DATE 2-6-87

TO: OPS-3-4

FROM: FO-2-1

Unit Plan of Exploration/[redacted] and Environmental Report

Lease(s) OCS-G6957,6958,6962 Control No. U-475

ARCO Oil and Gas Company
Southern District
Regulatory Compliance and
Environmental Department
Post Office Box 1346
Houston, Texas 77251
Telephone 713 584 6639

January 29, 1987

PUBLIC INFORMATION

Mr. Daniel Bourgeois
Regional Supervisor
Office of Field Operations
Minerals Management Service
Gulf of Mexico OCS Region
1420 South Clearview Parkway
New Orleans, LA 70123

Re: Plan of Exploration (POE)
Mississippi Canyon Block 486, 487 and 530
OCS-G 6957, 6598, 6962

Dear Mr. Bourgeois:

ARCO Oil and Gas Company, a Division of Atlantic Richfield Company, hereby submits five proprietary copies and four public information copies of the Plan of Exploration (POE) and Environmental Report (ER) with a Louisiana Coastal Zone Consistency Certification for Mississippi Canyon Block 486, 487 and 530. These blocks are part of an Exploratory Unit approved effective November 1, 1986. The unit was assigned Unit Agreement No. 7543870010. The POE was prepared in accordance with 30 CFR 250.34 and provides for the drilling of nine proposed wells beginning on or about February 28, 1987.

If you need any further information in your review, please call me at (713)584-6104.

Sincerely,

1/29/87

Belinda V. Breaux
Regulatory Compliance & Environmental Coordinator

BVB:lmh

c: Mr. Jack Hendricks - MMS New Orleans District w/attachments
File - MC 486 Gen. Lse
- MC 486 W/F

MINERALS MANAGEMENT SERVICE
RECEIVED
FEB 02 1987
FIELD
OPERATIONS
Gulf of Mexico OCS Region, New Orleans, La.

ARCO Oil and Gas Company
A Division of Atlantic Richfield Company

PLAN OF EXPLORATION

For

Mississippi Canyon Blocks 486, 487, and 530

OCS-G 6957, 6958, and 6962

This Plan of Exploration for Mississippi Canyon Blocks 486, 487, and 530, OCS-G 6957, 6958, and 6962, was prepared in accordance with 30 CFR 250.34, OCS Orders Nos. 2 and 7, Notice to Lesses 83-3, and Department of Interior Secretarial Order 2974, revised January 19, 1977.

Mississippi Canyon Blocks 486, 487, and 530 were leased by ARCO Oil and Gas Company in the April, 1984, Central Gulf of Mexico Oil and Gas Lease Sale 81. These three blocks are part of an Exploratory Unit approved effective November 1, 1986, and assigned Unit Agreement No. 7543870010. The shallow hazards geophysical survey was conducted by Ocean Marine Geophysics Inc. from July 23 to August 13, 1984. Drilling of the first exploratory well is scheduled to begin about February 28, 1987, subject to approval of the Plan and subsequent Permit to Drill. The proposed well locations and spud dates are as follows. The schedule is tentative in the meaning of 30 CFR 250.34-1 (a).

Well Location	Surface Location	Drilling Days	Anticipated Spud Date
A	675' FSL & 3500' FEL of MC 486	60	Feb. 28, 1987
B	5000' FNL & 5150' FEL of MC 486	60	April 30, 1987
C	6600' FSL & 4100' FEL of MC 486	60	June 30, 1987
D	3200' FSL & 2000' FEL of MC 486	60	August 30, 1987
E	100' FSL & 2100' FEL of MC 486	60	Oct. 30, 1987
F	4750' FSL & 1400' FWL of MC 487	60	Dec. 30, 1987
G	4000' FSL & 6100' FEL of MC 487	60	March 1, 1988
H	3100' FNL & 4550' FEL of MC 530	60	May 1, 1988
I	6050' FSL & 7800' FEL of MC 530	60	July 1, 1988

Additional exploratory drilling must be predicated upon the need to define reservoir limits and/or structures. The installation of platforms, producing facilities, and pipelines are contingent upon the success of the proposed wells. Other exploratory activities which may be conducted under this plan are a wellbore velocity survey and an soil boring.

The proposed wells will be drilled from a Mobile Offshore Drilling Unit such as Penrod Drilling Company's semi-submersible rig PENROD 78. A Schematic of the PENROD 78 is attached with a description of the blowout prevention equipment and diverter system. ARCO Oil and Gas Company supervisory drilling personnel are trained in blowout prevention and control procedures.

Plan of Exploration
Mississippi Canyon Blocks 486, 487 and 530
OCS-G 6957, 6958, and 6962
Plan 2

No waste products which contain oil will be disposed of into the Gulf of Mexico, Domestic wastes will be treated onboard with U.S. Coast Guard approved sanitation treatment facilities. Effluent waters, deck drainage, formation waters, and drilling fluids will be disposed of according to the stipulations of the U.S,. Environmental Protection Agency's National Pollutant Discharge Elimination System (NPDES) General Permit GMG 280000.

Spill reporting procedures and a list of company personnel responsible for pollutant spill cleanup are contained in the Oil Spill Contingency Plan approved by the Minerals Management Service on May 14, 1986. The Clean Gulf Associates (CGA) has oil spill cleanup equipment available for use by ARCO, as a member company. The equipment is stored at Grand Isle, Venice, Cameron, Houma, Theodore and Intercoastal City, Louisiana and at Galveston, Texas City, Port Aransas, and Fulton, Texas. Response time for a spill in The Mississippi Canyon 486 unit could vary from 6 to 12 hours depending on the location of company operated or available for charter workboats. Natural gas is expected to be the only mineral found on this lease; however, liquid hydrocarbons may be found which would increase the probability of a potential pollution incident.

The Mississippi Canyon 486 Unit is located approximately 46 miles from the nearest shoreline judged to be a point near the U.S. Coastal and Geodetic Survey Benchmark "SW Pass Lighthouse". The water depth varies from 560 feet in the central area of Block 486 to 1760 feet in the northeast corner of Block 487. A Vicinity Plat is attached for reference. Drilling operations will be supported from ARCO Oil and Gas Company's Venice, Louisiana shorebase.

In compliance with Minerals Management Service Notice to Lessees 83-3, a shallow hazards survey report with maps is attached. Also attached are an Environmental Report with a Louisiana Coastal Use Consistency Certification, a Projection of Air Emissions, Structure Map, Schematic Cross Section, Approximate Top of Abnormal Pressure Plat, Location Plat, and a drilling/additives list. A cultural resources report was not required for these Mississippi Canyon Blocks. Site specific examination of the data in the immediate vicinity of each proposed location indicates no significant drilling hazards.

4/29/87

Belinda V. Breaux
Regulatory Compliance & Environmental Coordinator

BVB:lmh

PROJECTED AIR EMISSIONS

for

Plan of Exploration

on

Mississippi Canyon Area

Blocks 486, 487, and 530

OCS-G 6957, 6958, and 6962

Description of Temporary Facility Under Part 250.34-1 (a)

The nine proposed exploratory wells on Mississippi Canyon Blocks 486, 487, and 530 will be drilled using a semi-submersible rig such as PENROD Drilling Company's PENROD 78. The rig is capable of drilling to 30,000' in up to 3000' of water.

The rig is powered by four (4) EMD 16-645E98 diesel engines. Each is rated at 3320 HP and drives a 2100 KW 60 volt AC generator. The draw works, mud pumps, and rotary equipment are operated on electrical power. Other equipment using diesel engines are the two National Supply OS435HD Hydraulic/Diesel cranes.

The rig is dynamically positioned using four (4) Schottel type S 1502 LS 360 degree full Azimuthing thrusters. Each thruster is driven by a 2000 HP DC motor. Eight (8) intergrated Power Systems Corp., Model 2200 M SCR units are used to supply DC power for drilling and mooring functions.

Calculation of Emission Exemptions - Part 250.57-1 (d)

Mississippi Canyon Blocks 486, 487, and 530 are located 46 miles from the nearest judged shoreline to be a point near the U.S. Coastal and Geodetic Survey's benchmark "SW Pass Lighthouse".

Carbon Monoxide (CO)	$= 3400(D)^{2/3}$ TPY $= 43,650$ TPY	$= 3400\ (46)^{2/3}$ TPY
(TSP), (SO_x), (NO_x) & (VOC)	$= 33.3(D)$ TPY $= 1532$ TPY	$= 33.3\ (46)$ TPY

Criteria for Calculations of PROJECTED EMISSIONS

Start MC 486 #1 (Well A)	± 2-28-87
Drilling time for MC 485 #1, PTVD 9000'	60 days
HP-hr/day for four Prime Movers, EMD 16-645E9BV, operating at 75% of rated continuous power, 4 X 3320 HP X 75% X 24 hr.	9960 HP-hr
HP-hr/day for two cranes operating 6 hrs/day, 2 X 90 HP X 6hr	1080 HP-hr
Total power usage per day	11,040 HP-hr

Emission Factors[1]

Sulfur Oxides (SO_x)	2.8 lb/10^3 HP-hr
Carbon Monoxide (CO)	6.4 lb/10^3 HP-hr
Hydrocarbons (HC)	0.63 lb/10^3 HP-hr
Nitrogen Oxides (NO_x)	24.0 lb/10^3 HP-hr
Particulates (TSP)	2.4 lb/10^3 HP-hr

[1]Table 3.3.4-1 Emission Factors for Stationary Large Bore Diesel and Dual Fuel Engines EPA Report, AP 42

Projected Emissions

SO_x 2.8 $16/10^3$ HP-hr X 11,040 HP-hr X 60 days X 0.0005 T/lb
= 0.93 T

CO 6.4 $lb/10^3$ HP-hr X 11,040 HP-hr X 60 days X 0.0005 T/lb
= 2.12 T

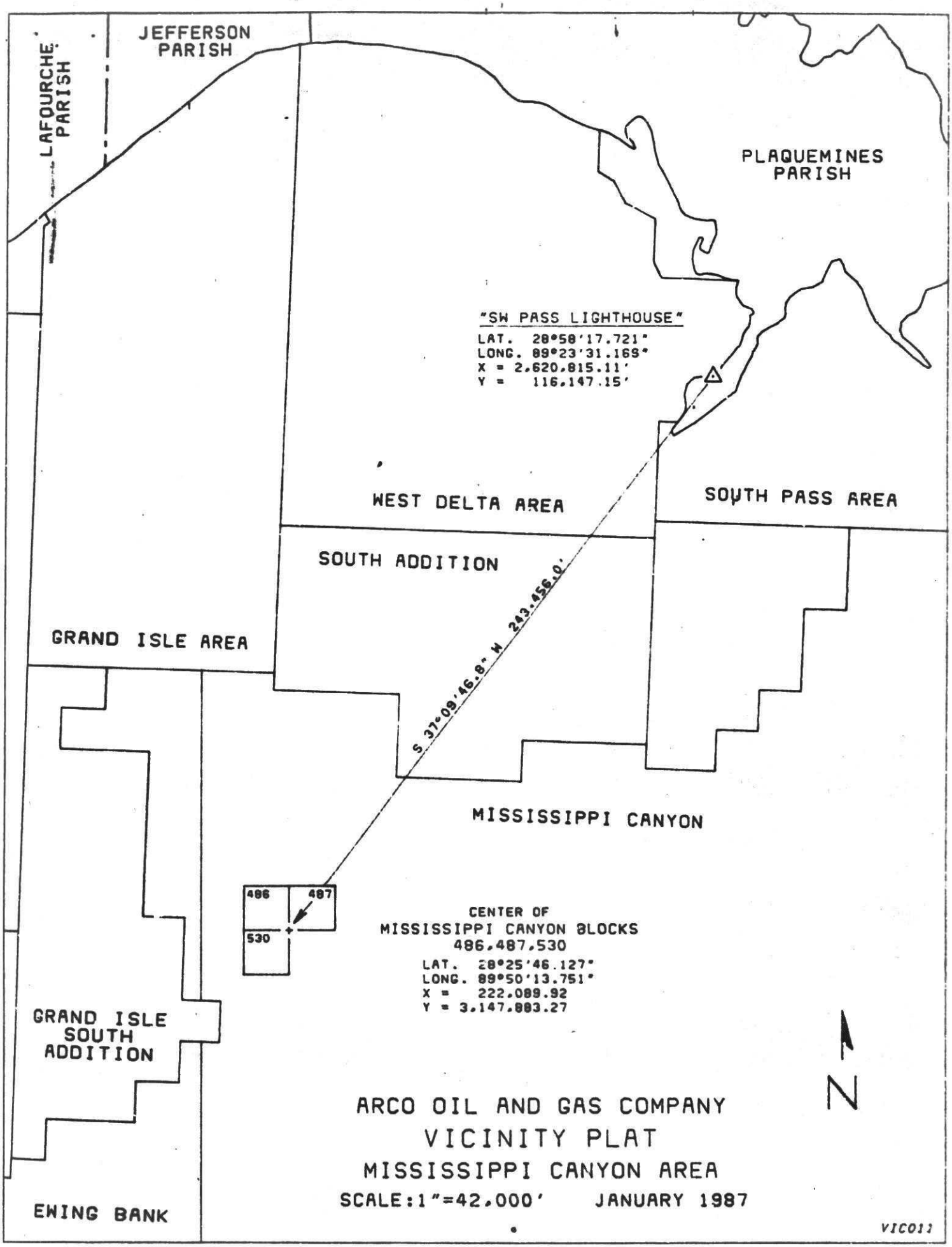
VOC 0.63 $lb/10^3$ HP-hr X 11,040 HP-hr X 60 days X 0.0005 T/lb
= 0.21 T

NO_x 24.0 $lb/10^3$ HP-hr X 11,040 HP-hr X 60 days X 0.0005 T/lb
= 7.95 T

TSP 2.4 $lb/10^3$ HP-hr X 11,040 HP-hr X 60 days 0.0005 T/lb
= 0.79 T

Total emissions for the remaining wells B through I can be approximated based on the above calculation since the target total depths are all within 8500' - 10,000' PTVD. Total projected air emissions and total exemptions for all nine exploratory wells is as follows:

	Projected	Exemption
SO_x	8.37 T	1,532 TPY
CO	19.08 T	43,650 TPY
VOC	1.89 T	1,532 TPY
NO_x	71.55 T	1,532 TPY
TSP	7.11 T	1,532 TPY



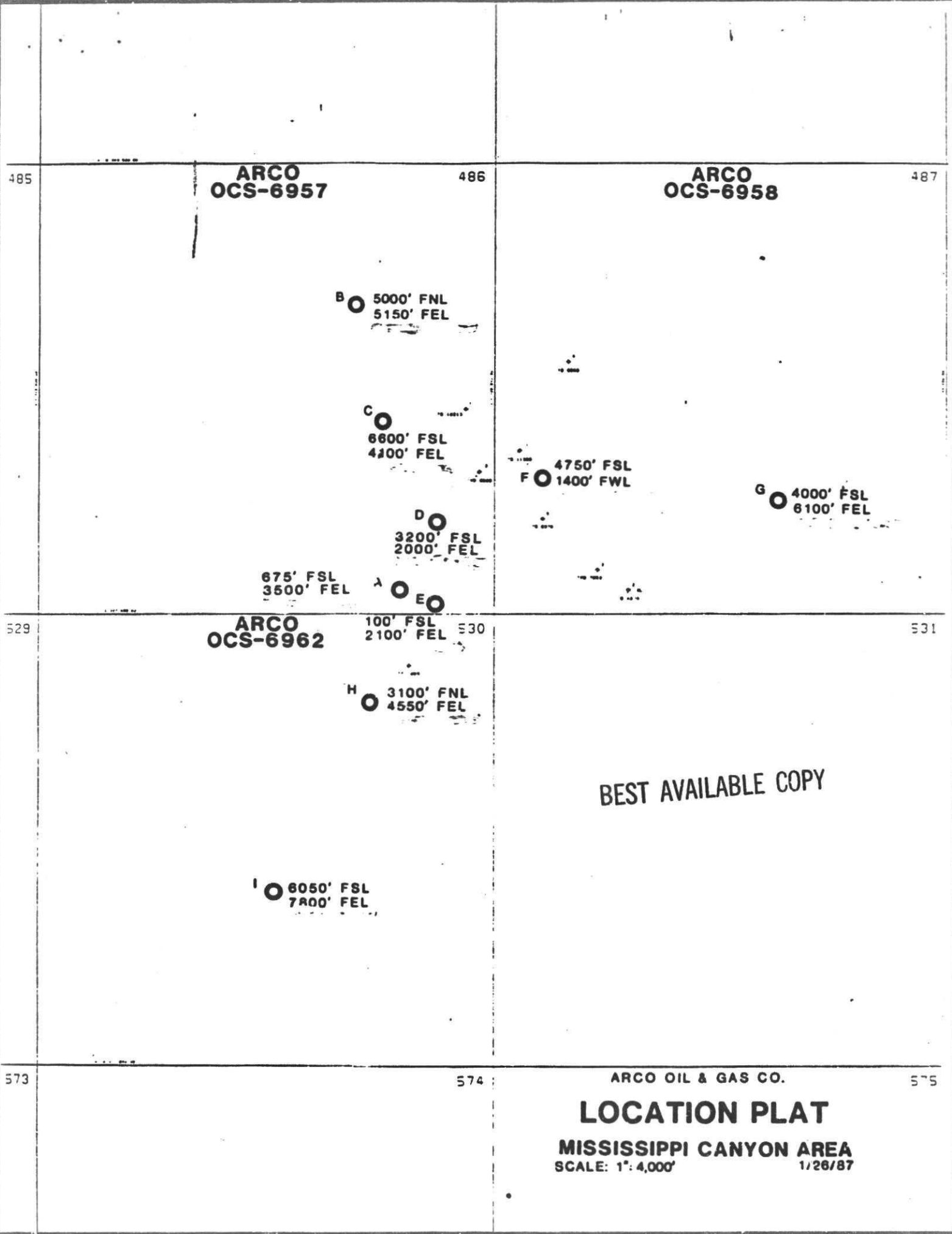
ARCO OIL AND GAS COMPANY

VICINITY PLAT

MISSISSIPPI CANYON AREA

SCALE: 1"=42,000' JANUARY 1987

VIC011



EXPLORATION PLAN

Mississippi Canyon Blocks 486, 487, and 530

OCS-G 6957, 6958, and 6962

Exploratory Drilling Vessel

with

Safety and Pollution Prevention Equipment

A semi-submersible drilling rig, such as the PENROD 78, will be used to drill on the deep water Mississippi Canyon Blocks. Attached is a rig schematic and a drawing of the surface diverter system. A list follows of the rig's blowout preventer (BOP) system for safety and pollution prevention as required by OCS Orders No. 2 and 7.

1 - Regan type KFDS diverter

1 - 18-3/4" Cameron type U 10 M psi WP double with 5" pipe rams in the bottom and 2-7/8" X 5" VBR in the top

1 - 18-3/4" Cameron type U 10 M psi WP double with blind shears in the top and 3-7/8" X 5" VBR in the bottom.

2 - 18-3/4" Cameron 5M psi WP type D annular preventer

14 - Fifteen gallon 3 M psi WP separator type accumulator bottles mounted on the stack.

Surface equipment is controlled by a Koomey Hydraulic Sub-Sea BOP Control System with master electric driller's control panel and remote panel.

PENROD 79

RIG DESIGN: Hitachi Zosen/Friede & Goldman

CONSTRUCTION: Built by Hitachi Zosen, Ariake Works, Japan, 1983.

PERFORMANCE: Water depth—3,000'. Drilling depth—30,000'.

QUARTERS: 90 persons.

HULL: 334' x 230' x 124'.

VARIABLE LOAD: 2,200 mt.

HELIPORT: Octagon, 83.6' across flats; 90.2' across corners.

STORAGE: Mud & Cmt Bulk—11,850 bbl; Fuel—14,900 bbl; Water for Drilling—10,000 bbl; Potable—4,200 bbl.

DRILLING EQUIPMENT: Drawworks—Nat'l 1625-DE. Pumps—two Nat'l 12-P-160 Triplex. Prime Movers—four EMD model MD16E9B. Rotary Table—Nat'l C-495.

DERRICK: DSI 165', 1,250,000-lb hook load.

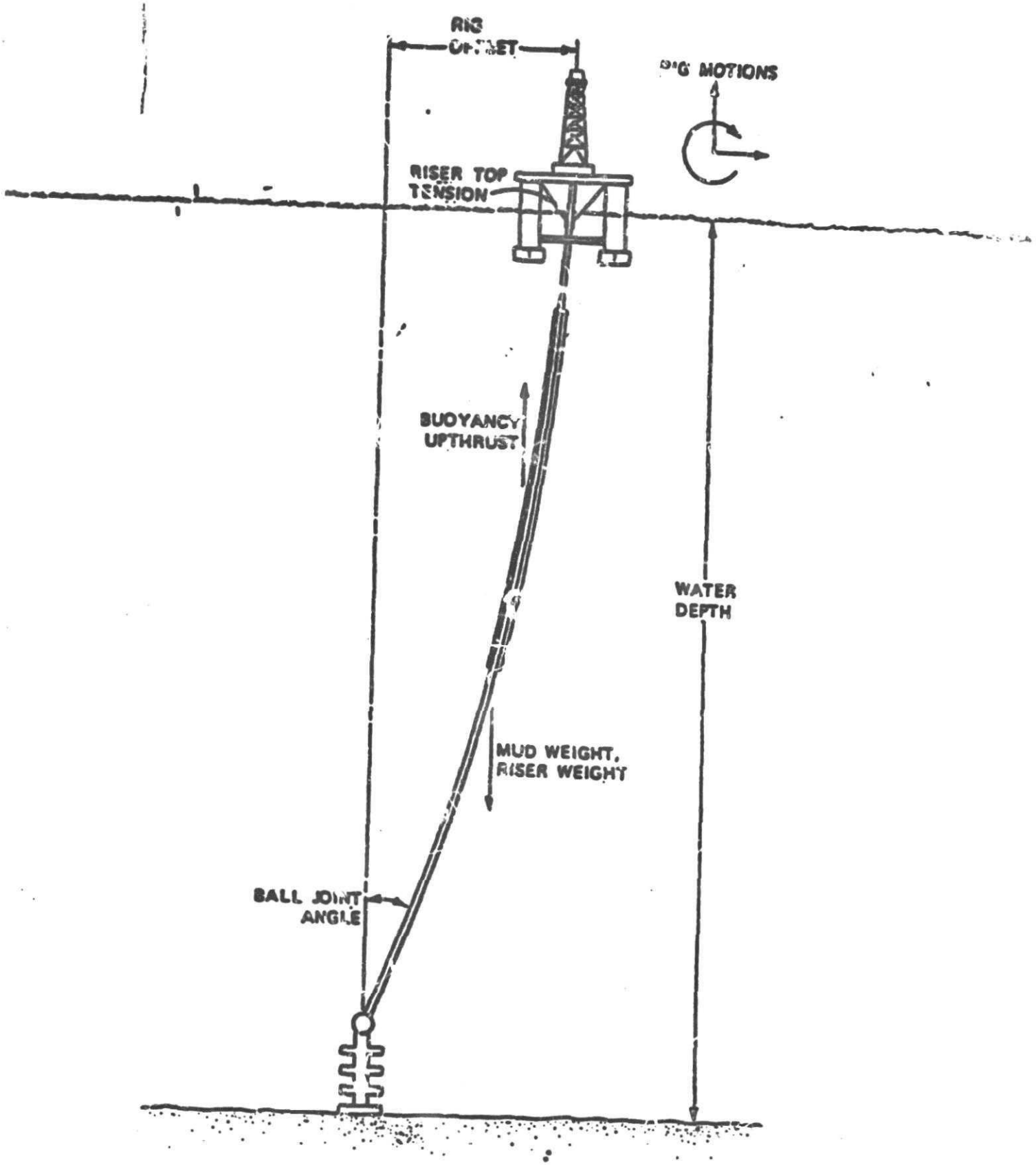
CRANES: Two Nat'l OS435HD, 52.5 t @ 30' w/ 150' booms.

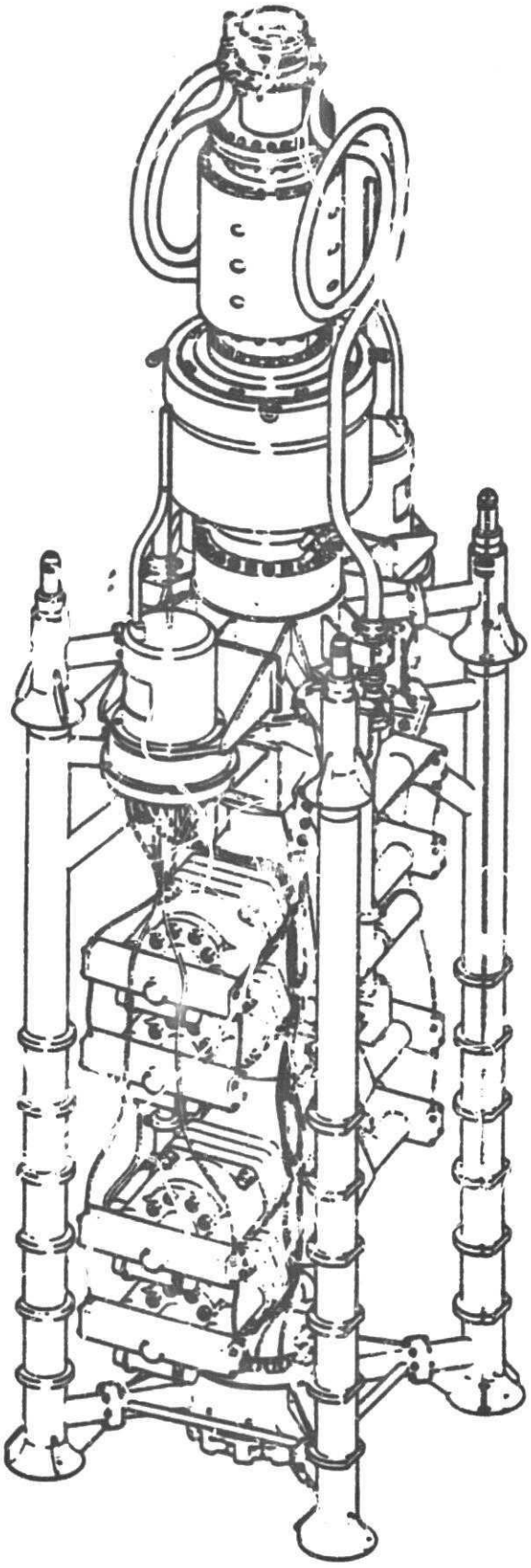
MOORING: Eight-point pattern, four Skagit model ETW-350/48 double-drum, double wildcat combination winch and windlass, eight 33,000-lb Bruce anchors w/3,000' of 3" chain and 6,300' of 3¼" wire rope.

TOWING REQUIREMENTS: 14,000 hp.

REMARKS: Four 360° azimuthing thruster units, 2,000 hp.

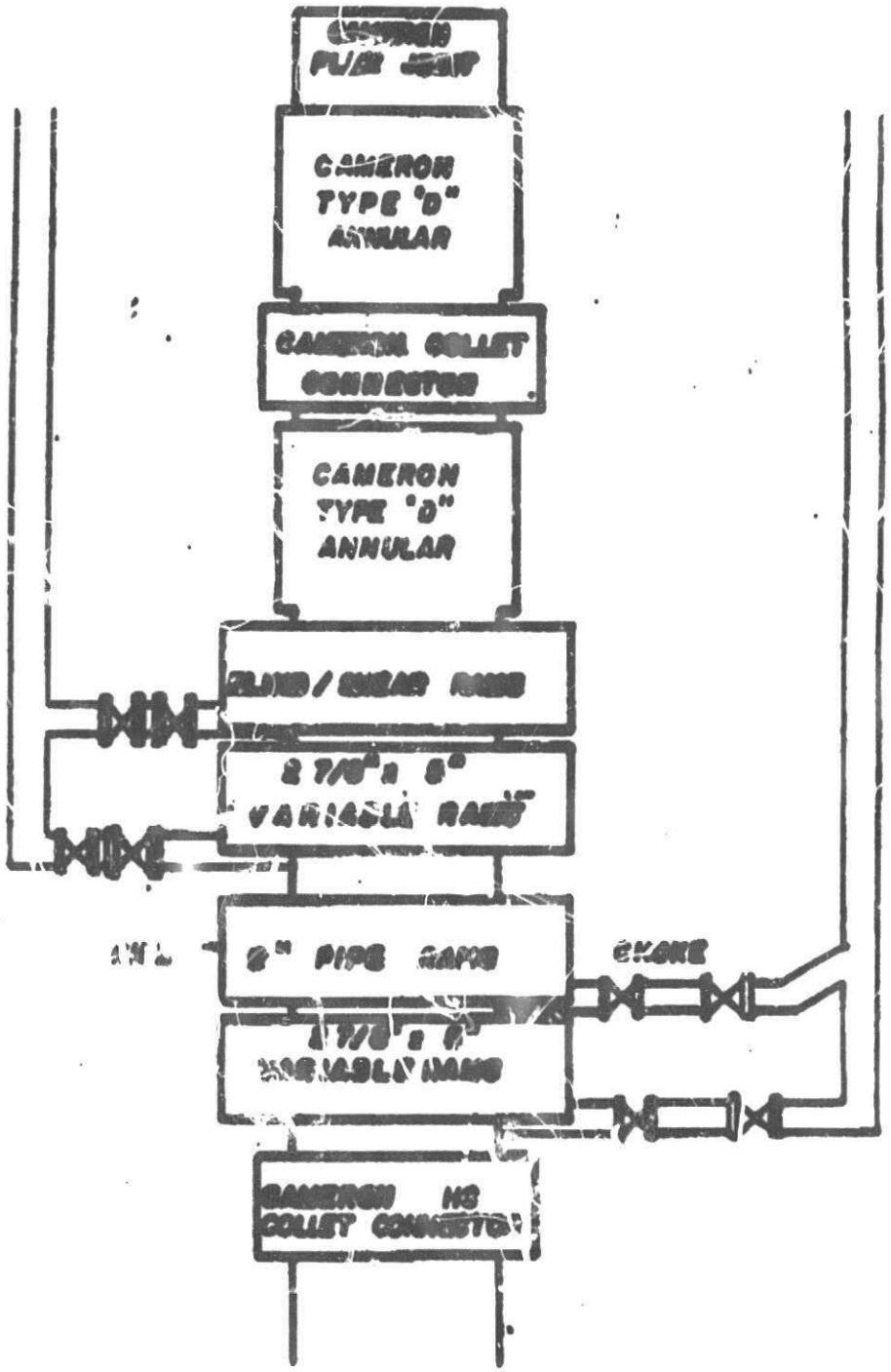
WORK AREA: Gulf of Mexico.


RIG
OFFSET
RIG MOTIONS
RISER TOP
TENSION
BUOYANCY
UPTHRUST
WATER
DEPTH
MUD WEIGHT,
RISER WEIGHT
BALL JOINT
ANGLE

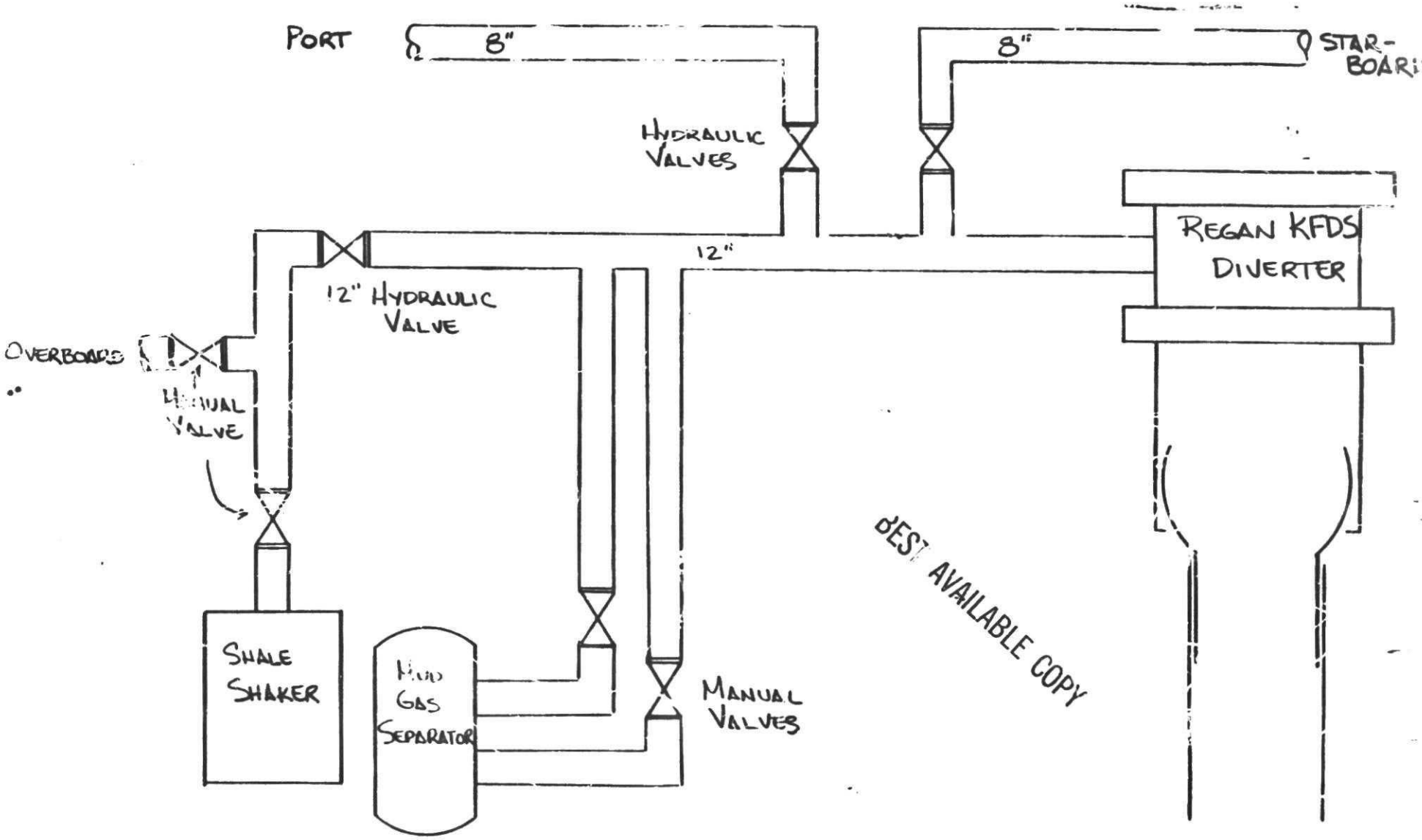


BOP STACK W/LOWER MARINE RISER PACKAGE ATTACHED

PENROD RIG 78
BOP STACK ARRANGEMENT



PENROD 78
DIVERTER SYSTEM



DIVERTER LINE(S) OPEN WHEN DIVERTER IS CLOSED.
PORT OR STARBOARD LINE MAY BE SELECTED

MUD PRODUCTS FOR USE OFFSHORE

PRIMARY

Mud Component Description	Chemical Name	Application
Barite*	Barium sulfate	For increasing mud weight up to 20 ppg.
Bentonite*	Naturally occurring clay	Viscosity and filtration control in water-base muds.
Attapulgite*	Naturally occurring clay	Viscosifier in salt-water muds.
Phosphate	Sodium tetraphosphate	Thinner for low pH fresh-water muds.
Mined Lignite*	Lignite	Dispersant, emulsifier and supplementary additive for fluid loss control.
Causticized Lignite	NaOH treated Lignite	1-6 ratio caustic-lignite dispersant, emulsifier and supplementary fluid loss additive.
Modified Lignosulfonate	Sodium Lignosulfonate	Dispersant and fluid loss control additive for water-base muds.
Blended Lignosulfonate Compound	Compound of chemicals	Blended multi-purpose dispersant, fluid loss agent and inhibitor for unique mud systems.
CMC	Sodium Carboxymethyl Cellulose	For fluid loss control and barite suspension in water-base muds.
Detergent (Biodegradable)	Compound of vegetable oil	Used in water-base muds to aid in dropping sand. Emulsifies oil, reduces torque and minimizes bit-balling.
Caustic Soda	Sodium Hydroxide NaOH	For pH control in water-base muds.
Soda Ash	Sodium Carbonate	For treating out calcium sulfate in low pH muds.
Sodium Bicarbonate	Sodium Bicarbonate	For treating out calcium sulfate or cement in high pH muds.

*Mined Minerals

SECONDARY

Mud Component Description	Chemical Name	Application
Asbestos Fibers*	Asbestos	Viscosifier for fresh or salt-water muds
Nut Shells: Fine	Natural Material	Most often used to prevent lost circulation.
Ground Mica*	Mica	Used for prevention of lost circulation.
Combination of granules, flakes, and fibrous materials of various sizes in one sack	None	Used where large crevices or fractures are encountered.
Sodium Chromate	Sodium Chromate	Used in water-base muds to prevent high temperature gelation.

TERTIARY

Oil Soluble Surfactants	None	Non-weighted fluid for spotting to free differentially stuck pipe.
Blend of Fatty Acids Sulfonates and Asphaltic Materials	None	Invert emulsion that may be weighted to desired density for spotting to free differentially stuck pipe.

*Mined Minerals

ENVIRONMENTAL REPORT

for

PLAN OF EXPLORATION

for

Exploratory Wells A through I

Mississippi Canyon Area

Blocks 486, 487, and 530
OCS-G 6957, 6958, and 6962

LESSEE: ARCO Oil and Gas Company, a Division of
Atlantic Richfield Company

January, 1987

Prepared by: Belinda V. Breaux
Regulatory and Environmental Coordinator
ARCO Oil and Gas Company
P. O. Box 1346
Houston, Texas 77251
(713) 584-6104

ENVIRONMENTAL REPORT

for

PLAN OF EXPLORATION

Mississippi Canyon Area
Blocks 486, 487, and 530
OCS-G 6957, 6958, 6962

ARCO Oil and Gas Company
A Division of Atlantic Richfield Company.

Description of the Proposed Action

ARCO Oil and Gas Company, a Division of Atlantic Richfield Company, acquired the Mississippi Canyon 486, 487, and 530 leases during the April, 1984 Central Gulf of Mexico Lease Sale 81. Preliminary geophysical survey activities have been conducted and this Plan of Exploration (POE) proposes the drilling of nine exploratory wells to define structures and possible reservoir characteristics.

The proposed drilling schedule is as follows:

Well Location	Surface Location	Drilling Days	Anticipated Spud Date
A	675'FSL & 3500'FEL of MC 486	60	Feb. 28, 1987
B	5000'FNL & 5150'FEL of MC 486	60	April 30, 1987
C	6600'FSL & 4100'FEL of MC 486	60	June 30, 1987
D	3200'FSL & 2000'FEL of MC 486	60	Aug. 30, 1987
E	100'FSL & 2100'FEL of MC 486	60	Oct. 30, 1987
F	4750'FSL & 1400'FWL of MC 487	60	Dec. 30, 1987
G	4000'FSL & 6100'FEL of MC 487	60	March 1, 1988
H	3100'FNL & 4550'FEL of MC 530	60	May 1, 1988
I	6050'FSL & 7800'FEL of MC 530	60	July 1. 1988

It must be emphasized that this schedule is tentative in the meaning of 30 CFR Part 250.34-1(a). The drilling, completion and testing of the nine proposed exploratory wells of Mississippi Canyon Blocks 486, 487, and 530 will be effected by a mobile offshore drilling unit such as Penrod Drilling Company's semi-submersible PENROD 78. Additional exploratory drilling must be predicated upon the need to define structures and possible reservoir characteristics/limits. In the event that hydrocarbons are not found in commercial quantities, the exploratory wells will be plugged and abandoned in accordance with Minerals Management Service Gulf of Mexico OCS Order No. 3 (30 CFR 250.10, 250.11, 250.15, and 250.92). Should hydrocarbons be found in commercial quantities, the exploratory wells may be temporarily abandoned and a Plan of Development and Production will be prepared to efficiently recover the reserves. This plan would entail the fabrication and installation of platforms, producing facilities and pipelines.

(a) Transportation of material, supplies and personnel between Mississippi Canyon Blocks 486, 487, and 530 and ARCO Oil and Gas Company's onshore Venice Shore Base (located southbound on Highway 23 on McDermott Road) will be by boat and helicopter. One workboat will average about 1.5 round trips per week. A crew boat will be required when weather conditions restrict helicopter operations. A frequency of one round trip per week may be realized for a crew boat. The frequency of helicopter flights for transportation of drilling and contract personnel to the mobile offshore drilling unit PENROD 78 is estimated to be 10 round trips per week. Helicopter flight paths will follow the most direct route to and from the PENROD 78 dependent upon the weather conditions at the particular time of departure.

b) ARCO Oil and Gas Company's Venice Shore Base (see Figure 1 for location and plat of existing facilities) in Venice, Louisiana will be the only support base used in the development of Mississippi Canyon Blocks 486, 487, and 530. There will be two onshore radio dispatchers employed, each working a seven day tour. Two company material supervisors and three contract personnel will be required to supervise various contract personnel in the trucking, transfer, and loading of drilling equipment and material onto workboats for transfer to the PENROD 78 on Mississippi Canyon Blocks 487, 487, and 530. Each workboat under contract to the company will require a crew of five persons. This crew will be changed out on some time period, i.e., 7, 10, or 14 days. Helicopters, Bell 206 and 212, are under a monthly contract and available when needed.

The OCS exploratory drilling operations of the mobile offshore drilling rig PENROD 78 in Mississippi Canyon 486, 487, and 530 will cause new workers to embark and disembark from the Venice Shore Base. Expected new workers include one company supervisor utilized each seven day tour, 44 rig personnel employed each seven day tour, two mud engineers and four mud loggers for each seven day tour. In addition, it is estimated that other service company personnel used on a call-out basis will consist of a total of about 25 persons who will work for a total of about 100 days for each well.

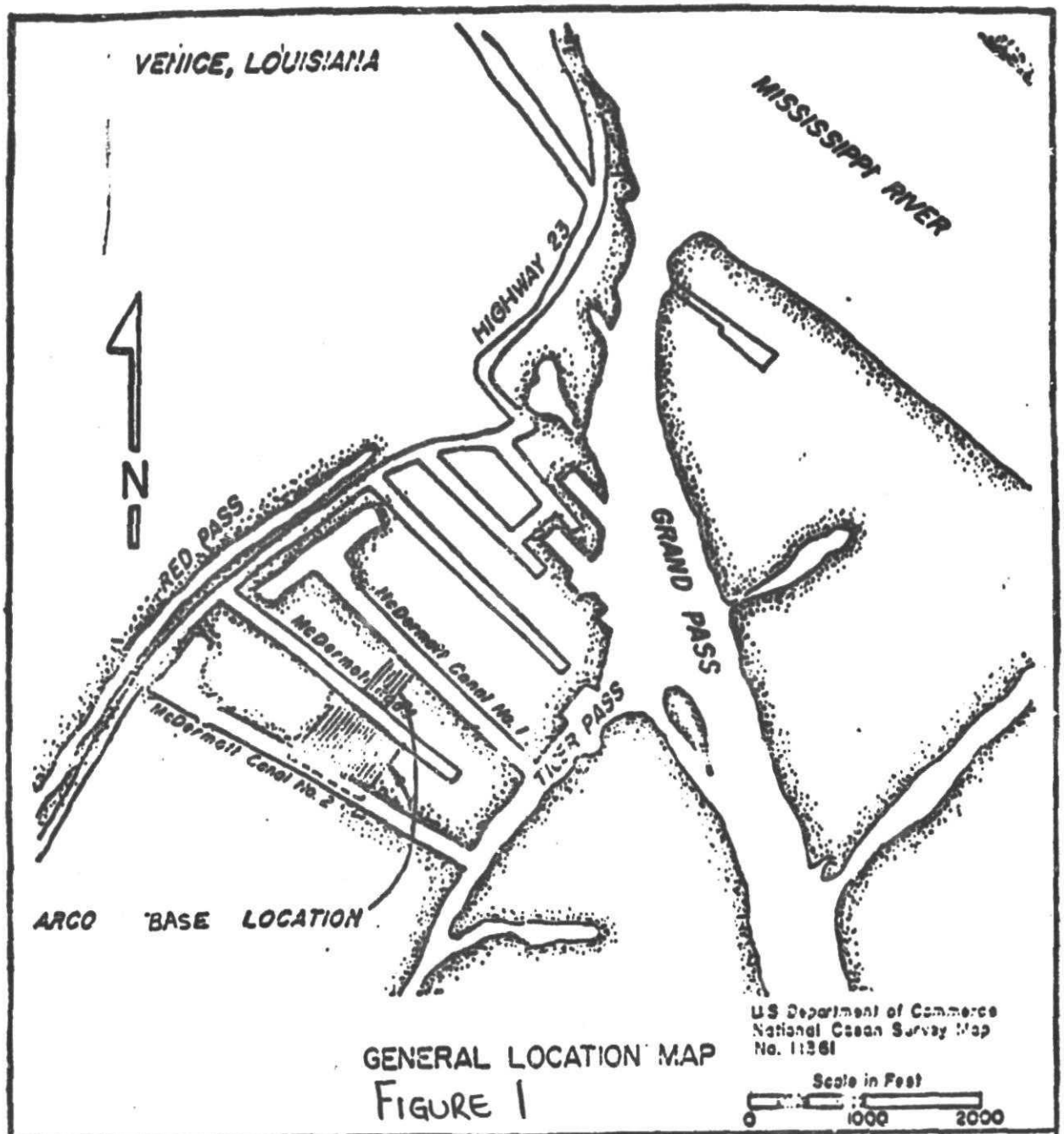
Because of the nonavailability of the MMS-Louisiana guidelines to complete an Initial OCS Socio-Econonmic Data Base Report, we will have to delay its submission until such guidelines are published.

(c) No new support facilities will be required for the development of Mississippi Canyon Blocks 486, 487, and 530.

(d) No new techniques or unusual technologies are anticipated which could affect the coastal waters of the State of Louisiana.

(e) Figure 2 (Reference No. 8, page 24) shows the location of Mississippi Canyon Blocks 486, 487, and 530 and the Venice Shore Base in relation to the coastal zone of the state of Louisiana. Figure 3 is the key to the wetland types designated in Figure 2.

(f) Non-applicable to Plans of Exploration.



GENERAL LOCATION MAP
FIGURE 1

GENERAL LOCATION MAP VENICE SHORE BASE ARCO OIL AND GAS COMPANY	ARCO OIL AND GAS COMPANY In: McDERMOTT CANAL NO. 2 At: PLAQUEMINES PARISH State: LOUISIANA

Description of the Affected Environment and Impacts

The approximate locations of the Venice Shore Base and Mississippi Canyon Blocks Blocks 486, 487, and 530 shown on the Louisiana Coastal Vegetation map (Reference No. 9, page 24) of Figure 2. The key to the coastal wetland types is given in Figure 3. These two figures reveal that the proposed exploratory drilling operations will be taking place in the neritic offshore environment of the Gulf of Mexico while support base operations, located on Tiger Pass off of the Grand Pass near the Mississippi River are impacting alluvial ridges and nonforested vegetated wetlands. The work/crew boats and helicopters that travel between the Venice Shore Base and and Mississippi Canyon Blocks 486, 487, and 530 will transverse the estuarine environments of saline, brackish, intermediate, and fresh water marshes.

a.(1) The presence of the semi-submersible drilling rig in the open neritic offshore environment of the Gulf of Mexico represents a refuge and place of nourishment to the diverse marine community of the general area. Although the exploratory drilling operations will be temporary, the drilling rig's pontoons soon become coated with fouling organisms, such as algaes, barnacles and mussels, which in turn attract and provide refuge for a numerous and diverse invertabrate community. The presence of this invertebrate community offers an energy source to larger vertebrates such as red snappers, groupers, trigger fish, spade fish, giant sea bass, pompano, barracuda, and many other smaller species. The mobile offshore drilling unit represents a shaded undersea island, a temporary place of refuge and sustenance from the harsh conditions of the Outer Continental Shelf's neritic environment.

a.(2) Mississippi Canyon Blocks 486, 487 and 530 is outside of the designated Shipping Safety Fairway; therefore, operations should pose no hazard to shipping traffic.

a.(3) Mississippi Canyon Blocks 486, 487, and 530 is within 46 miles of the Louisiana coastline. It is fairly uncommon for small pleasure boats to frequent the general area of the rig in search of the fauna it attracts, since they generally choose to remain closer to shore.

a.(4) Mississippi Canyon Blocks 486, 487, and 530 were surveyed by Ocean Marine Geophysics from July 23, to August 13, 1984, onboard the M/V Locator. The data was interpreted by Mr. Thomas W. Neurauter now of the Geohazards Group of ARCO Oil and Gas Company. An Archaeological Report was not required for these leases. A Raytheon DSF-6000 echosounder was use to determine the bathymetry of MC 486, 487, and 530. The slope of the seafloor ranges from near flat areas along the crest of ridges and through valleys to steep walls along the flanks. The C.R.E. subbottom profiler and E.E.R.I. watergun were used to determine the surface and subsurface geology. Side scan sonar and magnetometer records were not obtained due to the water depths in the Blocks.

PLEISTOCENE DEPOSITS

NON-FORESTED VEGETATED WETLANDS (MARSH)

MODIFIED WETLANDS

FORESTED WETLANDS CYPRESS-TUPELO GUM SWAMP

FIGURE 2
STATE OF LOUISIANA
COASTAL VEGETATION

LOUISIANA
COASTAL VEGETATION

PLEISTOCENE DEPOSITS

Terrace I rises three feet in elevation with upland vegetation. The coastal zone boundary is close to the juncture of the Pleistocene terrace and coastal wetlands. Upland vegetation such as pine (Pinus sp.) and oak (Quercus sp.) is characteristic in Southeastern Louisiana. In Southwestern Louisiana, coastal prairie and cultivated rice fields are predominant. Isolated segments of Pleistocene deposits occur in certain areas within the coastal zone where "islands" extend into the marsh or swamp. Examples are Hackberry Island, Pita Island, Avery Island and Beer Island.

ALLUVIAL RIDGES

Natural levees formed by deltaic sedimentation. These ridges mark active and abandoned river distributaries of various streams of the Mississippi and Atchafalaya Rivers and the main streams of the Pearl and Calcasieu Rivers.

The native woody vegetation of the alluvial ridges is live oak (Quercus virginiana) and other hardwood hardwoods. Most of these hardwoods have been cleared and replaced with cropland and urban areas. The remaining hardwood forest is located primarily on the flanks and distal ends of the alluvial ridges.

Other areas in the coastal zone with woody vegetation are cheniers, beach ridges, salt domes, Indian middens and spoil areas.

FORESTED WETLANDS(CYPRESS-TUPELO GUM SWAMP)

Bald cypress (Taxodium distichum) and tupelo gum (Nyssa aquatica) are dominant in the freshwater swamps. The swamp forests occur in the upper ends of the interdistributary basins and flanks the alluvial ridges. The swamp vegetative zone is common around lake margins, west of Lac Des Allemands and in the Atchafalaya Basin.

NON-FORESTED VEGETATED WETLANDS (MARSH)

The majority of the coastal zone are dominated by the grass-sedge-rush community. Due to the combined interaction of elevation, water depth, and increasing salinity, four zones of marsh vegetation exist in arcuate belts proceeding toward the coast. Transitional zones exist due to the gradual blending of marsh vegetation between zones. Certain species may occur in two or more zones but usually are dominant in only one.

Fresh Marsh - Typical vegetation is maiden cane (Panicum hemitomon), water hyacinth (Eichornia crassipes), pennywort (Hydrocotyle sp.), marshpennywood (Pontederia cordata), alligatorweed (Alternanthera philoxeroides), cattail (Typha sp.) and bulltongue (Sagittaria sp.).

Intermediate Marsh - Typical vegetation is wiregrass (Spartina patens), deer pea (Vigna repens), bulltongue, three-cornered grass (Scirpus olneyi), saltmarsh bulrush (Scirpus californicus) and wiregrass (Cladium jamaicense).

Brackish Marsh - Typical vegetation is wiregrass, three-cornered grass (Scirpus olneyi), cane (Scirpus robustus), wiregrass (Spartina patens) and black rush (Juncus roemerianus).

Saline Marsh - Typical vegetation is cordgrass (Spartina alterniflora), glasswort (Salicornia sp.), black rush, wiregrass, saltgrass (Distichlis spicata) and black mangrove (Avicennia nitida).

MODIFIED WETLANDS

These are areas of marsh or swamp that have been leveed, ditched, filled or drained. Surface features and hydrology have been altered or restricted to the degree that natural wetland processes may no longer occur. These areas may be completely drained (e.g. northern portion of Orleans and Jefferson Parishes), partially drained (e.g. various drainage districts), only slightly modified (e.g. marshes west of Lake Leary) or flooded and impounded (e.g. abandoned agricultural reclamation projects and refuge waterfowl pools). These marsh or swamp areas were modified for the purposes of urbanization, flood protection, navigation, farming, mining, spoil disposal, or waterfowl management.

SOURCES:

Fish and Americana. 1974. Field checking by staff personnel.

Chabreck, R. H., T. Joanen, and A. W. Palmisano. 1968. Vegetative Type Map of the Louisiana Coastal Marshes. Louisiana Wildlife and Fisheries Commission, New Orleans, Louisiana.

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Fisher, D. E. and J. L. Church. 1968. Recent Fan Deposits - Louisiana Coastal Plain. Geological Society of America, Special Paper 116.

Gagliano, S. M. 1973. Canals, Dredging and Land Reclamation in the Louisiana Coastal Zone. Hydrologic and Geologic Studies of Coastal Louisiana, report 14. Center for Wetland Resources, LSU. Baton Rouge, Louisiana.

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Louisiana Wildlife and Fisheries Commission. 1971. Comparative Gulf of Mexico Estuarine Inventory and Study, Louisiana Phase I, Area Description and Phase IV, Biology.

Metcalf, T. 1969. The Marshes in the Louisiana Coastal Marshes. Louisiana Wildlife and Fisheries Commission, New Orleans, Louisiana.

U. S. Geological Survey. Topographic Maps. Various scales and dates.

U. S. Geological Survey. 1974. Infrared photography of coastal area. Scale 1:120,000.

Figure: 3

a.(5) There are no marine sanctuaries, refuges, or preserves in the immediate area of Mississippi Canyon Blocks 486, 487, and 530. Clean Gulf Associates has prepared and distributed to members maps of the coastline of the Gulf of Mexico listing environmentally sensitive areas onshore and nearshore which might be affected by an accidental hydrocarbon release (See Maps 5 through 7, Reference No. 9). Since the entire coastline of the State of Louisiana can be considered environmentally sensitive in varying degrees, there is no benefit seen in listing all the major bays and State wildlife refuges along the coast. The map of Figure 4 (Reference No. 8, page d-6); however, shows that the Shell Keys Federal Wildlife Refuge (13), Marsh State Wildlife Refuge (12), Paul J. Rainey Private Wildlife Refuge (10), Cypremort Beach (15), Burns Point (16), Vermillion Bay and Atchafalaya Bay are designated by the State of Louisiana as ecologically sensitive and within the influence of shore base operations and the proposed exploratory drilling operations.

a.(6) Should hydrocarbons be found in commercial quantities in the proposed exploratory drilling schedule a Plan of Development would be prepared which would include a delineation of product handling for delivery to shore. The environmental impact of transporting the possible resources of Mississippi Canyon Blocks 486, 487, and 530 to Louisiana's Coast would be included in the Environmental Report (ER) for the Plan of Development.

a.(7) Both natural gas and liquid hydrocarbons are expected to be found on this Unit.

a.(8) There has been no ocean dumping of material on these leases by ARCO Oil and Gas Company.

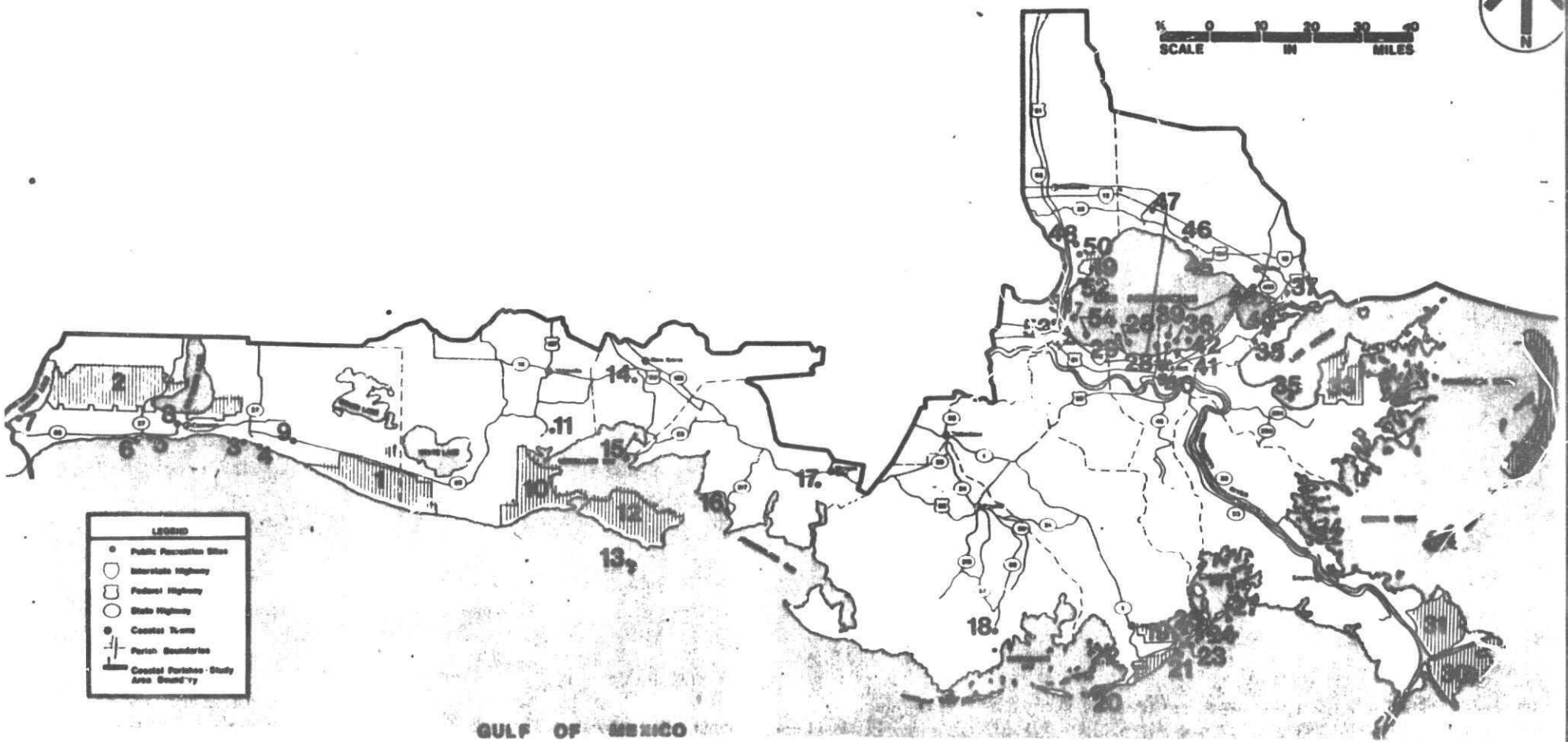
a.(9) There is no knowledge of an endangered or threatened species in the immediate area of Blocks 486, 487, and 530 which might be affected by drilling activities. However, the sei, fin, blue, black right and sperm whales are endangered cretacean species which occur in the central and western Gulf of Mexico (Waring, 1976). The status and migration patterns of these species in the Gulf is unknown.

The endangered Atlantic Ridley sea turtle adults are found only in the Gulf of Mexico. Critical habitat has not been determined for this species. The Atlantic Ridley is believed to nest on Padre Island and on the beaches of Kleberg, Kennedy, Willacy and Cameron Counties on the Texas Gulf Coast. The leatherneck turtle was listed as endangered on December 2, 1970. On the Gulf Coast, sightings are common in March and April.

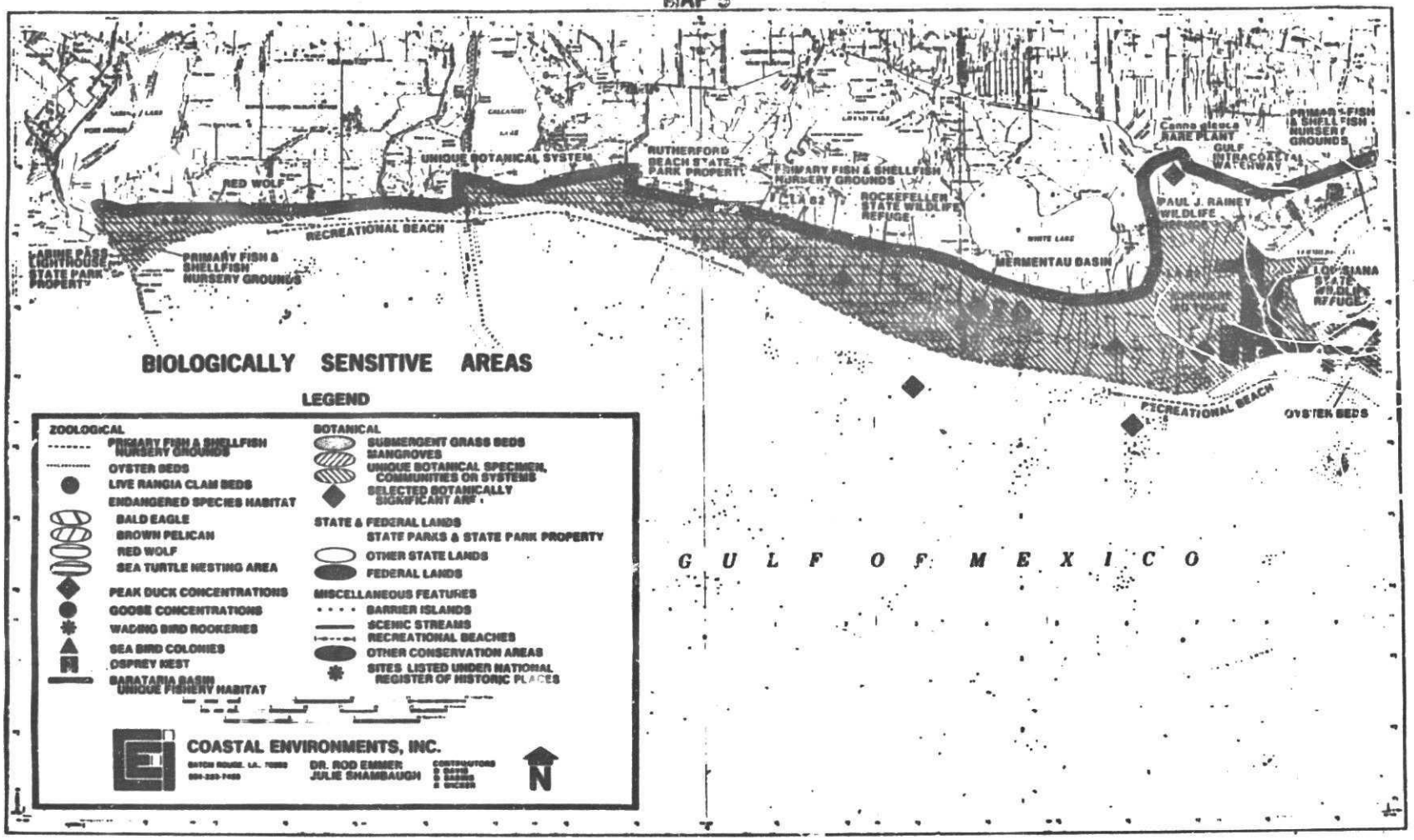
b. The Socio-Economic Data Base Report will be submitted as soon as guidelines are published. The report will follow the requirements now being finalized by the MMS and the states of Louisiana, Mississippi and Alabama.

FIGURE: 4

EXISTING PUBLIC SHOREFRONT RECREATION SITES AND ACCESS ROUTES

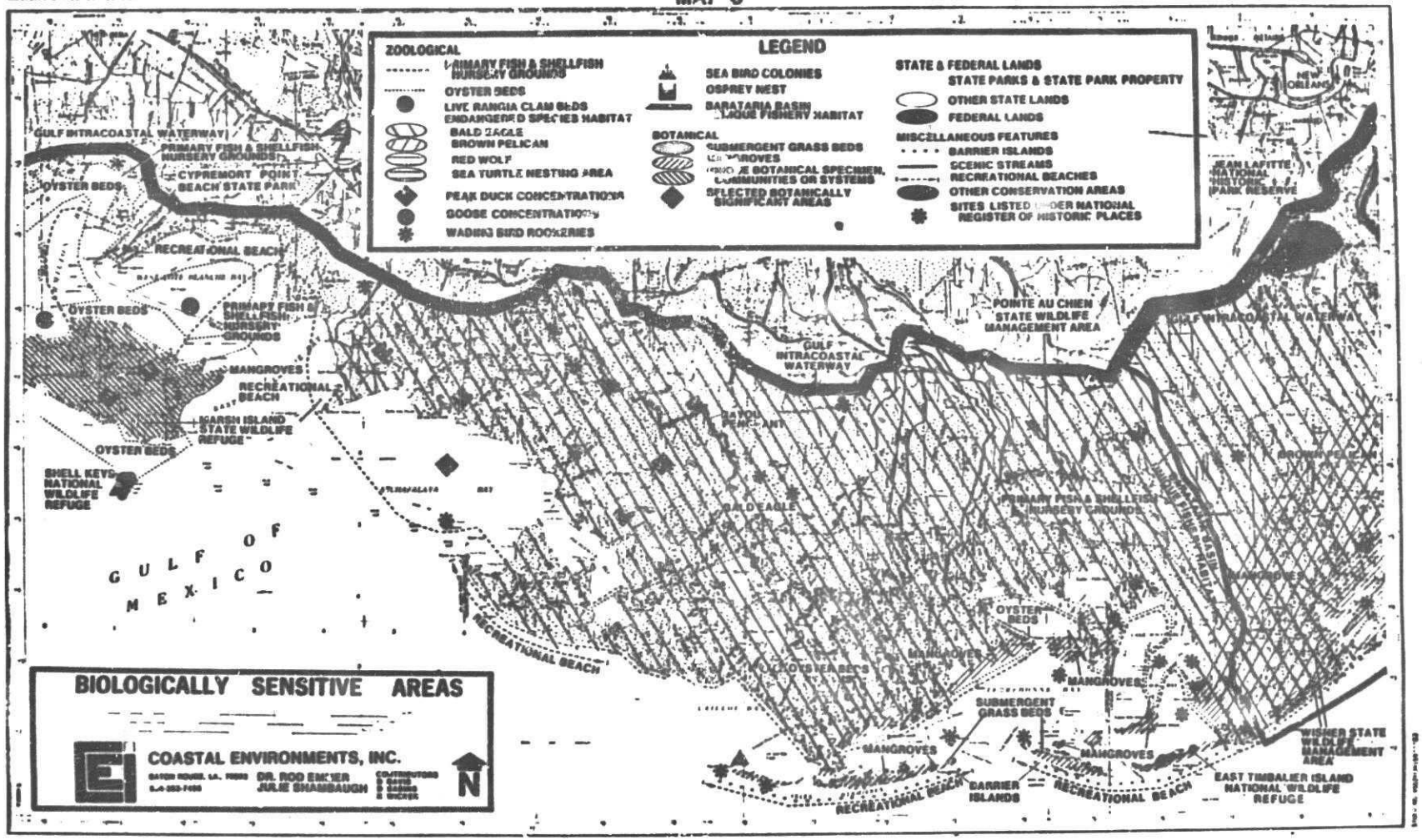


MAP 5

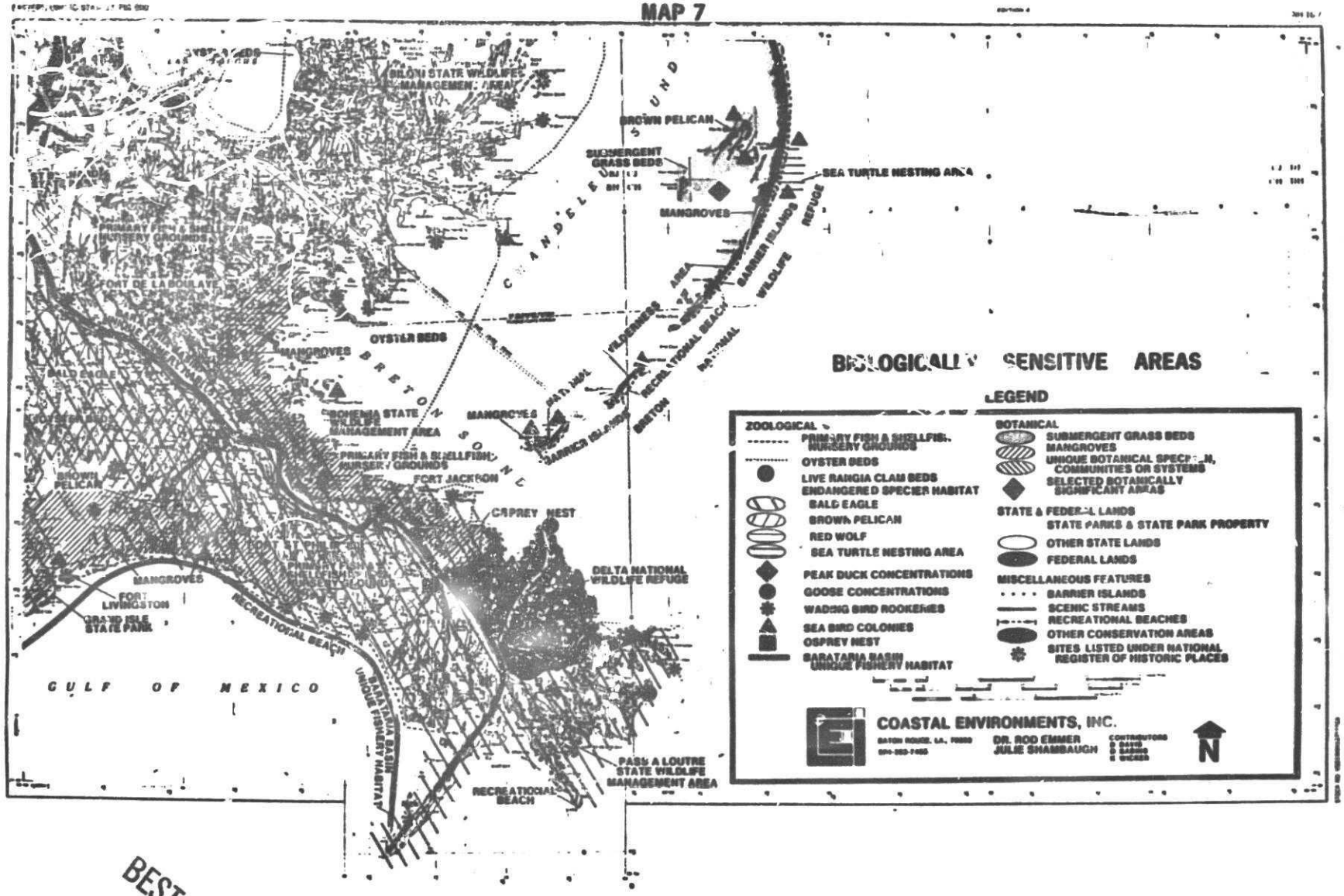


WESTERN UNITED STATES 1:250,000

MAP 6



MAP 7



Unavoidable Adverse Environmental Effects

Drilling of the proposed exploratory wells in Mississippi Canyon Blocks 486, 487, and 530 will result in the discharge of drill mud and cuttings into the waters of the Gulf as allowed under the EPA National Pollutant Discharge Elimination System (NPDES) General Permit GMG 280000. The discharge of drill cuttings will bury sessile benthic organisms in local areas under the discharge. The disposal of mud may result in a minor decrease in primary productivity due to the mortality or functional impairment of phytoplankton and algae in areas of high turbidity. A large oil spill is very unlikely but could result in localized severe mortalities, probably selective, and functional impairment of phytoplankton communities, thereby altering the community structure for an unknown period of time. These impacts are considered temporary and minor. (Final EIS, Sale 58, BLM, P V - 1 & 2)

Air emissions from combustion of diesel fuel in rig engines, boat engines and helicopters can affect the air quality near the mobile offshore jackup drilling rig and near the onshore travel routes. In most cases, these emissions will be local in nature and will be quickly dissipated by climatic conditions. Highly volatile, low molecular weight hydrocarbons would be released into the atmosphere from a blowout with release of natural gas. These hydrocarbons would undergo some unknown degree of degradation, possibly resulting in photochemical smog. If a blowout resulted in a fire, large amounts of particulate carbon and oxides of carbon, along with smaller but unknown amounts of sulphur oxides, volatile hydrocarbons and partially oxidized compounds would enter the air. Local air would be severely degraded for the duration of the fire. The extent of degradation is indeterminate, but it is unlikely that it would be high enough to affect land resources or human health. (Final EIS, Sale 58, BLM, P V - 1 & 2.)

These exploratory drilling activities are not expected to harmfully affect water quality, interfere with commercial fishing operations, recreational activities or shipping traffic. There is a very low probability of discovering historic and prehistoric site occurrence in Mississippi Canyon Blocks 486, 587, and 530.

References

1. Final Environmental Impact Statement, OCS Lease Sale No. 58, Volume 1 and Visuals No. 1 through No. 7, published by the United States Department of the Interior, 1979.

2. Final Environmental Impact Statement, OCS Lease Sale No. 51, Volume 1, published by the United States Department of the Interior, 1978.

3. "The Fate of Petroleum in the Marine Environment", a special report prepared by R. B. Wheeler for Exxon Production Research Company, August, 1978.

4. "Drilling Fluid Dispersion and Biological Effects Study for the Lower Cook Inlet C.O.S.T. Well", prepared by Dames & Moore for participating companies and Atlantic Richfield Company as operator, April, 1978.

5. "The Artificial Reef Studies" prepared by LGL Ecological Research Associates for the Bureau of Land Management, April, 1979.

6. "The Offshore Ecology Investigation", a brochure prepared for Gulf Universities Research Consortium, Galveston, Texas describing the results and conclusions of a study carried out in Timbalier Bay and the adjoining offshore area from October, 1972 through October, 1973.

7. Atlas of Pilot Charts, Publication No. 106, United States Naval Oceanographic Office.

8. Final Environmental Impact Statement, Louisiana Coastal Resources Program, published by the U. S. Department of Commerce, National Oceanic and Atmospheric Administration, Office of Coastal Zone Management and Louisiana Department of Natural Resources, Coastal Management Section, 1980.

9. Clean Gulf Associated (CGA) Operations Manual. "Biologically Sensitive Areas" prepared by Coastal Environments, Inc. (Dr. Rod Emmer and Julie Shambaugh, et. al.).

The proposed activity will be carried out and completed with the guarantee of the following items:

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, and equipment and monitoring systems.

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

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

1/29/87

COASTAL ZONE MANAGEMENT

CONSISTENCY CERTIFICATION

Plan of Exploration

Type of Plan

Mississippi Canyon Blocks 486, 487, and 530

Area and Block

OCS-G 6957, 6958, and 6962

The proposed activities described in detail in this Plan comply with Louisiana's approved Coastal Management Program and will be conducted in a manner consistent with such Program.

Arrangements have been made with the State-Times in Baton Rouge, Louisiana to publish a public notice of the proposed activities no later than February 3, 1987.

ATLANTIC RICHFIELD COMPANY
Lessee or Operator

Certifying Official

1/29/87
Date