

In Reply Refer To: MS 5231

January 17, 1996

Sonat Exploration Company
Attention: Ms. Julie Ward
Post Office Box 4792
Houston, Texas 77210-4792

Gentlemen:

Reference is made to the following plan received December 13, 1995:

Type Plan - Initial Plan of Exploration
Lease - OCS-G 12840
Block - 227
Area - East Cameron
Activities Proposed - Wells Nos. 1 through 4

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-5263 and should be referenced in your communication and correspondence concerning this plan.

Sincerely,

Donald C. Howard
Regional Supervisor
Field Operations

bcc: Lease OCS-G 12840 POD File (MS 5032)
MS 5034 w/public info. copy of the plan
and accomp. info.

BNewton:cic:01/08/96:POEGOM

INFORMATION SERVICE

RECEIVED

RECEIVED

NOTED - SCHEXNAILDRE

Sonat Exploration Company
Gulf Coast Region
4 Greenway Plaza
Post Office Box 4792
Houston TX 77210 4792
713 940 4000

N-5263

SONAT EXPLORATION

December 11, 1995

U. S. Department of the Interior
Minerals Management Service
Gulf of Mexico OCS Region
Attn: MS 5231
1201 Elmwood Park Boulevard
New Orleans, Louisiana 70123-2394



RE: Plan of Exploration (POE)
East Cameron Block 227
Lease OCS-G-12840

Gentlemen:

According to the provisions of Title 30 CFR 250.33, we are submitting for your review and approval nine (9) copies of the Plan of Exploration (POE) for the subject lease block. Five (5) copies are "Proprietary Information" and four copies are "Public Information".

Excluded from the Public Information copy is the proposed bottomhole, depth of well, structure map, shallow hazards report, and anticipated discharges. As operator of this lease, we request that this information and data be considered exempt and dispensed for use only by your office.

The lease OCS-G-12840 will expire on April 30, 1996. Your assistance in expediting the plan will be greatly appreciated.

If you have any questions or need additional information, please call me at 713/940-4021.

Sincerely,

A handwritten signature in cursive script that reads "Julie Ward".

Julie Ward
Sr. Regulatory Compliance Specialist

JAW/tdh

cc: U.S. Department of the Interior
Minerals Management Service
Gulf of Mexico OCS Region
825 Kaliste Saloon Road
Brandywine II, Suite 201
Lafayette, LA 70508

**SONAT EXPLORATION COMPANY
 PLAN OF EXPLORATION
 EAST CAMERON BLOCK 227
 LEASE OCS-G-12840
 OFFSHORE, LOUISIANA**



Sonat Exploration Company, as designated Operator of the subject block, submits this proposed Plan of Exploration (POE), in accordance with the regulations contained in Title 30 CFR 250.33 and more specifically defined in the Minerals Management Service Letters to Lessees and Operators dated October 12, 1988 and September 5, 1989.

In accordance to Letter to Lessees and Operators (LTL) dated November 5, 1993, which amends Title 30 CFR Part 256 surety bond requirements applicable to OCS, lessees and operators, Sonat has in place a \$3,000,000 area wide bond to covers all existing and future activities in the Gulf of Mexico.

1. **PROPOSED EXPLORATORY OPERATIONS**

Sonat Exploration Company plans to drill four wells in East Cameron Area, Block 227 as described below:

<u>Well No.</u>	<u>Location</u>	<u>Water Depth</u>
1	PSL: 700' FWL & 4700' FNL of Block 227	125'
2	PSL: 690' FWL & 4510' FNL of Block 227	125'
3	PSL: 909' FWL & 4293' FNL of Block 227	125'
4	PSL: 2600' FWL & 4900' FNL of Block 227	125'

Plats showing the proposed surface locations are shown as Attachment A. Our proposed start up date is January 1, 1996. If successful, and Initial Development Operations Coordination Document will follow.

<u>ACTIVITY</u>	<u>ESTIMATED START DATE</u>	<u>DURATION (DAYS)</u>
Drill & Evaluate Well #1	01/01/96	26
Drill & Evaluate Well #2	01/27/96	27
Drill & Evaluate Well #3	02/23/96	28
Drill & Evaluate Well #4	03/22/96	30

2. **CULTURAL RESOURCES**

An archeological survey report should be on file. The proposed activity area contains no known cultural resource, shipwreck sites, or objects of historic value on the block. However, should any find of possible archeological significance be encountered the proper government authorities will be notified and their outlined steps will be followed to preserve this find.

3. **DESCRIPTION OF RIG**

Water depth at East Cameron 227 is approximately 125'. The proposed wells will be drilled with a typical self-supporting jack-up rig normally found throughout the Gulf of Mexico. When a rig is selected, the rig specifications will be made a part of the Application for Permit to Drill. A typical jack-up rig drawing is shown as Attachment B.

Since a particular rig has not been selected, specifics regarding safety and pollution prevention are not possible. However, the rig which is ultimately contracted will contain all necessary safety and pollution prevention devices in working order as required by the Minerals Management Service. The appropriate life rafts, life jackets, rig buoys, etc. as prescribed by the U. S. Coast Guard will be maintained on the facility at all times.

Sonat's planned well control operation to surface casing depth typically incorporates a diverter system, an annular (BAG) type blowout preventer, and a drilling spool to be installed on the drive pipe while drilling the hole for the conductor casing and the surface casing. For drilling below the surface casing, blowout prevention equipment will included: four (4) remote-controlled, hydraulically-operated blowout preventers, including two (2) equipped with pipe rams, one (1) with blind rams, and one (1) annular (BAG) type drilling spool; choke line and manifold; kill-line and fill-up line.

4. **STRUCTURE MAP**

Proprietary information.

5. **BATHYMETRIC MAP**

The bathymetric map showing the proposed surface location of the proposed wells are shown as Attachment E.

6. **SHALLOW HAZARDS**

Proprietary information.

7. **OIL SPILL CONTINGENCY PLAN**

Drilling operations shall be performed in accordance with industry standards to prevention pollution of the environment. Reference is made to Sonat's Oil Spill Contingency Plan (OSCP) submitted for approval on June 20, 1995. This plan designates an Oil Spill Response Operating Team consisting of Sonat's personnel and contract personnel. The team's duties are to eliminate the source of the spill, deploy the most reliable means available transportation to monitor the movement of a slick, remove all sources of possible ignition and contain and remove the slick if possible.

Sonat is a member of Clean Gulf Association (CGA). The CGA stores pollution control equipment at two locations in Texas (Port Aransas and Galveston), five locations in Louisiana (Venice, Grand Isle, Intracoastal City, Houma and Cameron) one location in Alabama (Theodore), and one location in Florida (Panama City).

Each base is equipped with fast response units and there is a barge mounted high volume open seas skimmer based at Grand Isle, Louisiana. In addition to providing equipment, the CGA also supplies

advisors for clean-up operations. Equipment available from CGA and its locations is listed in the CGA Manual, Volume I, Section III.

Sonat will make every effort to see that a spill is responded to as quickly as possible. Response equipment and response time will be suitable for anticipated environmental conditions in the area.

In the event of a spill at East Cameron Block 227 requiring mobilization of containment and removal equipment, it will be Sonat's first reaction to use the utility boat it will have under contract and working in the area or to secure a suitable boat in Intracoastal City, LA. After loading out response equipment at Intracoastal City, LA, the fastest possible response time for East Cameron Block 227 can be estimated as follows:

	<u>HOURS</u>
1. Procure boat capable of handling oil spill containment equipment and deployment to the nearest CGA Base in Intracoastal City, LA.	4.0
2. Load out Fast Response Unit	1.0
3. Travel to lease site from CGA Base (Intracoastal City, LA)	
To Open Waters	1.5
From Open Waters to Lease Site (±82 miles @ 12 MPH)	<u>7.0</u>
Estimated Total Response Time	13.5 hrs.

It is important to note that the above time estimate is based on the major assumption that a suitable boat can be procured within 4.0 hours of a spill. Pollution equipment located in Intracoastal City, LA would be utilized first with additional equipment transported from the nearest CGA equipment base on-site as required.

Below are Sonat's projected trajectory of a spill utilizing information in the latest oil spill risk analysis.

LAUNCH AREA C32
LAND SEGMENT NOS.

- 8 - (Matagorda, TX) - Has 1% chance of impact.
- 9 - (Brazoria, TX) - Has 2% chance of impact.
- 10 - (Galveston, TX) - Has 9% chance of impact.
- 10 - (Chambers, TX) - Has 9% chance of impact.
- 11 - (Jefferson, TX) - Has 6% chance of impact.
- 12 - (Cameron, LA) - Has 8% chance of impact.
- 13 - (Vermilion, LA) - Has 2% chance of impact.
- 14 - (Iberia, LA) - Has less than 0.5% chance of impact.
- 15 - (St. Mary, LA) - Has less than 0.5% chance of impact.
- 16 - (Terrebonne, LA) - Has less than 0.5% chance of impact.
- 17 - (LaFourche, LA) - Has less than 0.5% chance of impact.
- 18 - (Jefferson, LA) - Has less than 0.5% chance of impact.
- 19 - (Plaquemines, LA) - Has less than 0.5% chance of impact.

Sonat will use TX Map 3 and 4 and LA Maps 5, 6, and 7 in the Clean Gulf Association Manual to identify the biologically sensitive areas. The biologically sensitive areas will be protected by using the referenced protection response mode. Maps and charts which will be referenced are listed below:

- * TX Map 3- Section V-55.0a through V-62.0b to Identify the Biologically Sensitive Areas.
- * TX Map 3- Section V-63.0a through V-68.0a for the Protection Response Modes for the Biologically Sensitive Areas.
- * TX Map 4- Section V-71.0a through V-74.1a to Identify the Biologically Sensitive Areas.
- * TX Map 4- Section V-75.0a through V-77.0a pertaining to the Protection Response Modes for the Biologically Sensitive Areas.
- * LA Map 5- Section V-99.0a through V-100.0c to Identify the Biologically Sensitive Areas.
- * LA Map 5- Section V-101.0a through V-102.1 pertaining to the Protection Response Modes for the Biologically Sensitive Areas.
- * LA Map 6- Section V-105.0a through V-107.0c to Identify the Biologically Sensitive Areas.
- * LA Map 6- Section 109.0a through V-112.2 pertaining to the Protection Response Modes for the Biologically Sensitive Areas.
- * LA Map 7- Section V-115.0a through V-117.0c to Identify the Biologically Sensitive Areas.
- * LA Map 7- Section V-119.0a through V-122.1 pertaining to the Protection Response Modes for the Biologically Sensitive Areas.

Sonat will make every effort to see that any spill is responded to as quickly as possible.

8. NEW OR UNUSUAL TECHNOLOGY

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

9. LEASE STIPULATIONS

Sonat is not aware of any operational lease stipulations for East Cameron Block 227.

10. DISCHARGES

All discharges associated with the drilling of the proposed wells will be in accordance with the permit limitations addressed in the Environmental Protection Agency NPDES General Permit GMG 290000 for the Gulf of Mexico.

Discharges will contain no free oil and will be in compliance with and monitored as required by the permit. Any drilling fluid contaminated with oil will be transported to shore for proper disposal at an authorized disposal site.

Solid domestic waste will be transported to shore for proper disposal at an authorized disposal site, and sewage will be treated on location by U.S. Coast Guard approved marine sanitation devices.

Muds may be discharged for purposes of dilution or at end of well. Surveillance of the fluid is accomplished through daily inventory of mud and chemicals added to the system; in addition to monthly and end-of-well toxicity tests required by EPA. Typical mud which may be used in the drilling of the proposed wells are shown as Attachment G.

11. HYDROGEN SULFIDE

A geological review of East Cameron Block 227 area indicates no evidence of hydrogen sulfide. Sonat is not aware of any significant H₂S production in the general vicinity of East Cameron Block 227. We request that East Cameron Block 227 area be classified as "zones where the absence of H₂S has been confirmed" in accordance with 30 CFR 250.67(c).

12. COASTAL ZONE CONSISTENCY CERTIFICATION

The certification of Coastal Zone Management Consistency for the State of Louisiana is enclosed as Attachment I. A copy of the Public Notice request for publication in the Louisiana, Baton Rouge State Times is included as Attachment J, as well as the appropriate Parish Journal being included as Attachment J.

13. PROJECTED AIR EMISSIONS

Projected emissions are detailed in Attachment K.

14. BASE OF OPERATIONS

East Cameron Block 227 lies approximately 65 miles from nearest coastline. A map showing the location of Block 227 relative to the shoreline and onshore base is enclosed as Attachment L.

Onshore support facilities for the drilling and completion operations in this plan will be located at Intracoastal City, Louisiana. Sonat maintains a 24-hour communication and loading facility there. No onshore expansion or construction is anticipated with respect to the proposed activities.

The proposed operation is expected to require the following support vessels for transportation of equipment and personnel to and from East Cameron Block 227:

<u>VESSELS</u>	<u>ESTIMATED ROUND TRIP FREQUENCY</u>
Workboat	2 trips/week
Crewboat	3-4 trips/week
Helicopter	1 trip/week

15. **ENVIRONMENTAL**

An Environmental Report is enclosed as Attachment M.

16. **INQUIRIES**

Inquiries regarding this plan may be made to the following representative of Sonat Exploration Company:

Julie Ward
Sonat Exploration Company
P. O. Box 4792
Houston, Texas 77210-4792
713/940-4021

List of Attachments

- A. Proposed Surface Location Plats
- B. Typical Jack-Up Rig
- C. Proprietary Information
- D. Proprietary Information
- E. Bathymetric Map
- F. Proprietary Information
- G. Typical Mud Composition
- H. Proprietary Information
- I. Coastal Zone Consistency Certification
- J. Public Notice
- K. Project Emissions
- L. Vicinity Map
- M. Environmental Report

Y = -8,951.200'

X = 1,465,241.952'

X = 1,480,000.000'

BEST AVAILABLE COPY

4,700' FNL

4,700'

Proposed Surface Location

Water Depth = 125'

700' FWL

Y = -23,709.248'

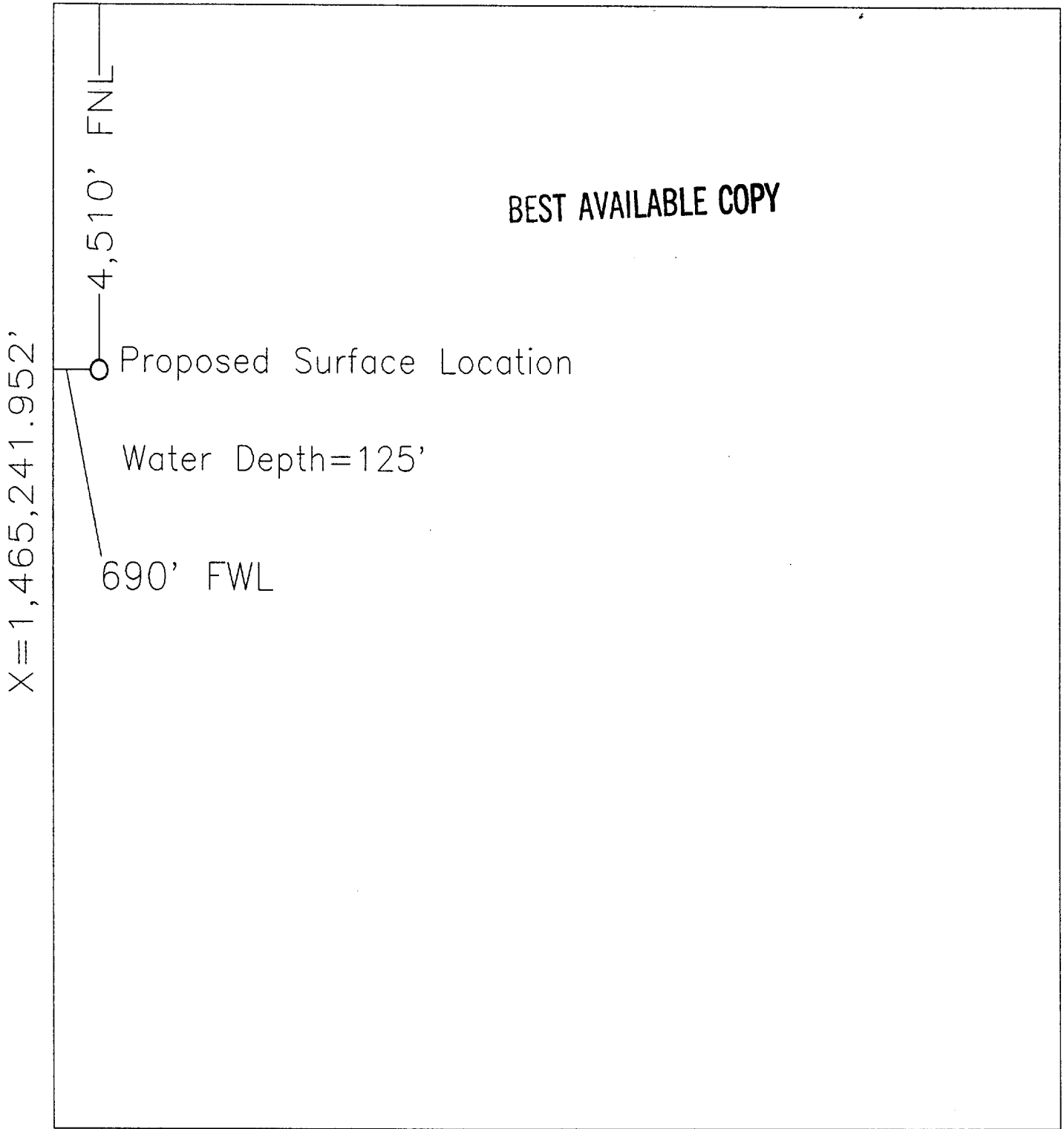
SONAT EXPLORATION

East Cameron Blk. 227
OCS-G-12840

Proposed Surface Location
Well No. 1

ATTACHMENT A-1

Y = -8,951.200'



BEST AVAILABLE COPY

X = 1,465,241.952'

X = 1,480,000.000'

Y = -23,709.248'

SONAT EXPLORATION

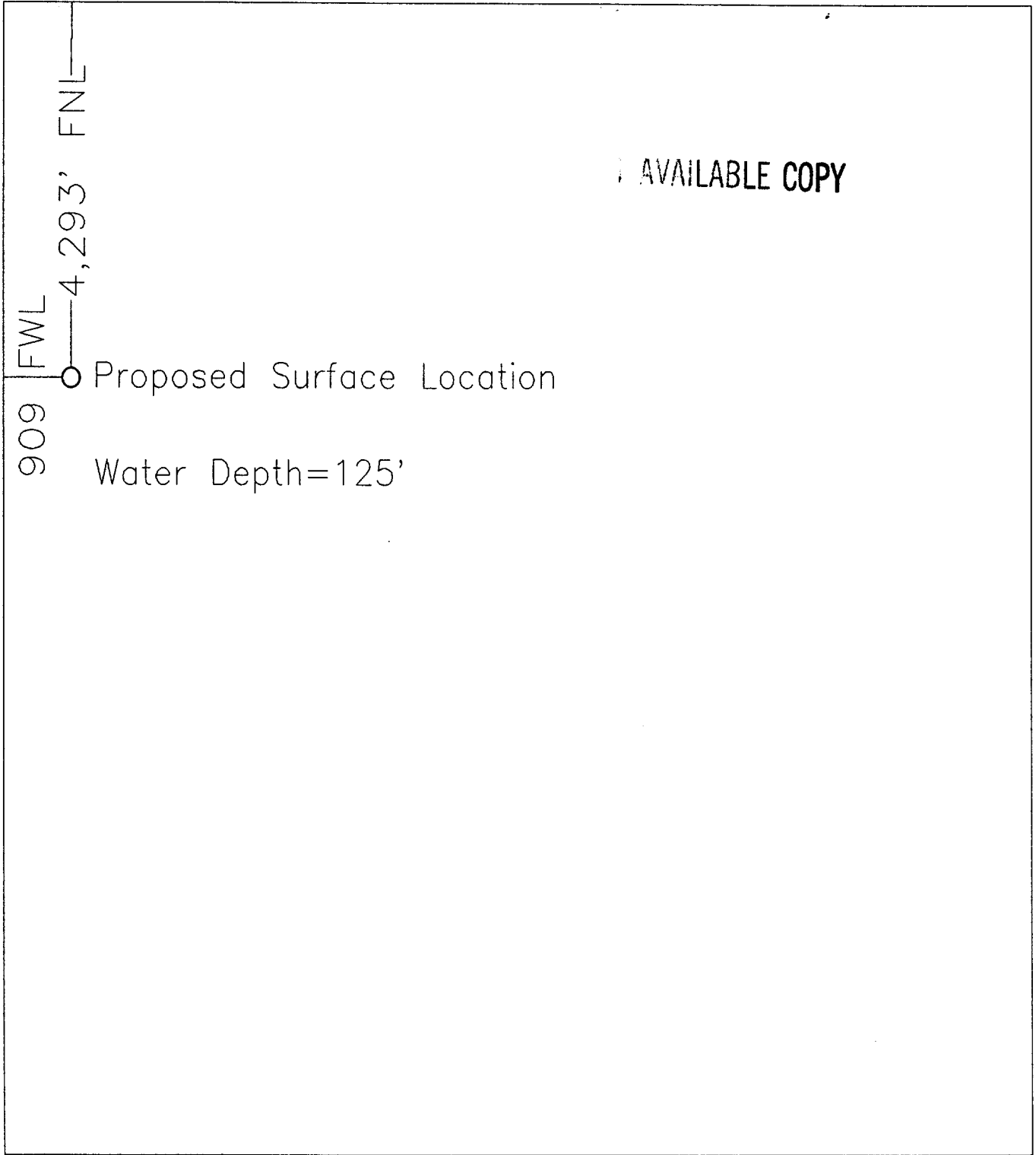
East Cameron Blk. 227
OCS-G-12840

Proposed Surface Location
Well No. 2

ATTACHMENT A-3

Y = -8,951.200'

X = 1,465,241.952'



AVAILABLE COPY

Proposed Surface Location

Water Depth = 125'

X = 1,480,000.000'

Y = -23,709.248'

SONAT EXPLORATION

East Cameron Blk. 227

OCS-G-12840

Proposed Surface Location

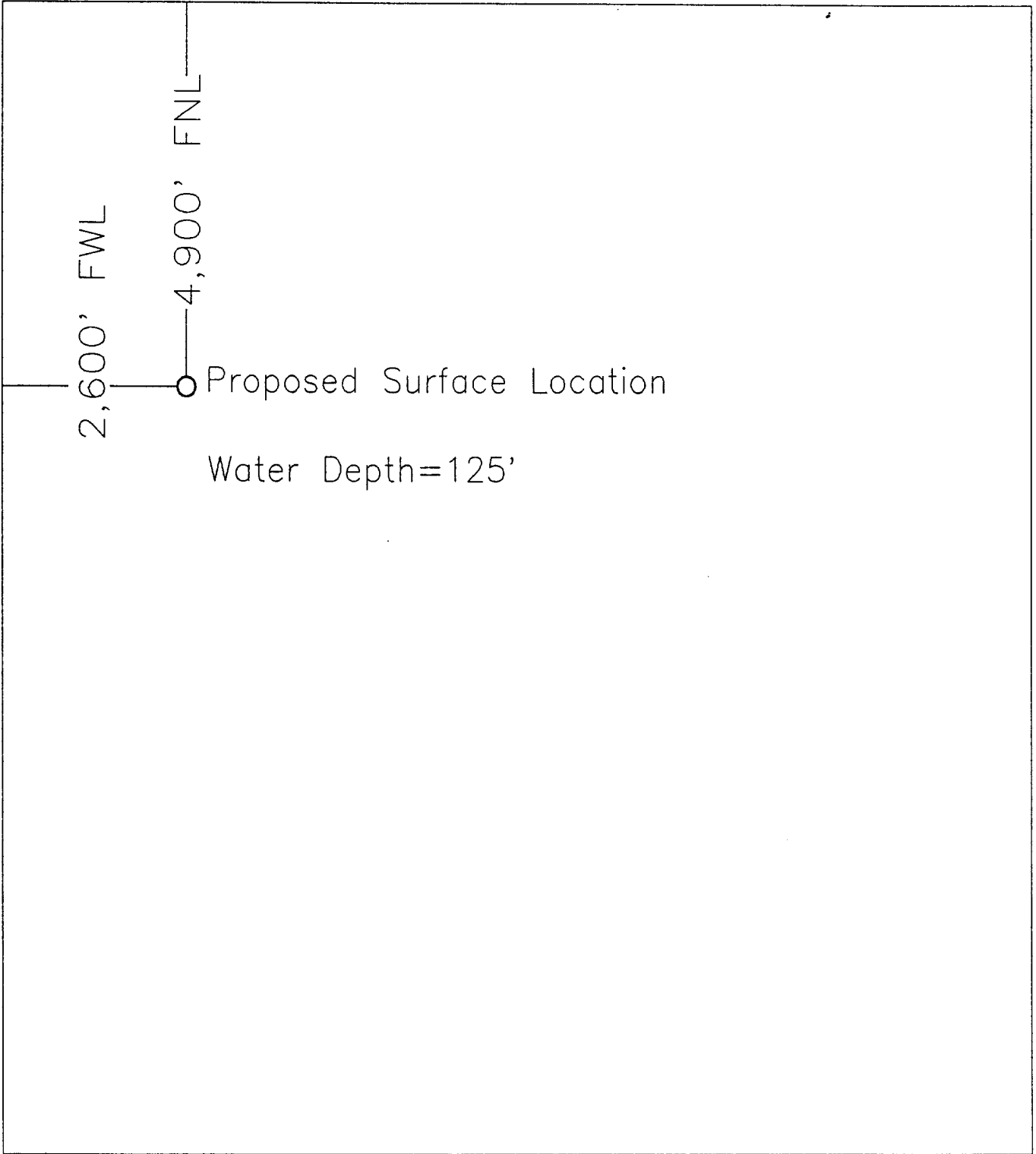
Well No. 3

ATTACHMENT A-5

Y = -8,951.200'

X = 1,465,241.952'

X = 1,480,000.000'



Proposed Surface Location

Water Depth = 125'

2,600' FWL

4,900' FNL

Y = -23,709.248'

SONAT EXPLORATION

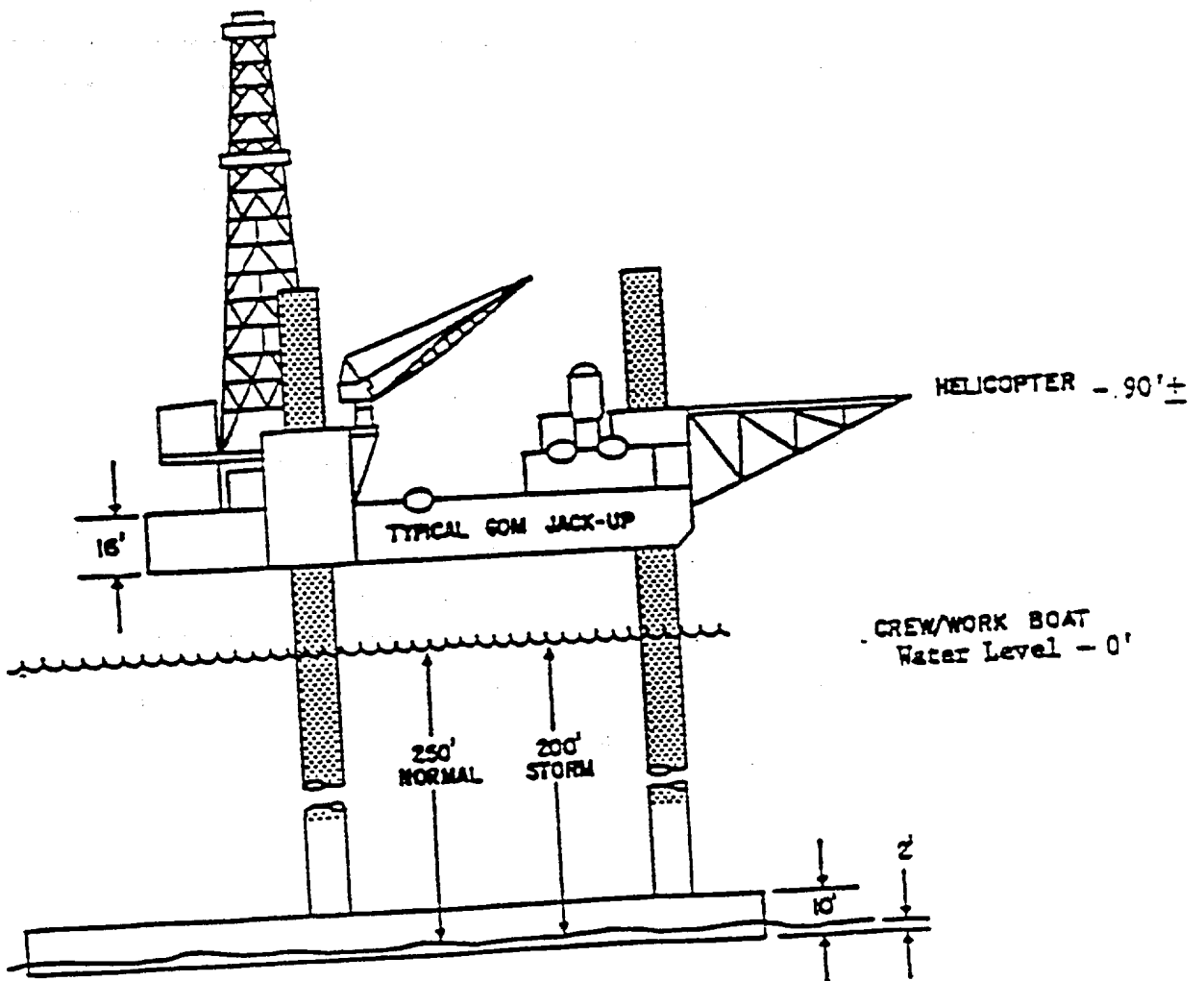
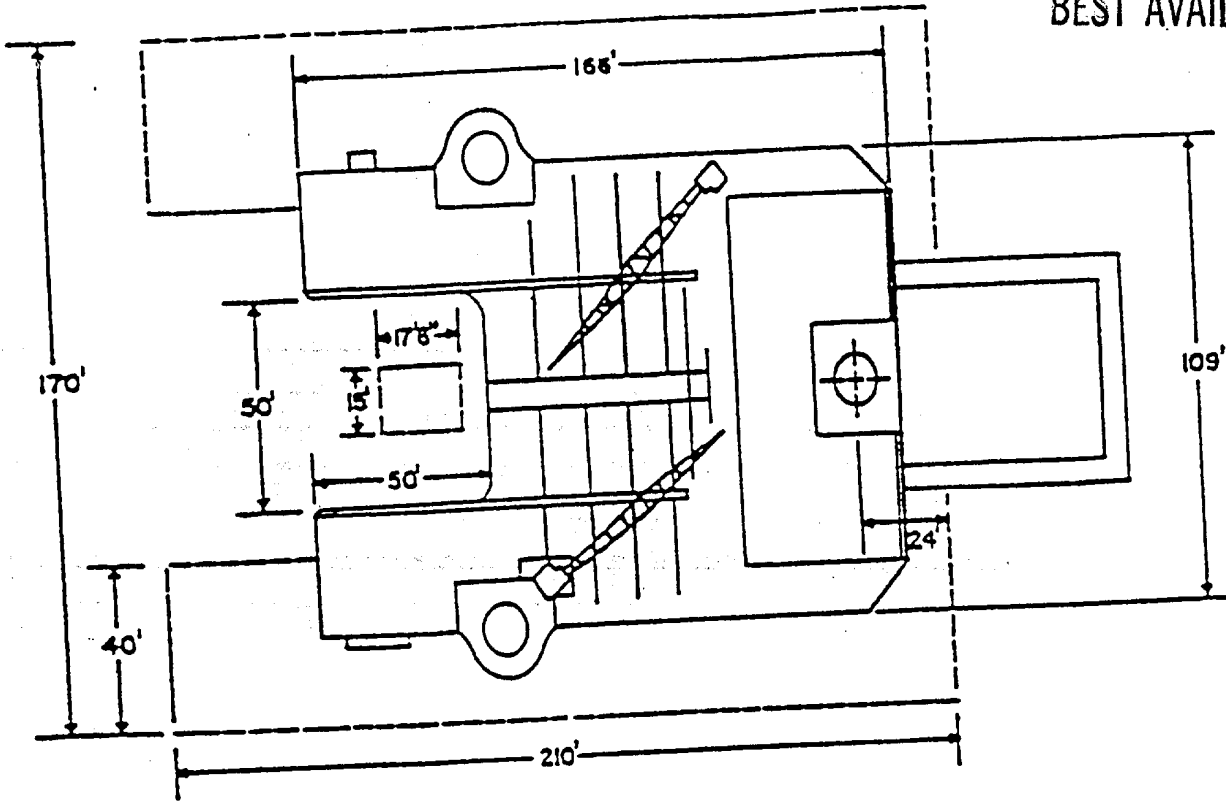
East Cameron Blk. 227

OCS-G-12840

Proposed Surface Location

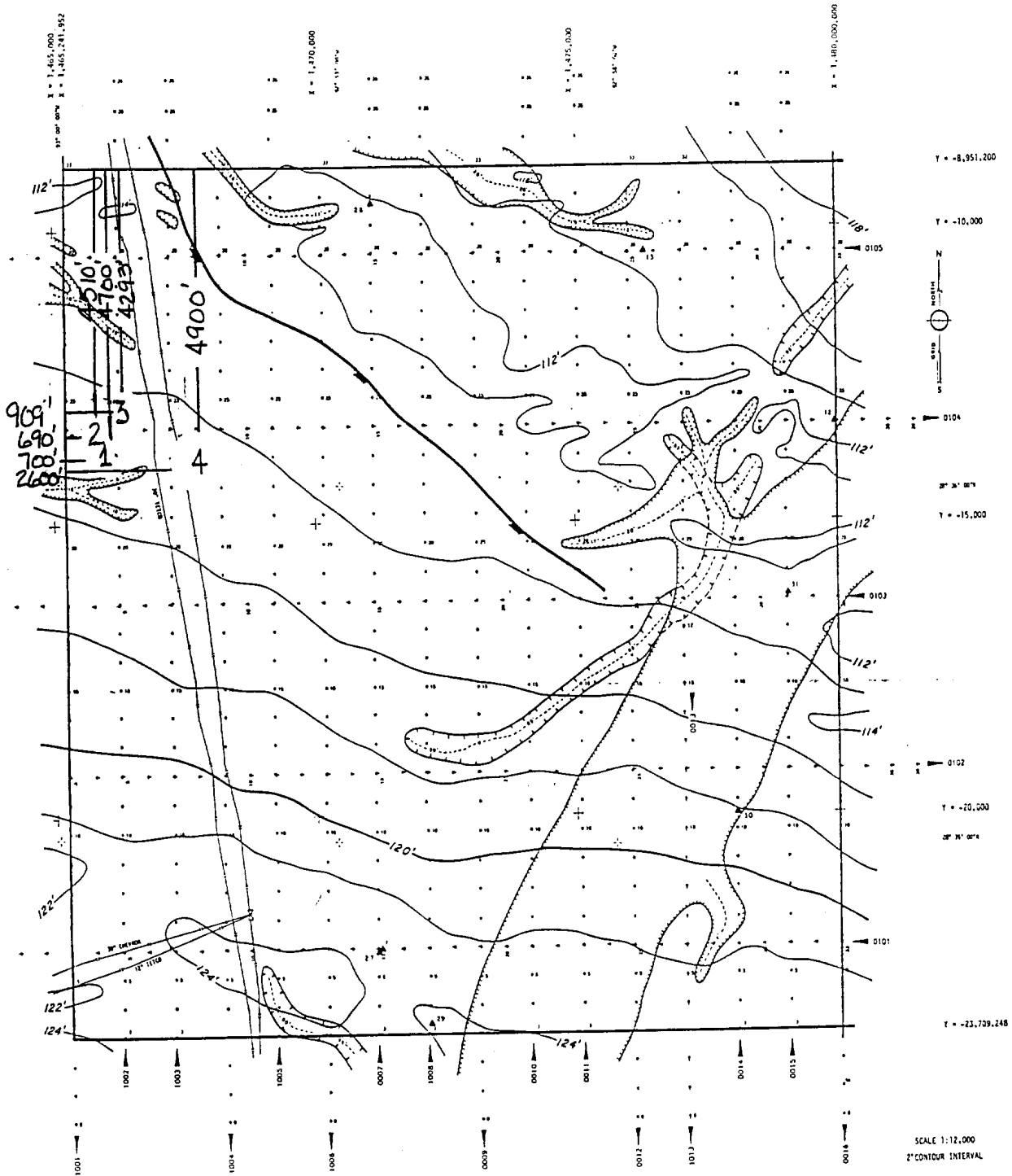
Well No. 4

ATTACHMENT A-7



Well #1 PSL @ 700'FWL & 4700'FNL of Block 227
 Well #2 PSL @ 690'FWL & 4510'FNL of Block 227
 Well #3 PSL @ 909'FWL & 4293'FNL of Block 227
 Well #4 PSL @ 2600'FWL & 4900'FNL of Block 227

BEST AVAILABLE COPY



- LEGEND:**
- SURVEY TRACK AND POSITION FILE
 - 0002 SURVEY DIRECTION AND LINE NO.
 - PIPELINE (EXISTING)
 - TAP
 - ▲ MAGNETIC ANOMALY (UNIDENTIFIED)
 - LATE PLEISTOCENE/EARLY HOLOCENE FLUVIAL CHANNEL
 - EARLY WISCONSIN/MIDDLE WISCONSIN FLUVIAL CHANNEL
 - DEPTH OF DEEPEST PORTION OF CHANNEL (50%)
 - NORMAL FAULT (PROJECTED SEAFLOOR INTERSECTION)

SEE FIGURE 1 FOR GENERAL NOTES

GEOPHYSICAL SURVEY BATHYMETRIC, SEAFLOOR AND NEAR-SEAFLOOR FEATURES MAP BLOCK 227 EAST CAMERON AREA OFFSHORE LOUISIANA		SONAT EXPLORATION COMPANY KINSELLA, COOK & ASSOCIATES, INC. OFFSHORE SURVEYING <small>SONAT MEMBER LABOR & ENERGY GROUP & SUPPLYWIRE & TOWER</small>
DRN JFL CHK RA	PREP RTG LCL TAD JAPP JG CHK RA	FILE NO 11-1-088-092 DATE 8-26-91 FIG NO MAP 2 OF 4

Attachment E

Detailed List of Drilling Mud Components and Mud Additives

Barite (weight material)	Mud Detergent
Gel (bentonite)	Aluminum Sterate
Caustic Soda (NaOH)	Mica
Sodium Bicarbonate	Nut Plug (ground walnut hulls)
Fibrous Material	Lubrikleen (lubricant)
Chrome Lignosulfonate	CMC (Sodium Carboxymethyl Cellulose)
Processed Lignite	Lime
Soda Ash	Salt
Starch	Polyanionic Cellulose
Anionic Liquid Polymer	
Sodium Acid Pyrophosphate	

Oil Soluble surfactants to free pipe if necessary.

Mud Disposal Plan

Dependent upon mud type, mud will be disposed of as follows:

Water based mud and cuttings will be disposed of overboard in the standard industry method. The disposal of such mud will be closely monitored to assure that no pollutants are in the discharged mud cuttings.

Oil based mud will be disposed of by transporting to an approved disposal facility on land.

Sonat will endeavor to assure that no pollutants are discharged during mud disposal. All disposal of mud will conform to the appropriate regulations.

**COASTAL ZONE MANAGEMENT
CONSISTENCY CERTIFICATION**

Initial Plan of Exploration
Type of Plan

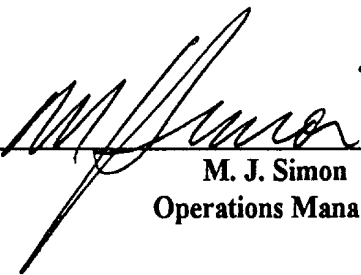
East Cameron Block 227
Area

OCS-G-12840
Lease Number

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

Arrangements have been made with the State Times in Baton Rouge, Louisiana to publish a public notice of the proposed activities on January 3, 1996. Additionally, arrangements have been made with the Cameron Parish Pilot to publish a public notice of the proposed activities on January 3, 1996.

Sonat Exploration Company



M. J. Simon
Operations Manager

December 11, 1995
Date

ATTACHMENT I

Sonat Exploration Company
Gulf Coast Region
4 Greenway Plaza
Post Office Box 4792
Houston TX 77210 4792
713 940 4000

SONAT EXPLORATION

December 20, 1995

The Advocate
State Times
ATTN: Vicki Thompson
P. O. Box 588
Baton Rouge, Louisiana 70821-0588

RE: Initial Plan of Exploration
East Cameron Block 227
Lease OCS-G-12840

Dear Ms. Thompson:

The Coastal Management Division with the Louisiana Department of Natural Resources request publication of the Plan of Exploration for the subject lease.

Sonat request that the publication notice be published as a legal ad on or after January 3, 1996. Please certify to the Coastal Management Division that a request has been made for publication.

Should you have any questions, or require additional information, please contact me at 713/940-4021.

Sincerely,



Julie Ward
Sr. Regulatory Compliance Specialist

JAW/tdh

Attachment

Attachment J-1

Sonat Exploration Company
Gulf Coast Region
4 Greenway Plaza
Post Office Box 4792
Houston TX 77210 4792
713 940 4000

SONAT EXPLORATION

December 20, 1995

Cameron Parish Pilot
P. O. Box 995
DeQuincy, LA 70633

RE: Initial Plan of Exploration
East Cameron Block 227
Lease OCS-G-12840

Gentlemen:

The Coastal Management Division with the Louisiana Department of Natural Resources request publication of the Plan of Exploration for the subject lease.

Sonat request that the publication notice be published as a legal ad on or after January 3, 1996. Please certify to the Coastal Management Division that a request has been made for publication.

Should you have any questions, or require additional information, please contact me at 713/940-4021.

Sincerely,



Julie Ward
Sr. Regulatory Compliance Specialist

JAW/tdh

Attachment

Attachment J-2

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

Applicant: Sonat Exploration Company
P. O. Box 4792
Houston, Texas 77210-4792

Location: East Cameron Area
Lease OCS-G-12840
Block 227
Lease offering date May 1, 1991

Description: Proposed Initial Plan of exploration for the above area provides for the exploration for oil and gas. Exploration activities shall include crews and equipment by helicopter and/or cargo vessel from an existing onshore base located at Intracoastal City, Louisiana. No ecological 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:a.m. to 5:00 p.m., Monday through Friday. The public is requested to submit comments to:

Coastal Management Division
Attention: OCS Plans
P. O. Box 44487
Baton Rouge, Louisiana 70804-4487

Comments must be received within 15 days from the date of this notice or 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 Programs.

i:\snt\poe\add.doc

AIR EMISSION CALCULATIONS

COMPANY	Sonat Exploration Company
AREA	East Cameron
BLOCK	227
LEASE	OCS-G-12840
PLATFORM	
WELL	#1-4
LATITUDE	
LONGITUDE	
COMPANY CONTACT	Julie Ward
TELEPHONE NO.	713/940-4021
REMARKS	Drill and Evaluate

Lat
 #1 - 28.61905
 #2 - 28.61957
 #3 - 28.62017
 #4 - 28.61857

Long
 -92.95154
 -92.95158
 -92.95091
 -92.94562

BEST AVAILABLE COPY

COMPANY	AREA	BLOCK	LEASE	PLATFORM	WELL	LATITUDE	LONGITUDE	CONTACT	PHONE	REMARKS	TONS PER YEAR										
											CO	SOx	NOx	VOC	CO	SOx	NOx	VOC	CO		
Sonat Exploration Company OPERATIONS	East Cameron	227	OCS-G-1284		#1-4			Julie Ward	713640-2021	Drill and Evaluate											
	EQUIPMENT	HP	MAX FUEL	ACT FUEL	HR/D	DAYS	TSP	SOx	NOx	VOC	CO	TSP	SOx	NOx	VOC	CO					
	Diesel Engines	MMBTU/HR	SCF/HR	SCF/D																	
	Nat. Gas Engines																				
DRILLING	PRIME MOVER-600hp diesel	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	0.00	0.00	0.00	0.00	
	PRIME MOVER-600hp diesel	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	0.00	0.00	0.00	0.00	
	PRIME MOVER-600hp diesel	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	0.00	0.00	0.00	0.00	
	AUXILIARY EQUIP-600hp diesel	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	0.00	0.00	0.00	0.00	
	VESSELS-600hp diesel	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	0.00	0.00	0.00	0.00	
PIPELINE	PIPELINE LAY BARGE diesel	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	0.00	0.00	0.00	0.00	
INSTALLATION	SUPPORT VESSEL diesel	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	0.00	0.00	0.00	0.00	
	PIPELINE BURY BARGE diesel	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	0.00	0.00	0.00	0.00	
	SUPPORT VESSEL diesel	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	0.00	0.00	0.00	0.00	
FACILITY	DERRICK BARGE diesel	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	0.00	0.00	0.00	0.00	
INSTALLATION	MATERIAL TUG diesel	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	0.00	0.00	0.00	0.00	
PRODUCTION	RECIP <600hp diesel	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	0.00	0.00	0.00	0.00	
	RECIP >600hp diesel	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	0.00	0.00	0.00	0.00	
	SUPPORT VESSEL diesel	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	0.00	0.00	0.00	0.00	
	TURBINE 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	0.00	0.00	0.00	0.00	
	RECIP 2 cycle lean 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	0.00	0.00	0.00	0.00	
	RECIP 4 cycle lean 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	0.00	0.00	0.00	0.00	
	RECIP 4 cycle rich 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	0.00	0.00	0.00	0.00	
	RECIP 2 cycle rich 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	0.00	0.00	0.00	0.00	
	MISC	BPD	SCF/HR	COUNT																	
	TANK-																				
	FLARE																				
	PROCESS VENT-																				
	FUGITIVES-																				
	GLYCOL STILL VENT-																				
DRILLING	OIL BURN																				
WELL TEST	GAS FLARE																				
	1988 YEAR TOTAL						2164.50	2164.50	2164.50	2164.50	2164.50	2164.50	2164.50	2164.50	2164.50	2164.50	2164.50	2164.50	2164.50	2164.50	55735.37
EXEMPTION CALCULATION	DISTANCE FROM LAND IN MILES																				65.0

BEST AVAILABLE COPY

AIR EMISSION CALCULATIONS

COMPANY	AREA	BLOCK	LEASE	PLATFORM	WELL
Sonat Explora	East Camero	227	OCS-G-1284		#1-4
Emitted					
Year	Substance				
	TSP	SOx	NOx	HC	CO
1996	3.48	19.03	144.07	4.71	31.73
1997	0.00	0.00	0.00	0.00	0.00
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	2164.50	2164.50	2164.50	2164.50	55735.37

BEST AVAILABLE COPY

AIR EMISSION CALCULATIONS

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	AP42 3.2-1	4/76 & 8/84	

Equipment/Emission Factors	units	TSP	SOx	NOx	VOC	CO	REF.	DATE
NG Turbines	gms/hp-hr		0.00247	1.3	0.01	0.83	AP42 3.2-2	4/93
NG 2-cycle lean	gms/hp-hr		0.00185	11	0.43	1.5	AP42 3.2-2	4/93
NG 4-cycle lean	gms/hp-hr		0.00185	12	0.72	1.6	AP42 3.2-2	4/93
NG 4-cycle rich	gms/hp-hr		0.00185	10	0.14	8.6	AP42 3.2-2	4/93
Diesel Recip. < 600 hp.	gms/hp-hr	1	0.931	14	1.12	3.03	AP42 3.3-1	4/93
Diesel Recip. > 600 hp.	gms/hp-hr	0.24	1.49	11	0.33	2.4	AP42 3.4-1	4/93
NG Heaters/Boilers/Burners	lbs/mmmscf	5	0.6	140	2.8	35	AP42 1.4-1	4/93
NG Flares	lbs/mmmscf		0.57	71.4	60.3	388.5	AP42 11.5-1	9/91
Liquid Flaring	lbs/bbls	0.42	6.6	2.3	0.01	0.21	AP421.3-1	4/93
Tank Vapors	lbs/bbl				0.03		E&P Forum	1/93
Fugitives	lbs/hr/comp.				0.000025		API Study	12/93
Glycol Dehydrator Vent	lbs/mmmscf				6.6		La. DEQ	1991
Gas Venting	lbs/scf				0.0034			

BEST AVAILABLE COPY

General

This document (MMS.WK3) was prepared through the cooperative efforts of those professionals in the oil industry including the API/OOC Gulf of Mexico Air Quality Task Force, who deal with air emission issues. This document is intended to standardize the way we estimate an air emission inventory for Plans of Exploration (POE) and 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 sheet gives the basis for the emission factors used in the emission spreadsheet as well as some general instructions. This file contains 8 sheets: A,B,C,D,E,F,G,& H. A is the Instruction Sheet, B is the Title Sheet, C is the Factors Sheet, D,E,F, & G are the Emission Spreadsheets and H is the Summary Sheet. These sheets will describe and calculate emissions from an activity.

Title Sheet

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.

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.

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.
2. The sulfur content assumed is 2000 grains/mmscf (3.33 ppm). If your concentration is different then ratio your emission factor up or down.

Diesel-Fired Prime Movers

1. Diesel sulfur level 0.4% by wt
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 only the emissions from the boats within 25 mile radius of the well/platform.
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. NG Sulfur content is 2000 grains per million cu ft
2. VOCs emissions based on total non-methane HCs

BEST AVAILABLE COPY

Gas Flares

1. Flare is non-smoking
2. 1050 btu/cu. ft. for NG heating value
3. The sulfur content assumed is 2000 grains/mmscf (3.33 ppm). If your concentration is different then ratio your emission factor up or down or you may use the following formula

$$\text{H2S flared (lbs/hr)} = \text{Gas flared (cu ft/hr)} \times \text{ppm H2S} \times 10\text{E-06} \times 34/379$$

$$\text{SOx emis (lbs/hr)} = \text{H2S flared (lbs/hr)} \times 64/34$$

Liquid Flares

1. Assume 1% by wt Sulfur maximum in the crude oil.
2. VOC equals non-methane HCs
3. Particulate emissions assumes Grade 5 oil.

Tanks

1. Tank emissions assumes uncontrolled fixed roof tank.

Fugitives

1. Fugitives are based on the 1993 Star Environmental Report. It requires that you count or estimate your components.

Glycol Dehydrator Vent

1. The dehydrated gas rate 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 (1994, 1995, etc.). The operation may include drilling only or drilling in conjunction with other activities such as pipeline installation or production operations. For the first year use sheet D, for the second year use sheet E, third use F, fourth use G and if you need more you will have to insert a sheet and copy the spreadsheet to the new sheet. The year (CELL D:A38) should be changed and the different operating parameters entered to calculate revised emissions for that subsequent 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 hrs X days X ton/2000 lbs (Actual emissions)

To customize the spreadsheet for your application you may want to delete lines for non-applicable equipment/activities or you can input "0" for the HP of equipment that does not apply. You may also need to copy/insert an entire line if more than one similar 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

BEST AVAILABLE COPY

Summary Sheet

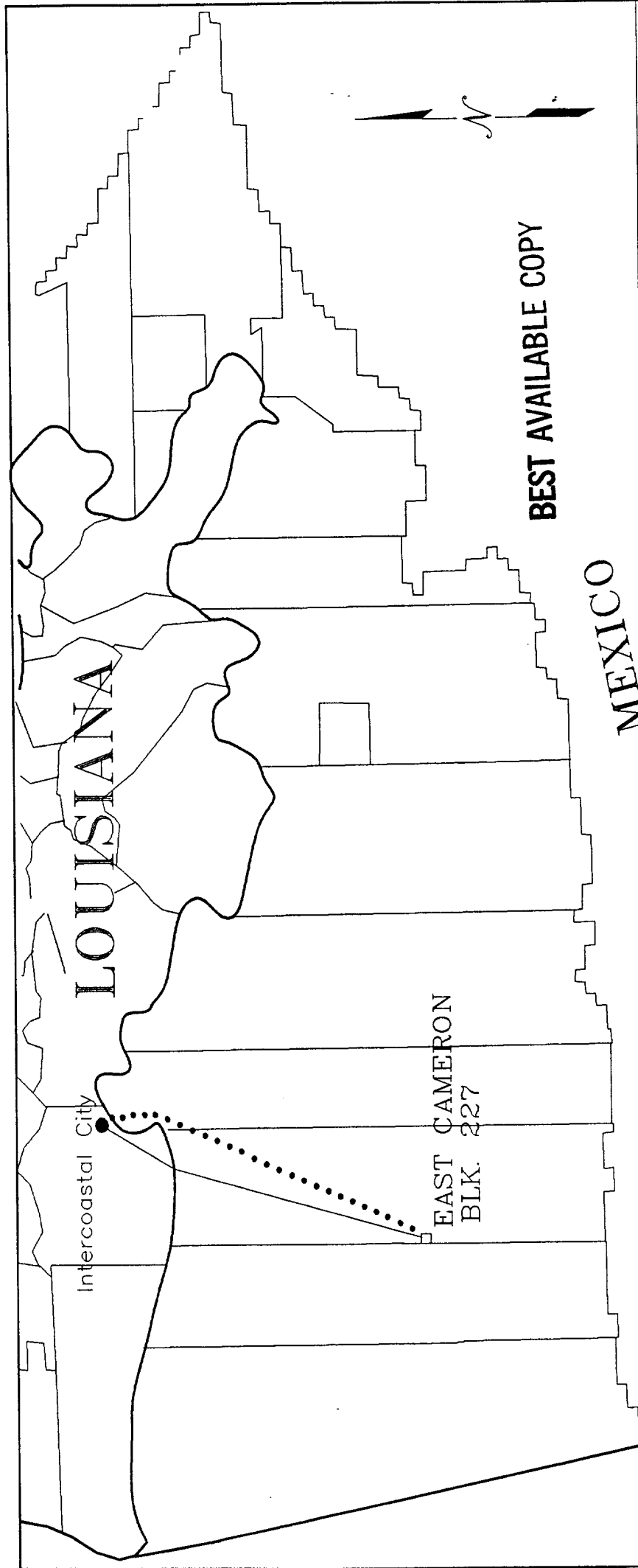
The Summary Sheet is designed to show a proposed estimate of emissions from an activity over a future period of time. In this example ten years was chosen. Each row links to the corresponding emission calculation spreadsheet for that year. For example, Row 7 of the summary corresponds to the annual totals from Sheet D. Row 8 links to the second emission calculation spreadsheet, Row 9 to the third and Row 10 to the fourth. Row 11 - 16 will carry down the emissions from the last spreadsheet with an emission rate greater than zero. The Summary Sheet will always carry down the last non-zero emission total. For example, if emission calculations are done for the years 1994 and 1995, then the 1995 total will be carried down through the year 2003. Row 17 of the summary sheet reflects the allowable for the air quality review exemption determination. If more or less years are needed you will have to modify the spreadsheet.

Print Instructions

The table below lists macros that were written to print sheets A, C, D, E, F, G, & H.

- \A - This macro prints 3 pages of instructions (sheet A).
- \C - This macro prints the emissions factors sheet (sheet C).
- \D - This macro prints the emissions calculations sheet (sheet D).
- \E - This macro prints the emissions calculations sheet (sheet E).
- \F - This macro prints the emissions calculations sheet (sheet F).
- \G - This macro prints the emissions calculations sheet (sheet G).
- \H - This macro prints the emissions calculations sheet (sheet H).
- \X - This macro prints all sheets - A, C, D, E, F, G, & H.

To run one of these macros, hold down ALT and press the letter in the macro range name. For example, to run the macro \A, press ALT-a.



BEST AVAILABLE COPY

SONAT EXPLORATION
 East Cameron Blk. 227
 OCS-G-12840
 VICINITY MAP

GULF OF MEXICO

— HELICOPTER ROUTE
 BOAT ROUTE

SONAT EXPLORATION COMPANY

ENVIRONMENTAL REPORT

EXPLORATION PHASE

EAST CAMERON AREA

BLOCK 227

OFFSHORE LOUISIANA

LEASE OCS G 12840

Attachment M

I. TITLE PAGE

A. Project Name:

East Cameron Area, Block 227

B. Area Name:

East Cameron Area

C. Block Number:

Block 227

D. Lessee and Operator

Sonat Exploration Company

E. Rig:

Typical Jack-Up Rig

F. Date of Preparation of Environmental Report

December 11, 1995

G. Lessee Representative:

Ms. Julie Ward
Sonat Exploration Company
P.O. Box 4792
Houston, TX 77210-4792
(713) 940-4021 (office)

II. DESCRIPTION OF PROPOSED ACTION

A. Lessee and Operator:

Sonat Exploration Company

B. Lease Number and Location:

OCS G 12840; East Cameron Area, Block 227

C. Objective

The objective of the proposed activities are to conduct exploration activities in East Cameron Area, Block 227. The proposed surface locations are shown as Attachment A.

D. Rig

The wells will be drilled and evaluated by using a typical jack-up rig in East Cameron Area, Block 227. The typical jack-up rig information is shown as Attachment B.

E. Time Frame

The proposed drilling activities will commence on or about January 1, 1996. No new onshore activities are associated with the proposed project.

F. Travel Modes, Routes, and Frequency

The lessee will operate two supply boats in support of the drilling operation. Each will make one round trip a day to the rig, a total of about 60 round trips per month from a support base located in Intracoastal City, Louisiana. The helicopter will be utilized for air transportation to the drilling operation. Two round trips per week will be made to change personnel. Other trips will be made as needed to provide materials and service personnel as needed in the operation.

Unless otherwise noted, all routes to or from East Cameron Block 227 will initiate or terminate in Intracoastal City, Louisiana as shown on Attachment C.

G. Equipment and Onshore Support System

1. Equipment

The structure to be utilized will be a typical jack-up rig. The rig contractor will be determined at a later date. The drilling equipment to be used is described in Attachment B.

2. Safety System and Monitoring Systems

The best available and safest technologies will be utilized throughout the proposed project. This includes meeting all applicable requirements for equipment types, general project layout, safety systems and equipment, and monitoring systems.

3. Onshore Support Facilities

The onshore support base for the exploration of East Cameron Block 227 will be Intracoastal City, Louisiana. No new facilities or additional onshore employment are envisioned in relation to this activity. Existing facilities are anticipated to be sufficient for all support activities.

H. New Technology

No new technology will be required for this operation.

I. Vicinity Map

East Cameron Block 227 is located approximately 65 miles to the nearest coastline. The water depth at the proposed surface location is approximately 125'.

J. Project Location

The specific location of East Cameron Block 227 and of Intracoastal, Louisiana is shown in Attachment C.

K. Certificate of Coastal Zone and Consistency:

A certificate of Coastal Zone Consistency is shown as Attachment D.

L. Compliance with OCS Orders and Other Regulations:

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

M. Product Transportation and Quantity

Not applicable to our exploration plan.

III. Description of Affected Environment

A. Commercial Fishing

The Gulf of Mexico provides nearly 20% of the commercial fish landings in the continental U.S. During 1991, commercial landings of all fisheries in the Gulf totaled nearly 1.5 billion pounds, valued at about \$641 million (US DOC, NMFS, 1992a).

Menhaden, with landings of 1.2 billion, valued at \$41 million, was the most important Gulf species in quantity landed during 1991. Shrimp, with landings of \$229 million pounds, valued at \$411 million, was the most important Gulf species in value landed during 1991. Gulf oyster fishery accounted for 43% of the national total with landings of 13.7 million pounds of meats, valued at about \$35.5 million. The Gulf blue crab fishery accounted for 29% of the national total with landings of 65.4 million pounds, valued at \$23.5 million.

Alabama ranked last among Central and Western Gulf states in total commercial landings for 1991 with 13.6 million pounds landed, valued at \$18.3 million. Shrimp was the most important fishery landed, with 6.5 million pounds, valued at \$14.2 million. In addition, during 1991, the following six species each accounted for landings valued at over \$125,000: blue crab, shark, black mullet, red snapper, flounder, and the American oyster. Alabama had about 3,470 and 2,515 commercial saltwater, licensed fishermen during 1991 and 1992, respectively.

Mississippi ranked second among Central and Western Gulf states in total commercial fishery landings for 1991 with 208.6 million pounds landed, valued at an estimated \$20.5 million. Shrimp was the most important fishery with 6 million pounds landed, valued at \$9.6 million. Menhaden landings during 1991, are estimated at 200 million pounds landed, valued at \$9.4 million. In addition, during 1991, the following four species each accounted for landings valued at over \$150,000: red snapper, blue crab, American oyster, and black mullet. In 1991 and 1992, Mississippi had about 3,329 and 2,515 commercial saltwater, licensed fishermen, respectively.

Louisiana ranked first among Central and Western Gulf states with total commercial fishery landings for 1991, with nearly 1.2 billion pounds landed, valued at \$163.4 million. Menhaden was the highest quantity finfish, with 1.0 billion pounds landed, valued at \$48 million. Shrimp was the highest valued shellfish, with 27.3 million pounds landed, valued at \$36.7 million. In addition, during 1991, the following nine species each accounted for landings valued at over \$1 million: black drum, red mullet roe, shark, red snapper, spotted sea trout, bluefin tuna, yellowfin tuna, blue crab, and the American oyster. In 1991 and 1992, Louisiana had about 19,923 and 19,241 commercial saltwater, licensed fishermen, respectively.

Texas ranked third among Central and Western Gulf states with total commercial fishery landings for 1990, with nearly 99 million pounds landed, valued at \$182 million. In quantity and value, shrimp ranked first, with about 92 million pounds, valued at \$17 million. In addition, during 1991, the following four species each accounted for landings valued at over \$500,000: black drum, red snapper, blue crab, and the American oyster. In 1991 and 1992, Texas had about 17,483 and 14,519 commercial saltwater, licensed fishermen, respectively.

The Gulf of Mexico yielded the nation's second largest regional commercial fishery by weight in 1991. The Gulf Fisheries landings were 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 over fished 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, and spring lobster, 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 stocks 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 over fishing occurring; and (3) pink shrimp yields are at or beyond maximum sustainable levels.

B. Shipping

Fairways play an important role in the avoidance of collisions on the OCS, particularly in the case of the larger ocean-going vessels, but not all vessels stay within the fairways. Many, such as fishing boats and OCS support vessels, travel through areas with high concentration 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.

East Cameron Block 227 is clear of all shipping fairways and anchorage areas. The drilling rig and each of the marine vessels servicing this operation will be equipped with all U.S. Coast Guard required navigational safety aids.

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 in connection with marine fishing and beach-related activities. The shorefront along the Gulf Coasts of Florida, Alabama, Mississippi, Louisiana and Texas offer a diversity of natural and developed landscapes and seascapes. The coastal beaches, barrier islands, estuarine bays and sounds, river deltas and tidal marshes are extensively and intensively used for recreational activity by residents of the Gulf Coast States and tourists from throughout the nation, as well as from foreign countries. 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 attract residents and visitors throughout the year. 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 and potentially affected by offshore leasing 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 production platforms. The recreational fishing associated with oil and gas structures stems from their function as high-profile artificial fishing reefs. A report on the 1984 Marine Recreational Fishery Statistics Surveys presented by NMFS at the Sixth Annual Gulf of Mexico Information Transfer Meeting indicates a majority of the offshore recreational fishing in the Central Planning Area (CPA) is directly associated with oil and gas structures. There are currently about 4,500 offshore oil and gas structures in the Central and Western Planning Areas (WPA). Many other studies have demonstrated that when oil and gas structures are accessible to marine recreational fishermen and scuba divers they are a major attraction for marine recreational activities and are a positive influence on tourism and coastal economics.

The coastal shorelines of the CPA and WPA contain extensive public park and recreation areas, private resorts, and commercial lodgings. 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 center. 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 central zone of the Gulf Coast states have been valued at an estimated \$20 billion/year.

D. Potential or Known Cultural Resources

Archaeological resources are any objects or features that are manmade or modified by human activity. Significant archaeological resources are either historic or prehistoric and, as defined by 36 CFR 800, Section 60.6, generally include properties that are greater than 50 years old and are associated with events that have made a significant contribution to the broad patterns of our history; are associated with the lives of persons significant in the past; embody the distinctive

characteristics of a type, period, or method of construction; represent the work of a master; possess high artistic values; represent a significant and distinguishable entity whose components may lack individual distinction; or have yielded, or may be likely to yield, information important in prehistory or history.

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. A recently completed Texas A&M University (Garrison et al, 11189) updated the Shipwreck database. Statistical analysis of over 4,000 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 57 potential shipwrecks.

Geomorphic features that have a high probability for associated prehistoric archaeological resources in the Central and Western Gulf include barrier islands and back-barrier embayments, river channels and associated flood plains 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. Through 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.

E. Ecologically Sensitive Features

Coastal barrier landforms consist of islands, spits, and beaches that stretch in an irregular chain from Florida to Texas. 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. Barrier landforms are young coastal features. The term "barrier" identifies the structure as one that protects other features, such as bays, lagoons, estuaries, and marshes from direct impacts of the open ocean. By separating coastal waters from the ocean, barriers contribute to the amount of estuarine habitat along the coast. As much as two-thirds of the high-value Atlantic and Gulf Coast species of fish are considered to be directly dependent during some stage of their life on conditions in these estuaries.

Another benefit of both the barriers and their adjacent marshes and bays is that of providing habitats for a large number of birds and other animals, including several threatened or endangered species, such as the loggerhead turtle, the southern bald eagle, alligator, and brown pelican.

Louisiana has the most rapidly retreating beaches in the nation. The average retreat rate for Fourchon beach over the past 100 years has been 35 to 65. According to Dolan et al., 1982, the statewide average is in excess of 3.6 m/yr (12 ft/yr). Beaches along the deltaic plain in Louisiana fit into one of three categories, depending on the stage of the deltaic cycle that the landmass is experiencing. When a major distributor of the Mississippi River is abandoned, subsidence results in a local sea-level transgression that transforms the active delta into an erosional headland with flanking barriers. Fourchon Beach is an example of an eroding headland beach. With increased age and subsidence, the barrier shoreline evolves into a transgressive barrier-island arc that is separated from the mainland by a lagoon. Isles Derniers is an example of a barrier that underwent the transformation from a headland beach to a barrier arc within the past century. Eventually with continued subsidence and sediment deprivation, the island ceases to exist.

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 South Texas coast and the Gulf Island National Seashore offshore Mississippi. Within the Central Gulf, the Gulf Islands National Seashore includes Ship, Horn and Petit Bois Island offshore Mississippi and the Davis Bayou area along the mainland where the park administrative offices and visitor center are located. The islands include about 50 km (30 miles) of beaches fronting the Gulf of Mexico.

Wetland habitat types occurring along the Gulf Coast include fresh brackish and saline marshes; forested wetlands; and small areas of mangroves. Marshes and mangroves form an interface between marine and terrestrial habitats, while forested wetlands occur inland from marsh areas. Wetland habitats may occupy narrow bands or vast expanses and can consist of sharply delineated zones of different species, monotonous strands of a single species, or mixed-plant species communities.

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 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 km² (50 square miles) for the period 1955-1978.

A recent study funded by MMS entitled "Causes of Wetland Loss in the Coastal Central Gulf of Mexico", investigated how wetland habitats have changed in the northern Gulf of Mexico as a result of natural processes and human activities. The study's primary focus was on assessing and quantifying the direct and indirect impacts of OCS-related activities on wetland areas. Canal construction for pipelines and navigation has been the major OCS-related impacting factor.

The shelf and shelf edge of the Central and Western Gulf are characterized by topographic features that are inhabited by benthic 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 recreational important fishes; they are unique to the extent that they are small, isolated areas of such 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.

The Central Gulf of Mexico list 16 topographic features. None of those listed are in or near the vicinity of the proposed operations in East Cameron Block 227.

F. Existing Pipelines and Cables

As a prudent operator, Sonat will comply our operations in accordance with the provisions specific in Minerals Management Service Notice to Lessees 83-03 in order to avoid all pipelines and/or cables in the vicinity of the proposed operation.

G. Other Mineral Uses

The activities proposed for East Cameron Block 227 will have no direct or indirect impact on other minerals.

H. Ocean Dumping

Ocean dumping is prohibited in this area.

I. Endangered or Threatened Species

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.

Bald Eagle (*Haliaeetus leucocephalus*)

Nests of the endangered bald eagle are found in Louisiana and Mississippi; there is no known nesting in Alabama. There were 45 active bald eagle nests located in coastal Louisiana parishes during the 1989-1990 winter nesting period. The majority of the nesting sites are west of the Mississippi River to the Atchafalaya Basin with a few scattered nests east of the Mississippi River. Eagles are opportunistic feeders, with fish constituting the bulk of their diet. They will feed on waterfowl and shorebirds, particularly sick or injured individuals, as well as carrion. A primary cause of the eagle's decline is due to pesticide ingestion and indiscriminate shooting of both immature and adult birds. An oil spill, reaching the coast, could contaminate the eagle's food supply (fish, waterfowl and shorebirds). Because of the distance involved and since the project will utilize existing onshore facilities, Sonat will comply with all applicable OCS Orders (thus minimizing the already small chance of a spill and in the event of a spill will follow Sonat's approved Oil Spill Contingency Plan, impact on this species if any, should be minimized (U.S. Department of the Interior FEIS Sales 141/143).

The **Arctic Peregrine Falcon** (*Falco peregrinus tundrius*), an endangered species since 1970, breeds in the North American tundra and winters along the gulf coast from Florida west to the eastern Mexican coast and Baja California, south to mid-Chile and mid-Argentina, and possibly on Pacific Islands. Factors leading to this species decline are: 1) the presence of chlorinated hydrocarbon pesticides in the falcon's food supply; 2) human disturbances; and 3) adverse weather conditions during nesting. While the arctic peregrine migrates south through a broad area of Eastern and Middle North America to the gulf coast, it funnels into coastal areas and concentrates along the beaches and barrier islands. During spring, migrating falcons are observed offshore along the coastal areas of the Central Gulf of Mexico. The falcons are occasionally sighted on Breton Island and Bon Secour National Wildlife Refuges during the winter. At Delta National Wildlife Refuge, the falcons are frequently observed on the refuge during the winter. In 1987, peregrines peaked in late October at 8 to 12 birds and were present most of the winter. The winter population has remained stable for the last 3 years, and one or more birds can be seen perching on survey towers or pilings on any given day. Possible impacts from oil and gas exploration include contamination of the falcon's food supply by an oil spill and disruption of habitat along their migration route. Since this project will utilize existing onshore facilities, and since the already small chances of a spill will be minimized, these activities should not affect this species. (U.S. Department of the Interior, FEIS Sales 131, 135 and 137).

The endangered species, **Red-Cockaded Woodpecker** (*Picoides borealis*) occurs in Texas coastal counties and not likely to be affected by the proposed activities.

The **brown pelican** (*Pelecanus occidentalis*), was originally listed as endangered on October 13, 1970. The species was delisted in Alabama on February 4, 1985, but is still listed as endangered in Louisiana and Mississippi. Two nesting colonies exist in Louisiana, one on Queen Bess Island, Jefferson Parish and the other on North Island, St. Bernard Parish. No nesting rookeries have been identified in Mississippi. The habitat of this species is small coastal islands in salt and brackish waters. Brown pelicans are rarely found away from saltwater and typically do not venture more than 20 miles from shore. Extensive use of pesticides, which contaminates the birds' food supply, is a primary cause of this specie's decline. Pelicans are sensitive to disturbance and habitat alteration. They are susceptible to oil spills. An oil spill could contaminate the bird's food supply (mainly fish) and, since pelicans are submerged when they dive for food, could coat their entire body with oil. Because of the distance involved and since this project will utilize existing onshore facilities, Sonat will comply with all applicable OCS Orders (thus minimizing the already small chance of an oil spill), and in the event of a spill, will follow Sonat's approved Oil Spill Contingency Plan, impact on this species, if any, should be minimal. (U.S. Department of the Interior, FEIS Sales 131/135/137).

Piping plover (*Charadrius melodus*), an endangered species since 1986 in the Great Lakes watershed and threatened elsewhere, breeds in North America. The bird's primary winter range is along the Atlantic and gulf coasts from North Carolina to Mexico. In a 1987-88 survey of this species along the gulf coast (Florida to Texas) approximately 323 birds, 7.7% of the total breeding population were found along the coasts of Alabama, Mississippi and Louisiana. Of the total gulf coast survey, piping plovers were observed most frequently in Alabama, Mississippi and Louisiana (53 to 60% of the sites had birds). Sites surveyed in the three states having the highest densities included Chandeleur Islands and Rockefeller Refuge, Louisiana and Little Dauphin Island, Alabama. Along with these sites, Buccaneer State Park, Mississippi and Isle Dernieres East, Louisiana are considered important piping plover wintering sites. Other wintering habitats are located at Fort Morgan and Little Dauphin Island - Bon Secour National Wildlife Refuge in Alabama; Horn Island, Ship Island and East Ship Island - Gulf Islands National Seashore, Hewes Avenue and Moses Pier - Gulf Port, Pass Christian and American Legion Pier in Mississippi; Fourchon Pass, Elmer's Island, Timbalier Island, Marsh Island, East Jetty Beach and Smith's Bayou in Louisiana. Critical habitat has not been designated for this species along the gulf coast. Impacts to the piping plover from oil spills would be caused by fouling of wintering habitat. The plover may be among the more vulnerable species because they forage in intertidal areas. Ingestion of oil could occur during the feeding process. Other impacts may result from pipeline placement and construction, onshore facility construction near wintering habitats, temporary displacement by aircraft and vessel traffic, and entanglement or ingestion of offshore oil/gas related debris and trash. The probability of impact from these disturbances are anticipated to be low. Impact to the piping plover includes the loss of beach habitat, human disturbance of nesting areas, and the loss of riverine sandbar

habitat as a result of channelization and flow modifications. Sonat will comply with all applicable OCS Orders and in the event of a spill will follow Sonat's approved Oil Spill Contingency Plan. Impact on this species, if any, should be minimal. (U.S. Department of the Interior, FEIS 142/143).

Several whale species, existing in the Gulf of Mexico, are listed as endangered: the humpback whale (*Megaptera novaeangliae*), the right whale (*Eubalaena glacialis*), the sei whale (*Balaenoptera borealis*), the blue whale (*Balaenoptera musculus*), the finback whale (*Balaenoptera physalus*), the minke whale, the whole northern whale, and the sperm whale (*Physeter catodon*). All are uncommon to rare in the Gulf except for the sperm whale.

The sperm whale is the most abundant large whale in the Gulf of Mexico and has been sighted on most surveys conducted in deeper waters. Congregations of sperm whales are commonly seen off the shelf edge in the vicinity of the Mississippi River Delta. There is, as yet, no data available that suggest seasonal movements of sperm whales in the Gulf of Mexico. A component of the ongoing GULFCET study will include an attempt to tag and track a limited number of sperm whales within the continental slope area of the north-central and northwestern Gulf using satellite telemetry to determine seasonal movements, diving behavior, and preferred habitat.

Due to the migratory nature of whales, the small increase in boat traffic associated with the proposed activities should have a minimal impact on the species. If a large oil spill were to occur in the immediate vicinity of the whales, damage could result from oil intake through the blowhole, fouling of the baleen plates, or through the ingestion of oil contaminated food. However, whales are uncommon and rarely (if ever) sighted in this area. Even if such a spill occurred, it is unlikely whales would be affected. Of course, in addition to following OCS Orders, Sonat will operate under its approved Oil Spill Contingency Plan. This should help minimize the potential of, and any adverse affects, from an oil spill.

The **loggerhead** sea turtle (*Caretta caretta*), threatened since 1978, is found in temperate and subtropical waters worldwide. In the Gulf of Mexico, loggerheads nest on various barrier islands and beaches throughout the keys and up the Florida west coast with scattered nesting occurring throughout the northern Gulf of Mexico. No critical habitat has been designated for the sea turtle in the Gulf of Mexico. Factors leading to the loggerhead sea turtle decline are: 1) to human encroachment of nesting beaches which include the problem of hatching disorientation arising from excessive artificial light, 2) over-utilization of the eggs as a food source by humans, and 3) excessive nest and hatching predation. Loggerhead nesting has been recently reported on Gulf Shores, Dauphin Island, and Ship Island. A few turtle crawls are usually reported from the Chandeleur

Islands every year. Sea turtle nesting habitat may be impacted by oil spills and human disturbances resulting from OCS activities. By following OCS Orders and, in the event of a spill, Sonat's approved Oil Spill Contingency Plan, Sonat will make every effort to minimize the potential of, and any adverse affects from an oil spill. (U.S. Department of the Interior, FEIS 131/135/137). The green (Chelonia mydas), leatherback (Dermochelys coriacea), hawksbill (Eretmochelys imbricata), and Kemp's ridley (Lepidochelys kempii) are not known to nest on beaches within the Central Gulf of Mexico Planning Area. (U.S. Department of the Interior, FEIS 131/135/137).

The **American alligator** (*Alligator mississippiensis*) has been reclassified as "threatened due to similarity of appearance" for enforcement purposes, but is not biologically endangered or threatened. (U.S. Department of the Interior, FEIS 131/135/137). This species inhabits brackish and freshwater marsh area, as well as other waterways from North Carolina to South Florida, the Gulf Coast states and inland to Oklahoma and Arkansas. The primary causes of the decline of this species have been commercial overharvesting and loss of habitat. An oil spill could contaminate the alligator's food supply, although the effects of such an ingestion of oil are not now known. (U.S. Department of the Interior, DEIS A62 & 62, 1980). Since the proposed activities will utilize existing onshore facilities, and since chances of an oil spill will be minimized, these activities should not affect this species.

The **Gulf of Mexico sturgeon** (*Acipenser oxyrinchus desotoi*) a subspecies of the Atlantic sturgeon, has been recommended to be listed at proposed threatened.

The species are known to occur in most major rivers from the Mississippi River to the Swannee River and in marine waters of the Central and Eastern Gulf of Mexico south to Florida Bay. Sturgeon in Alabama, Mississippi and Louisiana can be described as rare; recent specimens have been obtained from Lake Ponchartrain, Pearl River, Pascagoula River, and the Mobile River. No catches of Gulf of Mexico sturgeon has been recorded in Federal waters in the Gulf of Mexico. There has been no effect to the sturgeon during their offshore migration.

The sturgeon virtually disappeared throughout much of its range at the turn of the century. The decline of this species is attributed to: 1) damming of rivers and other forms of habitat construction, 2) over-exploitation, and 3) deterioration of water quality. The sturgeon would be most vulnerable to oil spills during the winter marine migrations. Since the sturgeon is a benthic feeder, ingestion of contaminated sediments, organisms or vegetation could occur once spilled oil has settled to the seafloor. The ability to sense and avoid oiled areas by sturgeon is unknown. The adult sturgeon does not feed in freshwater and therefore depends entirely on the resources accumulated by feeding during winter migrations. Consumption of contaminated food sources could lead to general body deterioration, lower reproductive potential and lower viability of offspring. Data suggest that the species tends to enter and leave the freshwater system within a very narrow time period. Because of the distance involved, and since the project will utilize existing onshore facilities, Sonat will comply with all

applicable OCS Orders (thus minimizing the already small chance of a spill), and in the event of a spill will follow Sonat's approved Oil Spill Contingency Plan. These species are not likely to be affected by the proposed activities. (U.S. Department of the Interior FEIS 131/135/137).

The **Southeastern Snowy Plover** (*Charadrius alexandrinus tenuirostris*), is considered a Category 2 candidate by the Fish and Wildlife Service. Category 2 comprises taxa for which information now in possession of the Fish and Wildlife Service indicates that proposing to list as endangered or threatened is possibly appropriate, but for which conclusive data on biological vulnerability and threat are not currently available to support proposed rules. However, a recent report by the Florida Game and Fresh Water Fish Commission indicates that the species could be proposed for listing in the foreseeable future. The bird is one of two subspecies of the snowy plover (*Charadrius alexandrinus*) that breeds along the gulf coast from Mexico to south Florida and on larger islands in the Caribbean. In Alabama, Mississippi, and Louisiana, snowy plovers occur only along sand beaches on the gulf coast. The snowy plover requires both dry and tidal sand flats for foraging. They feed on small crustaceans, mollusks, worms, and insects that they glean from beaches and sand flats. Their requirements for breeding habitat place it in conflict with humans. The sand beaches that the birds prefer for nesting are also highly desirable recreational resources for human populations. A primary cause of their decline are: 1) to loss of nesting habitat; 2) storms; 3) vehicles; and 4) predators. Impacts to the snowy plover from oil spills would be caused by fouling of foraging habitat. Ingestion of oil could occur during the feeding process. Some oiling may occur through direct contact with oiled sediments or waves in the splash zone. Sonat will comply with all applicable OCS Orders and in the event of a spill will follow Sonat's approved Oil Spill Contingency Plan. Impact of this species, if any, should be minimal (U.S. Department of the Interior, FEIS 142/143).

J. Socioeconomic

The initial OCS Socio-Economic Data Base Report will be submitted within three months when the requirement and guidelines for such a report are established.

IV. Unavoidable Adverse Impacts

Adverse environmental effects which could result from the proposed drilling activity are few and of short duration. The discharge of drilling muds and cuttings will result in a localized reduction in water quality and a temporary reduction in biological productivity. Commercial fishing will be negatively affected to the extent that the drilling rig will interfere with trawl fishermen for the duration of this project.

Offshore operational emissions may generate a small amount of air pollutants due to the emissions of diesel engines; therefore, the deterioration of air quality is unavoidable in an OCS operation area. These emissions affect only the immediate proposed activity site and are dissipated by the atmosphere depending upon climate conditions. Support vessels

(boat and helicopters) can also impact the air quality. Anticipated emissions are expected to be below MMS guideline limits and air quality should return to normal once operations are completed.

In the event of a spill reaching shore, organisms in wetland and beach habitats could be killed or functionally impaired. Any effects on endangered species would be significant.

- V. The proposed activities 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 emission and water quality and discharge for the proposed activities, as well as any other permit conditions, will be complied with.
 - D. The proposed activities described in detail in the Initial Plan of Exploration will comply with Louisiana's Coastal Management Program and will be conducted in a manner consistent with such program.

References

1. U.S. Department of the Interior, Final Environmental Impact Statement, Volumes I and II. Gulf of Mexico Sales 131/135/137.
2. U.S. Department of the Interior, Final Environmental Impact Statement, Gulf of Mexico Sales 123/125.
3. U.S. Department of the Interior, Final Environmental Impact Statement, Volume I and II, Gulf of Mexico Sales 142/143.
4. U. S. Department of the Interior, Final Environmental Impact Statement, Volume I and II, Gulf of Mexico Sales 147/150.

Attachments

- A. Surface Location Plat
- B. Typical Jack-Up Rig
- C. Vicinity Travel Route Map
- D. Coastal Zone Consistency Certification

Y = -8,951.200'

BEST AVAILABLE COPY

X = 1,465,241.952'

4,700' FNL

Proposed Surface Location

Water Depth = 125'

700' FWL

X = 1,480,000.000'

Y = -23,709.248'

SONAT EXPLORATION

East Cameron Blk. 227
OCS-G-12840

Proposed Surface Location
Well No. 1

ATTACHMENT A-1

Y = -8,951.200'

X = 1,465,241.952'

4,510' FNL

BEST AVAILABLE COPY

Proposed Surface Location

Water Depth = 125'

690' FWL

X = 1,480,000.000'

Y = -23,709.248'

SONAT EXPLORATION

East Cameron Blk. 227
OCS-G-12840

Proposed Surface Location
Well No. 2

ATTACHMENT A: 2

Y = -8,951.200'

BEST AVAILABLE COPY

FNL

4,293'

FWL

909

Proposed Surface Location

Water Depth = 125'

X = 1,465,241.952'

X = 1,480,000.000'

Y = -23,709.248'

SONAT EXPLORATION

East Cameron Blk. 227

OCS-G-12840

Proposed Surface Location

Well No. 3

ATTACHMENT A-3

Y = -8,951.200'

BEST AVAILABLE COPY

2,600' FWL

4,900' FNL

Proposed Surface Location

Water Depth = 125'

X = 1,465,241.952'

X = 1,480,000.000'

Y = -23,709.248'

SONAT EXPLORATION

East Cameron Blk. 227

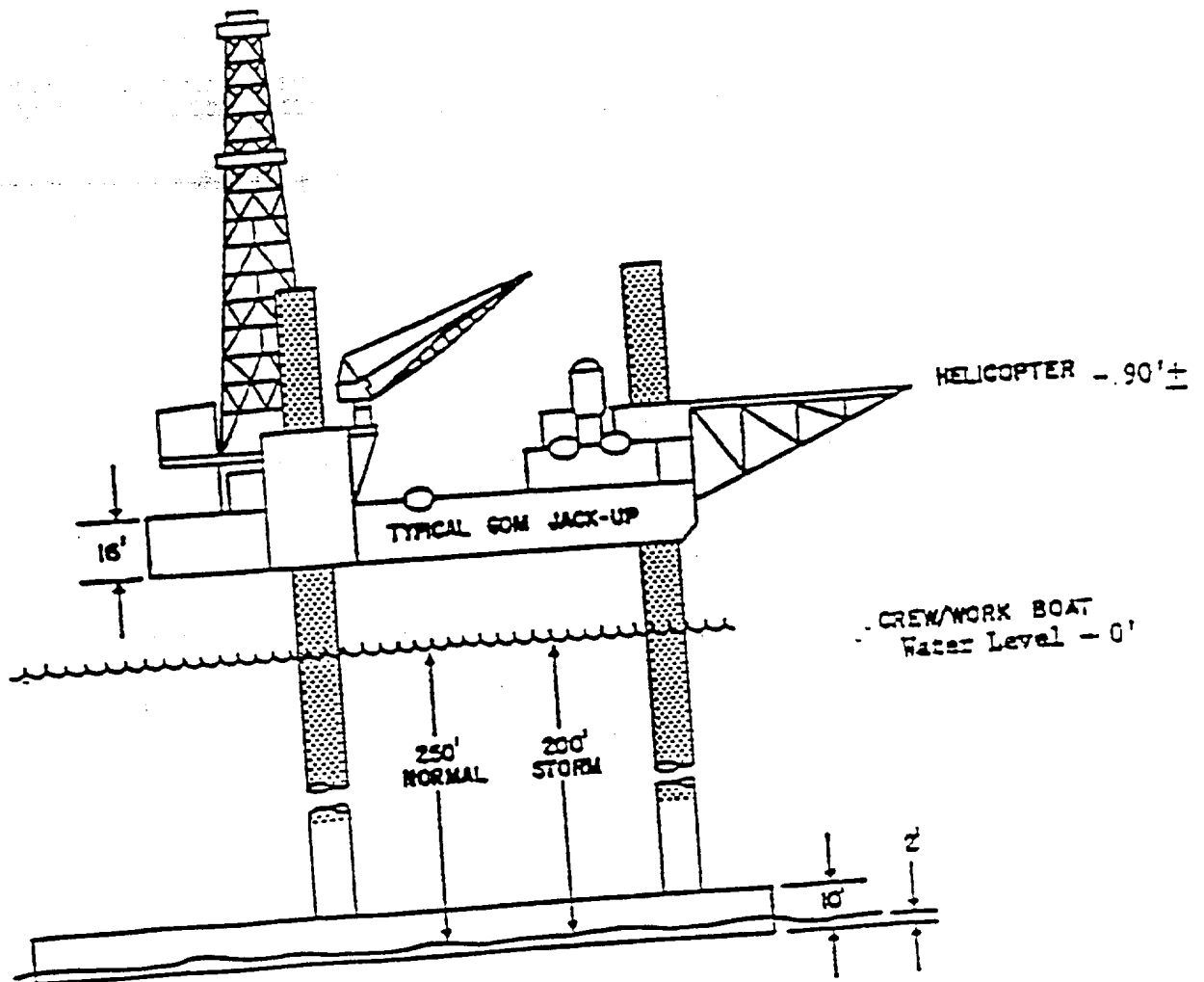
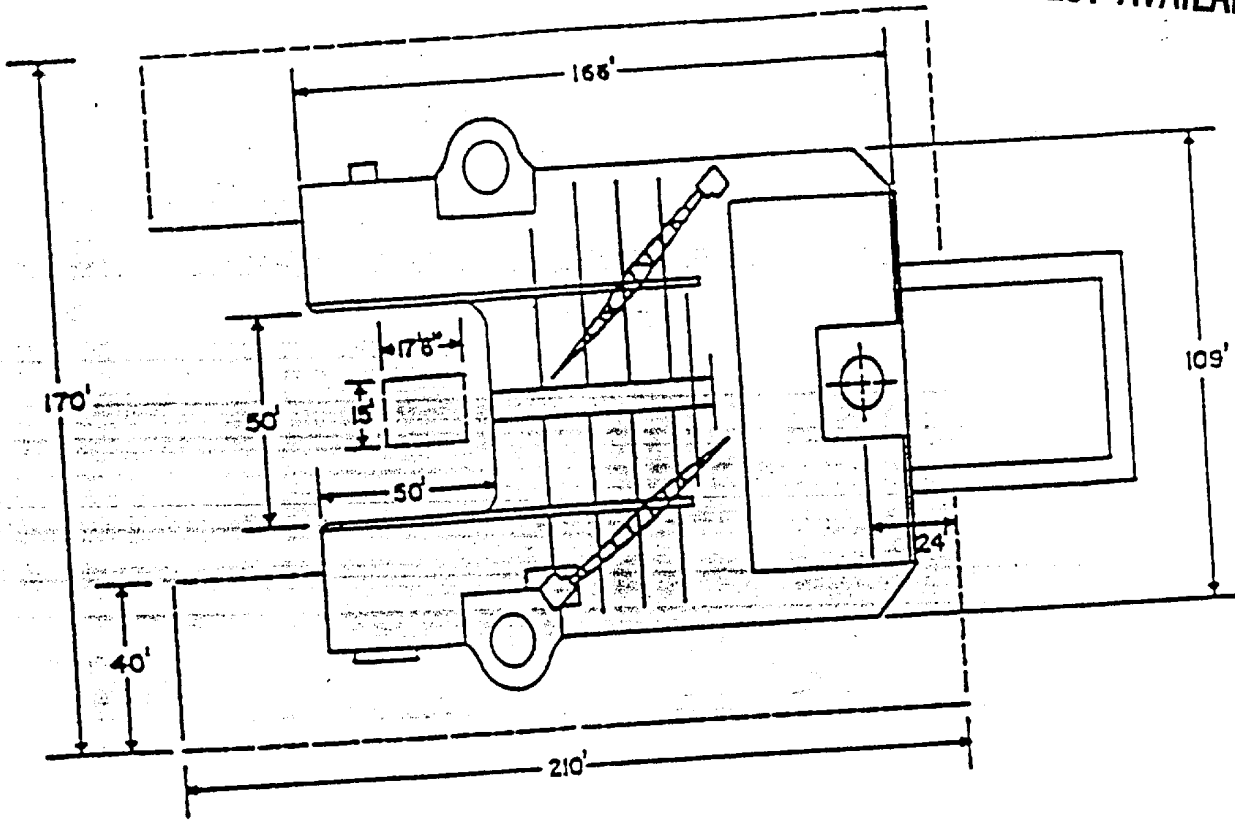
OCS-G-12840

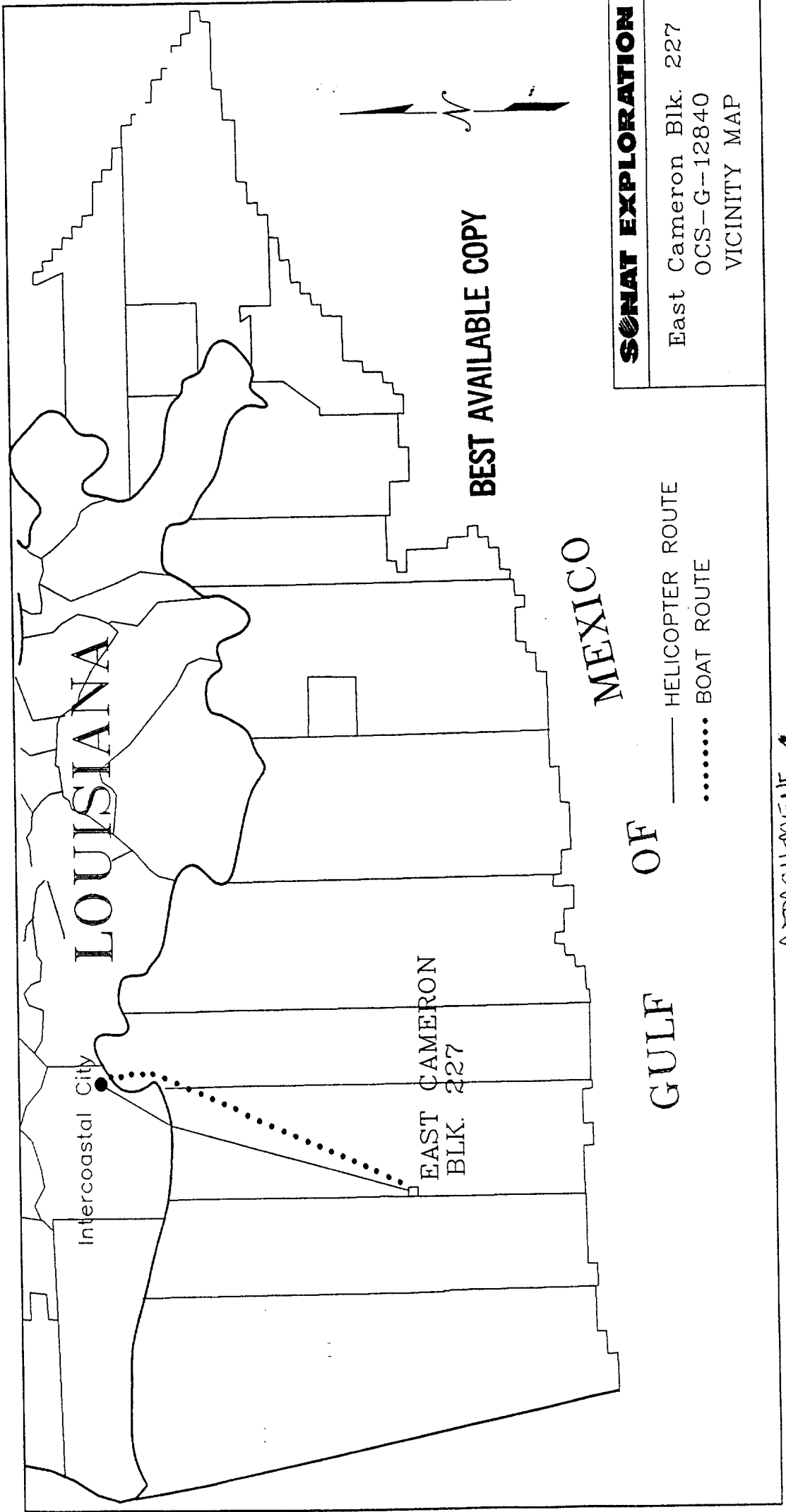
Proposed Surface Location

Well No. 4

ATTACHMENT A-4

BEST AVAILABLE COPY





SONAT EXPLORATION
 East Cameron Blk. 227
 OCS-G-12840
 VICINITY MAP

GULF OF MEXICO

— HELICOPTER ROUTE
 BOAT ROUTE

ATTACHMENT C

COASTAL ZONE MANAGEMENT
CONSISTENCY CERTIFICATION

Initial Plan of Exploration
Type of Plan

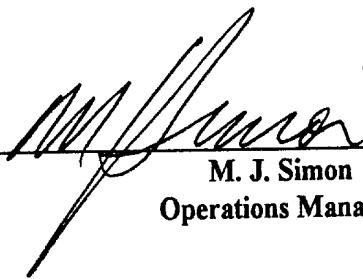
East Cameron Block 227
Area

OCS-G-12840
Lease Number

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

Arrangements have been made with the State Times in Baton Rouge, Louisiana to publish a public notice of the proposed activities on January 3, 1996. Additionally, arrangements have been made with the Cameron Parish Pilot to publish a public notice of the proposed activities on January 3, 1996.

Sonat Exploration Company



M. J. Simon
Operations Manager

December 11, 1995
Date

ATTACHMENT D