

UNITED STATES  
DEPARTMENT OF THE INTERIOR  
BUREAU OF LAND MANAGEMENT

SUBMIT IN TRIPLICATE

(Other instructions  
on reverse side)

FORM APPROVED  
OMB NO. 1004-0136  
Expires: February 28, 1995

014F

APPLICATION FOR PERMIT TO DRILL OR DEEPEN

1a. TYPE OF WORK

DRILL ☒

DEEPEN ☐

b. TYPE OF WELL

OIL  
WELL ☐

GAS  
WELL ☒

OTHER

SINGLE  
ZONE ☒

MULTIPLE  
ZONE ☐

2. NAME OF OPERATOR

Marathon Oil Company

14021

3. ADDRESS AND TELEPHONE NO.

P.O. Box 552 Midland, TX 79702

1-800-351-1417

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

At surface

1093' FNL & 663' FEL Sec. 20, T-21-S, R-24-E

At proposed prod. zone

1356' FNL & 1633' FWL Sec. 21, T-21-S, R-24-E

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

15 Miles N.W. of Carlsbad

15. DISTANCE FROM PROPOSED\*

LOCATION TO NEAREST

PROPERTY OR LEASE LINE, FT.

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

\*\* Reference Note

640

18. DISTANCE FROM PROPOSED LOCATION\*

TO NEAREST WELL, DRILLING COMPLETED,

OR APPLIED FOR, ON THIS LEASE, FT.

\* 33'

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

4149' G.L.

CARLSBAD CONTROLLED WATER BASIN

16. NO. OF ACRES IN LEASE

640

17. NO. OF ACRES ASSIGNED  
TO THIS WELL

320 W/2 of Sec. 21

19. PROPOSED DEPTH

8800'

20. ROTARY OR CABLE TOOLS

Rotary

22. APPROX. DATE WORK WILL START\*

ASAP

23. PROPOSED CASING AND CEMENTING PROGRAM

SIZE OF HOLE	GRADE, SIZE OF CASING	WEIGHT PER FOOT	SETTING DEPTH	QUANTITY OF CEMENT
17-1/2"	13-3/8" K-55	54.50#	1800'	1046 sks.
12.25"	9-5/8" K-55	40# & 53.50#	8800'	2610 sks.

Propose to drill a directional Upper Penn. Assoc. Gas well on the Same location as the Indian Hills Unit # 26

Located @ 1069' FNL, 685' FEL Sec. 20, T-21-S, R-24-E.

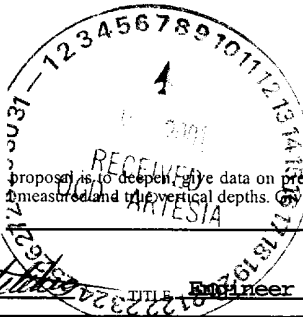
Note\*\*

BHL located @ 1356' FNL & 1633' FWL of Sec. 21, T-21-S, R-24-E

Distance From Indian Hills Unit # 26 SHL located @ 1069' FNL & 685' FEL to Indian Hills Unit # 31 SHL is 33'

13 3/8"

Notify OCD spud & time to witness  
cementing of 13 3/8" CASING



APPROVAL SUBJECT TO  
GENERAL REQUIREMENTS AND  
SPECIAL STIPULATIONS

proposal is to deepen, give data on present productive zone and proposed new productive zone. If proposal is to drill or  
measured and true vertical depths. Give blowout preventer program, if any.

24

Jerry Fletcher

SIGNED

Engineer Tech.

DATE 11-08-00

(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:

Approved Field Manager,  
Land and Minerals

APPROVED BY

TITLE

DATE

\*See Instructions On Reverse Side

APPROVED BY

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

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, NM 87504-2088

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

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. Assoc.
Property Code	Property Name	Well Number
	INDIAN HILLS UNIT	31
OGRID No.	Operator Name	Elevation
14021	MARATHON OIL COMPANY	4149

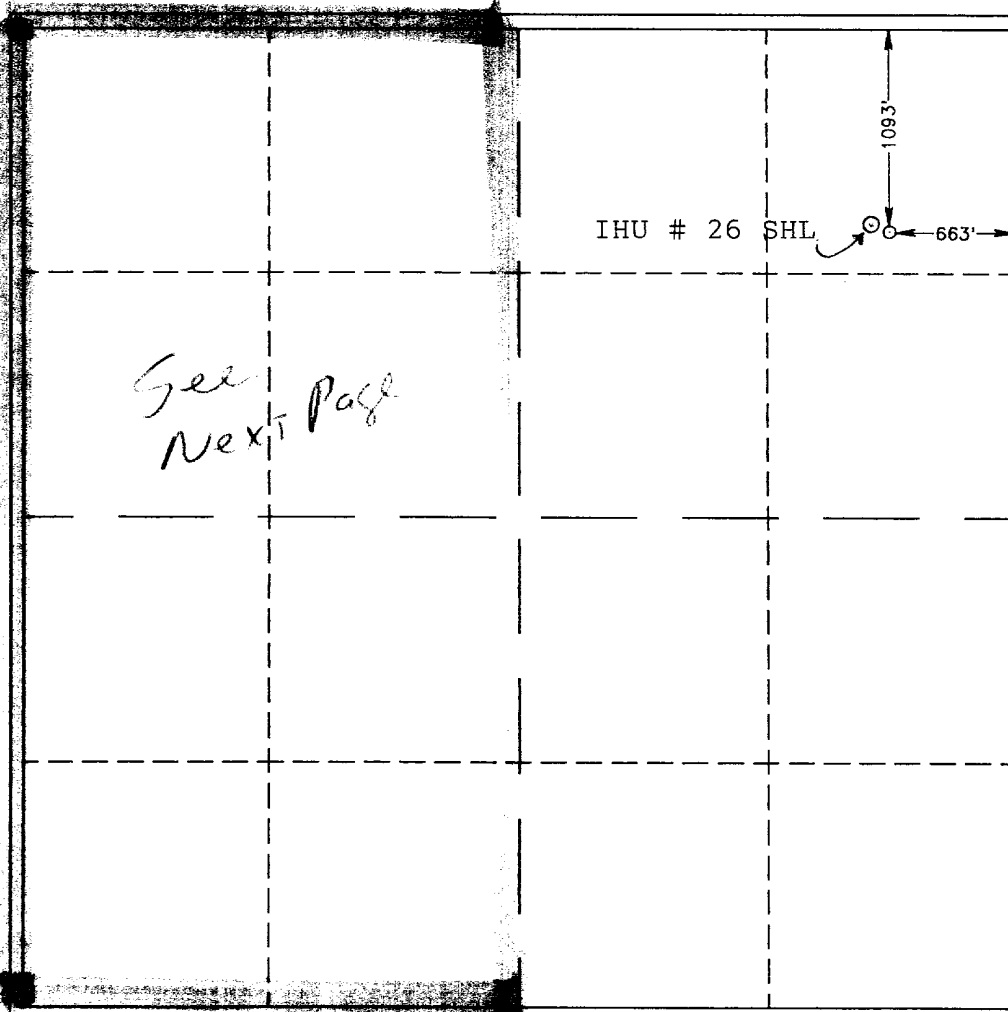
Surface Location

UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
A	20	21 S	24 E		1093	NORTH	663	EAST	EDDY

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
F	21	21 S	24 E		1356	NORTH	1633	WEST	Eddy
Dedicated Acres	Joint or Infill	Consolidation Code	Order No.						
320 W/2									

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.

*Jerry Fletcher*  
Signature

Jerry Fletcher  
Printed Name

Engineer Tech.  
Title

11-08-00  
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.

OCTOBER 18, 2000

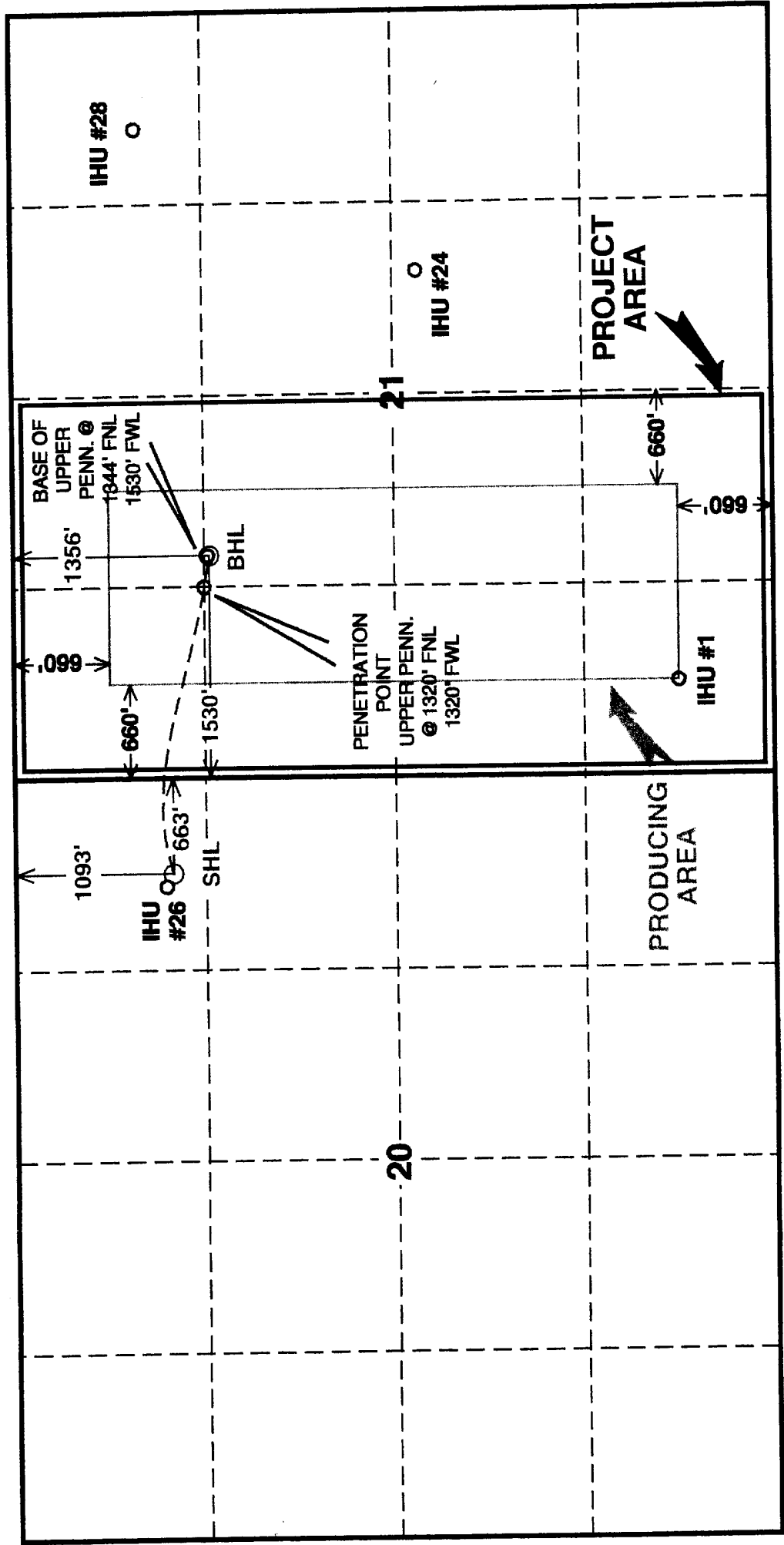
Date Surveyed J. Edson JLP  
Signature & Seal of  
Professional Surveyor

*Ronald J. Edson*  
W.O. Num. 00-11-1321 10/23/00

Certificate No. RONALD J. EDSON, 3239  
GARY G. EDSON, 12641

R 24 E

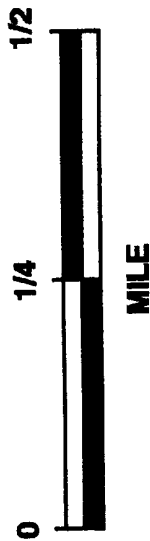
T 21 S



MARATHON OIL COMPANY  
SOUTHERN BUSINESS UNIT

# INDIAN HILLS UNIT #31

EDDY COUNTY, NEW MEXICO



# MARATHON OIL COMPANY

Structure : Indian Hills Unit No. 1

Slot : slot #1

Field : Indian Basin

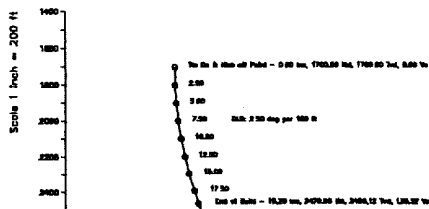
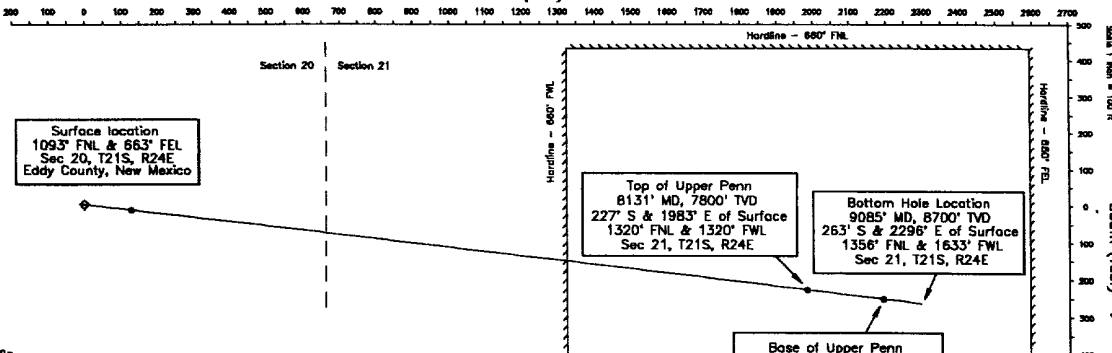
Location : EDDY COUNTY, NM.

Coordinates are in feet reference slot #1.  
True Vertical Depths are reference rotary table.

— Baker Hughes I

Scale 1 inch = 100 ft

East (feet) ->



WELL PROFILE DATA								
Point	MD	Inc	Dir	TVD	North	East	V. Sect	Dep/100
KDP	1700.00	0.00	96.53	1700.00	0.00	0.00	0.00	0.00
End of Build	2470.56	18.26	96.53	2456.12	-14.59	127.49	128.32	2.50
Target	8131.39	18.26	96.53	7800.00	-227.00	1983.00	1985.95	0.00
End of Hole	8768.98	18.26	96.53	8400.00	-250.85	2191.33	2205.84	0.00
T.D. & End of Hole	9084.78	18.26	96.53	8700.00	-262.77	2295.50	2310.48	0.00



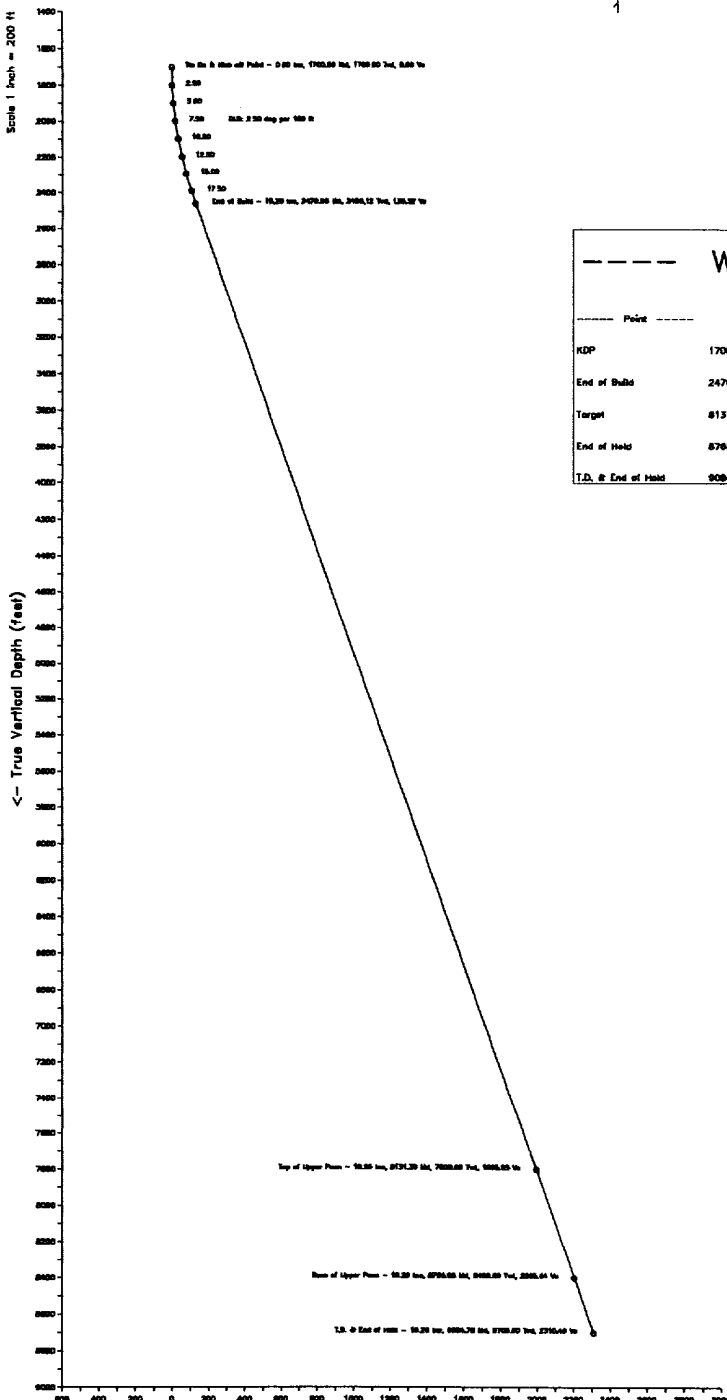
INTEQ

Approved By: \_\_\_\_\_

Title: \_\_\_\_\_

Date: \_\_\_\_\_

Scale 1 inch = 200 ft



Scale 1 inch = 200 ft

Vertical Section (feet) ->

Azimuth 98.53 with reference 0.00 N, 0.00 E from slot #1

MARATHON OIL COMPANY  
Indian Hills Unit No. 31, slot #1  
Indian Basin, EDDY COUNTY, NM.

Measured Depth	Inclin. Degrees	Azimuth Degrees	True Depth	R E C T A N G U L A R C O O R D I N A T E S	Dogleg Deg/100ft	Vert Sect
1700.00	0.00	96.53	1700.00	0.00 N	0.00	0.00
1800.00	2.50	96.53	1799.97	0.25 S	2.50	2.18
1900.00	5.00	96.53	1899.75	0.99 S	2.50	8.72
2000.00	7.50	96.53	1999.14	2.23 S	2.50	19.61
2100.00	10.00	96.53	2097.97	3.96 S	2.50	34.82
2200.00	12.50	96.53	2196.04	6.18 S	2.50	54.33
2300.00	15.00	96.53	2293.17	8.88 S	2.50	78.09
2400.00	17.50	96.53	2389.17	12.06 S	2.50	106.07
2470.56	19.26	96.53	2456.12	14.59 S	2.50	128.32
2500.00	19.26	96.53	2483.92	15.70 S	0.00	138.04
3000.00	19.26	96.53	2955.92	34.46 S	0.00	303.00
3500.00	19.26	96.53	3427.92	53.22 S	0.00	467.96
4000.00	19.26	96.53	3899.93	71.98 S	0.00	632.92
4500.00	19.26	96.53	4371.93	90.74 S	0.00	797.88
5000.00	19.26	96.53	4843.94	109.50 S	0.00	962.84
5500.00	19.26	96.53	5315.94	128.26 S	0.00	1127.80
6000.00	19.26	96.53	5787.95	147.03 S	0.00	1292.76
6500.00	19.26	96.53	6259.95	165.79 S	0.00	1457.72
7000.00	19.26	96.53	6731.95	184.55 S	0.00	1622.68
7500.00	19.26	96.53	7203.96	203.31 S	0.00	1787.64
8000.00	19.26	96.53	7675.96	222.07 S	0.00	1952.60
8131.39	19.26	96.53	7800.00	227.00 S	0.00	1995.95
8500.00	19.26	96.53	8147.97	240.83 S	0.00	2117.56
8766.98	19.26	96.53	8400.00	250.85 S	0.00	2205.64
9000.00	19.26	96.53	8619.97	259.59 S	0.00	2282.52

Top of Upper Penn  
Base of Upper Penn

All data is in feet unless otherwise stated.  
Coordinates from slot #1 and TVD from rotary table.  
Bottom hole distance is 2310.49 on azimuth 96.53 degrees from wellhead.  
Vertical section is from wellhead on azimuth 96.53 degrees.  
Calculation uses the minimum curvature method.  
Presented by Baker Hughes INTEQ

MARATHON OIL COMPANY  
 Indian Hills Unit No. 31, slot #1  
 Indian Basin, EDDY COUNTY, NM.

PROPOSAL LISTING Page 2  
 Your ref : 2.5 Deg BUR  
 Last revised : 7-Nov-2000

Measured Depth	Inclin. Degrees	Azimuth Degrees	True Depth	R E C T A N G U L A R C O O R D I N A T E S	Dogleg Deg/100ft	Vert Sect
9084.78	19.26	96.53	8700.00	262.77 S 2295.50 E	0.00	2310.49

All data is in feet unless otherwise stated.  
 Coordinates from slot #1 and TVD from rotary table.  
 Bottom hole distance is 2310.49 on azimuth 96.53 degrees from wellhead.  
 Vertical section is from wellhead on azimuth 96.53 degrees.  
 Calculation uses the minimum curvature method.  
 Presented by Baker Hughes INTEQ

MARATHON OIL COMPANY

Indian Hills Unit No. 31, slot #1  
Indian Basin, EDDY COUNTY, NM.

PROPOSAL LISTING Page 3  
Your ref : 2.5 Deg BUR  
Last revised : 7-Nov-2000

Comments in wellpath

=====

Comment

Rectangular Coords.

MD TVD

8131.39 7800.00 227.00 S 1983.00 E Top of Upper Penn  
8766.98 8400.00 250.85 S 2191.33 E Base of Upper Penn

Targets associated with this wellpath

=====

Target name Geographic Location

T.V.D.

Rectangular Coordinates

Revised

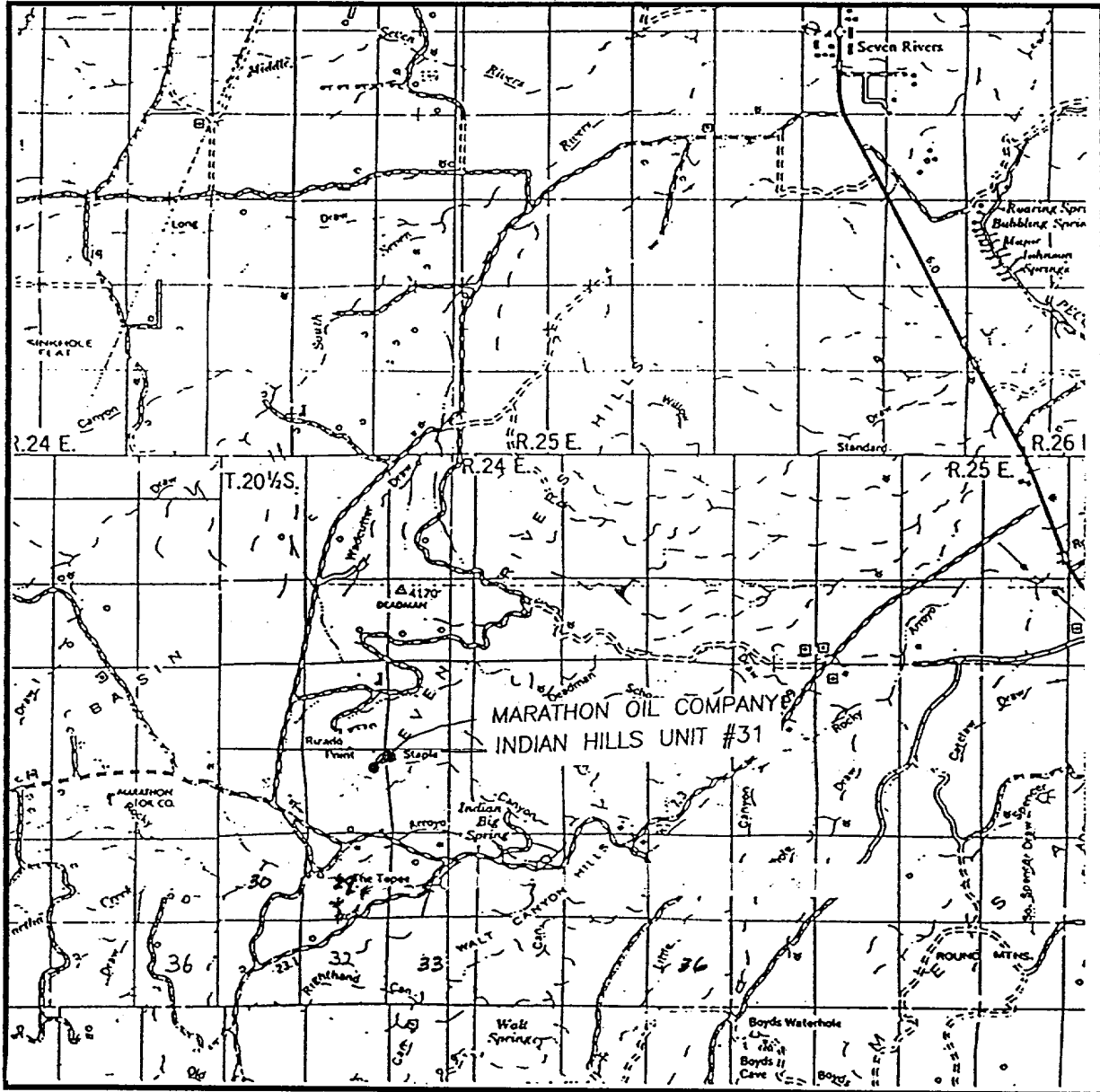
7800.00

227.00S

1983.00E

7-Nov-2000

# VICINITY MAP



SCALE: 1" = 2 MILES

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

SURVEY N.M.P.M.

COUNTY EDDY

DESCRIPTION 1093' FNL & 663' FEL

ELEVATION 4149

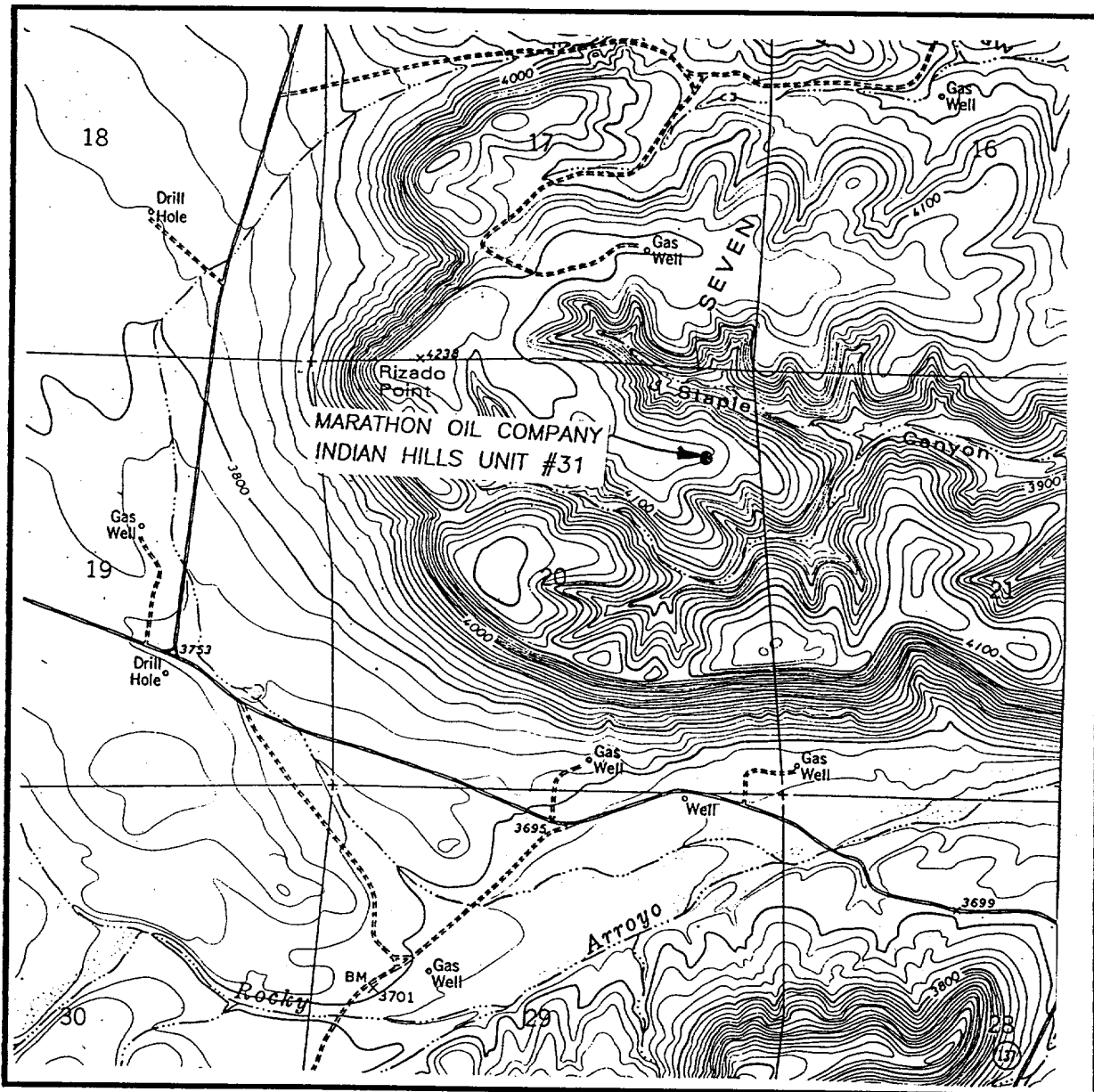
OPERATOR MARATHON OIL COMPANY

LEASE INDIAN HILLS UNIT

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



# LOCATION VERIFICATION MAP



SCALE: 1" = 2000'

CONTOUR INTERVAL - 20'

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

SURVEY N.M.P.M.

COUNTY EDDY

DESCRIPTION 1093' FNL & 663' FEL

ELEVATION 4149

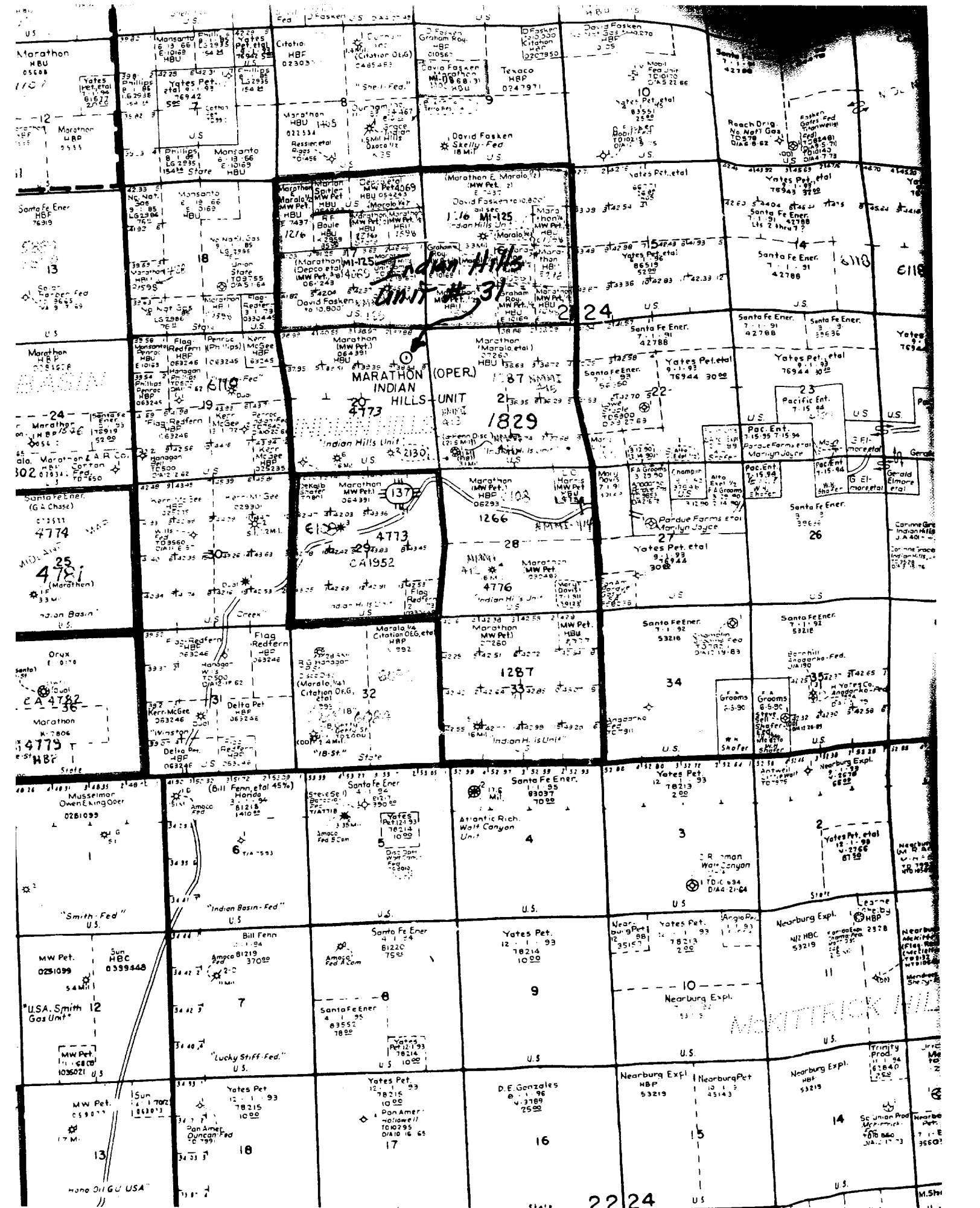
OPERATOR MARATHON OIL COMPANY

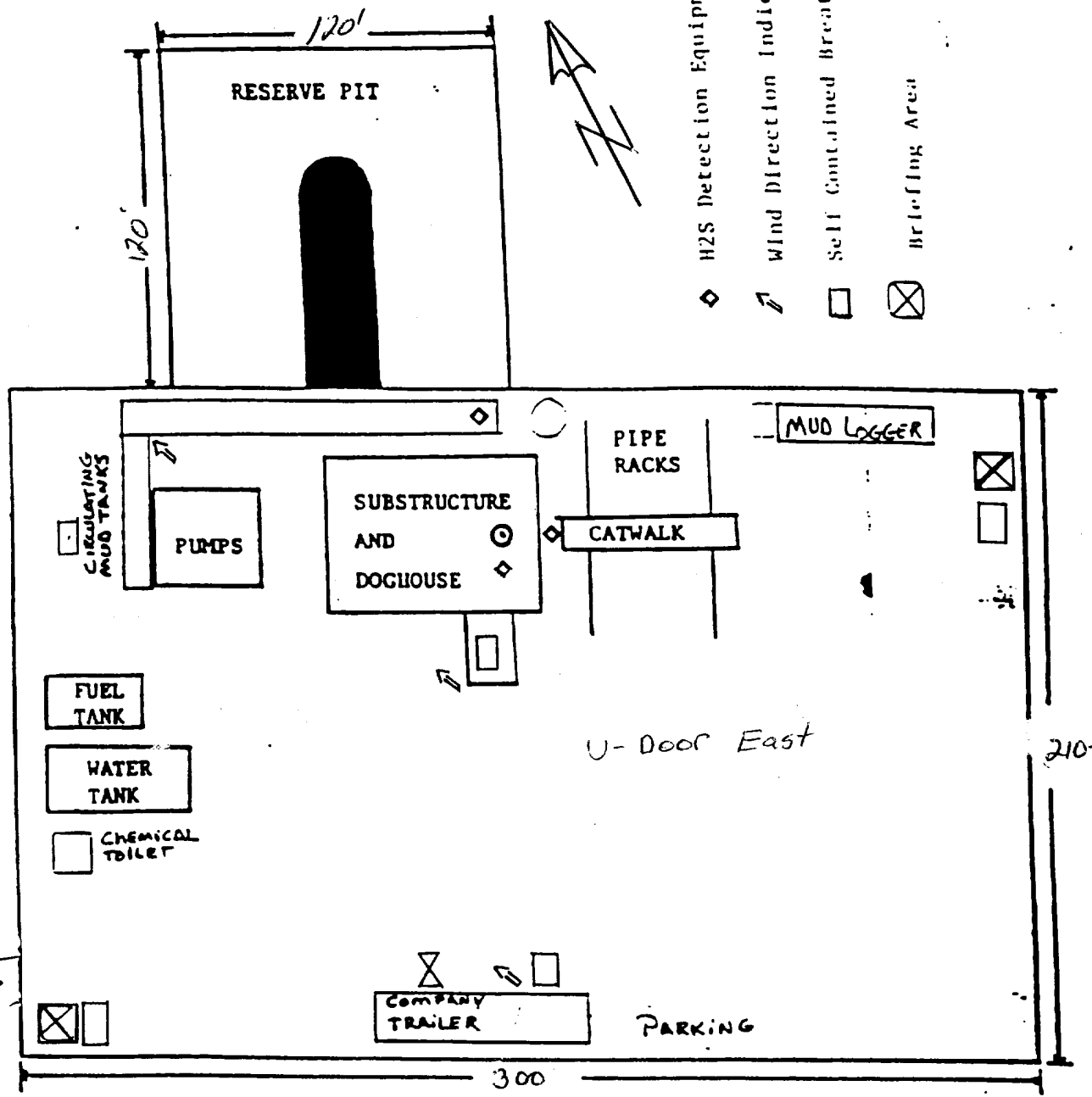
LEASE INDIAN HILLS UNIT

U.S.G.S. TOPOGRAPHIC MAP

MARTHA CREEK, N.M.

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





RESERVE PIT

120'  
120'

H2S Detection Equipment

Wind Direction Indicator

Self Contained Breathing Equipment

Briefing Area

PIPE RACKS

MUD LOGGER

SUBSTRUCTURE  
AND  
DOGHOUSE

CATWALK

PUMPS

CIRCULATING  
MUD TANKS

FUEL  
TANK

WATER  
TANK

CHEMICAL  
TOILET

U-Door East

COMPANY  
TRAILER

PARKING

300

210

Existing Access →

Prevailing Wind Direction  
Southwest

Foot-path for emergency  
egress

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

**INDIAN HILLS UNIT #31**  
**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 west. Turn Right on Marathon Road. Follow 1.9 miles to White Pine Road. Go North 1.3 miles, turn Right on lease road and continue East  $\pm$  1 mile. Turn Right at "Y" and follow lease road  $\pm$  .5 miles to new access road turn south east 3/4 mile 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.

The existing access road will be used. 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.

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 five oil and gas wells operated by Marathon and Fasken within a one-mile radius of the proposed location. These locations have production facilities including separators, condensate, oil, water storage tanks. Marathon and Fasken operate a variety of dehydrators, meter runs, and several gathering lines in the one-mile radius.
- b. New Facilities: New facilities are in place.
- c. Rehabilitation of disturbed areas no longer needed for operations will be accomplished by grading, leveling and seeding as recommended.

5. Location and Type of Water Supply:

- a. Source: Indian Basin Gas Plant, NE/4 Sec. 23, T-21-S, R-23-E.
- b. The water will be transported by a trucking contractor. 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. P. D. (cont.)**  
**Thirteen Point Surface Use Plan**  
**Indian Hills Unit #31**

- a. Construction materials may be obtained from the construction site.
- 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. Topsoil will be stockpiled per specifications.
- 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. Plans are to re-use the existing pit by adding more volume room on the east side.
- c. The reserve pit will be lined (8 mil material).

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 hauled away immediately after drilling is completed. If production is obtained, 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 provided by the BLM. Revegetation is recommended for road area, as well as around the drill pad.

**A. P. D. (cont.)**  
**Thirteen Point Surface Use Plan**  
**Indian Hills Unit #31**

- 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 completion 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.
- f. All efforts will be made to minimize surface disturbances and protect the visual resources along the scenic byway.

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 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 Bureau of Land Management.
- h. Due to proximity of the location and nearby drainage, Marathon will make every effort to minimize surface disturbance. Please see the location pad and reserve pit dimensions..
- i. This well is intended to identify any potential development in the Northern portion of the Indian Hills Unit.

12. Operator Representatives:

R. J. Longmire  
Drilling, Completion, & Workover Superintendent  
P. O. Box 552  
Midland, TX 79702  
800/351-1417  
915/682-1626  
915/687-8344 (Direct Line)  
915/495-2336(Pager)

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

A. P. D. (cont.)  
Thirteen Point Surface Use Plan  
Indian Hills Unit #31

contractors and subcontractors in conformity with this plan and the terms and conditions under which it is approved.

11/9/00  
\_\_\_\_\_  
Date

D. R. Hall Per  
\_\_\_\_\_  
R. J. Longmire

**DRILLING PROGRAM  
MARATHON OIL COMPANY  
INDIAN HILLS UNIT #31**

1. Estimated KB Elevation: 4174' KB

<u>FORMATION</u>	<u>-----TOP-----</u>		<u>-----BASE-----</u>		<u>FLUID CONTENT</u>
	<u>MEASURED</u>	<u>SUBSEA</u>	<u>MEASURED</u>	<u>SUBSEA</u>	
Queen	Surface	+4174'	650'	+3524'	water
San Andres	650'	+3524'	2250'	+1924'	water
Glorietta	2250'	+1924'	2355'	+1819'	
Delaware	3300'	+874'	4300'	+ 126'	
Bone Spring	4300'	-126'	5950'	-1716'	oil gas
Wolfcamp	5950'	-1776'	7520'	-3346'	oil gas
B/Permian Shale	7520'	-3346'	7530'	-3356'	
U. Penn	7530'	-3356'	8200'	-4026'	gas, oil, water

<u>FORMATION</u>	<u>---EST</u>	<u>SBHP---</u>	<u>EST</u>	<u>SBHT</u>	<u>H2S</u>	<u>---SIGNIFICANCE---</u> <u>(obj, marker, etc.)</u>
	<u>PSIG</u>	<u>PPG EMW</u>	<u>DEG f</u>	<u>PPM</u>		
Bone Springs	1210	8.5		500		marker
Wolfcamp	1680	9.0				marker
B/Permian Shale	1810	9.0				objective pay
U. Penn	2050	9.0		5000		objective pay

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:**

4. 13-3/8" Surface: 13-5/8" 3M annular tested to 300#/3000#, 13-5/8" 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, H<sub>2</sub>S 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**  
**Indian Hills Unit #31**

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---		SECTION	HOLE	CSG	WT.		THREADS	NEW
FROM	TO	LENGTH	SIZE	SIZE	PPF	GRADE	COUPLINGS	USED
0	1800'	1800'	17.50"	13-3/8"	54.50#	K-55	8rd, STC	New
0	4800'	4800'	12.25"	9-5/8"	40#	L-80	8rd, LT&C	New
4800'	8800'	4000'	12.25"	9-5/8"	53.5	C-75	8rd, LT&C	New

Casing	DV		Lead	Amt	Type	Yield	Wt.		
String	Depth	Stg.	Tail	SXS	Cement	CF/SX	PPG.	TOC	Additives
13-3/8"			L	100	"C"	7.15	9.5		Dia Seal
13-3/8"			L	100	Thixset	1.52	14.0		Thixset
13-3/8"			L	746	Lite	2.02	12.4	surface	2% cacl2
13-3/8"			T	300	PremPlus	1.34	14.8		
9-5/8"	6400'	1	L	350	" "	2.18	9.2		N2
9-5/8"		1	T	700	" "	1.44	13.0		N2
9-5/8"		2	L	1360	Interfill "C"	2.47	11.9		Flocele
9-5/8"		2	T	200	PremPlus	1.32	14.8		Neat

*Each stage will be preceded by an appropriate mud flush. Actual production hole volumes will be based on the caliper volume plus 20% excess.*

Centralizer Program:

9 5/8" Conventional centralizers. Bottom 3 joints and every fourth joint to surface.

**A. P. D. (cont.)**  
**Thirteen Point Surface Use Plan**  
**Indian Hills Unit #31**

13-3/8" Conventional centralizers , Bottom 3-joints and every 4<sup>th</sup> joint to surface.

9-5/8" Conventional centralizers middle of 1<sup>st</sup> joint, then every joint to 7500', and 1 cent. Every 4<sup>th</sup> joint thereafter to 1100'.

5. Mud Program

<u>---DEPTH---</u>		<u>MUD TYPE</u>	<u>WEIGHT</u>		<u>WL</u>		<u>ADDITIVES</u>	<u>VISUAL MONTR.</u>
<u>FROM</u>	<u>TO</u>		<u>(PPG)</u>	<u>VIS</u>	<u>CC</u>			
0	1200'	fresh water	8.3	28	N/A		Gel, Lime	Reserve
1200'	5000'	fresh	8.5	28-32	N/C		Gel, caustic, H <sub>2</sub> S Scavenger	Reserve
5000'	7000'	fresh	8.9	32-36	N/C		Gel, caustic, H <sub>2</sub> S Scavenger	Reserve
7000'	8800'	fresh	8.9	32-36	<20		Gel, caustic, H <sub>2</sub> S Scavenger	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:

<u>LOG/TEST/CORE/MUDLOG/OTHER</u>	<u>--INTERVAL--</u>		<u>REMARKS</u>
	<u>FROM</u>	<u>TO</u>	
DLL/MSFL/GR/CNL/LDT/CAL	TD	5000'	
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:

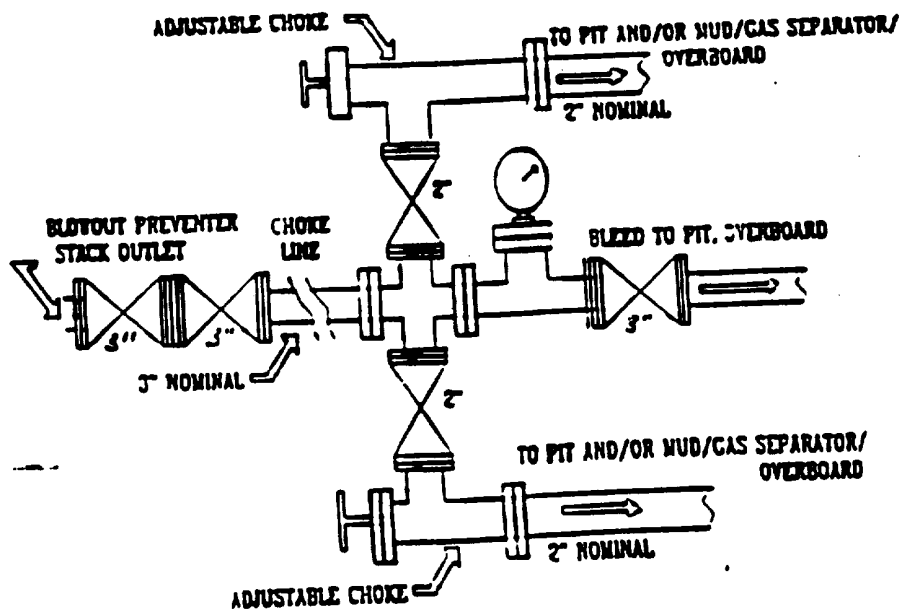
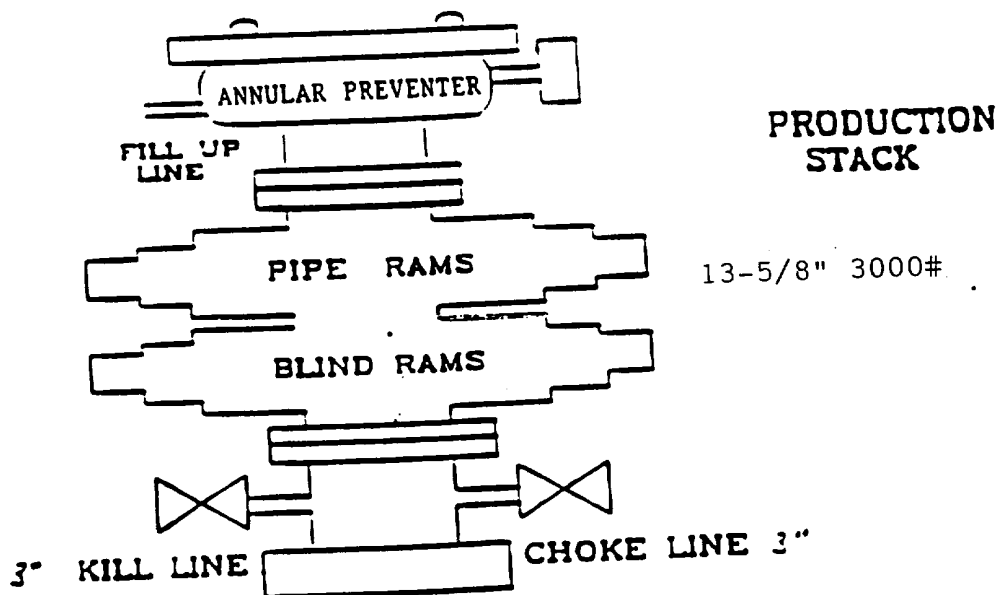
None anticipated. Possible H<sub>2</sub>S in Cisco & Upper Penn. See H<sub>2</sub>S Drilling Operations Plan.

8. Other Information:

Anticipated Starting Date: As soon as possible.

Duration of Well: drilling - 18 days, completion - 10 days.

This well shall be directionally drilled to a standard BHL.



# MARATHON OIL COMPANY

## H2S DRILLING OPERATIONS PLAN

### *I. 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 (H<sub>2</sub>S)
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 H<sub>2</sub>S 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 H<sub>2</sub>S 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 accomodate all pipe sizes
- b. blind rams
- c. choke manifold
- d. closing unit

Auxillary 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 land-line or mobile telephone capabilities.

### C. Mud Program

The mud program has been designed to minimize the volume of H<sub>2</sub>S circulated to surface. Proper mud weight, safe drilling practices, and the use of H<sub>2</sub>S scavengers when appropriate will minimize hazards when penetrating H<sub>2</sub>S bearing zones.

D. Drill Stem Test intervals are as follows:

DST No. 1	_____ ft. to _____ ft.
DST No. 2	_____ ft. to _____ ft.
DST 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