In Reply Refer To: RP-2-1.

SEP 20 1984

Getty Oil Company
Attention: Mr. Norman C. Porterfield
Post Office Box 53386
New Orleans, Louisiana 70153

Gentlemen:

Reference is made to your Initial Plan of Exploration, Live Bottom Survey, and Environmental Report received September 12, 1984, amended September 19, 1984, for Lease OCS-G 6867, Block 1006, Mobile Area. This plan includes the activities proposed for Well A.

In accordance with 30 CFR 250.34, revised December 13, 1979, and our letter dated January 29, 1979, this plan has been determined to be complete as of September 20, 1984, and is now being considered for approval.

Your plan control number is N-1815 and should be referenced in your communication and correspondence concerning this plan.

Sincerely yours,

For (ORIG. SGD.) RALPH J. MELANCON

D. W. Solanas
Regional Supervisor
Rules and Production

bcc: Lease OCS-G 6867 (OPS-2-3) (FILE ROOM)
OPS-2-5 w/Public Info. Copy of the plan and ER (PUBLIC RECORDS ROOM)
DO-5

ADGobert:gcw:9/13/84 Disk 3a

Office of
Program Services

SEP 24 1984

Records Management
Section

Getty

Getty Oil Company | P.O. Box 53386, New Orleans, Louisiana, 70153 • Telephone (504) 524-4861

J. E. King, Production Manager, New Orleans District
Southern Exploration and Production Division

September 19, 1984

Mr. D. W. Solanas
Regional Supervisor
Rules and Production
Minerals Management Service
Gulf of Mexico OCS Region
P. O. Box 7944
Metairie, LA 70010

MINERALS MANAGEMENT SERVICE

SEP 19 1984

RULES AND PRODUCTION

Re: Initial Plan of Exploration
Leases OCS-G-6860, 6866, and 6867, Mobile Area
Blocks 962, 1005, and 1006,
Central Gulf of Mexico
Offshore Alabama

Dear Mr. Solanas:

The above referenced Plan of Exploration was submitted on September 12, 1984. It contained a request for approval of two well sites, one in Mobile Area Block 962 and one in Mobile Area Block 1006.

We anticipated providing photodocumentation, as required by the lease, at a later date for the well proposed in Block 962. However, because this photodocumentation report was not provided, the above referenced Plan of Exploration cannot be considered complete. Therefore, we request you delete the well proposed for Block 962 and process the Plan of Exploration for one well only.

Should you have any questions, please contact Mr. Vince Cottone at the above address.

Sincerely,

GETTY OIL COMPANY

J. E. King

JEK/lbs

PLAN OF EXPLORATION

FOR

MOBILE AREA BLOCK 962 (OCS-G-6860
MOBILE AREA BLOCK 1005 (OCS-G-6866)
MOBILE AREA BLOCK 1006 (OCS-G-6867)

SUBMITTED TO:

VINCE COTTONE
OCS ENVIRONMENTAL AFFAIRS COORDINATOR

GETTY OIL COMPANY
P. O. BOX 53386
NEW ORLEANS, LOUISIANA 70153
(504) 524-4861

Prepared by:
JOHN E. CHANCE & ASSOCIATES, INC.
Regulatory & Environmental Division
Project #84-8146

TABLE OF CONTENTS
GETTY OIL COMPANY
PLAN OF EXPLORATION
MOBILE AREA BLOCKS 962, 1005, AND 1006

PROPRIETARY COPY

GETTY OIL COMPANY

PLAN OF EXPLORATION

MOBILE AREA BLOCK 962 (OCS-G-6860)

MOBILE AREA BLOCK 1005 (OCS-G-6866)

MOBILE AREA BLOCK 1006 (OCS-G-6867)

OFFSHORE ALABAMA

1. GENERAL INFORMATION

In accordance with 30 CFR 250.34-1 (b)(2), herewith is submitted a Plan of Exploration for the following locations:

Well #	Area	Surface Location	Bottomhole Location	PTD
A	Mobile Block 1006	590' FNL 1200' FWL	Proprietary	24000'
B	Mobile Block 962	3350' FSL 5000' FWL	Information	24250'

Mobile Area Blocks 962, 1005, and 1006 are located approximately fourteen (14) miles from the coast of Alabama. Mobile and Dauphin Island bases will be utilized as operations bases, where a dispatcher will be stationed twenty-four (24) hours per day. Water depths in these blocks range from seventy-five (75) to one hundred twenty-one (121) feet.

2. SCHEDULE OF ACTIVITIES

Drilling activity will commence on or about October 01, 1984. It is anticipated that it will take six hundred (600) days to drill, test and complete the two (2) proposed wells. It is anticipated that each of the wells will be drilled in two hundred ten (210) days. As proposed, drilling will be conducted on a continuous basis.

The fabrication and installation of any permanent structures, production facilities, and/or pipelines is contingent upon the success or failure of these wells. Should the wells indicate the presence of commercially producible reserves, a well protector may be installed to facilitate production of the well at a later date. The installation of a well protector would be conducted in accordance with OCS order No. 8 and would be marked in accordance with all Coast Guard regulations. An application showing the well protector, plan of installation, and location would be submitted to the Department of the Interior, Minerals Management Service prior to any installation.

3. DRILLING RIG AND SAFETY EQUIPMENT

The proposed exploratory wells will be drilled using a typical jack-up or submersible drilling rig. The drilling rig used to drill the proposed wells will be equipped with all appropriate safety equipment, such as a diverter system blowout preventers, mud testing and monitoring equipment, and auxilliary equipment, as required by OCS Order No. 2. Drip pans are installed, where practical, under all equipment that might be a source of

pollution. A typical diagram of the drilling rig is included as an attachment to this Plan.

4. PROJECTED DISCHARGES AND AIR EMISSIONS

Discharges anticipated as a result of the proposed activities will include domestic wastes which are treated in sanitation facilities on the drilling rig, water-based drilling fluids, drill cuttings, formation waters, and drill waters. No oil-based mud or waste products which might contain oil will be disposed of at the drilling site. Maximum projected air emissions related to the proposed activities can be found in the Air Quality Review Report attachment to this Plan. All projected emissions are well within allowable levels as established by the Department of the Interior and the Environmental Protection Agency.

5. SUPPORT BASE

The Mobile and Dauphine Island, support bases which will be utilized by Getty Oil Company will serve the following purposes:

1. Personnel and equipment transportation base; and
2. Storage space for materials and equipment.

The Mobile shorebase is located on the west side of the Mobile River and consists of docking facilities, crane, and twenty-four hour communications.

The Dauphin Island shorebase is located on Dauphin Island one block

west of Dauphin Island Parkway and consists of docking facilities, heliport, crew quarters, small crane, and twenty-four hour communications.

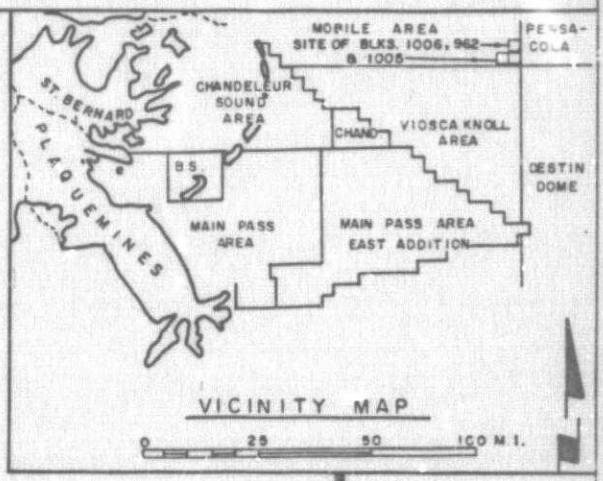
6. SAFETY IN OPERATIONS

Safety in drilling operations will be accomplished by Getty Oil Company through the use of trained operational personnel and employing all appropriate and available safety and pollution control mechanisms. The use of adequately designed casing programs, blowout preventers (and associated well equipment of sufficient pressure rating to contain anticipated pressures), and appropriate mud volumes and monitoring equipment are standard procedure for operations conducted by Getty Oil Company. Additionally, all shipboard safety requirements pursuant to Coast Guard regulations will be utilized and/or conducted by Getty Oil Company.

Getty Oil Company is a member of Clean Gulf Associates (CGA). Clean Gulf Associates is a cooperative organization formed to own and maintain a stockpile of oil spill clean-up equipment. This equipment, and supervisory personnel to advise member companies in the event of a spill incident, are available on a twenty-four (24) hour per day, seven (7) day per week basis. Oil spill equipment deployment time to the proposed activity site is approximately ten (10) hours from the nearest CGA base (Venice, LA). Information on the equipment maintained by CGA can be found in the Getty Oil Company, New Orleans District, Oil Spill Contingency Plan which has been approved effective August 1, 1984.

APPENDIX A

VICINITY MAP



961

BLK. 962

Getty Oil Company
O.C.S. - G - 6060

12.3 MILES TO SHORE

B

Y = 10,897,920.00'

A

Proposed Location
Lat. 30° 01' 25.143"
Long. 87° 49' 31.537"

1005

BLK. 1006

969

X = 1,378,080.00'

X = 1,393,920.00'

MOBILE AREA

PENSACOLA AREA

Getty Oil Company
O.C.S. - G - 6867

Y = 10,882,080.00'

MOBILE AREA

VIOSCA KNOLL AREA

38

VICINITY PLAT

0 3000 6000 FT.
SCALE

PROPOSED MINERAL DEVELOPMENT
MOBILE AREA (NH 16-4)
GULF OF MEXICO

APPLICATION BY GETTY OIL COMPANY
AUGUST 21, 1984 NEW ORLEANS, LA.

APPENDIX B

PROPOSED LOCATION PLAT

Getty Oil Company
O.C.S. - G - 6860

BLK. 962

5000'

B

3350'

1200'

590'

A

BLK. 1006

MOBILE AREA

Getty Oil Company
O.C.S. - G - 6867

U. T. M. ZONE 16

GETTY OIL COMPANY

PLAN OF EXPLORATION
PROPOSED LOCATIONS

MOBILE AREA
(NH 16 - 4)

SCALE: 1" = 2000'

08/21/84

Prepared by:
John E. Chance & Associates, Inc.

APPENDIX C

DRILLING MUDS AND ADDITIVES

Drilling Mud Components That May Be Utilized Offshore

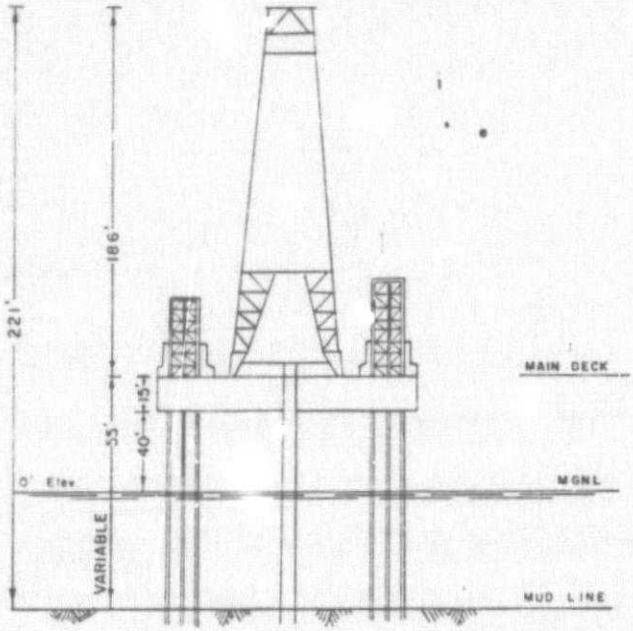
Product Trade Name	Common Name	Chemical Trade Name
I. Weight Materials and Viscosifiers		
MIL-BAR®	barite	barium sulfate
MILGEL®	bentonite	bentonite
SALT WATER GEL®	attapulgite	attapulgite clay
FLOSAL®	asbestos fiber	chrysotile asbestos
II. Dispersants (Thinners)		
UNI-CAL®	lignosulfonate	sodium lignosulfonate
DESCO®	modified tannin	sulso methylated tannin + sodium di chromate
III. Filtration Control Additives		
LIGCON®	causticized lignite	NaOH treated lignite
CHEMTROL®-X	polymer-treated lignite	polymer-treated lignite
DRISCOSE®	CMC	sodium carboxy methyl cellulose
DRISPAC®	PAC	polyanionic cellulose derivative
IV. Chemicals		
Caustic Soda	caustic	sodium hydroxide
Soda Ash	soda ash	sodium carbonate
Bicarb of Soda	bicarb	sodium bicarbonate
MIL-LIME	lime	calcium hydroxide

Drilling Mud Components That May Be Utilized Offshore (cont'd)

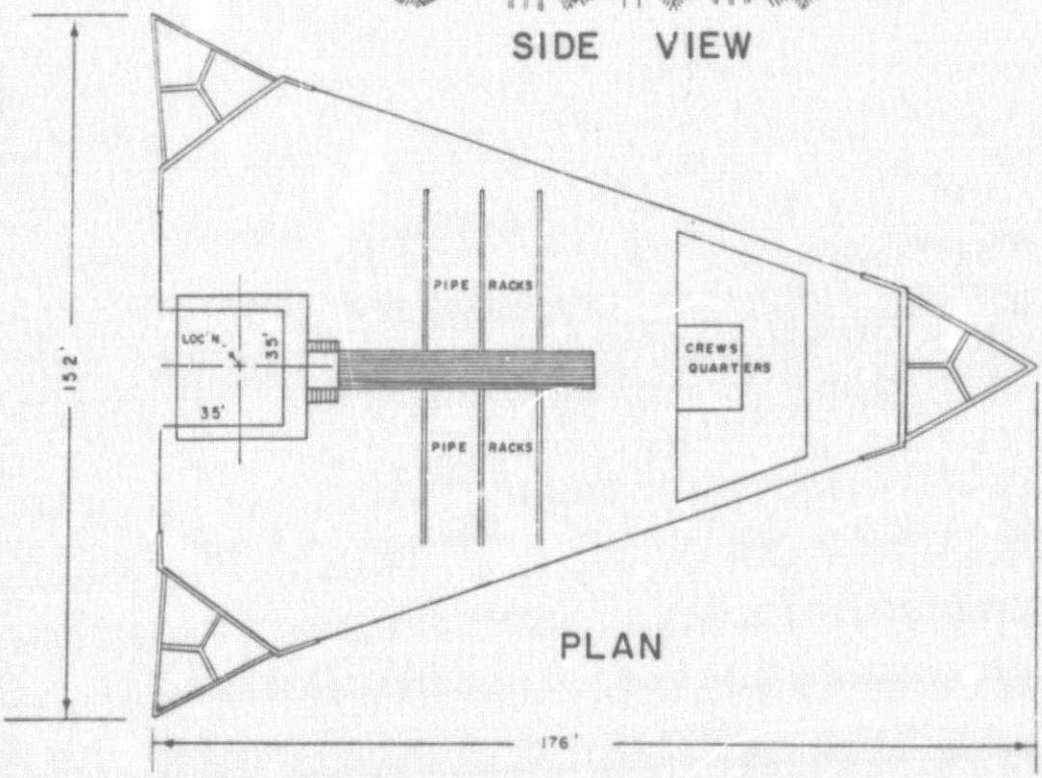
Product Trade Name	Common Name	Chemical Trade Name
V. Specialty Additives		
LD-8®	defoamer	non-hydrocarbon defoamer
Aluminum Stearate NOXYGEN™	defoamer oxygen scavenger	aluminum stearate catalyzed, sodium sulfite pwd
NOXYGEN™ L	oxygen scavenger	catalyzed ammonium bisulfite solution
LUBRI-SAL™	lubricant	biodegradable, non-polluting vegetable oil
SUPER SHALE-TROL® 202	Shale-Trol	Aluminum organic acid complex
MILCHEM® MD	drilling detergent	drilling fluid detergent
SOLTEX®	shale control additive	modified hydrocarbo (non polluting)
VI. Loss of Circulation Additives		
MIL-PLUG®	LCM	ground nut shells
MILMICA®	LCM	flake mica
KWIK-SEAL	LCM	combination of granules, flakes, and fibers
DIASEAL-M®	high water loss lost circulation squeeze material	non-hazardous diatomite blend

APPENDIX D

DIAGRAM OF TYPICAL JACK UP



SIDE VIEW



PLAN

TYPICAL JACK-UP RIG & APPURTENANCES

PROPOSED MINERAL DEVELOPMENT

MOBILE AREA (NH 16-4)

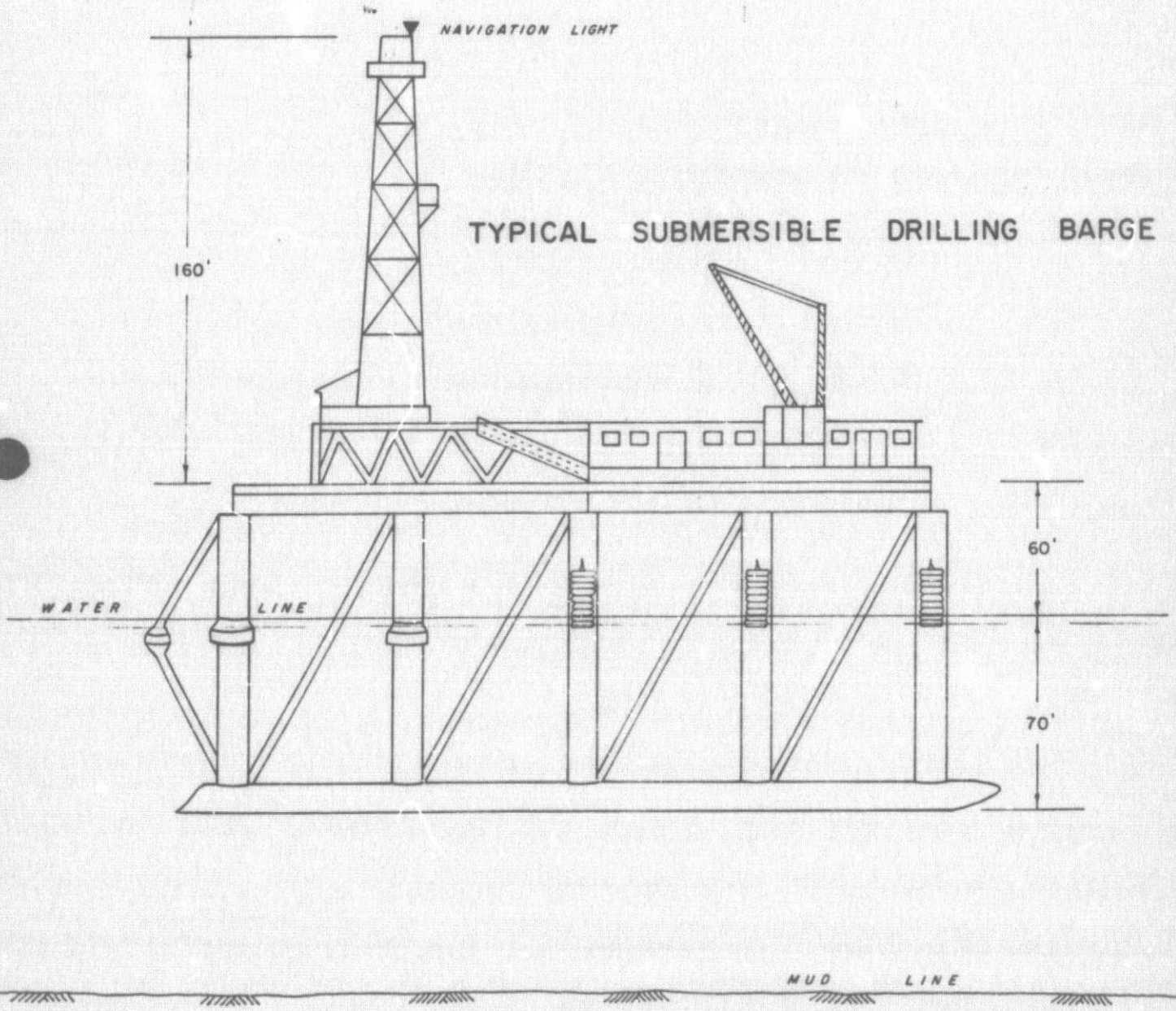
GULF OF MEXICO

APPLICATION BY
AUGUST 21, 1984

GETTY OIL COMPANY
NEW ORLEANS, LA.

APPENDIX E

DIAGRAM OF TYPICAL SUBMERSIBLE



0 20 40 60 80 FT.

PROPOSED MINERAL DEVELOPMENT

MOBILE AREA

GULF OF MEXICO

APPLICATION BY GETTY OIL COMPANY
SEPTEMBER 7, 1984 LAFAYETTE, LOUISIANA

SHEET OF

APPENDIX F

SHALLOW HAZARD WELL SITE SUMMARY

APPENDIX G

GEOLOGICAL STRUCTURE MAP

APPENDIX H

GEOLOGICAL CROSS-SECTION MAP

ENVIRONMENTAL REPORT

AND

AIR QUALITY REVIEW

FOR COASTAL MANAGEMENT CONSISTENCY DETERMINATION

PLAN OF EXPLORATION

GULF OF MEXICO

MOBILE AREA BLOCKS 962, 1005, AND 1006

OCS-G-6860, OCS-G-6866, AND OCS-G-6867

SUBMITTED TO:

VINCE COTTONE

OCS ENVIRONMENTAL AFFAIRS COORDINATOR

GETTY OIL COMPANY

P. O. BOX 53386

NEW ORLEANS, LOUISIANA 70153

(504/524-4861)

SEPTEMBER 06, 1984

Prepared by:

JOHN E. CHANCE & ASSOCIATES, INC.

Regulatory & Environmental Division

Project #84-8146

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ENVIRONMENTAL REPORT

Table of Contents (Contd.)

LIST OF FIGURES

LIST OF TABLES

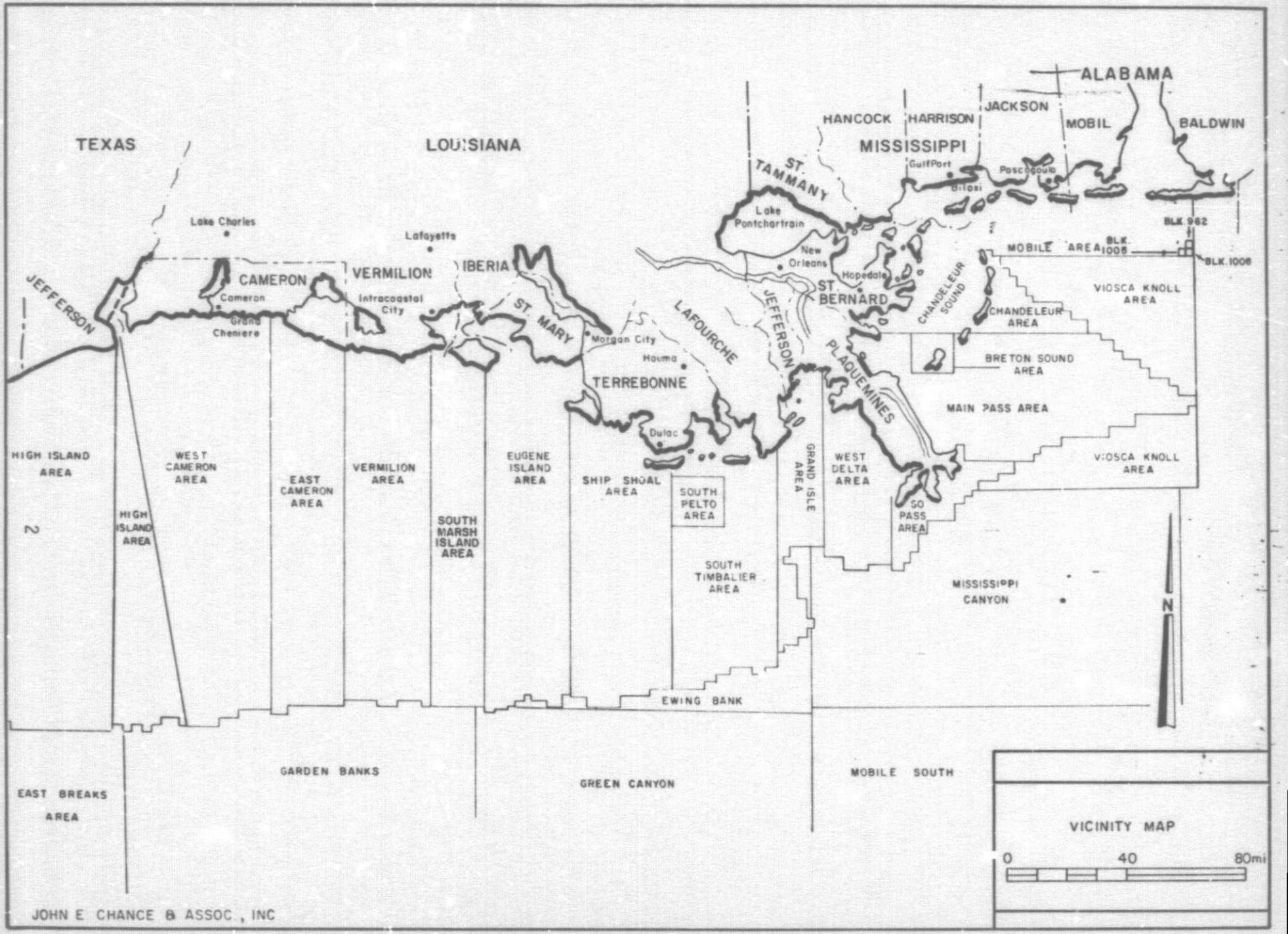
II. Description of the Proposed Action

This report addresses the activity proposed by Getty Oil Company for Mobile Area Blocks 962 (OCS-G-6860), 1005 (OCS-G-6866), and 1006 (OCS-G-6867). The approximate location of the activity is presented in Figure 1, a general vicinity map of the Outer Continental Shelf (OCS) lease areas off the coast of Alabama.

It is anticipated that a jack-up or submersible rig will be moved on location and two (2) exploratory wells will be drilled. The surface location of the wells and additional information regarding specific activities proposed by Getty Oil Company for this block are included in the attached Plan of Exploration.

The proposed activities will be carried out by Getty Oil Company with a guarantee of the following:

1. The best available and safest technologies will be utilized throughout the project. This includes meeting all applicable requirements for equipment types, general project layout, safety systems, equipment and monitoring systems.
2. All operations will be covered by M.M.S. approved Oil Spill Contingency Plan.
3. All applicable Federal, State, and local requirements regarding air emissions, water quality, and discharge for the proposed


TEXAS
LOUISIANA
ALABAMA
MISSISSIPPI
HANCOCK
HARRISON
JACKSON
MOBIL
BALDWIN
ST. TAMMANY
Lake Pontchartrain
GulfPort
Biloxi
Pascagoula
Lake Charles
Lafayette
JEFFERSON
CAMERON
Cameron
Grand Chenier
VERMILION
Intracoastal City
IBERIA
ST. MARY
Morgan City
Houma
TERREBONNE
LAFOURCHE
JEFFERSON
New Orleans
Hopedale
ST. BERNARD
CHANDELEUR SOUND
PLAQUEMINES
Dulac
MOBILE AREA
BLK. 1005
BLK. 962
BLK. 1006
VIOSCA KNOLL AREA
CHANDELEUR AREA
BRETON SOUND AREA
MAIN PASS AREA
VIOSCA KNOLL AREA
HIGH ISLAND AREA
WEST CAMERON AREA
EAST CAMERON AREA
VERMILION AREA
EUGENE ISLAND AREA
SHIP SHOAL AREA
SOUTH PELTO AREA
GRAND ISLE AREA
WEST DELTA AREA
SO PASS AREA
HIGH ISLAND AREA
SOUTH MARSH ISLAND AREA
SOUTH TIMBALIER AREA
MISSISSIPPI CANYON
EWING BANK
EAST BREAKS AREA
GARDEN BANKS
GREEN CANYON
MOBILE SOUTH
N
VICINITY MAP
0
40
80mi
JOHN E. CHANCE & ASSOC., INC

activities, as well as any other permit conditions, will be complied with.

A. Travel Modes, Routes, and Frequencies

Getty Oil Company will operate out of their service base facilities established in Mobile and on Dauphin Island, Alabama. Getty Oil Company anticipates using two (2) helicopters, two (2) supply boats, and one (1) crew boat to support their Mobile Area activities.

The helicopters, operating from Dauphin Island, will travel to the locations a total of fourteen (14) times per week, the crew boat will travel to the location a total of one (1) time per week, and the supply boats will travel to the location a total of seven (7) times per week.

It is anticipated that the transportation vessels will utilize the most direct route from the Mobile and Dauphin Island service bases. Because a vessel supporting Mobile Area Blocks 962, 1005, and 1006 exploration activities, as outlined in the Plan of Exploration, may be scheduled for other stops in the area, the exact route for each vessel on each particular trip cannot be predetermined.

B. Support Base and New Personnel

Getty Oil Company will utilize support base facilities established

in Mobile and Dauphin Island. The Mobile base is approximately forty-seven (47) miles from the exploration activity sites and the Dauphin Island base is located twenty-three (23) miles from the activity sites.

Because helicopter and marine facilities are currently available at the service bases and are presently and continuously manned, no additional onshore employment is expected to be generated as a result of these activities.

The initial OCS Socio-Economic Data Base Report for the service base facilities utilized by Getty Oil Company will be prepared for submission pursuant to the specific parameters to be established by the DOI/MMS and scheduled to be issued at a later date.

C. New Support Facilities

The proposed exploration activities for Mobile Area Blocks 962, 1005, and 1006 will not require the development of any new support facilities.

D. New or Unusual Technology

The exploration activities for Mobile Area Blocks 962, 1005, and 1006 will not warrant utilizing any new or unusual technology that may affect coastal waters.

E. Location of the Proposed Activities

Mobile Area exploration activities are located approximately forty-seven (47) miles from Mobile, twenty-three (23) miles from Dauphin Island and fourteen (14) miles from the Alabama coast of Baldwin County. Figure 1 presents the location of the block in relation to the Alabama coast, as well as the geographic relationship between Mobile Area Blocks 962, 1005, and 1006 and the other OCS lease areas.

III. DESCRIPTION OF THE AFFECTED ENVIRONMENT AND IMPACTS

A. Physical and Environmental

1. Commercial Fishing

Commercial fishing has traditionally provided an important economic base for a majority of the coastal communities along the Gulf of Mexico. In 1982, the Gulf coastal states landed 2.3 billion pounds of fish products representing a third of the nation's total, valued at over 600 million dollars. The five commercial fisheries of the greatest economic importance are the shrimp, menhaden, oyster, industrial bottom fish, and crab fisheries.

In 1982, Gulf fishermen landed over 209.9 million pounds of shrimp representing 75 percent of the nation's total and valued at over 425 million dollars. The northern Gulf shrimp fishery is comprised mainly of three species; the brown shrimp (Penaeus aztecus) , the white shrimp (P. setiferus) and the pink shrimp (P. duorarum). The smaller brown shrimp represent approximately 60 percent of the shrimp taken, the pink shrimp 10 percent, and the white shrimp account for a majority of the remainder. Three other species, the rock shrimp, royal reds, and the seabobs, are also taken commercially in the northern Gulf but together comprise less than 4 percent of the total shrimp landings.

Statistics compiled by the National Marine Fisheries Service indicate that 15,366,307 pounds of shrimp (heads on) valued at over 40 million dollars were landed at Alabama ports in 1983. It should be noted that catch statistics are recorded by the area landed and do not necessarily indicate that the species were actually caught in waters adjacent to the ports where they were landed.

Most shrimp are taken by trawl and are estuarine dependent in that they require estuaries during some stage of their life cycles. Mature shrimp leave the estuary for the open Gulf where they spawn (release eggs). The eggs and subsequent larval stages circulate freely in the currents of the OCS and can be found in virtually all OCS waters. Young juveniles then enter the estuary to feed, mature, and repeat the cycle.

The Mobile Area Blocks presently under consideration fall within the "high to moderate brown shrimp productivity area" (U.S.D.I., FREIS, Gulf of Mexico, 1983, Visual No. 4-I) wherein the possibility of shrimp fishing activity exists. Some documented impacts of petroleum exploration and production on the shrimp fishery include the removal of trawling space during the drilling and exploration phases and the possibility of fishing gear conflicts with existing well heads. These conflicts could result in loss of catch, loss of or damage to nets, vessel damage, and/or fishing downtime losses. Additional discussion of the impacts on the commercial fishing industry is contained in the Final Regional Environmental Impact Statement, Gulf of Mexico, Volume 1, pages 327 to 332 (U.S.D.I., 1983).

The Gulf oyster fishery provided over 40 percent of the oysters landed nationally in 1982 totaling 24.2 million pounds of meat worth over 33 million dollars. Most Gulf oysters are taken by oyster dredging in estuarine and coastal waters within 5 miles of shore. Oyster landings at Alabama ports have fluctuated considerably over the last several years. Several environmental factors account for these fluctuations namely prolonged periods of reduced salinities, increased siltation resulting from dredging operations, closure of oyster bottoms to harvesting because of organic and inorganic wastes produced by municipal and industrial sources in northern Mobile Bay, and by biological factors (O'Neil and Mettee, 1982). According to National Marine Fisheries Service statistics 335,666 pounds of oysters valued at 417,153 dollars were landed at Alabama ports in 1983. The proposed activities in Mobile Area Blocks 962, 1005 and 1006 are not expected to impact on the oyster fishery in Alabama.

In 1981 the Gulf States also landed 37.4 million pounds of blue crabs (Callinectes sapidus) valued at over 8 million dollars. Most were captured in "pots" (baited traps) in shallow estuarine or near shore waters. Blue crabs are also caught using "trotlines" (shallow, multibaited lines) and bottom trawls. These crabs are estuarine dependent with planktonic eggs and larval stages. Blue crab landings at Alabama ports totaled 1,411,629 pounds valued at 514,299 dollars in 1983, according to National Marine Fisheries Service statistics. The fishery for blue crabs is unlikely to be significantly affected by exploration activities in these blocks as it is

offshore of the coastal and estuarine waters in which this fishery operates.

Table 1 presents a list of commercially important shellfish found in this area of the Gulf.

The menhaden or "Pogy" fishery is the nation's second most valuable fishery accounting for 1.2 billion pounds valued at 47 million dollars or roughly half of the total 1981 fish poundage landed in the U. S. Spurred by a 55 percent increase in menhaden landings from the Gulf coast states, the U. S. had a record setting menhaden catch in 1982. Gulf landings were 1.9 billion pounds worth over 72 million dollars. Four species are said to comprise the menhaden fishery but the Gulf menhaden (Brevoortia patronus) accounts for most of the catch. Menhaden are processed into fish meal, fish oil, and fish solubles for industrial use. Menhaden are estuarine dependent with planktonic eggs. The activities as proposed are unlikely to have any adverse effect on the menhaden fishing as Mobile Area Blocks 962, 1005, and 1006 lie outside the "Principal Menhaden Harvest Area" (U.S.D.I., FREIS, Gulf of Mexico, 1983, Visual No. 4-I).

Industrial bottomfishes make up a large fishery in the Gulf. Within this group are fishes taken on or very near the bottom by commercial trawlers. The following fishes generally account for 95 to 98 percent of the industrial bottomfish trawl fishery: croaker, spot, sand seatrout, silver seatrout, catfish, and longspine porgy (U.S.D.I., 1983).

TABLE 1
COMMERCIALLY IMPORTANT SHELLFISH
OF THE GULF OF MEXICO

COMMON NAME	SCIENTIFIC NAME	HARVEST METHOD
SHRIMP:		
Brown Shrimp	Penaeus aztecus	BT
White Shrimp	P. setiferus	BT
Pink Shrimp	P. duorarum	BT
Seabob	Xiphopenaeus kroyeri	BT
Royal Red Shrimp	Hymenopenaeus robustus	BT
Rock Shrimp	Sicyonia brevirostris	BT
Blue Crab	Callinectes sapidus	CT,BT,TL
Oysters	Crassostrea sp.	OD,OT

BT Bottom Trawl
CT Baited Crab Trap
OD Oyster Dredge
OT Oyster Tongs
TL "Trotline"

Many of the species taken in the industrial bottomfish category spawn in offshore waters, and it is possible that the eggs might be adversely affected by contact with drill cuttings and/or drilling mud if they were present near the rig during such releases. These discharges may also cause temporary relocation of adults due to inundation of feeding ground at the drill site. Fishing activity will be temporarily interrupted by the placement of the drilling rig but no long-term effects are anticipated as a result of this proposal. Industrial bottomfish are usually sold as industrial fishmeal and fish solubles, but this group also produces some foodfish, pet food, and FPC (fish protein concentrate).

Other species for which significant commercial fisheries exist include striped mullet, groupers, snappers, and flounders. Mullet are taken near shore and in estuarine waters in seine nets, gill nets, and cast nets. Snappers and groupers are taken by hook and line throughout the OCS wherever naturally occurring or man-made benthic features provide sufficient habitat. Flounders are also caught commercially by hook and line and are taken seasonally in very shallow estuarine water by gig (barbless spear). Weakfishes, croakers, and drums are also taken commercially by hook and line as foodfishes. Table ? presents a list of commercially important industrial bottomfishes and sport fishes found in the Gulf of Mexico.

Overall, commercial fishermen have benefited from the growth of the petroleum industry in the OCS water of the Gulf of Mexico. While technological improvements have enabled commercial fishermen to increase

TABLE 2

A CHECK LIST OF COMMERCIAL & SPORT FISHES
OF THE NORTHERN GULF OF MEXICO[1]

COMMON NAME	SCIENTIFIC NAME[2]
Gulf Menhaden	*Brevoortia patronus*
Sea Catfish	*Arius felis*
Gafftopsail Catfish	*Bagre marinus*
Warsaw Grouper	*Epinephelus nigritus*
Jewfish	*Epinephelus itajara*
Red Grouper	*Epinephelus morio*
Rock Hind	*Epinephelus adscensionis*
Florida Pompano	*Trachinotus carolinus*
Red Snapper	*Lutjanus campechanus*
Sheepshead	*Archosargus probatocephalus*
King Whiting	*Menticirrhus saxatilis*
Black Drum	*Pogonias cromis*
Atlantic Croaker	*Micropogonias undulatus*
Spotted Seatrout	*Cynoscion nebulosus*
Sand Seatrout	*Cynoscion arenarius*
Red Drum	*Sciaenops ocellata*
Spot	*Leiostomus xanthurus*
Striped Mullet	*Mugil cephalus*
King Mackerel	*Scomberomorus cavalla*

TABLE 2 (cont'd)

Spanish Mackerel	*Scomberomorus maculatus*
Unclassified Flounders	*Paralichthys* spp.

1. Based on landing statistics compiled by the National Marine Fisheries Service, New Orleans, Louisiana and Bayou La Batre, Alabama.
2. Scientific nomenclature generally from Hoese and Moore (1977).

the volume of landings, development of the petroleum industry has also had a positive impact on fishing. Because OCS petroleum development is dependent on extensive marine vessel utilization, harbors and ports have been improved, port access waterways have been expanded and improved, and the availability and quality of marine vessel maintenance and repair facilities have increased significantly. These improvements have definitely had a positive effect on fishermen (Lassiter, 1980).

2. Shipping

Designated shipping fairways are located approximately six (6) miles to the west and eight (8) miles to the north of Mobile Area Blocks 962, 1005, and 1006. It is likely that the marine vessels supporting these blocks will utilize the shipping fairway located north of the block to gain access to the support bases; however, it is unlikely that the marine vessels will have a significant effect on fairway traffic. The drilling rig and each of the marine vessels will be equipped with all U. S. Coast Guard required navigational safety aids.

3. Recreation

The open Gulf encompasses a broad expanse of saltwater which is utilized by numerous sports fishermen and a small but rapidly increasing number of SCUBA divers. Many fishermen charter boats to deep-sea fish and sport dive in the northern Gulf. The states of Alabama, Mississippi, and Louisiana support approximately 120 charter boats which conduct a majority

of their fishing activities in the waters of the OCS (U.S.D.I., 1983). Petroleum platforms in the northern Gulf provide recreation for fishermen and scuba divers because they act as artificial reefs attracting and establishing aquatic communities including highly sought after food and sport fishes. The reef effect created by petroleum platforms is well known and is evidenced by the numerous private boat owners who regularly visit offshore facilities to harvest food and sport fishes.

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

4. Cultural Resources

Visual No. 11 from the Regional Environmental Impact Statement (U.S.D.I, 1983) indicates that Mobile Area Blocks 962, 1005, and 1006 fall within the zone designated as an area with a high probability of occurrence of historical cultural resources. Intersea Research Corporation conducted a cultural resources survey of the three block area. A copy of that report is included as an attachment to the Plan of Exploration. No archeological sites were identified from the three block area and it is unlikely that

there will be any significant impacts upon culturally significant resources.

5. Ecologically Sensitive Features

Mobile Area Blocks 962, 1005 and 1006 are located approximately sixteen (16) miles from the Bon Secour National Wildlife Refuge, nineteen (19) miles from Gulf State Park, twenty-seven (27) miles from Fort Pickens and forty (40) miles from the Gulf Islands National Seashore. There are no other known ecologically sensitive areas near Mobile Area Blocks 962, 1005, and 1006.

The Mobile and Dauphin Island support bases, which will be utilized as operations bases for Mobile Area Blocks 962, 1005, and 1006 exploration activities, are located approximately twenty (20) miles from Gulf Island National Seashore, twenty-two (22) miles from the Bon Secour National Wildlife Refuge and forty-eight (48) miles from Fort Pickens (U.S.D.I. FREIS, Gulf of Mexico, 1983, Visual No. 3).

In general if all activities are executed as planned, encountering no unusual circumstances, the environmentally sensitive areas will not be affected.

6. Existing Pipelines and Cables

The shallow hazards survey performed for Getty Oil Company by Intersea

Research Corporation and included as an attachment to the Plan of Exploration indicates that the seafloor is characterized as an area of topographic irregularity. The seafloor dips to the northeast approximately 0.5 of a degree. Subbottom profile records indicate an overlying sand layer, up to thirteen feet thick, which is acoustically amorphous and possibly mobile. Beneath the sand layer lies a unit with anomalous high amplitude returns which appear to represent paleo-channeling. Zones of acoustic turbidity, possibly associated with sedimentary methane gas concentrations, combined with the channeling give the unit a highly discordant appearance. There is no evidence of faulting in the near-surface sediments within Mobile Blocks 962, 1005, and 1006. Getty Oil Company is aware of these potential hazards and has taken the necessary precautionary measures.

There are no known pipelines or man made structures in Mobile Area Blocks 962, 1005, and 1006.

7. Other Mineral Uses

There are no other known mineral resources located in or near Mobile Area Blocks 962, 1005, and 1006.

8. Ocean Dumping

The major sources of ocean dumping related to OCS petroleum exploration activity are drilling fluids, or "muds," and drill cuttings.

After the exploratory drilling in Mobile Area Blocks 962, 1005, and 1006 is completed, Getty Oil Company anticipates dumping their excess water-based drilling fluids (approximately 800 - 1,200 bbls). If any oil-based mud is used in the drilling operations, it will be transported to shore for proper disposal.

Drill cuttings are brought up by the drilling mud and range in size from grains of sand to pebbles. These cuttings are separated and sifted and then disposed overboard. Treated domestic wastes and drill waters will also be disposed at the proposed drilling site. There will be no intentional discharge of any oily or hazardous materials in violation of DOI or EPA regulations.

9. Endangered or Threatened Species

Endangered or threatened species which might occur in Mobile Blocks 962, 1005, and 1006 are blue whale (Balaenoptera musculus), finback whale (Balaenoptera physalus), humpback whale (Megaptera novaeangliae), sei whale (Balaenoptera borealis), sperm whale (Physeter catodon), Kemp's ridley turtle (Lepidochelys kempii), green turtle (Chelonia mydas), hawksbill turtle (Eretmochelys imbricata), leatherback turtle (Dermochelys coriacea) and loggerhead turtle (Caretta caretta) (U.S.D.I., Region IV Endangered Species Notebook).

Endangered and threatened species expected to occur in the vicinity of the onshore bases are Florida manatee (Trichechus manatus), bald eagle

(Haliaeetus leucocephalus), Arctic peregrine falcon (Falco peregrinus tundrius), and brown pelican (Pelecanus occidentalis) (U.S.D.I., Region IV Endangered Species Notebook). No designated bald eagle nesting or feeding habitat occurs in Alabama (U.S.D.I., FREIS, Gulf of Mexico, 1983, Visual No. 3); however, bald eagles can be expected to feed on fish or dead animals along the coast (O'Neil and Mettee, 1982). The brown pelican was a common resident of Alabama but this species has experienced a sharp population decline since 1956 (O'Neil and Mettee, 1982). Arctic peregrine falcons are migrants through the area and are not considered an important component of the resident bird population (O'Neil and Mettee, 1982). The loggerhead turtle is known to have nested on Dauphin Island and Fort Morgan Peninsula (Jackson and Jackson, 1970 and Mount, 1975 both cited in O'Neil and Mettee, 1982). Caldwell and Caldwell (1973 cited in O'Neil and Mettee, 1982) have reported the Florida Manatee from coastal Alabama. The presence of marine mammals in coastal Alabama is considered sporadic and probably no resident populations exist (O'Neil and Mettee, 1982). It is unlikely that the offshore or onshore activities related to Mobile Area Blocks 962, 1005, and 1006 exploratory drilling will have any effect on the previously named species.

B. Socio-Economic Impacts

In accordance with DOI/MMS guidelines (OS-7-01), dated November 20, 1980, the initial OCS Data Base Report will be developed for submission on or before the prescribed due date. Subsequent Environmental Reports

provided by Getty Oil Company will address this data and related activity impacts as required.

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

It should be noted that most large crude oil and refined products spills have occurred during transportation and not during drilling or production operations. Furthermore, the probability of an oil spill occurring during exploratory drilling operations is low (Danenberger, 1976). Transportation and river runoff contribute an estimated 34.9 percent and 26.? percent, respectively, to the hydrocarbon contamination of the world's oceans while offshore production activities account for only 1.3 percent (National Academy of Sciences, 1975). Natural seeps of petroleum and natural gas, which occur throughout the northern Gulf of Mexico (Zo Bell, 1954; Geyer, 1979), contribute an estimated 9.8 percent to the contamination of the world's oceans (National Academy of Sciences, 1975). Additionally, it was noted in the executive summary of a recent study of petroleum production platforms in the central Gulf of Mexico (Bedinger, 1981), that natural disturbances (i.e. river flooding and storms) can more greatly affect normal biological communities that the current industrial development of the Louisiana OCS. The preceding

to minimize the significance of major oil spills resulting from petroleum exploration and production activities but is provided to establish a perspective relative to their probable occurrence.

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

The unavoidable adverse impacts that will occur as a result of the exploratory drilling and discharging of drilling fluids, and treated sewage will be few in number and temporary in nature. The primary adverse impacts include a localized degradation of water and air quality in the vicinity of the drilling site, the potential obstruction to commercial and recreational fishing vessels, and the disruption and/or killing of benthic and/or pelagic organisms during location of the drilling rig and during disposal of muds, cuttings, and domestic wastes and sewage.

Discharging from the drill site is inevitable during OCS operations, particularly during exploration. Any materials that may contain oil or other hazardous materials, and therefore would have a much greater adverse impact on the environment, will not be discharged intentionally. Any discharging will be done pursuant to all DOI and EPA regulations. The discharges to be disposed overboard as a result of the exploration activity will include domestic waste and sewage that is treated on the rig before discharging, drill cuttings, and excess water-based mud.

The environmental fate and effects of drilling muds and cuttings has been extensively addressed in a recent symposium (See Ayers et al., 1980 for detailed discussions). The discharging of drill cuttings and water-based mud will result in an increase in water turbidity, burial of benthic organisms, and possible toxic effects on marine organisms in the immediate vicinity of the drilling rig. A reduction in photosynthetic activity and plankton populations can also be expected as a result of discharging. It is expected, however, that pelagic and benthic organisms will repopulate the area rapidly after discharging if the effects are minimal and intermittent as expected.

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

Mobile Area Blocks 962, 1005, and 1006 and is included as an attachment to this Environmental Report.

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

There is a remote possibility that offshore areas of historical, cultural, or biological significance could be damaged or destroyed by OCS exploration operations. Visual No. 11 from the Regional Environmental Impact Statement (U.S.D.I., 1983) indicates that no archeological, cultural, or historic areas are in the vicinity of Mobile Area Blocks 962, 1005, and 1006. Intersea Research Corporation's cultural resources report also did not identify any known archeological, cultural, or historic resources. Getty Oil Company will make every effort to avoid disturbing any historically, culturally, or biologically significant feature.

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APPENDIX 1

COASTAL ZONE MANAGEMENT

CONSISTENCY CERTIFICATE

COASTAL ZONE MANAGEMENT

CONSISTENCY CERTIFICATION

EXPLORATION

.....

Type of Plan

MOBILE AREA BLOCK 962, 1005, AND 1006

.....

Area and Block

OCS-G-6860, OCS-G-6866, AND OCS-G-6867

.....

Lease Number

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

GETTY OIL COMPANY

.....

Lessee or Operator

.....

Certifying Official

9-12-84

.....

Date

* * * * * * *

AIR QUALITY REVIEW
PLAN OF EXPLORATION

For

MOBILE AREA BLOCKS 962 AND 1006
OCS-G-6860 AND OCS-G-6867

GETTY OIL COMPANY
P. O. BOX 53386
NEW ORLEANS, LOUISIANA 70153

* * *

Submitted to:

VINCE COTTONE
OCS ENVIRONMENTAL AFFAIRS COORDINATOR

SEPTEMBER 06, 1984

* * *

Prepared by:
JOHN E. CHANCE & ASSOCIATES, INC.
Regulatory & Environmental Division
Lafayette, Louisiana
Project No. 84-8146

PROJECTED AIR EMISSION SCHEDULE FOR EXPLORATION PROJECT

I. General Information

Location of Facility - Mobile Area Blocks 962 & 1006
Distance Offshore - 14 miles
Year 1 Beginning Date 10-01-84 Ending Date 09-31-85
Total Well Footage to be drilled - 40102 feet
Year 2 Beginning Date 10-01-85 Ending Date 12-01-85
Total Well Footage to be drilled - 8148 feet
Owner/Operator - Getty Oil Company
Address - P. O. Box 53386
New Orleans, Louisiana 70153
Contact Person - Vince Cottone
OCS Environmental Affairs Coordinator

II. Findings of Air Quality Review

As per DOI-MMS regulations this facility is exempt from further air quality review as it has been determined that its operation will not have a significant adverse environmental impact on air quality.

III. Total Emissions at Rig/Platform

Emitted Substance(s)	Allowable Emissions (tons/yr)	Year 1 Projected Emissions	Year 2 Projected Emissions	Status (OK/NG)
CO	19749.9	66.35	10.39	OK
SO2	466.2	2.42	.10	OK
NOX	466.2	435.11	68.04	OK
VOC	466.2	23.12	3.71	OK
TSP	466.2	.18	.03	OK

IV. Total Supply & Crew Boat Emissions at Mobile, Alabama

Emitted Substance(s)	Year 1 Projected Emissions	Year 2 Projected Emissions	Status (OK/NG)
CO	57.15	9.53	OK
SO2	*	*	*
NOX	401.01	66.83	OK
VOC	21.60	3.60	OK
TSP	*	*	*

V. Total Helicopter Emissions at Dauphine Island, Alabama

Emitted Substance(s)	Year 1 Projected Emissions	Year 2 Projected Emissions	Status (OK/NG)
CO	4.15	.69	OK
SO2	.13	.02	OK
NOX	.41	.07	OK
VOC	.38	.06	OK
TSP	.18	.03	OK

VI. Transportation Services Data

Supply Boats (3000 hp)

Port - Mobile, Alabama
Waiting Time- 24 hrs./day
Trips per Week - 7

Crew Boats (2500 hp)

Port - Mobile, Alabama
Waiting Time - 4 hrs.
Trips per Week - 1

Helicopters

Base - Dauphine Island, Alabama
Trips per Week - 14

Other (Explain) N/A

*The EPA does not provide SO2 and TSP emission factors for boats nor does it provide TSP factors for drilling.

VII. Factors Used in Calculations

Emission Factors for Power Generation

Emitted Substance(s)	Drilling (lb/hp-hr)
CO	.0042
SO2	.0019
NOX	.028
VOC	.00095
TSP	*

Emission Factors for Helicopters and Boats

Emitted Substance(s)	Helicopters (lb/engine-LTO)	Boats (lb/gal)
CO	5.7	.0598
SO2	.18	*
NOX	.57	.4196
VOC	.52	.0226
TSP	.25	*

Other Factors
Drilling Power Generation - 60 hp-hr/ft
Fuel Consumption by Boats - .0959 gal/kw-hr

VIII. Methodology

Rig/Platform - horsepower-hour method
Boats - horsepower-hour method
Helicopters - landing/takeoff (LTO) cycle method

IX. References

Drilling - EPA-450/3-77-026 (June 1977) - "Atmospheric Emissions From Offshore Oil and Gas Development and Production", pp. 81-92.

Boats and Helicopters - EPA Report AP-42 "compilation of Air Pollutant Emission Factors", 3rd edition, (August 1977), pp. 116, 125, 127.

*The EPA does not provide SO2 and TSP emission factors for boats nor does it provide TSP emission factors for drilling.

PHOTO DOCUMENTATION SURVEY

OF

BLOCK 1006 (OCS-G-6867)

MOBILE AREA

OFFSHORE ALABAMA

AUGUST, 1984

Submitted To:

VINCE COTTONE

OCS ENVIRONMENTAL AFFAIRS COORDINATOR

GETTY OIL COMPANY

P. O. BOX 53386

NEW ORLEANS, LOUISIANA 70153

(504/524-4861)

Prepared by:

JOHN E. CHANCE & ASSOCIATES, INC.

Regulatory & Environmental Division

Project #84-8146

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APPENDICES

PART I

INTRODUCTION

Getty Oil Company of New Orleans, Louisiana, contracted John E. Chance and Associates, Inc. to conduct a photo-documentation survey of the sea bottom at and in areas contiguous to a proposed exploratory drilling site located in Mobile Block 1006 (OCS-G-6867), offshore Alabama (Figures 1 and 2). Intersea Research Corporation (I.R.C.) performed a potential shallow geologic hazards and cultural resources survey for Getty in an area encompassing Mobile 1006 from April 26 to May 10, 1984. Interpretation of side-scan sonar, fathometer, and subbottom profiler records revealed areas of potential hard/live bottoms in all blocks surveyed. It was determined that these possible live bottom areas covered approximately 65 percent of Mobile Block 1006 (Figure 3). This photo-documentation survey was conducted pursuant to Stipulation 3 of Getty Oil Company's Oil and Gas Lease OCS-G-6867.

Two photo-documentation survey options are provided by Minerals Management Service (M.M.S.) guidelines. Option one consists of eight radials at 45 degree angles extended a minimum of 1820 meters from the proposed drill site. Assuming no hard/live bottoms are discovered during the photo-documentation survey, drilling operations can be conducted at the proposed well site without additional restrictions. Option two consists of providing photo-documentation for the entire lease block and all areas adjacent out to a minimum of 1820 meters. Line spacing for this option is 200 meters which provides regulatory coverage of 100 meters on either side

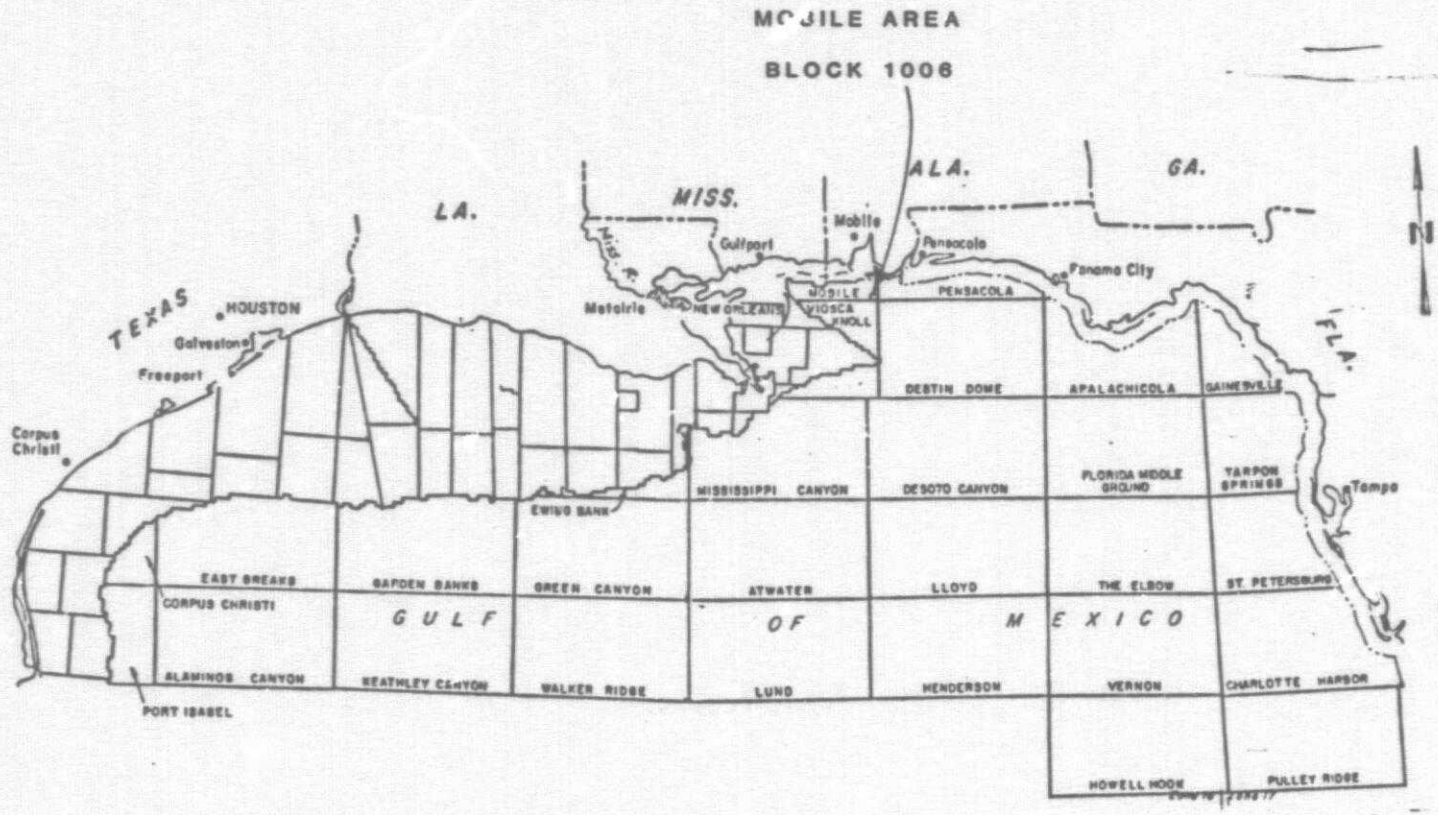
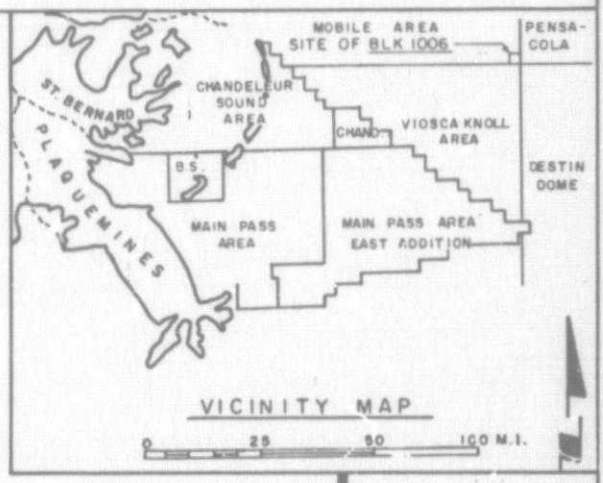


FIGURE 1

GULF OF MEXICO REGIONAL MAP



12.3 Miles to Shore

962

Y= 10,897,920.00'

Proposed Location
Lat. 30° 01' 21.069"
Long. 87° 49' 33.779"

1005

BLK. 1006

969

X= 1,378,080.00'

X= 1,393,920.00'

Getty Oil Company
O.C.S. - G - 6867

MOBILE AREA

PENSACOLA AREA

Y= 10,882,080.00'

MOBILE AREA
VIOSCA KNOLL AREA

38

VICINITY PLAT

0 3000 6000 FT.

FIGURE 2

PROPOSED MINERAL DEVELOPMENT
MOBILE AREA (NH 16-4)
GULF OF MEXICO

APPLICATION BY GETTY OIL COMPANY
JULY 5, 1984 NEW ORLEANS, LA.

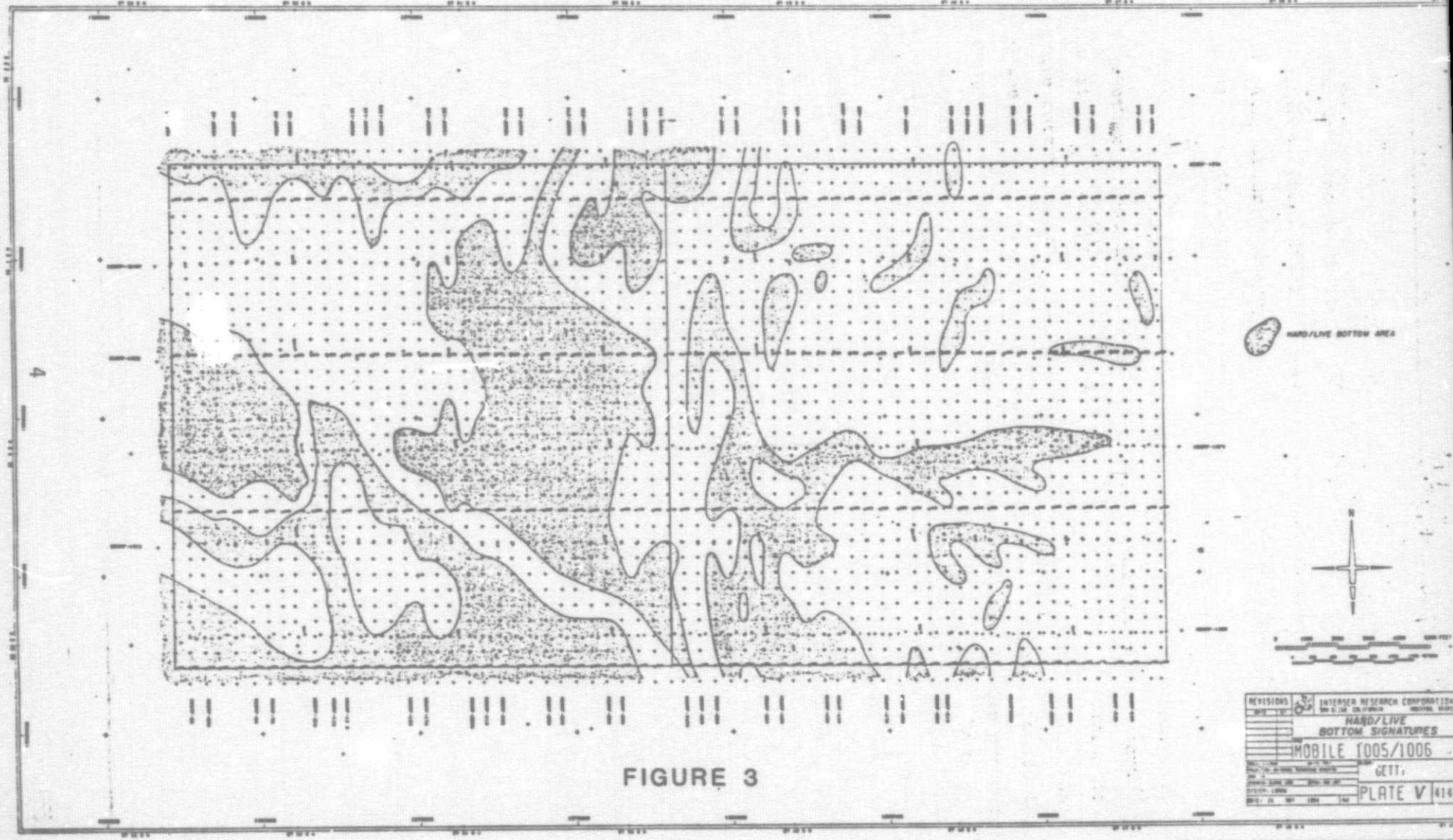

HARD/LIVE BOTTOM AREA
N
REVISIONS
INTERSEA RESEARCH CORPORATION
HARD/LIVE
BOTTOM SIGNATURES
MOBILE TOOS/1006
GETTY
PLATE V
4140

FIGURE 3

of the survey lines. If no hard/live bottoms are discovered during the photo-documentation survey, drilling operations can be conducted anywhere in the block without additional restrictions.

The photo-documentation survey conducted by John E. Chance & Associates consisted of eight line transects radiating from the proposed drill site at 45 degree angles to one another. Each radial extended 2275 meters from the proposed drill site (Figure 4). The rational for extending the radials to 2275 meters was formulated from a combination of the two M.M.S. options for photo-documentation surveys. Extending the radials to 2275 meters provides the 1820 meter buffer area required by option one and combined with the 100 meter regulatory coverage on either side of the radials provided by option two, permits the location of drilling operations anywhere with the shaded area (Figure 4) without additional photo-documentation. This degree of flexibility in locating drilling operations is only provided if no hard/live bottoms are discovered during the survey.

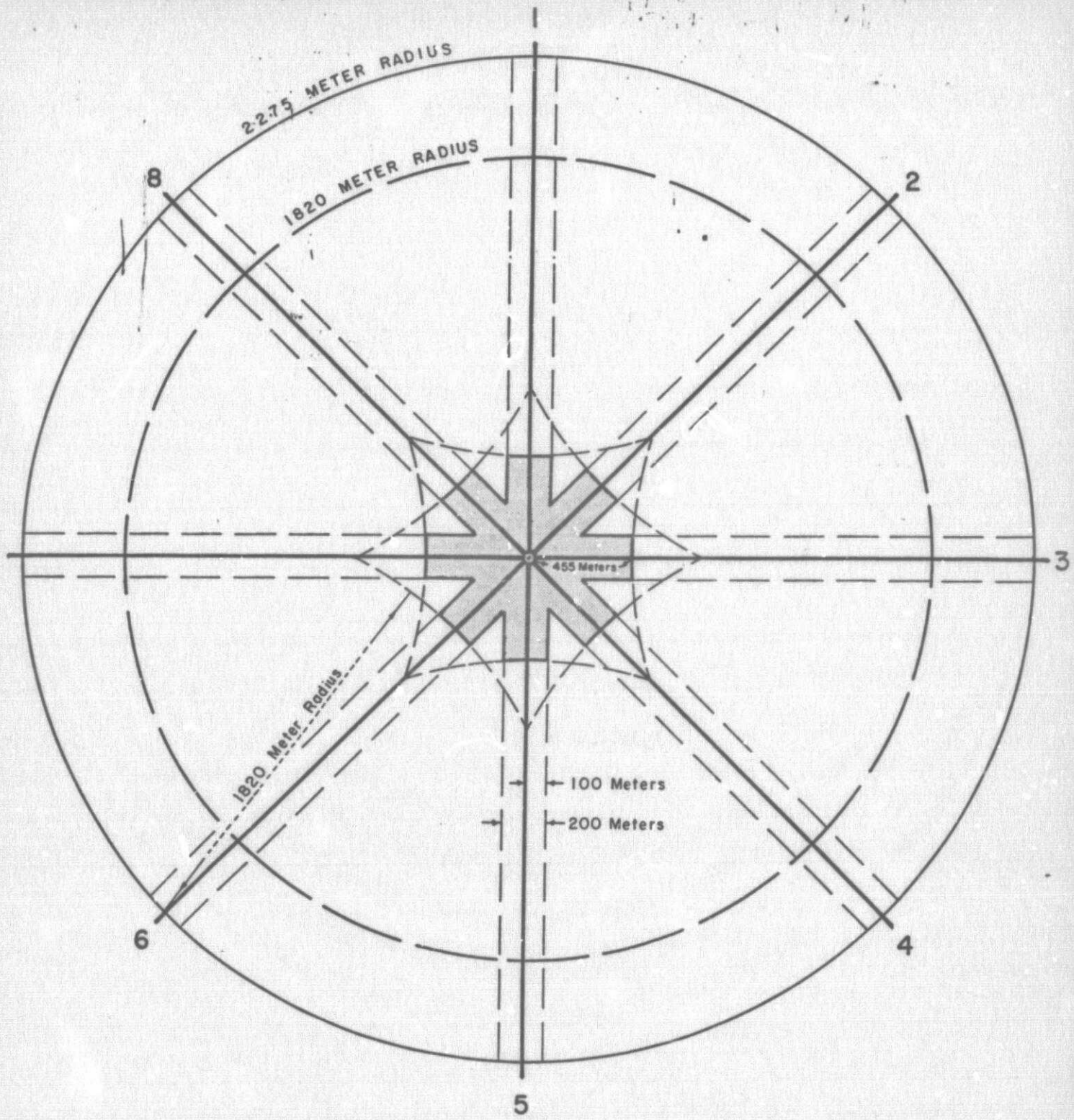


FIGURE 4

LINE 1 = RADIALS 1 & 5
LINE 2 = RADIALS 2 & 6
LINE 3 = RADIALS 3 & 7
LINE 4 = RADIALS 4 & 8

PHOTO- DOCUMENTATION
SURVEY DESIGN
J. E. C. A.
6/22/84

PART II

EQUIPMENT AND SURVEY METHODOLOGY

A. Equipment

Photo-documentation was obtained utilizing an International Submarine Engineering Type 2-20, Remotely Operated Vehicle (ROV). The tethered, unmanned, 20 horsepower vehicle was equipped with a 360 degree scanning sonar, black and white and color video, 35 mm stereoscopic still camera and five funct'on manipulator. Equipment specifics are presented in Appendix A.

The vehicle was navigated along the pre-planned survey route via a surface console on the host vessel M/V Universal Surveyor. Color and black and white video footage of the sea bottom and associated fauna were monitored and recorded throughout each transect. Additionally, the video was monitored during the vehicle's relocation from one line to another with a view toward increasing the areal extent of the photo-documentation coverage. All operating functions of the v.deo cameras including pan, tilt, focus, and light intensity were controlled via the surface console providing optimum video coverage of the substrate traversed. Real-time positioning coordinates, heading, time of day, and depth of the vehicle were superimposed on the color video. The vehicle was equipped with automatic heading and depth controls to facilitate navigation along the pre-planned transect. Survey speed of approximately 1 knot provided quality video viewing.

Stereoscopic still camera photography provided additional verification of the sea bottom substrate and associated fauna. Still photos were taken every 1000 feet along each transect and also when unusual subjects were encountered. The ROV was ideally suited for this type of work since unusual subjects could be closely scrutinized by simply stopping the vehicle. The surface-actuated camera recorded time of day, survey identification code and frame number as a data insert on each still picture.

B. Positioning

Positioning of the M/V Universal Surveyor was provided by a Cubic DM-54 Automatic Range Grid Overlay (ARGO) Positioning System. This system is a high precision range-range radio positioning system with a lane identification feature capable of determining lane loss. ARGO computes range by measuring the phase delay between the instantaneous output of the modulated signal and a signal which has traveled to a known point and back. The host vessel can then be navigated along a pre-planned route by monitoring the range measurements from two or more geographic points. Accuracy of the ARGO system is $\pm$10 meters.

Positioning of the ROV is accomplished through a totally integrated acoustic and surface positioning system for real-time knowledge of the vehicle's geographic location. The SIMRAD HPR-209 Hydroacoustic Position Reference System is designed to provide a reliable and precise means of establishing position relative to a submersible instrument such as a ROV.

The system is based upon a super-short baseline principle and provides an accuracy of less than one percent of the slant range. A transponder mounted on the ROV constitutes the acoustic reference source of the equipment and transmits a single pulse when interrogated by an acoustic signal of a specific frequency. On receipt of the pulse, the transducer (mounted beneath the host vessel) produces a highly accurate measurement of the direction (angle) to the transponder relative to the transducer, and simultaneously, the elapsed time between interrogation and reception is measured to give the slant range to the transponder. The Simrad positioning system is fully integrated with the ARGO surface positioning system on board the host vessel to establish the absolute, real-time position of the submerged vehicle.

C. Survey Methodology

Following ARGO calibration, the host vessel proceeded to the survey area and the ROV was deployed in the vicinity of the start point for line one (Radial 1-5). The area was surveyed with line 1 oriented north-south. This orientation provided the greatest number of intersections with the probable hard/live bottoms identified by I.R.C. The ROV was then navigated south along line one (Radial 1-5). Navigational fix marks were recorded at 500 foot intervals. Still photographs were taken at 1000 foot intervals at points which coincided with navigational fix marks. The real-time geographic location of the ROV at navigational fix marks and numbered still photograph locations are depicted on Enclosure 1. Upon completion of line one, the ROV was navigated to line two (Radial 4-8). Color and black and white video were monitored during the relocation in order to detect the

presence of hard/live bottoms which might be missed during the transect survey. Relocation video was monitored between lines two and three (Radial 7-3) and between lines three and four (Radial 2-6) (See Enclosure 1). The photo-documentation survey was conducted over a 23 hour period of June 29-30, 1984.

PART III

RESULTS AND DISCUSSION

A. Sea Bottom Substrates

Three bottom substrates were encountered during the photo-documentation survey. Two can be characterized as sand bottom with differences in topography which are readily apparent. The first consists of sand bottom covered by a lamina of fine grain, soft sediments, primarily kaolinite, which is discharged mainly through the Apalachicola River to the east of the study area and is swept into the region by littoral currents (Griffin, 1962 and Hyne and Goodell, 1967). Included in this bottom type are those areas covered by a veneer of what appeared to be plant detritus, presumably derived from the Mobile and Escambia river drainages. Bottom topography ranged from smooth to irregular low-relief mounding.

The second sand bottom-type consisted of a series of anastomosing, northeast trending, sand wave-like features. The bottom of the troughs were covered with large shell fragments and other coarse debris. In the area of gradation between the two substrate types the crests of the sand waves were of lower relief and the troughs were covered by shell hash and/or plant detritus.

Both of these bottom types had low to moderate shell hash content. I.R.C. noted the irregular nature of the seafloor in the geologic hazards report and cited movement of sediment by bottom currents as a possible

causative agent.

The third bottom type encountered consisted of a clay outcrop. The location of this anomaly is shown on Enclosure 1. This anomaly is not shown on I.R.C.'s bathymetry, composite anomalies and cultural features, or isopach of shallow sediment visuals although outcrops are mentioned in the report. It does however fall within a designated hard/live bottom area on I.R.C.'s hard/live bottom signatures visual. The outcrop appears to be associated with a paleo channel and if so could be a surface expression of clay material extruded by gas percolation. Low pressure gas of biogenic origin is known to be associated with paleochanneling (Whelan et al., 1977). The crenate, reticulate morphology of the outcrop is evidence of its recent extrusion. If the outcrop was a remnant in situ structure, it would have most certainly been smoothed by erosional forces.

Still photographs depicting the various bottom types observed are presented in Appendix B. Water depths in the survey area averaged 77 feet mean sea level.

B. Hard/Live Bottoms

No emergent hard/live bottoms were discovered during the photo-documentation survey. M.M.S. (1983) has defined live

bottom areas as "...those areas which contain biological assemblages consisting of such sessile invertebrates as sea fans, sea whips, hydroids, anemones, ascidians, sponges, bryozoans, seagrasses, or coral living upon and attached to naturally occurring hard or rocky formations with rough, broken, or smooth topography, whose lithotope favors the accumulation of turtles, fishes, and other fauna." By definition, live bottom areas consist of two integral elements, a hard substrate and an attached epifauna. The only outcrop discovered during the photo-documentation survey consisted of clay which undergoes severe erosion in the marine environment. No epifauna was noted attached to the outcrop and none is expected due to the high erosional character of the clay material.

C. Biological Assemblage

The predominant bottom substrate encountered during the photo-documentation survey consisted of sand bottom which supported a typical sand bottom biological assemblage. Benthic organisms noted during the survey included hydroids, sea pens, ceriantharian anemones, scallop (Aequipecten glyptus), polychaetes, calico crab (Hepatus epheliticus), echinoids (Clypeaster sp.), asteroids (Astropecten sp., Luidia sp.), and ophiuroides. An assemblage of this type corresponds favorably with the Inner and Middle Shelf Sand Bottom Assemblage described by Woodward-Clyde Consultants and Continental Shelf Associates, Inc. (1983). No epifauna was noted attached to the clay outcrop.

PART IV

CONCLUSIONS

No emergent hard/live bottoms were discovered during the photo-documentation survey. The predominant bottom type observed consisted of sand bottom which supported a typical sand bottom biological assemblage. Based on this photo-documentation survey, location of drilling operations anywhere within the cross-hatched area depicted on Enclosure 1 would comply with Stipulation 3 of Getty Oil Company's Oil and Gas Lease OCS-G-6867.

PART V
REFERENCES

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APPENDIX A

FEATURES OF THE INTERNATIONAL SUBMARINE ENGINEERING TYPE 2-20 REMOTELY OPERATED VEHICLE:

Sub-Sea Systems CM-8 black and white low light video camera with wide-angle lens

Panasonic WV3150 color video camera

35mm Photosea 2000 stereo camera (100 frames)

4-500 watt variable intensity flood lights

Simrad HPR 209 acoustic positioning system with 7095 miniature responder and 7109 miniature transponder

Ametek Straza model 250 A CTFM (search and navigation sonar)

Wesmar DC700 digital compass

International Submarine Engineering five-function manipulator.

APPENDIX B

Photo 65 - Upper Left
Sand bottom with no apparent relief. Dark material is plant detritus.

Photo 72 - Upper Right
Sand bottom with minimal relief. Whiter areas are composed of coarse sand. Bottom in this photo is covered by a veneer of kaolinte and shell hash.

Photo 16 - Lower Left
Sand bottom with low relief mounding in gradation area between little or no relief and northeast trending sand waves.

Photo 19 - Lower Right
Northeast trending sand waves. Note shell hash and plant detritus in troughs.

Upper Left
Photo of color video frame showing northeast trending sand waves. Note large shell fragments and other coarse debris in troughs.

Photo 5- Upper Right
Clay outcrop. Fish is a junenile red snapper (Lutjanus campechanus).