

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

811 SOUTH ST. ARTESIA, NM 86210-2834

APPLICATION FOR PERMIT TO DRILL OR DEEPEN

1a. TYPE OF WORK

DRILL ☒

DEEPEN ☐

b. TYPE OF WELL

OIL WELL ☐

GAS WELL ☐

OTHER ☒ - SWD

SINGLE ZONE ☒

MULTIPLE ZONE ☐

2. NAME OF OPERATOR

Marathon Oil Company

3. ADDRESS AND TELEPHONE NO

P.O. Box 552 Midland, TX 79702

915/687-8356

4. LOCATION OF WELL (Report location clearly and in accordance with any State requirements.)

At surface

1400' FSL & 800' FWL

At proposed prod. zone

1400' FSL & 800' FWL

14. DISTANCE IN MILES AND DIRECTION FROM NEAREST TOWN OR POST OFFICE*

15 MILES NW OF CARLSBAD

15. DISTANCE FROM PROPOSED*

LOCATION TO NEAREST

PROPERTY OR LEASE LINE, FT.

(Also to nearest drlg. unit line, if any) 800'

18. DISTANCE FROM PROPOSED LOCATION*

TO NEAREST WELL, DRILLING, COMPLETED,

OR APPLIED FOR, ON THIS LEASE, FT.

21. ELEVATIONS (Show whether DF, RT, GR, etc.)

3810' KB, 3794' GL

16. NO OF ACRES IN LEASE

640

17. NO OF ACRES ASSIGNED

TO THIS WELL

N/A

19. PROPOSED DEPTH

11,000'

20. ROTARY OR CABLE TOOLS

ROTARY

22. APPROX. DATE WORK WILL START*

3/25/99

23. PROPOSED CASING AND CEMENTING PROGRAM

SIZE OF HOLE	GRADE, SIZE OF CASING	WEIGHT PER FOOT	SETTING DEPTH	QUANTITY OF CEMENT
17 1/2"	K-55, 13 3/8"	40.50	1200'	1600 - CIRCULATE
12 1/4"	J-55, N-80, 9 5/8"	40#, 43#	10,000'	2900 - CIRCULATE
8 3/4"			OPEN HOLE	

*WELL IS A PROPOSED DEVONIAN PRODUCED WATER DISPOSAL.

THIS WELL SHALL REQUIRE ADMINISTRATIVE APPROVAL FOR UNDERGROUND DISPOSAL FROM THE NMCD.

APPROVAL SUBJECT TO
GENERAL REQUIREMENTS AND
SPECIAL STIPULATIONS
ATTACHED

IN ABOVE SPACE DESCRIBE PROPOSED PROGRAM: If proposal is to deepen, give data on present productive zone and proposed new productive zone. If proposal is to drill or deepen directionally, give pertinent data on subsurface locations and measured and true vertical depths. Give blowout preventer program, if any.

24.

SIGNED

Walter J. Stephens

TITLE DRILLING SUPERINTENDENT

DATE 1/29/99

(This space for Federal or State office use)

PERMIT NO.

APPROVAL DATE

Application approval does not warrant or certify that the applicant holds legal or equitable title to those rights in the subject lease which would entitle the applicant to conduct operations thereon.

CONDITIONS OF APPROVAL, IF ANY:

Acting

[s] Gary A. Stephens

Assistant Field Office Manager,
Lands and Minerals

MAR 15 1999

APPROVED BY

TITLE

DATE

*See Instructions On Reverse Side

Title 18 U.S.C. Section 1001, makes it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.



DISTRICT I
P.O. Box 1980, Hobbs, NM 88241-1980

State of New Mexico

Energy, Minerals and Natural Resources Department

Form C-102
Revised February 10, 1994
Submit to Appropriate District Office
State Lease - 4 Copies
Fee Lease - 3 Copies

DISTRICT II
P.O. Drawer DD, Artesia, NM 88211-0719

DISTRICT III
1000 Rio Brazos Rd., Aztec, NM 87410

DISTRICT IV
P.O. BOX 2088, SANTA FE, N.M. 87504-2088

OIL CONSERVATION DIVISION

P.O. Box 2088
Santa Fe, New Mexico 87504-2088

☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

API Number	Pool Code	Pool Name Indian Basin - Upper Penn
Property Code	Property Name ROCKY HILLS SWD	Well Number 2
OGRID No. 14021	Operator Name MARATHON OIL COMPANY	Elevation 3794

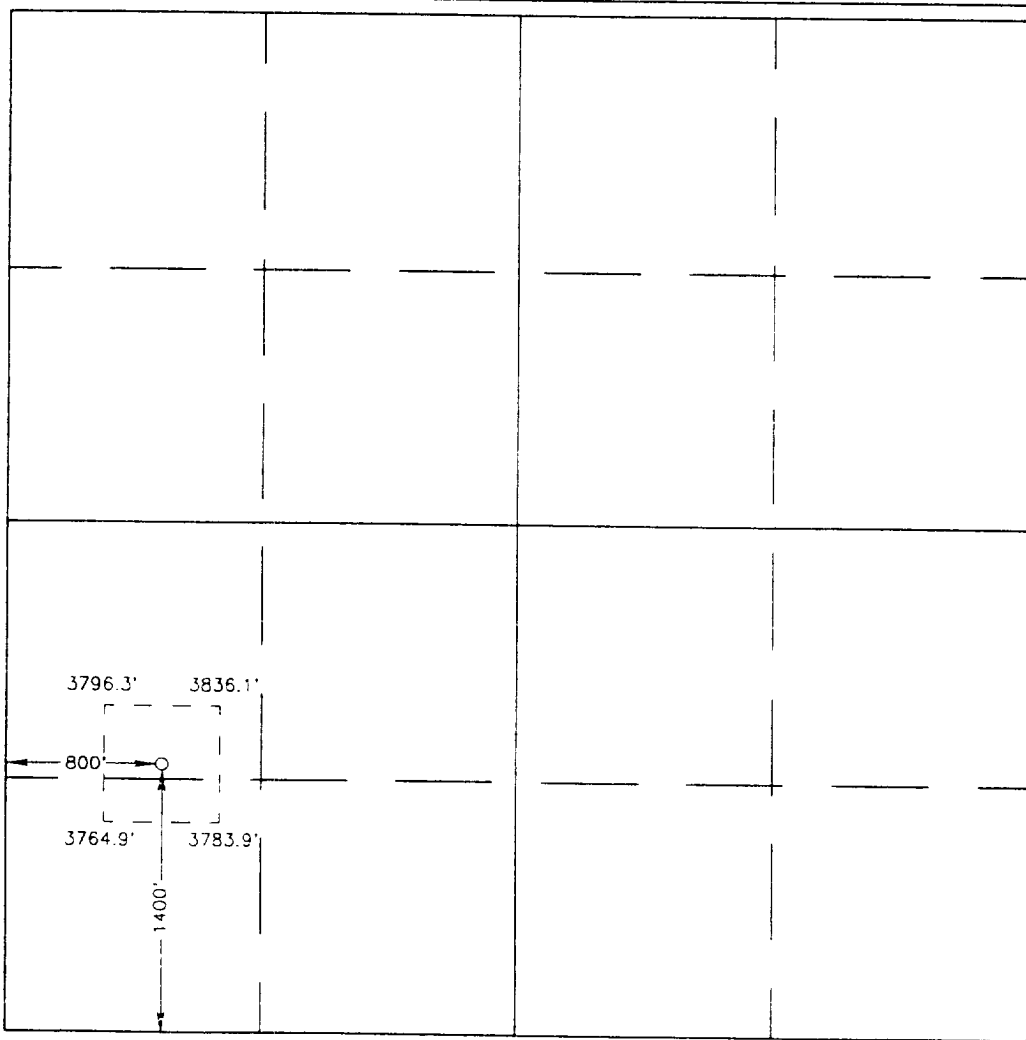
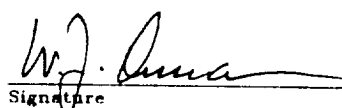
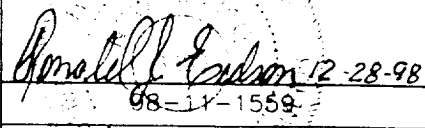
Surface Location

UL or lot No. L	Section 20	Township 21 S	Range 24 E	Lot Idn	Feet from the 1400	North/South line SOUTH	Feet from the 800	East/West line WEST	County EDDY
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Bottom Hole Location If Different From Surface

UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
Dedicated Acres N/A	Joint or Infill	Consolidation Code	Order No.						

NO ALLOWABLE WILL BE ASSIGNED TO THIS COMPLETION UNTIL ALL INTERESTS HAVE BEEN CONSOLIDATED
OR A NON-STANDARD UNIT HAS BEEN APPROVED BY THE DIVISION

	OPERATOR CERTIFICATION I hereby certify the the information contained herein is true and complete to the best of my knowledge and belief.  Signature R. J. Longmire Printed Name Drilling Superintendent Title 1/29/99 Date
	SURVEYOR CERTIFICATION I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my belief. DECEMBER 23, 1998 Date Surveyed Signature & Seal of Professional Surveyor  12-28-98 98-11-1559 Certificate No. RONALD J. EDSON 3239 CARY EDSON 12641 MACON McDONALD 12185

**Thirteen Point Surface Use Plan
MARATHON OIL COMPANY**

**ROCKY HILLS SWD #2
Sec. 20, T-21-S, R-24-E
Eddy County, New Mexico**

1. Existing Roads: Refer to Vicinity Lease Map.

- a. The proposed wellsite is staked and the surveyor's plat is attached.
- b. To reach the location from Carlsbad, New Mexico: Follow Hwy. 285 North of Carlsbad 11 miles. Turn left on (NM)137. Go 6 miles South. Turn rIGHT at the intersection of NM 137 and County Road 401. Follow County Road 401 for 1.8 miles to proposed well access road, Right .1 miles to location.
- c. Existing roads within a one-mile radius (refer to Vicinity Lease Map).
- d. The existing road will be maintained as necessary to provide access during the drilling operation.

2. Planned Access Road: Refer to Vicinity Lease Map.

Access will be by existing lease roads and 1,000' of new access. Construction plans will require blading and rolling the road and pad. The access road enters the drilling pad on the Southwest corner. The drilling location will have a V-door facing East with pits built into the hillside.

3. Location of Existing Wells: See Vicinity Lease Map.

4. Location of Existing and Proposed Production Facilities within a one-mile radius:

- a. Existing: There are seven oil and gas wells operated by Marathon and Santa Fe within a one-mile radius of the proposed location. These locations have production facilities including separators, condensate, oil, water storage tanks. Marathon and Santa Fe operate a variety of dehydrators, meter runs, and several gathering lines in the one-mile radius.
- b. New Facilities: The proposed location will have an injection manifold and filtering system. The actual equipment and its configuration will be determined after the well is completed.
- c. Rehabilitation of disturbed areas no longer needed for operations will be accomplished by recontouring, leveling and seeding as recommended.

A. P. D. (cont.)
Thirteen Point Surface Use Plan
Rocky Hills SWD #2

5. Location and Type of Water Supply:

- a. Source: Indian Basin Gas Plant, SE/4, NW/4, Sec. 28, T. 21-S, R-24-E.
- b. The water will be trucked by a contractor over existing roads to the well location. No new construction will be required on/along the water route.
- c. No water well will be drilled on this location.

6. Source of Construction Materials:

- a. Construction materials may be obtained from the extant location.
- b. If production is obtained, native materials will be used on the location and for installation of production facilities.
- c. On-site inspection may dictate any changes in location construction.

7. Methods of Handling Waste Material Disposal:

- a. Cuttings - will be deposited in the reserve pit.
- b. Drilling fluids - contained in reserve pit and allowed to evaporate. Free water will be removed and transported to an approved disposal site to accelerate pit drying.
- c. Produced fluids - none anticipated.
- d. A portable chemical toilet will be provided.
- e. Garbage and other waste material - garbage and trash will be stored in a receptacle on location and periodically hauled to an approved sanitary landfill.
- f. After the rig moves out, all materials not necessary for operations will be removed. Pits will be backfilled and leveled. The location will be cleaned of all trash and debris.

8. Ancillary Facilities: Camp facilities will not be required. Portable trailers will be on location to house a company drilling foreman and contract toolpusher.

9. Wellsite Layout:

- a. The wellpad layout shows the drillsite layout as staked. Cross-sections have been drafted to visualize the planned cuts and fills across the location.
- b. The reserve pit will be fenced on three sides before drilling begins. The fourth side will be fenced when the drilling rig leaves location.
- c. The reserve pit will be lined (10 mil minimum).

A. P. D. (cont.)
Thirteen Point Surface Use Plan
Rocky Hills SWD #2

10. Plans for Restoration of the Surface:

- a. Backfilling, leveling, and contouring are planned as soon as all pits have dried. Waste disposal and spoiled materials will be buried or hauled away immediately after drilling is completed. Once completed, the unused area will be restored as soon as possible.
- b. The soil banked material will be spread over the area. Revegetation will be accomplished by planting mixed grasses as per formula by BLM. Revegetation is recommended for road area, as well as around the drill pad.
- c. The reserve pit will be fenced during drilling operations. Fencing will be maintained until leveling and cleanup are accomplished.
- d. If any oil is in the pits and is not immediately removed after operations cease, the pit containing the oil or other adverse substances will be flagged overhead or covered with mesh.
- e. The rehabilitation operations will begin after the drilling rig is removed. Removal of oil or other adverse substances will begin immediately or area will be flagged and fenced. Other cleanup will be done as needed. Planting and revegetation will be done between July 15 and September 15. Rehabilitation efforts will be consistent with the BLM's construction and restoration stipulations.

11. Other Information:

- a. There are no significant archaeological or cultural sites visible in the area of disturbance. A cultural resource survey was performed by Archaeological Consultants Inc. of Roswell.
- b. General topography: Shown on Vicinity Lease Map. The terrain at the wellsite is gently rolling hills. Vegetation is primarily sage brush and natural grasses.
- c. Animal life: Prairie dogs, domestic livestock, rabbits and native rodents and predators.
- d. Dwellings (nearest): Approximately 4-1/2 miles.
- e. General location: Approximately 15 miles Northwest of Carlsbad, New Mexico.
- f. Drainage: Internal
- g. Surface Owner: The surface is owned by the Federal Government.

A. P. D. (cont.)
Thirteen Point Surface Use Plan
Rocky Hills SWD #2

12. Operator Representatives:

R. J. Longmire
Drilling, Completion, & Workover Superintendent
P. O. Box 552
Midland, TX 79702
800/351-1417
915/682-1626

13. Certification:

I hereby certify that I, or someone under my direct supervision, have inspected the proposed drillsite and access route; that I am familiar with the conditions that presently exist; that the statements made in this plan are, to the best of my knowledge and belief, true and correct; and that the work associated with the operations proposed herein will be performed by MARATHON OIL COMPANY and its contractors and subcontractors in conformity with this plan and the terms and conditions under which it is approved.

1/29/99

Date

R. J. Longmire
R. J. Longmire

**DRILLING PROGRAM
MARATHON OIL COMPANY**

Rocky Hills SWD #2

1. Estimated KB Elevation: 3,810'

FORMATION	TOP		BASE		FLUID CONTENT
	MEASURED	SUBSEA	MEASURED	SUBSEA	
Queen	Surface	+3810'	650'	+3160'	water
San Andres	850'	+3160'	2,250'	+1560'	
Glorietta	2,250'	+1560'	2,355'	+5100'	water
Delaware	3,300'	+510'	4,300'	-490'	
Bone Spring	4,300'	-490'	5,950'	-2140'	oil gas
Wolfcamp	5,950'	-2140'	7,520'	-3720'	
B/Permian Shale	7,520'	-3710'	7,530'	-3710'	oil gas
U. Penn	7,530'	-3720'	7,550'	-3720'	
Morrow	9,098'	-5288'	9,500'	-5690'	gas
Barnett	9,500'	-5690'	9,758'	-5948'	
Mississippian	9,758'	-5948'	10,148'	-6338'	gas, water
Woodford	10,148'	-6338'	10,210'	-6400'	
Devonian	10,210'	-6400'	11,160'	-7350'	

FORMATION	—EST PSIG	SBHP— PPG EMW	EST DEG f	SBHT	H2S PPM	—SIGNIFICANCE— (obj., marker, etc.)
Morrow	3639	9.4				
Barnett	3800	9.4			500	marker
Mississippian	3903	9.4				marker
Woodford	4059	9.4				marker
Devonian	3063	9.3				objective

2. See (1) above.
If any unexpected water or mineral bearing zones are encountered, they will be reported, evaluated, and protected as circumstances and regulations require.

3. Pressure Control Equipment:

13 3/8" Surface: 13 5/8" 3M annular tested to 200#/2000#, 11" 3M dual rams, choke manifold and mud cross, tested to 300#/3000#.

Auxiliary Equipment:

Surface Hole: Annular or rotating head w/air rig.

Intermediate Hole: N/A

Production Hole: Flow indicator, PVT, H₂S Sensors, air packs, stroke counter, rotating head.

BOP systems will be consistent with API RP 53. Blowout preventers will be installed and tested prior to drilling the surface casing plug and will remain in use until the well is completed or abandoned. Preventers will be inspected and operated at least daily to ensure good mechanical working order, and this inspection recorded on the daily drilling report. Preventers and casing will be pressure tested before drilling casing cement plugs.

Upper and lower kelly cocks with valve handle and safety valve and subs to fit all drillstring connections in use will be available on rig floor.

A. P. D. (cont.)
Thirteen Point Surface Use Plan
Rocky Hills SWD #2

Test Frequency

1. When installed.
2. Anytime a pressure seal is broken (test confined only to affected equipment).
3. At least every 20 days.
4. Blind and pipe rams shall be activated each trip but not more than once/day.

4. Casing and Cement Program:

—DEPTH— FROM TO		SECTION LENGTH	HOLE SIZE	C&G SIZE	WT. PPE	GRADE	THREADS COUPLINGS	NEW USED	
0	1200'	1200'	17.50"	13 3/8"	48#	K-55	8rd, STC	New	
0	2000'	2000'	12.25"	9.625"	40#	J-55	8rd, LTC	New	
2000'	8250'	8250'	12.25"	9.625	40#	N-80	8rd, LTC	New	
8250'	10,000'	1750'	12.25"	9.625	43.5#	N-80	8rd, LTC	New	
Casing String	DV Depth	Stg.	Lead Tail	Amt SXS	Type Cement	Yield CF/SX	Wt. PPG	TOC	Additives
13 3/8"	None	1	L	1400	"C" Neat	1.51	14.6	Surf	10% Gel, 3% CaCl ₂ , 1/4# cello
13 3/8"			T	200	"C" Neat	1.32	14.8	Surf	2% CaCl ₂ , 1/4# cello
9 5/8"	±5600'	1	L	800	"H" Lite	1.28	15.3	5600'	5 pps Silica, .6% Halad 9, 3% salt, 3 pps Gilsonite
9 5/8"		2	L	1800	65:35 POZ	1.91	12.6	5600'	5 pps, salt, 3 pps Gilsonite, 4% Gel, 1/4 pps Cello
9 5/8"		2	T	300	"C" Neat	1.32	14.8	±1000'	2% CaCl ₂

Each stage will be preceded by an appropriate mud flush. Actual production hole volumes will be based on the caliper volume plus 15% excess.

Centralizer Program:

- 13 3/8" Conventional centralizers. Bottom 3 joints and every fourth joint to surface.
- 9 5/8" Conventional centralizers middle of 1st joint, then every joint to 7500', and 1 centralizer every 4th joint thereafter to 1100'.

A. P. D. (cont.)
Thirteen Point Surface Use Plan
Rocky Hills SWD #2

5. Mud Program:

--DEPTH-- FROM TO		MUD TYPE	WEIGHT (PPG)	VIS	WL CG	ADDITIVES	VISUAL MONTR.
0	1200'	Fresh water	8.4	28-32	N/A	Gel	Reserve
1200'	5000'	fresh	8.5	28-32	N/C	Gel, caustic, H ₂ S Scavenger	Reserve
5000'	7000'	cut brine	9.0	32-36	N/C	Saturated brine	Reserve
7000'	10,000'	cut brine	9.0	32-36	<20	Salt gel, starch, caustic	Steel Pits
10,000'	11,000'	Fresh water	8.4 8.4	32-36		Fresh Water Gel	Steel Pits

Sufficient quantities of additives will be on location to maintain above mud properties for any anticipated well conditions.

6. Logging, Testing & Coring Programs:

LOG/TEST/CORE/MUDLOG/OTHER	--INTERVAL--		REMARKS
	FROM	TO	
DLL/MSFL/GR/CNL/LDT/CAL	TD	3000'	
LDT/CNL/GR/CAL	TD	surf casing	
MUD LOGGER	6000'	TD	ROP, Lithology, Gas Analysis, Chromatograph
NO CORES OR DST'S			

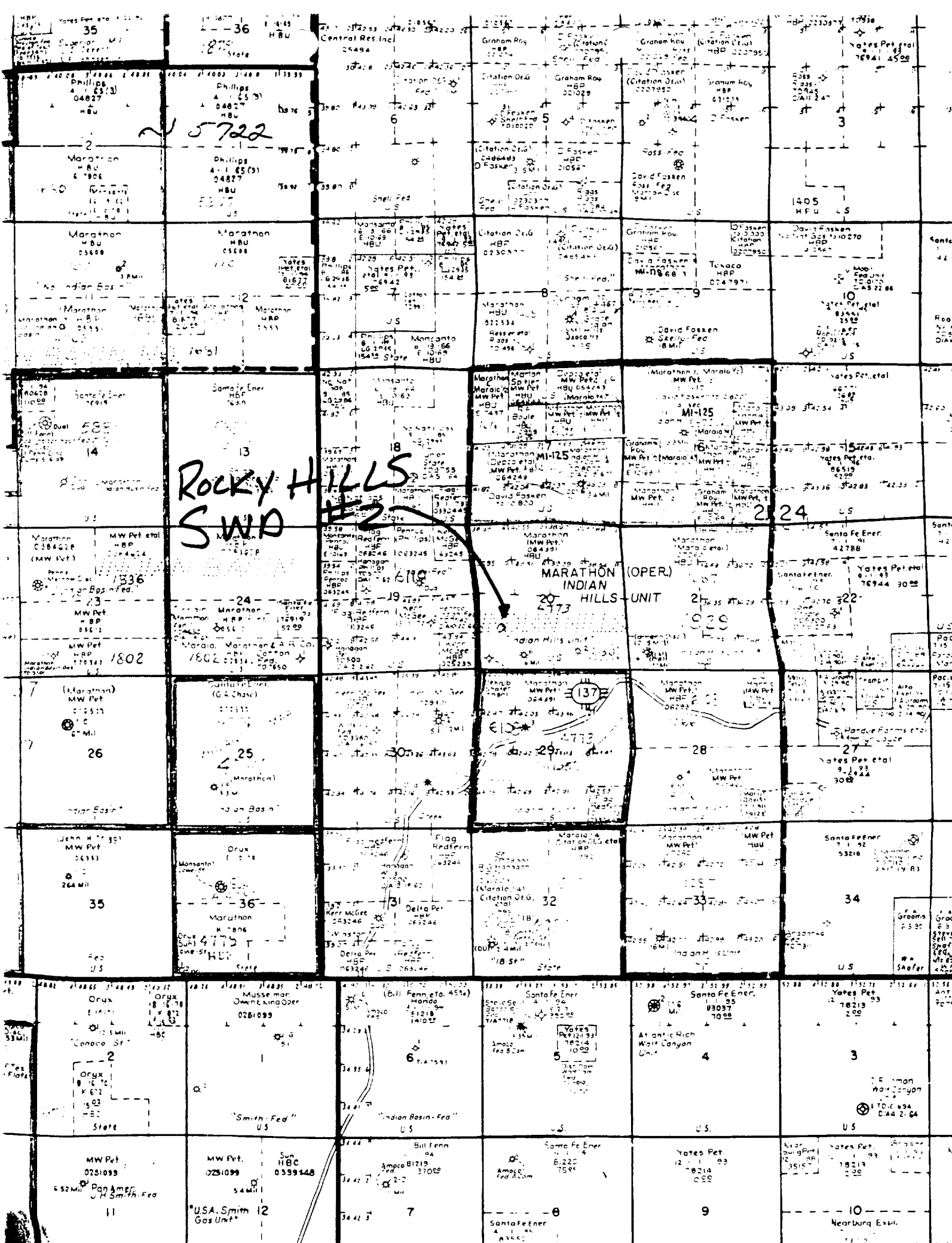
7. Abnormal Pressures, Temperatures or Potential Hazards:

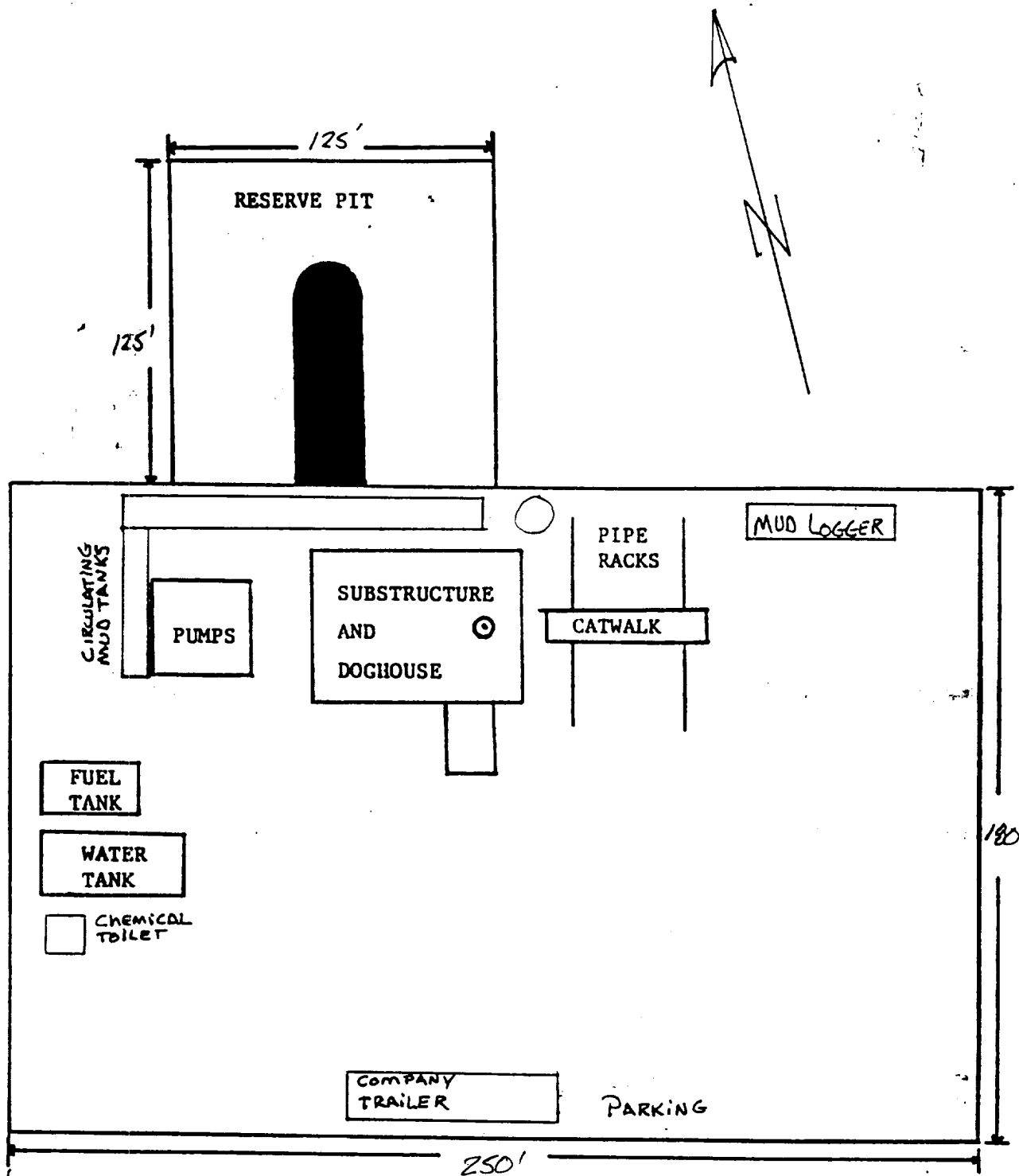
None anticipated. Possible H₂S in Cisco & Upper Penn. See H₂S Drilling Operations Plan.

8. Other Information:

Anticipated Starting Date: As soon as possible.

Duration of Well: drilling - 35 days, completion - 5 days.

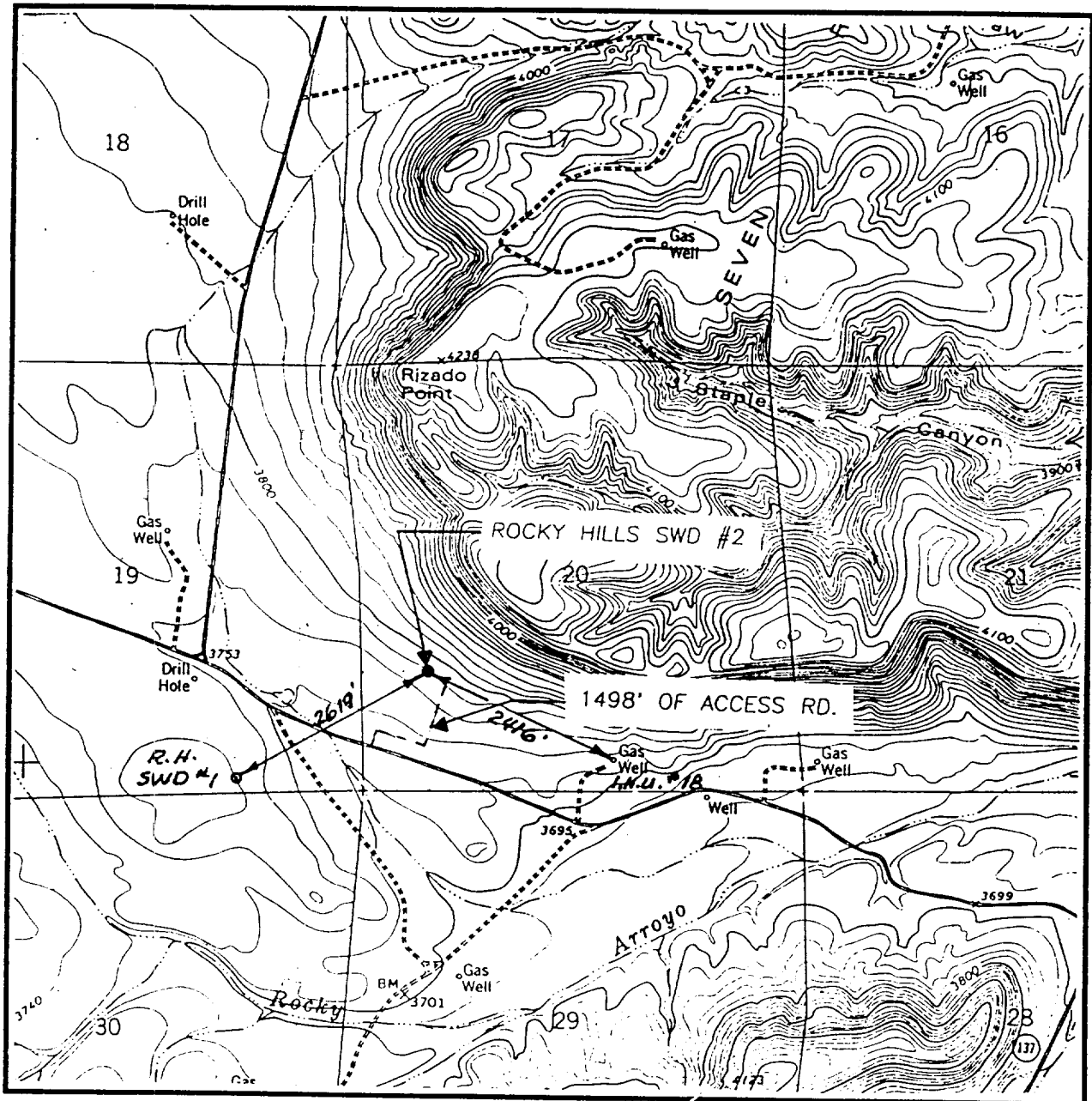




~ 100' NEW ACCESS

EDDY CO 401

LOC. TION VERIFICA ION MAP



SCALE: 1" = 2000'

CONTOUR INTERVAL:
MARTHA CREEK - 20'

SEC. 20 TWP. 21-S RGE. 24-E

SURVEY N.M.P.M.

COUNTY EDDY

DESCRIPTION 1400' FSL & 800' FWL

ELEVATION 3794

OPERATOR MARATHON OIL COMPANY

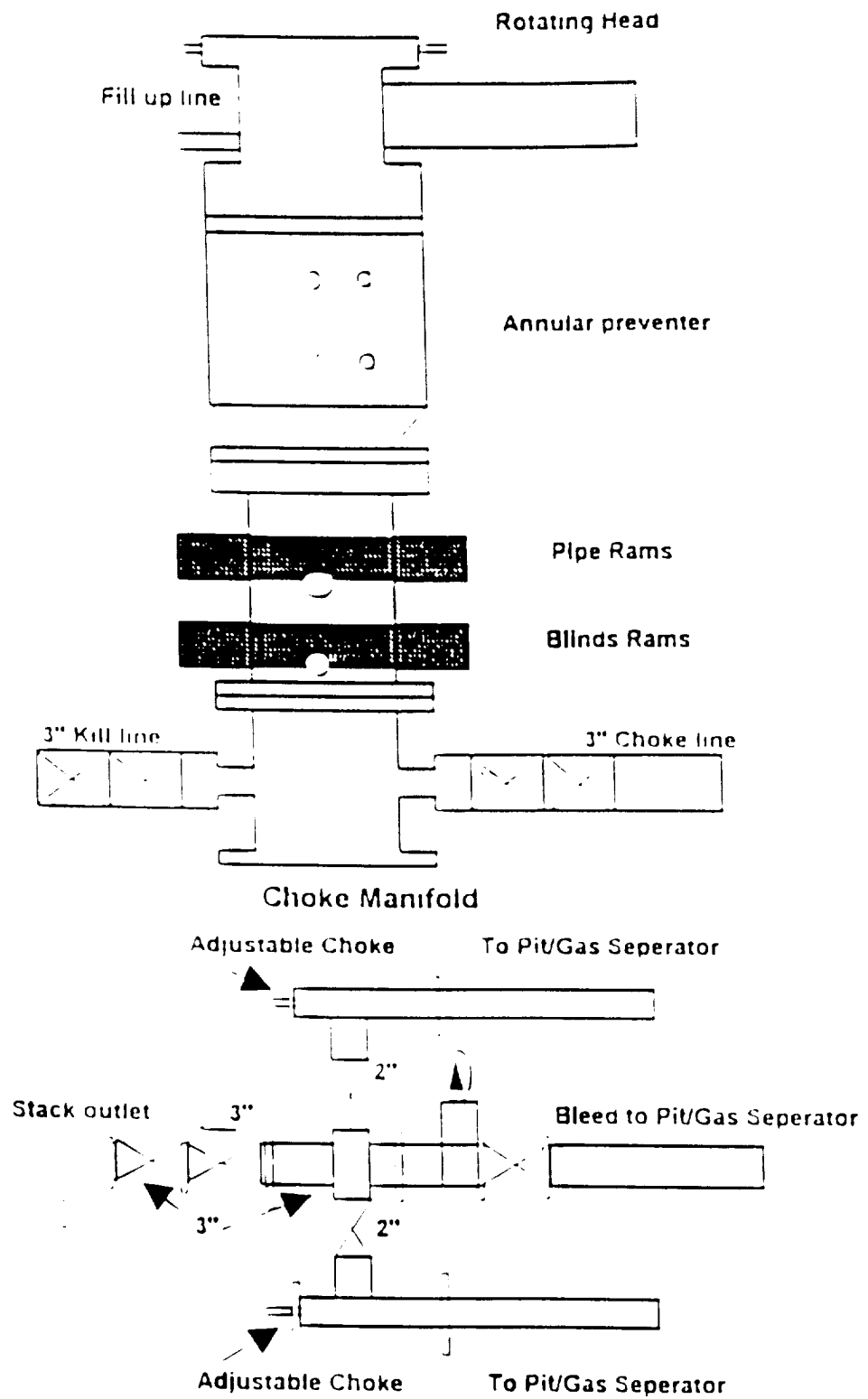
LEASE ROCKY HILLS SWD

U.S.G.S. TOPOGRAPHIC MAP

MARTHA CREEK, N.M.

JOHN WEST SURVEYING
HOBBS, NEW MEXICO
(505) 393-3117

Production Stack



MARATHON OIL COMPANY

H2S DRILLING OPERATIONS PLAN

1. HYDROGEN SULFIDE TRAINING

All contractors and subcontractors employed by Marathon Oil Company will receive or have received training from a qualified instructor within the last twelve months in the following areas prior to commencing drilling operations on this well.

1. The hazards and characteristics of hydrogen sulfide (H₂S)
2. Safety precautions
3. Operations of safety equipment and life support systems

In addition, contractor supervisory personnel will be trained or prepared in the following areas:

1. The effect of H₂S on metal components in the system. If high tensile tubulars are to be used, personnel will be trained in their special maintenance requirements.
2. Corrective action and shut-down procedures when drilling or reworking a well, blowout prevention and well control procedures, if the nature of work performed involves these items.
3. The contents and requirements of the contingency plan when such plan is required.

All personnel will be required to carry documentation of the above training on their person.

II. H2S EQUIPMENT AND SYSTEMS

1. Safety Equipment

The following safety equipment will be on location.

- A. Wind direction indicators as seen in attached diagram.
- B. Automatic H₂S detection alarm equipment (both audio and visual).
- C. Clearly visible warning signs as seen on the attached diagram. Signs will use the words "POISON GAS" and "CAUTION" with a strong color contrast.
- D. Protective breathing equipment will be located in the dog house and at briefing areas as seen in the attached diagram.

2. WELL CONTROL SYSTEMS

A. Blowout Prevention Equipment

Equipment includes but is not limited to:

- a. pipe rams to accommodate all pipe sizes
- b. blind rams
- c. choke manifold
- d. closing unit

Auxiliary equipment added as appropriate includes:

- a. annular preventor _____
- b. rotating head _____
- c. mud- gas separator _____
- d. flare line and means of ignition _____
- e. remote operated choke _____

B. Communication

The rig contractor will be required to have two-way communication capability. Marathon Oil Company will have either landline or mobile telephone capabilities.

C. Mud Program

The mud program has been designed to minimize the volume of H₂S circulated to surface. Proper mud weight, safe drilling practices, and the use of H₂S scavengers when appropriate will minimize hazards when penetrating H₂S bearing zones.

D. Drill Stem Test intervals are as follows:

OST No. 1	_____ ft. to _____ ft.
OST No. 2	_____ ft. to _____ ft.
OST No. 3	_____ ft. to _____ ft.

Drill Stem Testing Safety Rules are attached.

III. WELL SITE DIAGRAM

A complete well site diagram including the following information is attached.

- 1. Rig orientation
- 2. Terrain
- 3. Briefing areas
- 4. Ingress and egress
- 5. Pits and flare lines
- 6. Caution and danger signs
- 7. Wind indicators and prevailing wind direction