In Reply Refer To: MS 5231

September 11, 1996

Murphy Exploration & Production
Company
Attention: Ms. Debra K. Ormson
Post Office Box 61780
New Orleans, Louisiana 70161-1780

Gentlemen:

Reference is made to the following plan received August 28, 1996:

Type Plan - Initial Plan of Exploration
Lease - OCS-G 16208
Block - 579
Area - West Cameron
Activities Proposed - Wells A and B

In accordance with 30 CFR 250.33, this plan is hereby deemed submitted and is now being considered for approval.

Your control number is N-5502 and should be referenced in your communication and correspondence concerning this plan.

Sincerely,

Donald C. Howard
Regional Supervisor
Field Operations

bcc: Lease OCS-G 16208 POD File (MS 5032)
MS 5034 w/public info. copy of the plan
and accomp. info.

BNewton:cic:08/29/96:POECOM

MURPHY
EXPLORATION &
PRODUCTION
COMPANY

131 SOUTH ROBERTSON STREET
P.O. BOX 61780
NEW ORLEANS, LA 70161-1780
(504) 561-2811

U. S. Department of the Interior
Minerals Management Service
Office of Field Operations
MS 5231
1201 Elmwood Park Boulevard
New Orleans, Louisiana 70123-2394

August 27, 1996

Attention: Mr. Donald C. Howard
Regional Supervisor - Field Operations

Regarding: **Initial Plan of Exploration**
West Cameron Block 579, OCS-G-16208
Wells #A & B
Anticipated Commencement Date: November 1, 1996

Gentlemen:

Enclosed herewith are nine (9) sets of the above referenced Initial Plan of Exploration. We respectfully request that a speedy review be made to determine whether this document is complete. Should additional information be required, please advise immediately.

Every effort you extend in order to affect an early approval of this Plan will be greatly appreciated.

Very truly yours,

Debra K. Ormson
Technical Assistant
Environment & Government Affairs

/plans/16208#A and B

PUBLIC INFORMATION

MURPHY EXPLORATION & PRODUCTION COMPANY

INITIAL PLAN OF EXPLORATION

OCS-G-16208, WELL NO. A & B

WEST CAMERON BLOCK 579

OFFSHORE, LOUISIANA

SUBMITTED BY: Debra K. Ormsen

Debra K. Ormsen
Technical Assistant
Environment & Government Affairs

DATE: August 27, 1996

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MURPHY EXPLORATION & PRODUCTION COMPANY
INITIAL PLAN OF EXPLORATION
OCS-G-16208 WELLS NO. A AND B
WEST CAMERON BLOCK 579
OFFSHORE, LOUISIANA

Murphy Exploration & Production Company, as designated Operator of the subject lease, hereby submits this proposed Initial Plan of Exploration in accordance with the regulations contained in Title 30 CFR 250.34 and more specifically defined in the Minerals Management Service Letters to Lessees and Operators Dated October 12, 1988 and September 5, 1989.

HISTORY OF LEASE

This lease was acquired by Murphy Exploration & Production Company in Lease Sale effective September 1, 1996. A Geophysical Survey was submitted July 30, 1996

In accordance with Letter to Lessees and Operators dated November 5, 1993 which amends Title 30 CFR 256 Surety bond requirements applicable to OCS leases and operators, Murphy Exploration & Production Company's activities are covered by its Areawide Oil and Gas Lease Bond in the amount of $3,000,000.

SCHEDULE OF OPERATIONS

Under this Initial Plan of Exploration, Murphy Exploration & Production Company proposes to drill as follows:

ACTIVITY	DATES
Drill #A	November 1 - December 5, 1996
Drill #B	December 5, 1996 - February 1, 1997

PROPOSED LOCATION #A

Surface	4419' FNL & 2491' FWL of West Cameron Block 579
Water Depth	215'

PROPOSED LOCATION #B

Surface	6263' FNL & 2542' FEL of West Cameron Block 579
Water Depth	215'

PUBLIC INFORMATION

PRODUCTION FACILITIES

Should proposed wells have no commercial production, they will be plugged and abandoned with casings removed to a minimum of 15' BML. If they prove successful, they will be Temporarily Abandoned in accordance with 30 CFR 250.113.

No additional offshore or onshore personnel or additional facilities are anticipated as a result of these drilling activities.

DESCRIPTION OF DRILLING RIG

Offshore development activities are carried out from mobile drilling rigs. The five most common types of rigs used are jack-up, semi-submersible, submersible, drillship and drill barges. The subject well will be drilled and completed with a typical jack-up rig. When a rig is selected, the rig specifications will be made part of the Application for Permit to Drill. Typical diverter and BOP schematics are included in attachments.

SAFETY STANDARDS AND PROGRAMS - DRILLING AND PRODUCTION OPERATIONS

The rig to be used will comply with all of the regulations of the American Bureau of Shipping, International Maritime Organization and the United States Coast Guard. All drilling operations will be conducted under the provisions of 30 CFR, part 250, Subpart D and other applicable regulations and notices, including those regarding the avoidance of potential drilling hazards and safety and pollution prevention control. Safety features will include well control and blowout prevention equipment as described in Title 30 CFR 250.50. 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.

All production facilities are constructed and installed to meet M.M.S. and Coast Guard standards for safety and protection of the environment. Murphy Exploration & Production Company's Safety and Training Department monitors and trains personnel in the conduct of safe operations and compliance with all safety and pollution prevention standards.

OIL SPILL CONTINGENCY PLAN

Refer to Murphy's Plan filed with MMS, updated and approved May 13, 1992.

Murphy Exploration & Production Company fulfills its oil spill contingency plan by being a member of Clean Gulf Associates, P. O. Box 51239, New Orleans, LA 70151, an agency which handles clean up operations in the event of an oil spill. Fast Response Service can be obtained by calling Halliburton Services in Lafayette, LA, Tel. (318) 837-7400. Mr. Caro Louivier is in charge of administration of the equipment for Clean Gulf Associates.

DESCRIPTION OF CLEAN UP EQUIPMENT AVAILABLE IN VARIOUS LOCATIONS

1. Fast Response System Model I consists of:
   a. Primary & auxiliary skid with 180 bbl. tank on each skid
   b. One "Don Wilson" skimmer
   c. One basket and one lot of Bennet oil boom section
   d. Fire extinguisher skid

2. Fast Response Model II consists of:
   a. Section of floating oil boom
   b. Skimmer
   c. Outrigger
   d. Pump
   e. Two skid-mounted storage tanks of 180 bbls. each

3. Fast Response Model III - High volume open sea skimmer system (HOSS Barge).

4. Offshore skimmer system.

5. Shallow water skimmer system.

6. Sorbents.

7. Surface collecting agents.

8. Bird care equipment.

9. Field utility boats stationed at WC 71, SMI 240, ST 26 and SP 62.

10. Radio systems.

Estimated deployment time - see "Oil Spill Trajectory Simulation" Section.

EQUIPMENT AND RESPONSE TIME

Grand Isle, LA
All equipment listed in Clean up Equipment Section, 1 through 10 of this Plan.

Venice, LA
a. Fast Response Model I (Item 1)
b. Fast Response Model II (Item 2)
c. Items 4, 5, 6, 7, 8, and 9

Intracoastal City, LA
a. Fast Response Model I (Item 1)
b. Fast Response Model II (Item 2)
c. Items 4, 6, 7 and 9

Cameron, LA
a. Fast Response Model I (Item 1)
b. Fast Response Model II (Item 2)
c. Item 4

Houma, LA
a. Fast Response Model I (Item 1)
b. Fast Response Model II (Item 2) trailer loaded
c. Items 4, 5 and 7.

Galveston, TX
a. Fast Response Model I (Item 1)
b. Fast Response Model II (Item 2) trailer loaded
c. Items 4, 5, 6, 7, 8 and 9

Port Aransas, TX
a. Fast Response Model I (Item 1)
b. Fast Response Model II (Item 2) trailer loaded
c. Items 4, 6, 7, 8 and 9

Response Time - It takes approximately one hour to load Fast Response Model I onto vessel and approximately one and one half hours to load Model II, and approximately 3 hours to load Model III.

Vessels are to be provided by Murphy. Workboats under contract will be used. In the event of a spill, the fast response unit that is in a preloaded state adjacent to our marine dock at Cameron, LA will be loaded onto a marine vessel. Vessel procurement will take approximately 2 hours. It will take approximately 3 hours to round up a crew from various areas. Vessel and crew procurement operations will be conducted simultaneously. Vessel travel time from Cameron, LA to West Cameron Block 579 is approximately 11 hours*.

Initial Response - Fast Response Model II from Cameron, LA to West Cameron Block 579:

Procurement of vessel	2.0 hrs.
Waiting on crew	1.0 hrs.
Loading time	1.5 hrs.
Travel to West Cameron Block 579 Area*	11.0 hrs.
Deployment time	1.0 hrs.
Total Response Time	**16.5 hrs.**

* (Open water 110 miles @ 12 mph, inland water 6 miles @ 6 mph)

OIL SPILL TRAJECTORY SIMULATION

In the event a spill occurs from West Cameron Block 579, a projected trajectory of a spill impacting the coastline has been prepared utilizing information in the Environmental Impact Statement (EIS) and its related Oil Spill Risk Analysis Report for OCS Lease Sales 157 and 161.

The EIS contains oil spill trajectory simulations using seasonal surface current coupled with wind data, adjusted every three hours for 30 days or until a target is contacted.

Hypothetical spill trajectories were simulated for each of the potential launch sites across the entire Gulf. These simulations presume 500 spills occurring in each of the four seasons of the year. The results in the EIS were presented as probabilities that an oil spill beginning from a particular launch site would contact a certain land segment within three, ten or thirty days.

Utilizing the summary of the trajectory analysis (for 10 days) as presented in the EIS, the probable projected land fall of an oil spill and the CGA Map Number corresponding to the land segment which will be utilized to determine environmentally sensitive areas that may be affected by a spill as follows:

Launch Site	Landfall Segment	%	CGA Map
West Cameron 631	#10, Galveston County, TX	2%	Map #3, #4
(C 34)	#10, Chambers County, TX	2%	Map #3, #4
	#11, Jefferson County, TX	1%	Map #4
	#12, Cameron Parish, LA	1%	Map #5

If a spill should occur from these proposed operations, Murphy Exploration & Production Company would immediately activate its Oil Spill Response Team, determine from current conditions the probable location and time of landfall by contacting Continental Shelf Associates and/or the National Oceanic Atmospheric Administration's (NOAA) Gulf of Mexico Scientific Support Coordinator (SSC) for assistance in predicting spill movement. Then, using the CGA Operations Manual, Volume II, they would identify any biologically sensitive areas and determine the appropriate response mode.

Volume II, Sections V & VI of the CGA Operations Manual contain maps as listed above, equipment containment/cleanup protection respond modes for the sensitive areas and depicts the protection response modes that are applicable foil oil spill clean-up operations. Each response mode is schematically represented to show optimum deployment and operation of the equipment in areas of environmental concern. Implementation of the suggested procedures assures the most effective use of the equipment and will result in reduced adverse impact of oil spills on the environment. Supervisory personnel have the option to modify deployment and operation of equipment to more effectively respond to site-specific circumstances.

TRANSPORTATION ROUTES (WATER AND AIR)

The most direct routes from West Cameron Block 579 to shore base for supplies and personnel will be used.

BASE OF OPERATIONS

Marine service to drill these wells will be provided from Cameron, LA. A crew boat will make approximately 40 round trips of approximately 10 hours duration and a supply boat will make approximately 37 round trips of 18 hours duration.

Air service (helicopter) to drill these wells will be provided from Cameron, LA. The helicopter will make approximately 95 round trips of 2 hours duration.

DRILL MUD AND CHEMICAL COMPONENTS

MUD	COMPONENT	MUD	COMPONENT
Calcium Chloride	Calcium Chloride	Caustic Potash	Potassium Hydroxide
Caustic Soda	Sodium Hydroxide	Congor 303 A	Morpholine Process Res.
D-D	Surfactant Blend	Defoam-X	Defoamer
Desco	Sulfomethylated Tannin	Drispac	Polyanionic Cellulose
Fer-ox	Hematite, Iron Oxide	Gel Supreme	Bentonite (Natural Clay)
HEC	Hyroxylethyl Cellulose	K-17	Potassium Salt
K-52	Potassium Acetate	Kleen up	Surfactant Blend
Kwik Seal	Nut Hulls, Wood Fiber	Lime	Calcium Hydroxide
Lo-Wate	Calcium Carbonate	Lube 167	Lubricant
M-I Bar	Barium Sulfate	M-I CMC	Sodium Carboxymethyl
M-I Gel	Bentonite	M-I Mica	Mica
M-I-X II	Pulverized Cellulose	My-Lo-Jel	Pre-gelatized Starch
Nut Plug	Ground Nut Shells	Pipe-Lax ENV	Pipe Lax ENV
Poly Plus RD	Acrylic Copolymer	Polypac	Cellulose
Potassium Chloride	Potassium Chloride	Resinex	Lignite Resin Blend
Salt	Sodium Chloride	Salt Gel	Attapulgite Clay
SAPP	Sodium Pyrophosphate	Shale Chek	Anionic Polymer
Soda Ash	Sodium Carbonate	Sodium Bicarbonate	Sodium Bicarbonate
Soltex	Sodium Asphalt Sulfonate	Spersene	ChromeLignosulfonate
Spercene CF	Chrome-Free Lignosulf.	Sulf-X	Zinc Oxide
Tannathin	Lignite (Leonaidite)	Thermex	Phenol-Formaldehyde
Thermpac U/L	Sodium Carboxymethyl	XCD Polymer	Polysaccharide
XP-20	Chrome Lignite		

The rig will contain approximately 1000 sacks of barite and 200 sacks of gel.

Well #A will be drilled using a water based nondispersed unweighted mud system to 12000' and a medium density dispersed fluid to TD. Well #B will be drilled using a water based nondispersed unweighted mud system to 13000' then a weighted dispersed mud system to TD. Drill cuttings with a small amount of drilling fluid adhering to the shale and sand particles will be discharged at the well site during drilling operations. The maximum discharge rate of drill cuttings will be while drilling from the cemented conductor casing to the surface casing setting depth and should not exceed 700 bbls/day per each well in any one day. This discharge rate of cuttings is based on drilling this section of the hole at a rate of 1800 feet per 24 hour period and allowing for two (2) inches of hole enlargement due to erosion. The discharge rate of cuttings for the remainder of each well should average less than 50 bbls./day for #A and 100 bbls/day for #B based on an average drilling rate of 300-400 feet per day for #A and 200-250' per day for #B from surface casing to total depth and a two (2") hole enlargement due to erosion. The total discharge of cuttings for these wells is estimated to be 4000 bbls. for #A and 4200 bbls. for #B allowing for a 2" hole enlargement from the mud line to total depth.

Total discharge of drilling fluids for each well while drilling is estimated to be 5000 bbls. for #A and 8400 bbls. for #B. Data from wells drilled in this area indicate that an average of 1000 bbls/day of drilling fluid is discharged from the time a rig moves on location until drilling ceases. Upon setting casing and before moving the drilling rig, an additional 1000 bbls of mud can be expected to be discharged on each well, thus on each well we anticipate discharging approximately 6000 total bbls for #A and 9400 bbls for #B.

No oil will be added to the drilling mud or discharged at any time. In the event it becomes necessary to add oil to the drilling mud or "spot" an oil base lubricate around a stuck drill string, all mud and cuttings will be transported to shore for proper disposal. All mud discharged will be tested for toxicity as required by EPA's NPDES discharge permit.

Sanitary waste is treated by a waste treatment facility and discharged overboard in compliance with EPA's NPDES discharge permit. Treated waste discharged normally averages 25 gallons per day per man on the rig. A rig will discharge 750 to 1,000 gallons per day depending on the number of personnel on the rig.

All metal, steel, cables, etc. are stored on the rig until sufficient quantity accumulates. This material is then transported to our shore base for recycling. Paper, bags, plastics, etc. are compacted in a container by an onboard compactor then transported to shore for disposal.

All vessels used in our operations are equipped with Marine Sanitation Devices or holding tanks in compliance with DOT regulations. Drilling rigs are constructed with drip pans and or/drains under the floor and other machinery to maintain oil spills during operations. All used oil from machinery will be collected and stored and later transferred to shore base.

HYDROGEN SULPHIDE PLAN

This well will be drilled in an area which is known to be free of hydrogen sulphide. In the unlikely event that hydrogen sulphide would be encountered, all operations would cease until the rig could be equipped and personnel trained for operations in a hydrogen sulphide environment. See letter regarding absence of hydrogen sulphide on attached geological program.

GASEOUS EMISSION DATA

Emissions:

See Attachment "E."
Exemptions: Distance from shore = 110 statute miles.

1. Hydrocarbons, NO_x, SO_2, Particles:
   33.3 X 110 = 3663 tons/year
2. CO 3400 x $(110)^{2/3}$ or 79288.83 tons/year.

NEW OR UNUSUAL TECHNOLOGY

No new or unusual technology will be employed during drilling activities.

ATTACHMENTS

A. Coastal Zone Consistency Certification.

B. Location Plat.

C. Vicinity Plat with transportation route plotted.

D. Schematics of drill barge and of diverter.

E. Air emission calculations.

F. Environmental report.

G. Geological program with geological cross section maps, structure maps, bathymetry map, shallow hazards letters with seismic map and letter of request to determine status of H_2S.

COASTAL ZONE MANAGEMENT
CONSISTENCY CERTIFICATION

EXPLORATION

TYPE OF PLAN

WEST CAMERON BLOCK 579

AREA AND BLOCK

The proposed activities described in detail in the Attached plan of Exploration comply with Louisiana's approved Coastal Management Program and will be conducted in a manner consistent with such Program.

Arrangements have been made to publish Public Notices regarding the proposed activity no later than September 6, 1996 with the ADVOCATE, the official journal of Louisiana, and with the CAMERON PARISH PILOT, the official journal of Cameron Parish.

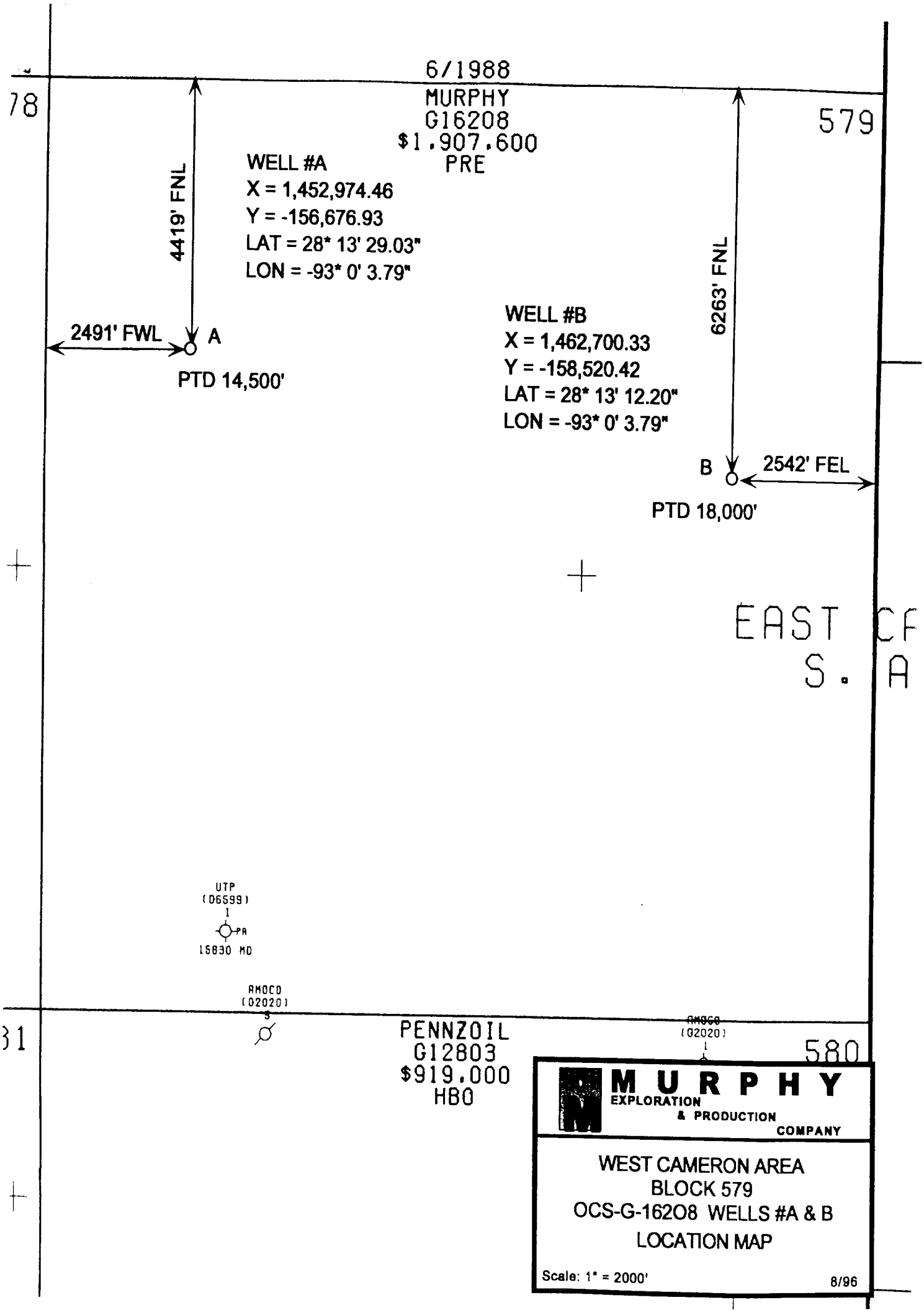
MURPHY EXPLORATION & PRODUCTION COMPANY

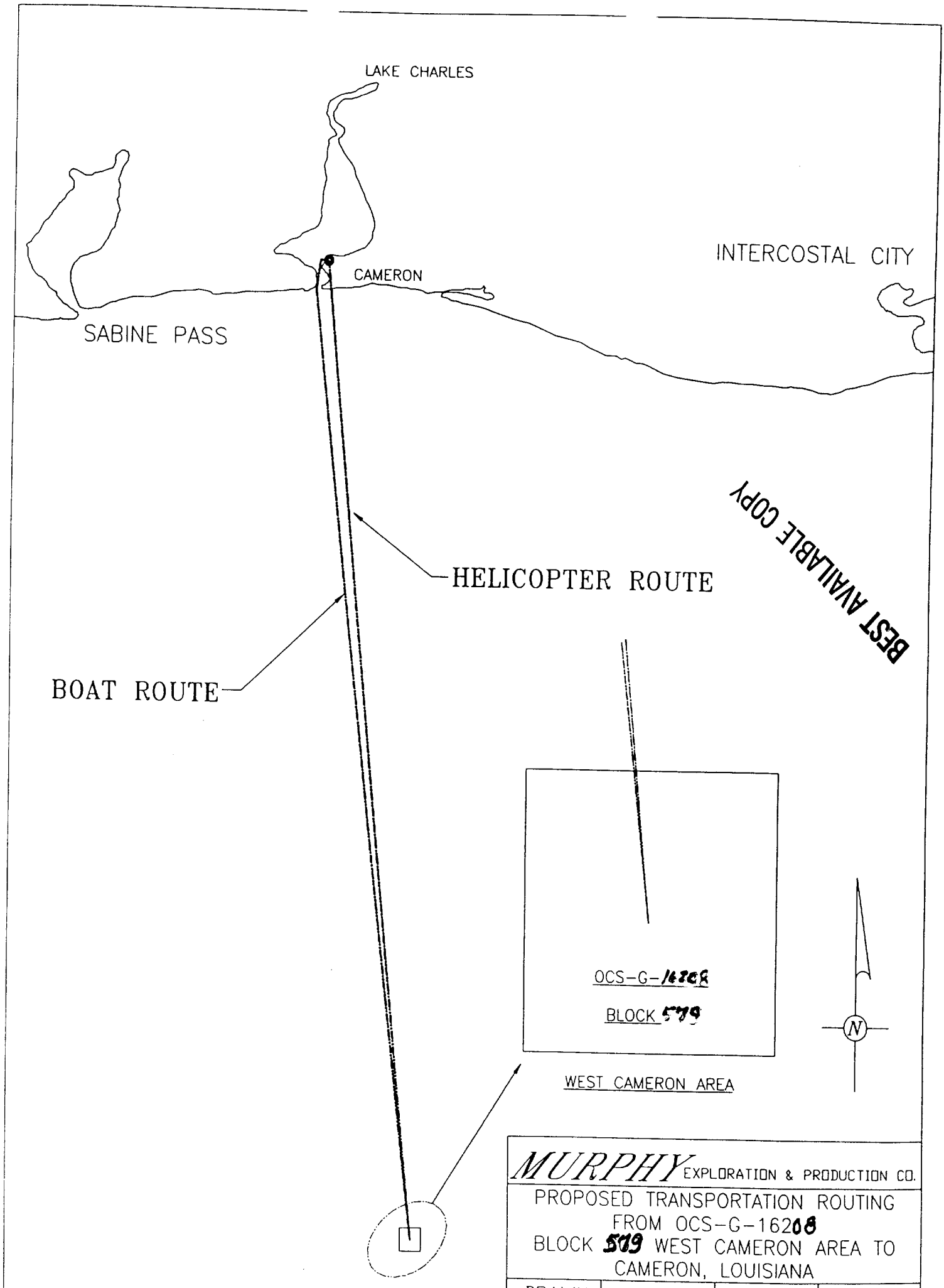
LESSEE OR OPERATOR

CERTIFYING OFFICIAL

AUGUST 27, 1996

DATE


6/1988
MURPHY
G16208
$1,907,600
PRE
78
579
WELL #A
X = 1,452,974.46
Y = -156,676.93
LAT = 28* 13' 29.03"
LON = -93* 0' 3.79"
4419' FNL
2491' FWL
A
PTD 14,500'
WELL #B
X = 1,462,700.33
Y = -158,520.42
LAT = 28* 13' 12.20"
LON = -93* 0' 3.79"
6263' FNL
B
2542' FEL
PTD 18,000'
EAST CA
S. A
UTP
(06599)
PA
15830 MD
AMOCO
(02020)
PENNZOIL
G12803
$919,000
HBO
AMOCO
(02020)
580
MURPHY
EXPLORATION
& PRODUCTION
COMPANY
WEST CAMERON AREA
BLOCK 579
OCS-G-16208 WELLS #A & B
LOCATION MAP
Scale: 1" = 2000'
8/96



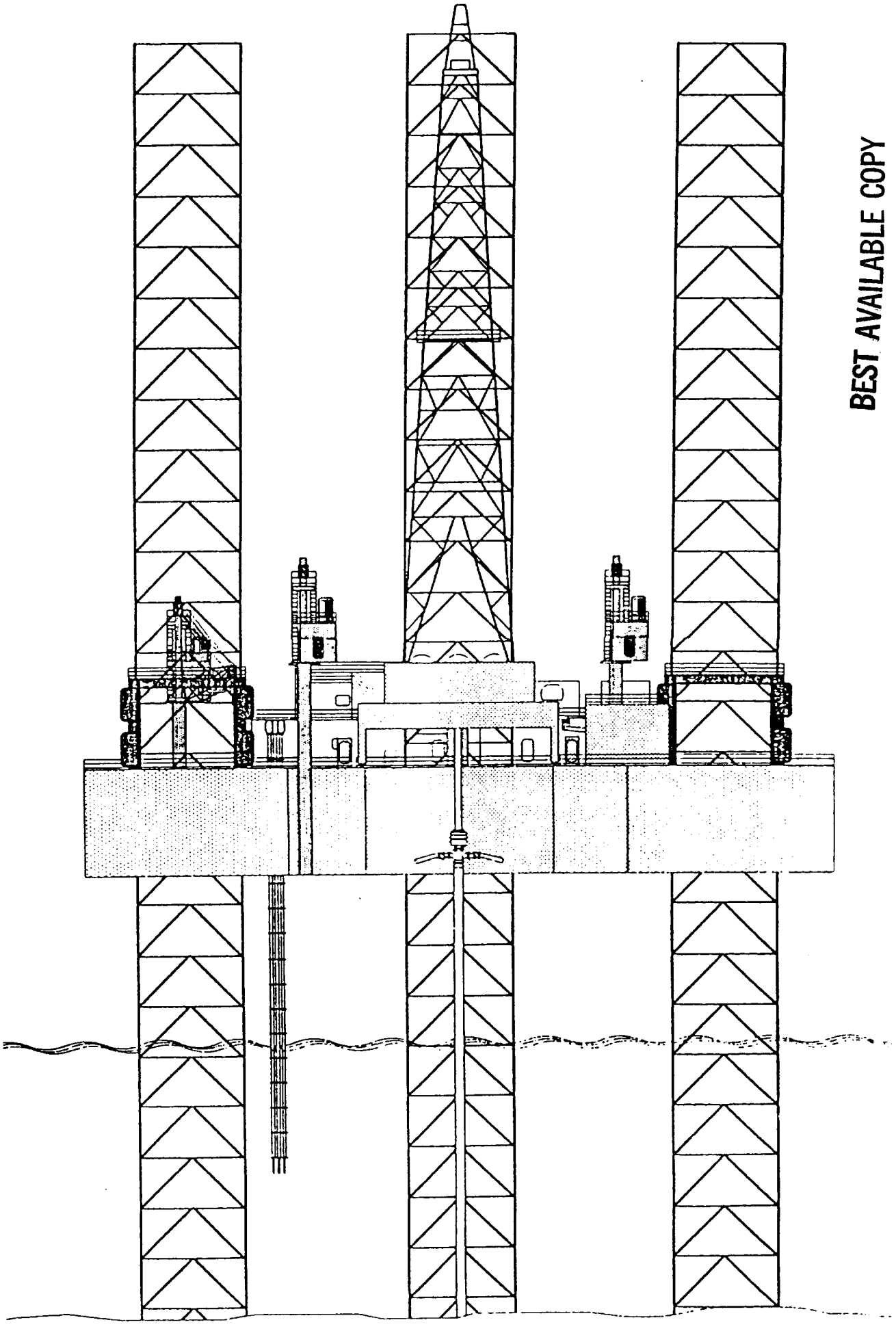
MURPHY EXPLORATION & PRODUCTION CO.

PROPOSED TRANSPORTATION ROUTING
FROM OCS-G-16208
BLOCK 579 WEST CAMERON AREA TO
CAMERON, LOUISIANA

DRAWN	DATE	SCALE	DWG.NO.
FJR	7-31-96	N/A	0902

ACAD11\DEB\WC-603

DIVERTER LAYOUT - OCEAN TO'
AFT ELEVATION VIEW



OCEAN TOWER

GENERAL DESCRIPTION AND EQUIPMENT LIST

A. GENERAL DESCRIPTION

The OCEAN TOWER is a Marathon LeTourneau, Class 53 independent leg slot type jackup drilling unit designed to operate in water depths from twenty-two feet (22') to three hundred fifty feet (350') and for drilling to a nominal well depth of 25,000 feet.

PRINCIPAL CHARACTERISTICS AND DIMENSIONS:

Length overall	230' 1"
Width of hull	200' 6"
Depth of hull	26' 0"
Slot length	41' 0"
Slot width	50' 0"
Number of legs	3
Overall length of legs and spud cans	466' 3-1/2"
Longitudinal leg centers	123' 0"
Transverse leg centers	142' 0"
Spud tank diameter (across flats)	46' 0"
Spud tank height	12'10"
Preload per spud can load	6,400 lbs/ft^2
Spud tank area	1,600 sq ft
Loadline draft	16' 7-7/8"
Jack house leg length requirement	51' 0"
Water tower length (flange to bottom)	130' 0"
Top of rotary table to bottom of barge	46' 0"

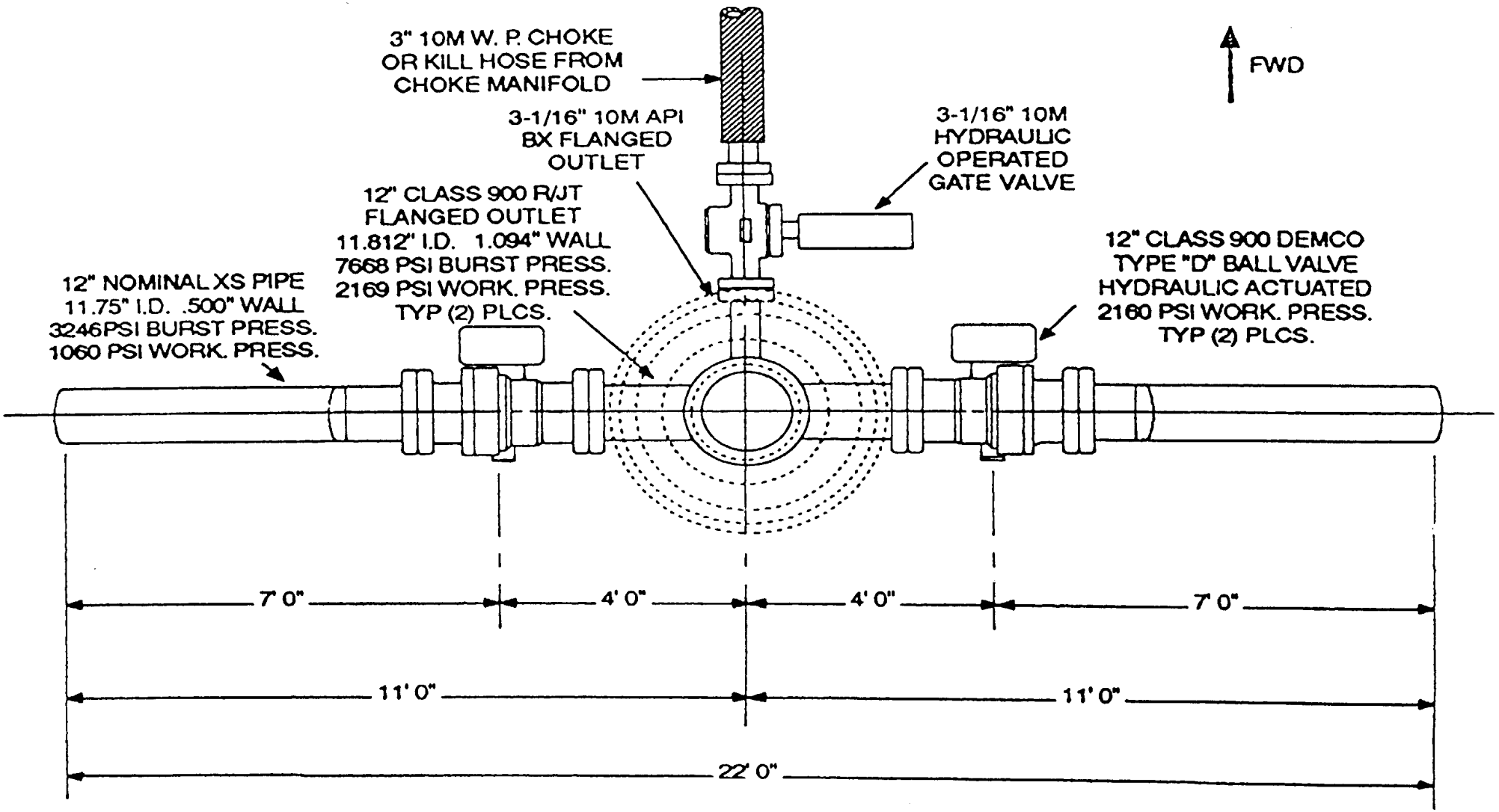
NOMINAL VARIABLE DECK LOAD (MAXIMUM):

Operating:	4,717 kips
Storm:	3,467 kips
Jacking:	3,485 kips
Transit:	3,485 kips

WATER DEPTH RATING:

Minimum (depending on loading)	22'
Maximum-Non Hurricane season	350'
Hurricane season (87 kt. wind and 42' wave)	260'

DIVERTER LAYOUT



PLAN VIEW

RS-3 (6/28/90)

ODECO

INTER-OFFICE CORRESPONDENCE

TO: R. S. Gloger LOC.: N. O. DATE:

CARBONS TO:

FROM: W. J. Wilkinson LOC.: N. O.

SUBJECT: Pollution and Waste Disposal from D/B OCEAN TOWER

The D/B OCEAN TOWER was constructed with certain features which were incorporated specifically to stop any pollutant likely to be found during normal drilling operations. It is equipped with drip pans and/or drians under floor and other machinery to retain all oil spills.

Provisions have been made for the collection, storage, and later transfer to shore base of all used oil from machinery on the drilling platform.

Containers have been provided to transfer solid waste, such as boxes, cartons, cans, etc., which cannot be incinerated to a shore base.

Copies of OCS Order Nos. 1 through 10 which are applicable to the contract drilling operations have been furnished the toolpushers. Rig supervisory personnel have been shown the seriousness of control of pollutants.

Should it come to your attention that any liquids or solids have escaped into the Gulf without our knowledge, I sincerely ask that you bring this to my attention.

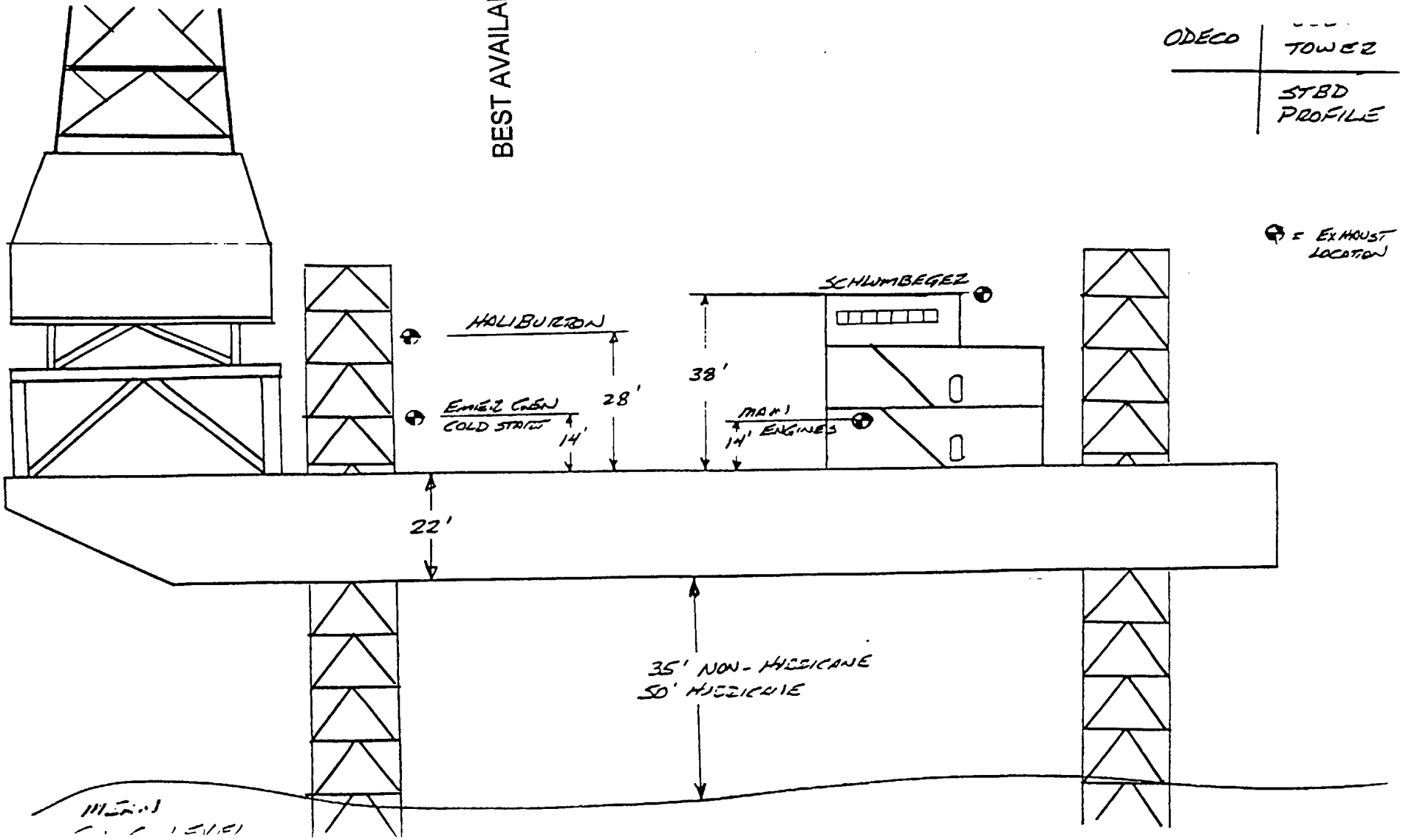
W. J. Wilkinson

WJW/ggt

ODECO | TOWER

STBD PROFILE

= EXHAUST LOCATION



AIR EMISSION CALCULATIONS

COMPANY	MURPHY EXPRO
AREA	WEST CAMERON
BLOCK	579
LEASE	OCS-G-16208
PLATFORM	---
WELL	#A & #B
LATITUDE	28° 13' 29"
LONGITUDE	93° 01' 53"
COMPANY CONTACT	DEBRA K. ORMSON
TELEPHONE NO.	(504) 561-2409
REMARKS	INITIAL POE

AIR EMISSION CALCULATIONS

COMPANY	AREA	BLOCK	LEASE	PLATFORM	WELL	LATITUDE	LONGITUDE	CONTA		PHONE	REMARKS					
MURPHY EXPRO	WEST CAMERON	579	OCS-G-16208	---	#A & #B	28° 13' 29"	93° 01' 53"	DEBRA K. ORMSON		(504) 561-2409	INITIAL POE					
OPERATIONS	EQUIPMENT		MAX. FUEL	ACT. FUEL	RUN TIME		POUNDS PER HOUR					TONS PER YEAR				
	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	TSP	SOx	NOx	VOC	CO	TSP	SOx	NOx	VOC	CO
DRILLING	PRIME MOVER>600hp diesel	2200	106.26	2550.24	24.00	61	1.16	7.22	53.30	1.60	11.63	0.85	5.29	39.02	1.17	8.51
	PRIME MOVER>600hp diesel	2200	106.26	2550.24	24.00	61	1.16	7.22	53.30	1.60	11.63	0.85	5.29	39.02	1.17	8.51
	PRIME MOVER>600hp diesel	2200	106.26	2550.24	24.00	61	1.16	7.22	53.30	1.60	11.63	0.85	5.29	39.02	1.17	8.51
	PRIME MOVER>600hp diesel-GENERATOR	1150	55.55	1333.08	24.00	61	0.61	3.77	27.86	0.84	6.08	0.45	2.76	20.40	0.61	4.45
	PRIME MOVER>600hp diesel-GENERATOR	1150	55.55	1333.08	24.00	61	0.61	3.77	27.86	0.84	6.08	0.45	2.76	20.40	0.61	4.45
	AUXILIARY EQUIP<600hp diesel-COMPRESSOR	125	6.04	144.90	0.14	61	0.28	0.26	3.85	0.31	0.83	0.00	0.00	0.02	0.00	0.00
	AUXILIARY EQUIP<600hp diesel-CRANE #1	175	8.45	202.86	2.00	61	0.39	0.36	5.40	0.43	1.17	0.02	0.02	0.33	0.03	0.07
	AUXILIARY EQUIP<600hp diesel-CRANE #2	175	8.45	202.86	2.00	61	0.39	0.36	5.40	0.43	1.17	0.02	0.02	0.33	0.03	0.07
	AUXILIARY EQUIP<600hp diesel-CRANE #3	175	8.45	202.86	2.00	61	0.39	0.36	5.40	0.43	1.17	0.02	0.02	0.33	0.03	0.07
	AUXILIARY EQUIP<600hp diesel-CEMENT UNIT	240	11.59	278.21	2.00	3	0.53	0.49	7.40	0.59	1.60	0.00	0.00	0.02	0.00	0.00
	AUXILIARY EQUIP<600hp diesel-CEMENT UNIT	240	11.59	278.21	2.00	3	0.53	0.49	7.40	0.59	1.60	0.00	0.00	0.02	0.00	0.00
	AUXILIARY EQUIP<600hp diesel-LOG UNIT	175	8.45	202.86	2.00	2	0.39	0.36	5.40	0.43	1.17	0.00	0.00	0.01	0.00	0.00
	VESSELS>600hp diesel-CREW BOAT	2150	103.85	2492.28	10.00	25	1.14	7.06	52.09	1.56	11.37	0.14	0.88	6.51	0.20	1.42
	VESSELS>600hp diesel-SUPPLY BOAT	1800	86.94	2086.56	18.00	25	0.95	5.91	43.61	1.31	9.52	0.21	1.33	9.81	0.29	2.14
	VESSELS>600hp diesel-HELICOPTER	1800	86.94	2086.56	2.00	60	0.95	5.91	43.61	1.31	9.52	0.06	0.35	2.62	0.08	0.57
PIPELINE	PIPELINE LAY & BURY BARGE diesel-ENG.	0	0.00	0.00	0.00	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	PIPELINE LAY & BURY BARGE diesel-GEN.	0	0.00	0.00	0.00	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	PIPELINE LAY & BURY BARGE diesel-CRANE	0	0.00	0.00	0.00	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
INSTALLATION	SUPPORT VESSEL diesel-SUPPLY BOAT	0	0.00	0.00	0.00	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		0														
FACILITY	DERRICK BARGE diesel	0	0.00	0.00	0.00	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
INSTALLATION	MATERIAL TUG diesel	0	0.00	0.00	0.00	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
FACILITY	RECIP.<600hp diesel	0	0.00	0.00	0.00	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	0.00	0.00	0.00	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	0.00	0.00	0.00	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	0.00	0.00	0.00	0		0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00
	RECIP.2 cycle lean nat gas	0	0.00	0.00	0.00	0		0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00
	RECIP.4 cycle lean nat gas	0	0.00	0.00	0.00	0		0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00
	RECIP.4 cycle rich nat gas	0	0.00	0.00	0.00	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	0.00	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				0.00					0.00	
	GLYCOL STILL VENT-		0		0	0				0.00					0.00	
DRILLING	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
WELL TEST	GAS FLARE		416667		24	1		0.24	29.75	25.13	161.88		0.00	0.36	0.30	1.94
1996	YEAR TOTAL						10.62	50.99	424.95	38.99	248.03	3.93	24.02	178.20	5.69	40.74
EXEMPTION CALCULATION	DISTANCE FROM LAND IN MILES											3663.00	3663.00	3663.00	3663.00	79288.83
	110.0															

AIR EMISSION CALCULATIONS

COMPANY	AREA	BLOCK	LEASE	PLATFORM	WELL	LATITUDE	LONGITUDE	CONTAC			PHONE	REMARKS				
MURPHY EXPRO	WEST CAMERON	579	OCS-G-16208	---	#A & #B	28° 13' 29"	93° 01' 53"	DEBRA K. ORMSON			(504) 561-2409	INITIAL POE				
OPERATIONS	EQUIPMENT		MAX. FUEL	ACT. FUEL	RUN TIME		POUNDS PER HOUR					TONS PER YEAR				
	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	TSP	SOx	NOx	VOC	CO	TSP	SOx	NOx	VOC	CO
DRILLING	PRIME MOVER>600hp diesel	2200	106.26	2550.24	24.00	31	1.16	7.22	53.30	1.60	11.63	0.43	2.69	19.83	0.59	4.33
	PRIME MOVER>600hp diesel	2200	106.26	2550.24	24.00	31	1.16	7.22	53.30	1.60	11.63	0.43	2.69	19.83	0.59	4.33
	PRIME MOVER>600hp diesel	2200	106.26	2550.24	24.00	31	1.16	7.22	53.30	1.60	11.63	0.43	2.69	19.83	0.59	4.33
	PRIME MOVER>600hp diesel-GENERATOR	1150	55.55	1333.08	24.00	31	0.61	3.77	27.86	0.84	6.08	0.23	1.40	10.37	0.31	2.26
	PRIME MOVER>600hp diesel-GENERATOR	1150	55.55	1333.08	24.00	31	0.61	3.77	27.86	0.84	6.08	0.23	1.40	10.37	0.31	2.26
	AUXILIARY EQUIP<600hp diesel-COMPRESSOR	125	6.04	144.90	0.14	31	0.28	0.26	3.85	0.31	0.83	0.00	0.00	0.01	0.00	0.00
	AUXILIARY EQUIP<600hp diesel-CRANE #1	175	8.45	202.86	2.00	31	0.39	0.36	5.40	0.43	1.17	0.01	0.01	0.17	0.01	0.04
	AUXILIARY EQUIP<600hp diesel-CRANE #2	175	8.45	202.86	2.00	31	0.39	0.36	5.40	0.43	1.17	0.01	0.01	0.17	0.01	0.04
	AUXILIARY EQUIP<600hp diesel-CRANE #3	175	8.45	202.86	2.00	31	0.39	0.36	5.40	0.43	1.17	0.01	0.01	0.17	0.01	0.04
	AUXILIARY EQUIP<600hp diesel-CEMENT UNIT	240	11.59	278.21	2.00	3	0.53	0.49	7.40	0.59	1.60	0.00	0.00	0.02	0.00	0.00
	AUXILIARY EQUIP<600hp diesel-CEMENT UNIT	240	11.59	278.21	2.00	3	0.53	0.49	7.40	0.59	1.60	0.00	0.00	0.02	0.00	0.00
	AUXILIARY EQUIP<600hp diesel-LOG UNIT	175	8.45	202.86	2.00	2	0.39	0.36	5.40	0.43	1.17	0.00	0.00	0.01	0.00	0.00
	VESSELS>600hp diesel-CREW BOAT	2150	103.85	2492.28	10.00	15	1.14	7.06	52.09	1.56	11.37	0.09	0.53	3.91	0.12	0.85
	VESSELS>600hp diesel-SUPPLY BOAT	1800	86.94	2086.56	18.00	12	0.95	5.91	43.61	1.31	9.52	0.10	0.64	4.71	0.14	1.03
	VESSELS>600hp diesel-HELICOPTER	1800	86.94	2086.56	2.00	35	0.95	5.91	43.61	1.31	9.52	0.03	0.21	1.53	0.05	0.33
PIPELINE	PIPELINE LAY & BURY BARGE diesel-ENG.	0	0.00	0.00	0.00	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	PIPELINE LAY & BURY BARGE diesel-GEN.	0	0.00	0.00	0.00	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	PIPELINE LAY & BURY BARGE diesel-CRANE	0	0.00	0.00	0.00	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
INSTALLATION	SUPPORT VESSEL diesel-SUPPLY BOAT	0	0.00	0.00	0.00	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		0														
FACILITY	DERRICK BARGE diesel	0	0.00	0.00	0.00	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
INSTALLATION	MATERIAL TUG diesel	0	0.00	0.00	0.00	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
FACILITY	RECIP.<600hp diesel	0	0.00	0.00	0.00	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	0.00	0.00	0.00	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	0.00	0.00	0.00	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	0.00	0.00	0.00	0		0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00
	RECIP.2 cycle lean nat gas	0	0.00	0.00	0.00	0		0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00
	RECIP.4 cycle lean nat gas	0	0.00	0.00	0.00	0		0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00
	RECIP.4 cycle rich nat gas	0	0.00	0.00	0.00	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	0.00	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				0.00					0.00	
	GLYCOL STILL VENT-		0		0	0				0.00					0.00	
DRILLING	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
WELL TEST	GAS FLARE		416667		24	1		0.24	29.75	25.13	161.88		0.00	0.36	0.30	1.94
1996 YEAR TOTAL							10.62	50.99	424.95	38.99	248.03	2.01	12.26	91.28	3.06	21.78
EXEMPTION CALCULATION	DISTANCE FROM LAND IN MILES											3663.00	3663.00	3663.00	3663.00	79288.83
	110.0															

AIR EMISSION CALCULATIONS

COMPANY	AREA	BLOCK	LEASE	PLATFORM	WELL
MURPHY EXPRO	WEST CAMERON	579	OCS-G-16208	---	#A & #B

Year	Emitted Substance				
	TSP	SOx	NOx	HC	CO
1996	3.93	24.02	178.20	5.69	40.74
1997	2.01	12.28	91.28	3.06	21.78
1998	0.00	0.00	0.00	0.00	0.00
1999	0.00	0.00	0.00	0.00	0.00
2000	0.00	0.00	0.00	0.00	0.00
2001	0.00	0.00	0.00	0.00	0.00
2002	0.00	0.00	0.00	0.00	0.00
2003	0.00	0.00	0.00	0.00	0.00
2004	0.00	0.00	0.00	0.00	0.00
2005	0.00	0.00	0.00	0.00	0.00
Allowable	**3663.00**	**3663.00**	**3663.00**	**3663.00**	**79288.83**

ENVIRONMENTAL REPORT

FOR

WEST CAMERON BLOCK 579

OCS-G 16208

GULF OF MEXICO
OFFSHORE, LOUISIANA

MURPHY EXPLORATION & PRODUCTION COMPANY

P.O. Box 1780
New Orleans, LA 70161

AUGUST 1996

Prepared By:

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Civil Engineers, Environmental Consultants & Land Surveyors
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I. DESCRIPTION OF PROPOSED ACTION

Murphy Exploration & Production Company proposes to conduct exploratory activities within West Cameron Block 579, Lease OCS-G 16208, Offshore, Louisiana.

As proposed, the Initial Plan of Exploration for West Cameron Block 579 provides for the drilling of two (2) exploratory wells utilizing a jack-up rig.

At this time, the planned commencement date for the proposed activities is November 1, 1996.

A. DESCRIPTION OF PROPOSED TRAVEL MODES, ROUTES AND FREQUENCY

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

TRAVEL MODES	NUMBER	FREQUENCY OF TRIPS
Crew boat	1	40
Stand-by boat	1	37
Helicopter	1	95

B. ONSHORE SUPPORT BASE

The proposed activities will utilize a support base located at a 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, drinking and drill water, etc. The proposed development 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 Minerals Management Service (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 for the proposed activity is in West Cameron Block 579 OCS-G 16208, which is located approximately one hundred ten (110) statute miles from the nearest Louisiana shoreline. The water depth at this location is approximately 215 feet. Figure 1 represents the location of the block in relation to the Louisiana Coast, as well as the geographic relationship between other Outer Continental Shelf (OCS) lease areas and West Cameron Block 579.

II. DESCRIPTION OF AFFECTED ENVIRONMENT

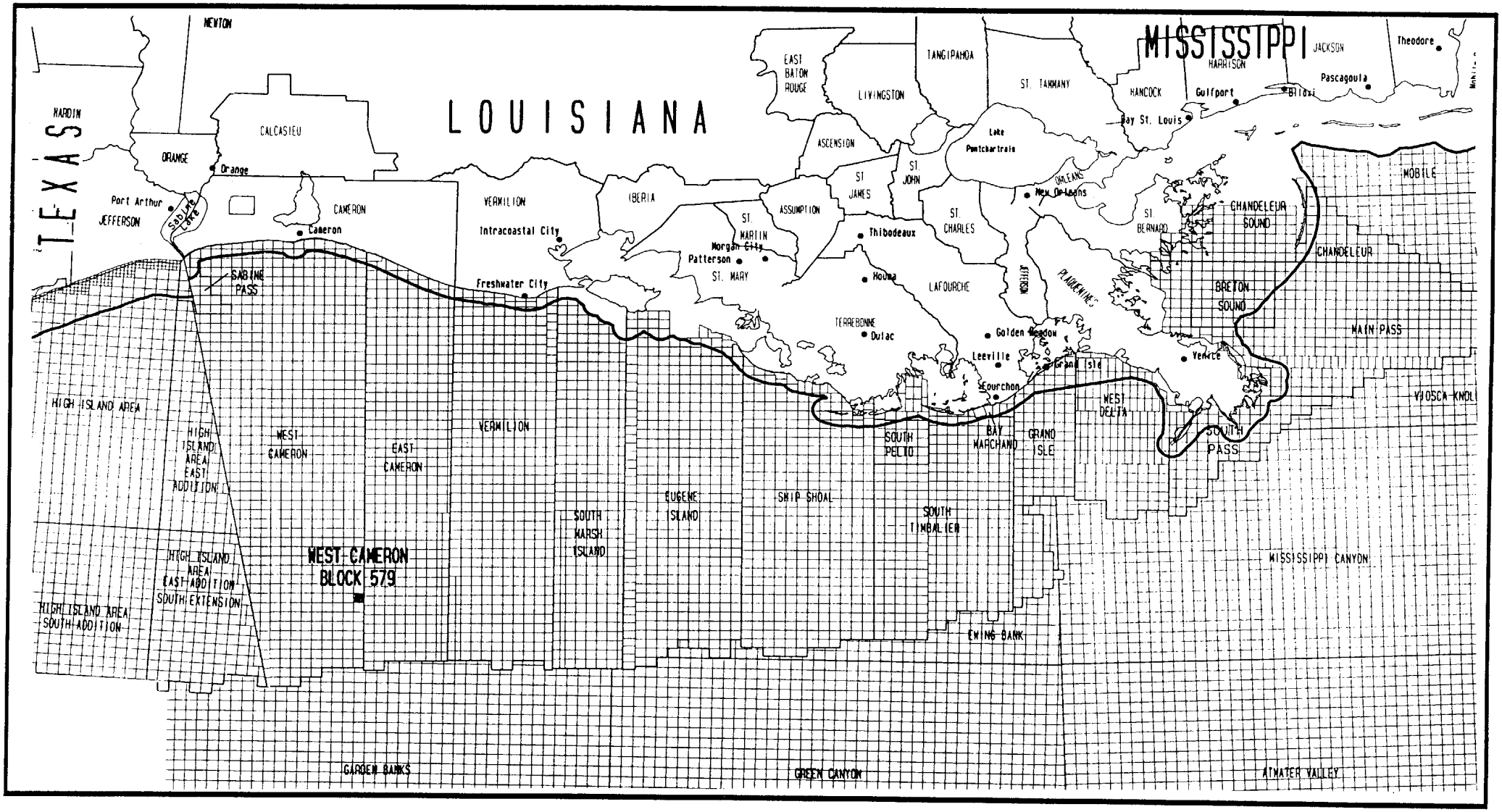
A. COMMERCIAL FISHING

The Gulf of Mexico provides nearly 20% of the commercial fish landings in the continental United States. During 1993, commercial landings of all fisheries in the Gulf totaled nearly 1.7 billion pounds valued at about $631 million.

Menhaden, with landings of 1.2 billion pounds, valued at $59.2 million, was the most important Gulf species in quantity landed during 1993. Shrimp, with landings of 206.4 million pounds, valued at $335 million, was the most important Gulf species in value landed during 1993. The 1993 Gulf oyster fishery accounted for 41% of the national total with landings of 22 million pounds of meat, valued at about $51.6 million. The Gulf blue crab fishery accounted for 25% of the national total with landings of 63.3 million pounds, valued at $32.3 million.

Alabama ranked third among Central and Western Gulf states in total commercial landings for 1993 with 20.3 million pounds landed, valued at $34.2 million. Shrimp was the most important fishery landed, with 14.4 million pounds, valued at $30.1 million. In addition, during 1993, the following five species each accounted for landings valued at over $125,000: blue crab, black mullet, red mullet roe, flounder, and the American oyster. Alabama had about 3470 and 2515 commercial saltwater, licensed fishermen during 1992 and 1993, respectively.

Mississippi ranked last among Central and Western Gulf states in total commercial fishery landings for 1993, with approximately 35.2 million pounds landed, valued at approximately $23.5 million. Shrimp was the most important fishery, with 10.5 million pounds landed, valued at about $18.4 million. In addition, during 1993, the following four species each accounted for landings valued at over $125,000: black mullet, red snapper, blue crab, and the American oyster. Mississippi had about 3329 and 2515 commercial saltwater, licensed fishermen during 1991 and 1992, respectively.



LAMBERT (1927-DATUM)

Location is approximately 110 miles from the nearest Louisiana shoreline.

BEST AVAILABLE COPY

FIGURE 1

MURPHY EXPLORATION & PRODUCTION COMPANY

VICINITY MAP

West Cameron Block 579
Gulf of Mexico

40 0 40 80

Scale: 1" = 40 Miles

Prepared by: C.H. Fenstermaker & Associates, Inc., Lafayette & New Orleans, La.		
Revised:	Job No.: 965972	Date: 08/26/96
		Drawn By: SLE

Louisiana ranked first among Central and Western Gulf states in total commercial fishery landings for 1993, with about 1.4 billion pounds landed, valued at $274.6 million. Menhaden was the highest quantity finfish, with about 1.0 billion pounds landed, valued at $49 million. Shrimp was the highest value shellfish, with 87.6 million pounds landed, valued at $158 million. In addition, during 1993, the following 12 species each accounted for landings valued at over $1 million: black drum, flounder, black mullet, red mullet roe, Atlantic sheepshead, red snapper, vermilion snapper, spotted sea trout, swordfish, yellowfin tuna, blue crab, and the American oyster. In 1992 and 1993, Louisiana had about 19,923 and 19,241 commercial saltwater, licensed fishermen, respectively.

Texas ranked second among Central and Western Gulf states in total commercial fishery landings for 1993 with nearly 93.1 million pounds landed, valued at $156.7 million. In quantity and value, shrimp ranked first, with about 78 million pounds, valued at $141.9 million. In addition, during 1993, the following seven species each accounted for landings valued at over $500,000: black drum, red snapper, vermilion snapper, swordfish, yellowfin tuna, blue crab, and American oyster. In 1992 and 1993, respectively, Texas had about 17,483 and 14,519 commercial saltwater, licensed fishermen.

The Gulf of Mexico yielded the nation's second largest regional commercial fishery by weight in 1993. The Gulf fisheries landings were nearly 20% of the national total by weight and 20% by value. Most commercial species harvested from Federal waters of the Gulf of Mexico 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. Commercial landings of traditional fisheries such as shrimp, red snapper, spiny lobster and mackerel, have declined over the past decade despite substantial increases in fishing effort. 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 of Mexico shrimp fishery is the most valuable in the United States accounting for 71.5% of the total domestic production. Three species of shrimp (brown, white and pink) dominate the landings. The status of the stock are as follows: (1) brown shrimp yields are at or near the maximum sustainable levels; (2) white shrimp yields are beyond maximum sustainable levels with signs of overfishing occurring; and (3) pink shrimp yields are at or beyond maximum sustainable levels.

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, 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 through 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.

West Cameron Block 579 is clear of all shipping fairways and anchorage areas. The drilling rig and each of the marine vessels servicing these operations will be equipped with all U.S. Coast Guard required navigational safety aids to alert ships of their 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 activities. 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 include publicly owned and administered areas such as national seashores, parks, beaches, and wildlife lands, as well as designated preservation areas, such as historic and natural sites, landmarks, wilderness areas, wildlife sanctuaries, and scenic rivers. Gulf Coastal residents and tourists from throughout the nation, as well as from foreign countries, use these resources extensively and intensively for recreation activity. Commercial and private recreational facilities and establishments such as resorts, marinas, amusement parks, and ornamental gardens also serve as primary interest areas.

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 offshore marine 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 coastal shorelines of the Central and Western Planning Areas 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.

D. POTENTIAL OR KNOWN ARCHAEOLOGICAL RESOURCES

Archaeological resources are any prehistoric or historic site, bui'ding, 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. Management of this resource was accomplished by establishing a high probability zone for the occurrence of historic shipwrecks. An MMS funded study updated the shipwreck 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. MMS redefined those blocks in the Gulf of Mexico that are considered to have a high probability for the occurrence of historic period shipwrecks. The number of blocks with a high probability for historic shipwrecks were reduced from 3,410 to 2,263. Remote sensing surveys required by MMS have recorded evidence of approximately 69 shipwrecks.

Geomorphic features that have a high probability for associated prehistoric archaeological resources in the Central and Western Gulf include barrier islands, embayments, river channels and associated floodplains and terraces, and salt dome features. Remote sensing surveys have been very successful in identifying the geographic features that have a high probability for associated prehistoric sites. Though lease block surveys have identified many specific areas in the Gulf as having a high potential for prehistoric sites, oil and gas development has generally avoided rather than investigated these high probability areas for archaeological content. In accordance with the Letter to Lessees (LTL) issued by the MMS on September 5, 1995, an archaeological survey is not required for West Cameron Block 579.

E. ECOLOGICALLY SENSITIVE FEATURES

Barrier Islands

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 non vegetated 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 wash over 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 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, deltaic sedimentation, 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 non cyclically progressive, such that landforms might move landward, seaward, or laterally along the coast.

From east to west, 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.

Beaches

Louisiana has the most rapidly retreating beaches in the nation. The statewide average for 1956-1978 was 8.29 m/yr. The sand beach formed between the Gulf and Bay Marchand retreated landward at rates of 18 to 23 m/yr. between 1887 and 1978. The average retreat rate for Fourchon Beach over the last 100 years has been 10 to 20 m/yr.

Barrier beaches along the deltaic plain in Louisiana fit into one of three categories, depending on the stage of the deltaic cycle of the nearby landmass. 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 barriers. The Bayou Lafourche Headland is an example of an eroding and subsiding delta that transgressively generates a barrier island arc, the ends of which are separated from the mainland. Isles Dernieres is an example of a barrier arc of islands that separated from its headland due to subsidence. 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.

From the Texas-Louisiana border to Rollover Pass, Texas, the Texas coast is a physiographic continuation of the Chenier Plain. Here, thin accumulations of sand, shell, and caliche 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 rest of the Texas coast is a continuous barrier shoreline. The barrier islands and spits were formed from sediments supplied from the three previously listed deltaic headlands: the Trinity delta, which is immediately west of the Sabine River in Jefferson County; the Brazos-Colorado Rivers delta complex in Brazoria and Matagorda Counties; and the Rio Grande delta in southernmost Cameron County.

The Central and Western Gulf Coast includes barrier islands that are part of the National Park System. These are the Padre Island National Seashore along the Texas coast and Gulf Islands National Seashore offshore Mississippi.

Coastal Wetlands

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. They provide habitat for a great number and wide diversity of invertebrates, fish, reptiles, birds, and mammals. Wetlands are particularly important as nursery grounds for juvenile forms of many important fish species. The Louisiana coastal wetlands support over two-thirds of the Mississippi Flyway wintering waterfowl population and the largest fur harvest in North America.

Louisiana contains most of the Gulf coastal wetlands. The deterioration of coastal wetlands, particularly in Louisiana, is an issue of concern. In Louisiana, the annual rate of wetlands 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. Several factors contribute to wetlands loss in coastal Louisiana. Sediment deprivation is a result of a 50% decrease in the suspended sediment load of the river since the 1950's, channelization of the river, and, the primary cause, which was levee construction. Subsidence and sea level rise have caused submergence of lower wetland areas. Construction of ring levees have allowed drainage and development of extensive wetlands. Development activities in low areas, outside leveed areas, have caused the filling in 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 northern Mississippi Sound. Between 1955 and 1979, fresh marshes and estuarine marshes declined in these areas by 69% and 29%, respectively. Major causes of coastal 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 the inshore side of barrier islands and bays and on river deltas. Salt marshes consisting primarily of smooth cordgrass occur at lower elevations and at higher salinities. Brackish marshes occur in transition areas landward of salt marshes on slightly higher elevations and at greater distances from saltwater bodies. 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 sp.*

Wetland changes observed in Texas during the past several decades appear to be driven by subsidence and sea level elevation 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, wetlands loss is occurring at rates similar to those occurring in adjacent parts of the Louisiana Chenier Plain.

Seagrasses

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 that include temperature, water depth, turbidity, salinity, turbulence, and substrate. Primarily because of low salinity and high turbidity, robust seagrass beds are found only within a few scattered, protected locations in the Central and Western Gulf of Mexico. Texas and Louisiana contain approximately 0.5%, Mississippi and Alabama 1% of seagrass beds in the Gulf of Mexico. Inshore seagrasses provide important habitat for early life stages of commercial and recreational fisheries species and they provide a food source for several species of wintering waterfowl.

Seagrasses dominate the aquatic floral habitat of low salinity, inshore estuarine communities along the Texas coast. Laguna Madre and Copano-Aransas estuaries account for the major portion of seagrass populations in Texas. Turbid waters and soft highly organic sediments of Louisiana's estuaries and offshore areas limit widespread distribution of seagrass beds. The most extensive seagrass beds occur in Chandeleur Sound. In Mississippi and Alabama, seagrasses occur within Mississippi Sound.

Live Bottoms (Pinnacle Trend)

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 to major pinnacles, as well as ridges, scarps, and relict patch reefs. The heavily indurated pinnacles provide a surprising amount of surface area for the growth of sessile invertebrates and attract large numbers of fish.

In the pinnacle trend, the bases of the pinnacles rise from the seafloor at water depths between 53 and 110 m with vertical relief occasionally in excess of 20 m. The features of the pinnacle trend offer a combination of topographic relief and hard substrate for the attachment of sessile organisms and, therefore, have a greater potential to support significant live bottom communities than surrounding areas on the Mississippi-Alabama Shelf. This potential to support live bottom communities has made these features a focus of concern and discussion.

Brooks concludes that the depth in the water column appears not to play a major role in determining species composition except in the case of coralline algae, which have not been encountered below a depth of 78 m. Since most of the major species are suspension feeders, susceptibility to sedimentation does appear to limit species composition. Areas closest to the Mississippi River Delta are most affected, and this influence extends eastward for up to 115 km (70 miles) from the Delta. Brooks also concludes, in assessing the overall health of the pinnacle trend that, human impact in these environments appears to be minimal. Cables and lines can affect shallower reef communities, but probably have little impact at these depths once they become tangled on or lodged against reef structures.

Continental Shelf Associates, Inc. makes similar conclusions as well as that at deeper locations near each feature's base, communities were reduced in density and diversity. This variation is thought to be due to the effects of sediment resuspension in these areas.

With the exception of the region defined as the pinnacle trend areas, the substrate in waters shallower than 67 m of the Central Gulf is a mixture of mud and/or sand. The live bottom surveys required by MMS and conducted in the eastern portions of the area have also revealed sand or mud substrate. These areas are not conducive to live bottom community growth since a hard substrate is needed for epifaunal attachment. As the substrate grades to carbonate sand in the Eastern Gulf, the potential for live bottoms increases.

Deepwater Benthic Communities

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. These cold water communities are primarily associated with seismic wipe-out zones and hydrocarbon and H_2S seep areas in water depths greater than 400 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.

Topographic Features

The shelf and shelf edge of the Central and Western Gulf are characterized by topographic features which are inhabited by hard bottom benthic communities. The habitat created by the topographic features is important in several respects: 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 the vast Gulf of Mexico; they provide a relatively pristine area suitable for scientific research; and they have an aesthetically 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 zones are divided into four categories dependent upon the degree of reef building activity in each zone. The Central Gulf of Mexico lists 16 topographic features and the western Gulf of Mexico lists 23 topographic features. West Cameron Block 579 is not listed on Notice to Lessees (NTL) 89-01 as one of the blocks where the topographic lease stipulation would apply.

F. PIPELINES AND CABLES

As a prudent operator, Murphy Exploration & Production Company will conduct its operations in accordance with the provisions specified in MMS NTL 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 West Cameron Block 579 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 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 National Pollution Discharge Elimination System (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 the NPDES general permit.

I. ENDANGERED AND THREATENED SPECIES AND CRITICAL HABITAT

Twenty-eight species of cetaceans, one sirenian, and one exotic pinniped (California sea lion) have been sighted in the northern Gulf of Mexico. Seven species of baleen whales have been reported in the Gulf of Mexico. These include the northern right whale and six species of balaenopterid whales (blue, fin, sei, Bryde's, minke, and humpback). Sightings and strandings of these species in this area are uncommon; however, historical sightings and strandings census data suggest that they more often frequent the north-central Gulf region in comparison to the other areas of the Gulf. Twenty-one species of toothed whales and dolphins have been reported in the Gulf of Mexico. These include the great sperm whale, pygmy and dwarf sperm whales, four species of beaked whales (Cuvier's, Gervais', Blainville's and Sowerby's), killer whale, false and pygmy killer whale, short-finned pilot whale, grampus (Risso's dolphin), melon-headed whale, and eight other species of delphinid dolphins (bottlenose, Atlantic spotted, pantropical spotted, spinner, clymene, striped, Fraser's and rough-toothed). Many of these species are distributed in warm temperate to tropical waters throughout the world.

Six species of baleen whales (northern right, blue, fin, minke, sei and humpback) and one species of toothed whale (sperm whale) found within the Gulf of Mexico are currently listed as endangered species under the provisions of the Endangered Species Act of 1973. All are uncommon to rare in the Gulf except for the sperm whale.

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 diet consists mainly of beach grass and sea oats.

The green turtle population in the Gulf once supported a commercial harvest in Texas and Florida, but the population has not completely recovered since the collapse of the fishery around the turn of the century. Green turtles prefer depths of less than 20m, where seagrasses and algae are plentiful. Leatherbacks, the largest and most oceanic of the marine turtles, seasonally enter coastal and estuarine habitats where jellyfish are plentiful. Their nesting is concentrated on coarse grained beaches in the tropical latitudes. 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. The Kemp's ridley sea turtle is the most imperiled of the world's marine turtles. Nesting primarily occurs on a stretch of beach in Rancho Nuevo, Vera Cruz, Mexico. Nesting in the United States occurs infrequently on Padre and Mustang Islands in south Texas from May to August. In the Gulf, Kemp's ridleys appear to inhabit nearshore areas and congregations of Kemp's have been recorded off the mouth of the Mississippi River. The loggerhead sea turtle occurs worldwide in habitats ranging from estuaries to the continental shelf. In the Gulf of Mexico, recent surveys indicate that the Florida Panhandle accounts for approximately one-third of the nesting on the Florida Gulf Coast. In the Central Gulf, loggerhead nesting has been reported on Gulf Shores and Dauphin Island, Alabama, Ship Island, Mississippi, and the Chandeleur Islands, Louisiana. The banks off of the central Louisiana coast and near the Mississippi Delta are also important marine turtle feeding areas. Hatchlings have a pelagic phase followed by movement inshore.

The offshore waters, coastal beaches, and contiguous wetlands of the northern Gulf of Mexico are populated by both resident and migratory species of coastal and marine birds. They are herein separated into five major groups: seabirds, shorebirds, wading birds, marsh birds, and waterfowl. Many species are strongly pelagic, and therefore rarely seen from shore. The remaining species, which are most susceptible to potential deleterious effects resulting from OCS related activities, are found within coastal and inshore habitats. Recent surveys indicate that Louisiana and Texas are among the most important states in the south and southeastern U.S. in terms of nesting colony sites and total number of nesting coastal and marine birds. Fidelity to these nesting sites varies from year to year along the Gulf Coast, with site abandonment along the northern Gulf Coast often attributed to habitat alteration and excessive human disturbance. Feeding habitats include the waters and coastal shores of the open Gulf, bays and estuaries, brackish and freshwater wetlands, as well as coastal farmlands and landfills.

The following coastal and marine bird species, which inhabit or frequent the north-central and western Gulf of Mexico coastal areas, are recognized by the FWS as either endangered or threatened: piping plover, whooping crane, eskimo curlew, bald eagle, peregrine falcon, eastern brown pelican, and interior least tern.

The piping plover is a distinctive ringed plover of central and eastern North America. It nests on sandy beaches along coasts or inland lakeshores, preferring areas with scant vegetation and cover. Uncontrolled hunting in the early 1900's brought the species close to extinction. Its historic populations have remained depressed because of losses to their specific nesting and wintering habitat requirements. Preliminary information indicates that Texas is the most important wintering area, in the extensive sand flats of Laguna Madre and sand flats associated with barrier island passes and river mouths. In Louisiana, barrier islands appear to provide the most suitable habitat. Unfortunately, some of these sites are experiencing dramatic rates of land loss via erosion.

Wild whooping cranes presently occur in two migratory populations. The first nests in Canada and migrates to wintering grounds along the Texas coast on salt flats and islands in and around Aransas National Wildlife Refuge (ANWR). The second population was established in southeastern Idaho. Results from the 1991 winter census indicated only 132 whooping cranes in the peak ANWR population, representing a drop in the previous year's census of 146 birds (USDOI, FWS, 1992). Cranes feed during the winter months on a wide variety of foods gathered from the coastal environment.

The eskimo curlew is a small American curlew that nests on Arctic tundra and migrates to wintering habitat in the pampas grasslands of southern South America. On migration, it formerly occurred in large flocks on the prairies and on coastal grasslands. The last confirmed sightings of the eskimo curlew were in Texas during 1981, Alaska in 1983, and Canada (Northwest Territories) in 1985. Census efforts are underway to ascertain whether the species is extinct.

The bald eagle is 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. The historical nesting range of the bald eagle in the southeast U.S. included the entire coastal plain and along major rivers and lakes.

The peregrine falcon of North America has been separated into three subspecies: the Arctic peregrine, American peregrine, and Peale's peregrine. The Arctic peregrine nests in tundra areas of North American and Greenland, and migrates south to the Gulf Coast, West Indies, and Central and South America. Coastal areas along the Gulf Coast are well known as foci for migrant peregrines, where beaches, flats, and wetlands are used for hunting and resting.

The eastern brown pelican is a colonial nesting species that feeds entirely upon fishes captured by plunge diving in coastal waters. It rarely ventures beyond 20 miles from the coast. A severe reduction in its population occurred during the late 1950's and is attributed to the toxic effects of the insecticide dichloro diphenyl trichloroethane (DDT).

Subsequent to the 1972 U.S. ban on the use of DDT, there has been a marked increase in populations of the brown pelican along its entire former range.

The least tern is the smallest North American tern. Populations occurring within the Mississippi basin have been eliminated as a result of destruction and alteration of nesting habitat along the Mississippi River and its tributaries. Least terns are the only nesting tern species in Louisiana to use mainland beaches, and they will use human made and managed spoil 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 production of OCS oil and gas, particularly offshore Louisiana, has been a major source of revenue in the study area since 1954. Data from the 1990 Census show that the average annual payroll associated with oil and gas activities amounts to approximately $3.3 billion for the Gulf of Mexico. Average annual tax dollars generated per employee in the offshore oil and gas program are estimated at 8% of payroll revenues. Thus, State and local taxes generated annually by development of offshore oil and gas in the Gulf of Mexico coastal region are estimated at $267.9 million.

Job estimates as of August 1994 show that 30,900 jobs are directly or indirectly dependent on the offshore program. Approximately 81% of these jobs are associated with activity in the Central Gulf and 19% are related to the Western Gulf. Nearly all offshore related employment in the Central Gulf is due to activity offshore Louisiana. In addition, offshore activity in other areas of the Gulf also generates employment in Louisiana. Estimates of direct employment offshore are 25,000 workers in the Central Gulf, and 5,900 workers in the Western Gulf.

The offshore oil exploration industry including oil companies, drilling contractors, and oilfield suppliers provide a major input to Louisiana's economy. 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 Murphy Exploration & Production Company's operations in West Cameron Block 579 is located in Cameron, Louisiana.

III. UNAVOIDABLE ADVERSE ENVIRONMENTAL IMPACTS

A. WATER QUALITY

Routine operational discharges (drilling muds and cuttings, produced waters, deck drainage, and sanitary and domestic wastes) or accidental spills may temporarily degrade some measures of water quality adjacent to the proposed surface location. However, these impacts decrease to very low with distance from the source. Therefore, the impact from these factors is considered to be low.

B. EFFECTS ON MARINE ORGANISMS

Some organisms will be killed and some will experience temporary functional impairment 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. Any effects on mammals and turtles would be significant.

C. EFFECTS ON THREATENED OR ENDANGERED SPECIES

Activities resulting from the proposed action have a potential to cause detrimental effects on endangered cetaceans. These cetaceans could be impacted by operational discharges, helicopter and 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 low to very low. Sale related oil spills of any size are expected to seldom contact endangered and threatened cetaceans.

Activities resulting from the proposed action have a potential to affect Alabama, Choctawhatchee, and Perdido Key beach mice detrimentally, however, due to the location of the block, the potential for spills or related activities impacting their habitat is minimal.

Activities resulting from the proposed action have a potential to affect marine turtles detrimentally. Marine turtles could be impacted by anchoring, structure installation, pipeline placement, dredging, blowouts, operational discharges, OCS related trash and debris, vessel traffic, explosive platform removals, oil spill response activities, oil spills,

and habitat and water quality degradation. The effects of the majority of these activities are expected to be sublethal. Sale related oil spills of any size are seldom expected to contact marine turtles.

Activities resulting from the proposed action have the potential to affect Central Gulf coastal and marine birds detrimentally. It is expected that the effects from the major impact producing factors on coastal and marine birds are negligible and of nominal occurrence. As a result, there will be no discernible disturbance of Gulf coastal and marine birds.

The brown pelican, Arctic peregrine falcon, bald eagle, piping plover, and least tern may be impacted by helicopter and service vessel traffic, offshore pipeline landfalls, entanglement in and ingestion of offshore oil and gas related plastic debris, and oil spills. The effects of these activities are expected to be sublethal. Sale related oil spills of any size are expected to seldom contact threatened and endangered birds or their critical feeding, resting, or nesting habitats.

The Gulf sturgeon can be impacted by oil spills resulting from the proposed action. The impact is expected to result in sublethal effects and cause short term physiological or behavioral changes.

D. WETLANDS AND BEACH

The major impact producing factors associated with the proposed action that could affect barrier beaches include oil spills, pipeline emplacements, navigation canal dredging and maintenance dredging, and support infrastructure (pipeline landfalls, navigation channels, service bases, platform yards, etc.) are not expected to occur, because no new infrastructure construction is anticipated as a result of the proposed action. Although some maintenance dredging is expected to occur, this activity has not been shown to have a negative impact on barriers, and the need for dredging cannot be attributed to the small percentage of vessel traffic in these channels.

Deepening of the channel to Port Fourchon is not expected to affect nearby barrier features.

The proposed activity is not expected to result in permanent alterations of barrier beach configurations, except in localized areas downdrift from navigation channels that have been dredged and deepened. Strategic placement of dredged material resulting from these actions can mitigate adverse impacts upon those localized areas.

Wetlands include forested wetlands (bottomland and swamp), tidal marshes, and seagrasses. Swamps and marshes occur throughout the coastal zone. Seagrasses are restricted in distribution to small areas behind barrier islands in Mississippi and

Chandeleur Sounds. Impact producing factors resulting from OCS oil and gas activities that could adversely affect wetlands include oil spills, pipeline construction and remaining canals, dredging of new navigation channels, maintenance dredging and vessel usage of existing navigation channels, and construction and maintenance of onshore facilities in wetland areas.

The proposed activity is expected to result in a small amount of dieback and mortality of wetlands vegetation as a result of contacts from oil spills. Most of these wetlands will recover within 10 years and the remaining will be converted to open water. Some wetlands are projected to be eroded along channel margins as a result of OCS vessel wake erosion, and some wetlands are projected to be created as a result of beneficial disposal of dredged material from channel deepening projects.

E. AIR QUALITY

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

Emissions of pollutants in the atmosphere for these activities are likely 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 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, structure placement, oil spills, production platform removals, seismic surveys, subsurface blowouts, pipeline trenching, and OCS discharges of drilling muds, produced waters and Naturally Occurring Radioactive Material (NORM), and underwater OCS obstructions.

The effects on and the extent of damage from an oil spill to Gulf commercial fisheries is restricted by time and location. Oil spills that contact coastal bays, estuaries, and waters of the OCS when high concentrations of pelagic eggs and larvae are present have the greatest potential to damage commercial fishery resources. Migratory species, such as mackerel, cobia, and crevalle could be impacted if oil spills contact nearshore open waters. An oil spill contacting a low energy inshore area would affect localized populations of commercial fishery resources, such as menhaden, shrimp, and blue crabs. Chronic oiling in an inshore area would affect all life stages of a localized population of a sessile fishery resource such as oysters.

The emplacement of a structure, with a surrounding 100 m navigational safety zone, in water depths less than 152 m, results in the loss of approximately 6 ha of bottom trawling area to commercial fishermen and causes space-use conflicts. Gear conflicts from underwater OCS obstructions result in losses of trawl and 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 Central Planning Area (CPA) are inconsequential and of nominal occurrence. As a result, there will be little discernible disturbance to Gulf commercial fisheries.

G. SHIP NAVIGATION

Very little interference can be expected between drilling rig and vessels utilized during exploratory operations and ships that use established fairways.

Approved aids to navigation will be installed on the drilling rig and all marine vessels servicing these operations in accordance with USCG regulations.

H. ARCHAEOLOGICAL RESOURCES

The greatest potential impact to an historic and/or prehistoric archaeological resource as a result of the proposed action would result from a contact between OCS offshore activity (platform installation, drilling rig emplacement, dredging or pipeline project) and a historic shipwreck.

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 prior to an operator beginning oil and gas activities in a lease block are estimated to be 90% effective at identifying possible sites.

There is only a small probability that an unknown cultural resource exists in the lease area. No archaeological survey was required on this lease, as per MMS Letter to Lessees dated September 5, 1995.

Murphy Exploration & Production Company, as a prudent operator, agrees that, should any site, structure or object of historical or archaeological significance be discovered during drilling and exploration 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 archaeological resources from damage until the Director has given directions as to its preservation.

I. RECREATION AND AESTHETIC VALUES

The drilling rig, platform and marine vessels may represent an obstacle to some sport fishermen, but such effect is expected to be negligible and not permanent. However, due to the water depth (± 215 feet) in West Cameron Block 579 and the distance of the block offshore, the likelihood of interference with sport fishermen is remote.

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

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

A 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 washing up on Louisiana and Texas beaches should be very low. 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 Plan of Exploration comply with Louisiana's Coastal Management Program and will be conducted in a manner consistent with such program.

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