

c/51

**UNITED STATES**  
**DEPARTMENT OF THE INTERIOR**  
**BUREAU OF LAND MANAGEMENT**

N.M. Oil Cons. V-Dis. FORM APPROVED  
1301 W. (Other instructions on reverse side) OMB NO. 1004-0136  
Expires: February 28, 1995

**Artesia, NM 88210**

**APPLICATION FOR PERMIT TO DRILL OR DEEPEN**

<b>1a. TYPE OF WORK</b> <div style="display: flex; justify-content: space-around;"><span>DRILL <input checked="" type="checkbox"/></span><span>DEEPEN <input type="checkbox"/></span></div>			<b>5. LEASE DESIGNATION AND SERIAL NO.</b> LC 0643918		
<b>b. TYPE OF WELL</b> OIL WELL <input type="checkbox"/> GAS WELL <input checked="" type="checkbox"/> OTHER <input type="checkbox"/> SINGLE ZONE <input checked="" type="checkbox"/> MULTIPLE ZONE <input type="checkbox"/>			<b>6. IF INDIAN, ALLOTTEE OR TRIBE NAME</b> N/A		
<b>2. NAME OF OPERATOR</b> Marathon Oil Company 14021			<b>7. UNIT AGREEMENT NAME</b> Indian Hills Unit 6409 NM-70964X		
<b>3. ADDRESS AND TELEPHONE NO.</b> P.O. Box 552 Midland, TX 79702 915/687-8357			<b>8. FARM OR LEASE NAME, WELL NO.</b> Indian Hills Unit # 40		
<b>4. LOCATION OF WELL</b> (Report location clearly and in accordance with any State requirements.)* At surface 497' FNL & 2512' FEL Sec. 20, T-21-S, R-24-E (SHL) At proposed prod. zone <b>**See Below</b>			<b>9. API WELL NO.</b> 30-015-32222		
<b>14. DISTANCE IN MILES AND DIRECTION FROM NEAREST TOWN OR POST OFFICE*</b> 15 miles N.W. of Carlsbad			<b>10. FIELD AND POOL, OR WILDCAT</b> Indian Basin Upper Penn. Assoc Strawn Wildcat/ I. B. Morrow		
<b>15. DISTANCE FROM PROPOSED* LOCATION TO NEAREST PROPERTY OR LEASE LINE, FT.</b> (Also to nearest drlg. unit line, if any) 497'			<b>11. SEC., T., R., M., OR BLK. AND SURVEY OR AREA</b> Sec. 20, T-21-S, R-24-E		
<b>16. NO. OF ACRES IN LEASE</b> 640			<b>12. COUNTY OR PARISH</b> Eddy		
<b>17. NO. OF ACRES ASSIGNED TO THIS WELL</b> 320 W/2			<b>13. STATE</b> N.M.		
<b>18. DISTANCE FROM PROPOSED LOCATION* TO NEAREST WELL, DRILLING, COMPLETED, OR APPLIED FOR, ON THIS LEASE, FT.</b> *1953'			<b>20. ROTARY OR CABLE TOOLS</b> Rotary		
<b>21. ELEVATIONS</b> (Show whether DF, RT, GR, etc.) 4204' G.L.			<b>22. APPROX. DATE WORK WILL START*</b> ASAP		

**23. PROPOSED CASING AND CEMENTING PROGRAM**

SIZE OF HOLE	GRADE, SIZE OF CASING	WEIGHT PER FOOT	SETTING DEPTH	QUANTITY OF CEMENT
12.25"	9-5/8" K-55	36#	1800'	800 sks.
8.750"	7" K-55	23#/ 26#	10,000'	1850 sks.

**Carlsbad Controlled Water Basin**

**\*\*Please See attached memo for pertinent information regarding drilling plans.**



**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.

SIGNED [Signature] TITLE Engineer Tech. DATE 11/12/01

(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 BY /S/ JOE G. LARA TITLE ACTING FIELD MANAGER DATE FEB 27 2002

\*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.

**APPROVAL FOR 1 YEAR**

## **Indian Hills Unit # 40**

**\*\* Marathon Oil Company is proposing to drill a directional Upper Penn. Associated Primary target with Secondary Strawn/ Morrow targets. NOTE: The Morrow zone in the Indian Hills Unit # 30 will be squeezed off prior to completing the Morrow in the proposed well.**

Both IHU # 40 and IHU 42 will share the same drilling pad to conserve space and reduce surface disturbances.

**The Upper Penn., Strawn, and Morrow are all Standard locations.**

**Reference attached Archaeology report # ASC-01-143 for Arch. Clearance.**

### **AT Proposed Zone:**

- 1) Penetration point of Upper Penn. @ 1038' FNL & 1843' FWL.**
- 2) Penetration point of Strawn @ approximately 1138' FNL & 1729' FWL.**
- 3) Penetration point of Morrow @ 1235' FNL & 1597' FWL.**
- 4) Bottom Hole Location (T.D.) @ 1300' FNL & 1525' FWL.**

**Please reference attached Baker Inteq Directional proposal for above information.**

**\* Distance from the proposed Indian Hills Unit # 40 to the existing Indian Hills Unit # 31 which is located @ 1093' FNL & 663' FEL, Section 20, T-21-S, R-24-E is 1953'**

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, N.M. 87504-2088

State of New Mexico  
Energy, Minerals and Natural Resources Department

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

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

WELL LOCATION AND ACREAGE DEDICATION PLAT

☐ AMENDED REPORT

API Number	Pool Code	Pool Name
	33685	Indian Basin Upper Penn. Assoc.
Property Code	Property Name	Well Number
	INDIAN HILLS UNIT	40
OGRID No.	Operator Name	Elevation
14021	MARATHON OIL COMPANY	4204'

Surface Location

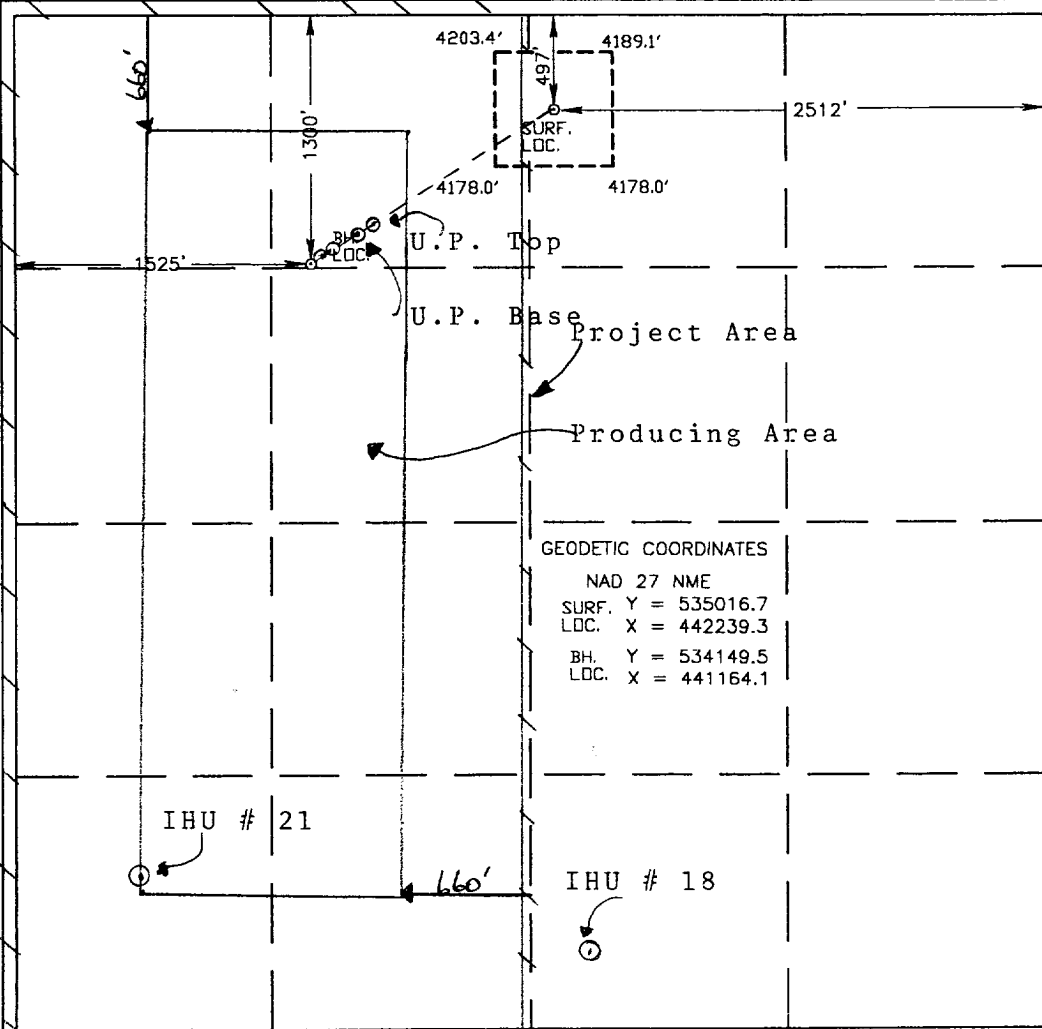
UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
B	20	21-S	24-E		497	NORTH	2512	EAST	EDDY

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
C	20	21-S	24-E		1300	NORTH	1525	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

	<p><b>OPERATOR CERTIFICATION</b></p> <p>I hereby certify the the information contained herein is true and complete to the best of my knowledge and belief.</p> <p><i>Jerry Fletcher</i> Signature Jerry Fletcher Printed Name Engineer Tech. Title 11/12/01 Date</p> <p><b>SURVEYOR CERTIFICATION</b></p> <p>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.</p> <p>SEPTEMBER 5, 2001</p> <p>Date Surveyed _____ AWB Signature &amp; Seal of Professional Surveyor <i>Ronald J. Edson</i> RONALD J. EDSON 11/02/01 01.11.0999 Certificate No. RONALD J. EDSON 3239 GARY EDSON 12641</p>
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## DISTRICT I

P.O. Box 1880, Hobbs, NM 88241-1880

## 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

## State of New Mexico

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## WELL LOCATION AND ACREAGE DEDICATION PLAT

☐ AMENDED REPORT

API Number	Pool Code	Pool Name
		Strawn Wildcat
Property Code	Property Name	Well Number
	INDIAN HILLS UNIT	40
OGRID No.	Operator Name	Elevation
14021	MARATHON OIL COMPANY	4204'

## Surface Location

UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
B	20	21-S	24-E		497	NORTH	2512	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
C	20	21-S	24-E		1300	NORTH	1525	WEST	EDDY
Dedicated Acres	Joint or Infill	Consolidation Code	Order No.						
320 W/2									

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<p>Strawn Top</p> <p>Project Area</p> <p>Producing Area</p> <p>GEODETIC COORDINATES</p> <p>NAD 27 NME</p> <p>SURF. Y = 535016.7</p> <p>LOC. X = 442239.3</p> <p>BH. Y = 534149.5</p> <p>LOC. X = 441164.1</p>	<p><b>OPERATOR CERTIFICATION</b></p> <p>I hereby certify the the information contained herein is true and complete to the best of my knowledge and belief.</p> <p><i>Jerry Fletcher</i></p> <p>Signature</p> <p>Jerry Fletcher</p> <p>Printed Name</p> <p>Engineer Tech.</p> <p>Title</p> <p>11/12/01</p> <p>Date</p> <p><b>SURVEYOR CERTIFICATION</b></p> <p>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.</p> <p>SEPTEMBER 5, 2001</p> <p>Date Surveyed</p> <p>AWB</p> <p>Signature &amp; Seal of Professional Surveyor</p> <p><i>Ronald J. Eidson</i></p> <p>0117.0999</p> <p>Certificate No. RONALD J. EIDSON 3239</p> <p>GARY EIDSON 12641</p>
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WELL LOCATION AND ACREAGE DEDICATION PLAT

☐ AMENDED REPORT

API Number	Pool Code	Pool Name
	78960	Indian Basin Morrow
Property Code	Property Name	Well Number
	INDIAN HILLS UNIT	40
GRID No.	Operator Name	Elevation
14021	MARATHON OIL COMPANY	4204'

Surface Location

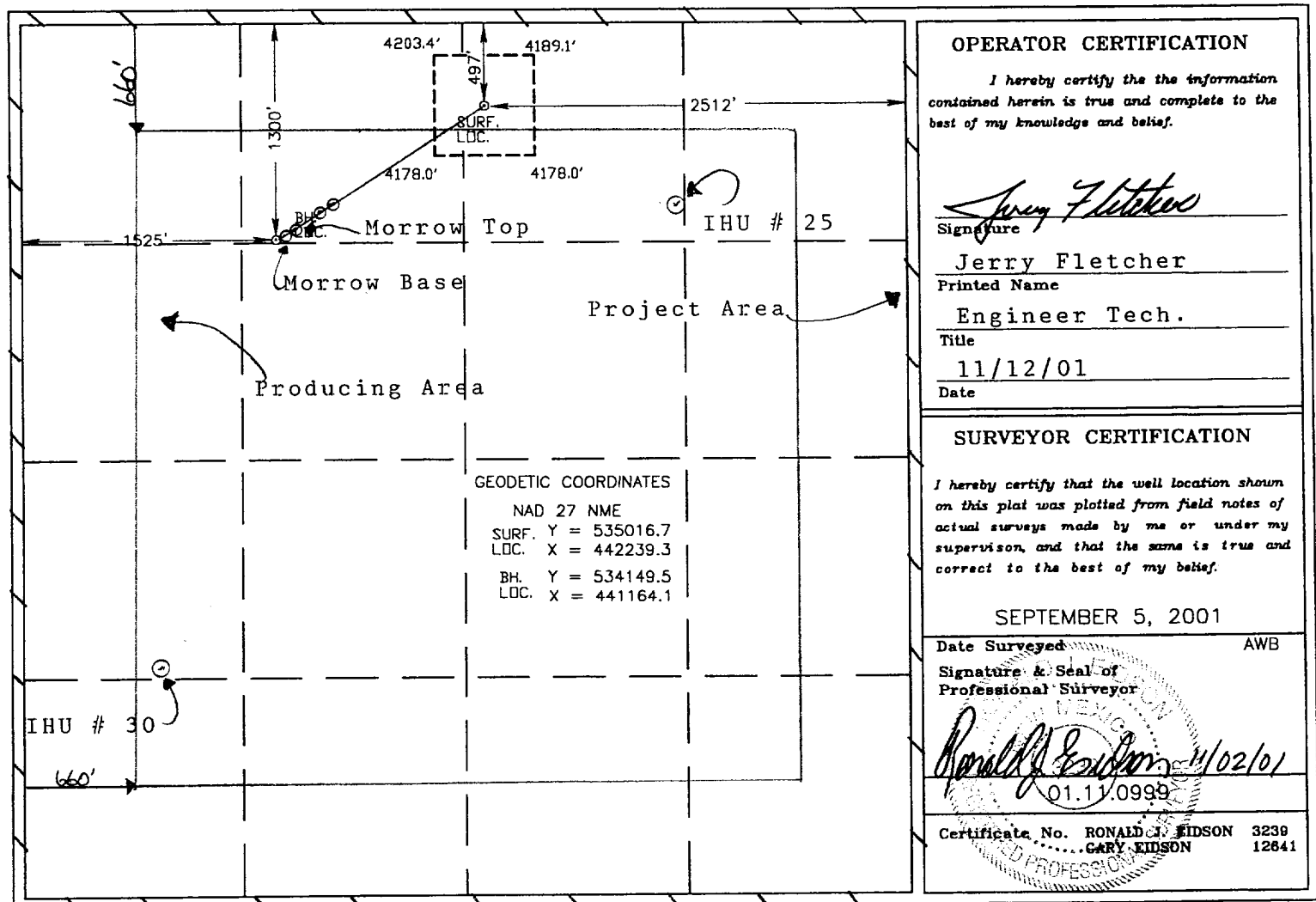
UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
B	20	21-S	24-E		497	NORTH	2512	EAST	EDDY

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
C	20	21-S	24-E		1300	NORTH	1525	WEST	EDDY

Dedicated Acres	Joint or Infill	Consolidation Code	Order No.
640			

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



ARCHAEOLOGICAL SURVEY of the MARATHON OIL COMPANY  
INDIAN HILLS UNIT FEDERAL WELL NO. 40 [497 FNL, 2512 FEL]  
and INDIAN HILLS UNIT FEDERAL WELL NO. 42 [475 FNL, 2522 FEL]  
and PIPELINE R/W RE-ROUTE  
T21S, R24E, SECTION 20 (NW $\frac{1}{4}$ NE $\frac{1}{4}$ ). EDDY COUNTY, NEW MEXICO

FEDERAL LAND SURFACE  
[U.S.G.S. 7.5 minute series, MARTHA CREEK, NEW MEXICO, 1978]

ASC Report 01-143 (NMCRIS NO. 76617)

by James V. Sciscenti, Project Archaeologist  
and Dorothy M. Griffiths, Principal Investigator

ARCHAEOLOGICAL SURVEY CONSULTANTS  
P.O. Box 2285, Roswell, New Mexico 88202-2285  
[505] 623-5012

BUREAU OF LAND MANAGEMENT PERMIT NO.: 18-2920-01-R  
FEDERAL LAND ANNUAL PERMIT NO.: NM-01-070

October 17, 2001

Prepared for:

Marathon Oil Company  
P.O. Box 552  
Midland, Texas 79702-0552

Attention: Jerry Fletcher

Distribution:

— Marathon Oil Company (1)  
BLM - Carlsbad Field Office (2)  
Sciscenti (1)

## TITLE PAGE/ABSTRACT/NEGATIVE PROJECT REPORT FORM

CARLSBAD FIELD OFFICE

M/CFO

1. BLM Report #	2. (ACCEPTED) (REJECTED)	3. NMCRIS #: 76617
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**Report Title:**

ARCHAEOLOGICAL SURVEY of the MARATHON OIL COMPANY INDIAN HILLS UNIT FEDERAL WELL NO. 40 [497 FNL, 2512 FEL], and INDIAN HILLS UNIT FEDERAL WELL NO. 42 [475 FNL, 2522 FEL]; and PIPELINE R/W RE-ROUTE. T21S, R24E, SECTION 20 (NW $\frac{1}{4}$ NE $\frac{1}{4}$ ). EDDY COUNTY, NEW MEXICO.

Project Date (Fieldwork): 10/14/2001 6. Report Date: 10/17/2001

**Consultant Name & Address:**

ARCHAEOLOGICAL SURVEY CONSULTANTS

P.O. Box 2285, Roswell, New Mexico 88202-2285. Phone: 505-623-5012.

Direct Charge: D.M. Griffiths and/or J.V. Scisoenti

Project Archaeologist: D.M. Griffiths and/or J.V. Scisoenti

Field Personnel Names: D.M. Griffiths; J.V. Scisoenti; L.J. Jaramillo

Bureau of Land Management Permit #: 18-2920-01-R  
State of New Mexico Permit #: NM-01-070

9. Consultant Report #: ASC Report 01-143

10. Sponsor Name, Address, &amp; Phone Number:

Individual Responsible: Jerry Fletcher

MARATHON OIL COMPANY

P.O. Box 552, Midland, TX 79702-0552. Phone: 1-800-351-1417

11. For BLM Use Only.

12. ACREAGE. Total Acres Surveyed: 6.10  
Surface Ownership by Acres: Federal: 6.10 N.M. State: 0 Fee: 0

13. Location (Maps attached): a. State: New Mexico b. County: Eddy

c. BLM Field Office: Carlsbad d. Nearest Town: Seven Rivers

e. Project (Well Pad) Location: Indian Hills Unit Fed. Well No. 40: T21S, R24E, Section 20 (497 FNL, 2512 FEL). Indian Hills Unit Fed. Well No. 42: T21S, R24E, Section 20 (475 FNL, 2522 FEL). Both locations are in T21S, R24E, Section 20 (NW $\frac{1}{4}$ NE $\frac{1}{4}$ ).

Access Road Location: not applicable (straddles extant caliche road).

Pipeline R/W Location: T21S, R24E, Section 20 (NW $\frac{1}{4}$ NE $\frac{1}{4}$ ; NE $\frac{1}{4}$ NW $\frac{1}{4}$ ).

f. Map Name(s): U.S.G.S. 7.5 minute series, MARTHA CREEK, NEW MEXICO, 1978 (32104-D5)

g. Impacted Block Area: 300 ft. square.

Surveyed Block Area: ca. 620 ft. NS x 615 ft. EW. (8.75 acres); the well pad overlaps a previously surveyed 600 ft. sq. well pad (see ASC 01-023).  
New surveyed acreage = 3.34 acres.

Linear Impact Area: 600 ft. long x 35 ft. wide.

Surveyed Linear Area: 600 ft. long x 200 ft. wide, 2.76 acres.

TITLE PAGE/ABSTRACT/NEGATIVE PROJECT REPORT FORM  
(continued)

BLM/CFO

- 14 a. **Records Search:** ARMS & BLM records, as of 10/10/2001, do not indicate the prior recording of sites within 0.25 miles of the project area.
- b. **Description of Undertaking:** intensive archaeological survey of the Marathon Oil Company Indian Hills Unit Federal Well Nos. 40 & 42, consisting of 2 proposed overlapping well pads (each 600 ft. square). Since the 2 well pad overlap a previously inspected, proposed well pad (see ASC Report 01-023), the total well pad acreage inspected during ASC Project 01-143 = 3.34 acres.
- In addition, a proposed pipeline R/W re-route (to avoid the proposed well centres), 600 ft. long x 200 ft. wide (2.76 acres) was inspected for cultural remains. A total federal land surface of 6.10 acres was inspected for cultural remains during ASC Project 01-143. No new access road is required, since the proposed well pads straddle the extant caliche oilfield road.
- c. **Environmental Setting:** situated on the crest and near slopes of the Seven Rivers Hills, ca. 0.25 miles to the ESE of Rizado Point, within the Staple Canyon drainage system, with the overlapping well pads on the spine and slopes of an ESE projecting ridge. The central part of the proposed well pads is within relatively level to slightly inclined terrain, on the spine of the ridge, in an area marked by limestone outcrops and bedrock, with shallow loam soils and limestone scree. The southwestern and southern part of the well pad is in terrain inclined to the SW, S, and SE towards a tributary of Staple Canyon; limestone outcrops are widely exposed on the slopes. The northern part of the well pads, and the pipeline re-route, is within terrain inclined directly NNE towards Staple Canyon, with wide exposures of shallow loam soil. Soils: Ector stony loam on the ridge spine and near slopes; Limestone rock land within steep slopes. Vegetation: marginal Chihuahua Desert Scrub. Ground Visibility: ca. 65% to 85%.
- d. **Field Methods:** straight and zig-zag transects, spaced no greater than 15 metres apart. Work Hours on Ground: 3.0. Crew Size: 3. Artifacts Collected: 0.
15. **Cultural Resource Findings:** archaeological survey of the Marathon Oil Company Indian Hills Unit Federal Well Nos. 40 & 42 did not reveal any prehistoric or historic cultural resources.

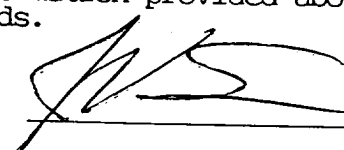
16. **Management Summary & Recommendations:**

Archaeological clearance for the Marathon Oil Company Indian Hills Unit Federal Well Nos. 40 & 42 is recommended, without proviso.

I certify that the information provided above is correct and accurate, and meets all applicable BLM standards.

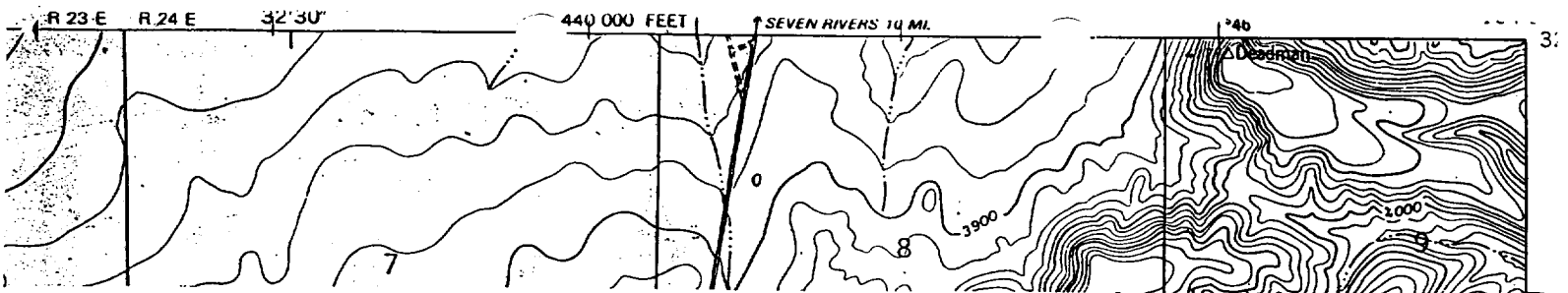
Project Archaeologist

Principal Investigator

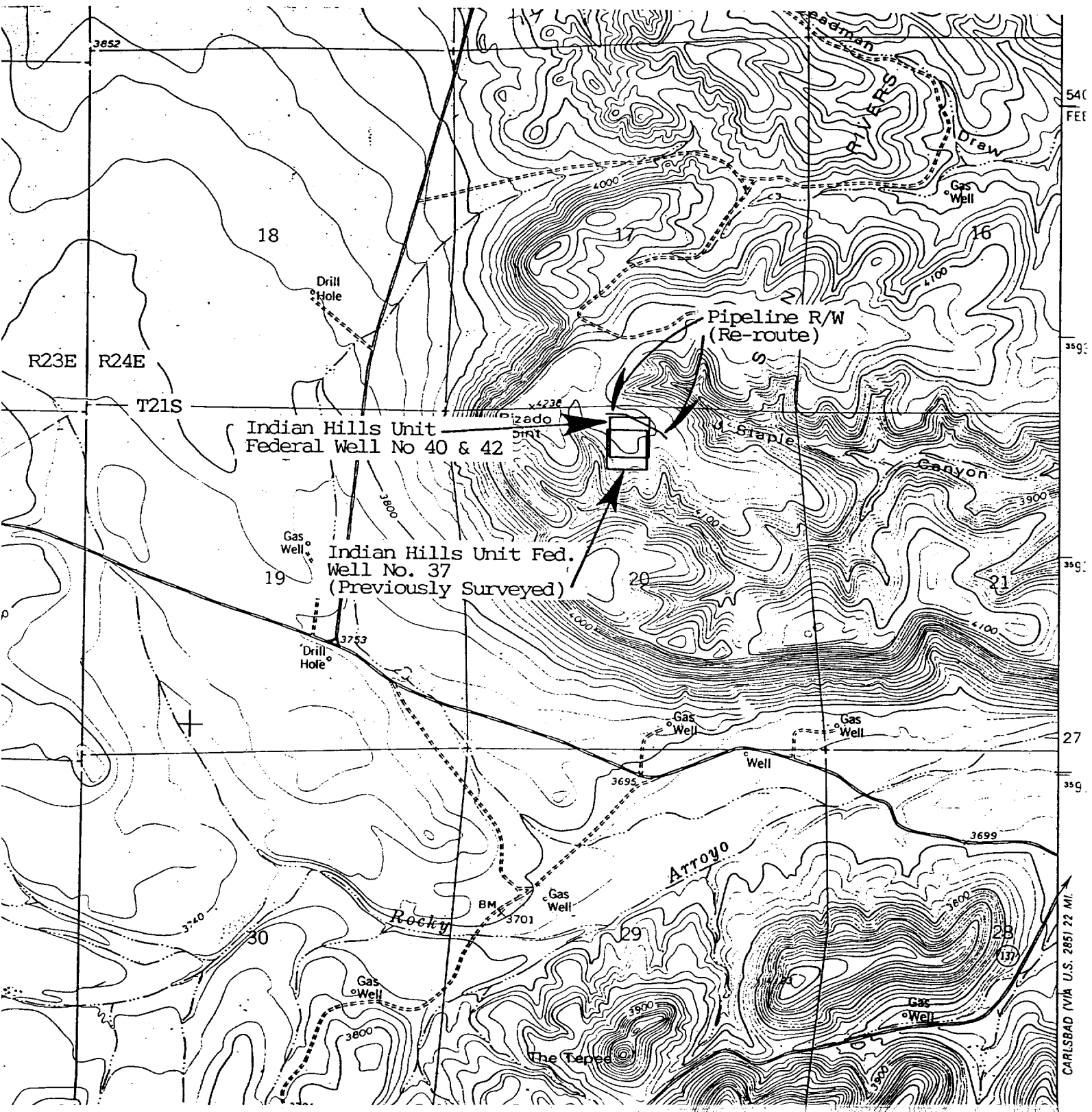
  
D.M. Griffiths

D.M. Griffiths





Map showing the location of the Marathon Oil Company Indian Hills Unit Federal Well No. 40 & No. 42 and Pipeline Re-Route. T21S, R24E, Section 20, Eddy County, New Mexico [BLM, Carlsbad Field Office, New Mexico]. Overlapping squares show locations of well pads; solid line shows location of pipeline re-route. U.S.G.S. 7.5 minute series, MARTHA CREEK, NEW MEXICO, 1978. ASC Project 01-143.





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

**INDIAN HILLS UNIT # 40  
Sec. 20,T-21-S, R-24-E  
Eddy County, New Mexico**

1. Existing Roads: Refer to Vicinity Lease Map.

- a. The proposed well site 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 1 mile. Turn Right at "Y" and follow lease road .5 mile to location in center of existing road.
- 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.

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/ Northeast.

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 six 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: No new facilities are proposed at this time. The well shall utilize the existing # 117 facility.
- 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.

**A. P. D. (cont.)**  
**Thirteen Point Surface Use Plan**  
**Indian Hills Unit #40**

6. Source of Construction Materials:
  - 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. In some cases 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 tool pusher.
  
9. Well site Layout:
  - a. The well pad layout shows the drill site 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.
  - c. The reserve pit will be lined (8 mil material).

**A. P. D. (cont.)**  
**Thirteen Point Surface Use Plan**  
**Indian Hills Unit #40**

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. Re-vegetation will be accomplished by planting mixed grasses as per formula provided by the BLM. Re-vegetation 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 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 re-vegetation 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 well site 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.

**A. P. D. (cont.)**  
**Thirteen Point Surface Use Plan**  
**Indian Hills Unit #40**


12. Operator Representatives:

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

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.

11/14/01  
Date

R. J. Longmire  


**DRILLING PROGRAM  
MARATHON OIL COMPANY  
INDIAN HILLS UNIT #40**

1. Estimated KB Elevation: 4221' KB 17' rig Floor

<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	476'	+3745'	1211'	+3010'	water
San Andres	1211'	+3010'	2851'	+1370'	water
Glorietta	2851'	+1370'	2971'	+1250'	
Yeso	2971'	+1250'	6831'	-2610'	
Bone Spring	6831'	-2610'	7061'	-2840'	oil gas
Wolfcamp	7061'	-2840'	7891'	-3670'	oil gas
Cisco	7891'	-3670'	8096'	-3875'	
U. Penn	8096'	-3875'	8626'	-4405'	gas, oil, water
Strawn	8626'	-4405'	9450'	-5105'	gas, oil, water
Morrow	9450'	-5105'	10,000'	-5779'	gas, oil

<u>FORMATION</u>	<u>---EST PSIG</u>	<u>SBHP--- PPG EMW</u>	<u>EST DEG f</u>	<u>SBHT PPM</u>	<u>H2S</u>	<u>---SIGNIFICANCE--- (obj, marker, etc.)</u>
Bone Springs	1210	8.5		500		marker
Wolfcamp	1680	9.0				marker
U. Penn	1025	9.0		5000		objective pay
Strawn	2250	9.0		5000		objective pay
Morrow	2400	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:**

9-5/8" Surface: 11" 3M annular tested to 300# PSI/3000#PSI, 11" 3M dual rams, choke manifold and mud cross, tested to 300# PSI/3000#PSI.

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 wrench and safety valve and subs to fit all drill string connections in use will be available on rig floor.

#### 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'	12.25"	9-5/8"	36#	K-55	8rd, STC		New
0	4800'	4800'	8.750"	7.00"	23#	K-55	8rd, LT&C		New
4800'	10,000'	5200'	8.750"	7.00"	26#	K-55	8rd, LT&C		New

Casing String	DV Depth	Stg.	Lead Tail	Amt SXS	Type Cement	Yield CF/SX	Wt. PPG.	TOC	Additives
9-5/8"			L	200	Thix Set	1.52	14.0		1% Thix set"A .25% Thix-set"B"
9-5/8"			L	400	Light	2.02	12.4		2% CACL2, cello flakes
9-5/8"			T	200	Class "C"	1.34	14.8		2% CACL2
7.0"			1	350	Class "H"	1.18	15.6		N2, Zone seal,
7.0"			1	500	Mod Super"H"	1.69	13.0		.4% CFR, 5 pps Gilsonite
7.0"	6500'		2	900	Interfill "C"	2.47	11.9	pps	.25 pps Cello,3 Gilsonite
7.0"			2	100	Class "C"	1.32	14.8		2% CACL2



**A. P. D. (cont.)**  
**Thirteen Point Surface Use Plan**  
**Indian Hills Unit #40**

Each stage will be preceded by an appropriate mud flush. Actual production hole volumes will be based on the caliper volume plus 25% excess.

Centralizer Program:

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

7.0" 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 10,000'

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 Starch	Reserve
5000'	7000'	fresh	8.9	32-36	N/C		Gel, caustic, H <sub>2</sub> S Starch	Reserve
7000'	10,000'	fresh	8.9	32-36	<20		Gel, caustic, H <sub>2</sub> S Starch	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			

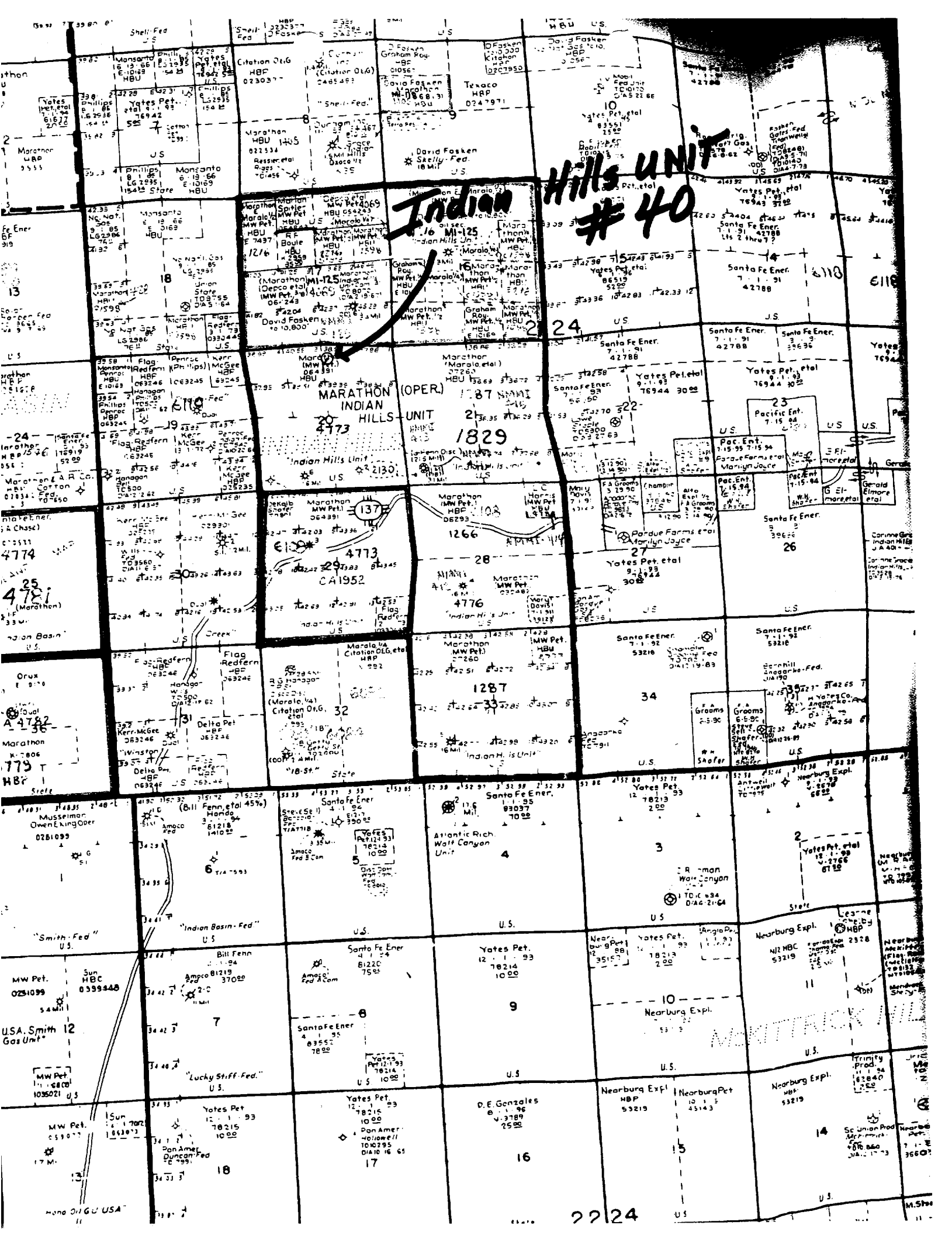
7. Abnormal Pressures, Temperatures or Potential Hazards:

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

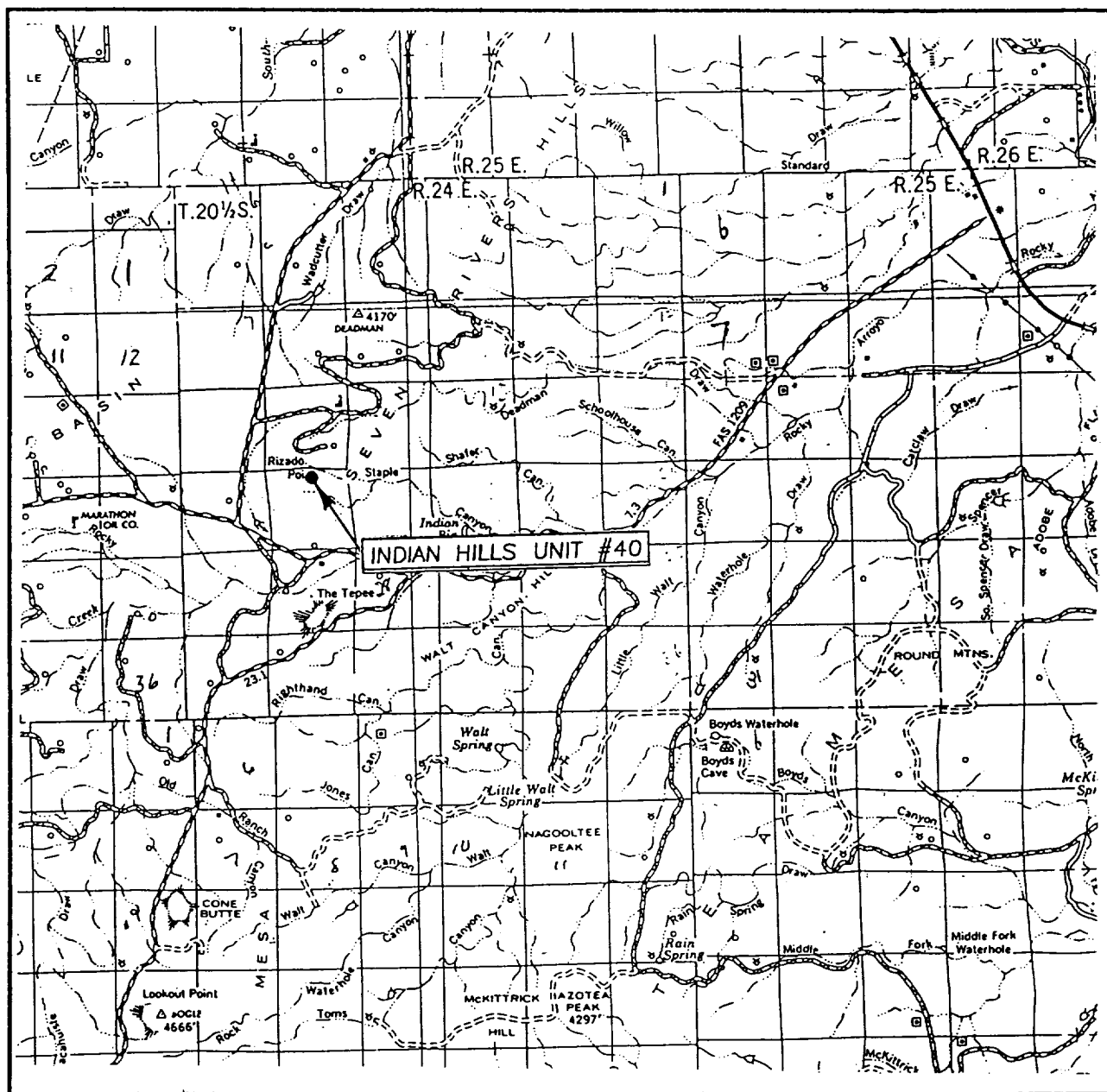
8. Other Information:

Anticipated Starting Date: As soon as possible.

Duration of Well: drilling - 25 days, completion - 10 days.



# VICINITY MAP



SCALE: 1" = 2 MILES

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

SURVEY N.M.P.M.

COUNTY EDDY

DESCRIPTION 497' FNL 2512' FEL

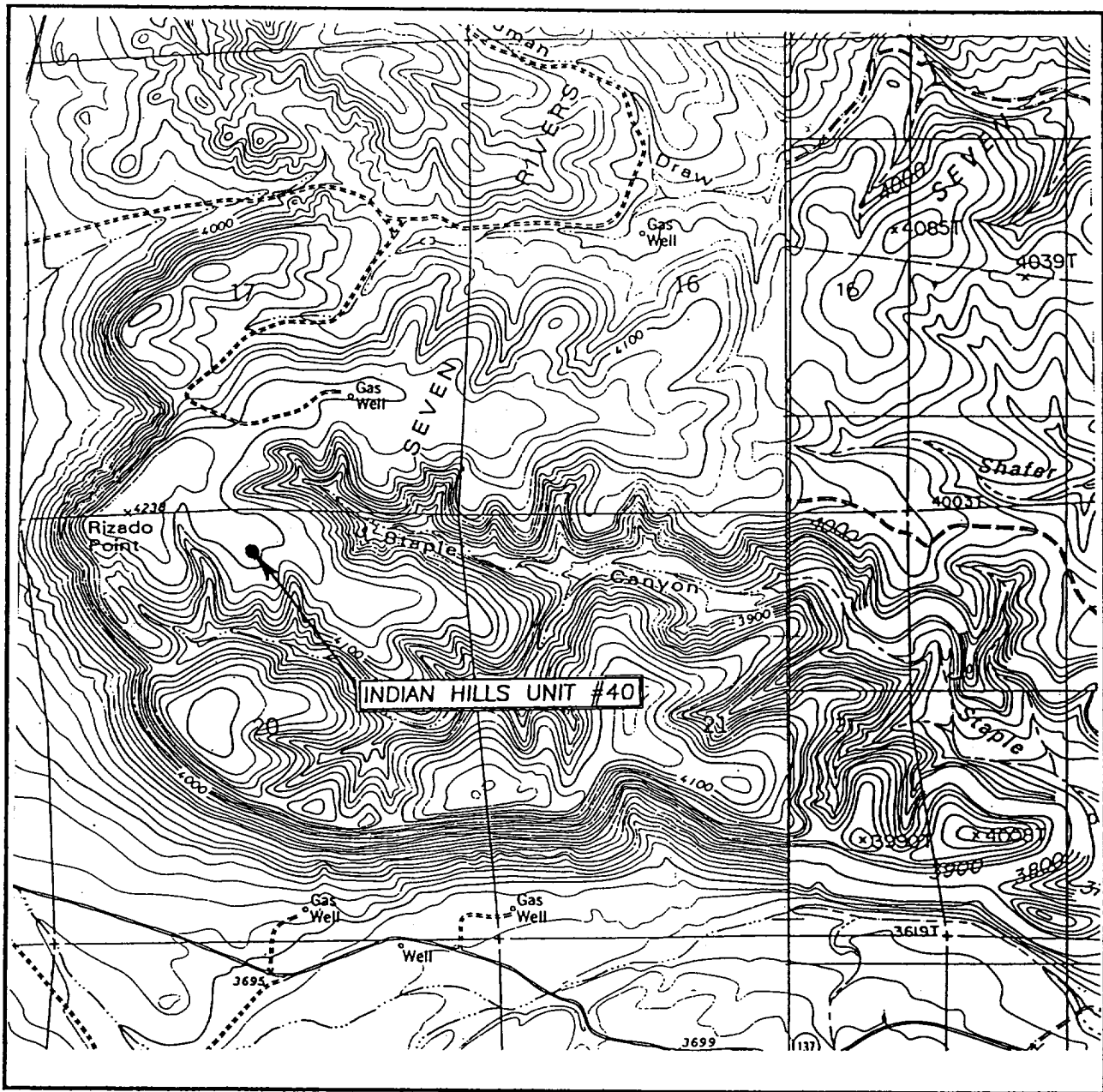
ELEVATION 4204'

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

AZOTEA PEAK, N.M.

SURVEY N.M.P.M.

MARTHA CREEK N.M.

COUNTY EDDY

DESCRIPTION 497' FNL 2512' FEL

ELEVATION 4204'

OPERATOR MARATHON OIL COMPANY

LEASE INDIAN HILLS UNIT

U.S.G.S. TOPOGRAPHIC MAP  
AZOTEA PEAK, N.M. - MARTHA CREEK N.M.

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

IHU #40

Top Soil  
Stack pile

RESERVE PIT

◇ H2S Detection Equipment

↗ Wind Direction Indicator

□ Self Contained Breathing Equip

⊗ Briefing Area

CIRCULATING  
MUD TANKS

PUMPS

SUBSTRUCTURE  
AND  
DOGHOUSE

PIPE  
RACKS

CATWALK

MUD LOGGER

FUEL  
TANK

WATER  
TANK

□ CHEMICAL  
TOILET

Lay down NE →

Main Road  
Access

⏏  
COMPANY  
TRAILER

PARKING

350'

210'

Prevailing Wind Direction

Southwest

Foot-path for emergency

egress

# **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:

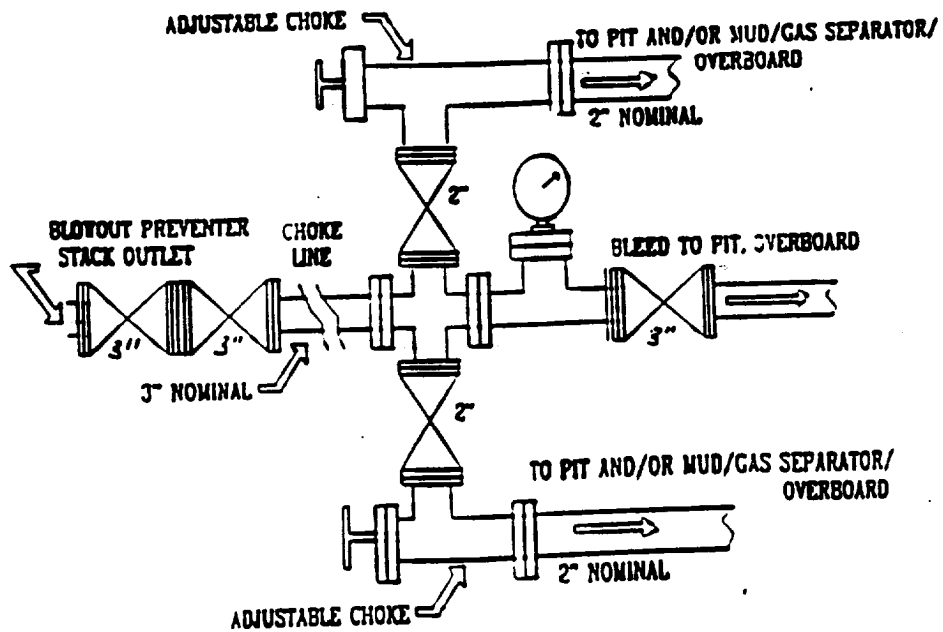
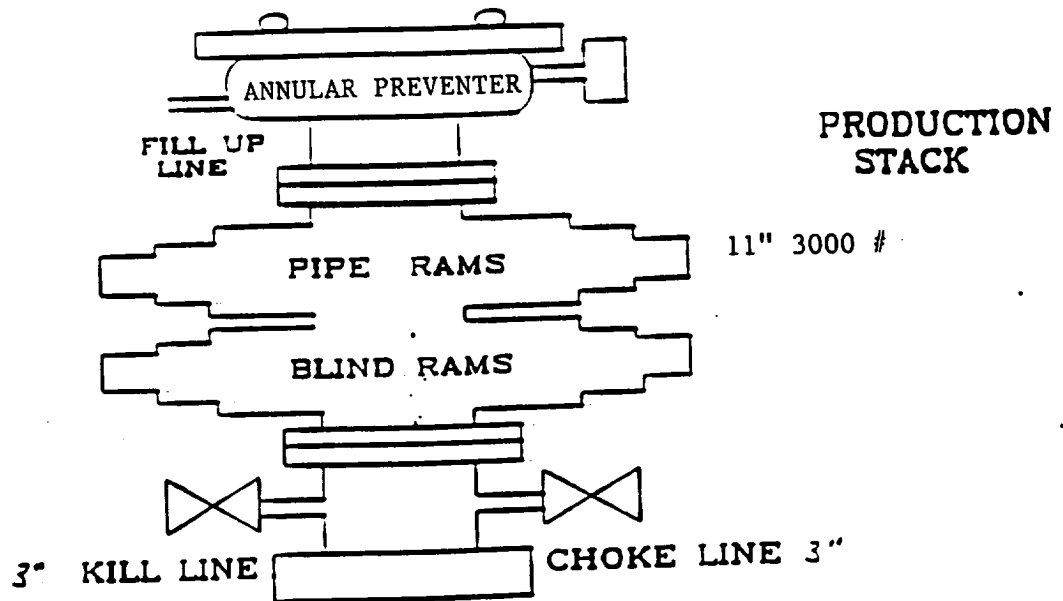
DST No. 1	_____	ft. to	_____	ft.
DST No. 2	_____	ft. to	_____	ft.
DST No. 3	_____	ft. to	_____	ft.

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







Marathon Oil Company  
Indian Hills Unit 40

slot #1  
INDIAN BASIN  
Eddy County New Mexico

P R O P O S A L L I S T I N G

by  
Baker Hughes INTEQ

Your ref : P12DJRH  
Our ref : prop3104  
License :

Date printed : 7-Nov-2001  
Date created : 7-Nov-2001  
Last revised : 7-Nov-2001

Field is centred on n32 30 0.000,w104 30 0  
Structure is centred on 442239.300,535016.700,999.00000,N

Slot location is n32 28 14.640,w104 31 14.248  
Slot Grid coordinates are N 535016.700, E 442239.300  
Slot local coordinates are 0.00 N 0.00 E

Projection type: mercator - New Mexico East (3001), Spheroid: Clarke - 1866  
Reference North is True North

Marathon Oil Company  
Indian Hills Unit 40, slot #1  
INDIAN BASIN, Eddy County New Mexico

PROPOSAL LISTING Page 1  
Your ref : P12DJRH  
Last revised : 7-Nov-2001

Measured Depth	Inclin. Degrees	Azimuth Degrees	True Vert 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
2000.00	0.00	231.06	2000.00	0.00 N	0.00 E	0.00
2100.00	2.00	231.06	2099.98	1.10 S	1.36 W	1.75
2200.00	4.00	231.06	2199.83	4.39 S	5.43 W	6.98
2300.00	6.00	231.06	2299.45	9.86 S	12.21 W	15.69
2400.00	8.00	231.06	2398.70	17.52 S	21.68 W	27.88
2500.00	10.00	231.06	2497.46	27.35 S	33.85 W	43.52
2525.71	10.51	231.06	2522.76	30.24 S	37.41 W	48.10
3000.00	10.51	231.06	2989.09	84.64 S	104.73 W	134.65
3500.00	10.51	231.06	3480.70	141.98 S	175.69 W	225.89
4000.00	10.51	231.06	3972.30	199.33 S	246.66 W	317.13
4500.00	10.51	231.06	4463.91	256.67 S	317.62 W	408.37
5000.00	10.51	231.06	4955.51	314.02 S	388.59 W	499.61
5500.00	10.51	231.06	5447.11	371.37 S	459.56 W	590.85
6000.00	10.51	231.06	5938.72	428.71 S	530.52 W	682.09
6500.00	10.51	231.06	6430.32	486.06 S	601.49 W	773.33
7000.00	10.51	231.06	6921.93	543.40 S	672.45 W	864.57
7500.00	10.51	231.06	7413.53	600.75 S	743.42 W	955.81
7842.21	10.51	231.06	7750.00	640.00 S	791.99 W	1018.26 TOP OF UPPER PENN
8452.46	10.51	231.06	8350.00	709.98 S	878.59 W	0.00 1129.60 UPPER PENN BASE
9571.22	10.51	231.06	9450.00	838.24 S	1037.31 W	0.00 1333.66 MORROW TOP
9600.00	10.51	231.06	9478.29	841.54 S	1041.39 W	0.00 1338.91
9700.00	10.51	231.06	9576.62	853.00 S	1055.58 W	0.00 1357.15
9800.00	10.51	231.06	9674.94	864.47 S	1069.77 W	0.00 1375.39
9900.00	10.51	231.06	9773.26	875.93 S	1083.95 W	0.00 1393.63
10000.00	10.51	231.06	9871.58	887.40 S	1098.14 W	0.00 1411.87

All data is in feet unless otherwise stated.  
Coordinates from slot #1 and TVD from rotary table.  
Bottom hole distance is 1435.70 on azimuth 231.06 degrees from wellhead.  
Vertical section is from N 0.00 E 0.00 on azimuth 231.06 degrees.  
Calculation uses the minimum curvature method.  
Presented by Baker Hughes INTEQ

1038' FNL # 1843 FNL  
1108' FNL # 1749' FNL  
1235' FNL # 1597' FNL

Marathon Oil Company  
Indian Hills Unit 40, slot #1  
INDIAN BASIN, Eddy County New Mexico

PROPOSAL LISTING Page 2  
Your ref : P12DJRH  
Last revised : 7-Nov-2001

Measured Depth	Inclin. Degrees	Azimuth Degrees	True Vert 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	
10079.76	10.51	231.06	9950.00	896.54 S	0.00	1426.42	MORROW BASE 1294' FNL # 1531' FNL
10115.43	10.51	231.06	9985.07	900.63 S	0.00	1432.93	
10130.61	10.51	231.06	10000.00	902.37 S	0.00	1435.70	T.O. 1300' FNL * 1525' FNL

All data is in feet unless otherwise stated.  
Coordinates from slot #1 and TVD from rotary table.  
Bottom hole distance is 1435.70 on azimuth 231.06 degrees from wellhead.  
Vertical section is from N 0.00 E 0.00 on azimuth 231.06 degrees.  
Calculation uses the minimum curvature method.  
Presented by Baker Hughes INTEQ

Marathon Oil Company  
Indian Hills Unit 40, slot #1  
INDIAN BASIN, Eddy County New Mexico

PROPOSAL LISTING Page 3  
Your ref : P12DJRH  
Last revised : 7-Nov-2001

Comments in wellpath  
=====

MD	TVD	Rectangular Coords.	Comment
7842.21	7750.00	640.00 S	791.99 W TOP OF UPPER PENN
8452.46	8350.00	709.98 S	878.59 W UPPER PENN BASE
9571.22	9450.00	838.24 S	1037.31 W MORROW TOP
10079.76	9950.00	896.54 S	1109.46 W MORROW BASE

Targets associated with this wellpath  
=====

Target name	Geographic Location	T.V.D.	Rectangular Coordinates	Revised
TOP OF UPPER PENN		7750.00	640.00S	791.99W 7-Nov-2001
UPPER PENN BASE		8350.00	709.98S	878.59W 7-Nov-2001
MORROW TOP		9450.00	838.24S	1037.31W 7-Nov-2001
MORROW BASE		9950.00	896.54S	1109.46W 7-Nov-2001