In Reply Refer To: MS 5231

February 16, 1996

Mobil Exploration & Producing
U.S. Inc.
Attention: Mr. A. A. Pontesso
1250 Poydras Plaza
New Orleans, Louisiana 70113-1892

Gentlemen:

Reference is made to the following plan received February 9, 1996:

Type Plan - Supplemental Development Operations Coordination Document
Lease - OCS-G 6848
Block - 869
Area - Mobile
Activities Proposed - Well A-3

In accordance with 30 CFR 250.34, this plan is hereby deemed submitted and is now being considered for approval.

Your control number is S-3896 and should be referenced in your communication and correspondence concerning this plan.

Sincerely,

(Orig. Sgd.) Kent E. Stauffer

Donald C. Howard
Regional Supervisor
Field Operations

bcc: Lease OCS-G 6848 POD File (MS 5032)
MS 5034 w/public info. copy of the plan
and accomp. info.

MTolbert:cic:02/15/96:DOCDCOM

NOTED - SCHEXNAILDRE

Mobil Exploration & Producing U.S. Inc.

February 8, 1996

Department of the Interior
Minerals Management Service
1201 Elmwood Park Boulevard
New Orleans, LA 70123-2394

MINERALS MANAGEMENT SERVICE
FEB 09 1996
OPERATIONS
GOM OCS Region, New Orleans

NEW ORLEANS DIVISION
1250 POYDRAS BUILDING
NEW ORLEANS, LOUISIANA 70113-1892

Attention: Regional Supervisor - FO-2-1

**DEVELOPMENT OPERATIONS
COORDINATION DOCUMENT (DOCD)
MOBILE 869 UNIT
CONTRACT 754394004
MOBILE 869 FIELD - OFFSHORE ALABAMA**

Gentlemen:

Mobil Exploration & Producing U.S. Inc. (MEPUS), as agent for Mobil Oil Exploration & Producing Southeast Inc. (MOEPSI), herein submits nine (9) copies of the Development Operations Coordination Document (DOCD) for the development of the subject lease. Five (5) copies are marked "Proprietary" and four (4) are marked "Public Information".

The Mobile 869 Unit consists of leases acquired by Texaco etal and Exxon. Mobile Block 868, OCS-G-5067 was leased in OCS Sale 67 which was held in February, 1982. Mobile Block 869, OCS-G-6848 was leased in OCS Sale 81 which was held in April, 1984. Both leases which form the unit are located approximately 30 miles south, southeast of Mobile, Alabama in 47 feet of water.

Two exploration/development wells have previously been drilled and tested. This plan covers drilling of a third well. Mobil plans to set a 4-pile production platform next to the wells with a minimal production facility. Full well stream production will be routed to the Mobile 823 "A" platform located approximately 6 miles to the west for dehydration prior to being transported to the Mobil operated Mobile 823 Gas Plant for sweetening prior to being sold. Some facilities required to produce these wells will have to be added to the Mobile 823 "A" platform, however the production will actually be treated in the existing production equipment at the 823 platform. The production from Mobile 869 Unit will have no effect on the function or the permitted operating parameters for the Mobile 823 "A" platform. The DOCD for the Mobile 823 "A" platform facilities was approved January 5, 1990.

If there should be any questions or you desire additional information, please contact me at 504/566-5927.

Very truly yours,

A. A. Pontesso

A. A. Pontesso
Sr. Staff Environmental & Regulatory Engineer

Public Information

MOBIL EXPLORATION & PRODUCING U.S. INC. (MEPUS)

AS AGENT FOR

MOBIL OIL EXPLORATION & PRODUCING
SOUTHEAST INC. (MOEPSI)

AND

MOBIL PRODUCING TEXAS &
NEW MEXICO INC. (MPTM)

SUPPLEMENTAL DEVELOPMENT OPERATIONS COORDINATION DOCUMENT (DOCD)

GULF OF MEXICO - OFFSHORE
MOBILE 869 UNIT
CONTRACT NO. 754394004

SUPPLEMENTAL DEVELOPMENT OPERATIONS COORDINATION DOCUMENT - MOBILE 869 UNIT OCS-G-6848 AND OCS-G-5067

TABLE OF CONTENTS

SUPPLEMENTAL DEVELOPMENT OPERATIONS COORDINATION DOCUMENT - MOBILE 869 UNIT OCS-G-6848 AND OCS-G-5067

TABLE OF CONTENTS - (Continued)

ATTACHMENTS

MOBIL EXPLORATION & PRODUCING U.S. INC. (MEPUS)
AS AGENT FOR
MOBIL OIL EXPLORATION & PRODUCING SOUTHEAST INC. (MOEPSI) AND
MOBIL PRODUCING TEXAS & NEW MEXICO INC. (MPTM)

SUPPLEMENTAL DEVELOPMENT OPERATIONS COORDINATION DOCUMENT (DOCD)
GULF OF MEXICO - OFFSHORE ALABAMA
MOBILE 869 UNIT - CONTRACT NO. 754394004

DEVELOPMENTAL INFORMATION

In compliance with 30 CFR 250.34 and Letter to Lessees (LTL) dated October 12, 1988, this document containing the following is submitted for the further development of the titled unit(s).

PLAN CONTENTS:

LEASE AND PROJECT DESCRIPTION

The Mobile 869 Unit consists of:

Block	OCS No.	Operator	Partners	% Ownership
Mobile 869	G-6848	MOEPSI	Texaco	30%
			MPTM	30%
			MOEPSI	40%
Mobile 868 (Eastern 1/4)	G-5067	MOEPSI	Exxon	100%
Unit				
Mobile 869	G-6848	MOEPSI	Exxon	30%
	G-5067		Texaco	21%
(Eastern 1/4)			MPTM	21%
			MOEPSI	28%

Two (2) exploration/development wells have previously been drilled on the Mobile 869 Unit. This Plan covers the drilling of a third well and well completion activities. Unit Production will be directed to the Mobile 823 platform for dehydration and treatment before the gas is transported to shore for processing to remove contaminants by the onshore Mobile 823 Gas Processing Plant, located near Coden, Alabama. Mobile 869 Unit is located approximately 30 miles south southeast of Mobile, Alabama in 38-62 feet of water. The Mobile 869 Unit is located just over three miles from the nearest point of land (Dauphin Island Lighthouse) and is designated as an "8-G" lease. Much of the leased area is beneath the Mobile Shipping Fairway and the "A" platform is situated just outside the fairway limits in 46 feet of water.

LEASE AND PROJECT DESCRIPTION - Continued

The four-well four-pile wellhead production platform is set over the previously drilled exploration/production wells. A third well will be drilled from the third well slot. The platform is designed as an unmanned minimum facilities installation with only a wellstream cooler and supporting utility equipment. Initially, only the #A-3 well will be completed for production. The production will flow through a production cooler and then flow full wellstream in a five inch (5") corrosion resistant alloy (CRA) flowline to the Mobile 823 "A" facility. Two additional lines, one for fuel gas and a spare are laid between the platforms. The pipelines are buried a minimum of three (3') along the right-of-way.

Production from the Mobile 869 Unit is expected to contain 90 PPM of H_2S and 3% CO_2 and produced water with a high chloride concentration. The wellstream cooler and flowline on the Mobile 869-A platform will be designed for 10,500 psig to accommodate full shut-in tubing pressure. The mechanical design temperature will be 350°F upstream of the wellstream cooler and 200°F downstream. The flowline from Mobile 869-A to Mobile 823-A will be designed for 6,000 psig and 200°F mechanical design temperature. The flowline will be protected from overpressure by two (2) independent high pressure sensors (PSH's), each controlling a separate shutdown valve (SDV). Process components that handle the untreated wellstream will be made of nickel alloy, either solid or internally clad or lined. The expected production rate for the gas is 50 MMSCFD.

PROPOSED ACTIVITY SCHEDULE

ACTIVITY	COMPLETION DATE
Fabricated Platform	June, 1995
Installed Jacket	June, 1995
TP & A'd 869 #2 Well (redesignated A-2)	January, 1996
Install Pipelines	February, 1996
Fabricate Production Facility	February, 1996
Drill and complete Well #A-3	October, 1996
Install Production Facility	November, 1996
Commence Production	December, 1996
Complete 869 #1 Well (redesignated Well A-1)	January, 1999

DESCRIPTION OF DRILLING/COMPLETION UNIT

The new well is scheduled to be drilled and completed with the jack-up drilling rig ENSCO 94. A complete description of the rig is included in the attached information as Attachment "A". Also included at the end of Attachment "A" is a listing and composition breakdown of mud additives and chemicals which may be employed in the drilling and completion of the wells. Drilling operations will be conducted and equipment will be maintained in a manner to prompt the assurance of the safety and protection of the personnel, equipment, natural resources and environment to the maximum extent possible. The anticipated discharges expected to be associated with the proposed activities are discussed in the "Discharge and Pollutant" section of the Supporting Information. Any welding, burning or hot tapping operations conducted on the drilling unit will be in accordance with the MMS approved Welding, Burning or Hot Tapping Safe Practices and Procedures Plan for Mobil installations in the Gulf of Mexico, OCS Area Offshore Texas, Louisiana, Mississippi, Alabama and Florida.

Safety features, personnel training, equipment and completion operations will be in accordance with 30 CFR 250. Safety features will include well control and blowout prevention equipment, gas monitoring equipment and other related safety equipment as necessary and/or required. The appropriate life rafts, life jackets, ring buoys, and lifesaving supplies and equipment as prescribed by the U.S. Coast Guard will be maintained on the drilling unit and facility at all times.

TABLE OF WELL LOCATIONS

Attachment "B" of the attached information contains information relative to the well locations. The "Proprietary" copy contains a "Table of Well Locations" indicating the surface and bottom-hole locations, total depths and total vertical depths for the proposed wells. The "Public Information" copy contains a "Table of Well Locations" indicating the surfaces location and total depths of the proposed wells.

SUPPORTING INFORMATION:

STRUCTURE MAP

A structure map indicating the Norphlet formation with the surface and bottom-hole locations of the existing wells is included in the attached information as Attachment "C". This attachment has been omitted from the "Public Information" copy.

BATHYMETRY MAP

A bathymetry map indicating the surface locations of the Mobile 869 Unit wells is included in the attached information as Attachment "D".

SHALLOW HAZARDS STATEMENT

Information concerning possible shallow geologic hazards and the surface location relative to anomalies is discussed in Attachment "E". The possibility of any shallow geologic hazard will be taken into account prior to drilling any of the wells or performing any of the other development activities.

OIL SPILL CONTINGENCY PLAN

A general compliance Oil Spill Contingency Plan (December 14, 1987) implementing instructions and procedures for an oil or waste spill from any Mobil operation in the Gulf of Mexico has been previously submitted to, and approved by, the Minerals Management Service and should be located in the Minerals Management Service Field Offices. MEPUS has updated the approved Contingency Plan as required by 30 CFR 250.42. An updated plan was submitted to the MMS in August, 1995 and is awaiting approval.

Base of Operations

MEPUS is a member of Clean Gulf Associates (CGA) and in the unlikely event that a spill occurs, response equipment from the CGA base in Theodore, Alabama, would be utilized. The Theodore base is equipped with many types of spill response equipment including a fast response skimmer. If necessary, a high volume open sea skimmer is available from the CGA base in Grand Isle, Louisiana. Details concerning the application, transportation and deployment of the various types of response equipment are found in the CGA manual which by reference is part of MEPUS' Oil Spill Contingency Plan.

Deployment Time

In the event that equipment is needed at Mobile 869 Unit, the estimated response time is approximately five (5) to eight (8) hours. This estimate assumes one (1) hour procurement time, two (2) to four (4) hours fast-response unit load-out time, and two (2) to three (3) hours travel time to the location.

Trajectory Analysis

A trajectory analysis was performed for a spill occurring at Mobile 869 Unit utilizing the hypothetical simulation presented in the Environmental Impact Statement for the gulf of Mexico Lease Sales 147 and 150. The analysis indicates that the leases in question are located in Launch Site 68 and that the probability of a spill reaching shore within 10 days is 23% for Land Segment 21 (Mississippi Gulf Coast), 17% for Land Segment 22 (Dauphin Island, Alabama), 9% for Land Segment 23 (Fort Morgan, Alabama) and 3% for Land Segment 20 (St. Bernard Parish, Louisiana). Note, however, that MEPUS expects the hydrocarbons to be produced from this unit to consist of natural gas (no liquid hydrocarbons) and, therefore, the probability of a spill is greatly diminished.

Trajectory Analysis - Continued

Biologically sensitive areas which would be affected and which require protection in the event of a spill are identified in the CGA manual. Once identified, action would be taken, as appropriate, to effectively respond to site-specific circumstances.

Details concerning quantity, rates of discharge, and composition of solid and liquid wastes and pollutants which will be generated by the activities described in this plan are found in the attachments. Because of the differences in drilling and producing operations, each of these operations is addressed separately.

DISCUSSION OF HYDROGEN SULFIDE

The well to be produced in the subject unit will be produced from the Norphlet reservoir. The presence of H_2S has been confirmed in the Norphlet reservoir by well tests in Mobile Block 869, Well No. 1 and Well No. 2. The Norphlet was classified, in accordance with 30 CFR 250.67 (c), as a zone known to contain H_2S on April 20, 1995.

MEPUS has conducted and will continue to conduct all drilling operations in accordance with the requirements contained in 30 CFR 250.67 and the H_2S contingency plan which has been approved by the MMS. MEPUS will update the H_2S Contingency Plan as appropriate to encompass any changes necessitated by the commencement of producing activities. As appropriate, MEPUS will obtain MMS approval of any updates of the plan.

CZM CONSISTENCY CERTIFICATION

A CZM Consistency Certificate is included as Attachment "J".

AIR EMISSIONS DATA

Air emission calculations and date for the activities described in this DOCD are included as Attachment "F". Analysis of the data indicates that air emissions will not be detrimental to the ambient air quality.

ENVIRONMENTAL INFORMATION

Environmental information, prepared in accordance with NTL No. 86-09, is provided in a separate volume. The activities proposed in this DOCD are not expected to significantly alter the affected environment, endanger or threaten endangered species nor have significant unavoidable impacts.

ONSHORE BASE FACILITY AND SUPPORT EQUIPMENT

The primary onshore support base for the operations described in this plan will be the existing Bayou LaBatre Crew Boat Service Dock. An existing MEPUS base at Dauphin Island, Alabama, will also provide limited support. No new onshore support facilities will be used in relation to this activity. However, impurities and contaminants in the gas produced will be removed at Mobil's Mobile 823 Gas Processing Plant. The plant is located near Coden, Alabama. Waste vapor and H_2S will be removed from the gas at the processing plant. The gas will then be sold to the pipeline company. Pure sulfur which will be recovered during gas processing will be sold and trucked from the plant.

The surface travel route between Mobile Area Block 869 and the support base will be the most direct route from Bayou LaBatre into the Gulf of Mexico. This is a total travel distance of approximately 28 miles. During the completion operations, a 130' crew boat will make one trip per day from the Dauphin Island Base. During the producing operations, one 130' utility boat will make three trips per week from the Dauphin Island base.

AUTHORIZED REPRESENTATIVE

Inquiries concerning this DOCD should be directed to the authorized representative listed below:

Mobil Exploration & Producing U.S. Inc.
Mr. Alfred A. (Fred) Pontesso
1250 Poydras Building, Room 1404
New Orleans, Louisiana 70113-1892

Telephone Number: (504) 566-5927

NEW OR UNUSUAL TECHNOLOGY

The prospect of producing gas laden with H_2S at high temperatures has necessitated the need for certain components of the well/process system to be made of CORROSION RESISTANT ALLOYS (CRA). Extensive metallurgical tests have been performed to find materials suitable for use in this producing environment. This situation has been discussed with MMS officials in the New Orleans Regional and District offices.

LEASE STIPULATIONS

Three lease stipulations are in effect for these leases (Lease Sales 67 & 81: Stipulation Nos. 1, 10, and 17). Lease Stipulation No. 1 is concerned with cultural resources. Getty/Texaco prior operators of Mobile 869 submitted an archeological survey report on September 15, 1982. That report, on file with the MMS, clears the lease for development.

LEASE STIPULATIONS - Continued

To date, no cultural resources on these leases have been identified by MEPUS. Should a cultural resource be discovered during any operation on these leases, MEPUS will report the discovery to the MMS and make every reasonable effort to protect the resource until the MMS provides direction as to protection.

Lease Stipulation No. 10 involves the avoidance of "live bottom" areas as defined in the stipulation. A multi-sensor engineering survey report prepared by Racal-Decca, was submitted on September 15, 1982. The report contains an interpretation of side scan sonar sub-bottom profiler data indicating the absence of hard or "live-bottom" areas on the subject leases.

Finally, Lease Stipulation No. 17 requires coordination between MEPUS' activities concerned with these leases and the activities of Eglin Air Force Base. Principally, MEPUS is required to control electromagnetic emissions emanating from defense warning areas, as specified by the commander of the Armament Division of Eglin Air Force Base, to the degree necessary to prevent damage to or unacceptable interference with DOD activities within the warning areas. Note that MEPUS has and will continue to take the necessary steps to meet the requirements of this stipulation, including, if necessary, entering into an agreement with the air force base to affect positive control of boats and aircraft operating in the area.

POLLUTION PREVENTION, WASTES, AND DISCHARGES

MEPUS will perform all operations in a safe and workmanlike manner and will maintain all equipment in a safe condition for the protection of persons, property, and the environment. MEPUS will prevent and control pollution in accordance with 30 CFR 250.40.

The Mobile 869 Unit is expected to produce gas laden with H_2S at high pressures. A detailed description of the safety systems that will be provided on the production platforms to detect, prevent and suppress hazardous conditions is included with the attachments.

All discharges associated with the drilling, completion, and production of the wells proposed in this DOCD will be discharged in accordance with the Environmental Protection Agency NPDES General Permit for the Gulf of Mexico. Discharges are described as follows:

DRILLING AND COMPLETION OPERATIONS

All wastes and discharges from drilling and completion operations are summarized on Attachment "L". These data include daily and total volumes of each type of waste discharged during drilling and completion activities.

PRODUCING OPERATIONS

Utilities

The Mobile 869-A Platform will have the following utilities:

1. A sweet fuel gas system for fuel, blanket, instrument and purge gas
2. A vent system for collecting and directing hydrocarbon vapors to a vent pole equipped with a vent tip.
3. A closed drain system for collecting liquid hydrocarbons into a vent pole sump. Liquids will be periodically pumped from the sump into the flowline.
4. Two (2) gas engine-driven generators for platform electrical power. The gas engines will be fitted with catalytic converters to lower the NO_x emission levels.
5. A diesel engine powered crane for transfer of equipment and supplies.
6. A diesel engine-driven well service pump system for back pressuring the surface-controlled subsurface safety valve (SCSSV) and for workovers and well kill.
7. A gylcol injection system for hydrate inhibition until the wells reach sufficient flowing temperature.
8. A diesel system for providing fuel to the crane and well service pump, and for back-pressuring the SCSSV.
9. A potable water system to provide fresh water for deck cleaning.

Deck Drainage

An open drain system for collecting rain water from curbed solid deck areas. Rain water will be treated through a sump tank before being discharged overboard.

Sanitary Waste

Sanitary waste will be collected and transported to shore for proper disposal.

PIPELINE LOCATION

Attachment "K" is a map showing the route of the 5" Right-of-Way pipeline. A total of three lines are laid along the proposed route. One will carry production to Mobile 823 "A" Platform, the second will carry fuel gas to the proposed Mobile 869 "A" Platform and the third is spare.

ADDITIONAL INFORMATION

Process Control and Safety

Emergency Safety and Shutdown (ESSD) and Process Measurement and Control System (PMACS) for the Mobile 869 "A" Platform will be integrated into a single Programmable Electronic System (PES). The PES will communicate with Hewlett Packard (HP) workstations on the Mobile 823 "A" Platform over a dedicated microwave link. From the

Process Control and Safety - Continued

HP workstations on the Mobile 823 "A" Platform, operators will be able to view Mobile 869 "A" process parameters such as pressures, temperatures, valve positions, etc., and remotely control some of the operations of the facility.

Remote well shutdown and startup of the Mobile 869 wells can be performed by issuing a series of commands to the Mobile 869 "A" PES from the HP workstations on the Mobile 823 "A" Platform. The Mobile 869 "A" wellhead chokes will be equipped with actuators interfaced with the PES.

The process equipment will be protected with safety systems which automatically shut-in the flow from the wells in cases of process upsets. Process Shutdowns (PSD) occur with high or low pressures, high and low levels, and high temperatures.

Emergency Shutdowns (ESD) only occur in the case of manual triggering and fire and gas detection. Several systems will be installed to detect hazardous conditions. These systems include fusible plug loops, hydrogen sulfide sensors and combustible gas sensors.

A fusible plug loop will be installed throughout the production area. The loop consists of pressurized tubing with plugs that melt at 160°F and 210°F. Melting of the plug will result in loss of pressure and a platform ESD is triggered.

Hydrogen sulfide (H_2S) detectors will be installed at various places on the platform to monitor the ambient air. At a low level of 10 PPM of H_2S, an alarm will be triggered and a yellow beacon activated at the source of detection and at opposite corners of the platform. At 10 PPM of H_2S, an audible alarm will be triggered. At 50 PPM of H_2S, a red beacon will be activated at opposite corners of the platform and a platform ESD initiated.

Combustible gas detectors will be installed in the control room on the platform. When a low level of combustible gas is detected, an alarm will be triggered. With higher concentrations, a platform ESD will be initiated.

Ionization smoke detectors will be installed in the platform control room and generator enclosures. If smoke is detected in a generator enclosure, CO_2 will be released in the enclosure. In the control room FM 200 will be released if smoke is present.

Fire protection for the other areas of the platform includes both portable and wheeled "Purple K" fire extinguishers and portable CO_2 fire extinguishers.

ATTACHMENT "A"

* * * * * * * *

ENSCO 94

RIG INVENTORY

* * * * * * * *

Public Information

ENSCO 94
TABLE OF CONTENTS

ENSCO 94 INVENTORY

Unit Operator	ENSCO Offshore Company
District address	620 Moulin Road Broussard, Louisiana 70518
Telephone	(318) 837-8500
Fax	(318) 837-8501

UNIT SPECIFICATIONS

Unit Name	ENSCO 94
Type	Hitachi Zosen C-250 Jack–Up
Flag	U.S.A.
Classification	A.B.S.
Certification	U.S.C.G. – Certificate of Inspection
Certification of Inspection Accommodation Limit	76 persons
Delivery Date	August 5, 1981
Constructed by	Hitachi Zosen, Osaka Works Sakai, Japan

MAIN DIMENSIONS

Jack–up Design	Triangular Shape Cantilever Substructure
Length O.A.	193.57′
Width O.A.	173.88′
Hull Depth	21.33′
Distance from Bottom of Hull to Top of Jacking System	46.43′
Tip of can below hull with leg in raised position	4′ - 6"
Number of Legs	3
Leg Type	Triangular
Length of each Leg	355′
Spud tank diameter	38′ Across Flats
Spud tank height	19′
Jacking System	National A.C. Electric
Spud Tank Jetting System	Firewater pumps thru down leg piping and jets on bottom of can.
Drilling slot dimensions	Cantilever (See Grid)
Conditions for jacking operations	Conditions are determined by the O.I.M. based on experience, rig behavior and sea state at time of jacking operations.

VARIABLE LOAD

Maximum Variable Load	4,609,000#

Maximum Combined Hook, Rotary, Setback and Conductor Tension Load (Drilling Loads) (Refer to Cantilever Load Chart)	1,700,000#
Maximum Operating Loads (Includes Variable and Drilling Loads)	6,309,000#

OPERATING DEPTHS

Max drilling depth with 5" D.P.	19,685 +/- feet
Max operating water depth for which the unit is fully equipped.	246 feet
Minimum water depth without special or extra equipment	15 feet

MOORING EQUIPMENT

Number of Anchor lines	3 – mooring used only to get on/off location
Type of Line	Wire Rope
Diameter of Line	1 1/2 inch
Breaking Strength	160,000 lbs.
Available line length	2,600 feet
Anchor winch	
Number of anchor winches	3
Make	Nippon
Type	NP-4009-1
Powered by	AC Motor
Anchors	
Number/Type	1/LWT
Weight in air	10,000 lbs.
Pendant Lines	
Pendant chain	4
Diameter	1 1/8" Stud Link
Length (each)	270 feet

STORAGE CAPACITIES

Fuel	2,564 bbls.
Drilling Water	4,603 bbls.
Potable Water	1,722 bbls.
Liquid Mud	1,276 bbls.
Bulk Mud/Cement	8,000 cu. ft.
Sacks Material	2,500 sx.
Pipe Racks	4,260 sq. ft.
Miscellaneous Storage Area	1,000 sq. ft.

CRANES

Number	2
Make	LeTourneau
Type	PCM-120AS Electric
Boom Length	100 feet
Powered by	AC Motors
Max hoisting capacity at min. boom straddle	100 kips at 24 feet
Max hoisting capacity at max. boom straddle	7.99 kips at 103.5 feet
Rigged with single line	150 ft/min with 7.99 kips

HELICOPTER DECK

Octagonal	65 feet across flats
Capacity	Sikorsky S-61 or equivalent
Foam fire extinguishing system	2-Amerex 125# Portable Dry Chemical Fire Extinguishers

DRILLING MACHINERY AND EQUIPMENT

Derrick	
Make	Superior Derrick Service w/Dreco extension
Type	Standard
Height	160 feet
Width of Base	30 x 30
Maximum hook load capacity	1,200,000 lbs. w/14 lines
Racking platform capacity	258 stands of 5" drill pipe plus 6 stands of 8" collars
Casing stabbing platform	Deckard
Adjustable - height	21 to 51 feet
Dead Line Anchor	
Make/Type	National/EB
Sub-Structure	
Make	Marathon LeTourneau
Height	28' - 8" w/cantilever
Simultaneous capacity Set back & rotary	See Attached Grid Sheet
Drawworks	
Make	National
Type	1320-UE
Electric Brake	Baylor
Model	7838
Crown-o-matic	Koomey Type 80 CBS
Drawworks Drum Grooving	1 1/2"
Sand Reel line capacity	16,600'(no sandline on reel)

Sand line sheave grooved for line size	5/8"
Drawworks Power	2 EMD D79 DC Motors each 1000 HP
<u>Crown Block</u>	
Make	Superior
Model	760 FA
Capacity	650 tons
Number of sheaves	8
Diameter of sheaves	7-60" & 1-50"
<u>Traveling Block</u>	
Make	National
Model	760H650
Capacity	650 tons
Number of sheaves	7
Diameter of sheaves	60"
<u>Hook</u>	
Make	National
Type	H-650
Capacity	650 tons
<u>Swivel</u>	
Make	National
Type	P-650
Capacity	650 tons
<u>Rotary Table</u>	
Make	National
Type	C-375
Max opening	37 1/2"
Powered By	1 - EMD D79
Continuous rating	800 HP
<u>Master bushing</u>	
Make	Varco
Type	MPCH

TOP DRIVE

Varco BJ Model TDS 4-H with 650 ton load rating and maximum continuous torque output of 45,500 ft/lbs at 110 RPM in low gear and 29,100 ft/lbs at 175 RPM in high gear. Includes raised back-up system (RBS-I) to handle 5" drill pipe.

TRANSFORMER SYSTEM

Output volts	480
KVA	1500
Hertz	60
Distribution control centers arranged to control simultaneously:	
Number of drilling motors	7
Number of mooring winch motors	4
Ship services mode and lighting total power	375 KVA

POWER

Generator Sets

Number of AC generator sets	3
Total drilling horsepower	4950 BHP
Engines	EMD
Model	12-645-E8
Max. drilling power rating(each)	1650 BHP @ 900 RPM
AC Generators	EMD
Type	AB20-N6
Max drilling KW	1180 KW each
Volts	600
Hertz	60 @ 900 RPM

SCR Conversion System

Number of SCR Bays	5
Make	Baylor
Type	Thyrig III PM
Volts	750 DC

MUD CIRCULATING SYSTEM

Mud Pumps

Make	2 – National
Model	12-P–160 Triplex
Each Powered by	2 – EMD D79 motors
Total Continuous Rating Each Pump	1600 input HP
Charging pumps	2-Mission Magnum Centrifugal 6 x 5/each driven by a 50 HP motor

Stand Pipes

Number of stand pipes	2
Size of stand pipes	5"
Working pressure	Per USCG Specifications

Mud Tanks Volumes

Tank No. 1	397 bbls.
Tank No. 2	351 bbls.
Tank No. 3	351 bbls.
Tank No. 4	397 bbls.
Slug Tank	92 bbls.
Main Deck Shaker Tank	200 bbls.
Total Volume	1600 bbls.

Mud mixing pumps

Make – Type	2 – Mission Magnum I Centrifugal 6 x 5
Horsepower	100 HP AC

<u>Electrical mud agitators</u>	
Make	Brandt
Quantity	2 each tank compartment
Powered by motor	7.5 HP XPLF AC
Installed on mud tank	1, 2, 3 & 4
<u>Bottom guns</u>	
Quantity	2 each tank
<u>Mud shearing device</u>	
Make	Mission
Location	Venture at hopper
<u>Shale shaker</u>	
Quantity	Dual Harrisburg shakers cascading over two(2) Derrick Flo-Line Cleaner Plus units
<u>Desander</u>	
Make	Sweco
Type	P10-C03
Driven by	75 HP Motor and Mission Magnum 6x5 centrifugal pump
<u>Desilter</u>	
Make	Sweco
Type	P05C16
Driven by	75 HP Motor and Mission Magnum 6x5 centrifugal pump
<u>Degasser</u>	
Make	Swaco
Type	Vacuum
<u>Mud gas separator</u>	
Make	Fabricated
Type	Vertical
Gas discharge line size	6"
From mud gas separator to	Choke Buffer Tank
From mud gas separator to	Shale shaker
From mud gas separator to	Trip tank
Vent line extending above the derrick	crown block
<u>Trip Tank</u>	
Capacity	70 bbls.
Centrifugal Pumps	2-3 x 2 Mission Magnum I each driven by a 20 HP motor

<u>DRY CEMENT AND MUD BULK STORAGE AND TRANSFER SYSTEM</u>

<u>For Cement</u>	
Number of tanks	4
Capacity of each	1000 cu. ft.
Installed on	Machinery Deck
Total capacity	4,000 cu. ft.

For barite/bentonite	
Number of tanks	4
Capacity of each	1000 cu. ft.
Installed on	Machinery Deck
Total capacity	4,000 cu. ft.
Surge tanks for cement	
Quantity	1
Capacity	70 cu. ft.
Surge tanks for barite/bentonite	
Quantity	1
Capacity	70 cu. ft.
Transfer system	
Type	Air
Rating	40 psi
Air tank capacity	200 cu. ft.
Conveying line size	5"
Supply hoses	
Quantity for diesel	1
Quantity for drill water	1
Quantity for potable water	1
Quantity for bulk material	1
Connection type	Quick Connects

CEMENTING UNIT

Make (Free Placement)	HOWCO
Number of pumps	2
Type	Triplex HT-400
Working pressure	15,000 psi
Motors	2 - EMD D79
Total horsepower	800 HP each
Cementing discharged lines	2
Diameter (ID)	2"
Working pressure	10,000 psi
Manifold working pressure	15,000 psi

Cement discharge lines from cementing unit to drill floor and choke manifold

BOP WELL CONTROL EQUIPMENT

Diverter	
Make	Regan
Size	37 1/2" - 1000
Type	KFDJ
Diverter System	12" pipe with 12" hydraulic operated ball valves - Routed port and Starboard at aft of hull
Main Annular Preventer	
Make	Hydril
Size	13 5/8"
Type	GL
Working pressure	5,000 psi

For H_2S Service	Yes
Top Connection	13 5/8" 5000 psi Studded
Bottom Connection	13 5/8" 10000 psi Flange
<u>Ram Type Preventer</u>	
Make	Shaffer
Type	SL Double
Size	13 5/8"
Working Pressure	10,000 psi
For H_2S Service	Yes
Top and Bottom Connection Type	13 5/8" x 10,000 psi Flanged
Outlets	2 – 3 1/16" x 10,000 psi Flanged
Ram sets available	1 – Blind 2 – 5" rams
<u>Ram Type Preventer</u>	
Make	Shaffer
Type	SL Double
Size	13 5/8"
Working pressure	10,000 psi
For H_2S Service	Yes
Top and Bottom Connection	13 5/8" x 10,000 psi Flanged
Outlets	None
<u>Drilling Spool</u>	
For H_2S Service	Yes
Top and Bottom Connection	13 5/8" x 10,000 psi Flanged
I.D. x height	13 5/8" x 30"
Outlets size W.P.	2 – 3 1/16" x 10,000 psi Flanged
<u>Valve (Hydraulic Operated) to choke/kill</u>	
Make	Shaffer Type DB
Number	2
Size W.P.	3 1/16" x 10,000 psi
<u>Valve (Manual Operated) to choke/kill</u>	
Make	Shaffer Type B
Number	2
Size W.P.	3 1/16" x 10,000 psi

BOP CONTROL SYSTEM AND ASSOCIATED EQUIPMENT

<u>Surface Accumulator Unit</u>	
Make	Koomey
Type	160-11SX
Installation Site	On Stern of Rig Behind Drill Floor Windwall
Number of Stations	7
Soluble oil reservoir capacity	280 gallons
Number of bottles	16
Capacity of each bottle	10 gallons
Total bottles capacity	160 gallons
Bottles working pressure	3,000 psi

Triplex Pumps	
Driven	25 HP motor
Pump capacity	11.4 G.P.M. each
Max working pressure	3,000 psi
Air Pump Package	
Quantity	3
Model	AC–62
Pump capacity	7.2 G.P.M.
Max working pressure	3,000 psi
Remote Control Panel	
Installation site	Entrance to living quarters by galley on 2nd level
Model	Arc–6
Burner Booms	Provision may be made for any type furnished by operator.

CHOKE MANIFOLD

Manual Adjustable Choke	2
Make	Cameron
Size	3 1/16"
Working Pressure	10,000 psi
For H_2S Service	
Remote Operated Choke	1
Make	Swaco
Type	Superchoke

DRILL PIPES

Total length	14,800'	5,100'
Nominal O.D.	5"	5"
Grade	S-135	S-135
Range	2	2
Weight lb/ft	19.50	25.60
Tool joint O.D.	6 5/8"	6 5/8"
Type of connections	4 1/2 IF	4 1/2" IF

DRILL COLLARS

Quantity	14	22	6
Size (OD)	8"	6 1/2"	9 1/2"
Connection	6 5/8" Reg	4 1/2" XH	7 5/8" Reg
Remarks	Spiral	Spiral	Spiral

DRILL PIPE ELEVATORS

Quantity	2
Size	5"
Make	BJ
Type	GG
Capacity	350 ton

DRILL PIPE SLIPS

Quantity	2
Size	5"
Make	Wooley
Type	SXL

DRILL COLLARS SLIPS

Quantity	2
Make	Varco
Size	5 1/2"-7"

SAFETY CLAMPS

Quantity	1
Make	Varco
Range Sizes	3" - 12"

DRILL PIPE AND DRILL COLLAR ROTARY TONGS

Quantity	2 sets
Make	BJ
Type	SDD
Range Size	3 1/2" to 11"

ELEVATOR LINKS

Quantity	1 pair	1 pair	1 pair
Make	Varco	Varco	Varco
Capacity	350 ton	500 ton	500 ton
Size	2 3/4"x108"	3 1/2"x132"	3 1/2"x180"

UPPER KELLY COCKS

Quantity	1	1
Make	Omsco	Varco DSV-15
Working pressure	15,000 psi	15,000 psi
Operation	Manual	Remote

LOWER KELLY VALVE

Quantity	2
Make	Omsco
Max OD	7"
Working pressure	10,000 psi
Type of connections	4 1/2" IF

ROTARY HOSES

Number of rotary hoses	2
Size (inside diameter)	3"
Length	75'
Working pressure	5,000 psi

INSIDE BOP

Quantity	2
Make	Gray
Nominal OD Drill Pipe	5"

EZY TORQUE

Make	Drilco

SPINNING WRENCH

Make	Hawk Industries
Type	Spinmaster 950-H
Range Size	2 7/8" - 9 1/2"

SAFETY VALVE

Quantity	1	1
Make	TIW	OMSCO
Max OD	7 1/2"	6 3/4"
Working pressure	10,000 psi	10,000 psi
Type connection	4 1/2" IF	4 1/2" IF

FLOAT VALVE

Quantity	1
Make	Baker
Type	5F–6R

CHICKSAN JOINTS

Quantity	6
Size	2"
Working pressure	10,000 psi
Length of each joint	10 feet

WIRE LINE MEASURING ASSEMBLY

Make	Mathey
Line Capacity	15,000'
Line size	.092"
Power	Electric

FISHING TOOLS

Overshots		
Quantity	1	1
Make	Bowen	Bowen
OD	9 1/2" SH	8 1/8" FS
Series	150	150
Connection	4 1/2 XH	4 1/2" XH
Oversize Guide	15"	11" & 15"
Extension		30"
Taper taps		
Quantity	1	
Make	Tri–State	
Min OD	2"	
Max OD	5"	
Length	60"	
Connections	4 1/2" XH	
ID	1"	

INSTRUMENTATION

Weight Indicator	
Make	Totco
Type	100
Sensor Type	E
Weight Indicator console including:	
Mud pump pressure gauges	
Make	Totco
Type	RMG 50–62–50
Capacity range	6,000
Rotary torque indicator	
Make	Weston
Model	273

<u>Rotary Speed tachometer</u>	
Make	Totco
Type	RPM 391-351
Capacity RPM	0 - 300
<u>Tong torque assembly</u>	
Make	Totco
Type	DCT 20
<u>Drilling recorder</u>	
Make	Geolograph
Type	6 pen
Parameter recorded:	Weight on bit Rate of penetration RPM rotary table Torque Pump pressure Stroke per minute
<u>Automatic Driller</u>	
Make	Bearcat
Type	Auto Driller
<u>Environmental data and unit motion Indicators</u>	
Indicating	Wind speed & direction, and barometric pressure
<u>Mud Pit Level Indicator</u>	
Make	WMCO
Type	Air
Warning instrument sites	Drill Floor
<u>Mud Flow Indicator</u>	
Make	Totco
Type	Air
Warning instrument site	Drill Floor
Warning instrument types	Alarm
<u>Combustible Gas Detector</u>	
Make	Gas Tech
Sample points	Pits & Shaker
Warning site	Drill Floor & Toolpusher Office
Warning type	Lights & Alarm

<u>OTHER EQUIPMENT AND FACILITIES</u>

<u>Air Compressor Units</u>	
Number	2
Make	Quincy
Type	Rotary Screw
Capacity	490 CFM @ 125 psi each
<u>Air Dryer</u>	
Make	Hankinson
Type	E800A
Capacity	

UTILITY HOISTS

Rig Floor

Number of hoists	1	1
Make	IR	Beebe Bros.
Type	K5UL	FA2–24MR
Rated pull	11,000 lbs.	3,180 lbs. (man) 4,400 lbs. (util.)

In Substructure for handling BOP's

Number of hoists	2
Make	LeTourneau
Type	Electric
Rated pull	60,000 lbs.
Other hoists	4–hand operated hoists for snubbing BOP's 4 – air operated hoists for moving BOP work platform

MISCELLANEOUS

Workshop complete with	Drill press, vise and mechanics hand tools
Warehouse	1
Welding machines	2
Make	Lincoln R3R-400
Type	400 amp
Forklift truck	Toyota 4,000 lb. cap.
Waste treatment system	Red Fox RF-2000-C-CRPN-S
Potable water distillation units	2 Riley Beaird Maxim TCF 7.5/15000 GPD total

EMERGENCY SYSTEM

Emergency Power Generator

Quantity	1
Max continuous power	350 KW
Volts	480
Hertz	60 @ 1800 RPM

Remarks:

The emergency power generator is located in an area remote from the main power to feed the following independent distribution circuits:

- BOP Accumulator System
- BOP Control Panel System
- Emergency Lighting
- Navigation Aids
- Bilge Pump #1
- Fire Pump #1
- Lifeboat Davit #3
- Bilge Pump #2
- Raw Water Pump #3
- Positive pressure system of accommodation

Flood lighting at all life boat and life raft stations
Emergency power at all life boat and life raft stations
All other systems required for the safety of personnel and the rig.

SAFETY EQUIPMENT

Life Boats	
Quantity	2
Type	Self Propelled
Capacity	58 men each
Mfg.	Watercraft
Launching device	Davit
Approved by U.S.C.G.	
Life Rafts	
Make	B F Goodrich
Type	Davit Launch Inflatable
Capacity	2 - 20 man
Life Vests (or jackets)	
Quantity	101 minimum
Life Buoys with Igniting Light Attachment and Self Activating Smoking Signal	
Quantity	2
Type	USCG Approved
Working Life Jackets/Vests	
Quantity	20
Emergency Escape Ladders	
Quantity	2
Make	Apollo Marine
Fireman's Suits	
Quantity	2
Air Breathing Apparatus	
Quantity	3
Type	Scott Air - USCG Approved
First Aid	
Sick Bays	1
Number of beds	5
Resuscitators with spare charged oxygen cylinder	1
Stretchers	2

Sick bay equipped with all instruments and medical supplies as recommended by USCG.

FIXED FIRE FIGHTING SYSTEM

Fire Water Delivery Stations

The water fire fighting system is serviced by at least two fire pumps, each of adequate capacity and each located in separate room. One of the two fire pumps is driven by the emergency generator or by diesel engine as per USCG/ABS requirements.

Fire CO2 — Per USCG/ABS Requirements

Portable Fire Extinguishers

15 lbs CO2 Type

24 lbs dry chemical (CO2 change) — Per USCG/ABS Requirements

LIVING QUARTERS

Accommodation for Contractor's personnel:	2 – two bed rooms 15 – four bed rooms 1 – six bed rooms
Accommodation for Operator's personnel	1 – two bed rooms
Total people accommodation:	78
Sickroom	5 beds
Mess for number of people	28
Number of recreation rooms	2
Entertainment sets in recreation rooms	2-TV; 2-Card Tables; 1-Pool Table
Number of Contractor toolpusher offices with connecting bedroom	1
Number of Operator toolpusher offices with connecting bedroom	1

COMMUNICATIONS EQUIPMENT

1 - VHF Marine Transceiver-Sailor Model RT144AC
4 – VHF Marine Hand Held Transceivers
26 Stations Intercom System GAI–Tronics
12 Stations Hose McCann Sound Powered Telephone System
1 - Birdview Satellite Dish

MOEPSI

BASIC DRILLING FLUID MATERIALS CROSS REFERENCE GUIDE

ATTACHMENT "A"

BEST AVAILABLE COPY

		BAROID	M-I	MILPARK	IDF	GLOBAL	UNIBAR	AMBAR	GENERIC
WEIGHTING AGENTS AND VISCOSIFIERS									
Barite	Barium Sulfate ($BaSO_4$)	Baroid	M-I Bar	Mil-Bar			Unibar	Ambar	Bar, Weight Material
Hematite	Ground Iron Oxide (Fe_2O_3)	Barodense	Fer-Ox						Densimix
Bentonite	Montmorillonite type clay	Aquagel	M-I Gel	Milgel				Amgel	Wyoming Bentonite, Gel
Non-peptized Bentonite	Montmorillonite type clay	Gold Seal		Milgel NT					Non-peptized Bentonite
Attapulgite	Hydrous Mg Al Silicate clay	Zeogel	Salt Gel			Salgite		Amcegel	Salt Gel
Sepiolite	Fibrous Mg Silicate clay		Durogel						Sepiolite, Sea-mud
XCD Polymer	Bacterial product- polysaccharide				Idvis				XCD Polymer
High Temperature Viscosifier	Polysaccharide								HP007
High Temperature Viscosifier	Synthetic Inorganic Polymer	Therma-Vis							
DISPERSANTS AND DEFLOCCULANTS:									
Chrome Lignosulfonate	Lignosulfonate reacted with chrome	Q-Broxin	Spersene	Unical				Amsperse	CLS
Desco	Sulfomethylated quebracho with sodium dichromate	Baro-Thin							
SAPP	Sodium Acid Pyrophosphate ($Na_2H_2P_2O_7$)							Amsapp	
Polyacrylate Deflocculant	Short chain PHPA (<10,000 molecular wt.)	Therma Thin	Tackle	New Thin	Idthin	Polysperse		Ampolymax	Alcomer 74L, ASP 718
Potassium Lignosulfonate	Lignosulfonate blended with potassium hydroxide					Shalex			
Maleic Anhydrite	Sulfonated Maleic Anhydride co-polymer			Mil-Temp					
FILTRATION CONTROL ADDITIVES:									
Lignite	Lignitic humic acid powder	Carbonox	Tannathin	Ligco				Amlig	Leonardite
Causticized Lignite	Lignite reacted with caustic soda	CC-16	Caustilig	Ligcon				Amaelig	
Chrome Lignite	Lignite reacted with chrome and caustic soda		XP-20						
Potassium Lignite	Lignite blended with potassium hydroxide	K-Lig	K-17	XKB-Lig					Basic K+
Starch	Corn starch (biodegradable- requires preservative)	Impermix	My-Lo-Jel	Mil-Starch	Idflo LT	Starch		Amceloid	Yellow Starch
Preserved Starch	Starch (usually potato) treated with preservative	Dextrid	Poly-Sal		Idflo	Starlose			Starlose, Perma-Lose
CMC	Sodium Carboxymethylcellulose	Cellex						AmCEC	CMC, Driscose
PAC	Polyanionic cellulose polymer (low or high vis)	PAC L, PAC R	Poly-Pac	Mil-Pac	IDF-FLR, IDF-FLR XL		UniPAC	AmPAC	PAC, Drispac, Monpac
Resin treated lignite	Lignite reacted with resins or polymers	Durenex	Resinex	Filtrex, Chemtrol X	IDF Hi Temp		Aquaplex	Amexperse HT	Sulfonated lignite
Sodium polyacrylate	Long chain sodium polyacrylate	Therma-Chek	SP 101	New-Trol Kem-Seal; Pyro-Trol					Cypan, Alcomer 507, SPAR
High temperature starch	Carboxymethyl starch		Thermpac						
Sulfonated Lignin	Modified lignin polymer	Baranex							
BENTONITE EXTENDERS AND SELECTIVE FLOCCULANTS:									
Bentonite Extender	Partially hydrolyzed polyacrylamide polymer blend	X-tend II	Gelex						Ben-ex, Alcomer 180
Selective Flocculant	Heavy molecular weight anionic polyacrylate	Bara-Floc	Flox-It						MF-1, Selec-Floc
SHALE STABILIZERS AND SHALE CONTROL ADDITIVES:									
Inhibitive polymer (PHPA)	High molecular weight PHPA	EZ Mud(Liq. or Pwdr.)	Poly Plus	New Drill(Liq. or Pwdr.)	ID Bond	Global 700		Ampolymax	Nalco ASP-700
Sulphonated Asphalt	Hydroxylated sodium asphalt sulfonate	Bara-Trol			IDTexw				Soltex
Blown Asphalt	Blown Asphalt			Protectomagic M					Blown Asphalt
Gilsonite	Ground gilsonite				IDTex				X-Pel G, Super-Drill
Lignitic Polymer Blend			Shale Check						
DETERGENTS AND DEFOAMERS:									
Mud Detergent	Anionic liquid detergent	ConDet	D-D	Milpark MD		Bio-D		Amdmd	Drilling detergent
Liquid Defoamer	Alcohol base defoamer	Bara-Defoam	Magconol	W.O.Defoam	ID Break			Amdefoam	
Liquid Defoamer	Silicone base defoamer		Defoam-X	LD-8					SDI
Powder Defoamer	Aluminum salt of stearic acid								Aluminum Stearate
SPOTTING FLUIDS:									
Diesel oil spots	Oil muds made with diesel (EPA restricted)	EZ Spot	Pipe Lax	Black Magic, SFT	IDFree		Petro-Mul	Amwallfree	
"Mineral oil" spots	Oil muds made with low aromatic oils	Enviro-Spot	Pipe Lax	Black Magic, SFT	IDFree		Petro-Mul	Amwallfree	
Non-hydrocarbon spotting fluid				Bio-spot					
LOST CIRCULATION MATERIALS:									
Nut Hulls	Sized ground nut (wallnut or pecan) hulls	Wallnut	Nutplug	Mil-plug	IDF Plug			Amplug	
Mica	Sized ground mica	Micatex	M-I Mica	Mil-Mica	IDF Mica			Ammica	
Cellophane	Shredded cellophane	Jelflake		Milflake	IDF Flake				
Fiber	Shredded wood or sugar cane fiber	Fibertex		Milcedar-fiber				Amfiber	
Kwik Seal	Blend of fiber,flakes and granules	Baro-Seal							
Shredded Paper	Shredded paper	Hy-Seal							
Cotton Seed Hulls	Cotton Seed Hulls								
COMMERCIAL CHEMICALS:									
Caustic Soda	Sodium Hydroxide (NaOH)								Caustic
Soda Ash	Sodium Carbonate (Na_2CO_3)								Soda Ash
Sodium Bicarbonate	Bicarbonate of Soda ($NaHCO_3$)								Bicarb
Lime	Calcium Hydroxide ($Ca(OH)_2$)								
Biocide	Several types (carbamates, etc.)		Bac Ban III		IDCide (Liq. or Pwdr.)			Amcide	X-Cide 207, Dryocide
Caustic Potash	Potassium Hydroxide (KOH)								
Potash	Potassium Carbonate (K_2CO_3)								Potash
Sulfide Scavenger	Zinc Oxide and/or Zinc Carbonate	No-Sulf		Milgard	IDZAC-24, IDZAC-L				
Acetic Acid	Acetic Acid (for neutralizing pH from drilling cement)								

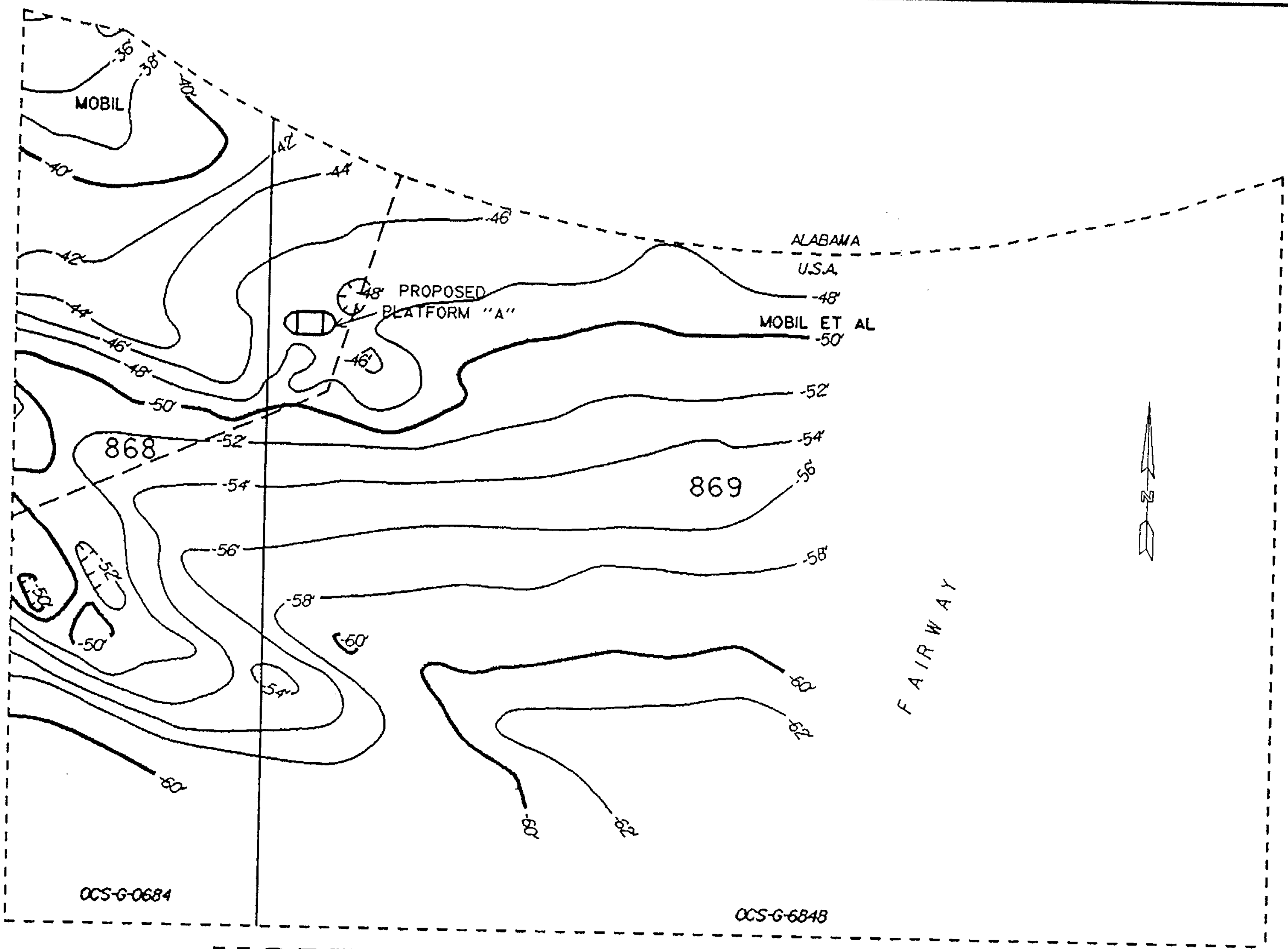
ATTACHMENT "B"

DEVELOPMENT OPERATIONS COORDINATION DOCUMENT

TABLE OF WELL LOCATIONS
MOBILE BLOCK 869 UNIT
CONTRACT # 754394004

Well No.	Surface Location	Total Depth
Mo 869 #1	10434' FSL & 652' FWL of 869	22,625'
MO 869 #2	10434' FSL & 642' FWL of 869	22,082'
PROPOSED MO 869 #3	10438' FSL & 635' FWL of 869	22,007'

Water Depth #1 = 47'
Water Depth #2 = 45'
Water Depth #3 = 45'



MOBILE BLOCK 869 UNIT OUTLINE

BATHYMETRY MAP

ALABAMA OFFSHORE

LEGEND:

- - - - UNIT OUTLINE
(platform symbol) PLATFORM

ATTACHMENT "D"

BEST AVAILABLE COPY

ATTACHMENT "E"

SHALLOW HAZARDS STATEMENT

MOBILE 869 UNIT - BLOCK 869 - MOBILE AREA
PLATFORM "A" LOCATION: 642' FWL; 10,434' FSL

The following is a statement of Shallow Hazards that may be encountered during the development of Mobile 869 Unit at the proposed "A" platform location.

The high resolution, multi-sensor survey for Mobile Area blocks 868 and 869 was acquired for Texaco by John E. Chance & Associates, Inc. in January 1988. Data were examined around the proposed platform location for the purpose of identifying potential shallow hazards. No shallow hazards were anticipated at that location and none were encountered in drilling the 869 No. 1 well.

The following summary was prepared for the 869 No. 1 well and applies to the platform location at that site:

> The seismic data which traverse the platform site consists of CDP profiles and high resolution profiles which include the side scan sonar, magnetometer, water gun and pinger profiles.
>
> The water depth at the proposed platform site is 47 feet. The seafloor is slightly irregular and slopes to the southeast at an approximate rate of 10 feet per mile. The seafloor topography is characterized by gentle ridge and sand wave formations. The near surface strata are composed of approximately 20 to 50 feet of sand overlying a clay bed. There is no evidence of surface or near-surface faulting near the platform site.
>
> Shallow "bright spots" are observed in the high resolution data at approximately 200 to 700 feet below the seafloor at a location 500 feet from the proposed platform site. CDP velocity data indicate no anomalous velocities in the vicinity of the platform site.
>
> Several magnetic anomalies were identified within 500 to 10000 feet of the platform site. These anomalies are expected to be small ferrous debris.

Chris Dileo

COMPANY	Mobil Exploration & Producing U.S. Inc.
AREA	Mobile
BLOCK	869
LEASE	OCS-G-6848
PLATFORM	A
WELL	
LATITUDE	30 08' 20.36"
LONGITUDE	88 04' 43.74"
COMPANY CONTACT	Fred Pontesso
TELEPHONE NO.	504-566-5927
REMARKS	

BEST AVAILABLE COPY

Public Information

ATTACHMENT "F"

AIR EMISSION CALCULATIONS

COMPANY	AREA	BLOCK	LEASE	PLATFORM	WELL
Mobil Exploration	Mobile	869	OCS-G-6848	A	

Year	Emitted Substance				
	TSP	SOx	NOx	HC	CO
1996	4.79	24.68	192.07	6.52	41.62
1997	5.89	5.93	103.92	7.75	20.94
1998	5.89	5.93	103.92	7.75	20.94
1999	8.18	20.16	208.94	10.90	43.85
2000	5.89	5.93	103.92	7.75	20.94
2001	5.89	5.93	103.92	7.75	20.94
2002	5.89	5.93	103.92	7.75	20.94
2003	5.89	5.93	103.92	7.75	20.94
2004	5.89	5.93	103.92	7.75	20.94
2005	5.89	5.93	103.92	7.75	20.94
Allowable	249.75	249.75	249.75	249.75	13115.05

BEST AVAILABLE COPY

Public Information

AIR EMISSION CALCULATIONS

COMPANY	AREA	BLOCK	LEASE	PLATFORM	WELL	LATITUDE	LONGITUDE	CONTACT			PHONE	REMARKS				
Mobil Exploration & Producin	Mobile	869	OCS-G-6848	A		30 08' 20.36"	88 04' 43.74"	Fred Pontesso			504-566-5927					
OPERATIONS	EQUIPMENT		MAX. FUEL	ACT. FUEL	RUN TIME		POUNDS PER HOUR					TONS PER YEAR				
	Diesel Engines	HP	GAL/HR	GAL/D												
	Nat. Gas Engines	HP	SCF/HR	SCF/D												
	Burners	MMBTU/HR	SCF/HR	SCF/D	HR/D	DAYS	TSP	SOx	NOx	VOC	CO	TSP	SOx	NOx	VOC	CO
DRILLING	PRIME MOVER>600hp diesel	1650	79.695	1912.68	24	150	0.87	5.42	39.98	1.20	8.72	1.57	9.75	71.96	2.16	15.70
	PRIME MOVER>600hp diesel	1650	79.695	1912.68	24	150	0.87	5.42	39.98	1.20	8.72	1.57	9.75	71.96	2.16	15.70
	PRIME MOVER>600hp diesel	1650	79.695	1912.68	0	150	0.87	5.42	39.98	1.20	8.72	0.00	0.00	0.00	0.00	0.00
	PRIME MOVER>600hp diesel	800	38.64	927.36	1	150	0.42	2.63	19.38	0.58	4.23	0.03	0.20	1.45	0.04	0.32
	VESSELS>600hp diesel	680	32.844	788.26	24	150	0.36	2.23	16.48	0.49	3.59	0.65	4.02	29.66	0.89	6.47
PIPELINE INSTALLATION	PIPELINE LAY BARGE diesel	0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	SUPPORT VESSEL diesel	0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	PIPELINE BURY BARGE diesel	0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	SUPPORT VESSEL diesel	0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
FACILITY INSTALLATION	DERRICK BARGE diesel	0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	MATERIAL TUG diesel	0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PRODUCTION	RECIP <600hp diesel - well pump	442	21.3486	512.37	24	60	0.97	0.91	13.63	1.09	2.95	0.70	0.65	9.81	0.79	2.12
	RECIP <600hp diesel - one crane	160	7.728	185.47	24	60	0.35	0.33	4.93	0.39	1.07	0.25	0.24	3.55	0.28	0.77
	RECIP.>600hp diesel	0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	SUPPORT VESSEL diesel	680	32.844	788.26	3	24	0.36	2.23	16.48	0.49	3.59	0.01	0.08	0.59	0.02	0.13
	TURBINE nat gas	0	0	0.00	0	0		0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00
	RECIP.2 cycle lean nat gas	0	0	0.00	0	0		0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00
	RECIP.4 cycle lean nat gas-power	162	1157.166	27771.98	24	60		0.00	4.28	0.26	0.57		0.00	3.08	0.18	0.41
	RECIP.4 cycle lean nat gas-power	162	1157.166	27771.98	0	60		0.00	4.28	0.26	0.57		0.00	0.00	0.00	0.00
	RECIP.4 cycle rich nat gas	0	0	0.00	0	0		0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00
	BURNER nat gas	0	0.00	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	MISC.	BPD	SCF/HR	COUNT												
	TANK-	0.274			0	0				0.00					0.00	
	FLARE-		0		0	0		0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00
	PROCESS VENT-		41.67		0	0				0.14					0.00	
	FUGITIVES-			405.0		0				0.01					0.00	
	GLYCOL STILL VENT-		0		0	0				0.00					0.00	
DRILLING WELL TEST	OIL BURN	0			0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	GAS FLARE		0		0	0		0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00
1996 YEAR TOTAL							5.08	24.57	199.40	7.32	42.75	4.79	24.68	192.07	6.52	41.62
EXEMPTION CALCULATION	DISTANCE FROM LAND IN MILES											249.75	249.75	249.75	249.75	13115.05
	7.5															

BEST AVAILABLE COPY

COMPANY	AREA	BLOCK	LEASE	PLATFORM	WELL	LATITUDE	LONGITUDE	CONTACT		PHONE	REMARKS					
Mobil Exploration & Produci	Mobile	869	OCS-G-6848	A		30 08' 20.36"	88 04' 43.74"	Fred Pontesso		504-566-5927						
OPERATIONS	EQUIPMENT		MAX. FUEL	ACT. FUEL	RUN TIME											
	Diesel Engines	HP	GAL/HR	GAL/D			POUNDS PER HOUR					TONS PER YEAR				
	Nat. Gas Engines	HP	SCF/HR	SCF/D												
	Burners	MMBTU/HR	SCF/HR	SCF/D	HR/D	DAYS	TSP	SOx	NOx	VOC	CO	TSP	SOx	NOx	VOC	CO
DRILLING	PRIME MOVER>600hp diesel	0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	PRIME MOVER>600hp diesel	0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	PRIME MOVER>600hp diesel	0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	AUXILIARY EQUIP<600hp diesel	0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	VESSELS>600hp diesel	0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PIPELINE INSTALLATION	PIPELINE LAY BARGE diesel	0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	SUPPORT VESSEL diesel	0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	PIPELINE BURY BARGE diesel	0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	SUPPORT VESSEL diesel	0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
FACILITY INSTALLATION	DERRICK BARGE diesel	0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	MATERIAL TUG diesel	0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PRODUCTION	RECIP <600hp diesel -well pump	442	21.3486	512.37	24	365	0.97	0.91	13.63	1.09	2.95	4.26	3.97	59.70	4.78	12.92
	RECIP <600hp diesel - one crane	160	7.728	185.47	24	365	0.35	0.33	4.93	0.39	1.07	1.54	1.44	21.61	1.73	4.68
	RECIP.>600hp diesel	0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	SUPPORT VESSEL diesel	680	32.844	788.26	3	156	0.36	2.23	16.48	0.49	3.59	0.08	0.52	3.86	0.12	0.84
	TURBINE nat gas	0	0	0.00	0	0		0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00
	RECIP.2 cycle lean nat gas	0	0	0.00	0	0		0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00
	RECIP.4 cycle lean nat gas-power	162	1157.166	27771.98	24	365		0.00	4.28	0.26	0.57		0.00	18.75	1.13	2.50
	RECIP.4 cycle lean nat gas-power	162	1157.166	27771.98	0	365		0.00	3.57	0.05	3.07		0.00	0.00	0.00	0.00
	BURNER nat gas	0	0.00	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	MISC.	BPD	SCF/HR	COUNT												
	TANK-	0.274			0	0				0.00					0.00	
	FLARE-		0		0	0		0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00
	PROCESS VENT-		41.67		0	0				0.14					0.00	
	FUGITIVES-			405.0		0				0.01					0.00	
	GLYCOL STILL VENT-		0		0	0				0.00					0.00	
DRILLING WELL TEST	OIL BURN	0			0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	GAS FLARE		0		0	0		0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00
1997 YEAR TOTAL							1.69	3.47	42.89	2.44	11.25	5.89	5.93	103.92	7.75	20.94
EXEMPTION CALCULATION	DISTANCE FROM LAND IN MILES															
	7.5											249.75	249.75	249.75	249.75	13115.05

BEST AVAILABLE COPY

COMPANY	AREA	BLOCK	LEASE	PLATFORM	WELL	LATITUDE	LONGITUDE	CONTACT	PHONE	REMARKS
Mobil Exploration & Produci	Mobile	869	OCS-G-6848	A		30 08' 20.36"	88 04' 43.74"	Fred Pontesso	504-566-5927	

OPERATIONS	EQUIPMENT		MAX. FUEL	ACT. FUEL	RUN TIME		POUNDS PER HOUR					TONS PER YEAR				
	Diesel Engines	HP	GAL/HR	GAL/D												
	Nat. Gas Engines	HP	SCF/HR	SCF/D												
	Burners	MMBTU/HR	SCF/HR	SCF/D	HR/D	DAYS	TSP	SOx	NOx	VOC	CO	TSP	SOx	NOx	VOC	CO
DRILLING	PRIME MOVER>600hp diesel	1650	79.695	1912.68	0	0	0.87	5.42	39.98	1.20	8.72	0.00	0.00	0.00	0.00	0.00
	PRIME MOVER>600hp diesel	1650	79.695	1912.68	0	0	0.87	5.42	39.98	1.20	8.72	0.00	0.00	0.00	0.00	0.00
	PRIME MOVER>600hp diesel	1650	79.695	1912.68	0	0	0.87	5.42	39.98	1.20	8.72	0.00	0.00	0.00	0.00	0.00
	PRIME MOVER>600hp diesel	800	38.64	927.36	0	0	0.42	2.63	19.38	0.58	4.23	0.00	0.00	0.00	0.00	0.00
	AUXILIARY EQUIP<600hp diesel	0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	VESSELS>600hp diesel	680	32.844	788.26	0	0	0.36	2.23	16.48	0.49	3.59	0.00	0.00	0.00	0.00	0.00
PIPELINE INSTALLATION	PIPELINE LAY BARGE diesel	0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	SUPPORT VESSEL diesel	0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	PIPELINE BURY BARGE diesel	0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	SUPPORT VESSEL diesel	0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
FACILITY INSTALLATION	DERRICK BARGE diesel	0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	MATERIAL TUG diesel	0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PRODUCTION	RECIP <600hp diesel - well pump	442	21.3486	512.37	24	365	0.97	0.91	13.63	1.09	2.95	4.26	3.97	59.70	4.78	12.92
	RECIP <600hp diesel - one crane	160	7.728	185.47	24	365	0.35	0.33	4.93	0.39	1.07	1.54	1.44	21.61	1.73	4.68
	RECIP.>600hp diesel	0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	SUPPORT VESSEL diesel	680	32.844	788.26	3	156	0.36	2.23	16.48	0.49	3.59	0.08	0.52	3.86	0.12	0.84
	TURBINE nat gas	0	0	0.00	0	0		0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00
	RECIP.2 cycle lean nat gas	0	0	0.00	0	0		0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00
	RECIP.4 cycle lean nat gas-power	162	1157.166	27771.98	24	365		0.00	4.28	0.26	0.57		0.00	0.00	0.00	0.00
	RECIP.4 cycle lean nat gas-power	162	1157.166	27771.98	0	365		0.00	4.28	0.26	0.57		0.00	18.75	1.13	2.50
	RECIP.4 cycle rich nat gas	0	0	0.00	0	0		0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00
	BURNER nat gas	0	0.00	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	MISC.	BPD	SCF/HR	COUNT												
	TANK-	0.274			0	0				0.00					0.00	
	FLARE-		0		0	0		0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00
	PROCESS VENT-		41.67		0	0				0.14					0.00	
	FUGITIVES-			405.0		0				0.01					0.00	
	GLYCOL STILL VENT-		0		0	0				0.00					0.00	
DRILLING WELL TEST	OIL BURN	0			0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	GAS FLARE		0		0	0		0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00
1998 YEAR TOTAL							5.08	24.57	199.40	7.32	42.75	5.89	5.93	103.92	7.75	20.94
EXEMPTION CALCULATION	DISTANCE FROM LAND IN MILES											249.75	249.75	249.75	249.75	13115.05
	7.5															

BEST AVAILABLE COPY

BEST AVAILABLE COPY

COMPANY	AREA	BLOCK	LEASE	PLATFORM	WELL	LATITUDE	LONGITUDE	CONTACT	PHONE	REMARKS
Mobil Exploration & Produc	Mobile	869	OCS-G-6848	A		30 08' 20.36"	88 04' 43.74"	Fred Pontesso	504-566-5927	

OPERATIONS	EQUIPMENT		MAX. FUEL	ACT. FUEL	RUN TIME		POUNDS PER HOUR					TONS PER YEAR				
	Diesel Engines	HP	GAL/HR	GAL/D												
	Nat. Gas Engines	HP	SCF/HR	SCF/D												
	Burners	MMBTU/HR	SCF/HR	SCF/D	HR/D	DAYS	TSP	SOx	NOx	VOC	CO	TSP	SOx	NOx	VOC	CO
DRILLING	PRIME MOVER>600hp diesel	1650	79.695	1912.68	24	90	0.87	5.42	39.98	1.20	8.72	0.94	5.85	43.18	1.30	9.42
	PRIME MOVER>600hp diesel	1650	79.695	1912.68	24	90	0.87	5.42	39.98	1.20	8.72	0.94	5.85	43.18	1.30	9.42
	PRIME MOVER>600hp diesel	1650	79.695	1912.68	0	90	0.87	5.42	39.98	1.20	8.72	0.00	0.00	0.00	0.00	0.00
	PRIME MOVER>600hp diesel	800	38.64	927.36	1	90	0.42	2.63	19.38	0.58	4.23	0.02	0.12	0.87	0.03	0.19
	AUXILIARY EQUIP<600hp diesel	0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	VESSELS>600hp diesel	680	32.844	788.26	24	90	0.36	2.23	16.48	0.49	3.59	0.39	2.41	17.79	0.53	3.88
PIPELINE INSTALLATION	PIPELINE LAY BARGE diesel	0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	SUPPORT VESSEL diesel	0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	PIPELINE BURY BARGE diesel	0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	SUPPORT VESSEL diesel	0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
FACILITY INSTALLATION	DERRICK BARGE diesel	0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	MATERIAL TUG diesel	0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PRODUCTION	RECIP <600hp diesel - well pump	442	21.3486	512.37	24	365	0.97	0.91	13.63	1.09	2.95	4.26	3.97	59.70	4.78	12.92
	RECIP <600hp diesel - one crane	160	7.728	185.47	24	365	0.35	0.33	4.93	0.39	1.07	1.54	1.44	21.61	1.73	4.68
	RECIP.>600hp diesel	0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	SUPPORT VESSEL diesel	680	32.844	788.26	3	156	0.36	2.23	16.48	0.49	3.59	0.08	0.52	3.86	0.12	0.84
	TURBINE nat gas	0	0	0.00	0	0		0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00
	RECIP.2 cycle lean nat gas	0	0	0.00	0	0		0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00
	RECIP.4 cycle lean nat gas-power	162	1157.166	27771.98	24	365		0.00	4.28	0.26	0.57		0.00	18.75	1.13	2.50
	RECIP.4 cycle lean nat gas-power	162	1157.166	27771.98	0	365		0.00	4.28	0.26	0.57		0.00	0.00	0.00	0.00
	RECIP.4 cycle rich nat gas	0	0	0.00	0	0		0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00
	BURNER nat gas	0	0.00	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	MISC.	BPD	SCF/HR	COUNT												
	TANK-	0.274			0	0				0.00					0.00	
	FLARE-		0		0	0				0.00					0.00	
	PROCESS VENT-		41.67		0	0		0.00	0.00	0.14	0.00		0.00	0.00	0.00	0.00
	FUGITIVES-			405.0		0				0.01					0.00	
	GLYCOL STILL VENT-		0			0				0.00					0.00	
DRILLING WELL TEST	OIL BURN	0			0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	GAS FLARE		0		0	0		0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00
1999 YEAR TOTAL							5.08	24.57	199.40	7.32	42.75	8.18	20.16	208.94	10.90	43.85
EXEMPTION CALCULATION	DISTANCE FROM LAND IN MILES															
	7.5											249.75	249.75	249.75	249.75	13115.05

BEST AVAILABLE COPY

ENVIRONMENTAL REPORT

FOR

COASTAL MANAGEMENT CONSISTENCY DETERMINATION

DEVELOPMENT OPERATIONS COORDINATION DOCUMENT

FOR

MOBILE AREA BLOCK 868 & 869

(OCS-G 6848 & 5067)

OFFSHORE ALABAMA

SUBMITTED TO:

A. A. PONTESSO, P.E.

SENIOR STAFF ENVIRONMENTAL & REGULATORY ENGINEER

MOBIL EXPLORATION & PRODUCING U. S. INC.
1250 POYDRAS BUILDING
NEW ORLEANS, LOUISIANA 70113-1892
504-566-5927

BEST AVAILABLE COPY

December 2, 1994

Prepared By:
JOHN E. CHANCE & ASSOCIATES, INC.
REGULATORY & ENVIRONMENTAL DIVISION
200 Dulles Drive
Lafayette, Louisiana 70506

Project No. 94-8183

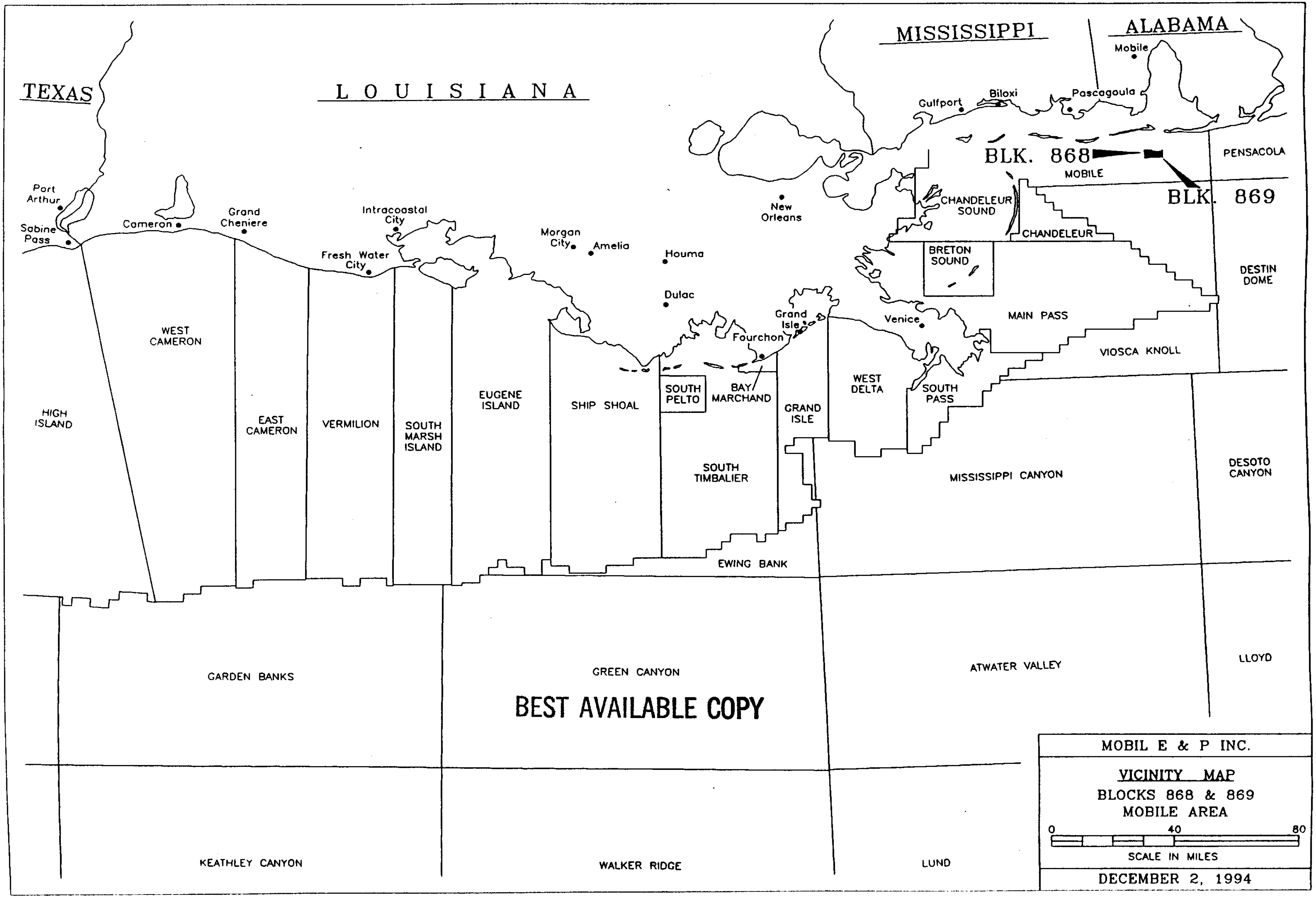
ATTACHMENT "G"

Public Information

TABLE OF CONTENTS

LIST OF FIGURES

FIGURE


TEXAS
LOUISIANA
MISSISSIPPI
ALABAMA
Mobile
Gulfport
Biloxi
Pascagoula
BLK. 868
BLK. 869
MOBILE
PENSACOLA
Port Arthur
Sabine Pass
Cameron
Grand Cheniere
Intracoastal City
Fresh Water City
Morgan City
Amelia
Houma
Dulac
New Orleans
Grand Isle
Fourchon
Venice
CHANDELEUR SOUND
CHANDELEUR
BRETON SOUND
MAIN PASS
DESTIN DOME
VIOSCA KNOLL
WEST CAMERON
HIGH ISLAND
EAST CAMERON
VERMILION
SOUTH MARSH ISLAND
EUGENE ISLAND
SHIP SHOAL
SOUTH PELTO
BAY MARCHAND
GRAND ISLE
WEST DELTA
SOUTH PASS
SOUTH TIMBALIER
MISSISSIPPI CANYON
DESOTO CANYON
EWING BANK
GARDEN BANKS
GREEN CANYON
ATWATER VALLEY
LLOYD
BEST AVAILABLE COPY
KEATHLEY CANYON
WALKER RIDGE
LUND
MOBIL E & P INC.
VICINITY MAP
BLOCKS 868 & 869
MOBILE AREA
0
40
80
SCALE IN MILES
DECEMBER 2, 1994

II. Description of the Proposed Action

This report addresses the activities proposed by Mobil Exploration & Producing U. S. Inc. (Mobil) for Mobile Area Blocks 868 & 869 (OCS-G-6848 & 5067). The approximate locations of the activities are presented on Figure 1, a general vicinity map of the Outer Continental Shelf (OCS) lease areas off the coast of Alabama.

Mobil proposes to install a platform and pipeline for the production of gas and well completion activities. The activities proposed by Mobil for these blocks are further addressed in the attached Development Operations Coordination Document.

The proposed activities will be carried out by Mobil with a guarantee of the following:

1. The best available and safest technologies will be utilized throughout the project. This includes meeting all applicable requirements for equipment types, general project layout, safety systems, equipment and monitoring systems.

2. All operations will be covered by MMS-approved Oil Spill Contingency Plan.

3. All applicable Federal, State, and local requirements regarding air emissions, water quality, and discharge for the proposed activities, as well as any other permit conditions, will be complied with.

A. Travel Modes, Routes, and Frequencies

Mobil will operate out of their established service base facilities in Dauphin Island, Alabama. Mobil anticipates using one supply boat and one crew boat to support their activities in Mobile Area Blocks 868 & 869.

During the construction and production phase of this project, a crew boat will travel to the location seven times per week. The supply/work boat will travel to the location two times per week.

It is anticipated that the transportation vessels will utilize the most direct route from the Dauphin Island, Alabama service base or Theodore Industrial Canal. Because a vessel supporting the Mobile Area Blocks 868 & 869 construction and production activities, as outlined in the Development Operations Coordination Document, may be scheduled for other stops in the area, the exact route for each vessel on each particular trip cannot be predetermined.

B. Support Base and New Personnel

Mobil will utilize their established support base facilities on Dauphin Island, Alabama for daily support activities. Mobil will use the commercial docks at the Theodore Industrial Canal for large equipment. The Dauphin Island support base is located approximately 10 miles from the activity site. Because marine facilities are currently available at the service base and are presently and continuously manned, no additional onshore employment is expected to be generated as a result of these activities.

In accordance with DOI/MMS guidelines (NTL 80-06 and 86-09) dated 20 November 1980 and 13 October 1986, the initial OCS Data Base Report will be developed for submission on or before the prescribed due date. Subsequent Environmental Reports provided by Mobil will address this data and related activity impacts as required.

C. New Support Facilities

The proposed activities in Mobile Area Blocks 868 & 869 will not require the development of any new support facilities.

D. New or Unusual Technology

The exploration activities proposed for Mobile Area Blocks 868 & 869 will not warrant utilizing any new or unusual technology that may affect coastal waters.

E. Location of the Proposed Activities

Mobile Area Blocks 868 & 869 are located approximately 10 miles southeast of Dauphin Island, Alabama, approximately 30 miles south of Theodore, Alabama, and approximately 100 miles northeast of Plaquemines Parish, Louisiana. Figure 1 presents the location of the block in relation to the Alabama coast, as well as the geographic relationship between Mobile Area Blocks 868 & 869.

III. DESCRIPTION OF THE AFFECTED ENVIRONMENT AND IMPACTS

A. Physical and Environmental

1. Commercial Fishing

Commercial fishery statistics from 1992 data are used to estimate and evaluate current finfish and shellfish landings in Alabama. These statistics are indicators of the species composition, value, and volume of the Alabama harvest but are not exact. These statistics represent dockside landings; the fish may have been caught in waters of another state but sold (landed) at an Alabama dock, just as Alabama-caught fish may have been landed dockside in other states. Each commercial species is broken down into the amount landed (pounds) and its dockside value (dollars). Finfish and shellfish landings from Mobile and Baldwin counties were valued at $37,735,700 in 1992 (NMFS 1993). A discussion of the general characteristics and commercial value of each of the species that account for approximately 99 percent of the fisheries in the project area follows:

a. Sharks

Sharks are characterized by an entirely cartilaginous skeleton, lacking true bones (Castro 1983). The most common species of sharks found in the Gulf of Mexico include the tiger shark (Galeocerdo cuvier), blacknose shark (Carcharhinus acronotus), spinner shark (C. brevipinna), blacktip shark (C. limbatus), sandbar shark (C. plumbeus), Atlantic sharpnose shark (Rhizoprionodon terraenovae), and scalloped hammerhead (Sphyrna lewini) (Branstetter 1981). A total of 20,125 pounds of shark worth $11,709 were landed in Mobile and Baldwin Counties in 1992 (NMFS 1993).

The following discussion is summarized from Castro (1983). Relatively little is known about sharks because of the difficulties inherent in studying these large fast moving and far roving fish. Sharks appear to migrate for a variety of reasons; the most common of which are tracking their prey, responding to their reproductive cycles, and environmental changes such as temperature.

On a daily basis some sharks are known to migrate vertically while following their prey. Sharks are also known to cover thousands of miles in a year tracking prey.

Shark reproduction is achieved through internal fertilization, usually during the months of June and July. Many species migrate to specific mating areas for this purpose. After a gestation period of ten to twelve months, sharks migrate to the nursery areas for the birth of small litters of large pups. These nursery areas are typically highly productive coastal or estuarine waters able to provide ample food for the growing pups.

Sharks are cold blooded and their body temperature usually corresponds to the temperature of the surrounding water. Each species lives within a relatively narrow temperature range determined by its metabolism. Many species migrate to remain within their temperature tolerance limits. In general these migrations are directed northward and inshore during the summer and southward and offshore in the winter months.

b. Sea Basses

Fifteen species of sea basses (Serranidae) are harvested by commercial fishermen in the Gulf of Mexico, but the largest economic contribution to the northern Gulf coast comes from three species: red grouper (Epinephelus morio), gag (Mycteroperca microlepis), scamp (M. phenax), warsaw, and yellowedge grouper (NMFS 1990,1993). Sea basses have similar biological characteristics and ecological requirements and can be considered as a group. The adults may be found offshore on rocky reefs, in holes, under ledges, in underwater caves, and around wrecks. Inshore they may be found around jetties, oil platforms, pilings, in deep channels, among mangrove roots, in association with coral and sponge, and over bottoms of sand, shell, and rock (Hardy 1978). The life history of sea basses is poorly known, with little or no information published concerning spawning habits and larvae. Juveniles, however, have been found inshore in turtle grass beds, mangrove roots, and shallow reefs, where they apparently remain resident for several years and then move into deeper water (Hardy 1978). In 1992, Mobile and Baldwin counties landed a total of 42,379 pounds of serranids worth $89,179 (NMFS 1993).

c. Jacks

Commercially important jacks (Carangidae) of the northeastern Gulf include almaco jack (Seriola rivoliana), banded rudderfish (S. zonata), greater amberjack (S. dumerili), and lesser amberjack (S. fasciata). These species are grouped together under the common name "amberjack" for the purpose of commercial fisheries statistics (Ernest Snell, NMFS, personal communication, 1985). Mobile and Baldwin counties landed a total of 21,432 pounds of amberjack worth $19,039 in 1992 (NMFS 1993).

Jacks are generally large, schooling predators that can be found in tropical and temperate waters of the Atlantic Ocean and the Gulf of Mexico (Hoese and Moore 1977). Despite the wide distribution of these commercially important fish, very little is known about their life histories. Generally, spawning occurs offshore, with the larvae and early juveniles associating with floating mats of sargassum (Benson 1982, Johnson 1978).

d. Snapper

In 1992, Baldwin and Mobile counties landed a total of 81,615 pounds of snapper worth $171,251 (NMFS 1993). The red snapper (Lutjanus campechanus) fishery represents 75 percent of this total, while the vermilion snapper (Rhomboplites aurorubens) accounts for approximately 20 percent of the catch.

Snappers are demersal predatory fish that are common over or near banks, coral reefs and outcrops, submarine ridges, rocks, and man-made structures such as shipwrecks and offshore drilling platforms (Benson 1982, Hardy 1978). Red snapper spawn in the Gulf of Mexico from June to mid-September, in water depths of 16-37 meters, over bottoms of hard sand and shell with rocky reef areas; spawning may actually take place at the surface (Hardy 1978). Little or no information is available about larval red snapper, but juveniles are typically found inshore in high salinity (24 to 40 ppt) water 9-91 meters in depth (Benson 1982). The vermilion snapper has a life history and habits similar to the red snapper.

e. Porgies

Sheepshead (Archosargus probatocephalus) are harvested commercially in the project area, although most are taken incidentally in shrimp trawls (Benson, 1982). Sheepshead have a low dockside value, and most incidental catches by shrimpers are probably discarded. A total of 278,017 pounds of porgies valued at $81,517 was landed in Baldwin and Mobile counties in 1992 (NMFS 1993).

Sheepshead occur primarily inshore and are seldom found at water depths greater than 50 meters (Hoese and Moore 1977). The adults tend to inhabit muddy, shallow waters and inlets, and spawning occurs in these areas in late winter, spring, and early summer (Benson 1982). The larvae migrate into shallow estuaries in March to May.

f. Drums

The drums (Scianidae) are one of the three most abundant families of fishes in the Gulf of Mexico in terms of biomass, and they outnumber all other families in the number of species (Hoese and Moore 1977). Six species of drums are commercially important to the counties of the project area. These include Atlantic croaker (Micropogonias undulatus), black drum (Pogonias cromis), spotted seatrout (Cynoscion nebulosus), sand seatrout (Cynoscion arenarius), spot (Leiostomus xanthurus), and northern kingfish (Menticirrhus saxatilis). In 1992, the coastal counties of Alabama landed a total of 394,244 pounds of drums worth $155,465 (NMFS 1993).

Typically, scianids are euryhaline inshore species that spawn in shallow nearshore Gulf waters, producing larvae that enter coastal estuaries for development (Benson 1982, Johnson 1978, Hoese and Moore 1977). Spotted seatrout spawn at night in deep channels and depressions adjacent to shallow flats, grass beds, and bayous in the estuary, from March to September with a peak from April through July (Benson 1982). The larvae associate with bottom vegetation (predominantly sea grasses) or shell rubble in channel bottoms (Johnson 1978). The juveniles spend at least their first 6 to 8 weeks on the nursery grounds, usually within 50 meters of the shoreline, until late fall when they move into the deeper waters of the estuary (Benson 1982). Adult spotted seatrout rarely leave the estuaries (Benson 1982).

Atlantic croakers spawn offshore from October to April near deep passes at a depth range of 15 to 81 meters; 20 meters is the favored depth (Beccasio et al. 1982, Benson 1982). Larvae begin to appear in the shallow estuaries in October where they remain through the winter. During late spring and early summer, the juveniles migrate into deeper estuarine and nearshore Gulf areas, and the adults move into the estuaries until fall, when both adults and juveniles move offshore (Beccasio et al. 1982).

Black drum spawn from February to April in or near tidal passes and in open bays and estuaries (Benson 1982). The larvae are transported to shallow estuarine marshes, but may move to deeper estuarine waters or shallow waters off sandy beaches as large juveniles (Johnson 1978). Adult migration is largely restricted to spring and fall movement through the passes between estuaries and nearshore environments (Beccasio et al. 1982).

Sand seatrout are found offshore to depths of 110 meters (Benson 1982). Spawning occurs offshore, near passes and inlets, from March to September, and the larvae migrate into shallow areas of the upper estuaries and later move to deeper open bays as they grow (Beccasio et al. 1982). In the fall most adults and juveniles migrate to offshore waters, but some sand seatrout remain in estuaries all winter (Benson 1982).

Spot are widely distributed from freshwater rivers to depths of 132 meters offshore (Beccasio et al. 1982). Spawning occurs offshore in the winter; larvae and juveniles appear on low salinity estuarine nursery grounds in the winter, and juveniles move to open estuarine areas in the spring (Johnson 1978). By the following winter, spot move offshore and apparently never return to the estuaries.

Northern kingfish are commonly taken from water depths of 7 to 45 meters, but have been occasionally found at depths of 126 meters (Johnson 1978). Spawning occurs offshore in the spring, with the larvae migrating into the estuaries and then seaward as they mature (Johnson 1978).

g. Mullet

Alabama landed 723,705 pounds of striped mullet (Mugil cephalus) worth $197,502, and 555,078 pounds of mullet roe worth $629,997 in 1992 (NMFS 1993). Mullets are one of the most abundant fishes in the Gulf of Mexico (Hoese and Moore 1977) and have been observed in Alabama inland as far as 607 kilometers from the Gulf, and offshore as far as 80 kilometers and as deep as 1,385 meters (Benson 1982). Mullet spawn from October to May, and some females spawn more than once in a season (Benson 1982). Larvae move inshore in the spring and the juveniles are found in the shallow areas of the estuaries. Offshore movement from the estuaries occurs during the fall (Beccasio et al. 1982).

h. Mackerel

Mobile and Baldwin counties landed a total of 146,452 pounds of Spanish mackerel (Scomberomorus maculatus) valued at $41,199 in 1992 (NMFS 1993). Spanish mackerel occur over the continental shelf, but they also freely enter tidal estuaries to feed (Fritzsche 1978). Spawning takes place in the open Gulf in neuritic waters, but fingerling mackerel have been collected in Mobile Bay and Mississippi Sound, suggesting that at least some Spanish mackerel use estuaries during their early life stages, or even spawn there (Benson 1982). A total of 8696 pounds of King Mackerel worth $5,921.00 were also landed in Alabama in 1992.

i. Flounder

Two species of flounder, the southern flounder (Paralichthys lethostigma) and the gulf flounder (P. albigutta) are sought commercially, but the two are combined for the purpose of commercial fishery statistics (Ernest Snell, NMFS, personal communication 1985). A total of 170,461 pounds of flounder worth $174,928 were landed in the coastal counties of Alabama in 1992 (NMFS 1993). The southern flounder is much more abundant in the area than the gulf flounder and probably comprises the majority of the catch (Beccasio et al. 1982).

The southern flounder is found from shallow estuaries to depths of 110 meters offshore; the gulf flounder is found to depths of 50 meters (Beccasio et al. 1982). Both fish spawn over the inner continental shelf from November to January, and the larvae of both enter bays, sounds, and estuaries to mature (Benson 1982).

j. Oysters

The Eastern oyster (Crassostrea virginica) is most abundant in the Gulf of Mexico from Aransas Bay, Texas, to Apalachicola Bay, Florida (Beccasio et al. 1982). Alabama docks reported 1,202,799 pounds of oysters worth $1,728,733 were landed in 1992 (NMFS 1993). Cedar Point Reef has been the major oyster-producing reef in Mobile Bay, yielding 90 percent of all oysters harvested in Alabama waters. However, reduced yields and intermittent closures of this area, caused by over harvesting and the removal of clutch material, has forced most of Alabama's oystermen into Mississippi Sound (Beccasio et al. 1982).

Oysters thrive at salinities between 5 and 15 parts per thousand and water depths of 2.5 to 8 meters (Beccasio et al. 1982). Oysters spawn inshore during the summer, and the free-swimming larvae attach and develop in the same estuarine habitat.

k. Shrimp

The three species of commercial penaeid shrimp in the Gulf of Mexico, brown shrimp (Penaeus aztecus), white shrimp (P. setiferus), and pink shrimp (P. duorarum), comprise the most important fishery in the coastal counties of Alabama. The 1992 harvest amounted to 13,500,317 pounds worth $30,179,746 (NMFS 1993). Harvest data for these species indicate the brown shrimp dominates the shrimp harvest in the area and is the most abundant species in Alabama waters (Benson 1982). White shrimp are abundant as well. Pink shrimp are a major part of the Florida shrimp fishery from Cape Romano to the Apalachicola Delta, but their numbers rapidly diminish west of that area until they become relatively insignificant west of the Mississippi Delta (Beccasio et al. 1982). Pink shrimp are probably the smallest component of the commercial shrimp industry in Alabama waters.

All three species of shrimp are estuarine dependent and have similar life histories, with the major differences being the time and location that the various life stages begin and reach their maximum levels. Generally, spawning occurs offshore with the resulting larvae migrating inshore to develop in estuaries. Brown shrimp spawn from November to April in 30 to 120 meters of water, white shrimp spawn from March to October in 8 to 34 meters, and pink shrimp spawn in 4 to 52 meters from May to November (Benson 1982). Juvenile and adult brown shrimp migrate offshore from May to July, white shrimp migrate between June and November, and pink shrimp move offshore from April to September (Benson 1982).

l. Blue Crabs

The blue crab (Callinectes sapidus) ranges from Nova Scotia to Uruguay and supports the largest crab fishery in the United States (Marine Experiment Station 1973). The coastal counties of Alabama landed 3,549,713 pounds of blue crabs worth $1,464,938 in 1992 (NMFS 1993).

Blue crabs inhabit shallow water and can be found in high salinity sounds, bay, and channels where they spawn from March through November, with a peak from May to September (Benson 1982). The resulting planktonic larvae pass through several molts and stages before the juveniles drop to the bottom of the estuarine nurseries, where they remain throughout the year (Benson 1982).

m. Impacts to Commercial Fisheries

Mobile Area Blocks 868 & 869 lie outside the primary menhaden fishing grounds but within the principal industrial bottomfish harvest area for most other species of finfish as well as brown and white shrimp (MMS 1986 Visual No. 2). Both the important demersal fish-species (snappers and groupers) and coastal pelagic fish-species (King and Spanish mackerel) could likely be found within, and may be harvested within the block. Oyster reefs and significant crab fisheries would not be expected within the Blocks 868 & 869 due to water depth and substrate type, but are located shoreward of the barrier islands to the north and west. Barring catastrophic and unforeseen events such as major oilspills, the activities proposed by Mobil for Mobile Area Blocks 868 & 869 should have no significant long-term impacts on the commercial fisheries in the area.

2. Shipping

A designated shipping fairway traverses the entire portion of Mobile Area Blocks 868 & 869. This designated shipping fairway runs north, east, west, southwest and southeast of Mobile Area Blocks 868 & 869 (MMS 1986 Visual No. 3). It is likely that the marine vessels supporting drilling activities in this block will utilize these shipping fairways to gain access to the support base; however, it is unlikely that the marine vessels will have a significant effect on fairway traffic. The drilling rig and each of the marine vessels will be equipped with all U. S. Coast Guard required navigational safety aids.

3. Recreation

The open Gulf encompasses a broad expanse of saltwater which is utilized by numerous sports fishermen and a small but rapidly increasing number of SCUBA divers. Many fishermen charter boats to deep-sea fish and sport dive in the northern Gulf. The states of Alabama, Mississippi, and Louisiana support approximately 120 charter boats which conduct a majority of their fishing activities in the waters of the OCS (MMS 1983). There were an estimated 499,000 recreational marine fishing trips off Alabama's coast in 1989 (MMS 1992). Petroleum platforms in the northern Gulf provide recreation for fishermen and scuba divers because they act as artificial reefs attracting and establishing aquatic communities including highly sought after food and sport fishes. The reef effect created by petroleum platforms is well known and is evidenced by the numerous private boat owners who regularly visit offshore facilities to harvest food and sport fishes.

Frequently, offshore rigs and platforms serve as navigation points for small commercial and recreational marine craft. Manned drilling rigs and platforms can also provide a haven for small craft operators forced to abandon their vessels during storms or following boat accidents. The installation and use of navigational aids, lifesaving equipment, and other safety requirements pursuant to Coast Guard regulations are standard procedure for drilling rigs and marine vessels utilized by Mobil.

Several multiple use / recreation areas are located along the Florida, Alabama, and Mississippi coasts north of Mobile Area Blocks 868 & 869 including Pensacola Beach (60 miles to the east), Big Lagoon State Recreation Area (40 miles to the northeast), Fort Pickens State Aquatic Preserve (48 miles to the east), Perdido Key State Preserve (30 miles to the east), Gulf State Park (33 miles to the northeast), Bon Secour National Wildlife Refuge (18 miles to the northeast), Fort Morgan State Park (6 miles to the northeast), and Gulf Islands National Seashore and Wilderness Area (36 miles to the northwest) (MMS 1986 Visuals 3 and 3E). Breton National Wildlife Refuge and

Wilderness Area is located approximately 50 miles to the west and south (MMS 1986 Visual No. 3). Beach use is a major economic factor for many Gulf coastal communities (MMS 1992).

The activities proposed by Mobil for Mobile Area Blocks 868 & 869, as outlined in the Development Operations Coordination Document, should have no impacts on recreational resources in the region barring the occurrence of major oil spills such as those resulting from blowouts. Recreational fishing opportunities may actually increase due to the construction of platforms.

4. Cultural Resources

Visual No. 4 from the Final Environmental Impact Statement (MMS 1986) indicates that Mobile Area Blocks 868 & 869 fall within the zone designated as an area with a high probability of occurrence of pre-historic and historic cultural resources. An Archeological and Shallow Hazard Survey of Mobile Area Blocks 868 & 869 was conducted by John E. Chance & Associates, Inc. (1988) for Texaco Producing Inc. and is summarized below.

a. Archeological Assessment

Due to sea level rise the Mobil Area Blocks 868 & 869 vicinity was potentially occupied by Indians for as long as 4000 years (8000 - 12000 B.P.). However the archeological survey revealed a lack of diagnostic landforms or river channels indicating a low probability of the existence of such sites or recovery of cultural remains in Mobile Area Blocks 868 & 869 (John E. Chance & Associates, Inc. 1988)

Historical ship activity has been great in the Mobile Area and a number of shipwrecks are reference in the archeological survey; however no shipwreck locations have been reported for Mobile Area Blocks 868 & 869 (John E. Chance & Associates, Inc. 1988). Numerous magnetic anomalies were reported in the archeological hazard survey, however it was concluded that most were probably objects discarded by boats passing through or across the fairway as the water depths are slightly deep for any historic vessels to have run aground (John E. Chance & Associates, Inc. 1988). The report did caution however that all such anomalies should be avoided as possible cultural resources.

b. Bathymetry and Seafloor Features

An analysis of the bathymetry and seafloor of Mobile Area Blocks 868 & 869, was provided in conjunction with a shallow hazards survey conducted by John E. Chance & Associates, Inc. (1988) and is summarized as follows. The bottom topography consists of gentle crest and trough features oriented northwest to southeast. These are primarily evident in Block 868 where water depths range from -34 feet along the 3 mile line, grading to -50 feet midway down the block. The seafloor in Block 869 reflects less irregularity with a gentle slope from -44 feet to -62 feet when traversing to the south-southeast.

c. Soils

Bottom sediments across the area are predictably sand (MMS 1986 Visual No. 3). These sands are being replenished by longshore currents from a source to the east of Mobile Bay, where sand appears to be continuous out from the shore. Sediment samples taken while conducting the Shallow Hazards Survey, identify a firm to stiff clay bed beneath the sand.

5. Ecologically Sensitive Features

There are apparently no ecologically sensitive areas located within Mobile Area Blocks 868 & 869 or seaward, but a number of such areas are situated along the coastline to the east, north, and west (MMS 1986 Visual 3, USFWS 1982 Maps 3E). Seagrass beds are found scattered along the coast with concentrations behind barrier islands such as the Chandeleur Islands 50 miles to the west, the Gulf Islands (Dauphin, Petit Bois, Ship, Horn, Cat, etc.) 6 miles to the west and northwest, and in Mobile Bay. Oyster beds are also located in these areas, particularly in Mobile Bay and in the Mississippi Sound area to the west. Shorebird and wading birds are known to nest in colonies on most all of the aforementioned Gulf Islands and Chandeleur Islands. An Audubon Bird Sanctuary is located on Dauphin Island. Delta National Wildlife Refuge, Pass a Loutre Wildlife Management Area, and other important Plaquemines Parish coastal marshes lie approximately 100 miles to the east respectively. Perdido Key State Preserve and Bon Secour National Wildlife Refuge are located approximately 30 miles to the northeast of Mobile Area Blocks 868 & 869. Mobile Bay itself is an ecologically sensitive and important estuary. The Theodore, Alabama support base, which will be utilized as operations base for the exploration activities proposed for Mobile Area Blocks 868 & 869 are located within and/or adjacent to the west side of Mobile Bay. Several wading bird colonies, oyster reefs, and important marshes are located along this coast of the Bay (USFWS 1986 Map 3).

No such sensitive areas are known to occur in the blocks themselves, and the shorebases on Dauphin Island, and in Theodore, Alabama are already established. In general if all activities are executed as planned, and encountering no unusual circumstances, these ecologically sensitive areas will not be affected by the activities proposed by Mobil for Mobile Area Blocks 868 & 869.

6. Existing Pipelines and Cables

A review of company data and public information revealed that one pipeline is located in Block 868 and one 20-inch Dauphin gas /condensate pipeline exists in Mobile Area Block 869. The pipeline runs east west, in the northern portion of block 869. Mobil is aware of the location of these pipelines and will exercise caution when operating in that vicinity. Mobil is not aware of any cables located in Mobile Area Blocks 868 & 869.

7. Other Mineral Uses

There are no other known mineral resources located in or near Mobile Area Blocks 868 & 869.

8. Ocean Dumping

The major sources of ocean dumping related to OCS petroleum exploration activity are drilling fluids, or "muds," and drill cuttings. During the development activity in Mobile Area Blocks 868 & 869, Mobil does not anticipate dumping their water-based drilling fluids (approximately 250 -500 barrels per well), these fluids will be transported to an approved onshore disposal facility. There will be no intentional discharge of any oily or hazardous materials in violation of DOI or EPA regulations.

9. Endangered or Threatened Species and Critical Habitat

a. Endangered or Threatened Species of the Area

Endangered or threatened species that could occur in or near the project area include the following cetaceans: fin whale (Balaenoptera physalus), blue whale (Balaenoptera musculus), humpback whale (Megaptera novaeangliae), northern right whale (Eubalaena glacialis), sei whale (Balaenoptera borealis), and sperm whale (Physeter catodon).

The northern right whale, blue whale, and sei whale have never been common in the Gulf of Mexico and have very few documented historical Gulf sightings, and would not be expected to utilize Blocks 868 & 869. There is however a small population of fin whales in the Gulf and Caribbean Sea (Schmidly 1981). Most Gulf sightings of fin whales have been in the deeper waters of the North-central Gulf (Mullin et al. 1991). The humpback whale is cosmopolitan being found in all oceans of the world; recent sightings in the Gulf of Mexico have been sporadic but included the Central and Eastern Gulf, and off Galveston Bay, Texas (Schmidly 1981). The sperm whale is the most abundant large whale in the Gulf of Mexico, and has been sighted on most surveys conducted in the deeper waters. It is commonly seen off the continental shelf edge in the vicinity of the Mississippi River Delta (Mullin et al. 1991 in MMS 1992). The waters of Mobile Area Blocks 868 & 869 are too shallow to reasonably expect use by any of these endangered cetaceans, therefore no impacts to these species would be expected from the project.

The West Indian manatee (Trichechus manatus), a federally endangered marine mammal, has historically utilized (seasonally) shallow protected estuarine waters of the northern Gulf of Mexico, including coastal Alabama (USFWS 1980), but would not be expected to utilize the open marine waters of Mobile Area Blocks 868 & 869.

The Gulf of Mexico is also home to a number of endangered marine turtles including Kemp's ridley turtle (Lepidochelys Kempii), green turtle (Chelonia mydas), hawksbill turtle (Eretmochelys imbricata), leatherback turtle (Dermochelys coriacea), and loggerhead turtle (Caretta caretta) (USFWS 1976, Schmidly 1981, Schmidly and Scarborough 1990).

The green turtle is found throughout the Gulf of Mexico with infrequent nesting occurrences throughout and nesting aggregations on the Florida and Yucatan coasts. Green turtles prefer depths of less than 20 m (66 ft) where seagrasses are abundant (NRC 1990). Leatherbacks are oceanic turtles but do enter shallower waters at times. There are rare but reported cases of leatherbacks nesting on the Florida panhandle (MMS 1992). The hawksbill is the least commonly reported marine turtle in the Northern Gulf, with

Texas being the only state with regular occurrences. It is more common in tropical Carribean waters. Kemp's Ridley is the most endangered species of marine turtle but is more common in Texas and Mexico. Loggerheads occur worldwide in depths varying from those found in estuaries to the continental shelf. Major Gulf nesting areas for this species include the beaches along the Florida panhandle, South Florida, and Padre Island, Texas. In the Central Gulf loggerheads are known to nest on the beaches of Gulf Shores and Dauphin Island, Alabama, Ship Island, Mississippi, and on the Chandeleur Islands of Louisiana (MMS 1992). The banks offshore of the Mississippi Delta have been reported as important marine turtle feeding areas (Hildebrand 1982 in MMS 1992) and the turtles are commonly observed around platforms. Mobile Area Blocks 868 & 869 are located approximately 20 miles southeast of a sea turtle nesting area. Barring catastrophic and unforeseen events such as major oilspills, the activities proposed by Mobil for Mobile Area Blocks 868 & 869 should have no significant long-term impacts on the nesting area or on individual turtles which may pass thorough or forage within the blocks.

The Piping Plover (Charadrius melodus), Arctic Peregrine (Falco peregrinus tundrius), Bald Eagle (Heliiaeetus leucocephalus), and Brown Pelican (Pelecanus occidentalis) are federally-listed bird species which occur in this area of the Gulf. They would not, however be found in Mobile Area Blocks 868 & 869 but may occur along the coast to the north and west. Piping Plovers are endangered shorebirds which winter in numbers along the Gulf Coast, being more common westward into Texas and Louisiana. They utilize beach and intertidal habitats and are reported to roost at night on beaches just above the wrack line (MMS 1992). The Arctic Peregrine is another northern-nesting species that winters along the Gulf Coast concentrating its foraging activities for shorebirds etc. along the beaches and barrier islands. Bald Eagles generally nest away from the coast but commonly congregate along the coast where they feed in estuarine waters on birds and fish. Brown Pelicans have been federally de-listed for the states of Florida and Alabama but remain listed in Mississippi, Louisiana, and Texas. These birds nest on secluded barrier islands including the Chandeleur Islands. The plunge-diving foraging behavior and general nesting and loafing habits render the Brown Pelican susceptible to oil spills.

The Gulf Sturgeon is a threatened subspecies of the anadramous Atlantic Sturgeon (Acipenser oxyrhynchus). This large fish spawns in the larger rivers which empty into the Gulf from the Pearl River in the west to the Suwanee River in the east. Otherwise, it inhabits estuarine and Gulf waters, particularly seagrass and hardbottom areas. Activities proposed for Mobile Area Blocks 868 & 869 should have no impact on the Gulf Sturgeon.

b. Endangered or Threatened Species Near the Onshore Base

Endangered or threatened species which could potentially occur in the vicinity of the established onshore base in Theodore, Alabama include the aforementioned marine turtles, Gulf sturgeon, Piping Plover, Arctic Peregrine, Bald Eagle, Brown Pelican, West Indian Manatee, as well as the American alligator (Alligator mississippiensis) and several state-listed species such as the Snowy Plover (Charadrius alexandrus), Mottled Duck (Anas fulvigula), and Reddish Egret (Dichromonassa rufescens). All these species frequent estuarine habitats such as those found in Mobile Bay.

Any impact on endangered species would be considered to be a significant adverse environmental impact. The work proposed by Mobil for Mobile Area Blocks 868 & 869, however, is not likely to jeopardize the existence of any endangered species. It is possible that boat traffic associated with the proposed activity could cause injury or mortality to individual sea turtles and manatees. However, boat traffic in the area, resulting from the proposed activity, would represent an insignificant increase over existing traffic. A significant oil spill, on the other hand, could cause significant adverse impact, especially, if it penetrated coastal waters inhabited by manatees and other estuarine species, nesting or feeding habitats of Piping Plovers, Bald Eagles, or Brown Pelicans, or critical habitat of the Alabama beach mouse or the Perdido Key beach mouse.

B. Socio-Economic Impacts

In accordance with DOI/MMS guidelines (80-06 and 86-09), dated November 20, 1980 and October 13, 1986, the initial OCS Data Base Report will be developed for submission on or before the prescribed due date. Subsequent Environmental Reports provided by Mobil will address this data and related activity impacts as required.

IV. UNAVOIDABLE ADVERSE IMPACTS

The greatest threat to the natural environment is caused by inadequate operational safeguards that may cause or contribute to an oil spill or well blowout. These accidents can be greatly reduced in number by utilizing trained operational personnel and employing all available safety and pollution control systems. These measures are standard operating procedures for Mobil. Mobil has an approved Oil Spill Contingency Plan.

It should be noted that most large crude oil and refined products spills have occurred during transportation and not during drilling or production operations. Furthermore, the probability of an oil spill occurring during exploratory drilling operations is low (Danenberger 1976). Transportation and river runoff contribute an estimated 34.9 percent and 26.2 percent, respectively, to the hydrocarbon contamination of the world's oceans while offshore production activities account for only 1.3 percent (NAS 1975). Natural seeps of petroleum and natural gas, which occur throughout the northern Gulf of Mexico (Zo Bell 1954, Geyer 1979), contribute an estimated 9.8 percent to the contamination of the world's oceans (NAS 1975). Additionally, it was noted in the executive summary of a recent study of petroleum production platforms in the central Gulf of Mexico (Bedinger 1981), that natural disturbances (i.e. river flooding and storms) can more greatly affect normal biological communities that the current industrial development of the Louisiana OCS. The preceding discussion is not intended to minimize the significance of major oil spills resulting from petroleum exploration and production activities but is provided to establish a perspective relative to their probable occurrence.

Thirteen of the forty-six blow-outs on the OCS between 1971 and 1978 were associated with exploratory drilling activities, none of which released any oil to the marine environment (Danenberger 1980). The IXTOC I spill of 1979, however, demonstrates that advanced drilling technology and available safety and pollution control systems are not infallible. Most spills are subjected to immediate containment and cleanup efforts. The ultimate fate of oil spilled in the marine environment is generally considered to be one or a combination of the following: evaporation and decomposition in the atmosphere, dispersal in the water column, incorporation into sediments, and oxidation by chemical or biological means (NAS 1975).

Although Mobil will adhere to the standards set by their NPDES Permit, drilling wastes may still change ambient water quality at the site during the exploration period. While the durations of the various impacts will differ, it is fair to describe all the known effects on water quality as both local and transient.

A slurry of used drilling muds and downhole cuttings will be discharged continuously during drilling, creating a double plume downcurrent from the rig. The greater part of the particulate matter will descend rapidly in the turbulent lower plume. Given a water depth of only 40 to 90 feet, drill cuttings and other dense fractions should pile up on the bottom, probably not more than 20 meters downcurrent. The lighter fraction, comprised of finer particles, will persist as an upper plume for a longer period, cover a longer distance, and deposit its load more slowly as it drifts in the current (Ayers et al. 1980a).

The rapidity with which the material of the lower plume reaches the bottom will probably rule out lasting alterations of water quality in the upper column, except that transparency in the plume will be reduced. The most significant effect of the lower plume on water quality should occur at the seabed-water interface, where concentrations of dissolved materials will be maximum near accumulations of solid wastes. Barium, for example, will persist as bits of barite but then slowly enter solution, creating a local and transient gradient of concentration from the waste pile outward (NRC 1983).

The upper plume, being made up of fine particles and having a greater longevity, should have a greater adverse impact on water quality than the lower plume. Again, transparency will be reduced in the plume, and the concentrations of dissolved materials leaching from suspended particles should not be significantly higher. On the other hand, this condition cannot last long because of the dilution that inevitably follows mixing between the upper plume and the water mass surrounding it. In the study cited above, in which large volumes of drilling mud were discharged rapidly into Gulf shelf waters, the concentrations of suspended solids and trace metals in the plumes were indistinguishable from background a kilometer or less downcurrent from the discharged point (Ayers et al. 1980a).

Ray and Meek (1980) performed similar studies at a site west of Los Angeles, with similar results. Only light transmittance was significantly affected by the discharges. On average, concentrations of mud in the plumes were diluted about ten-fold within three meters of the discharge point, there was an additional hundred-fold dilution at a 100 meters distance, and levels of suspended solids and trace metals approached background concentrations 200 meters away.

Other liquid wastes, such as sewage and wash water, will be minimal in accordance with a NPDES Permit, and in any case will discharge into such a large sink as to be undetectable a few hundred meters downcurrent.

Plankton can be affected by water quality factors mentioned earlier: reduction of transparency will shorten the photosynthetic water column and dissolved or adsorbed pollutants may harm zooplankters. While the bulk constituents of drilling fluids (e.g. water, barite, clay minerals, chrome lignosulfonate, lignite, and sodium hydroxide) are nontoxic to marine organisms at ambient dilutions, muds often contain materials that in the laboratory have been shown to be lethal to planktonic species. Toxicity studies reviewed by the National Academy of Sciences (NAS 1975) implicated more than 70 kinds of used drilling muds and 62 species from five major animal phyla, including both holoplanktonic forms and those for which planktonic existence is temporary.

Larval and early juvenile stages are particularly sensitive to drilling fluid toxins (NRC 1983), but Bookhout et al. (1984) reported that both the mud aqueous fraction (MAF) and suspended solids phase preparation (SPP) applications of a ferrochrome lignosulfonate mud were non-toxic to xanthid crab larvae. Blue crab larvae survived 5 percent MAF and SPP, but showed increasing mortality in the presence of concentrations up to 50 percent. No larvae reached the first crab stage in 100 percent MAF or SPP, and drilling fluid in sublethal concentrations reduced larval swimming speeds. In another bioassay of five used drilling fluids, some were toxic to the larvae of American lobsters ($LC_{50} = 74$ mg/l) and some were less so (Derby and Capuzzo 1984).

The toxic materials in drilling muds are often additives, like diesel oil, which even in very dilute concentrations can have significant sublethal effects on larval, juvenile, and molting crustaceans. Though diesel oil was present in the more toxic muds of the study cited above, diesel concentration and toxicity were not correlated (Derby and Capuzzo 1984). No diesel oil will be added to the water-based drilling fluids employed in the project area.

Conditions adverse to the existence of a healthy planktonic community will also affect the nekton, both directly and as a consequence of trophic relations. Shortening the photosynthetic water column by reducing transmittance can decrease production of nektonic biomass, as can the direct exposure of such organisms as fishes to toxic suspensions.

When the NAS surveyed research up to 1983 on the acute toxicity of drilling fluids, it included twelve fish species and their response to 32 used drilling muds. In only 3 percent of test samples were LC_{50} values (the concentration (v/v) required to kill half the test sample), as low as 1,000 to 9,115 ppm (0.1 percent - 0.99 percent), and in 52 percent the LC_{50} values were 10,000-99,115 ppm (1.0 percent to 9.9 percent). This suggest a sensitivity of fishes equivalent to that of bivalve mollusks and much less than that of crustaceans (NRC 1983). Unfortunately, few have investigated toxicity of muds to the kinds of nektonic organisms normally found around drilling rigs, such as midwater fishes, marine mammals, and squid.

Gerber et al. (1980) reported on the toxic effects of muds on Gulf of Maine organisms, but the only fish in their study was the mummichog (Fundulus heteroclitus), a euryhaline resident of inshore waters. The fishes in their toxicity tests survived all treatments for 96 hours. Tornberg et al. (1980) used as test specimens three species of marine ground fish (epibenthic animals) and two from freshwater habitats. All were relatively insensitive to drilling fluids, having 96-hr LC50 concentrations of between 4 and 40 percent (v/v) mud in seawater. Houghton, Beyer, and Thielk (1980) used one epibenthic fish (staghorn sculpin) and the fry of an anadromous fish (pink salmon) for acute toxicity investigations of drilling fluids in Alaska waters. The salmon fry's sensitivity was far greater than that of other taxa tested, including invertebrates, having 96-hr LC50 concentrations that ranged from 0.3 percent to 2.9 percent, as contrasted with the staghorn sculpin's 10 to 20 percent. Despite such sensitivity, no mortality of salmon fry occurred in four-day incubations in situ, 100 meters and 200 meters, respectively, downcurrent from the discharge point.

It could be concluded that routine, non-accidental discharges of used drilling muds and drill cuttings are probably benign with respect to pelagic fishes--so long as no hydrocarbons have been added. First, the fishes' mobility imparts to them the potential for avoidance of noxious intrusions, and second, dilution is rapid in the upper water column and it may not be possible for lethal concentrations of toxic materials to accumulate anywhere but inside the discharge pipe itself.

A continuous discharge of used drilling fluids and downhole cuttings can adversely affect bottom-dwelling communities in two ways. The material may physically smother animals that cannot move out of the way, and leachate concentrations at or very near potentially toxic levels may accumulate.

Animals that live all or most of their lives on or immediately above the seabottom must be further divided into two functional groups. Mobile organisms, mostly fishes, are capable of getting out of the way of oncoming objects, such as a descending slurry of mud and debris. Such degradations of the bottom habitat can affect them only if they are especially sensitive to dissolved toxins by sorption, or if they ingest toxic particles. Investigations, already referred to, indicate that epibenthic fishes (for which data exists) exhibit a low sensitivity to normal toxin concentrations. Ingestion of particles containing toxic compounds would appear to be a hazard, but little research has been published on this topic (see Conklin et al. 1980 for an exception).

Sessile organisms cannot escape danger as they are incapable of movement. Their fate in the presence of an exploratory drilling operation will be treated together with infauna. Animals that live all or most of their lives buried in substrate and sessile epifauna are subject to a variety of stresses from drilling platform wastes, ranging from sudden burial to chronic, sublethal toxicity.

A sufficient volume of spent muds and drill cuttings, falling rapidly to the seabottom in a continuous plume (Ayers et al. 1980b), would almost certainly smother and kill whatever area of the substrate it covered. Zingula (1975), Zingula and Larson (1977), and others have contended that such substrates are rapidly re-colonized after drilling ceases. The National Research Council (1983) seemed to share this view, on the grounds that little current energy is required to move particles along the bottom and effectively redistribute the contents of a temporary deposit. Generally, therefore, the "permanence" of a drilling midden in shallow shelf waters is determined by the frequency of storms.

Even assuming the extreme case of an azoic bottom following the conclusion of exploratory drilling, colonization will proceed. It is true that the presence of toxic materials will delay the re-establishment of macroinvertebrate populations, but not for long. Indeed, the experiments reported by Tagatz et al. (1980) indicated that even substrates covered by whole lignosulfonate mud would recruit juvenile forms which would grow and develop. The same authors reported that biocidal additives suppressed recolonization.

Dodge (1982) subjected star coral (Montastrea annularis) to an array of drilling mud concentrations in a continuous-flow system. Only a concentration of 100 ppm significantly depressed coral growth.

The question of drilling fluid toxicity is confounded by several factors. Primary is the fact that drilling fluids are numerous, proprietary, complex, and varied. Scientists who wish to determine the toxic effects of a drilling mud may have to resort to a time-consuming and expensive suite of analyses before they know what they are testing. That test may not be applicable to others of the scores of drilling fluids on the market.

Second, tests performed in one habitat may not be extrapolable to a different habitat. For example, results obtained from the summer flounder (Paralichthys dentatus) by scientists in the Gulf of Maine may have little application to a congeneric species in the Gulf of Mexico (for example, P. albigutta). However, the National Academy of Science believes that there are "no discernible differences in tolerance to drilling fluids among animals from the Atlantic Ocean, Gulf of Mexico, Pacific Ocean, and Beaufort Sea" (NRC 1983).

Third, organisms respond in radically different ways to different phases of the same complex material. Several toxicity studies have reported greater sensitivity to an SPP than to the MAF of a single drilling fluid (Gerber et al. 1980). Others (Carr et al. 1980) have reported that the MAF is more toxic. The issue's resolution may depend upon the test species and its feeding habit.

Fourth, few investigators have employed appropriate species as toxicity test subjects, but instead have tended to use animals that happened to be available or were easy to culture in the laboratory. Both fortuities are ill-advised but not for the same reasons. Local availability of a test species is highly desirable if the test applies to its natural habitat. Ease of culture may mean high resistance to a large class of life-threatening factors. If the substance being tested is one of those, it would be like testing brine shrimp for tolerance of high salinity. Generally, common sense should prevail: an assessment of potential impacts on the benthic infauna of the Gulf of Mexico's coastal shelf, for example, is on shaky ground with estuarine shrimp, freshwater fishes, and marsh clams as test organisms.

Fifth, the literature of interest suggests that there is a substantial discrepancy between the concentrations required to kill half a test sample of animals and concentrations actually determined from field samples. It is a difficult problem. Many drilling mud components are so poorly soluble in seawater, and turbulent dispersion or dilution are so rapid, that long-term residence of stable concentrations of hazardous materials does not occur in the field, or occurs rarely.

In a thorough study of the effects of drilling on benthic communities surrounding a platform off the mid-Atlantic coast, Menzie et al. (1980) were unable to relate patterns of abundance to drilling residues. Large patches of polychaetes were apparently buried, but in other areas polychaete abundance was greater than in control areas. Mollusc similarly declined in some areas and increased in others. Most echinoderms were less abundant after drilling, but the abundance of Astropecten americanus, the dominant seastar, did not change. Two urophycid species and the dominant crab, Cancer borealis, increased in numbers subsequent to drilling.

Mariani et al. (1980) analyzed the sediments surrounding the same mid-Atlantic hole. They found that while certain heavy metals had increased significantly, both lead and zinc were still within the range of natural variability. They also reported significant gains of barium and zinc in the tissue of several bottom invertebrates, but mercury, of which drilling mud contained little, also increased. They concluded that there was no simple correlation between sediment and tissue minerals. The complexity of the problem is highlighted by the findings of McCulloch et al. (1980), whose laboratory study of heavy metals uptake by a clam and an oyster found that ions go in but they also go out, leaving tissue levels about where they were at the beginning.

Heavy metal ions have long been recognized as biologically active, and some, notably lead and mercury, are biocidal. But, their distribution resulting from the discharge of drilling waste does not appear to create an ecologically dangerous situation. This is not true in the case of hydrocarbons, as a North Sea Study showed. For a number of reasons, drillers there were using oil-based muds that contained a significant quantity of diesel fuel.

After long periods of drilling and discharges to the environment, nearby benthic sediments were heavily contaminated with a hydrocarbon that by chromatographic analysis could not be distinguished from diesel oil. The range of concentrations was reported by Grahl-Nielson et al. (1980) as 2.4 to a maximum of 1768 mg/kg of sediments. They offered no observations of effects on benthic biota.

A field study in the Gulf of Mexico (Ayers et al. 1980a) established the rapidity with which discharges of drilling materials are dispersed by even gentle ocean currents. The results can be summarized by stating that concentrations of chromium in a drilling mud plume drop to background levels in ten minutes. It is unlikely that dilution accounted for the majority of the decrease; rather, the material fell to the bottom near the well. Concentrations of biologically active materials on the bottom were not reported in this study.

In more dynamic current systems, such as those found in Alaskan waters, drilling effluent are probably dispersed even more widely. Lees and Houghton (1980) found no visible accumulations of cuttings because of swift bottom currents and were unable to detect infaunal changes due to drilling.

Meek and Ray (1980) and Ray and Meek (1980) reported substantial alterations to bottom sediments. By dry weight in sediment, barium increased four-fold, chrome doubled, and lead increased six-fold. They apparently did not attempt to determine the effects of these alterations on concentrations of dissolved materials.

Another approach to the problem of determining the impacts of discharges is to study their cumulative effects on benthic communities as a whole. Such a study was reported by Benech et al. (1980). They observed and sampled biofouling communities that had formed over a period of two years on the upper, horizontal surfaces of pontoons supporting a drilling vessel. They attributed structural disruptions of communities on two of the surfaces to the nearly constant rain of used muds and drill cuttings being discharged from the platform. The other two surfaces were debris-free and displayed normal epifaunal communities.

On balance, environmental perturbations attributable to the discharge of used muds and drill cuttings are either benign or transient or both. Perhaps further investigation will disclose hazards of which one cannot now be aware, but there seems little question that careful exploratory drilling, carried out with due caution and strict adherence to NPDES permit stipulations, will not permanently harm the OCS environment.

Offshore activities generate a small but significant amount of air pollutants due to the emissions of diesel engines; therefore, the deterioration of air quality is unavoidable in the OCS operation area. In most instances, these emissions affect only the immediate exploration activity site and are rapidly dissipated by the atmosphere depending upon climatic conditions. An Air Quality Review Report has been performed for Mobile Area Blocks 868 & 869 and is included as an attachment to the Development Operations Coordination Document.

Commercial and recreational fishing would be affected by OCS development, but primarily in terms of inconvenience and interference. Although the unavoidable adverse impacts could include some smothering of shellfish, snagging of trawl nets, reduction of area presently used for unrestricted fishing, and minimal finfish killing, commercial fishing activities would not be significantly affected, except in the unlikely event of an oil spill. An oil spill would result in serious economic losses due to the contamination of commercial fish species over a large area.

There is a remote possibility that offshore areas of historical, cultural, or biological significance could be damaged or destroyed by OCS exploration operations. Visuals No. 4 from Regional Environmental Impact Statements (MMS 1986) indicate that no archeological, cultural, or historic areas are in the vicinity of Mobile Area Blocks 868 & 869 although the blocks are within the high probability zones for both prehistoric and historic cultural resources. A geophysical survey of the block identified the survey area as one with a low probability for recovering prehistoric cultural remains. There is the possibility that shipwrecks have occurred in this area due to the extensive historic ship activity. Side scan sonar and magnetometer records revealed a total of nine objects on the seafloor. It was concluded that it is unlikely these are shipwreck features because of the water depth, however these anomalies should be avoided as possible cultural resources. Mobil will make every effort to avoid disturbing any historically, culturally, or biologically significant feature.

V. LITERATURE CITED

Ayers, R. C., Jr., T. C. Sauer, Jr., D. O. Stuebner, and R. P. Meek. 1980a. An environmental study to assess the effect of drilling fluids on water quality parameters during high rate, high volume discharges to the ocean. Vol. 1 pages 351-381 in Proceedings of a symposium on research on environmental fate and effects of drilling fluids and cuttings. January 21-24, 1980, Lake Buena Vista, FL.

Ayers, R. C., Jr., T. C. Sauer, Jr., R. P. Meek, and D. Bowers. 1980b. An environmental study to assess the impact of drilling discharges in the mid-Atlantic. I. Quantity and fate of discharges. Vol. 1 pages 382-418 in Proceedings of a symposium on research on environmental fate and effects of drilling fluids and cuttings. January 21-24, 1980, Lake Buena Vista, FL.

Beccasio, A. D., N. Fotheringham, A. E. Redfield, et. al. 1982. Gulf coast ecological inventory: user's guide and information base. Biological Service Program, U. S. Fish and Wildlife Service, Washington, D.C.: FWS/OBS-82/55. 191 pp.

Bedinger, C. A., Jr. 1981. Ecological investigations of petroleum production platforms in the central Gulf of Mexico. Volume III: Executive Summary. Submitted to the Bureau of Land Management, New Orleans, Louisiana. Contract No. AA551-CT8-17. 29 pp.

Benech, S. V., R. Bowker, and R. A. Pimentel. 1980. The effect of long-term exposure to drilling fluids on the structure of the fouling community on a semi-submersible exploratory drilling vessel. Vol. 1 pages 611-635 in Proceedings of a symposium on research on environmental fate and effects of drilling fluids and cuttings. January 21-24, 1980, Lake Buena Vista, FL.

Benson, N. G., ed. 1982. Life history requirements of selected finfish and shellfish in Mississippi Sound and adjacent areas. U.S. Fish and Wildlife Service, Washington, D.C. FWS/OBS-81/51. 97 pp.

BLM. 1978. Final environmental impact statement: Proposed 1978 outer continental shelf oil and gas lease sale offshore Eastern Gulf of Mexico, OCS Sale 65. Vol.2 USDI Bureau Land Management, Washington, D.C. Vol. 2.

Bookout, C. G., R. J. Monroe, R. B. Forward, Jr., and J. D. Costlow. 1984. Effects of soluble fractions of drilling fluids on development of crabs, Rhithropanopeus harrisii and Callinectes sapidus. Water, Air, Soil Pollution 21(1-4): 183-197.

Branstetter, S. 1981. Biological notes on the sharks of the North Central Gulf of Mexico. Contrib. Mar. Sci. 24:13-34.

Carr, R. S., L. A. Reitsema, and J. M. Neff. 1980. Influence of a used chrome lignosulfonate drilling mud on the survival, respiration, feeding activity, and net growth efficiency of the opossum shrimp Mysidopsis almyra. Vol. 2 pages 944-963 in Proceedings of a symposium on research on environmental fate and effects of drilling fluids and cuttings. January 21-24, 1980, Lake Buena Vista, FL.

Castro, Jose I. 1983. The sharks of North American waters, Texas A & M Univ. Press., College Station, 180 pp.

Concklin, P. J., D. G. Doughtie, and K. Ranga Rao. 1980. Effects of barite and used drilling muds on crustaceans, with particular reference to the grass shrimp, Palaemonetes pugio. Vol. 2 pages 912-943 in Proceedings of symposium on research on environmental fate and effects of drilling fluids and cuttings. January 21-24, 1980, Lake Buena Vista, FL.

Danenberger, E. P. 1976. Oil spills, 1971 - 1975, Gulf of Mexico Outer Continental Shelf. Geological Survey Circular 741. USDOI, Washington, D.C. 47 pp.

Danenberger, E. P. 1980. Outer Continental Shelf oil and gas blowouts. U.S.G.S. Open-File Report. 80-101. 15pp.

Derby, J. G. S., and J. Capuzzo. 1984. Lethal and sublethal toxicity of drilling fluids to larvae of the American lobster, Homarus americanus. Can. J. Fish Aquat. Sci. 41: 1334-1340.

Dodge, R. E. 1982. Effects of drilling mud on the reef-building coral Montastrea annularis. Report to EPA from Nova Univ. Oceanogr. Inst., Dania, FL. 8 pp.

Fritzsche, R. A. 1978. Development of fishes of the Mid-Atlantic Bight. Volume V: Chaetodontidae through Ophidiidae. U. S. Fish and Wildlife Service, Washington, D. C. FWS/OBS-78/12. 340 pp.

Gerber, R. P., E. S. Gilfillan, B. T. Page, D. S. Page, and J. B. Hotham. 1980. Short-and long-term effects of used drilling fluids on marine organisms. Vol. 2 pages 882-911 in Proceedings of a symposium on research on environmental fate and effects of drilling fluids and cuttings. January 21-24, 1980, Lake Buena Vista, FL.

Geyer, R. A. 1979. Naturally occurring hydrocarbon seeps in the Gulf of Mexico and Caribbean Sea. College Station, Texas: Texas A & M University Press.

Grahl-Neilson, O., S. Sundgy, K. Westrheim, and S. Wilhelmsen. 1980. Petroleum hydrocarbons in sediment resulting from drilling discharges from a production platform in the North Sea. Vol. 1 pages 541-561 in Proceedings of a symposium on research on environmental fate and effects of drilling fluids and cuttings. January 21-24, 1980, Lake Buena Vista, FL.

Hardy, J. D., Jr. 1978. Development of fishes of the Mid-Atlantic Bight. Volume III. Aphredoderidae through Rachycentridae. U. S. Fish and Wildlife Service, Washington, D. C. FWS/OBS-78/12. 394 pp.

Hildebrand, H. H. 1982. A historical review of the status of sea turtle populations in the western Gulf of Mexico. in K. A. Bjorndahl ed. Biology and conservation of sea turtles. Proc. World Conf. Sea Turtle Conserv. Nov 26-30 1979 Smithsonian Instit. Press, Washington, D.C.

Hoese, H. D. and R. H. Moore. 1977. Fishes of the Gulf of Mexico. Texas A & M Univ. Press, College Station, Texas. 327 pp.

Houghton, J. P., D. L. Beyer, and E. D. Thielk. 1980. Effects of oilwell drilling fluids on several important Alaska marine organisms. Vol. 2 pages 1017-1043 in Proceedings of a symposium on research on environmental fate and effects of drilling fluids and cuttings. January 21-24, 1980, Lake Buena Vista, FL.

John E. Chance & Associates, Inc. 1984. Geophysical Survey Report. Blocks 868 & 869. OCS-G 5761. Mobile Area Offshore Alabama.

Johnson, G. D. 1978. Development of fishes of the Mid-Atlantic Bight. Volume IV: Carangidae through Ephippidae. U. S. Fish and Wildlife Service, Washington, D. C. FWS/OBS-78/112. 314 pp.

Lees, D. C., and J. P. Houghton. 1980. Effects of drilling fluids on benthic communities in the Lower Cook Inlet C.O.S.T. well. Vol. 1 pages 309-350 in Proceedings of a symposium on research on environmental fate and effects of drilling fluids and cuttings. January 21-24, 1980, Lake Buena Vista, FL.

Mariani, G. M., L. V. Sick, and C. C. Johnson. 1980. An environmental monitoring study to assess the impact of drilling discharges in the mid-Atlantic. III. Chemical and physical alterations in the benthic environment. Vol. 1 pages 438-498 in Proceedings of a symposium on research on environmental fate and effects of drilling fluids and cuttings. January 21-24, 1980, Lake Buena Vista, FL.

Marine Experiment Station. 1973. Coastal and offshore environmental inventory Cape Hateras to Nantucket Shoals. Marine Publication Series No. 2, University of Rhode Island.

McCulloch, W. L., J. M. Neff, and R. S. Carr. 1980. Bioavailability of selected metals from used offshore drilling muds to the clam Rangia cuneata and the oyster Crassostrea gigas. Vol. 2 pages 964-983 in Proceedings of a symposium on research on environmental fate and effects of drilling fluids and cuttings. January 21-24, 1980, Lake Buena Vista, FL.

Meek, R. P., and J. P. Ray. 1980. Induced sedimentation, accumulation, and transport resulting from exploratory drilling discharges of drilling fluids and cuttings on the southern California Outer Continental Shelf. Vol. 1 pages 259-284 in Proceedings of a symposium on research on environmental fate and effects of drilling fluids and cuttings. January 21-24, 1980, Lake Buena Vista, FL.

Menzie, C. A., D. Maurer, and W. A. Leathem. 1980. An environmental study to assess the impact of drilling discharges in the mid-Atlantic. IV. The effects of drilling discharges on the benthic community. Vol. 1 pages 499-540 in Proceedings of a symposium on research on environmental fate and effects of drilling fluids and cuttings. January 21-24, 1980, Lake BuenaVista, FL.

MMS. 1983. Final Regional Environmental Impact Statement, Gulf of Mexico. Vol. 1. Prepared by Minerals Management Service, Gulf of Mexico OCS Region, Metairie, Louisiana. 527 pp.

MMS. 1986. Final environmental impact statement, Proposed Oil and Gas Lease Sales 110 and 112, Gulf of Mexico OCS Region, Prepared by Minerals Management Service, Gulf of Mexico OCS Region, New Orleans, Louisiana. MMS. 1992. Final environmental impact statement, Proposed Oil and Gas Lease Sales 142 and 143, Gulf of Mexico OCS Region, Prepared by Minerals Management Service, Gulf of Mexico OCS Region, New Orleans, Louisiana. Visual No. 2, 3, & 4.

Mullin, K., W. Hoggard, C. Roden, R Lohoefener, C. Rogers, and B. Toggart. 1991. Cetaceans of the upper continental slope in the norhern Gulf of Mexico. USDI Minerals Management Service, Gulf of Mexico Region, New Orleans, Louisiana. OCS Study MMS 91-0027. 108 pp.

NAS. 1975. Petroleum in the marine environment. Workshop on inputs, fates and the effects of petroleum in the marine environment. Ocean Affairs Board, Commission on Natural Resources, NRC. National Academy of Science, Washington, D.C.: 107 pp.

NMFS. 1990. Alabama landings in 1989 and 1988. Unpublished report. National Marine Fisheries Service, New Orleans, Louisiana.

NMFS. 1993. Alabama landings in 1991 and 1992. Unpublished report. National Marine Fisheries Service, New Orleans, Louisiana.

NRC. 1983. Drilling discharges in the marine environment. National Academy Press, Washington, D.C.: 180 pp.

Ray, J. P., and R. P. Meek. 1980. Water column characterization of drilling fluids dispersion from an offshore exploratory well on Tanner Bank. Vol. 1 pages 223-258 in Proceedings of a symposium on research on environmental fate and effects of drilling fluids and cuttings. January 21-24, 1980, Lake Buena Vista, FL.

Schmidly, D. J. 1981. Marine mammals of the southeastern United States coast and the Gulf of Mexico. U. S. Fish and Wildlife Service, Washington, D.C. FWS/OBS-80/41. 163 pp.

Schmidly, D. J. and D. L. Scarborough. 1990. Marine mammals of the Gulf of Mexico: past present and future. Proceedings of a workshop held in New Orleans, LA, August 1-3 1989. Minerals Management Service GOM Region, New Orleans Louisiana, OCS Study MMS 90-0009.

Snell, E. 1985. Personal communication, National Marine Fisheries Service, Miami, FL.

Tagetz, M. E., J. M. Ivey, H. K, Lehman, M. Tobia, and J. L. Oglesby. 1980. Effects of drilling mud on development of experimental estuarine macrobenthic communities. Vol. 2 pages 1044-1078 in Proceedings of a symposium on research on environmental fate and effects of drilling fluids and cuttings. January 21-24, 1980, Lake Buena Vista, FL.

Tornberg, L. D., E. D. Thielk, R. E. Nakatani, R. C. Miller, and S. O. Hillman. 1980. Toxicity of drilling fluids to marine organisms in the Beaufort Sea, Alaska. Vol. 2 pages 997-1013 in Proceedings of a symposium on research on environmental fate and effects of drilling fluids and cuttings. January 21-24, 1980, Lake Buena Vista, FL.

USFWS. 1976. Endangered and threatened species of the southeastern United States. USDI United States Fish and Wildlife Service, Region IV, Atlanta, Georgia (periodically updated).

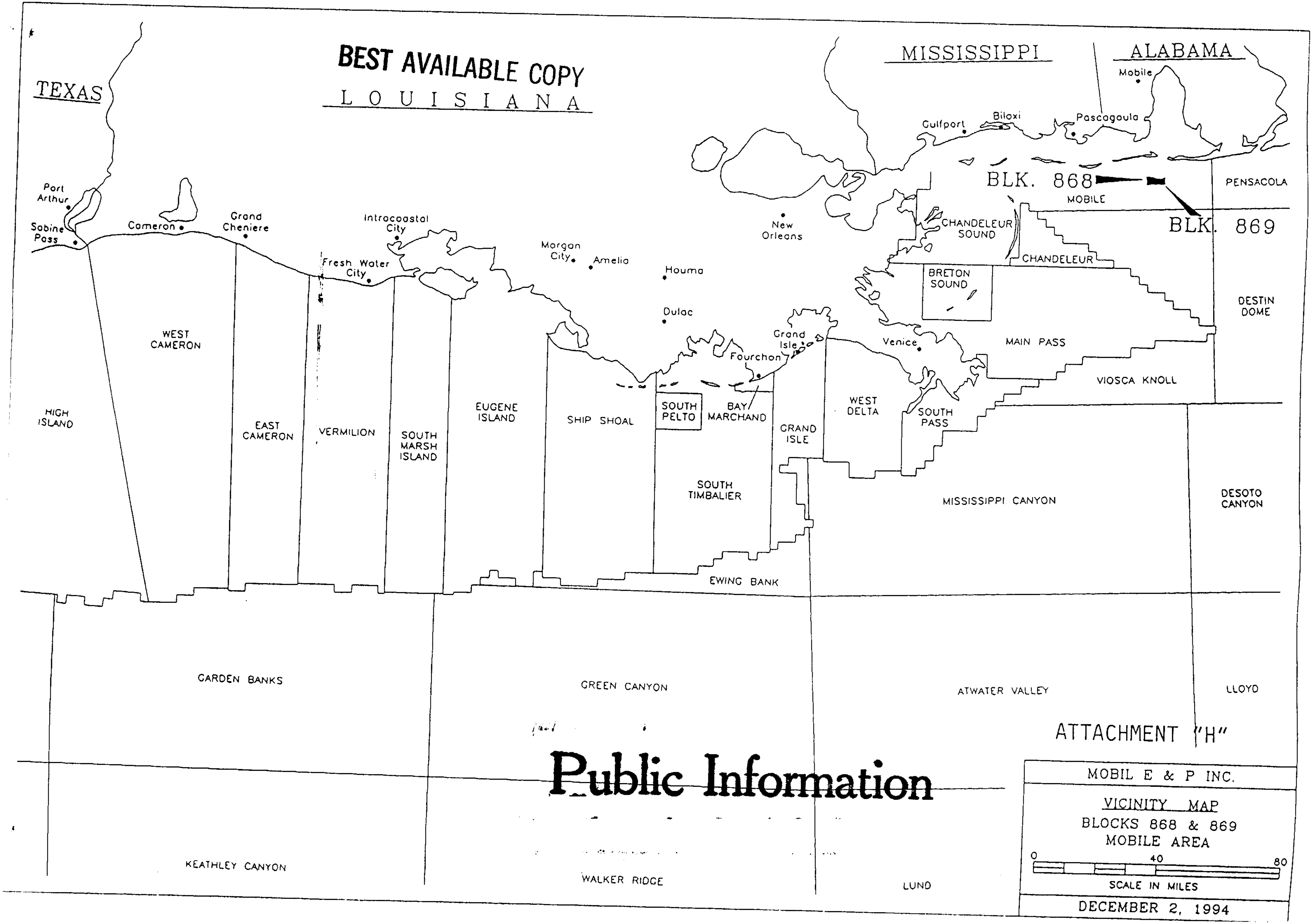
USFWS. 1982. Ecological atlas of coastal Alabama. Maps A5 Biloxi and A6 Pensacola. USDI United States Fish and Wildlife Service, Washington, D.C. USFWS/OBS-82/46. USFWS. 1980. Selected vertebrate endangered species of the seacoast of the United States: West Indian manatee. USDI United States Fish and Wildlife Service, Washington, D.C. FWS/OBS-80/01.35

Walls, J. G. 1976. Fishes of the northern Gulf of Mexico. T. F. H. Publications, Inc., Neptune City, NJ. 432 pp.

Zingula, R. P. 1975. Effects of drilling operations on the marine environment. Pages 433-449 in Conference proceedings: Environmental aspects of chemical use in well-drilling operations. May, 1975, Houston, TX.

Zingula, R. P. and D. W. Larson. 1977. Fate of drill cuttings in the marine environment. Offshore Technology Conference, Paper 3040: 553-556.

Zo Bell, C. E. 1954. Marine bacteria and fungi. Fisheries Bulletin 55 (89):217 -222.

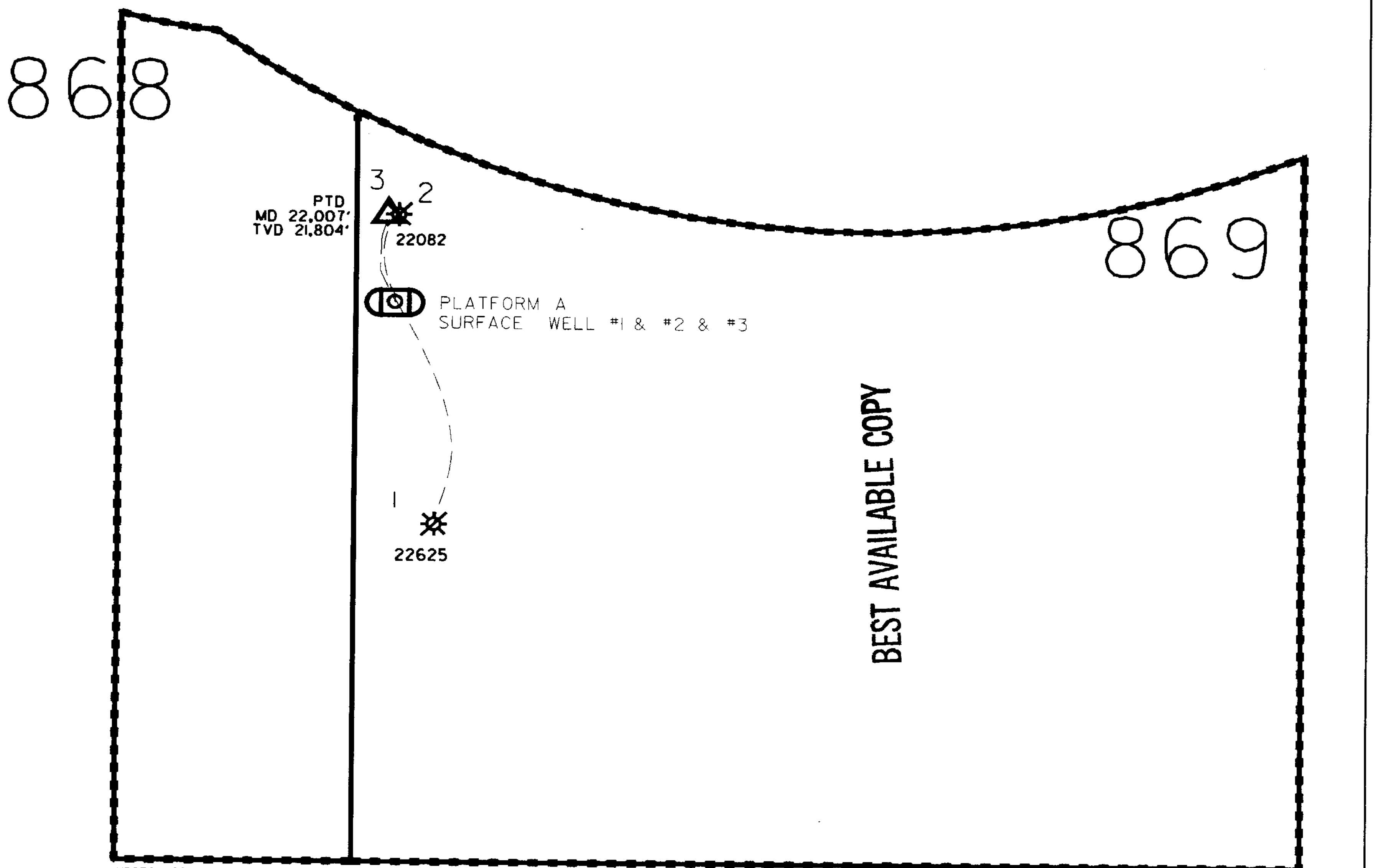


ATTACHMENT "H"

MOBIL E & P INC.

VICINITY MAP
BLOCKS 868 & 869
MOBILE AREA

DECEMBER 2, 1994



MBODI:M0869PB4.DGN
2/01/96

MOBILE BLOCK 869 UNIT OUTLINE

ALABAMA OFFSHORE

LEGEND:

UNIT OUTLINE

PLATFORM

ATTACHMENT "I"

Public Information

COASTAL ZONE MANAGEMENT

CONSISTENCY CERTIFICATION

SUPPLEMENTAL
DEVELOPMENT OPERATIONS COORDINATION DOCUMENT

MOBILE 869 UNIT

CONTRACT 754394004

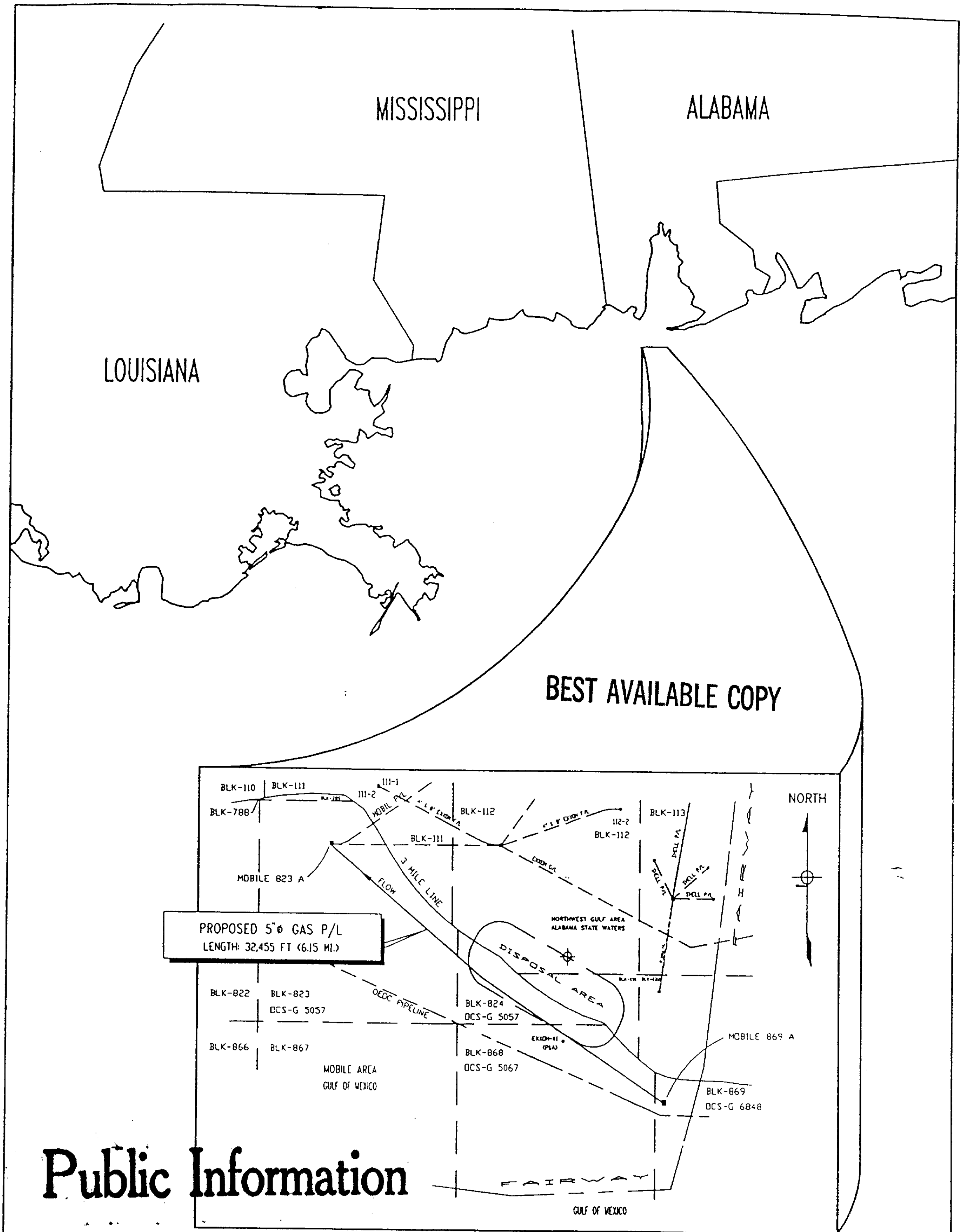
The proposed activities described in detail in the attached Supplemental Development Operations Coordination Document comply with Alabama's approved Coastal Management Program and will be conducted in a manner consistent with such program.

MOBIL EXPLORATION & PRODUCING U.S. INC.
Lessee or Operator

A. A. Pontesso
Certifying Official

2/7/96
Date

ATTACHMENT "J"



MOBIL OIL EXPLORATION & PRODUCING SOUTHEAST INC.

Sheet 1 of 1

VICINITY MAP
PROPOSED 5" GAS & CONDENSATE PIPELINE

MOBILE AREA

OFFSHORE FEDERAL ALABAMA

Scale: 1" = NONE

Drawn by: JJF

Date: 12-1-94

ATTACHMENT "K"

BEST AVAILABLE COPY

WELL NAME: MO869.3						
DRILLING RIG: ENSCO 94						
INTERVAL NO.	I	II	III	IV	V	TOTAL
BIT SIZE, IN.	26	17.5	12.25	8.5	COMPLETION	
HOLE SIZE, IN.	29	19	14	10		
CASING SIZE, IN.	20	13.325	9.625	7		
DEPTH (MD), FT.	1100	9800	16500	22000		
INTERVAL LENGTH,FT.	1100	8700	6700	5500		22000
AVG % DRILL SOLIDS	3	4	3	1		
AVG SOLIDS REMOVAL EFF.	50	70	70	70		
CUTTINGS VOL., BBLS.	899	3051	1276	534		5760
MUD VOL., BBLS.	14529	21967	12374	15868		64739
DISCHARGE RATE, BBL./HR. AVERAGE	1500	263	190	291	50	
MAX DISCHARGE RATE, BBL./HR. MAXIMUM	1000	1000	1000	1000	1000	
TOTAL DAYS	5	27	58	45	15	150
AVG PERSONNEL	60	50	50	50	50	
SANITARY WASTE, BBLS.	300	1350	2900	2250	750	6800
DOMESTIC WASTE, BBLS./DAY	60	50	50	50	50	
DOMESTIC WASTE, TOTAL BBLS.	300	1350	2900	2250	750	6800
FRESHWATER MAKER/COOLING WATER, GALS./DAY	1440000	1440000	1440000	1440000	1440000	
FRESHWATER MAKER/COOLING WATER, TOTAL GALS.	7200000	38880000	83520000	64800000	21600000	194400000
DECK DRAINAGE, BBLS/DAY	50	50	50	50	50	
DECK DRAINAGE, TOTAL BBLS	250	1350	2900	2250	750	6750
PRELOAD BALLAST, BBLS	50000	0	0	0	0	50000
COMPLETION FLUID, BBLS./DAY	0	0	0	0	300	
COMPLETION FLUID, TOTAL BBLS.	0	0	0	0	4500	4500

Public Information

ATTACHMENT "L"

TKT/2:01 PM; 2/6/96