UNITED STATES GOVERNMENT
MEMORANDUM

March 13, 2001

To: Public Information (MS 5034)

From: Plan Coordinator, FO, Plans Section (MS 5231)

Subject: Public Information copy of plan

Control #	-	N-07082
Type	-	Initial Exploration Plan
Lease(s)	-	OCS-G16290 Block - 96 Vermilion Area
Operator	-	Anadarko Petroleum Corporation
Description	-	Wells A, B, C, and D
Rig Type	-	JACKUP

Attached is a copy of the subject plan.

It has been deemed submitted as of this date and is under review for approval.

Michelle Griffitt
Plan Coordinator

Site Type/Name	Botm Lse/Area/Blk	Surface Location	Surf Lse/Area/Blk
WELL/A	G16290/VR/96	360 FNL, 5083 FEL	G16290/VR/96
WELL/B	G16290/VR/96	1180 FNL, 3457 FEL	G16290/VR/96
WELL/C	G16290/VR/96	2161 FNL, 3935 FEL	G16290/VR/96
WELL/D	G16290/VR/96	2161 FNL, 3935 FEL	G16290/VR/96

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NOTED - SCHEXNAILDRE

INITIAL EXPLORATION PLAN
VERMILION BLOCK 96
OCS-G 16290

PUBLIC INFORMATION

March, 2001

CONTROL No. N-7082
REVIEWER: Michelle Griffitt
PHONE: (504) 736-2975

INITIAL EXPLORATION PLAN
OCS-G 16290, VERMILION AREA, BLOCK 96

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INITIAL EXPLORATION PLAN
VERMILION BLOCK 96
OCS-G 16290

A. CONTENTS OF PLAN

Description, Objective and Schedule

Anadarko Petroleum Corporation (APC), as designated operator of the subject block, hereby submits this proposed Initial Exploration Plan in accordance with the regulations contained in 30 CFR 250.204, and more specifically defined in the Minerals Management Service Notice to Lessees NTL No. 2000-G21 dated December 26, 2000.

Lease OCS-G 16290, Vermilion Block 96 was acquired by El Paso Production Company April 24, 1996. APC was designated operator of the block March, 2001.

This Initial EP provides for the drilling and completion of four (4) wells in Vermilion Block 96 to test the target sands as detailed in Section C of this plan. The following schedule details the proposed drilling and completion of the wells.

Activity	Estimated Start Date	Estimated Completion Date
Drill and complete wells:		
A	04-15-01	07-31-01
B	08-01-01	11-15-01
C	11-16-01	02-28-02
D	03-01-02	06-15-02

Location of Wells

Well locations are depicted in Section J. A well location plat is included as Attachment 1 and a Bathymetry Map is included as Attachment 2.

Description Of Drilling Unit

Offshore exploratory activities are carried out from mobile drilling rigs. The five most common types of mobile rigs employed for exploratory drilling offshore are submersible drilling rigs, semi-submersible drilling rigs, jack-up drilling rigs, drillships, and drill barges.

The proposed wells will be drilled and completed with jack-up rig. Rig specifications will be made a part of the appropriate Applications for Permit to Drill.

Safety features on the MODU will include well control, pollution prevention, welding procedure, and blowout prevention equipment as described in Title 30 CFR Part 250, Subparts C, D, E, G

and O; and as further clarified by MMS Notices to Lessees, and current policy making invoked by MMS, Environmental Protection Agency and the U.S. Coast Guard. The appropriate life rafts, life jackets, ring buoys, etc., as prescribed by the U.S. Coast Guard will be maintained on the facility at all times. In accordance with Title 30 CFR Part 250, Subpart O, an operator is to ensure Well Control Training is provided for lessee and contractor personnel engaged in oil and gas operations in the OCS Gulf of Mexico. Supervisory and certain designated personnel on-board the facility are to be familiar with the effluent limitations and guidelines for overboard discharges into the receiving waters, as outlined in the NPDES General Permit GMG290000.

The operator is charged with the responsibility to not create conditions that will pose unreasonable risk to the public health, life, property, aquatic life, wildlife, recreation, navigation, commercial fishing, or other uses of the ocean. Some of these measures include installation of curbs, gutters, drip pans, and drains on drilling deck areas to collect all contaminants and debris.

The MMS is required to conduct onsite inspections of offshore facilities to confirm operators are complying with lease stipulations, operating regulations, approved plans, and other conditions; as well as to assure safety and pollution prevention requirements are being met. The National Potential Incident of Noncompliance (PINC) List serves as the baseline for these inspections. The MMS also inspects the stockpiles of equipment listed in the operator's approved Oil Spill Response Plan that would be used for the containment and cleanup of hydrocarbon spills.

B. GENERAL INFORMATION

Contact Person

APC authorizes the following individual be contacted for any inquiries pertaining to this Plan:

Anadarko Petroleum Corporation
Attention: Judy Davidson
P. O. Box 1330
Houston, Texas 77251-1330
(281) 874-8766
E-Mail address: judy_davidson@anadarko.com

Project Name

Glacier

New or Unusual Technology

APC does not intend to utilize any new or unusual techniques or technology during the proposed development operations.

Bonding

In accordance with NTL 99-G04 which implements the requirements for general lease surety bonds contained in 30 CFR 256, APC has on file with the Minerals Management Service a $3,000,000 area-wide development bond.

Additionally, NTL 98-18N addresses how MMS has the authority to require additional security to cover full plugging, site clearance and other associated lease liabilities, which may be in excess of the general lease surety bonds. These activities are reviewed on a case-by-case basis, and if deemed warranted; Minerals Management Service will provide such notification to APC. APC is currently exempt from supplemental bonding.

Oil Spill Financial Responsibility is in place on this lease in the amount of $35,000,000 as required by OPA 90 regulations.

Onshore Support Base and Support Vessels

Vermilion Block 96 is approximately 24 miles south of the Louisiana coastline, and approximately 70 miles from the onshore support base in Cameron, Louisiana. A vicinity map showing the location of Vermilion Block 96 relative to the shoreline and onshore base is included as Attachment 3.

The onshore facilities located in Cameron, Louisiana will serve as port of debarkation for supplies and crews. No onshore expansion or construction is anticipated with respect to the proposed activities. This base is capable of providing the services necessary for the proposed activities. It has 24-hour service, a radio tower with a phone patch, dock space, equipment and supply storage base, drinking and drill water, etc. Support vessels and travel frequency during drilling and completion activities are as follows:

Support Vessel	Drilling/Completion - Trips Per week
Crew Boat	2
Supply Boat	3
Helicopter	7

The boats will normally move to Vermilion Block 96 via the most direct route from Cameron, Louisiana. The helicopter will normally take the most direct route of travel between the two points when air traffic and weather conditions permit.

Lease Stipulations

Oil and gas exploration and development activities on the OCS have the potential for causing adverse environmental impacts; therefore, special stipulations may be attached to the lease instrument, as necessary, in the form of additional mitigating measures. The MMS is responsible for ensuring full compliance with stipulations appended to leases.

Stipulation No. 1 "Archaeological Resources", is attached to the Vermilion Block 96 lease.

C. GEOLOGICAL AND GEOPHYSICAL

Structure Maps

Structure Maps drawn to the top of the prospective hydrocarbon accumulation showing the surface and bottom hole locations of the subject wells is included in this plan as Attachment 4.

Seismic Lines

Included as Attachment 5, is a copy of the letter being submitted under separate cover this date depicting the migrated and annotated deep seismic lines within 500 feet of the surface locations being proposed in this plan.

Geological Structure Cross-Sections

Cross section maps are included as Attachment 6.

Shallow Hazards Report

John E. Chance & Associates was contracted by Freeport McMoRan Oil & Gas Company to perform a Hazard and Archaeological in Vermilion Block 96. The purpose of the survey was to determine bottom and subbottom conditions in the lease area and inspect for potential drilling hazards. Two copies of the subject report are being submitted under separate cover this date.

Shallow Hazard Assessment

A shallow hazard analysis for the proposed surface locations is included as Attachment 7.

High Resolution Seismic Lines

Also included as Attachment 5 is a copy of the letter being submitted under separate cover this date depicting the annotated shallow hazards lines within 500 feet of the surface locations being proposed in this Plan.

Stratigraphic Column

A generalized biostratigraphic/lithostratigraphic column from the seafloor to the total depth of the proposed wells in included as Attachment 8.

Time Versus Depth Tables

A Time versus Depth Table is included as Attachment 9.

Trapping Features

Trapping features and depths of geopressure for the proposed well locations are discussed in Attachment 10.

Hydrogen Sulfide

APC hereby requests that Vermilion Block 96 be classified as an area where the absence of hydrogen sulfide has been confirmed.

The basis for this determination is based on the three existing wells on Vermilion Block 96, and the Petro-Fina Block 95 No. 2 which encountered no evidence of H2S while drilling. The Petro-Fina well drilled to 19,902' and tested the objective interval for APC's Vermilion Block 96 proposed drilling program.

D. BIOLOGICAL INFORMATION

Chemosynthetic Information

Not Applicable.

Topographic Features

MMS and the National Marine Fisheries Service (NMFS) have entered into a programmatic consultation agreement for Essential Fish Habitat that requires that no bottom disturbing activities, including anchors or cables from a semi-submersible drilling rig, may occur within 500 feet of the no-activity zone of a topographic feature. If such proposed bottom disturbing activities are within 500 feet of a no activity zone, the MMS is required to consult with the NMFS.

The activities proposed in this plan are not affected by a topographic feature.

E. WASTES AND DISCHARGES INFORMATION

All discharges associated with drilling and development will be in accordance with regulations implemented by Minerals Management Service (MMS), U.S. Environmental Protection Agency (EPA) and the U. S. Coast Guard (USCG).

Included as Attachment 11 are the typical mud components used in the proposed activities and the estimated quantity and rates of discharges applicable to the drilling fluids/cuttings based on hole interval and washout.

Minerals Management Service

NTL 98-14 advises operators to exercise caution in the handling and disposal of small items, and packaging materials and to develop a disposal plan for the proper control and disposal of this type of refuse.

Regulations at 30 CFR 250.300(a) and 250.300(b)(6) prohibit the deliberate discharge of equipment, cables, chains, containers, or other materials offshore. 30 CFR 250.300(c) requires an operator mark all portable equipment, spools or reels, drums, pallets and other loose items weighing 18 kg or more prior to transport offshore. Smaller items must be stored in a marked container. In addition operators are required to install curbs, gutters, drip pans, and drains on rig deck areas and platforms to collect debris not authorized for discharge.

U.S. Coast Guard

All ships and watercraft are prohibited from dumping plastics at sea. The marine supply vessels that service this location will be equipped with sewage treatment facilities. Victual matter or organic food wastes are allowed to be ground up into small pieces and disposed overboard from manned structures located more than 20 km from shore. E&P wastes and trash generated at this location will be disposed according to USCG regulations.

Environmental Protection Agency

It is not expected that any liquid or solid wastes, or pollutants will be generated by offshore, onshore or transportation-related operations with the following exceptions. The discharge of wastewater resulting from offshore activities includes deck drainage, solid wastes (i.e. sanitary and domestic wastes), and miscellaneous discharges (i.e., desalinization unit discharge, blowout preventor fluid, uncontaminated ballast water, uncontaminated bilge, uncontaminated freshwater, mud, cuttings and cement at seafloor, uncontaminated seawater, boiler blowdown, source water and sand, diatomaceous earth filter media, excess cement slurry. Deck drainage will consist of all waste resulting from rainfall, rig/platform washing, deck washings, tank cleaning operations, and runoff from curbs and gutters, including drip pans and work areas with an estimated volume range of 0 to 200 bbls/day. Sanitary and domestic wastes will be processed on the rig and the resulting effluent will be discharged into the Gulf with an estimated maximum of 2900 gallons/day flow, depending on the number of inhabitants. Cooling water is defined by the U.S. Environmental Protection Agency as "noncontact" water used for cooling machinery, and desalinization discharges are those wastes resulting from the creation of freshwater from seawater. These discharges are regulated by the U.S. Environmental Protection Agency through the National Pollutant Discharge Elimination System (NPDES) General Permit GMG290000. Discharges will contain no free oil and will be in compliance with and monitored as required by the permit.

F. OIL SPILL RESPONSE AND CHEMICAL INFORMATION

Oil Spill Response Plan Information

APC is the only entity covered in the Regional Oil Spill Response Plan (OSRP) which was approved April 3. 2000 and amended October 24, 2000. The worst case certification was also approved. Activities proposed in this Initial EP will be covered by the Regional OSRP.

OSRO Information

APC's primary equipment provider is Clean Gulf Associates (CGA). The Marine Spill Response Corporation's (MSRC) STARS network will provide closest available personnel, as well as an MSRC supervisor to operate the equipment. In the event of a spill, mechanical response equipment located in CGA's bases located in Galveston, Texas, Lake Charles, and Houma, Louisiana would be transported to a staging area in Cameron, Louisiana.

Worst Case Discharge Scenario Comparison

The Worst Case Discharge (WCD) proposed in this EP does not supercede the WCD as approved in the Regional OSRP. If our evaluation reveals that this WCD does in fact have the potential of having more adverse impact than our currently identified WCD in our existing Regional OSRP, then APC will amend the Regional OSRP as required. Activities proposed in this EP are considered far-shore, greater than 10 miles from the shoreline. The WCD scenario from the proposed activities in this Initial EP and the WCD in the Regional OSRP on file with the MMS are compared below:

Category	Regional OSRP WCD	EP WCD
Type of Activity (1)	Production	Drilling
Spill Location (Area/Block	EI 346	VR 96
Facility Designation (2)	Well A001	Jackup Rig
Distance to Nearest Shoreline (miles)	76	24
Volume (3)	53,500 bbls	1500 bbls
Type of oil (crude, condensate, diesel)	Oil	Condensate
API Gravity (4)	23.4	Unknown

"Since APC has the capability to respond to the worst-case spill scenario included in its regional OSRP, and since the worst case scenario determined for our Initial EP, does not replace the worst case scenario in our regional OSRP, I hereby certify that APC has the capability to respond, to the maximum extent practicable, to a worst case discharge, or a substantial threat of such a discharge, resulting from the activities proposed in our Initial EP."

G. AIR EMISSIONS INFORMATION

The potential degrading effects on air quality from onshore and offshore operational activities are platform emissions, development drilling activities; service vessel operations; evaporation of volatile hydrocarbons from surface oil slicks; and fugitive emissions during hydrocarbon venting and offloading.

Emission of pollutants into the atmosphere from these proposed activities are likely to have a minimum impact on offshore air quality because of prevailing atmospheric conditions, emission heights, pollutant concentrations, and distance from shore. Onshore impact on air quality from OCS activities emissions is estimated to be negligible because of the atmospheric regime, the emission rates and the distance of these emissions from the coast line. There will be days of low mixing heights and wind speeds that could increase impact levels. These conditions are characterized by fog formation, which in the Gulf occurs about 35 days a year, mostly during winter months. The impact from these conditions is reduced in winter because the onshore winds have the smallest frequency (37%) and rain removal is greatest. Summer is the worst time, with onshore winds having a frequency of 61%. Emissions of pollutants into the atmosphere are expected to have concentrations that would not change the onshore air quality classifications. Primary air pollutants associated with OCS activities are nitrogen oxides, carbon monoxide, sulphur oxides, volatile organic compound, and suspended particulate.

An Air Emissions Report is enclosed as Attachment 12.

H. ENVIRONMENTAL INFORMATION

An Environmental Report is enclosed as Attachment 13.

I. COASTAL ZONE MANAGEMENT CONSISTENCY

A Coastal Zone Management Consistency Certificate and request for public notices are enclosed as Attachment 14.

OMB Control No. 1010-0049
Expiration Date:

OCS PLAN INFORMATION FORM

(USE SEPARATE FORM FOR EACH LEASE)

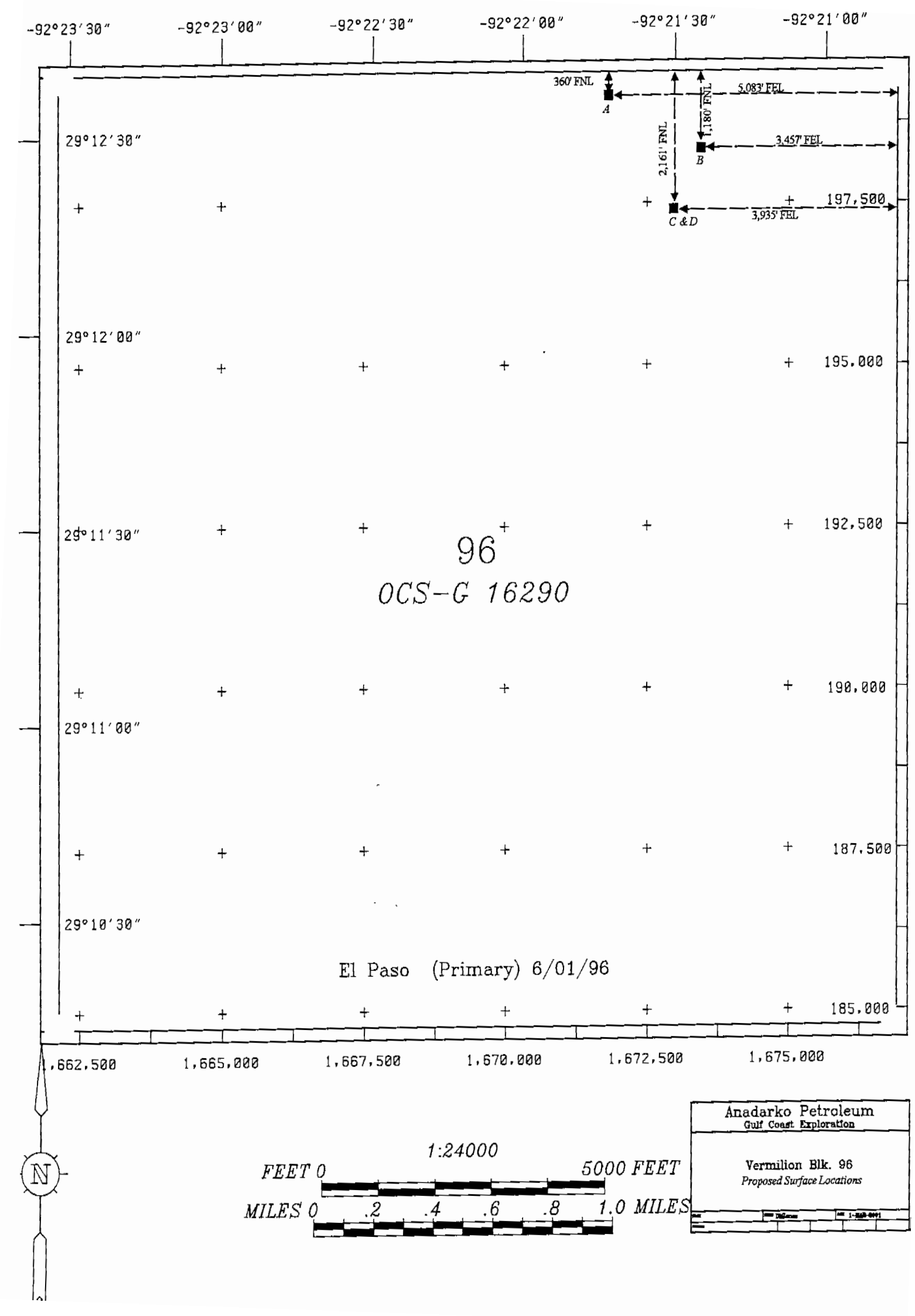
EXPLORATION PLAN	x	DEVELOPMENT OPERATIONS COORDINATION DOCUMENT		DEVELOPMENT & PRODUCTION PLAN	
OPERATOR:	Anadarko Petroleum Corporation		ADDRESS:	P. O. Box 1330	
MMS OPERATOR NO.:	00981			Houston, Texas 77251	
CONTACT PERSON:	Judy Davidson		PHONE NO.	(281) 874-8766	
START DATE: 04/15/2001	RIG TYPE: JU x SS PF DS OTHER		DISTANCE TO CLOSEST LAND IN MILES:	24	
NEW OR UNUSUAL TECHNOLOGY	YES NO x		ONSHORE SUPPORT BASE(S):	Cameron, Louisiana	
NARRATIVE DESCRIPTION OF PROPOSED ACTIVITIES:					
Drill and complete four wells					
			PROJECT NAME, IF APPLICABLE:	Glacier	

PROPOSED WELL/STRUCTURE LOCATIONS

WELL/ STRUCTURE NAME	SURFACE LOCATION	BOTTOM-HOLE LOCATION (FOR WELLS)
Platform ____ or Well x Name: A	Calls: 360' F N L and 5083 F E L of Lease OCS 16290, Vermilion Area Block 96 X: 1,671,815.00 Y: 199,158.00 LAT: LONG: TVD (IN FEET): MD (IN FEET):	Calls: ____ F __ L and ____ F __ L of Lease OCS ____, ____ Area Block X: Y: LAT: LONG: TVD (IN FEET): MD (IN FEET):
Platform ____ or Well x Name: B	Calls: 1180 F N L and 3457 F E L of Lease OCS 16290, Vermilion Area Block 96 X: 1,673,441.00 Y: 198,338.00 LAT: LONG: TVD (IN FEET): MD (IN FEET):	Calls: ____ F __ L and ____ F __ L of Lease OCS ____, ____ Area Block X: Y: LAT: LONG: TVD (IN FEET): MD (IN FEET):
Platform ____ or Well x Name: C	Calls: 2161 F N L and 3935 F E L of Lease OCS 16290, Vermilion Area Block 96 X: 1,672,960.00 Y: 197,357.00 LAT: LONG: TVD (IN FEET): MD (IN FEET):	Calls: ____ F __ L and ____ F __ L of Lease OCS ____, ____ Area Block X: Y: LAT: LONG: TVD (IN FEET): MD (IN FEET):
Platform ____ or Well x Name: D	Calls: 2161 F N L and 3935 F E L of Lease OCS 16290, Vermilion Area Block 96 X: 1,672,960.00 Y: 197,357.00 LAT: LONG: TVD (IN FEET): MD (IN FEET):	Calls: ____ F __ L and ____ F __ L of Lease OCS ____, ____ Area Block X: Y: LAT: LONG: TVD (IN FEET): MD (IN FEET):

K ATTACHMENTS

1	Well Location Plat
2	Bathymetry Map
3	Vicinity Map
4	Structure Map
5	Submittal Letter for Seismic Lines
6	Cross-Sections
7	Shallow Hazard Assessment
8	Stratigraphic Column
9	Time Versus Depth Table
10	Trapping Features
11	Mud Components/Discharges
12	Air Emissions Report
13	Environmental Report
14	Coastal Zone Management Consistency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A
5,083' FEL
1,180' FNL
2,161' FNL
B
3,457' FEL
C & D
3,935' FEL
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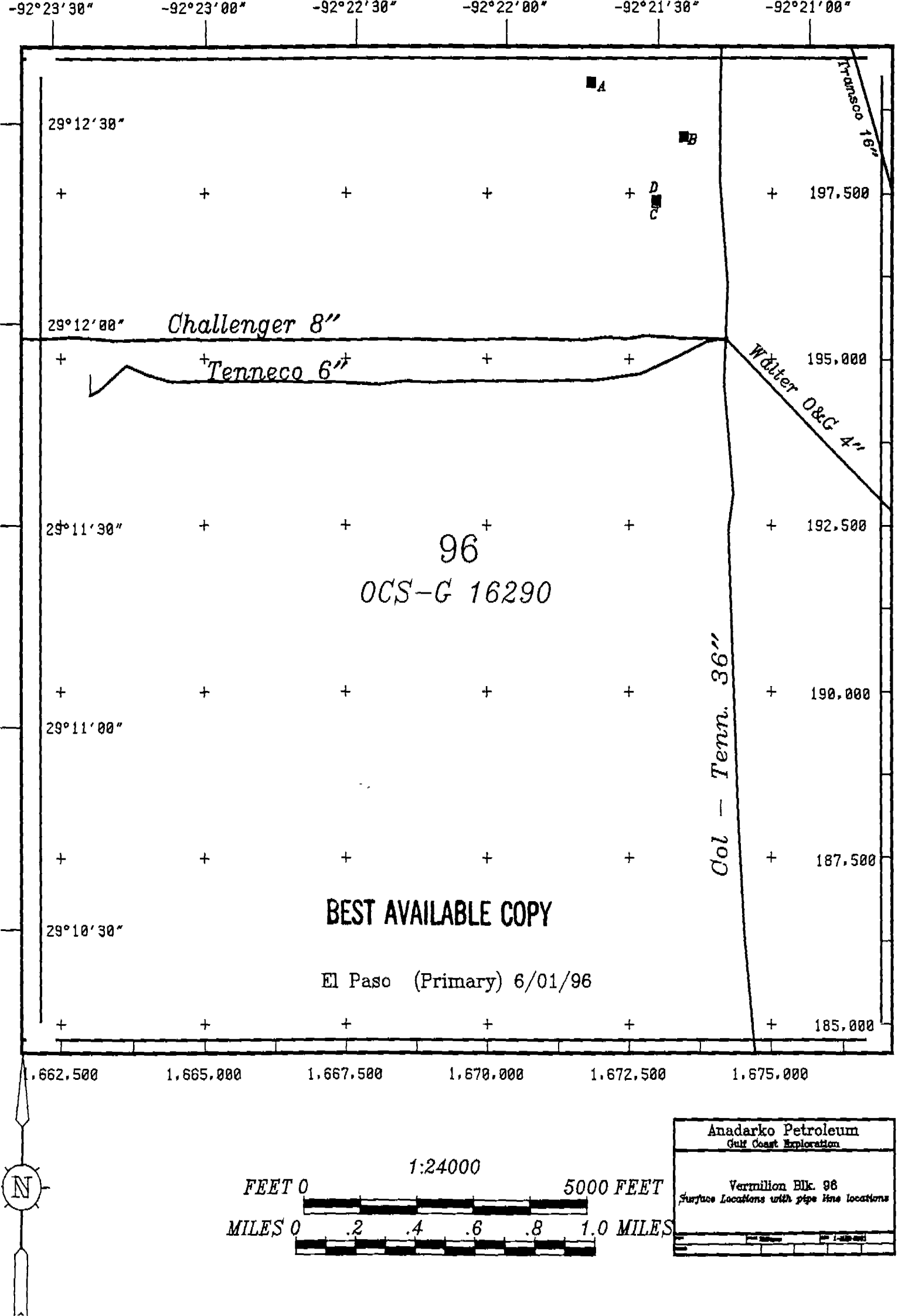
Anadarko Petroleum
Gulf Coast Exploration
Vermilion Blk. 96
Proposed Surface Locations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Challenger 8"
Tenneco 6"
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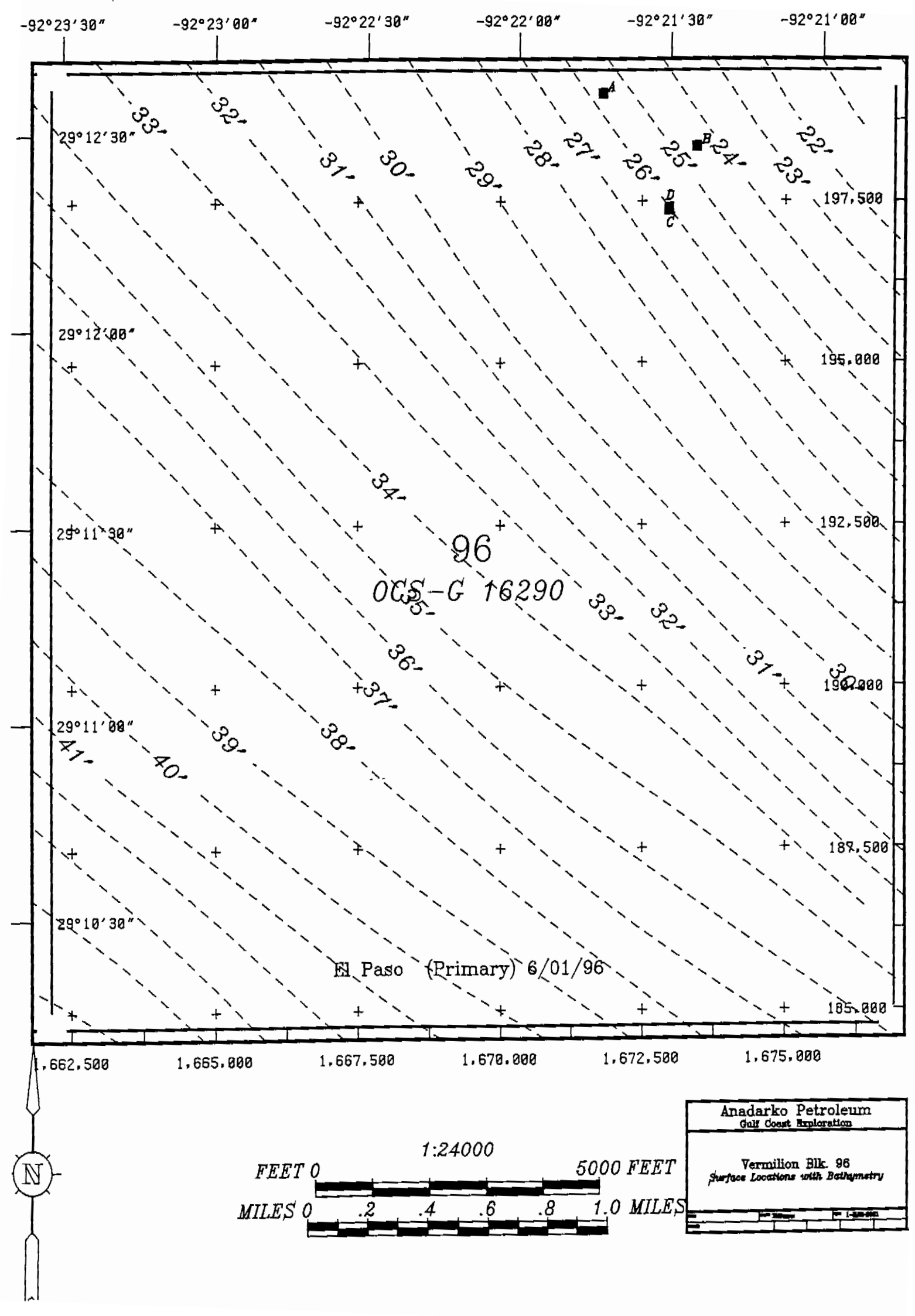
Gulf Coast Exploration
Vermilion Blk. 96
Surface Locations with pipe line locations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OCS-G 16290
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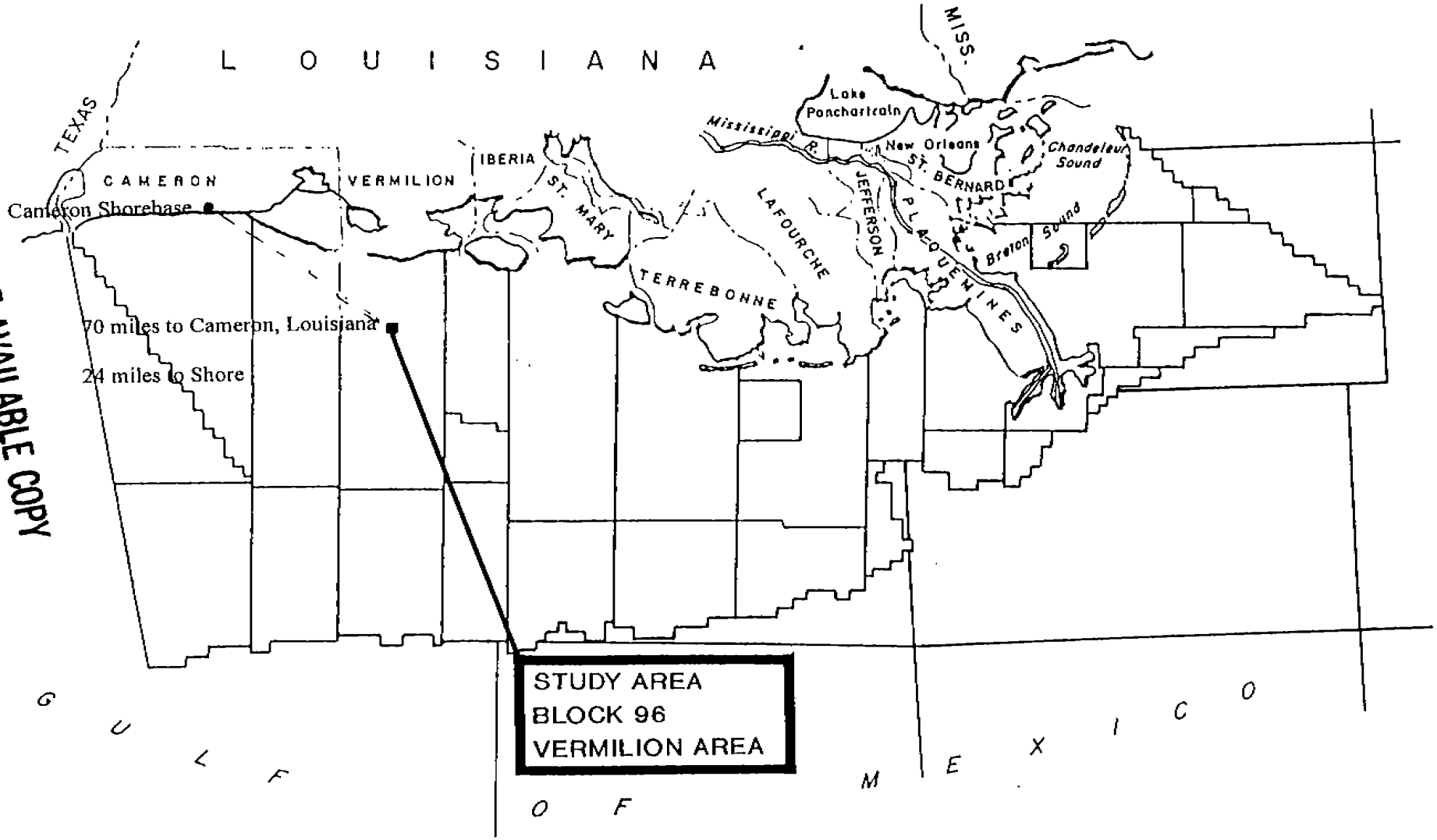
Gulf Coast Exploration
Vermilion Blk. 96
Surface Locations with Bathymetry



REGIONAL MAP

ANADARKO PETROLEUM CORPORATION 17001 NORTHCHASE DRIVE • P.O. BOX 1330 • HOUSTON, TEXAS 77251-1330
TEL. (281) 875-1101

March 9, 2001

Anadarko

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

Attention: Bob Kuzela

RE: Initial Exploration Plan
Vermilion Block 96
OCS-G 16290

Gentlemen:

In support of the Initial Exploration Plan submitted for approval for Vermilion Block 96, enclosed are the shallow hazard lines listed below. Also enclosed are 3-D seismic tie lines. The Shallow Hazards Report was submitted with the Initial Exploration Plan.

1. Side Scan Sonar:	10, 11, 12, 13, 17, 18
2. Fathometer:	10, 11, 12, 13, 17, 18
3. Magnetometer:	10, 11, 12, 13, 17, 18
4. Seismic:	10, 11, 12, 13, 17, 18
5. Bathymetry:	10, 11, 12, 13, 17, 18

If you should require any additional information or have any questions, please call me at (281) 874-8766.

Sincerely,

Judy Davidson
Sr. Regulatory Analyst

JD/me
Enclosures

Shallow Hazard Assessment
Block 96
Vermilion Area, Gulf of Mexico

John E. Chance and Associates were contracted by McMoran Oil & Gas to perform a Hazard Study of block 96, Vermilion area (OCS-G-16290) in 1991. Anadarko Petroleum Corp. purchased this study in 2001 to perform a hazard assessment of the block in preparation for drilling. In conjunction with this assessment, El Paso Energy, is assigning operatorship to Anadarko Petroleum.

The Geophysical instruments utilized for the survey included the O.R.E pinger Profiler, Echotrac Bathymetric System, watergun Profilerwith DFS-V Recording system, Proto Magnetometer, and SMS-960 Side Scan sonar. Horizontal positioning of the survey vessel was accomplished with John Chance STARFIX System. The survey consisted of sixteen (16) north-south tracklines spaced approximately 300 meters apart and six (6) east-west tielines spaced approximately 800 meters apart. Shot points were recorded at 150 meter intervals along all survey lines.

The seafloor across the lease ranges in depth from a minimum of –20 feet at the northeast corner of the study area to a maximum of –46 feet at the southwestern section of the study area. The seafloor slopes towards the southwest at approximate rates of 3.3 to 9.0 feet per mile (0.04 – 0.1 degrees). The seafloor dip direction reflects the position of Block 96, Vermilion Area near the southwest flank of Trinity Shoal, a low-relief, physiographic feature. Minor sediment density variations, noted on the sonograms, may represent sand accumulations along the seafloor. However, sonar and pinger data indicate the seafloor within the study area is smooth, uniform, and clear of natural hazards or obstacles. (see report Appendix A, Figures 1-3).

There were no indications of faults, folds, or high pressure gas pockets detected on the seismic data in the survey area. Pinger profiles uncovered the presence of a buried erosional channel system that is related to fluvial processes during the Late Wicsonsin glacial age. The channel banks are buried 30 to 42 feet below the seafloor. This network of channels is primarily in the southern half of the block and two to three thousand meters from the nearest proposed surface location. (channel orientation map).

Man made features and magnetic anomalies need to be addressed in this report. Magnetometer and sonar data verified the position of several features, which include 3 wells, 2 platforms, and 6 pipelines. (pg. 12 of the report). In addition to this, fifty-seven (57) unidentified magnetic anomalies were located in the study area. A table of all magnetic anomalies can be found in the report (pp. 16-20). Attempts by John Chance to identify the sources for the magnetic anomalies with side scan sonar proved inconclusive. The contacts are presumed to represent articles of ferrous debris, either buried below the mudline or too small to be acoustically detected.

DRILLING MUD COMPONENTS

COMMON CHEMICAL OR CHEMICAL TRADE NAME	DESCRIPTION OF MATERIAL
Aluminum Stearate	Aluminum Stearate
AXTAFLO-S	Nonionic Surfactant
Barite	Barium Sulfate ($BaSO_4$)
Black Magic Supermix	Sacked concentrated oil base mud
Black Magic	Oil base mud concentrate
Calcium Carbonate	Aragonite ($CaCO_3$)
Calcium Chloride	Hydrophilite ($CaCl_2$)
Calcium Oxide	Lime (Quick)
Calcium Sulfate	Anhydrite ($CaSO_4$)
Carboxymethyl Cellulose	Carboxymethyl Cellulose
Caustic Potash	Potassium Hydrate
Caustic Soda	Sodium Hydroxide (NaOH)
Chrome Lignite	Chrome Lignite
Chrome Lignosulfonate	Chrome Lignosulfonate
Diesel	Used to mix certain loss circulation pills
Drilling Detergent	Soap
E-Pal	Non-toxic, biodegradable defoamer
Ferrochrome Lignosulfonate	Derived from wood pulp
Gel	Sodium montmorillonite, bentonite, attapulgite
Gypsum	$CaSO_4.2H_2O$
Jelflake	Plastic foil, shredded cellophane
Lignite	Lignite
Lignosulfonate	Lignosulfonate
MICA	Loss circulation material
MOR-REX	Hydroloyzed Cereal solid
Mud Sweep	Cement Pre-flush
Pipe-Lax	Surfactant mixed with diesel
Sapp	Sodium Acid Pyrophosphate
Shale-Trol	Organo-aluminum complex
Soda Ash	Sodium Carbonate
Sodium Bicarbonate	$NaHCO_3$
Sodium Carboxymethyl Cellulose	Sodium Carboxymethyl Cellulose
Sodium Chloride	NaCl
Sodium Chromate	$NaCrO_4.1OH_2O$
Starch	Corn Starch
TORQ-Trim	Biodegradable drilling lubricant
TX-9010	Biodegradable drilling lubricant
Wall-Nut	Ground walnut shells
Wood Fibers	Loss circulation material

GULF OF MEXICO AIR EMISSION CALCULATIONS

General

This document (DOCD_AQ.XLS) was prepared through the cooperative efforts of those professionals in the oil industry including the API/OOC Gulf of Mexico Air Quality Task Force, and the Minerals Management service (MMS), who deal with air emission issues. This document is intended to standardize the way we estimate our potential air emissions for Development Operations Coordination Documents (DOCD) approved by the Minerals Management Service (MMS). It is intended to be thorough but flexible to meet the needs of different operators. This first file gives the basis for the emission factors used in the emission spreadsheet as well as some general instructions.
The following files, Title Sheet, Factors Sheet,Emissions Spreadsheet,and Summary Sheet will describe and calculate emissions from an activity.

Title Sheet

1. The Title Sheet requires input of the company's name, area, block, OCS-G number, platform and/or well(s) in the necessary lines. This data will automatically be transferred to the spreadsheet and summary sheet.

2. Answer the screening questions by indicating yes or no in the correct column. If all of the questions are answered no, fill in the information about your lease term pipelines in the block immediately below the screening questions and then submit just the title sheet with your DOCD; you do not need to complete the rest of the spreadsheets. If you answer yes to any of the screening questions, you need to prepare and subit a full set of spreadsheets. In either case you do not need to print and submit these instructions.

Factor Sheet

The emission factors were compiled from the latest AP-42 references or from industry studies if no AP-42 reference was available. Factors can be revised as more data becomes available. A change to this Factor Sheet will be automatically changed in Emission Spreadsheet. A sulfur content table was added in 1996. A change in this table will automatically revise the SOx factor which will revise emissions.

The basis for the factors is as follows:

1. NG Turbines — Fuel usage scf/hr = HP X 9.524 (10,000 btu/HP-hr / 1050 btu/scf)

2. NG Engines — Fuel usage scf/hr = HP X 7.143 (7,500 btu/HP-hr / 1050 btu/scf)

3. Diesel — Fuel usage gals/hr = HP X 0.0483 (7,000 btu/HP-hr / 145,000 btu/gal)

Emission Factors

Natural Gas Prime Movers

1. TNMOC refers to total non-methane organic carbon emissions and these can be assumed equivalent to VOC emissions.

3. The sulfur content assumed is 2000 grains /mmscf (3.33 ppm). If your concentration is different then revise the ppm in the sulfur able immediately below the factors table.

Diesel-Fired Prime Movers

1. Diesel sulfur level 0.4% by wt. If your sulfur content is different change % wt. in the sulfur table.

2. For boats use > 600 HP factors based on AP-42 Vol. II, Table II-3-3.
Those figures closely match the above values. Include the emissions from all vessels associated with your activities for their time of operation within a 25 mile radius of your facility.

3. For diesel engines <600 HP VOC emissions equal total HC emissions; for diesel engines>600 HP VOC emissions equal non-methane HC emissions.

Heaters/Boilers/Firetubes/NG-Fired

1. The assumed NG Sulfur content is 2000 gr. per mcf(3.33 ppm). You may revise the sulfur content by changing the ppm in the sulfur table, if your content is different.

2. The VOCs emissions are based on total non-methane HCs.

Gas Flares

1. It is assumed that the flare is non-smoking.

2. A heating value of 1050 btu/cu. ft. for NG is assumed.

3. The sulfur content assumed is 2000 grains /mmscf (3.33 ppm). If your concentration is different then revise the ppm in the sulfur table, or you may use the following formula:

H2S flared (lbs/hr) = Gas flared (cu ft/hr) X ppm H2S X 34/(379X1000000)

SOx emis (lbs/hr) = H2S flared (lbs/hr) X 64/34

Liquid Flares

1. Assumes 1% by wt Sulfur maximum in the crude oil. Revise the percent sulfur in the sulfur table if your value is different.

2. VOCs equal non-methane HCs

3. Particulate emissions assumes Grade 5 oil.

Tanks

1. Tank emissions assumes uncontrolled fixed roof tank.

2. The EPA TANKS model is an acceptable alternative. If you use TANKS you must provide sufficient information for MMS to verify your results.

Fugitives

1. Fugitives are based on the 1995 Star Environmental Report. It requires that you count or estimate your components.The factor is based on average leak rate for light oil / gas facility.

Glycol Dehydrator Vent

1. The rate of the gas being dehydrated (throughput) in SCF/HR must be entered in the spreadsheet. The emission factor is from the compilation of the Louisiana Survey and an average emissions per gas rate.

Gas Venting

1.The emission factor is based on venting unburned natural gas of average weight.

Emissions Spreadsheet

The emissions from an operation should be presented for a calendar year (1999, 2000, etc.). The operation may include production only or production in conjunction with other activities such as drilling or construction operations. For additional years the Emissions Spreadsheet is renamed Emissions 2, 3, etc. The different operating parameters for each year should entered to calculate revised emissions for that year. The spreadsheet will calculate maximum fuel usage (UNIT/HR) using the known horsepower. It will assume maximum fuel usage is equal to actual fuel (UNIT/DAY) usage unless the actual fuel usage is known. If so, insert actual fuel usage in appropriate column. The emissions will be calculated as follows:

Emission rate (lb/hr) = (HP or fuel rate) X Emission Factor (Potential to emit)

Emissions (tpy)=Emission rate (lb/hr) X load factor(Act Fuel/Max Fuel) X hrsX daysX ton/2000 lbs (Actual emissions)

To customize the spreadsheet for your application it is possible to delete lines for non-applicable equipment/activities or copy/insert an entire line if more than one similiar type of equipment is present.

Also, the production equipment can be customized further by adding the use of the equipment behind each type of engine, i.e.,

Turbine
Turbine - Gas Compressor

Burner
Burner - Line Heater

Summary Sheet

The Summary Sheet is designed to show a proposed estimate of emissions from an activity over a future period of time. In this example ten years was chosen. The first line (Row 7) of the summary sheet is linked to the yearly totals in the Emissions1 Spreadsheet. The second line (Row 8) is referenced to Emissions2 Spreadsheet. The third line (Row 9) is referenced to Emissions3, Row 10 to Emissions 4, Row 11 to Emissions 5. If more years of calculations are necessary to reach a constant then a spreadsheet can be copied and linked to the summary sheet for future years. Once emissions are constant the values are carried to the end of the ten year period.

DOCD AIR QUALITY SCREENING CHECKLIST

COMPANY	Anadarko Petroleum Corporation
AREA	Vermilion
BLOCK	96
LEASE	OCS-G 16290
PLATFORM	NA
WELL	A, B, C, D
COMPANY CONTACT	Judy Davidson
TELEPHONE NO.	(281)8748766
REMARKS	Drill and complete four exploratory wells

"Yes"	"No"	**Air Quality Screening Questions**
	no	1. Is the concentration of H_2S expected greater than 20 ppm?
	no	2. Is the burning of produced liquids proposed?
	no	3. Is gas flaring or venting which would require Regional Supervisor of Production and Development approval under Subpart K proposed?
	no	4. Does the facility process production from 8 or more active wells?
	no	5. Is the facility within 200km of the Breton Area?
	no	6. Will the proposed activity be collocated at (same surface location), or bridge attached to, a previously approved facility?
yes		7. Is the proposed activity within 25 miles of shore?
	no	8. Are semi-submersible activities involved and is the facility within 75 miles of shore?
	no	9. Are drillship operations involved and is the facility within 145 miles of shore?

If ALL questions are answered "No":
Fill in the information below about your lease term pipelines and submit only this coversheet with your plan.

If ANY question is answered "Yes":
Prepare and submit a full set of spreadsheets with your plan.

LEASE TERM PIPELINE CONSTRUCTION INFORMATION:		
YEAR	NUMBER OF PIPELINES	TOTAL NUMBER OF CONSTRUCTION DAYS
2001		
2002		
2003		
2004		
2005		
2006		
2007		
2008		
2009		

Fuel Usage Conversion Factors	Natural Gas Turbines		Natural Gas Engines		Diesel Recip. Engine		REF.	DATE
	SCF/hp-hr	9.524	SCF/hp-hr	7.143	GAL/hp-hr	0.0483	AP42 3.2-1	4/76 & 8/84

Equipment/Emission Factors	units	PM	SOx	NOx	VOC	CO	REF.	DATE
NG Turbines	gms/hp-hr		0.00247	1.3	0.01	0.83	AP42 3.2-1& 3.1-1	10/96
NG 2-cycle lean	gms/hp-hr		0.00185	10.9	0.43	1.5	AP42 3.2-1	10/96
NG 4-cycle lean	gms/hp-hr		0.00185	11.8	0.72	1.6	AP42 3.2-1	10/96
NG 4-cycle rich	gms/hp-hr		0.00185	10	0.14	8.6	AP42 3.2-1	10/96
Diesel Recip. < 600 hp.	gms/hp-hr	1	1.468	14	1.12	3.03	AP42 3.3-1	10/96
Diesel Recip. > 600 hp.	gms/hp-hr	0.32	1.468	11	0.33	2.4	AP42 3.4-1	10/96
Diesel Boiler	lbs/bbl	0.084	2.42	0.84	0.008	0.21	AP42 1.3-12,14	9/98
NG Heaters/Boilers/Burners	lbs/mmscf	7.6	0.593	100	5.5	84	AP42 1.4-1, 14-2, & 14-3	7/98
NG Flares	lbs/mmscf		0.593	71.4	60.3	388.5	AP42 11.5-1	9/91
Liquid Flaring	lbs/bbl	0.42	6.83	2	0.01	0.21	AP42 1.3-1 & 1.3-3	9/98
Tank Vapors	lbs/bbl				0.03		E&P Forum	1/93
Fugitives	lbs/hr/comp.				0.0005		API Study	12/93
Glycol Dehydrator Vent	lbs/mmscf				6.6		La. DEQ	1991
Gas Venting	lbs/scf				0.0034			

Sulfur Content Source	Value	Units
Fuel Gas	3.33	ppm
Diesel Fuel	0.4	% weight
Produced Gas(Flares)	3.33	ppm
Produced Oil (Liquid Flaring)	1	% weight

OMB Control No. xxxx-xxxx
Expiration Date: Pending

COMPANY	AREA	BLOCK	LEASE	PLATFORM	WELL	CONTACT	PHONE	REMARKS
Anadarko Petroleum Corpor	Vermilion	96	OCS G 16290	NA	A, B, C, D	Judy Davidson	(281)8746766	Drill three wells, install caissons, pipelines and place three wells on production.

OPERATIONS	EQUIPMENT	RATING	MAX. FUEL	ACT. FUEL	RUN TIME		MAXIMUM POUNDS PER HOUR					ESTIMATED TONS				
	Diesel Engines	HP	GAL/HR	GAL/D												
	Nat. Gas Engines	HP	SCF/HR	SCF/D												
	Burners	MMBTU/HR	SCF/HR	SCF/D	HR/D	DAYS	PM	SOx	NOx	VOC	CO	PM	SOx	NOx	VOC	CO
DRILLING	PRIME MOVER>600hp diesel	2100	101.43	2434 32	24	260	1.48	6 79	50.88	1 53	11 10	4 62	21 19	158 75	4.76	34.64
	PRIME MOVER>600hp diesel	2100	101 43	2434.32	24	260	1 48	6 79	50 88	1 53	11.10	4 62	21.19	158.75	4.76	34 64
	PRIME MOVER>600hp diesel	2100	101.43	2434 32	24	260	1.48	6.79	50.88	1.53	11.10	4 62	21.19	158.75	4 76	34.64
	PRIME MOVER>600hp diesel	0	0	0.00	0	0	0 00	0 00	0.00	0 00	0 00	0 00	0.00	0.00	0.00	0.00
	BURNER diesel	0			0	0	0.00	0.00	0.00	0 00	0 00	0.00	0.00	0 00	0.00	0.00
	AUXILIARY EQUIP<600hp diesel	0	0	0 00	0	0	0.00	0.00	0 00	0 00	0.00	0 00	0.00	0.00	0.00	0.00
	VESSELS>600hp diesel(crew)	2040	98.532	2364.77	14	75	1 44	6.60	49.43	1.48	10.78	0.75	3.46	25 95	0.78	5.66
	VESSELS>600hp diesel(supply)	3300	159.39	3826.36	18	112	2.33	10.67	79.96	2.40	17.44	2.34	10.76	80.60	2.42	17.58
	VESSELS>600hp diesel(tugs)	3000	144.9	3477 60	24	2	2.11	9.70	72 69	2 18	15.86	0 05	0.23	1.74	0 05	0.38
	VESSELS>600hp diesel(tugs)	3000	144.9	3477.60	24	2	2.11	9.70	72.69	2.18	15.86	0.05	0.23	1.74	0.05	0.38
	VESSELS>600hp diesel(helicopt)	1800	86.94	2086.56	1.5	260	1.27	5.62	43.61	1 31	9.52	0.25	1.13	8.60	0.26	1.86
PIPELINE INSTALLATION	PIPELINE LAY BARGE diesel	0	0	0.00	0	0	0 00	0 00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	SUPPORT VESSEL diesel	0	0	0.00	0	0	0.00	0.00	0.00	0 00	0 00	0.00	0.00	0.00	0.00	0.00
	PIPELINE BURY BARGE diesel	0	0	0.00	0	0	0 00	0.00	0.00	0.00	0.00	0 00	0.00	0.00	0.00	0.00
	SUPPORT VESSEL diesel	0	0	0 00	0	0	0 00	0.00	0 00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	VESSELS>600hp diesel(tugs)	0	0	0.00	0	0	0 00	0.00	0 00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	VESSELS>600hp diesel(supply)	0	0	0.00	0	0	0.00	0.00	0.00	0 00	0.00	0.00	0.00	0 00	0.00	0.00
FACILITY INSTALLATION	DERRICK BARGE diesel	0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	MATERIAL TUG diesel	0	0	0.00	0	0	0 00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	VESSELS>600hp diesel(liftboat)	0	0	0.00	0	0	0.00	0.00	0.00	0.00	0 00	0 00	0.00	0.00	0.00	0.00
	VESSELS>600hp diesel(supply)	0	0	0.00	0	0	0.00	0.00	0.00	0 00	0.00	0.00	0.00	0.00	0.00	0.00
PRODUCTION	RECIP.<600hp diesel	0	0	0 00	0	0	0 00	0 00	0.00	0.00	0.00	0 00	0.00	0.00	0.00	0.00
	RECIP.>600hp diesel	0	0	0.00	0	0	0 00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Helicopter	SUPPORT VESSEL diesel	0	0	0.00	0	0	0.00	0.00	0.00	0 00	0.00	0.00	0.00	0.00	0.00	0.00
	TURBINE nat gas	0	0	0.00	0	0		0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00
	RECIP.2 cycle lean nat gas	0	0	0.00	0	0		0 00	0 00	0.00	0.00		0.00	0.00	0.00	0.00
	RECIP.4 cycle lean nat gas	0	0	0 00	0	0		0.00	0 00	0.00	0 00		0.00	0 00	0.00	0.00
	RECIP.4 cycle rich nat gas	0	0	0.00	0	0		0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00
	BURNER nat gas	0	0.00	0.00	0	0	0.00	0.00	0.00	0 00	0.00	0.00	0.00	0.00	0.00	0.00
	MISC.	BPD	SCF/HR	COUNT												
	TANK-	0			0	0				0.00					0.00	
	FLARE-		0		0	0		0 00	0.00	0.00	0.00		0.00	0.00	0.00	0.00
	PROCESS VENT-		0		0	0				0 00					0 00	
	FUGITIVES-			0 0		0				0 00					0.00	
	GLYCOL STILL VENT-		0		0	0				0 00					0.00	
DRILLING WELL TEST	OIL BURN	0			0	0	0 00	0 00	0.00	0 00	0.00	0 00	0 00	0 00	0.00	0.00
	GAS FLARE		416000		24	3		0.25	29 70	25 08	161.62		0.01	1 07	0 90	5.82
2001	YEAR TOTAL						13.70	63.11	500.72	39.22	264.38	17.30	79.39	595.85	18.75	135.59
EXEMPTION CALCULATION	DISTANCE FROM LAND IN MILES											799.20	799.20	799.20	799.20	28289.14
	24 0															

OMB Control No. xxxx-xxxx
Expiration Date: Pending

COMPANY	AREA	BLOCK	LEASE	PLATFORM	WELL		CONTACT	PHONE	REMARKS
Anadarko Petroleum Corpor	Vermilion	96	OCS-G 16290	NA	A, B, C, D		Judy Davidson	(281)8748766	

OPERATIONS	EQUIPMENT	RATING	MAX. FUEL	ACT. FUEL	RUN TIME		MAXIMUM POUNDS PER HOUR					ESTIMATED TONS				
	Diesel Engines	HP	GAL/HR	GAL/D												
	Nat. Gas Engines	HP	SCF/HR	SCF/D												
	Burners	MMBTU/HR	SCF/HR	SCF/D	HR/D	DAYS	PM	SOx	NOx	VOC	CO	PM	SOx	NOx	VOC	CO
DRILLING	PRIME MOVER>600hp diesel	2100	101.43	2434 32	24 00	166.00	1 48	6.79	50 88	1 53	11 10	2.95	13.53	101.36	3 04	22 11
	PRIME MOVER>600hp diesel	2100	101.43	2434.32	24 00	166.00	1.48	6 79	50 88	1 53	11.10	2 95	13 53	101 36	3 04	22.11
	PRIME MOVER>600hp diesel	2100	101.43	2434 32	24 00	166 00	1.48	6.79	50 88	1.53	11.10	2.95	13.53	101.36	3.04	22.11
	PRIME MOVER>600hp diesel	0	0	0 00	0 00	0.00	0.00	0.00	0 00	0 00	0 00	0.00	0 00	0.00	0.00	0.00
	BURNER diesel	0			0	0	0 00	0.00	0 00	0 00	0.00	0 00	0.00	0.00	0 00	0.00
	AUXILIARY EQUIP<600hp diesel	0	0	0.00	0.00	0.00	0.00	0.00	0 00	0.00	0.00	0 00	0.00	0.00	0.00	0 00
	VESSELS>600hp diesel(crew)	2040	98 532	2364.77	14 00	47 00	1.44	6 60	49 43	1 48	10.78	0 47	2 17	16 26	0.49	3.55
	VESSELS>600hp diesel(supply)	3300	159.39	3825.36	18 00	72 00	2.33	10 67	79.96	2.40	17.44	1 51	6.91	51.81	1.55	11.30
	VESSELS>600hp diesel(tugs)	3000	144.9	3477 60	24 00	2.00	2 11	9.70	72 69	2 18	15.86	0 05	0 23	1.74	0.05	0.38
	VESSELS>600hp diesel(tugs)	3000	144 9	3477.60	24.00	2.00	2.11	9.70	72.69	2.18	15.86	0.05	0.23	1.74	0 05	0.38
	VESSELS>600hp diesel(helicopt)	1800	86.94	2086 56	1.5	166	1 27	5.82	43.61	1 31	9 52	0.16	0.72	5.43	0.16	1.18
PIPELINE NSTALLATION	PIPELINE LAY BARGE diesel	780	37 674	904 18	24	21	0.55	2.52	18 90	0.57	4.12	0.14	0.64	4.76	0.14	1.04
	SUPPORT VESSEL diesel	0	0	0.00	0	0	0.00	0.00	0 00	0 00	0.00	0.00	0.00	0.00	0 00	0.00
	PIPELINE BURY BARGE diesel	780	37.674	904.18	24	21	0.55	2.52	18.90	0.57	4.12	0.14	0.64	4.76	0.14	1.04
	SUPPORT VESSEL diesel	0	0	0.00	0	0	0 00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	VESSELS>600hp diesel(tugs)	4200	202.86	4868 64	24 00	21.00	2.96	13.58	101.76	3.05	22.20	0.75	3.42	25.64	0.77	5.60
	VESSELS>600hp diesel(supply)	0	0	0.00	0.00	0 00	0 00	0.00	0.00	0.00	0 00	0.00	0.00	0.00	0.00	0.00
FACILITY NSTALLATION	DERRICK BARGE diesel	0	0	0.00	0	0	0 00	0.00	0.00	0 00	0.00	0 00	0.00	0.00	0.00	0.00
	MATERIAL TUG diesel	0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	VESSELS>600hp diesel(liftboat)	800	38 64	927.36	24.00	15.00	0.56	2.59	19.38	0.58	4.23	0.10	0.47	3.49	0.10	0.76
	VESSELS>600hp diesel(supply)	1000	48.3	1159 20	24 00	15 00	0 70	3.23	24.23	0.73	5.29	0 13	0.58	4.36	0.13	0.95
PRODUCTION	RECIP.<600hp diesel	0	0	0 00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0 00	0.00	0.00	0.00
	RECIP.>600hp diesel	0	0	0 00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Helicopter	SUPPORT VESSEL diesel	325	15 6975	376 74	1	52	0 23	1.05	7 87	0 24	1.72	0 01	0.03	0.20	0.01	0 04
	TURBINE nat gas	0	0	0.00	0	0		0 00	0.00	0.00	0.00		0.00	0 00	0.00	0.00
	RECIP.2 cycle lean nat gas	0	0	0.00	0	0		0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00
	RECIP.4 cycle lean nat gas	0	0	0.00	0	0		0.00	0 00	0.00	0.00		0.00	0.00	0.00	0.00
	RECIP.4 cycle rich nat gas	0	0	0.00	0	0		0.00	0.00	0.00	0.00		0.00	0.00	0.00	0 00
	BURNER nat gas	0	0.00	0.00	0	0	0 00	0 00	0.00	0.00	0.00	0 00	0.00	0.00	0.00	0.00
	MISC.	BPD	SCF/HR	COUNT												
	TANK-	0			0	0				0 00					0.00	
	FLARE-		0		0	0		0 00	0.00	0.00	0.00		0 00	0 00	0.00	0.00
	PROCESS VENT-		0		0	0				0.00					0.00	
	FUGITIVES-			0 0		0				0 00					0.00	
	GLYCOL STILL VENT-		0		0	0				0.00					0.00	
DRILLING WELL TEST	OIL BURN	0			0	0	0 00	0.00	0.00	0 00	0.00	0.00	0.00	0.00	0.00	0.00
	GAS FLARE		0		0	0		0.00	0 00	0 00	0 00		0.00	0.00	0.00	0.00
2002 YEAR TOTAL							19.26	88.35	662.06	19.86	144.45	12.34	56.62	424.28	12.73	92.57

EXEMPTION CALCULATION	DISTANCE FROM LAND IN MILES															
	24 0											799.20	799.20	799.20	799.20	28289.14

COMPANY	AREA	BLOCK	LEASE	PLATFORM	WELL
Anadarko Petroleu	Vermilion	96	OCS-G 16290	NA	A, B, C, D

Year	Emitted Substance				
	PM	SOx	NOx	VOC	CO
2001	17.30	79.39	595.85	18.75	135.59
2002	12.34	56.62	424.28	12.73	92.57
2003	0.01	0.03	0.20	0.01	0.04
2004	0.01	0.03	0.20	0.01	0.04
2005	0.01	0.03	0.20	0.01	0.04
2006	0.01	0.03	0.20	0.01	0.04
2007	0.01	0.03	0.20	0.01	0.04
2008	0.01	0.03	0.20	0.01	0.04
2009	0.01	0.03	0.20	0.01	0.04
2010	0.01	0.03	0.20	0.01	0.04
Allowable	799.20	799.20	799.20	799.20	28289.14

ATTACHMENT 13

INITIAL EXPLORATION PLAN

VERMILION BLOCK 96
OCS-G 16290

ENVIRONMENTAL REPORT

March, 2001

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I. DESCRIPTION OF PROPOSED ACTION

Anadarko Petroleum Corporation proposes to conduct exploration activities within Vermilion Block 96, OCS-G 16290, offshore, Louisiana.

As proposed, the Initial Exploration Plan (EP) provides for the drilling of four wells, locations A through D. The planned date of commencement for these operations is approximately April, 2001.

A. DESCRIPTION OF PROPOSED TRAVEL MODES, ROUTES AND FREQUENCY

Support vessels will be dispatched from a shorebase located in Cameron, Louisiana. The boats will normally move to the block via the most direct route; however, boats operating in the field may travel from other facilities nearby. Following is an estimate of trips to the proposed operations.

Drilling and Completion

Crew Boat	2
Supply Boat	3
Helicopter	7

B. ONSHORE SUPPORT BASE

The proposed activities will utilize a support base in Cameron, Louisiana. This base provides 24-hour service, a radio tower with phone patch, dock space, office space, parking lot, equipment and supply storage space, drilling and drill water, etc. The proposed exploration activities will help to maintain this base at its present level of activity. No expansion of the physical facilities or the creation of new jobs is expected to result from the work planned in conjunction with this block.

The first socioeconomic data base report will be submitted when the MMS and the states of Alabama, Louisiana and Mississippi identify the specific parameters to be addressed in these semi-annual reports.

C. NEW OR UNUSUAL TECHNOLOGY

No new or unusual technology will be required for this operation.

D. VICINITY MAP

The location of the proposed activity is located approximately 24 miles south of the Louisiana coastline. The water depth in the block ranges from 20 to 46 feet.

II. DESCRIPTION OF AFFECTED ENVIRONMENT

A. COMMERCIAL FISHING

The Gulf of Mexico yielded the nation's second largest regional commercial fishery by both weight and value in 1995. Commercial landings of all fisheries in the Gulf totaled nearly 1.5 billion pounds, valued at about $787 million during 1995. The Gulf of Mexico provides nearly 20% of the commercial fish landings in the continental United States.

Most commercial species harvested in Federal waters of the Gulf are considered to be at or near an overfished condition. Continued fishing at the present levels may result in rapid declines in commercial landings and eventual failure of certain fisheries. Despite substantial increases in fishing effort, the commercial landings of traditional fisheries such as shrimp, red snapper, spiny lobster and mackerel have declined over the past decade. Commercial landings of recent fisheries, such as shark, black drum, and tuna have increased exponentially over the past five years and those fisheries are thought to be in need of conservation.

The Gulf's shrimp fishery is the most valuable in the United States accounting for 71.5 percent of the total domestic production. Three species of shrimp – brown, white and pink – dominate the landings. The status of the stocks are as follows: (1) brown yields are at or near the maximum sustained levels; (2) white yields are beyond maximum sustainable levels with signs of overfishing occurring; and (3) pink are at or beyond maximum sustainable levels.

The most important Gulf species in quantity landed was menhaden, with landings of 1.0 billion pounds, valued at $52 million. Shrimp was the most important Gulf species in value landed during 1995 with landings of 234 million pounds, valued at $468 million. The oyster fishery had landings of 24 million pounds of meat, valued at about $44 million, and the blue crab fishery had landings of 54 million pounds, valued at $42 million.

Red snapper resources in the Gulf of Mexico are believed to be severely overfished. It is the most important species in the reef fish complex in terms of value and historical landings. The species is presently considered to be in worse condition than was red drum when that fishery was closed to all further harvest in Federal waters on January 1, 1998. The present concern with the black drum fishery stems from the closure of the red drum fishery. Black drum were accepted as a substitute in

the commercial market. As a result, stocks of black drum are believed to be fast approaching a serious depleted condition. Commercial landings of swordfish have increased steadily over the past several years. The percentage of older fish and spawning biomass has declined significantly.

A strong market for shark has resulted in soaring catches over the past several years. These stocks are unable to sustain the present heavy fishing pressure and, without management, the fishery is expected to collapse in the near future.

Blue marlin and white marlin are believed to be at or near the point of exploitation. The tuna fishing industry has expanded at an alarming rate in the past five years and is now included in conservation acts.

Louisiana ranked first among Central and Western Gulf States in total commercial fishery landings for 1995 with about 1129 billion pounds landed, valued at $316 million. Texas ranked second among Central and Western Gulf of Mexico states in total commercial fishery landings for 1995 with nearly 88 million pounds landed, valued at $193 million. Alabama ranked third with 28 million pounds landed valued at $50 million, and Mississippi ranked last with an estimated 145 million pounds, valued at an estimated $42 million.

B. SHIPPING

The establishment of a series of safety fairways or traffic separation schemes (TSS's), and anchorage areas provide unobstructed approach for vessels using U.S. ports. Shipping safety fairways are lanes or corridors in which no fixed structure, whether temporary or permanent, is permitted. TSS's increase navigation safety by separating opposing lanes of vessel traffic. Fairway anchorages are areas contiguous to and associated with a fairway, in which fixed structures may be permitted within certain spacing limitations.

Fairways play an important role in the avoidance of collisions on the OCS, particularly in the case of the larger oceangoing vessels, but not all vessels stay within the fairways. Many others, such as fishing boats and OCS support vessels, travel trough areas with high concentrations of fixed structures. In such cases the most important mitigation factor is the requirement for adequate marking and lighting of structures. After a structure has been in place for a while, it often becomes a landmark and an aid to navigation for vessels that operate in the area on a regular basis. Most oceangoing vessels are equipped with radar capable of aiding navigation in all weather conditions. This has contributed to safe navigation on the OCS.

Vermilion Block 96 is located outside of any fairways. All mobile drilling units or marine vessels servicing these operations will be equipped with all U.S. Coast Guard required navigational safety

aids to alert ships of its presence in all weather conditions.

C. PLEASURE BOATING, SPORT FISHING AND RECREATION

The northern Gulf of Mexico coastal zone is one of the major recreational regions of the United States, particularly for marine fishing and beach-related activities. The Gulf Coast shorelines offer a diversity of natural and developed landscapes and seascapes. Major recreational resources include coastal beaches, barrier islands, estuarine bays and sounds, river deltas, and tidal marshes. Other resources that attract residents and visitors throughout the year include publicly owned and administered areas such as national seashores, parks, beaches, and wildlife lands, as well as specially designated preservation areas, such as historic and natural sites and landmarks, wilderness areas, wildlife sanctuaries, and scenic rivers. Commercial and private recreational facilities and establishments such as resorts, marinas, amusement parks, and ornamental gardens also serve as primary-interest areas and support services for people who seek enjoyment from the recreational resources associated with the Gulf.

The two major recreational areas most directly associated with offshore leasing and potentially affected by it are the offshore marine environment and the coastal shorefront of the adjoining states. The major recreational activity occurring on the OCS is recreational fishing and diving. Studies, reports, and conference proceedings published by MMS and others have documented a substantial recreational fishery, including scuba diving directly associated with oil and gas structures which stems from their function as high profile artificial fishing reefs. The NMFS Marine Recreational Fisheries Statistics Survey for the Gulf and Atlantic Coasts (USDOC, NMFS, 1992b) and a special report by Schmied and Burgess (1987) indicate there are about 4 million resident participants in marine recreational fishing and over 2 million tourists who angle for Gulf marine species. According to NMFS, over 40 percent of the nation's marine recreational fishing catch comes from the Gulf of Mexico, and marine anglers in the Gulf made over 15 million fishing trips in 1991, exclusive of Texas (USDOC, NMFS, 1992b).

Marine recreational fishing trips and catch along the Gulf Coast began to rebound in 1991 after several years of decline. Speckled trout are the most sought sport fish in coastal marine waters, whereas snapper and mackerel are some of the more popular offshore sport fish.

Marine recreational fishing in the Gulf Region from Texas to Alabama is a major industry important to these states' economies. The recreational marine fishing industry accounts for an estimated $769 million in sales (equipment, transportation, food, lodging, insurance, and services) and employment for over 15,000 people, earning more than $158 million annually.
Padre Island National Seashore and Gulf Islands National Seashore are the predominant public recreation areas abutting the Gulf of Mexico. These seashores account for approximately 110 miles

of exposed Gulf beachfront, which accommodates over 2 million recreational visits a year. Besides beaches, these seashores contain nationally significant forts, shipwrecks, wetlands, lagoons and estuaries, sea grasses, fish and wildlife, and archaeological sites.

The coastal shorelines contain extensive public park and recreation areas, private resorts, and commercial lodging. Most of the outdoor recreational activity focused on the Gulf shorefront is associated with accessible beach areas. Beaches are a major inducement for coastal tourism, as well as a primary resource for resident recreational activity. However, recreational resources, activities, and expenditures are not constant along the Gulf of Mexico shorefront, but are focused where public beaches are close to major urban centers. Beach use is a major economic factor for many Gulf coastal communities, especially during peak-use seasons in the spring and summer. Tourism in the coastal zone of the five Gulf Coast states has been valued at an estimated $20 billion per year.

D. POTENTIAL OR KNOWN CULTURAL RESOURCES

Archaeological resources are any prehistoric or historic site, building, structure, object or feature that is manmade or modified by human activity. Significant archaeological resources are defined in 36 CFR 800, Section 60.6. The MMS has previously contacted the State Historic Preservation Officers for all Gulf Coast States and requested them to provide a list of those National Register of Historic Places that are in their State's coastal zones and that could potentially be affected by OCS leasing activities.

With the exception of the Ship Shoal Lighthouse, historic archaeological resources on the OCS consist of shipwrecks. A 1977 MMS archaeological resource baseline study for the northern Gulf of Mexico indicated that 2% of the pre-20th century shipwrecks and 10% of all wrecks reported lost between 1500 and 1945 have known and/or verified locations. A recent Texas A&M University study updated this database. Statistical analysis of over 4000 potential shipwrecks in the northern Gulf indicated that many of the OCS shipwrecks occur in clustered patterns related mainly to navigation hazards and port entrances.

Geomorphic features that have a high probability for associated prehistoric sites in the Central and Western Gulf include barrier islands and back-barrier embayments, river channels and associated floodplains and terraces, and salt-dome features. These areas contain Holocene deltaic deposits.

Vermilion Block 96 is located within a pre-historical culture resources area; an Archaeological Report was prepared by John E. Chance & Associates and has been submitted to the Minerals Management Service with the Shallow Hazards Report.

E. ECOLOGICALLY SENSITIVE FEATURES

Coastal barriers of the Western and Central Gulf Coast consist of relatively low land masses that can be divided into several interrelated environments. The beach itself consists of the foreshore and backshore. The nonvegetated foreshore slopes up from the ocean to the beach berm-crest. The backshore may occasionally be absent due to storm activity. If present, the backshore is found between the beach berm-crest and the dunes and may be sparsely vegetated. The dune zone of a barrier landform can consist of a single dune ridge, several parallel dune ridges, or a number of curving dune lines that are stabilized by vegetation. These elongated, narrow landforms are composed of sand and other unconsolidated, predominantly coarse sediments that have been transported and deposited by waves, currents, storm surges, and winds.

When Gulf water levels are elevated by storms, water will overwash a coastal barrier. This action will create overwash fans or terraces behind and between the dunes. With time, these terraces will be vegetated by opportunistic species. Along more stable barriers, the area behind the dunes consists of broad flats that support scrubby woody vegetation. Saline or freshwater ponds may be found among the dunes or on the landward flats. Landward, these flats may grade into wetlands and intertidal mud flats that fringe the shore of lagoons, islands, and embayments. In other areas, these barriers may grade into scrub or forest habitat of the mainland, with no bay or lagoon separating the two landforms. Habitats found among the coastal barrier landforms provide a variety of niches that support many avian, terrestrial, aquatic and amphibious species, some of which are endangered or threatened.

Stability of these habitats is primarily dependent upon the rates of geodynamic change for each coastal vicinity. The major sources of pressure that cause barrier landforms to change are storms, subsidence, delta abandonment, and human activity.

Barrier landforms of these coasts are continually adjusting their configuration in response to prevailing or changing environmental conditions. Landform changes can be seasonal and cyclical, such as seen with the transitional movement of sand onshore during the summer and the movement of sand offshore during the winter, due to seasonal wave energy differences. Changes in landforms can also be noncyclically progressive, such that landforms might move landward, seaward, or laterally along the coast.

From east to west, headlands found on the barrier coasts of the Western and Central Gulf include Baldwin County Headland in Alabama, the barrier islands of Mississippi Sound, the Chandeleur Islands, the Modern Mississippi River Delta and its developing barrier islands, the Bayou Lafourche Headland and accompanying barrier islands, Isles Dernieres, the Chenier Plain of Louisiana and Texas, Trinity River Delta, Brazos-Colorado River Delta and its accompanying

barrier islands, barrier islands of Espiritu Santo Bay and Laguna Madre, and the Rio Grande Delta.

The Mississippi Sound barrier islands are relatively young, are well vegetated, and are generally regressive with high beach ridges and prominent sand dunes. Although there is no observed trend toward erosion or thinning of the islands, there is a trend toward westward migration in response to the predominantly westward-moving longshore currents.

Louisiana has the most rapidly retreating beaches in the nation. Recent analyses reveal Louisiana shorelines are retreating at an average rate of 4.2 m/yr, ranging from a gain of 3.4 m/yr to a loss of 15.3 m/yr. In comparison, the average shoreline retreat for the Gulf of Mexico, Atlantic Seaboard and Pacific Seaboard were reported at 1.8, 0.8, and 0.0.

In Louisiana, the highest reported rates of coastal retreat occurred along the coastal plain of the Mississippi River. Barrier beaches along the deltaic plain in Louisiana fit into one of three categories, depending on the stage of the deltaic cycle that the nearby landmass is experiencing. When a major distributary of the Mississippi River is abandoned, submergence due to subsidence and sea-level rise transforms the abandoned delta into an erosional headland with flanking arcs of barrier sand spits that generate barrier islands as washover channels occur. The Bayou Lafourche Headland is an example of a transgressive headland. Isles Dernieres is a more advanced example of a transgressive headland where subsidence has caused the barrier arc of islands to separate from the headland. With continued subsidence and no source of sediment, Isles Dernieres will eventually submerge and form a submarine inner-shelf shoal.

The coast of the Chenier Plain is fronted by sand beaches and coastal mudflats. The source of the mud is the discharge of the Mississippi and Atchafalaya Rivers, which tends to drift westward due to prevailing winds and associated nearshore currents. Fluid mud which extends from the seaward edge of the marsh grasses to a few hundred meters offshore is an extremely effective wave energy absorber. Consequently, the mainland shore is rarely exposed to effective wave action. Much of the Chenier coast is fairly stable.

The Texas coast between Louisiana and Rollover Pass is a physiographic continuation of the Chenier Plain. Here, thin accumulations of sand, shell, and coliche nodules make up beaches that are migrating landward over tidal marshes. These beaches are narrow and have numerous overwash features and local, poorly developed sand dunes. The barrier island and spits of the rest of the Texas coast were formed and are maintained by sediments supplied from the three deltaic headlands discussed above.

The importance of coastal wetlands to the coastal environment has been well documented. Coastal wetlands are characterized by high organic productivity, high detritus production, and efficient nutrient recycling. Wetlands provide habitat for a great number and wide diversity of resident

invertebrates, fish, reptiles, birds, and mammals, and are particularly important nursery grounds for many important fish and shellfish juveniles. The Louisiana coastal wetlands support over two-thirds of the Mississippi Flyway wintering waterfowl population, including 20-25 percent of North America's puddle duck population. The region supports the largest fur harvest in North America, producing 40-65 percent of the nation's total each year.

Louisiana contains most of the Gulf coastal wetlands. These wetlands occur in two physiographic settings: the Mississippi River Deltaic Plain and the Chenier Plain. The deterioration of coastal wetlands, particularly in Louisiana, is an issue of concern. In Louisiana, the annual rate of wetland loss has been measured at 130 km^2 for the period 1955-1978. A recent study has shown that the current rate of land loss on the Deltaic Plain area of the Louisiana coast has decreased to about 90 km^2 per year (British and Kemp, 1990). Several factors contribute to wetland loss in coastal Louisiana. Sediment deprivation has greatly reduced, even eliminated, sedimentation in coastal Louisiana. The suspended-sediment load of the Mississippi River has been reduced by 50% since the 1950's, due to channelization and farmland soil conservation efforts. However, the primary cause of reduced sedimentation rates is levee construction, which has excluded river-borne sediment from the flanking deltaic wetlands. Subsidence and sea level rise have caused submergence of lower wetland areas. Construction of ring levees has allowed drainage and development of extensive wetlands. Development activities in low areas, outside leveed areas, have caused the filling of wetlands. Construction of canals converts wetlands to open water and upland spoilbanks. Canals and subsidence have also contributed to increased tidal influence and salinities in freshwater and low-salinity wetlands, which in turn increase erosion and sediment export.

In Mississippi and Alabama, the mainland marshes behind Mississippi Sound occur as discontinuous wetlands associated with estuarine environments. The most extensive wetland areas in Mississippi occur east of the Pearl River delta near the western border of the state and the Pascagoula River delta area near the eastern border of the state. The wetlands of Mississippi seem to be more stable than those in Louisiana, perhaps reflecting the more stable substrate and more active sedimentation per unit of wetland area. Also, there have been only minor amounts of canal dredging in the Mississippi wetlands.

Most of the wetlands in Alabama occur on the Mobile River delta or along the northern Mississippi Sound. Between 1955 and 1979, fresh marshes and estuarine marshes declined in these areas by 69% and 29%, respectively. Major causes of non-fresh wetland losses were industrial development and navigation, residential and commercial development, natural succession, and erosion/subsidence. The loss of fresh marsh was mainly attributable to commercial and residential development and silviculture.

In Texas, coastal marshes occur along bays, on rivers and their deltas, and on the inshore side of

barrier islands. Salt marshes consisting primarily of smooth cordgrass occur at lower elevations and at higher salinities. Brackish marshes occur in less saline areas inland of salt marshes. Freshwater marshes of the region occur primarily along the major rivers and tributaries. Sparse bands of black mangroves are also found in the region. Broad expanses of emergent wetland vegetation do not commonly occur south of Baffin Bay at the northern edge of Kenedy County because of the arid climate and hypersaline waters to the south. Dominant salt-marsh plants here include more salt-tolerant species such as Batis Maritima and Salicornia.

Wetland changes observed in Texas during the past several decades appear to be driven by subsidence and sea-level increases. Open-water areas are appearing in wetlands along their seaward margins, while new wetlands are encroaching onto previously non-wetland habitat along the landward margin of wetland areas on the mainland, on the back side of barrier islands, and onto spoil banks. In addition, wetlands are being affected by human activities including canal dredging, impoundments, and accelerated subsidence caused by fluid withdrawals. The magnitudes of these wetland acreage changes in most of Texas have not been determined at the present time. In the Freeport, Texas area, along the Louisiana border, wetland loss is occurring at rates similar to those occurring in adjacent parts of the Louisiana Chenier Plain. In the Sabine Basin area, for example, 20,548 ha wetlands were lost between 1952 and 1974.

There are an estimated 3 million ha (7.4 million acres) of submerged seagrass beds in the exposed, shallow coastal waters of the northern Gulf of Mexico. An additional 166,000 ha are found in natural embayments and are not considered exposed to OCS impacts. Hence, seagrass beds are not dealt with in detail in this report. The area off Florida contains the vast majority of such beds, which in turn contain approximately 98.5 percent of all coastal seagrasses in the northern Gulf of Mexico. Coastal seagrass beds in Texas and Louisiana comprise approximately 0.5 percent of the exposed seagrasses, with Alabama and Mississippi the remaining 1 percent of the habitat.

The seagrass beds grow in shallow, relatively clear and protected waters with predominantly sand bottoms. Their distribution depends on an interrelationship among a number of environmental factors including temperature, water depth, turbidity, salinity, and substrate suitability. In general, luxuriant growth of seagrasses are found only within a few scattered protected locations in the Central and Western Gulf of Mexico.

Seagrasses dominate the aquatic flora habitat of low salinity in the estuarine communities along the Texas Coast. Dominant species include shoal grass and widgeongrass. These inshore seagrasses provide an important habitat for immature shrimp, black drum, spotted seatrout, juvenile southern flounder, and several other fish species and a food source for several species of wintering waterfowl. These species occur in abundance due to their ability to tolerate salinity variations that occur in a number of lagoon and bay systems in Texas. The Laguna Madre and Copano-Aransas estuaries account for the major portion of the seagrass population.

The turbid waters and soft highly organic sediments of Louisiana's estuaries limit widespread distribution of seagrass beds. Consequently, there are only a few areas in coastal Louisiana where seagrass beds occur; the most extensive beds occur on Chandeleur Sound. Seagrasses also occur within the Mississippi Sound.

The shelf and shelf edge of the Central and Western Gulf are characterized by topographic features which are inhabited by benthic hard-bottom communities. The habitat created by the topographic features is important because they support hard-bottom communities of high biomass, high diversity, and high numbers of plant and animal species. They support, either as shelter, food or both, large numbers of commercially and recreationally important fishes; they are unique to the extent that they are small isolated areas of communities in vast areas of lower diversity; they provide a relatively pristine area suitable for scientific research; and they have an aesthetically sensitive attractive intrinsic value.

Seven distinct biotic zones on the banks of the Gulf have been identified. None of the banks contain all of the seven zones. The central Gulf of Mexico lists 16 topographic features, and the Western Gulf of Mexico contains 23 banks. None of these banks are located in Vermilion Block 96.

The northeastern portion of the Central Gulf of Mexico exhibits a region of topographic relief, the "pinnacle trend", found at the outer edge of the Mississippi-Alabama shelf between the Mississippi River and DeSoto Canyon. The pinnacles appear to be carbonate reefal structures in an intermediate stage between growth and fossilization. The region contains a variety of features from low-relief rocky areas to major pinnacles, as well as ridges, scraps, and relict patch reefs. It has been postulated that these features formed during the last sea level low stages of the most recent ice age. The heavily indurated pinnacles provide a surprising amount of surface area for the growth of sessile invertebrates and attract large numbers of fish.

Additional hard-bottom features, which are located outside the actual pinnacle trend on the outer continental shelf are areas on the Alabama Northwest Florida inner-shelf. Other rock outcrops have been reported at various depths around the head of DeSoto Canyon.

The features of the pinnacle trend offer a combination of a topographic relief and hard substrate for the attachment of sessile organisms and, therefore, have a greater potential to support live-bottom communities than surrounding areas on the Mississippi-Alabama shelf.

Chemosynthetic communities are defined as persistent, largely sessile assemblages of marine organisms dependent upon chemosynthetic bacteria as their primary food source. Chemosynthetic clams, mussels, and tube worms similar to the hydrothermal vent communities of the eastern

Pacific have been discovered in association with hydrocarbon seeps in the northern Gulf of Mexico. Initial discoveries indicated that these cold-water communities are primarily associated with seismic wipe-out zones and hydrocarbon and H_2S seep areas. The occurrence of chemosynthetic organisms dependent on hydrocarbon seepage has been documented in water depths as shallow as 290 m, but the most dense aggregations of these organisms have been found in water depths of 500+ m. Chemosynthetic communities have been a source of controversy over the past few years, in part because of the unusual environmental requirements and hypothesized sensitivity of the communities to oil and gas activities. The MMS requires site-specific surveys of bottom-disturbing actions in water depths greater than 400 m in order to judge the potential of the region for supporting chemosynthetic organisms.

There are four general chemosynthetic community types. These are communities dominated by vestimentiferan, feran tube worms, mytilid mussels, epifaunal vesicomyid clams, and infaunal lucinid or thyasirid clams. These communities are distributed across a wide range of environmental conditions, but in all cases their presence strongly indicates active localized seepage. To date there are 43 sites across the northern Gulf of Mexico continental slope where the presence of chemosynthetic metazoans (dependent on hydrocarbon seepage) has been documented.

F. PIPELINES AND CABLES

As a prudent operator, Anadarko will conduct its operations in accordance with the provisions specified in Minerals Management Service Notice to Lessees 83-03 in order to avoid all pipelines and/or cables in the vicinity of the proposed operations.

G. OTHER MINERAL USES

The activities proposed for Vermilion Block 96 will have no direct or indirect impact on other mineral uses.

H. OCEAN DUMPING

The Marine Pollution Research and Control Act of 1987 implements Annex V of the International Convention for the Prevention of Pollution from Ships. Most of the law's regulatory provisions became effective on December 31, 1988. Under provisions of the law, all ships and watercraft, including all commercial and recreational fishing vessels, are prohibited from dumping plastics at sea. The law also severely restricts the legality of dumping other vessel-generated garbage and solid waste items both at sea and in U.S. navigable waters. The USCG is responsible for enforcing

the provisions of this law and has developed final rules for its implementation, calling for adequate trash reception facilities at all ports, docks, marinas, and boat launching facilities.

Interim final rules published May 2, 1990 explicitly stated that fixed and floating platforms and all drilling rigs, manned production platforms and support vessels operating under a Federal oil and gas lease are required to develop Waste Management Plans and to post placards reflecting MARPOL, Annex V dumping restrictions. Waste Management Plans will require oil and gas operators to describe procedures for collecting, processing, storing, and discharging garbage and to designate the person who is in charge of carrying out the plan. These rules also apply to all oceangoing ships of 40 ft or more in length that are documented under the laws of the U.S. or numbered by a State and that are equipped with a galley and berthing. Placards noting discharge limitations and restrictions, as well as penalties for noncompliance, apply to all boats and ships 26 ft or more in length. Furthermore, the Shore Protection Act of 1988 requires ships transporting garbage and refuse to assure that the garbage and refuse is properly contained on board so that it will not be lost in the water from inclement wind or water conditions.

The disposal of oil and gas operational wastes is managed by USEPA through regulations established under three Federal Acts. The Resource Conservation and Recovery Act (RCRA) provides a framework for the safe disposal of discarded materials, regulating the management of solid and hazardous wastes. The USEPA has exempted many oil and gas wastes from coverage under hazardous wastes regulations under Subtitle C of RCRA. If covered, such wastes would be more stringently regulated under hazardous waste rules; i.e., industry would be responsible for the wastes from their generation to their final disposal. Exempt wastes include those generally coming from an activity directly associated with the drilling, production, or processing of a hydrocarbon product. Nonexempt oil and gas wastes include those not unique to the oil and gas industry and used in the maintenance of equipment.

The direct disposal of operational wastes into offshore waters is limited by USEPA under the authority of the Clean Water Act. And, when injected underground, oil and gas operational wastes are regulated by USEPA's third program, the Underground Injection Control program.

A general NPDES permit, based on effluent limitation guidelines, is required for direct disposal of operational wastes into offshore waters. The major discharges from offshore oil and gas exploration and production activities include produced water, drilling fluids and cuttings, ballast water, and storage displacement water. Minor discharges from the offshore oil and gas industry include drilling-waste chemicals, fracturing and acidizing fluids, and well completion and workover fluids; and from production operations deck drainage, and miscellaneous well fluids (cement, BOP fluid); and other sanitary and domestic wastes, gas and oil processing wastes, and miscellaneous discharges. Produced sand is no longer allowed to be discharged under NPDES General Permit GMG290000.

I. ENDANGERED AND THREATENED SPECIES AND CRITICAL HABITAT

Although a large number of endangered and threatened species inhabit the Gulf Coast states and their adjoining waters, only a small percentage occupy coastal and marine habitats. An even smaller number are likely to be affected by OCS oil and gas exploration and production activities.

The Alabama, Choctawhatchee, and Perdido Key beach mice, subspecies of the old field mouse, occupy restricted habitats in the mature coastal dunes of Florida and Alabama. The beach mice feed nocturnally on the lee side of the dunes and remain in burrows during the day. Their population has declined as a result of loss of habitat from coastal development, competition, loss of genetic diversity, disease and predation.

The Kemp's ridley sea turtle is the most imperiled of the world's marine turtles. The population of nesting females has dwindled from an estimated 47,000 in 1947 to less than 1,000 today. Nested in the Untied States occurs infrequently from May to August on Padre and Mustang Islands in south Texas. In the Gulf, Kemp's ridley sea turtles appear to inhabit nearshore areas and have been recorded off the mouth of the Mississippi River. Although adult Kemp's ridleys primarily inhabit the Gulf of Mexico, subadults range along the Atlantic Coast to Massachusetts. However, there is speculation that young turtles found beyond the Gulf of Mexico are lost to the breeding population. The loggerhead sea turtle occurs worldwide and is the most common marine turtle in the U.S. In the Gulf of Mexico, recent surveys indicate that the Florida Panhandle accounts for approximately 1/3 of the nesting on the Florida Gulf Coast. In the Central Gulf, nesting has been reported on Gulf Shores, Orange Beach, Perdido Key, Ft. Morgan and Dauphin Island, Alabama; Ship Island, Mississippi; and the Chandeleur Islands, Louisiana. Nesting in Texas occurs primarily on North and South Padre Island although occurrences are recorded throughout coastal Texas. Banks offshore the central Louisiana coast and near the Mississippi Delta are also important marine turtle feeding areas.

The green turtle population has not completely recovered since the collapse of the fishery around the turn of the century. Reports of nesting in the northern Gulf are isolated and infrequent, except on Santa Rosa Island, Walton County, Florida.

Leatherbacks, the largest most oceanic of the marine turtles, seasonally enter coastal and estuarine habitats where jellyfish are plentiful. Their nesting is concentrated on coarse-grain beaches in tropical latitudes, but there are rare occurrences on the Panhandle and Flagler County coasts of Florida.

The hawksbill is the least commonly reported marine turtle in the Gulf. Stranded turtles are regularly reported in Texas, and recently in Louisiana. These tend to be either hatchlings or yearlings.

There are five (5) baleen (northern right, blue, fin, sei, and humpback) whales, one species of toothed whale (sperm), and one sirenian (west Indian manatee) found with the Gulf of Mexico. All are uncommon to rare in the Gulf except for the sperm whale which has been spotted on most surveys conducted in deeper waters. The manatee normally ranges no farther north along the west coast of Florida than the Suwanee River. They are uncommon along the Florida Panhandle and are infrequently found (strandings and sightings) as far west as the Central and Western Gulf.

The peregrine falcon of North America is separated into three subspecies: Arctic, American, and Peale's. The Arctic peregrine, which originates in the Arctic and sub-Arctic regions from western Alaska to western Greenland, accounts for 99 percent of the fall migrants on the Gulf of Mexico coast. Peregrines prey almost exclusively on birds. The peregrine falcon experienced drastic population declines as a result of the effects of organochlorine pesticides such as DDT and DDE. Recent surveys indicate that many local and regional populations of peregrines are reproducing well and are either stable or increasing.

The piping plover is a migratory shorebird. Preliminary information indicates Texas is the most important wintering area. In Texas, the extensive sand flats of the Laguna Madre and sand flats associated with barrier island passes and river mouths are the most important. In Louisiana, barrier islands appear to provide the most favorable habitat. The plover nests on sandy beaches along coasts or inland lakeshores preferring areas with scant vegetation cover. Uncontrolled hunted in the early 1900's decimated its historic populations, which have remained depressed because of expanded recreational use of its specific nesting and wintering habitat requirements.

The whooping crane is the tallest bird in North America. The breeding population winters along the Texas coast on salt flats and islands in and around Aransas National Wildlife Refuge. Cranes are omnivorous wading birds and feed during the winter months on a wide variety of foods gathered from the coastal environment.

Bald eagles are the only species of sea eagle regularly occurring on the North American continent. The bulk of the bald eagle's diet is fish, combined with opportunistic capture of a variety of vertebrate species. The bald eagle requires a large area for hunting and is sensitive to chemical contaminants in the food chain. Factors contributing to its decline were widespread application of DDT from 1940-1972, habitat loss and alteration, shooting, poisoning, and electrocution. The historical nesting range within the southeast U.S. includes the entire coastal plain and along the major rivers and lakes, but the range is now limited with most breeding pairs occurring in Florida and Louisiana and some in South Caroline, Alabama, and east Texas. The bald eagle was

reclassified from endangered to threatened in July 1995.

The brown pelican is one of two species of pelicans in North America. It is a colonial nesting species that feeds entirely upon fishes captured by plunge diving in coastal waters. They rarely venture beyond 20 miles from shore. A severe population reduction in the 1950's was attributed to the toxic effects of DDT and DDE; however, there has been a marked increase in population since the ban on the use of DDT in 1972. The brown pelican remains classified as endangered within the state of Texas, Louisiana, and Mississippi. Surveys conducted in 1990 to 1992 show one large nesting colony in Alabama, none in Mississippi, six in Louisiana, and three colonies in Texas.

The eskimo curlew is a small American curlew that nests on Arctic tundra and migrates to wintering habitats in the pampas grasslands of southern South America. On migration, it formerly occurred in large flocks on the prairies and on coastal grasslands, but was greatly reduced by hunting from 1850 to 1890, and perhaps by habitat alteration. In 1929 it was through to be extinct, but has occasionally been seen in very small numbers. The last confirmed sightings were in Texas during 1982, Alaska in 1983 and Canada in 1985. Efforts are underway to determine if it is extinct.

The least tern is the smallest North American tern. Least terns are listed as endangered, except within 50 miles of the coast. They prefer inshore habitats. Surveys from 1990 to 1992 showed 10 tern colonies in Mississippi, 14 in Louisiana, and 35 in Texas. Least terns are the only nesting tern species in Louisiana to use mainland beaches, and they will use human-made and managed spill sites as well.

J. SOCIOECONOMIC

In relation to oil and gas activity in the Gulf of Mexico, the exploration and production of crude oil and gas is classified as a primary industry. Classified as secondary industries are activities associated with the processing of crude oil and gas in refineries, natural gas plants, and petrochemical plants.

The offshore oil exploration industry including oil companies, drilling contractors, and oilfield suppliers provide a major input to Louisiana's economy. Of the Gulf Coast states, Louisiana has historically been most dependent on oil and gas activity. A number of ports in the Central and Western Gulf have developed into important centers for offshore support. The most active of these in Louisiana are (from east to west) Venice, Morgan City, Intracoastal City, and Cameron, Louisiana. The onshore support base for operations in Vermilion Block 96 is located in Cameron, Louisiana.

III. UNAVOIDABLE ADVERSE ENVIRONMENTAL IMPACTS

A. WATER QUALITY

Several impact-producing factors may adversely affect offshore water quality. Resuspension of bottom sediments may result from drilling operations, platform and pipeline installation, and platform removal operations. Some water quality parameters may vary from background levels; however, these changes would have little effect on most water uses, and the impact level from this factor is considered to be low. Routine operational discharges (drilling muds and cuttings, produced waters, deck drainage, and sanitary and domestic wastes) may degrade water quality. High impacts may occur within a few meters to tens of meters from the source. However, these impacts will decrease to very low with distance (500 – 1000 m) from the source. Accidental oil spills may degrade water quality somewhat, changing the measurements from background levels, but with little effect on most water uses, and then only in a very limited area close to the source. The impact level from this factor is considered to be low. All activities resulting from this proposed action result in low impacts limited to very close to the structure.

B. EFFECTS ON MARINE ORGANISMS

Some organisms will be killed and some will be temporarily functionally impaired as a result of operational discharges. The most affected groups will be plankton and benthos immediately around the proposed surface locations. Damage will be both mechanical and toxicological. These communities are widespread throughout the deep-water areas of the Gulf. 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.

C. EFFECTS ON THREATENED OR ENDANGERED SPECIES

The major impact-producing factors related to this proposed activity that may effect threatened or endangered species include operational discharges, helicopter and service-vessel traffic, platform noise, explosive platform removals, seismic surveys, oil spills, and oil-spill response activities. The effects of the majority of these activities are estimated to be sublethal, and expected impact levels range from very low to low. Lethal effects are estimated only from large oil spills. The expected impact levels from different sizes of oil spills range from low to high.

Anchoring, pipe and structure emplacement, dredging, operational discharges, and possible oil spill impacts will result in disturbances of the seagrass and benthic fauna and food sources utilized by these species. The impact on these species is estimated to be moderate to low.

D. 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 affects on endangered species and/or critical habitats would be significant.

E. AIR QUALITY

The potential degrading effects on air quality from onshore and offshore operational activities are platform construction and emplacement; platform operations; exploration, delineation and development drilling activities; support vessel and pipelaying barge operation; evaporation of volatile hydrocarbons from surface oil slicks; and fugitive emissions during hydrocarbon venting and offloading.

Emissions of pollutants in the atmosphere from the proposed activities are projected to have minimum impact on offshore air quality because of prevailing atmospheric conditions, emission heights and pollutant concentrations. Onshore impact on air quality from emissions from OCS activities is estimated to be negligible because of the atmospheric regime, the emission rates, and distance of these emissions from the coastline. The above discussion is based on average steady state conditions; however, there will be days of low mixing heights and wind speeds that could increase impact levels. These conditions are characterized by fog formation, which in the Gulf occurs 35 days a year, mostly during winter. Impact from these conditions is reduced in winter because the onshore winds have the smallest frequency (37%) and rain removal is greatest. Summer is the worst time, with onshore winds having a frequency of 61%. Emissions of pollutants into the atmosphere are expected to have concentrations that would not change the onshore air quality classifications.

F. COMMERCIAL FISHING

The major impact producing factors on fishing activities from the proposed operations are coastal environmental degradation, emplacement of production platforms, underwater OCS obstructions,

production platform removals, seismic surveys, oil spills, subsurface blowouts, pipeline trenching, and OCS discharges of drilling muds, produced waters and NORM, and underwater OCS obstructions.

Oil spills that contact the coastal marshes, bays, estuaries, and open Gulf areas with high concentrations of floating eggs and larvae have the greatest potential for damage to commercial fisheries. The majority of the Gulf's fishes are estuarine dependent. An oil spill could seriously affect commercial fisheries such as menhaden, shrimp, and blue crab that use these areas as nursery or spawning grounds.

The emplacement of one structure eliminates approximately 9 acres of commercial trawling space, and underwater OCS obstructions cause gear conflicts which result in such losses as trawls, shrimp catch, business downtime, and vessel damage.

Commercial fishery resources may also be affected by the discharge of drilling muds which may contain material toxic to marine fishes; however, this is only at concentrations four or five orders of magnitude higher than those found more than a few meters from the discharge point. Further dilution is extremely rapid in offshore waters.

The fate and effects of NORM from the discharge of produced water on seafood available for commercial harvest has become an issue of environmental concern. However, the likelihood of consuming seafood containing higher than normal radium for a sufficient period of time to present a risk is minimal. The prospect that NORM discharged in offshore produced water will affect commercial fishery species and subsequently increase man's intake of radium is virtually zero.

Activities resulting from the proposed action have the potential to cause detrimental effects to Central Gulf commercial fisheries. It is expected that the effects from the major impact-producing factors on commercial fisheries in the CPA are inconsequential and of nominal occurrence. As a result, there will be little discernable disturbance to Gulf commercial fisheries.

G. SHIP NAVIGATION

There are no fairways located in Vermilion Block 96. Approved aids to navigation will be installed on any drilling/workover rig and all marine vessels servicing these operations in accordance with USCG regulations.

H. CULTURAL RESOURCES

The greatest potential impact to an historic archaeological resource as a result of the proposed action would result from a contact between an OCS offshore activity (platform installation,

drilling/workover rig emplacement, dredging or pipeline project) and an historic shipwreck. A recently completed, MMS-funded study has resulted in the refinement of the high probability areas for the location of historic period shipwrecks.

The OCS activity could contact a shipwreck because of incomplete knowledge on the location of shipwrecks in the Gulf. Although this occurrence is not probable, such an event would result in the disturbance or destruction of important historic archaeological information. Other factors associated with the proposed action are not expected to affect historic archaeological resources.

The archaeological surveys required under NTL 91-02 prior to an operator beginning oil and gas activities within a lease block are estimated to 95% effective at identifying possible sites when a sidescan sonar is effective, and 90% effective at identifying possible sites when magnetometer data are used.

Anadarko, as a prudent operator, agrees that, should any site, structure or object of historical or archaeological significance be discovered during production activities within the lease, such finds would immediately be reported to the Director, Gulf of Mexico OCS Region, and every reasonable effort would be made to preserve and protect the cultural resources from damage until said Director has given directions as to its preservation.

I. RECREATION AND AESTHETIC VALUES

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

Even though existing MMS regulations, the NPDES general permit and the U.S. Coast Guard regulations implementing MARPOL 73/78 Annex V 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 few oil spills greater than 1 and less than or equal to 50 bbls are assumed to affect portions of CPA beaches, with little disruption of recreational activities. Marine debris will be lost from time to time. However, the impact from resulting intermittent pollution wash-up on Louisiana and

Texas beaches should be very low. A drilling rig and production platform in the nearshore area off Louisiana and Mississippi could also impact the natural seascape from some wilderness beaches. Helicopter and vessel traffic will add very little additional noise pollution likely to affect wilderness beach users.

The proposed action is expected to result in minor pollution events and nearshore operations that may adversely affect the enjoyment of some beach users on Texas and Louisiana beaches.

IV. SUMMARY

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 a Minerals Management Service approved Oil Spill Contingency Plan.

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

D. The proposed activities described in detail in the Exploration Plan will 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 142 and 143, Central and Western Planning Areas, OCS EIS, MMS 92-0054.

2. Final Environmental Impact Statement, Proposed Oil and Gas Lease Sales 147 and 150, Central and Western Planning Areas, OCS EIS, MMS 93-0065.

3. Final Environmental Impact Statement, Proposed Oil and Gas Lease Sales 152 and 155, Central and Western Planning Areas, OCS EIS/EA, MMS 94-0058.

4. Final Environmental Impact Statement, Proposed Oil and Gas Lease Sales 166 and 168, Central and Western Planning Areas, OCS EIS/EA, MMS 96-0058

5. Final Environmental Impact Statement, Proposed Oil and Gas Lease Sales 169, 172, 175, 178 and 182, Central Planning Area, OCS EIS/EA, MMS 97-0033.

6. Final Environmental Impact Statement, Proposed Oil and Gas Lease Sales 171, 174, 177, and 180, Western Planning Area, OCS EIS/EA, MMS 98-0008.

ATTACHMENT 14

COASTAL ZONE MANAGEMENT

CONSISTENCY CERTIFICATION

INITIAL EXPLORATION PLAN

VERMILION BLOCK 96, OCS-G 16290

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

Arrangements have been made with the Morning Advocate in Baton Rouge, Louisiana and The Cameron Parish Pilot in Cameron Parish to publish a public notice of the proposed activities March 28, 2001.

Anadarko Petroleum Corporation

Judy Davidson, Sr. Regulatory Analyst

March 9, 2001

Public Notice of Federal Consistency Review of a Proposed Exploration Plan (POE) by the Coastal Management Division/Louisiana Department of Natural Resources for the Plan's Consistency with the Louisiana Coastal Resources Program

Applicant:

Anadarko Petroleum Corporation
P. O. Box 1330
Houston, TX 77251-1330

Location:

Vermilion Area
Lease OCS-G 16290
Block 96

Description:

Proposed Exploration Plan for the above area provides for the exploration for oil and gas. Exploration activities shall include drilling from a jackup rig and transport of drilling crews and equipment by helicopter and/or cargo vessel from an onshore base located at Cameron, Louisiana. No ecologically sensitive species or habitats are expected to be located near or affected by these activities.

A Copy of the plan described above is available for inspection at the Coastal Management Division Office located on the 10th floor of the State Land and Natural Resources Bldg., 625 North 4th Street, Baton Rouge, Louisiana. Office hours: 8:00 a.m. to 5:00 p.m., Monday through Friday. The public is requested to submit comments to the Coastal Management Division, Attention: OCS Plans, P. O. Box 44487, Baton Rouge, Louisiana 70804-4487. Comments must be received within 15 days after the Coastal Management Division obtains a copy of the plan and it is available for public inspection. This public notice is provided to meet the requirements of the NOAA Regulations on Federal Consistency with approved Coastal Management Program.