

N-2902
OCS-G-6337
G-6338

In Reply Refer To: FO-2-1

January 22, 1988

Amoco Production Company
Attention: Mr. R. A. Fitch
Post Office Box 50879
New Orleans, Louisiana 70150

Gentlemen:

Reference is made to your Initial Plan of Exploration and Environmental Report received January 15, 1988, for Leases OCS-G 6337 and 6338, Blocks 109 and 110, respectively, Garden Banks Area. This plan includes the activities proposed for Wells A through D.

In accordance with 30 CFR 250.34, revised December 13, 1979, and our letter dated January 29, 1979, this plan is hereby determined to be complete and is now being considered for approval.

Your plan control number is N-2902 and should be referenced in your communication and correspondence concerning this plan.

Sincerely yours,

(Orig. Sgd.) A. Donald Girou

D. J. Bourgeois
Regional Supervisor
Field Operations

bcc: Lease OCS-G 6337 (OPS-3-2) (FILE ROOM)
Lease OCS-G 6338 (OPS-3-2) (FILE ROOM)
OPS-3-4 w/Public Info. Copy of the plan and ER (PUBLIC RECORDS)

ADGobert:cck:01/20/88:poecom

PUBLIC INFORMATION
COPY



Amoco Production Company

New Orleans Region
Amoco Building
Post Office Box 50879
New Orleans, Louisiana 70150
Offshore

R A Fitch
Division Production
Manager

January 13, 1988

File: GAU-LF

Minerals Management Service
Office of Field Operations
1201 Elmwood Park Boulevard
New Orleans, LA 70123-2394

Attention: Regional Supervisor

Plan of Exploration and Supplement
Garden Bank: Blocks 109 & 110
OCS-G-6337, 6338
Offshore, Louisiana



In accordance with 30 CFR 250.34-1, Exploration Plan, revised September 14, 1979, and letter dated January 29, 1979, attached please find nine copies of Amoco Production Company's Plan of Exploration and Supplement for Garden Banks Blocks 109 and 110, OCS-G-6337, 6338, Offshore Louisiana. The Block 110 Supplement adds three wells.

Amoco respectfully requests your earliest favorable attention as drilling is scheduled to commence by February 1, 1988. Should further information be desired, please contact Harty Van of this office at telephone 504/586-6567.

Yours sincerely,

R. A. Fitch

MBCV

Attachments

PLAN OF EXPLORATION & SUPPLEMENT

GARDEN BANKS BLOCKS 109 & 110

OCS-C-6337, 6338

OFFSHORE, LOUISIANA

AMOCO PRODUCTION COMPANY
NEW ORLEANS, LOUISIANA

Harty C. Van, Jr.
504/586-6567
Petroleum Engineer Associate
January 13, 1988

PUBLIC INFORMATION COPY

250.34-1 PLAN OF EXPLORATION & SUPPLEMENT

January 13, 1988

A BRIEF DESCRIPTION OF THE PROPOSED TYPE AND SEQUENCE OF EXPLORATION ACTIVITIES TO BE UNDERTAKEN TOGETHER WITH A TENTATIVE TIMETABLE FOR THEIR PERFORMANCE INCLUDING PLAN COMMENCEMENT DATE, SEQUENCE EACH WELL IS TO BE DRILLED, TIME FRAME (DAYS) TO COMPLETE EACH WELL, AND TOTAL TIME TO COMPLETE THE PROPOSED PROJECT.

Amoco Production Company, recently took a farm-in on Garden Banks Block 109 and 110 from Placid Oil Company and associates. Blocks 109 and 110 are located in water depths ranging between 250 and 860 feet, approximately 117 miles offshore and south of the Cameron Parish, Louisiana shoreline. (See Attachment No. 1, Location Map).

Placid was initially designated as operator and filed the initial Plan of Exploration on Block 110 in January 1984. Placid also filed a Supplement to this Plan of Exploration in May 1984. The Plan and Supplement were approved by the MMS and one well was drilled by Placid. Amoco took a farm-in of both blocks on January 4, 1988.

Amoco's Plan of Exploration for Block 109 is for one well. The proposed Supplement for Block 110 is for three wells. The wells will be drilled with a semi-submersible rig. The proposed locations of these wells are as follows:

- A. Surface: 6,200' FSL & 1,850' FWL, GB 110
- B. Surface: 6,200' FSL & 650' FEL, GB 109
- C. Surface: 6,700' FNL & 4,800' FWL, GB 110
- D. Surface: 4,700' FNL & 6,300' FEL, GB 110

Drilling of the first well will commence on February 1, 1988, with drilling of the remaining wells to last about 287 days. See Attachment No. 2 for the Timing Schedule on the drilling of the wells.

A DESCRIPTION OF THE DRILLING VESSEL(S), OR OTHER INSTALLATION(S) OR DEVICE(S) TO BE PERMANENTLY OR TEMPORARILY ATTACHED TO THE SEABED INDICATING THE IMPORTANT FEATURES THEREOF WITH SPECIAL ATTENTION TO SAFETY FEATURES AND POLLUTION PREVENTION AND CONTROL FEATURES INCLUDING OIL SPILL CONTAINMENT AND CLEANUP PLANS.

The actual rig to be used will probably be the Penrod 73 or a similar type semi-submersible rig. The rig is equipped with all safety and pollution-prevention equipment required by the OCS Orders. See Attachment No. 3 for rig details.

All operations are covered by Amoco's Oil Spill Contingency Plan previously approved by the MMS on February 20, 1987.

The leases were issued with Lease Stipulation No. 2 - Biological. A portion of each of the Blocks are within the "3 Mile Zone". For any operations within this zone, Amoco plans to utilize Option No. 1, by which all drill cuttings and drilling fluids will be disposed of by shunting the material to the bottom through a downpipe that will terminate no more than 10 meters from the bottom. Currently, only proposed Wells "A" & "B" fall within the "3 Mile Zone", as noted on the Location Map, Attachment No. 1.

Please reference Attachment No. 4 "Air Quality" for specific data on air emissions.

GEOLOGICAL AND GEOPHYSICAL SURVEY RESULTS IDENTIFYING GEOLOGICAL HAZARDS AND/OR SUSPECTED ARCHAEOLOGICAL ANOMALIES RELATIVE TO PROPOSED WELL(S), A MAP IDENTIFYING ANY SUSPECTED ARCHAEOLOGICAL ANOMALIES RELATIVE TO PROPOSED WELL(S) WHERE AN ARCHAEOLOGICAL SURVEY IS REQUIRED, AND A DESCRIPTION OF SURVEY EQUIPMENT UTILIZED.

The attached Shallow Hazard Report (Attachment No. 5) confirms that the proposed well locations are free of surface faults, seafloor anomalies, and shallow gas accumulations.

In accordance with the lease agreement, an archaeological survey was not required nor conducted. The entire High-Resolution Geophysical Survey Report in three copies is forwarded as Attachment No. 6.

In accordance with NTL 83-3, par. II.A.5, copies of the high-resolution survey data from the two lines closest to the proposed well will be forwarded directly to the New Orleans MMS Region.

A LOCATION MAP OF THE LEASE BLOCK(S) RELATIVE TO THE SHORELINE, INCLUDING A DESCRIPTION OF ONSHORE SUPPORT BASE FACILITIES, A LOCATION MAP SHOWING EACH PROPOSED WELL, INCLUDING SURFACE AND PROJECTED BOTTOM-HOLE LOCATION, WATER DEPTH (BATHYMETRY), PROPOSED TRUE VERTICAL AND MEASURED DEPTH OF EACH WELL.

Please reference Attachment No. 1, Location Map. This map shows the relationship of Garden Banks Blocks 109 & 110, to the shoreline as well as the proposed surface location of the wells. Water depths over the two blocks range between 250 and 860 feet.

Operations will be conducted out of Amoco's base facility at Intracoastal City, Louisiana. The facility is equipped with both a heliport and boat handling facilities.

CURRENT STRUCTURE MAPS AND, AS APPROPRIATE, SCHEMATIC CROSS SECTIONS SHOWING EXPECTED DEPTH OR MARKER FORMATIONS.

NOTE: Amoco Production Company believes all geologic information submitted under this section to be exempt from disclosure under the Freedom of Information Act and its implementing regulations.

Attachment No. 7 is a Structure Map demonstrating structural relationships.

Attachment No. 8 is a Schematic Cross Section showing the geologic setting of the prospect and depicts structural relationships as determined by interpretation of proprietary data.

A BRIEF DESCRIPTION OF PROCEDURES, PERSONNEL, AND EQUIPMENT USED IN YOUR OIL SPILL CONTINGENCY PLAN THAT ARE TO BE USED FOR PREVENTING, REPORTING, AND CLEANING UP A POLLUTION SPILL, INCLUDING EQUIPMENT LOCATION AND TRAVEL AND DEPLOYMENT TIME.

In addition to those systems commonly utilized by industry to prevent pollution, Amoco is a member of Clean Gulf Associates which was founded in 1972 as a non-profit organization of energy companies cooperating to provide oil containment and clean-up capabilities in the Gulf of Mexico.

The organization contracts with Halliburton Services, a division of the Halliburton Company, to procure and maintain in 24-hour readiness the most advanced oil spill equipment available and to train personnel of member companies in its proper use.

Existing oil spill cleanup equipment with beach protection and bird-cleaning stations can be on hand within 17 hours in the event of a spill. This equipment is maintained on standby and in a ready state at locations such as Panama City, Florida; Theodore, Alabama; Venice, Louisiana; Grand Isle, Louisiana; Houma, Louisiana; Intracoastal City, Louisiana; Cameron, Louisiana; Galveston (Texas City), Texas; and Port Aransas (Fulton), Texas.

All applicable safety and pollution standards of the MMS, USCG, OSHA, and the EPA will be complied with. All personnel will be trained in the proper maintenance of existing equipment and will participate in drills and inspections designed to enhance their ability to utilize the equipment to its fullest extent and ensure as safe an operation as possible.

The Environmental Report required by Section 307 of the Coastal Zone Management Act (CZMA) is forwarded as Attachment No. 9.

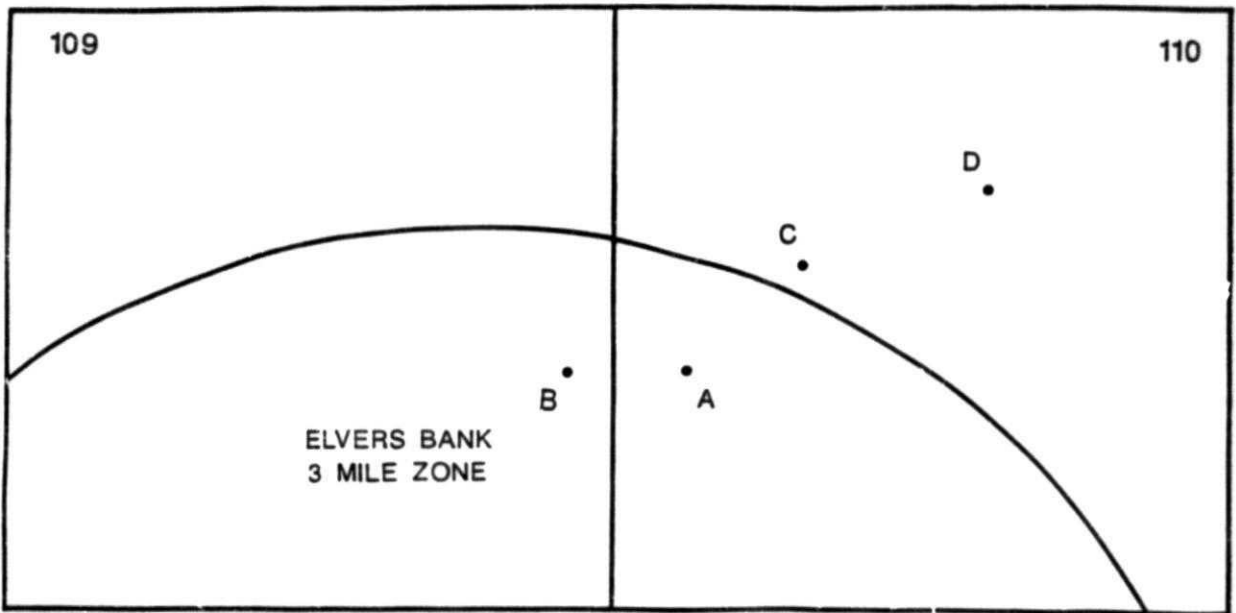
A DETAILED LIST OF MUD COMPONENTS AND ADDITIVES, INCLUDING THE COMMON OR CHEMICAL TRADE NAME OF EACH.

Components of the drilling mud may include any or all of the following: barite, gel, caustic, soda, chrome lignosulfonate, lignite, sapp, aluminum stearate, soda ash, phosphate, gilsonite, surfactant (methanol), Quick Seal, Spotty and CMC. No bactericides containing halogenated phe-

nols will be used in the mud system. Any drilling mud, drill cuttings, sand, or other solids will not be disposed of into the Gulf unless all of the free oil has been removed.

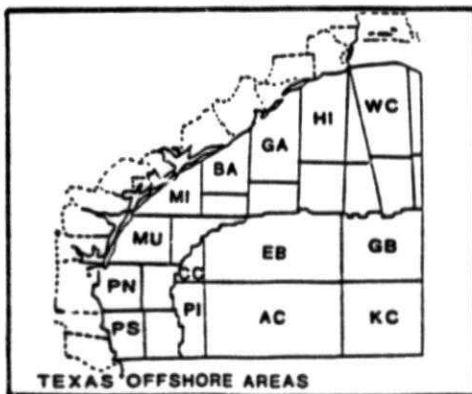
WELL SURFACE LOCATION

- A 6200' FSL x 1850' FWL
- B 6200' FSL x 650' FEL GB 109
- C 6700' FNL x 4800' FWL
- D 4700' FNL x 6300' FEL



SCALE: 1" = 4000'

VICINITY



ATTACHMENT #1

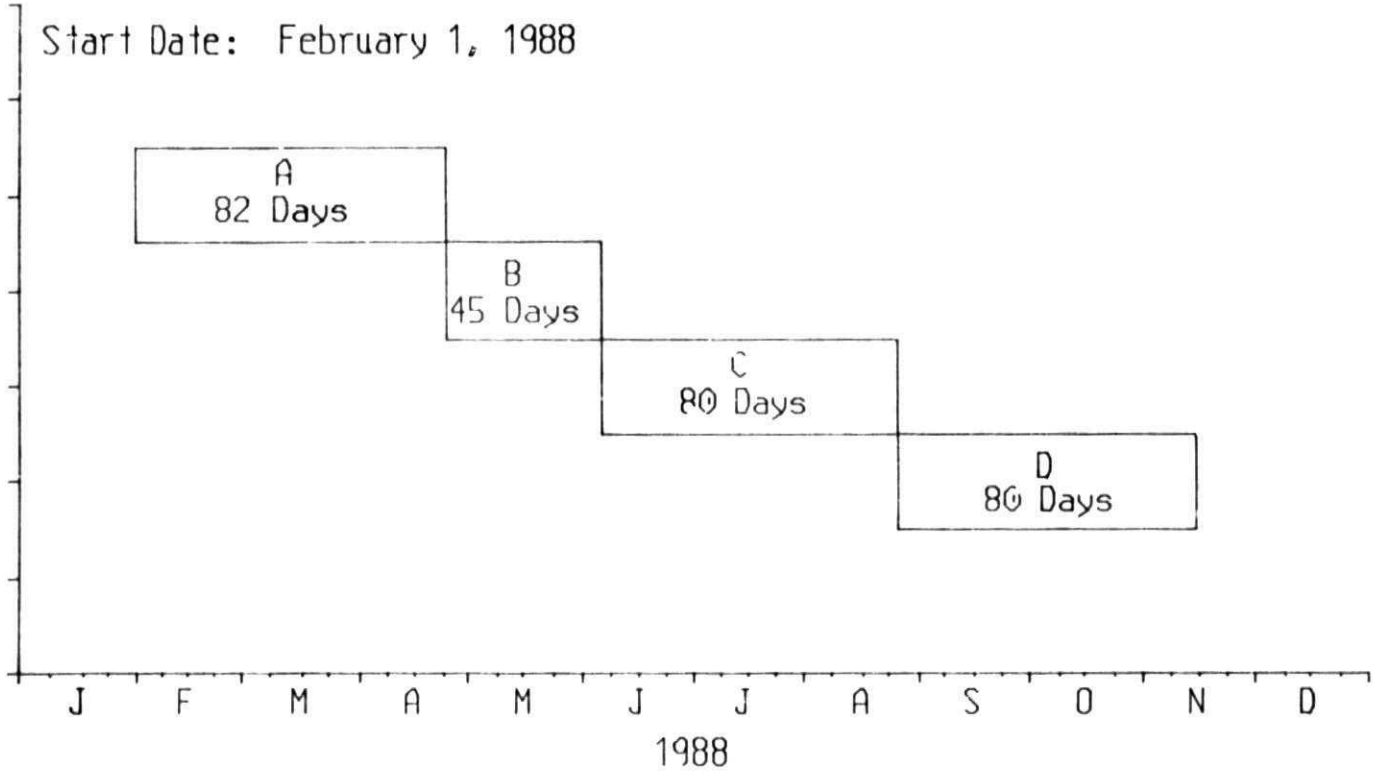
Amoco Production Company
NEW ORLEANS REGION

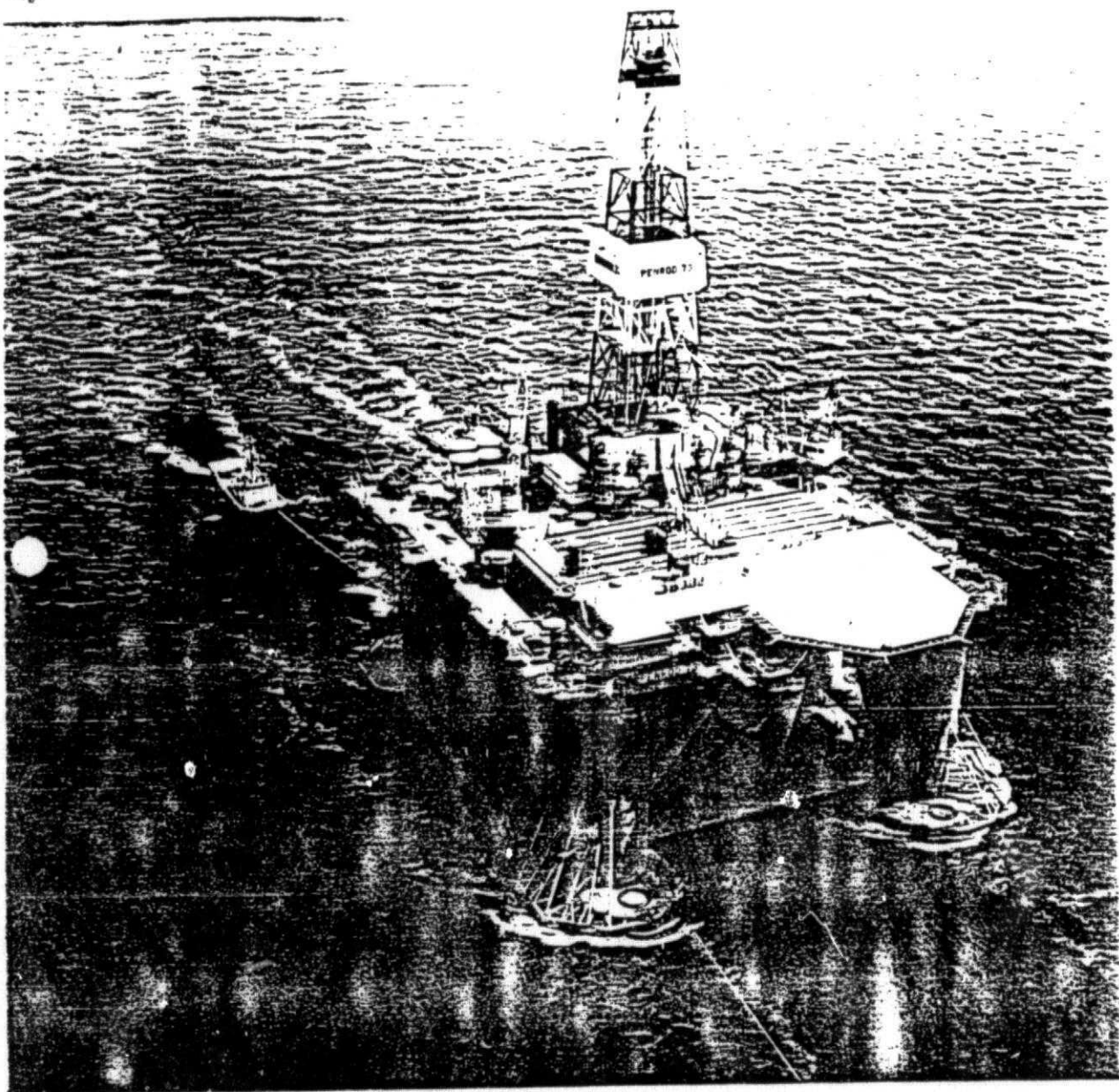
**BLOCK: GARDEN BANKS 109/110
OCS-G-6338**

LOCATION MAP

GARDEN BANKS BLOCK 110
OCS-G-6338
TIMING SCHEDULE

Start Date: February 1, 1988





BEST AVAILABLE COPY

ATTACHMENT NO. 3

PENROD 73

Nominal water depth rating 1600 ft.

Hull Dimensions PENROD 73		Drilling Equipment	
	Enhanced Pacesetter		Rated to 30,000'
Registered	ABS -A1, Column Stabilized United States Coast Guard MODU,	Drawworks	National 1625-DE with sand- line drum, emergency rotary drive and a parmac V-295 hydraulic brake
Overall Length	270 ft.	Main Power Plant	Four EMD 16-645 E98 diesel engines, each rated at 3070 continuous H.P. each driving a 2100 KW (3) volt AC generator
Overall Width	200 ft.		Eight I.P.S. Corp. Model 2200 m SCR units supply DC power to drilling and mooring functions
Depth	116 ft.	Pumps	Two Nat'l 12P160 Triplex 1600 hp mud pumps each powered by two EMD D-79 electric motors
Operating Draft	65 ft.	Rotary	Nat'l C495 with 49 1/2" table opening
Cranes	Two National OS435HD Hydraulic/Diesel with 150 ft. booms rated at 88 kips at 60 foot reaches	Riser Pipe Equipment	1600 ft. 20" O.D. x 1/2" wall x-52 pipe; slip joint with a 60' stroke; six 80,000 lb. Western Gear riser tensioners
Anchoring System	1) Skay WMD-48 wildcat windlasses rated at 502 kips stall load. 2) 8 - 32,518 lb moorfast anchors and 8 spares for piggy backing. 3) 8 anchor chains 5000' x 3" dia. API oil rig quality. 4) Assisted by four Schottel 360° thrusters.	SOP Equipment	Cameron 18 3/4" x 10,000 psi stack with two U double ram prevents and two 18 3/4" 5000 psi Rucker-Shaffer sphericals
Towing Speed in Calm Sea	Eight knots	Substructure Derrick	160' x 40' Dresco Int'l. with static hook load capacity of 1,050,000 lbs.
Variable Load	2065 st.	Pipe Racking System	VMW Model RJT-33C drill string racking arm
Storage		Drill String Compensator System	NC rig equipment model 25; 400 with 25' stroke and 400,000 lb. capacity
Drilling Water	9205 bbls.	Mud Mixing Pumps	Two 6" x 5" centrifugals
Potable Water	3245 bbls.	Cementing Unit	Halliburton electric PT-400
Fuel Oil	12,097 bbls.	Drill Collars	8" OD x 2 13/16" ID collars 6 1/2" OD x 2 1/4" ID spiral collars
Liquid Mud	1942 bbls.	Drill Pipe	5" 19.50 lb. Grade E & G, Range 2
Total Bulk Mud and Cement	4720 cu. ft.		
Sack Storage	5000 sacks		
Sewage Treating System	Two Red Ox Foxpac FP-1500		
Desalination Unit	8500 G.P.D. Maximum Capacity		
Heliport	5-61 or equivalent		
Quarters	Quarters for 86 persons, includes hospital and 2 galleys		
Personnel	Two 58 men Water ft		
Survival	lifeboats. Three 20 men davit launched life rafts.		

Supplemental Plan of Exploration for Garden Banks Block 110

OCS-G-6338

Air Quality

This attachment includes the information required under 30 CFR Part 250.57(a), to make the necessary findings under that section.

Exemption Formula

The distance of the proposed facility from the closest onshore area of a state is 117 statute miles:

The proposed facility is at: latitude 27° 52' 46.01" north, and
longitude 92° 51' 3.10" west.

The closest onshore area of a state is in Vermilion parish, Louisiana,
at:

latitude 29° 3' 5.84" north, and
longitude 92° 33' 27.39" west.

This produces the exemption amount of 3,896 tons/year for particulates, sulfur dioxide, nitrogen oxides and volatile organic compounds, and the exemption amount of 81,333 tons/year for carbon monoxide.

Projected Emissions

Drilling

The wells proposed to be drilled on this plan are as follows:

<u>Proposed Well</u>	<u>Proposed Measured Depth (Feet)</u>	<u>Rig Type</u>
OCS-G-6338 A		Semi-Submersible
OCS-G-6338 B		Semi-Submersible
OCS-G-6338 C		Semi-Submersible
OCS-G-6338 D		Semi-Submersible
Total Feet Drilled	<u>52,300</u>	

Assuming that the rate of drilling will be constant, the total feet drilled during the plan is:

1988 52,300 feet

Assuming 60 horsepower hours required to drill one foot¹ on an offshore oil and gas drilling rig, this plan will require 3,138,000 horsepower hours to complete the drilling. The duration of the operations is 287 days. Using the emission factors for diesel powered industrial equipment from Table 3.3.3-1 of EPA publication AP-42, Compilation of Air Pollutant Emission Factors, the following total emissions are expected from this plan:

	<u>Carbon Monoxide</u>	<u>Nitrogen Oxide</u>	<u>Hydrocarbons</u>	<u>Sulfur Dioxide</u>	<u>Particulates</u>
Drilling Rig	10.48	48.43	3.87	3.22	3.46

We estimate to have two helicopter landing-takeoff cycles each day at the drilling location for the 287 day period of drilling activity. The emission factors per landing-takeoff cycle for helicopters from Table 3.2.1-3 of EPA Publication AP-42 produce the following helicopter emissions in tons:

Helicopters	1.64	0.16	0.15	0.05	0.07
-------------	------	------	------	------	------

We plan one 2,000 horsepower workboat landing with six hours of idling three times each week at the drilling location. The fuel consumption while idling at the drilling location is seven gallons per hour. The emission factors (7 gallons/hour x 6 hours/landing x 3 landing/week x 41 weeks of drilling = 5,166 gallons) for CO, VOC and NOx from diesel vessel emission factors by operating mode, Table 3.2.3-3, and the factors for SO₂ and particulates from

Table 3.3.3-1 produce the following workboat emissions, in tons, at the drilling location:

Workboats	<u>0.76</u>	<u>0.64</u>	<u>0.25</u>	<u>0.08</u>	<u>0.09</u>
Total	12.88	49.23	4.27	3.35	3.62

These emissions are planned to occur in 1988.

¹Atmospheric emissions from offshore oil and gas development and production (EPA 450/3-77-026, p. 82-83, June 1977).

Therefore, since none of these amounts approach 3,896 tons (81,333 tons for carbon monoxide), we request that you determine under Section 250.57(d) that this plan be exempt from further air quality review.



Amoco Production Company
New Orleans Louisiana

January 14, 1988

Minerals Management Service
Office of Field Operations
1201 Elmwood Park Blvd.
New Orleans, LA 70123

Attn: Regional Supervisor

Dear Sir:

Subject: Shallow Hazard Report
Plan of Exploration and Supplement

GARDEN BANKS BLKS. 109/110 OCS-G-6337/6338

A multi-sensor, high-resolution, geophysical survey was conducted over the entire blocks. The results indicate a smooth seafloor, no surface faults, seafloor anomalies, or shallow gas accumulations at the following surface locations:

BLK. 110	BLK. 109
A. 6200' FSL, 1850' FWL	B. 6200' FSL, 650' FEL
C. 6700' FNL, 4800' FWL	
D. 4700' FNL, 6300' FEL	

Conventional CDP and "bright-spot" seismic data, with associated velocity analyses, are free from anomalies at these locations.

Geologic control is available from the OCS-G-6338 No. 1, previously drilled in Blk 110 and a similar sequence is expected at the above proposed locations.

Sincerely,


Byron L. Gillean

Division Geophysical Manager

/jhs

ATTACHMENT NO. 5

PLAN OF EXPLORATION
ENVIRONMENTAL REPORT
GARDEN BANKS AREA
GARDEN BANKS BLOCK 109
OCS-G-6337

AMOCO PRODUCTION COMPANY
P. O. BOX 50879
NEW ORLEANS, LOUISIANA 70150

HARTY C. VAN, JR.
PETROLEUM ENGINEERING ASSOCIATE
PHONE 504/586-6567

JANUARY 8, 1988

ATTACHMENT NO. 9

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I. DESCRIPTION OF PROPOSED ACTION -

- A. DESCRIPTION OF PROPOSED TRAVEL MODES ROUTES AND FREQUENCY:
Boats and helicopters will be dispatched from Amoco's base facility at Intracoastal City, Louisiana on a daily basis or as needed to the proposed drilling locations upon commencement of operations. Boats will travel out Freshwater Bayou to the Gulf. Upon reaching the Gulf of Mexico, a more or less direct route will be taken.

The breakdown shown below reflects an approximate account of boat and aircraft departures and arrivals for the different phases of the activity, dependent upon variable weather conditions.

	<u>Drilling:</u>
Boat	- 1 trip every two days
Helicopter	- 2 trips daily

- B. PERSONNEL REQUIRED TO CONDUCT ACTIVITIES:
The number of persons expected to be needed to carry on and support the production operations is as follows:

<u>Offshore</u>	<u>No. of Employees</u>
<u>Drilling Phase:</u>	
Contract Rig Crew	55 (7/7 shift)
Service Support	10 (7/7 shift)
Catering	8 (7/7 shift)
Company Supervision	2 (7/7 shift)
<u>Onshore</u>	
Dockside Support	6 (7/7 shift)
<u>Transportation</u>	
Helicopter Pilots	2 (7/7 shift)
Marine Crews	<u>12</u> (7/7 shift)
Total Persons	95

Since the transportation vehicles to be used are currently working in the Gulf of Mexico, no additional families of operations or transportation personnel are expected in the area. Any personnel needed for onshore support activities will be hired locally; therefore, no new families are anticipated in the coastal area.

C. ONSHORE SUPPORT SYSTEMS:

We expect to use our currently existing support facility in Intracoastal City, Louisiana, located on the Intracoastal Canal. An easily accessible state highway leads to the Amoco base facility. No extra land is expected to be needed under the proposed activities for facilities, storage, rights-of-way or easements. Current facilities already in use seem adequate to support all phases of the plan of exploration.

D. NEW OR UNUSUAL TECHNOLOGY:

No new or unusual technology will be employed during this exploration operation.

E. VICINITY MAP:

See Attachment No. 1.

F. PROPOSED MEANS TO TRANSPORT OIL AND GAS TO SHORE, ROUTES, QUANTITIES:

The proposed action is exploratory. No hydrocarbons will be produced by this plan of exploration.

II. DESCRIPTION OF AFFECTED ENVIRONMENT -

A. COMMERCIAL FISHING:

The Gulf fishery is dominated by the shell fisheries: shrimp, crabs, and oysters (with smaller amounts of clams and scallops). The shrimp fishery in the Gulf area includes brown, white, and pink shrimp. These are taken almost exclusively by trawl fishing in depths ranging from 2 to 73 meters.

Garden Banks Block 109 is located within the major finfish grounds but outside of the brown and white shrimp harvest areas. It is also outside the high density offshore shellfish areas. Finfish volume for the Gulf states is dominated by menhaden. Menhaden are number one in volume and second in value for Louisiana. Gulf Region Landings in 1986 were 1.8 billion pounds, or 75% of the 2.4 billion pounds U.S. menhaden catch, most of which is landed at Louisiana ports. (Fisheries of the United States 1986, April 1987). Other finfishes which contribute significantly to Louisiana's landings include drum, catfish, sea trout, mackerel and snapper. (Louisiana Landings for Specified Periods, 1985 and 1986). See Appendix No. 1 for a complete listing of the catch by major species.

Since the majority of shrimp and commercial bottom fish are caught by trawling, sites occupied by drilling rigs must be avoided by shrimpers, but are attractive to hook and line fishermen.

B. SHIPPING:

At least 8,000 km of navigable streams and 1,800 km of inter-coastal waterways are located in the state. These waterways include the Mississippi River and the Gulf Intracoastal Waterway which are major waterways for the nation's waterborne commerce. Other notable waterways include the Atchafalaya River in St. Mary Parish. Louisiana has three major ports - New Orleans, Baton Rouge, and Lake Charles. Aside from deep-draft ocean shipping, Louisiana is a key focal point for inland waterway traffic. Inland barge traffic not only links the deepwater ports to the interior of the nation, but also provides important support for the industrial structure of coastal Louisiana. The existence of barge service tends to concentrate petrochemical facilities adjacent to the water sites in Louisiana.

The major east - west fairway in the Gulf is located along the southern border of the block. This shipping fairway is depicted in Attachment No. 1 of this report. Another shipping fairway is to the north of the block approximately twenty-one (21) miles. It is likely that the marine vessels supporting Garden Banks Area Block 109 will utilize the shipping fairway located north of the block to gain access to the support base, however, it is unlikely that the marine vessels will have significant effect on fairway traffic. There are no proposed exploration sites located within the nearby fairway. The drilling rig and each of the marine vessels will be equipped with all U.S. Coast Guard required navigational aids. No problems are anticipated in association with these fairways.

A heavily used shipping pattern has developed in the offshore waters of the Gulf. Ships crossing open Gulf waters often utilize a system of established safety fairways. These fairways connect the major Gulf ports, which include the deepwater oil terminal (LOOP) located offshore Louisiana. Regulations prohibit the placement of fixed structures in fairways, thus providing clear passages of 2 nautical miles in width through the developed areas of the Gulf. Vessels operating along the coast generally use the Gulf Intracoastal Waterways (GIWW) which follows the coastline inshore and through bays and estuaries from Fort Meyers, Florida, to Brownsville, Texas. However, ships do not always use these fairways and waterways and this increases the possibility of a collision with drilling rigs or vessels attending these rigs. In the fairways there is the risk of ship/ship collisions. Impacts which could result include loss of human life, spillage of oil, release of debris, including part of or the entire drilling rig and the ship. The contents of the ship's cargo could pose a serious threat to the environment if it includes toxic materials such as chemicals, crude oil, or refined products. It should be noted that while the number of offshore structures is increasing, the number of accidents involving the structures has not increased.

C. PLEASURE BOATING, SPORT FISHING AND RECREATION:

Sport fishing in Louisiana is a very popular form of recreation. Louisiana's coastal marshland with few roads reaching the shoreline has limited fishing access and precludes full utilization of the saltwater fishery resources. Nevertheless, a high percentage of Louisiana residents own or have access to boats. Sport fishing around offshore oil and gas rigs is popular. Results of recreational fisheries surveys by Ditton and Graefe (1978) in the northwestern Gulf of Mexico's Houston-Galveston area indicated that only one-third of the boating population was saltwater fishermen and only 5% fished offshore. However, oil and gas structures attracted more fishing than any other structure, natural or artificial (87% of the boats and 50% of all offshore recreational fishing effort were directly associated with oil and gas platforms). Offshore fishermen were estimated to have contributed over five million dollars to the local economy. (The Ecology of Petroleum Platforms in the Northwestern Gulf of Mexico; A Community Profile).

Boating in Louisiana's coastal areas is most often related to recreational fishing. Water skiing and sailing are growing in popularity, especially in estuarine lakes near South Louisiana's major urban centers.

Hunting is a popular recreational activity in Louisiana. A variety of water fowl are taken throughout the coastal marshes. There are two State Parks, one National Wildlife Refuge, three State Wildlife Refuges, and numerous game management areas onshore from the area of operation.

With the exception of Grand Isle and vicinity and a stretch of beach area in Cameron Parish, Louisiana has very limited beach area suitable for recreation. Most of it is very narrow, of poor recreational quality and generally inaccessible by automobile, some of the highest quality beach areas in coastal Louisiana are found along the barrier islands chain off Terrebonne Parish.

Several additional significant recreations resources are found along the Gulf Coast. Louisiana has ornamental gardens, scenic roads, rivers, and trails. No adverse impacts are anticipated.

D. POTENTIAL OR KNOWN CULTURAL RESOURCES:

Visual No. 11 from the EIS for Lease Sales 94, 98, & 102 indicates that Garden Banks Area Block 109 is not located within the Prehistoric or Historic Cultural Resources High Probability Lines, therefore it is unlikely that there will be any significant impacts upon culturally significant resources. Pursuant to the lease agreement for the tract, an archaeological survey was not required and nor conducted.

E. ECOLOGICALLY SENSITIVE FEATURES:

The southern half of Garden Banks Area Block 109 is located within the biologically sensitive "3 Mile Zone" of Elvers Bank. See Attachment No. 2 for details. There are no other known ecologically sensitive areas near the Block. Currently two of the proposed well locations are located within this zone. Amoco is aware of the stipulations governing this block and will shunt cuttings to within 10 meters of the ocean floor.

There are several areas of environmental concern that lie onshore from the lease area. These include (1) Rockefeller State Wildlife Refuge, (2) Louisiana State Wildlife Refuge, (3) Marsh Island State Wildlife Refuge, (4) Paul J. Rainey Wildlife Sanctuary, (5) Lacassine National Wildlife Refuge and Wilderness Area, (6) Shell Keys National Wildlife Refuge, and (7) Cheniere Au Tigre State Park and Rutherford Beach, Cypremort Beach and other recreational beaches.

Block 109 does not occupy a position within any known breeding habitat, nursery area, or specific migration route. While associated activities could occur in the block, they are not known to be concentrated there. No adverse impacts are anticipated.

F. PIPELINES AND CABLES:

There are no existing pipelines across the block. See Attachment No. 3 for pipeline details.

G. OTHER MINERAL USES:

There are no known other mineral deposits in the lease area which would be considered commercially important.

H. OCEAN DUMPING ACTIVITIES:

There are no EPA approved ocean dumping sites located within the Garden Banks Area.

I. ENDANGERED OR THREATENED SPECIES AND CRITICAL HABITAT:

Five federally listed endangered whale species occur within the Central Gulf. These include fin, humpback, right, sei, and sperm whales. Generally, these large cetaceans inhabit the continental slope and deep oceanic waters, occasionally they are sighted nearshore (Schmidly, 1981). Sperm whales have been sighted near the Louisiana Delta and offshore Brownsville, (Fritts et al., 1983).

Red wolf hybrids occur along the Gulf coast in Cameron Parish Louisiana and Jefferson County Texas; for all practical purposes, pure-blood red wolves are extinct in the wild (McCarley and Carley, 1979).

Four federally listed endangered turtle species (Kemp's ridley, green, hawksbill, and leatherback turtles) and one threatened species (loggerhead turtle) occur in the Gulf of Mexico. The green turtle is listed as endangered in Florida waters and threatened throughout the rest of the Gulf. The Kemp's ridley turtle inhabits shallow coastal and estuarine waters. Ridley turtles commonly occur in shallow water areas from Marsh Island to the Mississippi Delta in Louisiana (Hildebrand, 1982). Kemp's ridley turtles infrequently nest on the beaches of southwestern Padre Island, Texas, where FWS, NMFS, and NPS have established a ridley turtle head start release program. The green turtle is found throughout the Gulf where its favored habitats are lagoons and shoals providing an abundance of marine grass and algae on which it feeds. No recent green turtle nesting has been reported on Gulf beaches. Juvenile green turtles occur in Texas estuaries (Hildebrand, 1982) and along the southwest Florida coast. The leatherback turtle is the most pelagic marine turtle and may be found near the Gulf coast in March and April; no recent nesting has been reported in the Gulf. The loggerhead turtle occurs throughout the Gulf and has been observed as far as 500 miles out in the open sea. They nest on various barrier islands and beaches from the Florida Keys, up the southwest Florida coast where the majority of nesting in the Gulf occurs, and west to the Chandeleur Islands off Louisiana where nesting occurs.

The American alligator occurs generally throughout the Central Gulf coastal areas in fresh to brackish water areas. The alligator is listed as endangered throughout its range except in the coastal areas of Florida and Texas where it is listed as threatened and in Louisiana where it is listed as "threatened by similarity of appearance." American crocodiles are restricted to southern Florida, chiefly along Florida Bay and on adjacent Key Largo. Current population is estimated to range from 200-400 animals.

The red-cockaded woodpecker occurs primarily in mature open pine forest throughout the Eastern and Central Gulf area and into eastern Texas.

Arctic peregrine falcons migrate along the eastern coast of Florida, the Florida Keys, and the Gulf coast of Texas. Some peregrine falcons overwinter along the Gulf coastal areas.

The endangered eskimo curlew's northward migration corridor crosses the Louisiana and Texas coastal areas.

A small population of nonmigratory Mississippi sandhill cranes inhabits an area in Jackson County, Mississippi.

A small population (about 70 - 80) of migratory whooping cranes overwinters at the Aransas National Wildlife Refuge and surrounding wetland areas from October through April.

The largest population of brown pelicans (about 9,000 - 10,000 birds) in the Gulf region occurs along the west coast of Florida. Four smaller brown pelican rookeries (about 900 - 1,000 birds) occur at North Island, northern St. Bernard Parish, and Queen Bess Island in Louisiana. Also, a small population of brown pelicans occur near Corpus Christi, Texas, and a small number of brown pelicans from Mexico feed along the southwestern coast of Texas during the summer.

Bald eagles inhabit several Gulf coastal counties; the majority of this population occurs in Florida.

The Key tree cactus was listed as endangered on July 19, 1984. The distribution of the cactus is within the boundaries of the Key Deer National Wildlife Refuge, on a few of the larger lower Florida Keys. (FEIS Sale 94, 98 and 102).

III.UNAVOIDABLE ADVERSE ENVIRONMENTAL EFFECTS -

A. WATER QUALITY:

Drilling activities will temporarily reduce water quality adjacent to the location due to discharge of hole cuttings. This displacement will increase turbidity in a plume down-current from the work sites. Released formation waters and a minor oil spill could also contribute to water quality degradation.

B. EFFECTS ON MARINE ORGANISMS:

Some organisms will be killed and some will be temporarily functionally impaired as a result of exploration operations. The most affected groups will be plankton and benthos immediately around the drilling rig. Damage will be both mechanical and toxicological. Discharge of hole cuttings will damage plankton within the plume and bury some of the less mobile benthic infauna and epifauna. These impacts are considered to be localized, short term and reversible at the population level.

An oil spill could affect a broad spectrum of marine organisms. However, most effects would be localized and short term. Any effects on mammals and turtles would be significant.

C. WETLANDS AND BEACH:

In the unlikely event of a spill occurring and reaching shore, organisms in wetland and beach habitats could be killed or functionally impaired. Human community disruption could also occur. Although all such effects would be localized, any effects on endangered species and/or critical habitats would be significant.

D. AIR QUALITY:

The air quality at the lease site will be degraded temporarily during operations, but should return to normal once operations are measurably completed. Offshore activities probably will not affect onshore air quality. Air quality at the onshore base will be only insignificantly reduced by onshore activities. Any such effect will be temporary.

E. COMMERCIAL FISHING:

Of the various types of fishing gear in use in the OCS areas, trawls have the greatest chance for operational conflicts with oil and gas activities. Losses may, however, be compensated under the Fishermen's Contingency Fund or other legal routes. Trawl nets can be snagged on underwater stubs causing damage or loss of the nets. In addition, it is conceivable that snags could damage underwater production equipment or pipelines causing a spill of oil or gas. Because safety equipment is installed, which shuts in production when a loss of pressure occurs, the likelihood of a major spill resulting thereby is considered very small. Less frequently, large objects which were lost overboard from petroleum industry boats, pipeline lay barges, and platforms are caught by fishing gear resulting in damage to the gear and/or its catch of fish; however, occurrence of this type of incident is low. Also, commercial fishermen would probably not harvest fish in the area of an oil spill, as spilled oil could coat or contaminate commercial fish species rendering them unmarketable. Other unavoidable adverse impacts include loss of fish space caused by installation of unburied pipelines, rigs, platforms, or by other OCS-related structures. There may be some localized competition for shore facilities. These effects and any effect that the drilling operations will have on stocks of important species are considered minor.

F. SHIP NAVIGATION:

Very little interference can be expected between the drilling rig and ships that use the established fairway. However, at night and during rough weather, fog, and heavy seas, ships not using the established fairway could collide with the drilling rig.

G. CULTURAL RESOURCES:

There is only a small probability that an unknown cultural resource exists in the lease area. There is an even smaller probability that the activity in the area will adversely affect any unknown cultural resource.

H. RECREATION AND AESTHETIC VALUES:

The drilling rig may represent an obstacle to some sport fishermen, but such an effect is expected to be negligible and not permanent.

Even though existing regulations and orders prohibit indiscriminate littering of the marine environment with trash, offshore oil and gas operations involving men, machines, equipment, and supplies is bound to result in some littering of the ocean. Human nature and accidents associated with offshore operations will contribute some floatable debris to the ocean environment which will eventually come ashore on major recreational beaches.

The effects that normal operations or a minor oil spill would have on any fish stocks important to sport fishermen are also considered to be negligible.

A minor oil spill and/or non-petroleum floating debris could foul beaches inshore of the lease area. The fouling of the beaches would be an aesthetic detriment that could adversely affect recreation. Any effects on beach recreation could adversely affect tourism and, consequently, the local economy.

IV. THE PROPOSED ACTIVITY WILL BE CARRIED OUT AND COMPLETED WITH THE GUARANTEE OF THE FOLLOWING ITEMS -

- A. 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.
- B. All operations are covered by Amoco Production Company's Oil Spill Contingency Plan, last approved by the M.M.S. on February 20, 1987.
- C. 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.
- D. The proposed activities described in detail in the Plan of Exploration comply with Louisiana's Coastal Management Program and will be conducted in a manner consistent with such Program.

REFERENCES

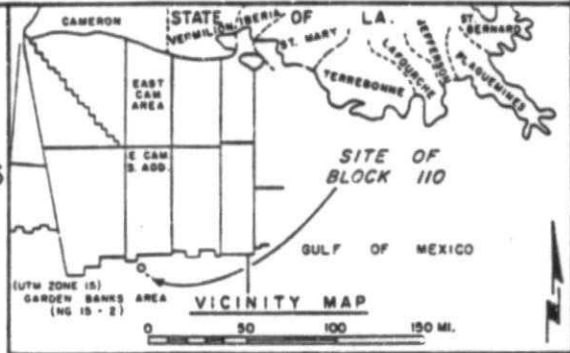
1. Final Environmental Impact Statement, Proposed Oil and Gas Lease Sales, 94, 98, and 102, Gulf of Mexico OCS Region, OCS EIS, MMS 84-0057.
2. Final Environmental Impact Statement, Proposed Oil and Gas Lease Sales, 94, 98, and 102, Gulf of Mexico OCS Region, OCS EIS, MMS 84-0057, visuals.
3. Fisheries of the United States, 1986, April, 1987.
4. The Ecology of Petroleum Platforms in the Northwestern Gulf of Mexico: A Community Profile, Bureau of Land Management Open File Report 82-03, July 1982.

APPENDICES

1. Louisiana Landings for Specified Periods, 1985 and 1986.

UTM ZONE 15
(NG 15 - 2)

BLK. 66



SITE OF
BLOCK 110

GULF OF MEXICO

Lot. 27° 53' 32.673"
Long. 92° 52' 49.398"

Y = 10,121,760.00'
15,840.00'

Lot. 27° 53' 32.485"
Long. 92° 49' 52.802"

O.C.S. - G - 6330

BLK. 109

X = 1,679,040.00'
15,840.00'

BLK. 110

X = 1,694,880.00'

BLK. 111

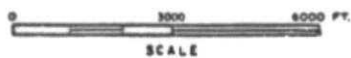
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Lot. 27° 50' 55.781"
Long. 92° 52' 49.570"

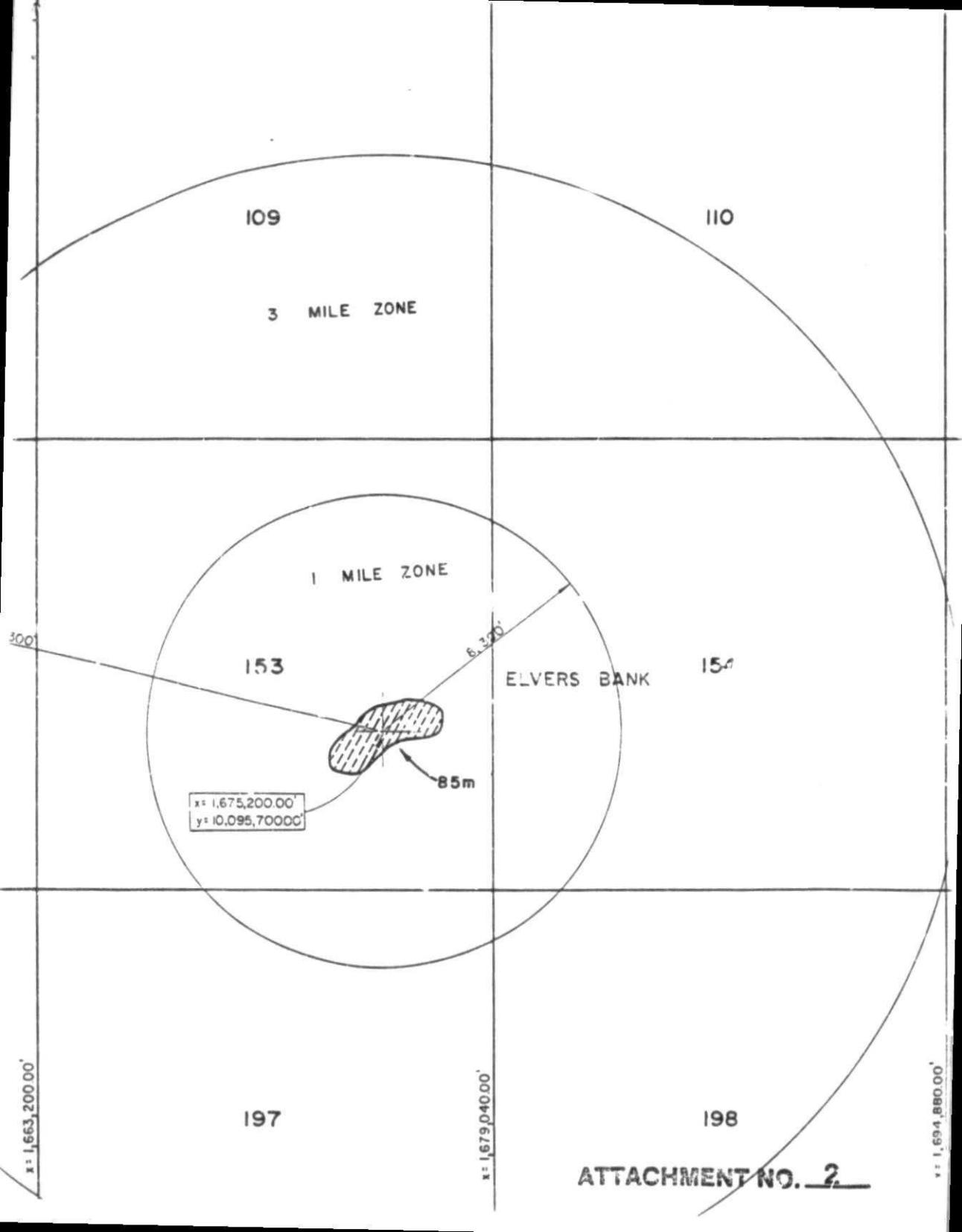
Y = 10,105,920.00'
BLK. 154

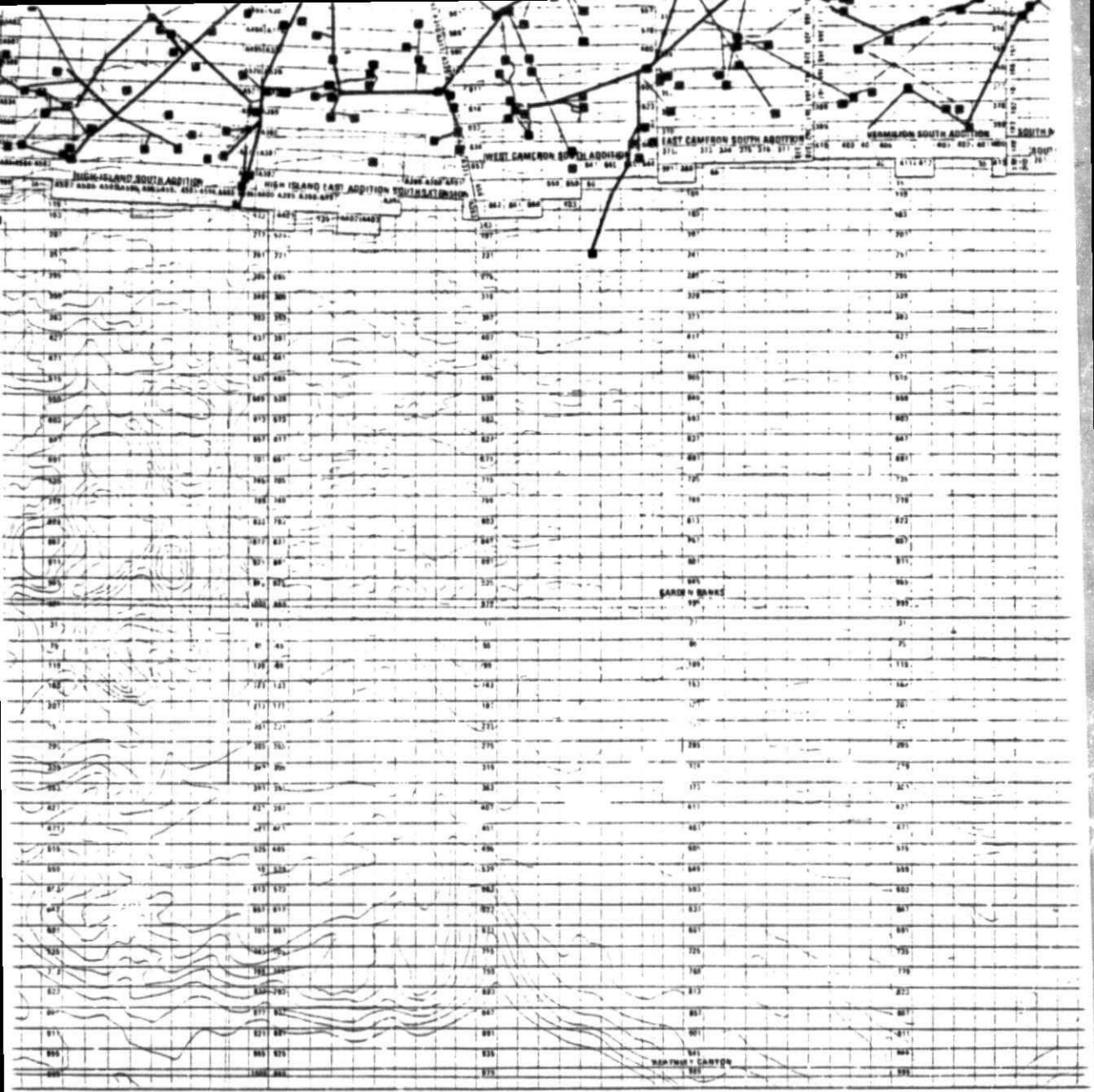
Lot. 27° 50' 55.577"
Long. 92° 49' 53.043"

FAIRWAY
(NO OPERATIONS... IN THIS AREA.)
MASTER SHEET



PROPOSED MINERAL DEVELOPMENT
GARDEN BANKS AREA
GULF OF MEXICO
ATTACHMENT NO. 1





94°

93°

92°

ONSHORE

OFFSHORE

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REFINERIES



SHOPYARDS



OIL LINE 10'' AND LARGER



GAS LINE

INTRACOASTAL WATERWAY



MAJOR PIPELINE FABRICATION YARDS



OIL LINE LESS THAN 10''



GAS LINE

ATTACHMENT NO. 3

LOUISIANA

LANDINGS FOR SPECIFIED PERIODS, 1985 AND 1986

SPECIES	12 MONTHS ENDING WITH DECEMBER			
	1985		1986	
	POUNDS	DOLLARS	POUNDS	DOLLARS
AMHERJACK	96,206	35,613*	314,057	134,153*
DRIFTFISH, BLACK	0	0*	227	57*
BLACKFISH, SACRAMENTO	0	0*	26	7*
HLIEFISH	2,242	421*	1,488	763*
BLUE RUNNER	662	205*	67	18*
BONITO	837	231*	0	0*
BOWFIN	7,689	884*	14,390	910*
BUFFALOFISH	1,819,061	341,995*	2,219,511	424,323*
BUTTERFISH, LG	480	96*	105	31*
BUTTERFISH, UNC	16	3*	112,156	70,459*
CARID	16,873	11,160*	33,628	22,452*
CARP	197,936	15,548*	242,704	20,145*
CATFISH & BULLHEADS	5,665,221	2,674,592*	6,909,707	3,209,949*
CREVALLE	88	15*	54	4*
CROAKER, ATLANTIC, UNC	83,016	56,834*	52,618	35,955*
DOLPHINFISH	9,615	8,922*	33,867	27,933*
DRUM, BLACK	3,421,325	1,018,687*	5,225,976	1,836,960*
DRUM, RED	2,933,573	2,785,391*	7,817,694	5,707,526*
EEL, COMMON	25,318	17,723*	4,036	2,630*
EEL, CONGER	0	0*	39	15*
BEARDED ROTULA	0	0*	18,312	7,032*
FILEFISH	0	0*	11	2*
FLOUNDERS	529,979	336,124*	825,034	576,321*
GARFISH (FRESHWATER)	1,253,260	388,882*	1,233,793	393,907*
GROUPE & SCAMP	482,001	674,787*	168,045	205,767*
HIND, SPECKLED	13	14*	1,251	1,420*
HIND, ROCK	0	0*	256	329*
HIND, RED	0	0*	483	663*
GROUPE, SNOWY	83	128*	21,801	27,522*
GROUPE, YELLOWEDGE	56,867	82,348*	561,338	730,737*
GROUPE, RED	0	0*	1,052	1,240*
GROUPE, MARBLED	0	0*	2,801	3,325*
GROUPE, BLACK	6	9*	1,434	2,024*
GROUPE, GAG	7,231	5,221*	30,599	41,156*
SCAMP	5,355	7,133*	58,561	83,011*
GROUPE, YELLOWMOUTH	0	0*	96	139*
GROUPE, YELLOWFIN	0	0*	16,923	19,592*
HAKE, ATLN, UNCL	7,444	3,203*	0	0*
JEW FISH	47	20*	213	161*
KING MACKEREL & CERO	969,665	744,862*	334,405	248,807*
KING WHITING (KING FISH)	90,352	23,481*	248,177	71,452*
MARLIN, BLK	0	0*	144	105*
MARLIN, WHITE	3,122	2,517*	22,652	14,356*
MARLIN, BLUE	1,064	992*	5,837	3,519*
MARLIN, UNCL	2,125	1,105*	24,618	13,878*
MENHADEN	1,528,133,566	55,946,680*	1,459,152,685	53,536,262*
MOONFISH (OPAH)	0	0*	172	13*
MULLET, BLACK	579,297	202,558*	2,277,713	1,192,404*
PADDLE FISH	14,280	2,154*	3,200	478*
PIGFISH	0	0*	1	0*
POMPANO	20,076	83,138*	27,675	98,661*
SAILFISH	86	64*	0	0*
SCUP OR PORGY, MD	0	0*	4,331	3,160*
SCUP OR PORGY, UNCL	6,905	4,813*	16,402	10,822*
SEA CATFISH	52,356	6,674*	103,263	12,076*
SEA TROUT, SPOTTED	1,161,598	1,255,982*	1,978,038	1,675,935*
SEA TROUT, WHITE	243,082	147,337*	234,422	140,432*

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APPENDIX A

SPECIES	12 MONTHS ENDING WITH DECEMBER			
	1985		1986	
FISH	POUNDS	DOLLARS	POUNDS	DOLLARS
SHAD, UNCL	77,960	7,755*	57,435	5,530*
SHARK, HONITO (SHTFN MA)	576	152*	2,039	1,130*
SHARK, UNCL	63,593	23,215*	157,565	44,050*
SHARK, THRESHER	0	0*	154	80*
SHEEPSHEAD, FRESHWATER	761,853	144,468*	575,157	109,877*
SHEEPSHEAD, ATLANTIC	719,936	79,807*	962,698	128,687*
SKATES	0	0*	48	24*
SNAPPER, BLACK	186	256*	4,985	6,634*
WENCHMAN	0	0*	5	4*
SNAPPER, BLACKFIN	2,676	3,271*	5,840	6,139*
SNAPPER, SILK	1,916	1,654*	1,017	1,148*
SNAPPER, LANE	0	0*	4,466	5,850*
SNAPPER, MANGROVE	2,163	2,618*	3,401	3,636*
SNAPPER, RED	1,214,576	2,524,431*	1,358,797	3,006,943*
SNAPPER, VERMILION	84,506	130,507*	442,597	619,043*
SNAPPER, YELLOWTAIL	757	532*	16	15*
SNAPPER, UNCL	3,248	5,329*	2,297	2,767*
SNAPPER, QUEEN	3,674	6,519*	17,561	25,377*
SNAPPER, MAHOGONY	0	0*	14	13*
SPANISH MACKREL	31,625	6,911*	21,761	6,032*
SPOT	2,087	237*	2,696	382*
SUNFISH	0	0*	281	195*
SWORDFISH	102,301	375,869*	137,972	358,048*
TILEFISH	47,394	39,997*	94,077	83,139*
TRIGGERFISH	4,766	1,559*	14,493	6,043*
TRIPLETAIL	500	161*	1,314	582*
TUNA, ALBACORE	0	0*	334	234*
TUNA, BLUEFIN	40,090	99,488*	156,067	474,512*
TUNA, SKIPJACK	400	500*	0	0*
TUNA, YELLOWFIN	226,910	332,769*	1,435,014	3,231,617*
TUNA, UNCL	6,556	2,490*	0	0*
TUNA, BIGEYE	0	0*	811	1,280*
TUNA, BLACKFIN	9,169	6,947*	26,161	43,119*
WAMON	3,704	3,579*	7,412	6,551*
WARSAW	11,172	9,328*	83,685	67,214*
FINFISH, UNCL	821	354*	1,234	439*
FINFISH, UNCL FOR BAIT	12,087	1,242*	6,880	635*
FISH, FRESHWATER, OTH	6	0*	1,236	183*
TOTAL FISH	1,551,337,226	70,700,815*	1,496,991,604	78,858,568*
SHELLFISH				
CRAB, BLUE, HARD	29,848,488	8,386,794*	31,610,487	9,301,204*
CRAB, BLUE, SOFT & PEEL	82,102	199,600*	79,385	180,697*
CRAB, STONE	26	39*	997	2,217*
CRAWFISH, FRESHWATER	9,824,595	3,581,976*	16,679,824	7,070,150*
SHRIMP, FRESHWATER	343	342*	0	0*
OYSTER, EAST, MKT, P, SP	1,806,097	2,735,489*	1,750,481	2,670,803*
OYSTER, EAST, MKT, P, FA	3,490,306	6,213,913*	1,364,819	3,717,323*
OYSTER, EAST, MKT, PR, SP	6,515,860	10,069,118*	6,194,498	10,015,069*
OYSTER, EAST, MKT, PR, FA	2,534,968	4,739,332*	3,343,711	7,981,356*
SQUID, UNCLASSIFIED	7,656	3,022*	14,943	5,355*
TURTLE, SNAPPER	77,853	72,246*	31,164	29,225*
TURTLE, SOFT-SHELL	465	382*	0	0*
FROGS	20,183	30,096*	10,529	15,316*
TOTAL SHELLFISH	54,208,942	36,032,349*	61,081,242	40,948,715*
SUB-TOTAL	1,605,546,168	106,733,164*	1,558,072,851	119,847,283*
SHRIMP, ALL SPECIES	116,436,117	135,039,177	146,681,064	206,355,729

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