OCS G 3250
G 0405

In Reply Refer To: OS-7-1

APR 24 1980

Federal Programs Office
Office of Coastal Zone Management
3000 White Haven Street
Washington, D.C. 20235

Gentlemen:

In accordance with 30 CFR 250.34, revised January 27, 1978, enclosed is a copy of an Exploration Plan submitted by Mesa Petroleum Company for Lease OCS-G 3250, Block A-331, High Island Area, Control No. G-0405.

Sincerely yours,

(Orig. Sgd.) D. W. Solanas

D. W. Solanas
Oil and Gas Supervisor
Operations Support
Gulf of Mexico Area

Enclosure

cc: OCS-G 3250 (OMS-2-3)
OMS-2-5 w/enclosure

AAlvarado:wf:4/21/80

OMS-2-5 COPY

EXPLORATION PLAN

fo

OCS-G 3250

SOUTH EXTENSION, EAST ADDITION

HIGH ISLAND AREA

BLOCK A-331

FEDERAL OFFSHORE, TEXAS

As required by 30 CFR 250.34

submitted by:

MESA PETROLEUM CO.
1700 Dresser Tower
601 Jefferson Street
Houston, Texas 77002

Telephone (713) 659-8585

John D. Kloecker
REGULATORY COORDINATOR

December 10, 1979

HIGH ISLAND BLOCK A-331

Addressee List

*Mesa Petroleum Co.

Oxy Petroleum, Inc.
P. O. Box 2247
Houston, Texas 77001
Attn: Mr. Bill Low

Canadian Occidental of California, Inc.
1000 Calgary House
550 - 6th Ave. SW
Calgary, Alberta, Canada T2P OS3
Attn: Mr. R. T. Pierce

TABLE OF CONTENTS

INTRODUCTION

Mesa Petroleum Co., as operator, is submitting this exploration plan on High Island Block A-331 in accordance with Section 250.34 of Title 30 CFR.

Lease OCS-G 3250, High Island Block A-331 was issued (effective) on September 1, 1975, to Mesa Petroleum Co. (50%) and Oxy Petroleum, Inc. (50%). Mesa Petroleum Co. was designated operator of OCS-G 3250, High Island Block A-331. On October 31, 1975, an assignment was filed for approval were by Oxy Petroleum, Inc. assigned unto Canadian Occidental of California, Inc. an undivided ten percent interest in the subject lease and was approved. Previous activities on this lease consist only of preliminary geophysical activities that did not result in any physical penetration of the seabed.

Mesa Petroleum Co. submits seventeen (17) copies of the proposed exploration plan. Information considered exempt from disclosure under the Freedom of Information Act (5 USC 552) and its implementing regulations (43 CFR Part 2) is submitted under separate cover. Five (5) copies of this information is supplied.

Mesa Petroleum Co. hereby respectfully submits this proposed exploration plan on OCS-G 3250, High Island Block A-331 for approval by the Supervisor.

EXPLORATION PLAN

A. Proposed Exploration Activities

Exploratory drilling is the only type of exploration activity scheduled to occur under this plan.

The sequence of the exploration activity will be to move a rig onto location, drill and evaluate the well, then move off location. At this time in date, Mesa feels that six (6) wells will be sufficient to determine the potential for future development of the subject lease. Below is listed a time schedule proposed for the drilling of the exploratory wells.

Well	From	To
First	May 5, 1980	July 1, 1980
Second	August 15, 1980	October 1, 1980
Third	December 20, 1980	February 5, 1981
Fourth	April 25, 1981	June 15, 1981
Fifth	September 5, 1981	October 25, 1981
Sixth	January 15, 1982	March 10, 1982

B. Description - Offshore Structure(s)

The average water depth is approximately 250' in High Island Block A-331 and a semi-submersible rig will be utilized for exploratory drilling. See Appendix A for typical diagram of this type rig.

Rig specifications in Appendix A will provide complete description of safety features and pollution-prevention and control features. The rig specifications are from the specs on the Rowan Midland. The rig specifications will very similar for any other semi-submersible type rig that is contracted to drill Mesa's proposed exploratory wells. If any notable variations occur at the time a specific rig is contracted,

these differences will be noted to the Supervisor prior to or with the submittal of the well permit application for approval.

Also included in Appendix A is a diagram of the diverter system for the Rowan Midland rig.

C. Geophysical Equipment

No geophysical equipment will be utilized under this exploratory plan other than velocity surveys occasionally run in a wellbore employing no explosives.

D. Location of Wells

Presently it is proposed to drill only six (6) exploratory wells in the specified time period in this plan on the subject lease. Listed below is the proposed surface location of each proposed well in High Island Block A-331. (Well numbers given have no significance other than for reference.)

Well No.	Proposed Surface Location
1	5200' FNL & 3700' FEL
2	1000' FSL & 2300' FWL
3	700' FSL & 500' FWL
4	3750' FNL & 950' FEL
5	5250' FNL & 400' FEL
6	1000' FNL & 700' FEL

Mesa is submitting a location plat under separate cover as mentioned in Part G giving the proposed bottom hole location and proposed total depth of each well.

Any possible engineering combination of the proposed wells might be directionally drilled from a nearby proposed surface location or sidetracked from a well drilled. Also, an ocean floor templet guide may be

utilized if more than one well is directionally drilled from a proposed surface location as a cluster wellsite.

E. Maps, Cross Sections

Mesa is submitting current structure and pressure maps and a schematic cross section on lease OCS-G 3250 under separate cover as mentioned in Part G.

F. Other Relevant Data

No archeological survey is required for the subject lease.

See Appendix B for a brief description of the "Oil Spill Alert Procedure" and the committment letter for deployment of trained personnel contained in Mesa's Oil Spill Contingency Plan. Also in Appendix B, see a brief description of the deployment of clean-up equipment.

Also, Mesa is submitting, under separate cover as mentioned in Part G, a geophysical wellsite analysis that provides a study of shallow hazards in the vicinity of each proposed surface location.

As currently planned, exploratory operations on the subject lease will be supported from the Mesa Petroleum Co. facility located at Sabine Pass, Texas. Travel routes for boats and helicopters servicing High Island Block A-331 operations will be the most direct route feasible. Helicopter trips will occur approximately once each day with boat trips occuring on an average of four (4) trips per week to transport personnel and/or supplies. The Sabine Pass Base operational level will not be adversely effected by supporting exploratory operations on OCS-G 3250. Refer to Appendix D for Sabine Pass Base site and vicinity plat.

G. Statement of Exemption from Disclosure

Mesa Petroleum Co. respectfully requests exemption from disclosure, under the provisions of the Freedom of Information Act and implementing regulations, the following items:

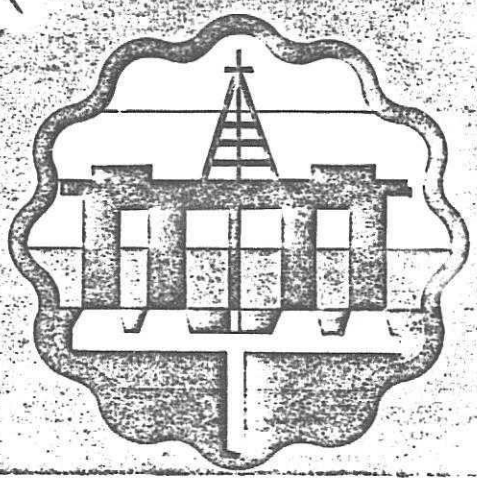
1. Location Map
2. Structure Map
3. Pressure Map
4. Schematic Cross Section
5. Geophysical Analysis of Proposed Surface Locations

Mesa believes this information to be exempt as allowed for in subsection (b), paragraph (9) of the Freedom of Information Act (81 Stat. 54; 5 USC 552) as amended by Public Law 93-502, November 21, 1974, 88 Stat. 1561. The information believed to be exempt is geological and/or geophysical. Also, Mesa Petroleum Co., as operator of lease OCS-G 3250, requests that this information and data considered exempt be dispersed for use only by the United States Government.

APPENDIX A

Klocker

ROWAN-MIDLAND



ROWAN INTERNATIONAL, INC.

Rowan International, Inc., a 50% owned subsidiary of the Rowan Companies, Inc., which was formed in 1968, is presently active in offshore drilling operations around the world. Through the years, Rowan has built extremely strong management and operation teams to construct, equip and operate some of the most advanced and efficient drilling platforms in the industry. The semi-submersible platform, "Rowan-Midland", is a prime example of Rowan's dedication to excellence.

Rowan's reputation as an outstanding drilling contractor, drilling over 6,000 wells during the past 51 years, is well known throughout the oil industry. A highly competent management and operational staff backed by an impressive reserve of qualified personnel are experienced in working in remote environments as well as areas of severe weather conditions that are present in offshore and foreign activities. The Rowan organization is now operating units in offshore regions of the U.S. Coast, Latin America, the Middle East, Southeast Asia and the North Sea. Land drilling activities of the parent company are currently in process throughout the United States, including Alaska.

The "Rowan-Midland" is a design that was developed by the Rowan Engineering Staff and Earl & Wright Consulting Engineers. The unit has undergone extensive tank tests and engineering studies. The vessel is classified by the American Bureau of Ships as an unrestricted A-1 semi-submersible mobile drilling platform, constructed by Levingston Shipbuilding Company, which meets the requirements of the U.S. Coast Guard and OSHA Safety Standards as well as the SOLAS (Safety of Life at Sea) Convention Requirements.

SEMI-SUBMERSIBLE - TWO PONTOON EIGHT COLUMN STABILIZED OFFSHORE DRILLING PLATFORM

The "Rowan-Midland", rated for 25,000' drilling depths, is a two pontoon semi-submersible mobile drilling platform designed with eight stabilizing columns with horizontal bracing and vertical diagonals running between the two lower pontoons to the deck girders, rigidly interconnected to act as a continuous three dimensional space frame. The two lower hulls are 279' in length; each lower hull is 40' in width and has a pontoon height of 23'. Each pontoon has a flat bottom and top deck with the perimeter of the hull rounded in shape. Four stabilizing columns are mounted on each lower hull. The fore and aft columns are 27' diameter; the two center columns are 18' diameter.

The main deck incorporates crew quarters for 94 men with galleys, mess areas and recreational facilities and a six man hospital. The quarters are fully air conditioned and heated. The deck house, pipe racks, machinery houses, derrick and substructure are incorporated on the main deck.

Four National double drum anchor winches with two 6000' lengths of 2½" wire rope are located on the top of each of the corner columns of the drilling vessel.

For Further Information Please Contact:

ROWAN COMPANIES, INC.
1900 Post Oak Tower
Houston, Texas 77056

THE "ROWAN-MIDLAND"

VESSEL DESIGN

Semi-Submersible. Two Pontoon Column Stabilized 279' x 210' x 100' Drilling Vessel, Rowan - Earle & Wright design. Water depth - 600', Survival Sea State - 86', Drilling Depth - 25,000', Location - Gulf of Mexico.

PLATFORM CONTROL

A control house is located on the port forward deck of the platform with dual use for ballast controls, weather, anchor tension indicating equipment and gas and fire detection equipment.

PRIME POWER

Five Caterpillar Model D399 Diesel Electric Marine Drilling Power units. Rated 1325 BHP @ 1200 RPM with 930 KW Generators. Total Continuous 6250 HP. Spark Arresting Mufflers. Generators provide power for anchor handling and drilling through 9 Baylor Thyristor Modules. A separate Cat 379 Diesel Electric Auxiliary Generator Set.

ANCHORING SYSTEM

The anchoring system which is installed on the ROWAN-MIDLAND Semi-Submersible Platform consists of eight (8) separate moorings. A National winch, a fairleader, 6,000' of 2 1/2" anchor line and a 30,000 pound anchor, a 750' pendent line and an anchor bouy make up a single mooring system.

ANCHORING SYSTEM EQUIPMENT

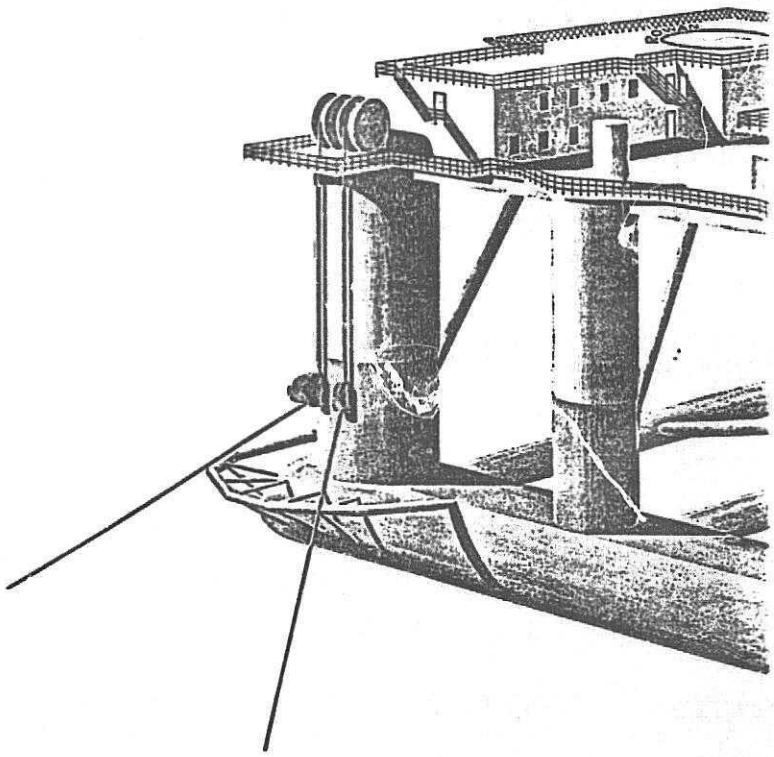
4 - National Model D5600 double anchor winches for 2 1/2", 6000' wire rope. Winches driven by GE Model 752 motors and a Baylor SCR DC drive system.

LOADS AND SPEEDS	Line Speed Ft. Per Min	Line Pull Pounds
Bare Drum	0 - 40	583,000
	60	175,000
	80	116,000
Mid Radius	0 - 64	367,000
	96	110,000
	128	73,000
Full Radius	0 - 88	267,000
	132	80,000
	176	53,000

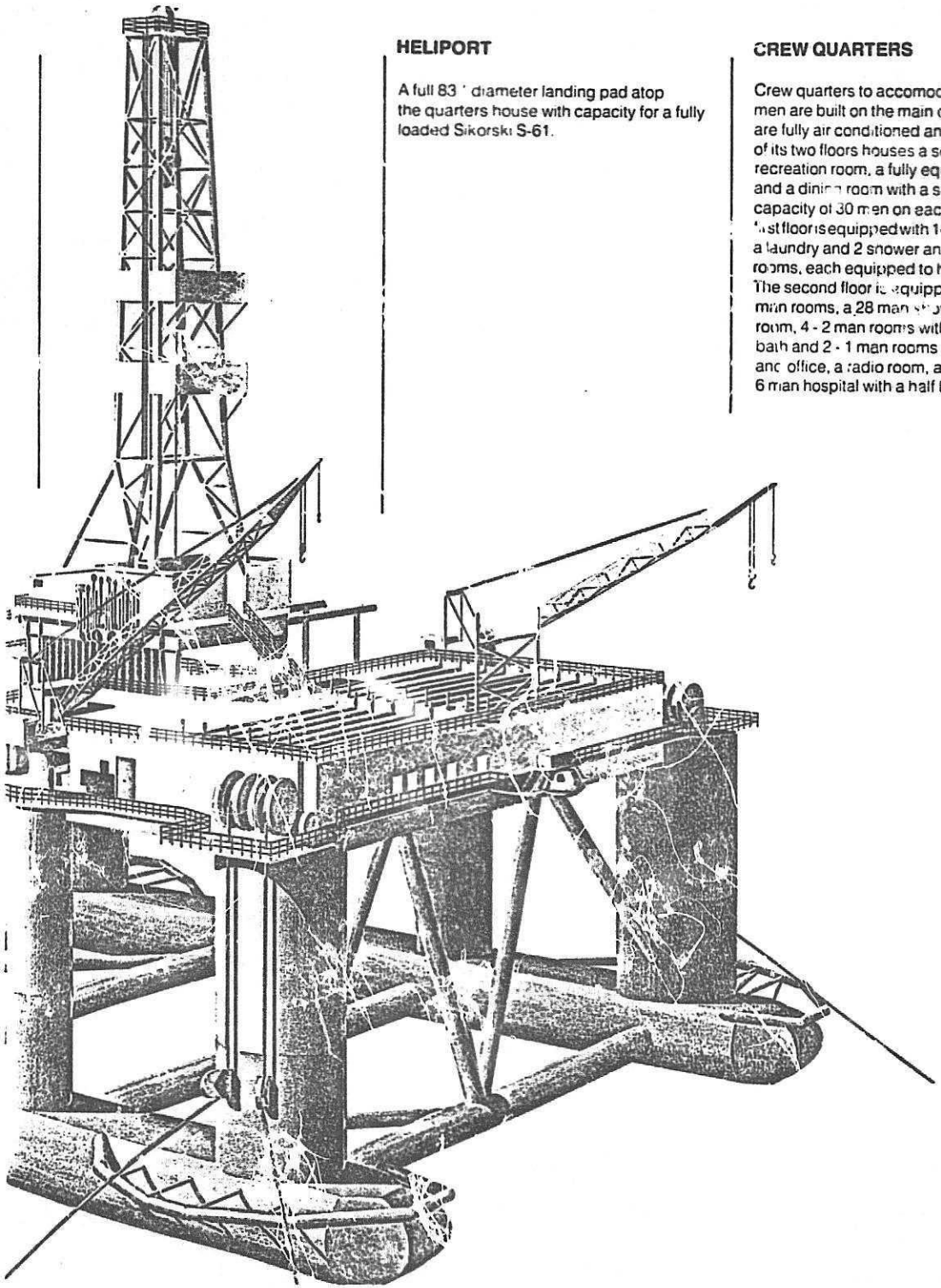
16 - 30,000 lbs. LWT Anchors with adjustable fluke angles. All ABS certified to 550,000 lbs.

10 - Sets Anchor Pendent Lines 2 1/2", 6 x 25 galvanized to 750 ft.

10 - Sets Anchor Bouys.



KEY DESIGN FEATURES



HELIPORT

A full 83 ' diameter landing pad atop the quarters house with capacity for a fully loaded Sikorski S-61.

CREW QUARTERS

Crew quarters to accomodate a total of 94 men are built on the main deck. Quarters are fully air conditioned and heated Each of its two floors houses a separate recreation room, a fully equipped Galley and a dining room with a seating capacity of 30 men on each floor. The first floor is equipped with 14 - 4 man rooms, a laundry and 2 shower and change rooms, each equipped to handle 28 men. The second floor is equipped with 7 - 4 man rooms, a 28 man shower and change room, 4 - 2 man rooms with a half bath and 2 - 1 man rooms with half bath and office, a radio room, a laundry and a 6 man hospital with a half bath.

DIMENSIONS

THE "ROWAN-MIDLAND" KEY DESIGN FEATURES

- Ability to operate in rough sea conditions as encountered on the Atlantic Coast and in the Gulf of Mexico
- High degree of mobility
- Large supply capability
- Favorable wave motion response characteristics

STORAGE CAPACITIES

	Volume	Short Ton
Bulk Mud	5,600 Ft³	280
Bulk Cement	2,600 Ft³	132
Sack Mud Area	1,500 Ft³	375
Pipe rack	14,000 Ft³	900
Liquid Mud	1,750 Bbls	500
Fuel Oil	4,400 Bbls	933
Drill Water	12,800 Bbls	2,320
Potable Water	1,000 Bbls	60
Maximum Variable deck load		1,600

OPERATION CHARACTERISTICS

Water Depth	600 Ft.
Drilling Depth	25,000 Ft.
Draft of platform in drilling condition	50 Ft.
Platform clearance at drilling draft	41 Ft.
Total Displacement - Drilling Draft 50 Ft.	14,590 L. Tons
Survival Draft 40 Ft.	13,590 L. Tons
Towing Draft 18 Ft.	10,409 L. Tons

MOTION CHARACTERISTICS

	Period
Natural Heave period	19.2 sec
Natural roll period	42.0 sec
Natural pitch period	29.8 sec

PLATFORM DIMENSIONS

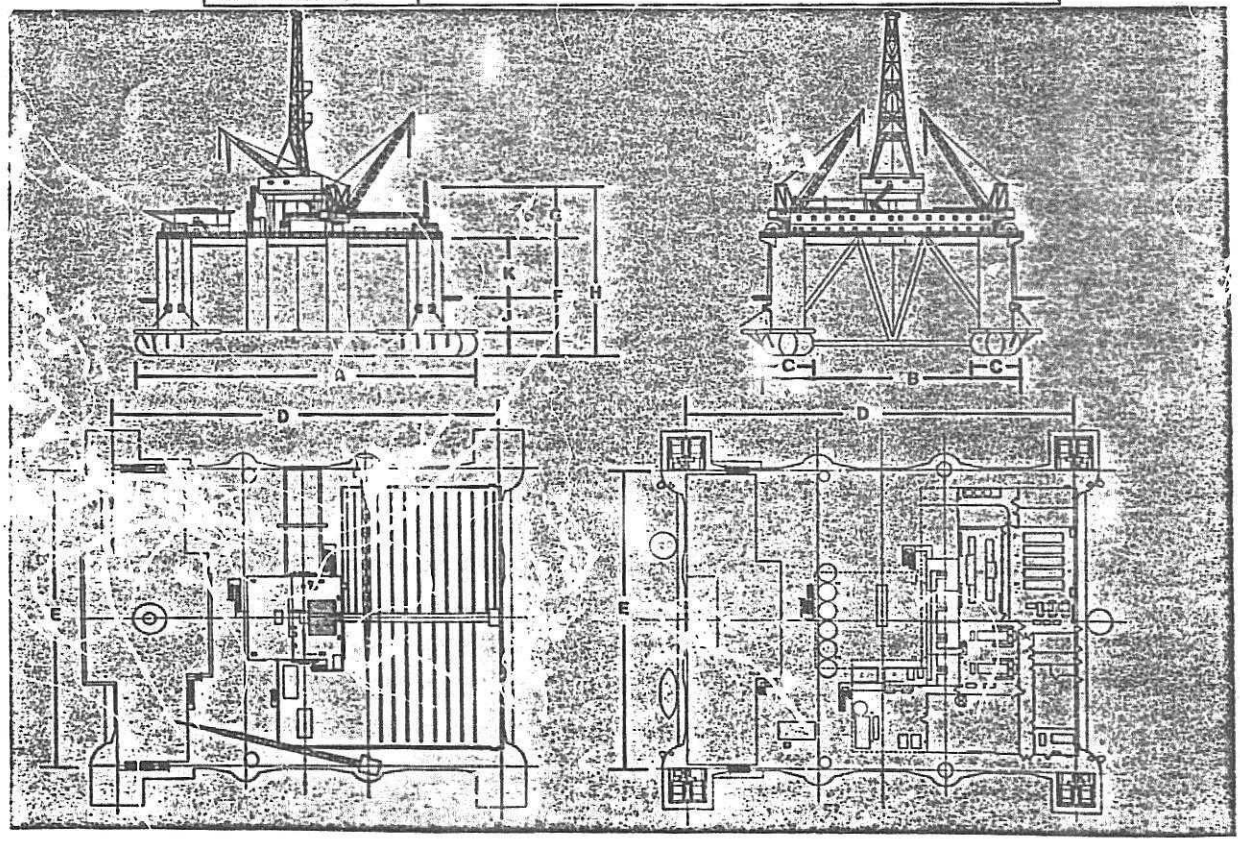
Twin Lower Hulls.	Length overall	A	279' - 6"
	Width overall	B	210' - 0"
	Hull Widths	C	40' - 0"
Main Deck	Length overall	D	220' - 0"
	Width overall	E	170' - 0"

Heights and Drafts	Keel to Main Deck	F.	100' - 0"
	Main Deck to Derrick Floor	G.	38' - 0"
	Keel to Drill Floor	H.	138' - 0"
	Towing Draft	I.	18' - 0"
	Normal Operating Draft	J.	50' - 0"
	Normal Drilling Air Gap	K.	41' - 0"

CLASSIFICATION

American Bureau of Ships

Maximum Operating Water Depth 600'



SAFETY EQUIPMENT

1 - 42 man self-propelled survival type rescue boat.
2 - Brucker Survival capsules, rated for 28 men each
4 - 20 man inflatable life rafts

Life vests, ring buoys, fire fighting equipment, general alarm, etc. approved by USCG & ABS

MOTION COMPENSATOR AND TENSIONING EQUIPMENT

Rucker Shafer XS drill string heave compensator system. Compensator Assembly Model 18/400, 18 foot compensation stroke. 400,000 lbs. compensation hook capacity at 2300 PSI (2400 PSI rated) over 300 ft. minimum response speed Panel control at drillers station.

A. 480,000 lbs. Riser Tensioner System - Six tensioners each rated for 80,000# with 50' wire line travel (¾" dia. wire rope). Nine 285 gallon air pressure Vessels. 2400 PSI operational pressure. Three stand-by 285 gallon air pressure vessels - 2400 PSI operational pressure Riser control panel (Explosion Proof) for control of the "three pair" tensioner system.

A. 96,000 lbs. Guide Line Tensioner System - Six - 16,000 lb. guide line tensioners - 40 ft. wire line travel (¾" dia. wire rope). Line dead ended to (6) hoist with constant tension manifolds. One 285 gallon air pressure vessel 2400 PSI operating pressure; One (1) standby 285 gallon air pressure vessel - 2400 PSI operating pressure. Guide Line control panel (Explosion Proof) for control of the "three pair" guide line tensioner system.

On all units above. Rucker supplies three (3) air compressors, air dryer units (TEFC) 15 CFM - 2500 PSI; 15 HP for constant maintenance of 2400 PSI air pressure vessels.

CRANES

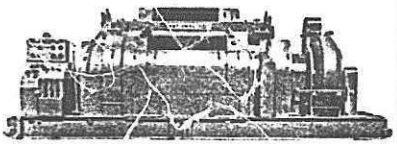
1 - 35 Ton Crane w/100' Boom
1 - 75 Ton Crane w/100' Boom
(Both pedestal mounted)

DERRICK AND SUBSTRUCTURE

Lee C. Moore 160' x 40' x 40' Cantilever Beam Leg Mast. Dynamic designed Mast 1,000,000# adjustable casing stabbing platform, explosion proof lighting Substructure, 38'-3" High, 650,000# Casing capacity, 600,000# setback.

DRAWWORKS

National 1625 DE grooved for 1-1/2" line with (2) integral General Electric Model #752 Electric Motors (Rated 3000 HP input), ELMAGCO Eddy current brake rated 100,000 ft. lbs., Sand Reel with 18,000 ft. of 9/16" Wireline.



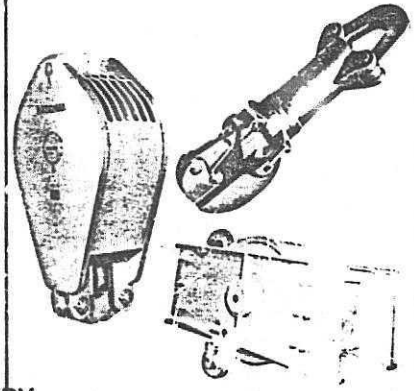
TRAVELING EQUIPMENT

Lee C. Moore Crown Block with 7 - 60" Sheaves grooved for 1-1/2" Line, 15" Catline Sheave, 24" Sand Line Sheave.

National Model 660 H500 Traveling Block with 6 - 60" Sheaves grooved for 1-1/2" Line rated at 500 ton with Traveling Block Guide.

National Model P-650 Swivel.

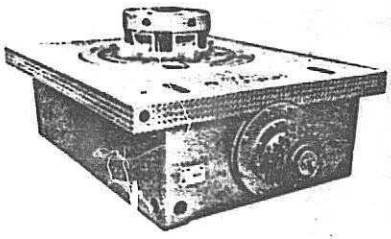
National Model 660 H 500 Hook with Hydraulic Snubber & Rotation Lock.



ROTARY

National Model C495 with insert to adapt 37½ Varco MPCH master bushing.

Type KFDS diverter support system, 20" x 49-½" with diverter insert packer, flow-line spool and type DR-1 support ball (30° included angle).
PS-12 Air powered drill pipe sli



MUD SYSTEM & SERVICE

2 - National Model 12P-160 mud pumps with forged steel fluid ends. Hydril Model K-20-5000 dampeners, each driven by 2 G.E. Model 752 D.C. Motors, rated 1600 HP Input.

2 - Mission 6" x 8" Centrifugal supercharging pumps, each driven by 50 HP explosion proof electric motor.

2 - Mission 6" x 8" Centrifugal Mud Mixing pumps, each driven by 75 HP explosion proof electric motor

1 - Brandt, Inc. double high speed Shale Shaker with 50, 70 & 80 mesh screens. Driven by 2 - 5HP explosion proof motors.

1 - Pioneer Desander rated at 1200 GPM with 5" x 6" Centrifugal pump driven by 75 HP explosion proof electric motor.

1 - Pioneer Desilter rated 1260 GPM with Mission 6" x 8" Centrifugal pump driven by 75 HP explosion proof electric motor.

1 - Swaco Degasser.

4 - 15 HP Lightnin' Pit Mixers with explosion proof motors.

4 - Mud tanks (Total 1750 Bbls.)

4 - Howco 1400 Cu. Ft. Pneumatic type bulk mud storage system.

1 - 1500 sq. ft. sack mud and chemical area (fully enclosed)

1 - Martin Decker Pit Volume Totalizer and flow meter and stroke counter, with remote readout and recorder in quarters office

EQUIPMENT

CEMENTING EQUIPMENT

1 - Twin Pump Cementing Unit, HOWCO H1-400 with two Detroit Diesel 8V71N engines, torque converter equipped. 20 bbl. displacement tank.

2 - Howco 1400 Cu. Ft. Pneumatic type bulk cement storage system.

2 - Howco 175 CFM compressors w/30 HP TEFC motor electric drivers.

1 - Gas Detector.

2 - 5-9/16" OD stand pipes with 10,000# Rotary Hoses.

1 - Howco 220 cu. ft. cement surge tank. Pressure tank.

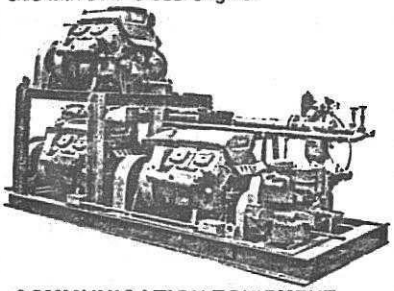
1 - Howco recirculating cement mixing system.

RIG AIR SYSTEM

1 unit - Stewart & Stevenson Model D603 Air Compressor system consisting of three (3) D603, two stage, two cylinder, air cooled air compressors mounted on a common skid 125 PSIG w/1468 CFM. 100 HP TEFC Motor.

1 - Stewart & Stevenson Model E-1200 Refrigerated air dryer.

1 - Stewart & Stevenson Model K25/DC Cold Start Air Compressor on fabricated skid with 8 HP diesel engine.



COMMUNICATION EQUIPMENT

1 - Maritime Radio Station, complete 55 Channel VHF Radio system. Collins Model MR-201.

1 - Aircraft Beacon Radio, 80 watts.

2 - Marinetts model 61 A16 Lifeboat tranceivers

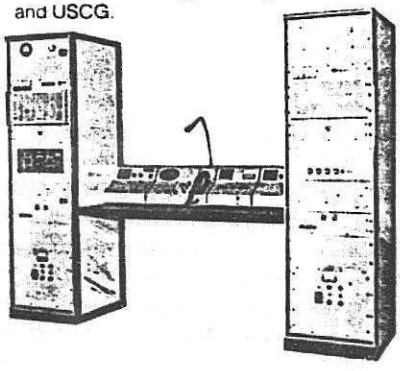
1 - Helicopter communications set. "COM II 360 tranceiver channel".

1 - Single side band Radio

1 - Sound Powered Telephone System.

6 - Hand Held tranceivers Motorola UHF 1 watt.

All equipment as approved by FCC and USCG.



STEAM HEATING

3 - 200 HP Clayton steam generators

1 - Closed Loop Steam circulating system with a water treating system.

ACCESSORY EQUIPMENT

1 - Hydro-Products Underwater Television System Model WS - 125.

1 - Honeywell Acoustic Position system Model RS-5 & RS-505.

1 - Martin & Decker 5 Channel Recorder.

1 - Set of environmental and rig motion recorders.

OTHER EQUIPMENT

2 - Distillation Units, Potable Water. 200 GPH/Each

2 - Welding Units 400 AMP

18 - Air Hoists: 3 rig floor, 2 towing bridle, 4 spider deck and 1 monkey board, 6 guide lines, 2 utility, 1 Fork Truck to handle sack pallets.

LIGHTING

All navigation lights, beacons, and signals as approved by ABS and USCG.

BOP EQUIPMENT

BLOWOUT PREVENTER STACK

1 - 18-3/4" 10,000 psi hydraulic collet connector w/clamp hub top.

1 - 18-3/4" double Cameron Type "U" blowout preventer, 10,000 psi WP w/four 3-1/8" outlets and two sets 5" rams.

1 - 18-3/4" double Cameron Type "U" blowout preventer 10,000 psi WP w/four 3-1/8" outlets and blind and shear rams.

1 - 18-3/4" Hydril Type GL Annular preventer 5000 psi WP w/18-3/4" 10,000 psi WP clamp hub bottom x 18-3/4" 5000 psi WP studded top.

1 - 18-3/4" 10,000 psi spool adapter "AX" clamp hub top x 18-3/4" psi WP flange bottom

2 - Gate valves, 3-1/8" 10,000 psi WP clamp hub, inlet and outlet w/Type "A" 3000 psi fail safe operator w/uni directional gate and seat

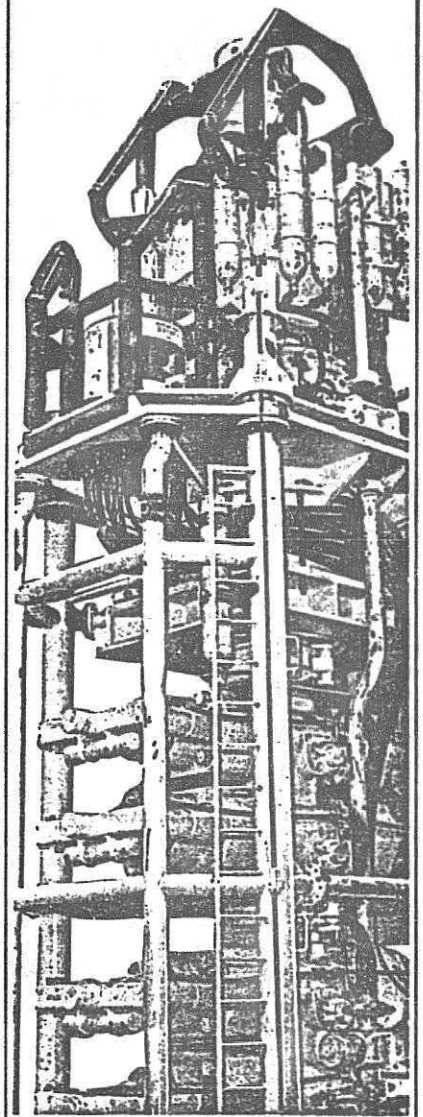
2 - Gate valves, 3-1/8" 10,000 psi Cameron "F" clamp hub inlet and outlet w/Type "A" 3000 psi fail safe operator.

1 - 18-3/4" BOP stack guide frame w/four position 6' radius w/sleeve for attaching collet connector and manifolding and lift ring.

HYDRAULIC CONTROL SYSTEM

1 - Koomey Subsea Accumulator w/Control System. Complete with 18-3/4" accumulator package. 2 x 750' hose reels (air driven), 2 pods. Three separate control stations, emergency battery pack

1 - 18-3/4" TEST Stump 10,000 psi WP "AX" clamp hub top w/1/2" test port and 4-1/2" I.F. box thread.



21" RISER SYSTEM

1 - 18-3/4" Collet connector, hydraulic 10,000 psi WP w/CIW clamp hub top.

1 - Set 18-3/4" clamp assembly 10,000 psi and gaskets.

1 - Set 18-3/4" Hydril Annular preventer 5000 psi WP w/18-3/4" 10,000 CIW clamp hub bottom x 18-3/4" 5000 psi studded top.

1 - 18-3/4" ball joint 5000 psi flanged bottom x 21" type "RCK" box riser top, 10 degree deflection, pressure balanced.

13 - 21" x 1/2" wall 55 ft. long riser pipe w/box up "RCK" riser connector end, w/integral 3" choke and kill, X-52 pipe.

1 each of 21" x 1/2" wall riser pup joints 40', 20', 15' and 10' long, each w connector pins and 3" choke and kill X-52 pipe.

1 - Telescoping joint, 21" marine riser with "RCK" pin riser connector bottom and type "R" box riser connector top, 55 ft. stroke with remote press operated seal and with integral choke and kill lines with lugs for tension lines and clamp for guide lines.

2 - Chiksan flex assy. 10,000 psi w/uni bolt bottom X 3-1/8" psi clamp hub top.

1 - Riser stab assembly; upper unit, equipped with line up pin receptacles and choke line stab sub box.

1 - 30" pin connector assembly with extra ball joint to connect riser with diverter.

1 - Handling joint 5" OD drill pipe w/4-1/2" I.F.T.J. box and pin.

BOP HANDLING EQUIPMENT

The handling equipment built into cellar deck can handle the BOP Stack in one piece, excluding the Lower Riser assembly.

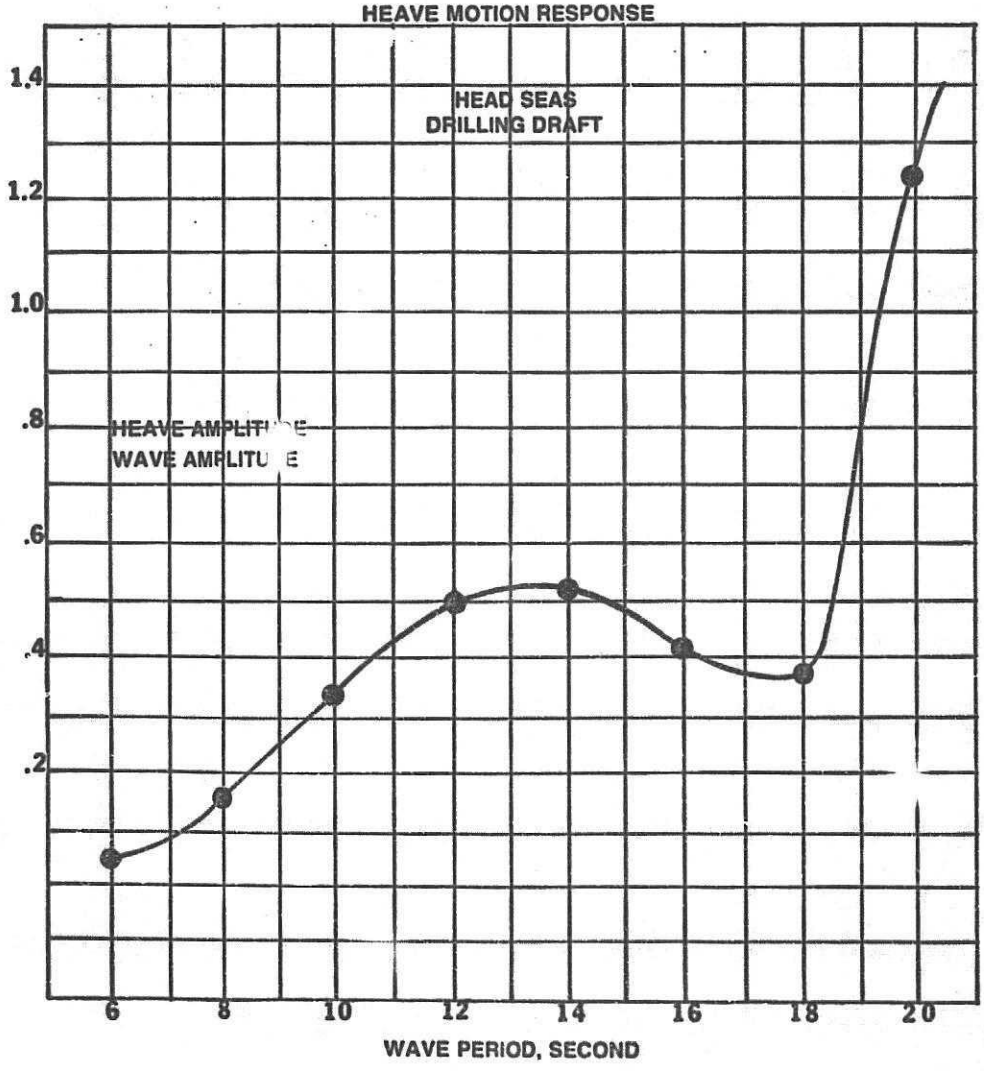
MOTION DATA

WAVE MOTION

Motion studies conducted on semi-submersible platforms indicate that horizontal excursion during actual drilling operations is usually held to a maximum of 5-6% of the water depth in waters of 200-800 feet. However, most of the drilling operations are carried out with horizontal excursion within 2-3% of the water depth.

Acceptable limits of a drilling vessel's motion are determined not only by vessel response, but also by characteristics of the subsea drilling equipment such as the stresses on the marine riser, the angular movement of the lower ball joint and the nature of the drilling operations. During non-drilling times, when the marine riser is still connected to the blow-out preventer, the mooring system is designed to maintain a maximum of 10° angle at the lower ball joint.

The semi-submersible platform has been designed to the severe environment criteria prescribed for the operation area. This criteria developed around the quasi-static forces (wind, wave drift, currents) and the forces induced by dynamic loading on the vessel which are surge, sway, roll, pitch, yaw and heave. The accompanying graph indicates the reactions of the unit to these forces.



APPENDIX B

OIL SPILL ALERT PROCEDURE
GULF OF MEXICO AREA

I. The Division Drilling Supervisor should be notified immediately on discovery of an oil spill. Notification should be made as indicated in the following oil spill alert procedure:

DIVISION DRILLING SUPERVISOR

C. R. Wampler	Office (713) 659-8585 Home (713) 376-2665

Alternates

P. Phillip, Jr.	Home (713) 353-0975
J. R. Stewart, Jr.	Home (713) 877-8047
J. R. Barrett	Home (713) 492-0135

Notification should include the following information:

Date of Spill
Time of Spill
Location of Spill
Type of Material Spilled
Action Taken to Control Spill
Estimated Amount Spilled
Source of Spill
Estimated Dimension of Spill on Water (Lenth, Width, Thickness)
Wind Direction and Velocity
Wave Height
Direction and Velocity Spill Drifting

II. Division Drilling Supervisor should contact the following:

CLEAN GULF ASSOCIATES

In order to obtain use of the Clean Gulf Associates, call one of the following:

Ring, K. A.	New Orleans (504) 588-6911
(Home)	New Orleans (504) 877-0982
Golay, Claude	New Orleans (504) 521-6213
(Home)	New Orleans (504) 394-0520

Halliburton personnel to notify for coordination of equipment:

DeBlanc, F. X.	New Orleans	(504) 366-1735
(Home)	New Orleans	(504) 366-2866
Naquin, Merlin	Houma	(504) 873-8576
(Home)	Houma	(504) 873-8743
Louviere, J. C.	Morgan City	(504) 384-9930
(Home)	Morgan City	(504) 395-2404

In order to use Peterson Maritime Services for trained manpower and equipment, notify one of the following:

Byars, Fred	New Orleans	(504) 949-7534
(Home)	Marrero	(504) 347-0077
George, Robert	New Orleans	(504) 949-7534
(Home)	Metairie	(504) 468-2073

III. The Supervisor or alternate should notify Regulatory Coordinator:

Regulatory Coordinator

J. D. Kloecker	Home	(713) 793-6006

IV. Regulatory Coordinator, J. D. Kloecker, should notify appropriate regulatory agencies:

Agencies

U.S.G.S.
Coast Guard
E. P. A.
Other Agencies at discretion

V. The Drilling Supervisor or alternate should notify all non-operators concerned.

VI. Drilling Supervisor should notify other appropriate personnel.

DIRECTORY OF AGENCIES
(Personnel to be Notified)

Environmental Protection Agency

Region VI	Office (214) 767-2666
Emergency Response Center	(214) 767-2720
National Response Center	(800) 424-8802

U.S. Coast Guard

24 hour watch	Office (504) 589-7101

U.S. Geological Survey

(See Attached List)

U. S. GEOLOGICAL SURVEY
GULF OF MEXICO, OCS OPERATIONS

Area Office for Field Operations P. O. Box 7944 Metairie, Louisiana 70010	504-837-4720
J. B. Lowenhaupt	504-888-2836
W. H. Martin	504-831-2923
Freeport District Office 200 W. 2nd Street Freeport, Texas 77541	713-233-2604
J. C. Sandridge, District Supervisor	713-265-7935
E. L. Smith, Assistant District Supervisor	713-849-4142
D. Davis, Drilling Engineer	713-233-0028
C. Kirkpatrick, Production Engineer	713-849-9554
Lake Charles District Office P. O. Box 6088	318-478-6440
R. H. Darrow, District Supervisor	NON-WORKING HOURS
B. R. Stewart, Assistant District Supervisor	318-478-6440
M. Hebert, Drilling Engineer	(Answering
J. Larsen, Production Engineer	Service)
Lafayette District Office P. O. Box 52289 Lafayette, Louisiana 70501	318-232-6037
E. G. Hubble, District Supervisor	NON-WORKING HOURS
R. W. Mercer, Assistant District Supervisor	318-232-6037
[illegible]e, Drilling Engineer	(Answering
[illegible] Production Engineer	Service)
[illegible]fice	504-868-4033
[illegible] 70360	
J. D. Borne, District Supervisor	504-876-9142
C. L. Ratcliff, Assistant District Supervisor	504-876-1036
L. P. Templet, Drilling Engineer	504-872-6962
E. K. Domingos, Production Engineer	504-868-0493
Metairie District Office P. O. Box 7966 Metairie, Louisiana 70010	504-837-4720
C. B. Mullin, District Supervisor	504-892-5165
W. F. Frederick, Assistant District Supervisor	504-454-6620
J. R. Hennessey, Drilling Engineer	504-643-4385
J. M. Long, Production Engineer	504-885-7152

TWX 810-951-5328 TWENTY-FOUR HOUR SERVICE Cable: PETMAR

PETERSON MARITIME SERVICES, inc.

2431 DECATUR STREET, NEW ORLEANS, LA. 70117
(504) 949-7534

803 DAUPHIN STREET, MOBILE, ALA. 36602
(705) 432-1824

4400 SOUTH WAYSIDE DRIVE, SUITE 102, HOUSTON, TEXAS 77087
(713) 641-6685

Consultants, Contractors and Specialists in:
Ship and Barge Cleaning • Oil Spill Cleanup • Helicopter and Seaplane Service

HAROLD J. PECUNIA
President

MAY 28 1979

May 23, 1979

Mesa Petroleum Company
1700 Dresser Tower
601 Jefferson Street
Houston, TX 77002

ATTN: Mr. J. Kloeck

RE: Oil Spill Control,
Retention & Clean up

Dear Mr. Kloecker,

Peterson Maritime Services, Inc. will guarantee to Mesa Petroluem Company that we will respond on a twenty-four hour per day basis to any oil spill as directed by Mesa with sufficient men, equipment and materials to handle both major and minor spills. We also guarantee that in the event Mesa Petroleum Company wishes to activate equipment from Clean Gulf Associates, Peterson will provide the necessary trained personnel to operate all of the now existing Clean Gulf Associates equipment. Rates charged for these services will be based on Peterson's latest published rate schedule.

Please be advised our guarantee commences this date (5/23/79) and will expire 5/23/80.

Enclosed is an up to date rate schedule, equipment and materials list and brochures on equipment and materials which we use and sell.

Also enclosed is a Certificate of Insurance made to Mesa Petroleum Company.

Sincerely,

Fred D. Byars

Fred D. Byars
Manager
Pollution Control Division

FDB/lld

enclosures

DEPLOYMENT TIME OF OIL
SPILL EQUIPMENT TO
HIGH ISLAND BLOCK A-331

The estimated deployment time to load out and mobilize to the subject lease for a possible spill control-clean-up activity is shown below.

Fast Response Skimmer	12 to 14 hours
Hoss Barge	23 to 25 hours

APPENDIX C

MUD PRODUCTS LIST

DESCRIPTION	MAGCOBAR	IMCO	BAROID	MILCHEM	PRIMARY APPLICATION
		WEIGHTING AGENTS AND VISCOSIFIERS			
Barite	Magcobar	Imcobar	Baroid	Milbar	For increasing density to 20#/gal.
High density weight material	Superwate		Galena		For increasing density to 30#/gal.
Acid soluble high gravity weight material	Siderite				For increasing density to 18#/gal. with acid soluble material.
Acid soluble low gravity weight material	Lowate	Imcowate		W.O. 30	For increasing density to 12.0#/gal. with acid soluble material.
Bentonite	Magcogel	Imcogel	Aquagel	Milgel	Viscosifier and filtration control in water base muds.
Beneficiated Bentonite	Kwik Thik	ImcoHYB	Quickgel	Supercol	Quick viscosity in fresh water upper hole muds.
Attapulgite	Salt Gel	ImcoBrine Gel	Zeogel	Salt Water Gel	Viscosifiers in salt water muds.
Bacterially produced Polymer	Duovis	Imco XC	XC Polymer	XC Polymer	Viscosifier and fluid loss additive for low solids muds.
Guar Gum	Lo Loss				Viscosifier and fluid loss additive for low solids muds.

DESCRIPTION	MAGCOBAR	IMCO	BAROID	MILCHEM	PRIMARY APPLICATION
			DEFLOCCULANTS		
Modified Lignosulfonate	Spersene	VC-10 RD-111	Q-Broxin	Uni-Cal	Deflocculant and protective colloid.
Modified Tannin	Desco	Desco	Desco	Desco	Thinner and protective colloid.
Lignite	TannAthin	Imco Lig	Carbonox	Ligco	Deflocculant, emulsifier and supplementary additive for fluid loss control.
Modified Lignite	XP-20	Imco Thin	CC-16	Ligcon	Modified Lignite for supplementary use with Modified Lignosulfonate.
Potassium Lignite			K-Lig		For specific use as a thinner and fluid loss control agent in Potassium base systems.
Tannin Extract	MC-Quebracho	Imco QBT	Tannex	Tanco	Thinner and protective colloid.
			DISPERSANTS		
Sodium Tetra-Phosphate	Magcophos	Imcophos	Barafos	Oilfos	Thinner for low pH fresh water muds and calcium sequestering agent.
Sodium Acid Pyrophosphate	SAPP	SAPP	SAPP	SAPP	Thinner for low pH fresh water muds and calcium sequestering agent.
Non-Ionic Surfactant	HME (Montello)	HME	HME	HME	Dispersant for gilsonite.

DESCRIPTION	MAGCOBAR	IMCO	BAROID	MILCHEM	PRIMARY APPLICATION
		FILTRATION CONTROL AGENTS			
Organic Polymer	Resinex	Poly RX			Fluid loss control and high temperature stabilization of water base muds.
Pre-gelatinized Starch	My-Lo-Jel	Imco Loid	Impermex	Milstarch	Controls fluid loss in SSW, fresh water, lime, and lignosulfonate muds.
Regular grade Sodium Carboxymethyl Cellulose	Magco-CMC (Regular)	Imco-CMC (Regular)	Cellex (Regular)	Milchem-CMC-MV	Fluid loss control and barite suspension in water base muds.
High Viscosity Sodium Carboxymethyl Cellulose	Magco-CMC (Hi-Vis)	Imco-CMC (Hi-Vis)	Cellex (Hi-Vis)	Milchem-CMC-HV	Fluid loss control and barite suspension in water base muds.
Tech Grade Sodium Carboxymethyl Cellulose	Magco-CMC (Tech Grade)	Imco-CMC (Tech Grade)	Cellex (Tech Grade)	Milchem CMC-TG	Fluid loss control in gyp, seawater, and fresh water muds.
Polyanionic Cellulose	Drispac	Imco Sure-Trol	Drispac	Drispac	Fluid loss control additive & viscosifier in salt muds.
Sodium Polycrylate	Cypan WL-100 SPA (Amoco)	Cypan WL-100	Cypan WL-100	Cypan WL-100	Fluid loss control in calcium free low solids and non-dispersed muds.
Paraformaldehyde	My-Lo-Jel Preservative	Imco Preservaloid	Aldacide	Preservative	Prevents bacterial degradation of fermentable products.
		LUBRICANTS, DETERGENTS, EMULSIFIERS, SURFACTANTS			
Extreme Pressure Lubricant	Bit Lube	Imco EP Lube	EP Mud Lube	Lubri-Film	Used in water base muds to impart extreme pressure lubricity.

DESCRIPTION	MAGCOBAR	IMCO	BAROID	MILCHEM	PRIMARY APPLICATION
Sulfonated Residuum	Soltex	Soltex	Soltex	Soltex	Used in water base muds to lower downhole fluid loss and minimize heaving shale.
Water Dispersible Asphalts	Stabilhole	Imco Holecoat	Baroid Asphalt	IPI (WD)	Lubricant and shale stabilizer for water base muds.
Detergent	Drilling Detergent (DD)	Imco MD	Con Det	Milchem MD	Drilling mud detergent used to prevent balling, drop sand, emulsify oil, etc.
Graphite Lubricant	Flate Graphite Lube Kote	Graphite	Graphite	Mil Graphite	Mechanical lubricant for water base muds.
Non-Ionic Surfactant	Surfak M	DMS	Aktaflo S	DMS	Primary surfactant for surfactant drilling fluids.
Non-Ionic Emulsifier	Surfak E	DME	Aktaflo E	DME	Emulsifier for surfactant muds.
Blend of Anionic Surfactants	Salinex	Imco SWS	Seamul	Atlosol	Emulsifier for muds with salt contents between 15,000 and 150,000 NaCl.
Petroleum Sulfonated Emulsifier	Magconate		Trimulso		Emulsifier for use in fresh water, calcium free, low pH muds.
Diesel-Oil Substitute	DOS-3 Drillaid 405 (Amoco)	Lubrikleen	Torq Trim	Lubrisal	Non-polluting lubricant for water base muds.
		DEFOAMERS, FLOCCULANTS			
Aluminum Stearate	Aluminum Stearate	Aluminum Stearate	Aluminum Stearate	Aluminum Stearate	Defoamer added in Diesel oil suspension for use in water base muds.

DESCRIPTION	MAGCOBAR	IMCO	BAROID	MILCHEM	PRIMARY APPLICATION
Sodium Alkyl Aryl Sulfonate	Defoamer A-40	Imco Defoam			Defoamer for saturated salt muds.
Alcohol Base Defoamer	Magconol	DFM	Surfic 300	W.O. Defoam	Defoamer for water base muds.
Flocculating Agent for Clay Solids	Floxit Slec-Floc (Amoco)	Imco Floc	Barafloc	Separan	Flocculant used to drop solids where clear water is desirable for a drlg fluid.
Co-Polymer, Flocculant and Clay Extender	Ben-Ex VAMA (Amoco)	Imco Gellex	Ben-Ex	Ben-Ex	Increases yield of bentonite to form low solids drilling fluids.
Bentonite Extender Flocculant	Rapidrill Lo-Sol (Amoco)				Polymer for extending yield of bentonite & flocculating drill solids.
		LOST CIRCULATION MATERIALS			
Fiberous Material	Mud Fiber Magco Fiber	Imco Cedar Fiber	Fibertex	Mil-Fiber	Filler and matting for material for lost circulation.
Nut Shells Fine	Nut Plug	Imco Plug	Wall-Nut	Mil-Plug	Granular loss circulation material.
Nut Shells Medium	Nut Plug	Imco Plug	Wall-Nut	Mil-Plug	Used with fibers and flake materials to regain circulation.
Nut Shells Coarse	Nut Plug	Imco Plug	Wall-Nut	Mil-Plug	For use in fractured loss zones.
Ground Mica Fine	Magco-Mica	Imco-Mica	Micatex	Mil-Mica	Used for prevention of lost circulation.
Ground Mica Coarse	Magco-Mica	Imco-Mica	Micatex	Mil-Mica	Used for prevention of lost circulation.

DESCRIPTION	MAGCOBAR	IMCO	BAROID	MILCHEM	PRIMARY APPLICATION
Cellophone Flakes	Cell-O-Seal	Imco Flakes	Jel Flakes	Mil-Flake	Used in mixture of granular and fiberous materials.
One sack combination of flake, fiber, and granular materials.	Kwik-Seal	Kwik-Seal	Kwik-Seal	Kwik-Seal	Used to seal fractures or crevices.
Cottonseed Hulls	Cottonseed Hulls	Cottonseed Hulls	Cottonseed Hulls	Cottonseed Hulls	Used for all types of lost circulation problems.
Phenolic Flakes	Pheno-Seal	Pheno-Seal	Pheno-Seal	Pheno-Seal	Used for all types of lost circulation problems.
Blended high fluid loss plugging material	Diaseal M	Diaseal M	Diaseal M	Diaseal M	One sack mixture for preparing soft plugs for severe lost circulation.
Low Density inert solids for LC plugs	Diacel-D	Diacel-D	Diacel-D	Diacel-D	Inert solid for high fluid loss soft plug squeeze preparations.
Shredded wood fiber	Chip Seal	Imco Cedar Fiber	Plug-Git	Mil-Cedar Plug	Used for general loss of returns.
Shredded cellulose material	Dick's Mud Seal	Dick's Mud Seal	Dick's Mud Seal	Dick's Mud Seal	Shredded paper particles for general loss of returns.
		SPECIALTY PRODUCTS			
Bentonite Extender	Ben-Ex	Imco-Gelex	Ben-Ex	Ben-Ex	Increases yield of bentonite to form low solids muds.
Foaming agent for brines and/or oil containing waters	Foamer 66			Amplifoam	Basic foamer for brine water Stiff-Foam.

DESCRIPTION	MAGCOBAR	IMCO	BAROID	MILCHEM	PRIMARY APPLICATION
Oil soluble Surfactant	Pipe Lax	Pipe Free	Skot Free	Petrocote	Surfactant to mix with oil to free stuck pipe.
Dry-hard blown asphalt water dispersible	Wonderseal	Imco Holecoat		ITI-WD	Used to seal micro-fractures in troublesome shales.
Oil Dispersible asphalts	Pave-A-Hole	Imco Mud Oil	Baroid Asphalt	Carbo-Seal	Used to seal micro-fractures in troublesome shales.
		OIL BASE SYSTEMS AND ADDITIVES			
Basic package for Invert Emulsion system	Vert Oil	Ken-X Kenol-S	Invermul	Carbo-Tec	Invert emulsion drilling mud and packer fluid.
Basic package for Oil Base system	Oil Faze	Ken-Supreme			Oil base drilling mud and packer fluid.
Organophilic Clay	VG-69	Ken Gel	Geltone	Carbo-Gel	Viscosifier and gelling agent for oil muds.
Liquid Organic Surfactant	DV-33	Ken-X Conc #3	Duratone HT	Surfcote	Oil wetting agent for water base solids.
Blended supplementary emulsifier and wetting agent	SE-11		EZ-Mul	Carbo-Mul	Used for aiding oil wetting and emulsifications.
Surfactant Cleaner	KU-1		Slik-5		Cleaning agent to cut oil and grime from metal parts and to wash up with on oil mud jobs.
High temperature FLC additive for oil muds	DV-22				Controls HT-HP fluid loss of oil base systems.

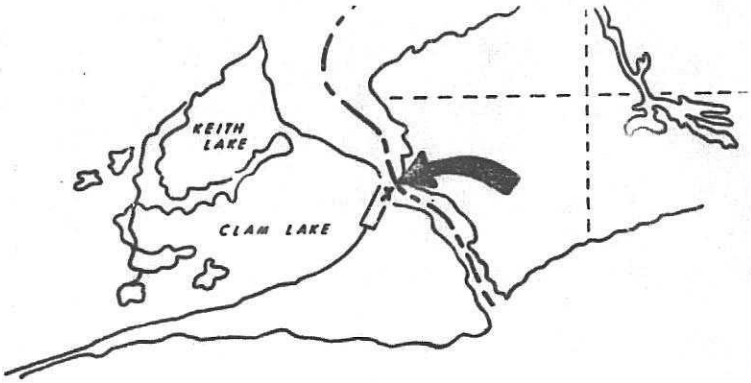
DESCRIPTION	MAGCOBAR	CHAMPION	IMCO	BAROID	MILCHEM	PRIMARY APPLICATION
Amine Type Inhibitor	Magco Inhibitor A-101	RDF-101	PT-102	Burflo B 33 Biocide & pH	Ami-Tec	For fresh water packer muds.
Drill Pipe Corrosion Inhibitor	Magco Inhibitor A-202	DF-18	PT-102	Coat 415	Ami-Tec Acqua-Tec	Persistent film corrosion protection for drill pipe.
Water Soluble Inhibitor for Brines	Magco Inhibitor A-303	Bactron 4 & pH		Coat-B-1400 Coat-122		For clear brines.
Oxygen Scavengers	(a) OS-1 OS-1L + Magcor[illegible]	(a) RDF 109 2207 & pH + Bactron 4-B-142 (b) RDF 108		Coat 888 (dry) Coat 777 (liq) + W-300 Defoamer Coat 113	Noxygen Noxygen-L + W-0 Defoamer or LD 8 Defoamer	(a) Removes oxygen (b) Films pipe
Organic Phosphate Type Inhibitor		Gyptron		Surflo H-35	DFE-1000	Tublar goods scale inhibitor
Sulfide Scavenger	[illegible]ge Zinc Carbonate Zinc Chromate SCAV-730 (experimental)	2207 + pH + Bactron 4	Crack-Chek Sulf-X	Zinc Oxide Ironite Sponge (also used as cataylizer for oxygen scavenger)	Mil-Gard	Used to treat H_2S intrusions.
Oil Base Casing Pack Fluids	Oil Faze & Vert Oil with Treated Asbestos		Ken-Pak	Invermul Csg Pack	Carbo-Tec Invert Csg. Pack	Oil Base Annular Packer Fluid

DESCRIPTION	MAGCOBAR	IMCO	BAROID	MILCHEM	PRIMARY APPLICATION
*Sodium Chromate	Sodium Chromate	Sodium Chromate	Sodium Chromate	Sodium Chromate	Used in water base muds to prevent high temperature gelation.
Sodium Hydroxide	Caustic Soda	Caustic Soda	Caustic Soda	Caustic Soda	For pH control in water base muds.
Sodium Carbonate	Soda Ash	Soda Ash	Soda Ash	Soda Ash	For treating out calcium sulfate in low pH muds.
Sodium Bicarbonate	Sodium Bicarbonate	Sodium Bicarbonate	Sodium Bicarbonate	Sodium Bicarbonate	For treating out calcium sulfate or cement in high pH muds.
Barium Carbonate	Barium Carbonate	Barium Carbonate	Anhydrox	Barium Carbonate	For treating out calcium sulfate (pH should be above 10 for best results).
Calcium Sulfate	Gypsum	Gypsum	Gypsum	Gypsum	Source of calcium for formulating gyp muds.
Calcium Hydroxide	Lime	Lime	Lime	Lime	Source of calcium for formulating lime muds.
Sodium Chloride	Salt	Salt	Salt	Salt	For saturated salt muds and resistivity control.
Chrome Alum	Chrome Alum	Chrome Alum	Chrome Alum	Chrome Alum	For use in cross-linking XC-Polymer systems.
Cement (all types)	Cement	Cement	Cement	Cement	Bulk cement used in cementing operations.
Calcium Chloride	Calcium Chloride	Calcium Chloride	Calcium Chloride	Calcium Chloride	Calcium salt used to control activity in oil muds.

*Not to be dumped into surrounding environment.

DESCRIPTION	MAGCOBAR	IMCO	BAROID	MILCHEM	PRIMARY APPLICATION
Potassium Chloride (Muriate of Potash)	Potassium Chloride	Potassium Chloride	Potassium Chloride	Potassium Chloride	Potassium salt used in KCl systems.
Caustic Potash	Potassium Hydroxide	Potassium Hydroxide	Potassium Hydroxide	Potassium Hydroxide	Used to control pH in potassium base system.
Chromic Chloride					Cross-linking agent for Duovis systems.

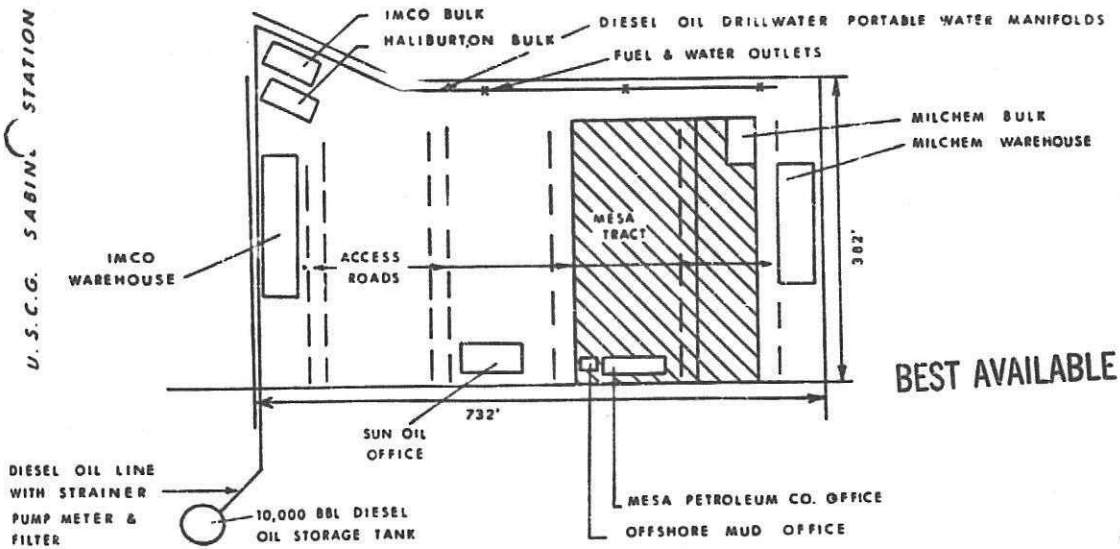
APPENDIX D



SITE OF SABINE PASS BASE

SABINE PASS CHANNEL

U.S.C.G. SABINE STATION



BEST AVAILABLE COPY

MESA PETROLEUM CO.
GULF COAST DIVISION

SABINE PASS BASE

G-0405

MONITORING PROGRAM

HIGH ISLAND AREA, SOUTH EXTENSION, EAST ADDITION, BLOCK A-331

MESA PETROLEUM COMPANY

Lease OCS-G 3250

February 29, 1980

High Island Area, Block A-331 is in near proximity to the topographic feature 29 Fathom Bank. 29 Fathom Bank, located in Block A-329, has been designated as a "Protected Area of Biological Significance". (See BLM OCS Sale A62 and 62 EIS Visual No. 4). Operations that occur within the 1 Nautical Mile Zone, an area within a 1 nautical mile line measured from the 64 meter depth contour of 29 Fathom Bank, will shunt all drill cuttings and drilling fluids through a downpipe that terminates within ten meters of the bottom. Operations that occur within the zone between the 1 nautical mile line and a line 3 nautical miles from the 64 meter depth contour, the 3 Nautical Mile Zone, will either (1) shunt all drill cuttings and drilling fluids through a downpipe that terminates within ten meters of the bottom or (2) conduct a monitoring plan designed to assess the effects of exploration operations on the biotic communities of 29 Fathom Bank.

Mesa Petroleum Company, as the designated operator, has submitted in their Plan of Exploration the following proposed surface locations for six wells;

Well Number	Proposed Surface Location
1	5200' FNL; 3700' FEL
2	1000' FSL; 2300' FWL
3	700' FSL; 500' FWL
4	3750' FNL: 950' FEL
5	5250' FNL; 400' FEL
6	1000' FNL; 700' FEL

The location of well No. 6 is within the 1 Nautical Mile Zone and must be shunted. The location of wells Nos. 1,2,4 and 5 are within the 3 Nautical Mile Zone; for these wells, Mesa has selected the option to conduct a monitoring program during their exploration activities. Well No. 3 is located outside of the 3 Nautical Mile Zone and is therefore exempt from the monitoring program.

This monitoring program is designed to obtain and analyze samples from the top of the Bank, the southwestern flank of the Bank, and an area between the drillsites and the Bank. The program consists of: I. General Requirements; II. Pre-Drilling Investigation; III. Monitoring During Drilling; IV. Post-Drilling Investigation and V. Reporting of Results. See the attached Figure 1 for the bathymetry of 29 Fathom Bank and Figure 2 for sampling station locations.

I. GENERAL REQUIREMENTS

A. The Oil and Gas Supervisor for Operations Support will be notified immediately if any unusual observation is made that might be detrimental to

the viability of the biotic communities of 29 Fathom Bank. The Oil and Gas Supervisor may then require the shunting of drilling fluids and drill cuttings to protect 29 Fathom Bank.

B. The sampling cruises will be coordinated with the Oil and Ga[illegible] for Operations Support and will accommodate at least one representative [illegible] Department of Interior.

C. No halogenated phenol bactericides will be used in any [illegible] activity (see Federal Register, 7/3/79). If any bactericides are conside[illegible] for use, an application shall be submitted to the Oil and Gas Supervisor for Operations Support for approval before utilization.

D. The source of barite utilized will meet the minimum API standards in Specifications 13A.

E. The USGS marine sediment sample MAG-1 will be analyzed for barium and chromium to determine the accuracy of the analytical methods used. A discussion of the findings should be included in the final report. (Refer to Gettleson, D. A. and C. E. Laird 1980, Benthic Barium Levels in the Vicinity of Six Drillsites in the Gulf of Mexico, for "State of Art" chemical methodology.)

F. A daily Drilling Mud Report will be maintained in a format similar as provided in API RP 47 (1969), with an estimate of the amount (pounds/day) of barium, chromium, drilling muds, and drill cuttings discharged and their calculation methodology.

G. A contingency plan will be submitted prior to drilling, listing the names, amounts, and locations of supplies and equipment for use in the event of a blowout. If a blowout occurs, this monitoring program may be modified by the Oil and Gas Supervisor for Operations Support to investigate the environmental effects to 29 Fathom Bank.

H. During the drilling activity, an optimum amount of washing and dilution water will be used to maintain a maximum dilution of drilling fluids and cuttings during disposal.

I. The data collected during the post-drilling investigations may be used as the pre-drilling investigation data for subsequent wells upon approval by the Oil and Gas Supervisor for Operations Support.

II. PRE-DRILLING INVESTIGATION

A. Monitoring of the Bank

1. Three monitoring sites will be established on the Bank. These sites will be located on the southwestern side of 29 Fathom Bank along a line from the crest of the Bank to approximately a mid-way point between the proposed surface locations of wells Nos. 4 and 5.

2. Monitoring Site "A" will be established within the 52 meter depth contour near the crest of the bank.

a. A sediment trap will be placed at Site "A" prior to the commencement of drilling. The sediment trap will remain in place throughout exploration activities and the samples retrieved after the completion of each well. (Refer to Hargrave and Burns, Journal of Limnology and Oceanography, Volume 24, pages 1124-1186 for the "State of the Art" concerning sediment traps.)

b. A sediment sample will be collected at Site "A" and analyzed for barium and chromium.

c. Vertical profiles will be made at 5-meter intervals for transmissivity, salinity, and temperature at Site "A".

3. Monitoring Site "B" will consist of a line transect between Site "A" and "C". Remote photographic documentation will be made at two locations to characterize community assemblages and their health or abnormal conditions. An overview and close-ups color photographs will be made at the two locations.

4. Monitoring Site "C" will be established between the 56 and 60 meter depth contour. A sediment sample will be taken and analyzed for barium and chromium.

5. Vertical profiles will be made at 5-meter intervals for transmissivity, salinity and temperature at Site "C".

B. Monitoring Locations Between the Drill Sites and 29 Fathom Bank

Sampling Site "D" will consist of Stations 1, 2, 3, 4, and 5 and a current meter array location.

1. Stations 1, 2, 3, 4 and 5 will be located to approximate the sampling pattern as illustrated in Figure 2.

2. Sediment samples will be taken at Stations, 1, 2, 3, 4 and 5 and analyzed for barium and chromium.

3. Vertical profiles will be made at 5-meter intervals for transmissivity, temperature and salinity at stations 1, 2, 3, 4 and 5.

4. A continuous recording current meter array will be anchored at a midway point between Stations 4 and 5. Meters will be set at appropriate levels to register the presence of bottom, mid-level and surface current direction and speed with a minimum of three current meters. The current meters will record throughout all drilling activity.

III. MONITORING DURING DRILLING OPERATIONS

A. A single continuous recording current meter will be placed as close as possible to the drilling rig on the Bank side and at the level in the water column where discharge is received. The metering instrumentation will be designed

so that a direct readout must be utilized before any bulk dumping of drilling fluids occurs. Bulk dumping will occur only when the current direction is away from 29 Fathom Bank. Guidelines for restrictive envelopes for each drillsite are between the following compass bearings:

Well	Degrees
1	35° - 75°
2	25° - 45°
4	27° - 75°
5	20° - 65°
6	35° - 100°

When mud is bulk dumped, the amount (bbls.), the rate (bbls./min.), the density (lbs./gal.), percent solids and the starting and stopping time of the discharge will be reported.

B. Station No. 2 will be occupied during ongoing drilling activity and plume occurence. Vertical profiles will be taken for temperature, salinity, and transmissivity every three hours for one 24 hour period. Sampling time would be approximately midway through the drilling of each well.

C. A representative composite sample of discharged drilling mud and drill cuttings will be analyzed for barium and chromium.

IV. POST-DRILLING INVESTIGATION

After the completion of all drilling activities at each well, a post-drilling investigation will be implemented.

A. Monitoring of the Bank

1. The sediment trap samples at Site "A" will be collected and analyzed for barium and chromium. The sediment trap will be reset for subsequent wells.

2. A sediment sample will be taken at Site "A" and analyzed for barium and chromium.

3. Remote photographic documentation will be made at the two Site "B" locations. The health or abnormal conditions of the observed bank communities will be determined.

4. A sediment sample will be taken at Site "C" and analyzed for barium and chromium.

5. Vertical profiles will be made at 5-meter intervals for transmmissivity, salinity and temperature at Site "C".

B. Monitoring Location Between the Drillsites and 29 Fathom Bank

1. Sediment samples will be taken at Stations 1, 2, 3, 4, and 5 of Site "D". The samples will be analyzed for barium and chromium.

2. Vertical profiles will be made at 5-meter intervals for transmissivity, salinity and temperature at stations 1, 2,.3, 4 and 5.

3. The data from the current meters will be retrieved. The meters will be reset for subsequent monitoring of remaining wells.

V. REPORTING

A. Within one month of the termination of drilling activities at each well, three draft copies of the monitoring program results shall be submitted to the Oil and Gas Supervisor for Operations Support for review and comment prior to acceptance of the final report.

B. A formal monitoring program critique will be presented by the lessee at the USGS Metairie Office as soon as practicable after submission of the draft report.

C. Three copies of the final report shall be submitted to the Oil and Gas Supervisor for Operations Support within one month of the monitoring program critique. The report will consist of a comprehensive narrative presentation and analyses to include, but not to be limited to, the following:

1. The introduction to the report will include an executive summary that will be independent of the remaining text.

2. The results of the sediment barium and chromium analysis will be submitted in tabular form. The data will be presented in graphic form to show changes in concentration. Also, the changes in concentrations will be illustrated on a sampling pattern map that includes the monitoring stations.

3. The transmissivity, salinity, and temperature data will be presented in tabular form. Their distribution will be illustrated in drawings or graphs and discussed in the text.

4. Current meter readings will be presented in tabular form, interpreted, and illustrated as "current roses" and discussed in the text.

5. A section of the report will describe the equipment and instrumentation used in the program and the chemical analysis methodology.

6. Representative photographic documentation and a narrative interpretation of observations will be presented and discussed in the text.

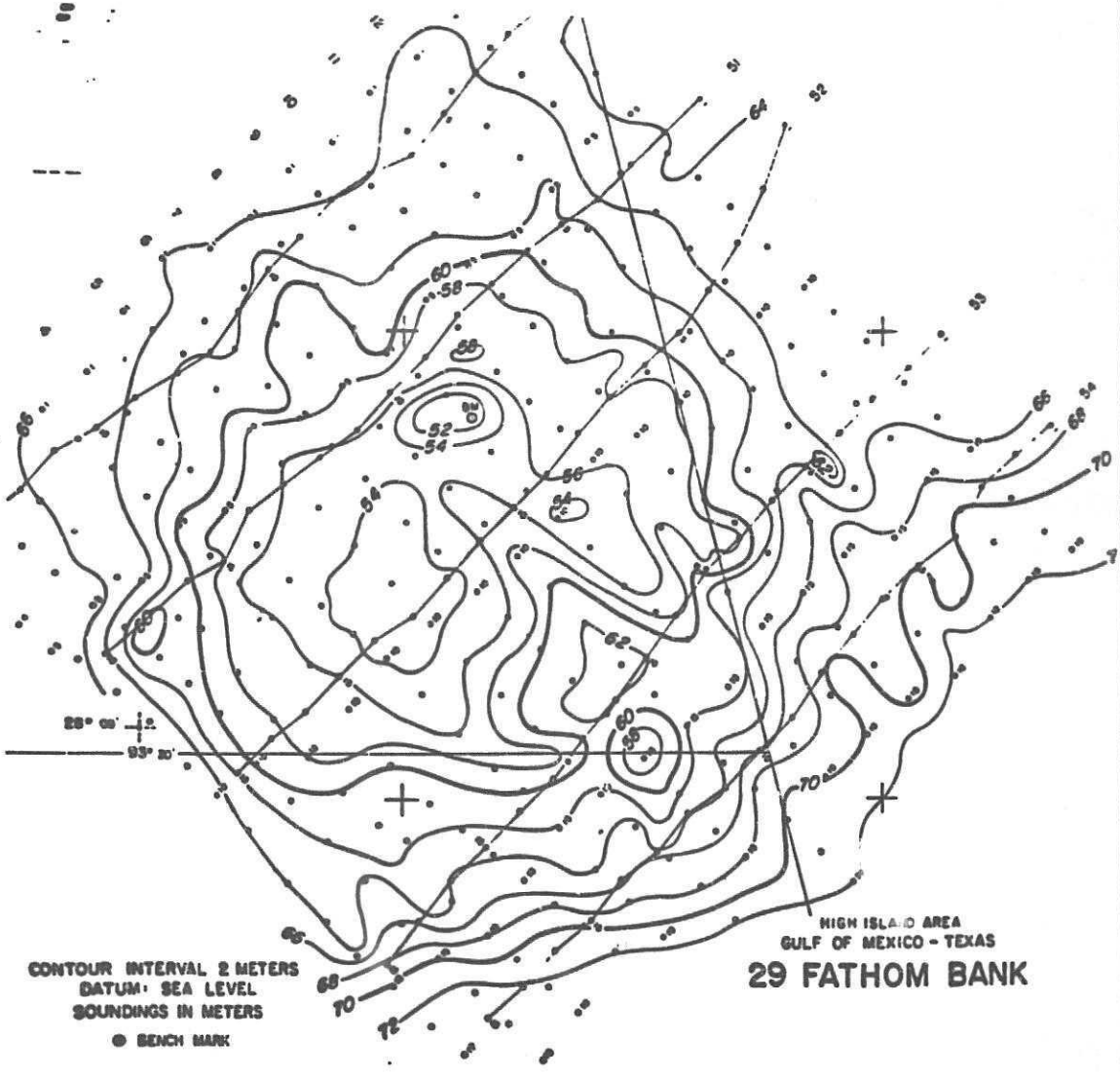
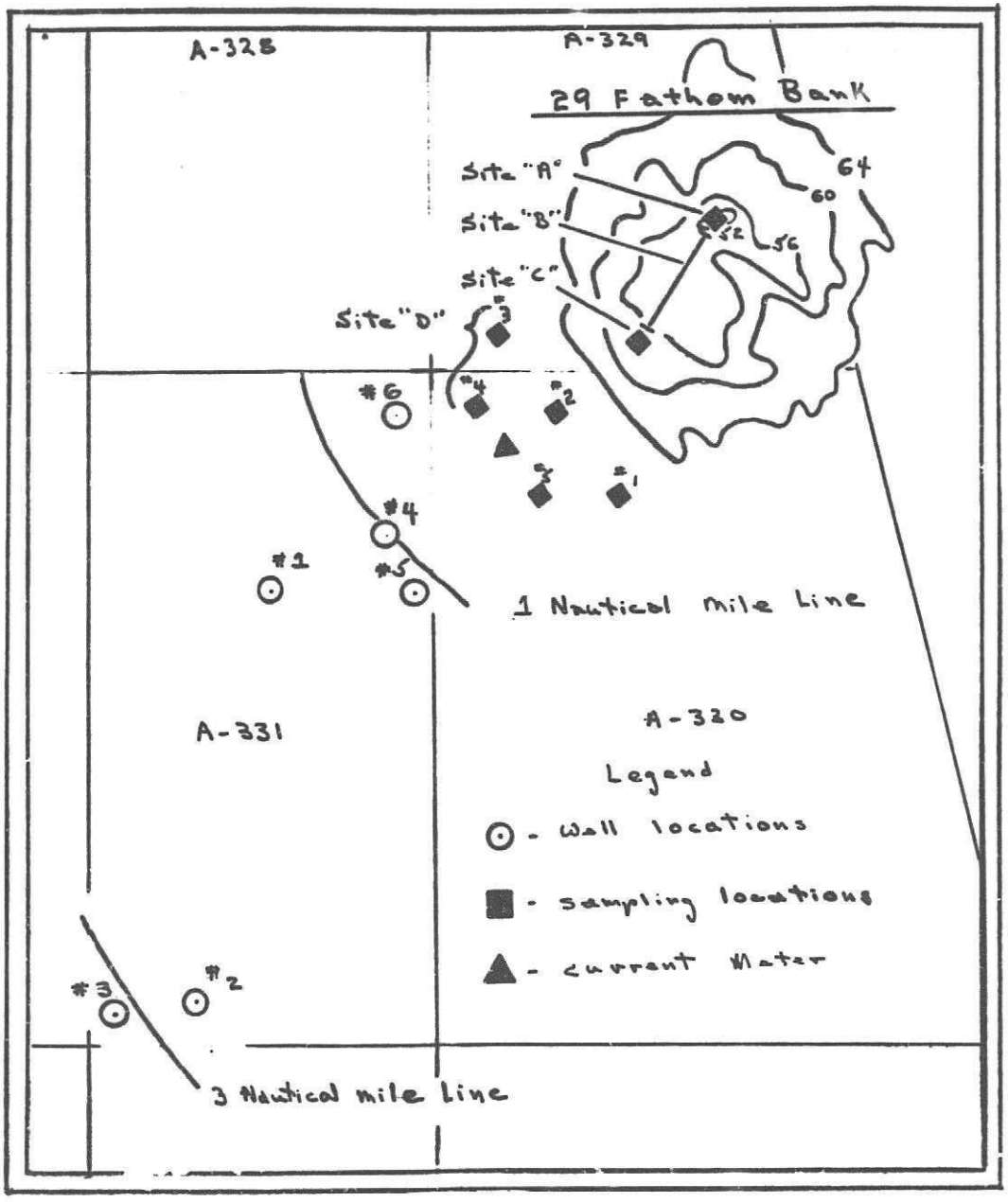


Figure 1



High Island Area

Figure 2

Review of Monitoring Program Activity

Investigations	Sediment Trap	Photographs	Sediment Sample	Transmissivity	Salinity	Temperature	Current Meter
Pre-drilling							
Site "A"	+		+	+	+	+	
Site "B"		+					
Site "C"			+	+	+	+	
Site "D"			+	+	+	+	+
#1,#2,#3							
#4 & #5							
Drillsite							
Drilling Operations							
Site "A"	+						
Site "B"							
Site "C"							
Site "D", #2			+	+	+	+	+
Drillsite							+
Post-drilling							
Site "A"	+		+				
Site "B"		+					
Site "C"			+	+	+	+	
Site "D"			+	+	+	+	+
#1,#2,#3							
#4 & #5							
Drillsite							