



P.O. Box 3128  
Houston, TX 77253-3128  
Telephone 713/629-6600

**RECEIVED**

March 30, 2004

**MAR 31 2004**

Mr. Richard Ezeanyim  
Oil Conservation Division  
1220 South Saint Francis Drive  
Santa Fe, New Mexico 87504

**Oil Conservation Division  
1220 S. St. Francis Drive  
Santa Fe, NM 87505**

**RE: *Indian Hills Unit Well No. 31 (API No. 30-015-31534) Sidetrack Re-Entry  
1,093' FNL & 663' FEL, Sec. 20, Township 21 South, Range 24 East (SHL),  
2,467' FNL & 496' FWL, Sec. 21, Township 21 South, Range 24 East (BHL)  
Indian Basin Upper Pennsylvanian Associated Pool***

Dear Mr. Ezeanyim,

By means of this application, Marathon respectfully requests administrative approval for a non-standard location for the proposed sidetrack of the Indian Hills Unit Well No. 31. The current well has a surface location of 1,093' FNL & 663' FEL, Section 20, Township 21 South, Range 24 East. Marathon requests this approval in order to sidetrack and reposition the well to a more southern bottomhole location of 2,467' FNL & 496' FWL, Section 21, Township 21 South, Range 24 East in the Upper Pennsylvanian formation, and the well shall remain dedicated to the standard spacing unit consisting of the east half of Section 21.

Marathon proposes to sidetrack the Indian Hills Unit Well No. 31 in the "Indian Basin Upper Pennsylvanian Associated Pool" as promulgated by the New Mexico Oil Conservation Division Order Nos. R-9922, R-9922-A, R-9922-B, R-9922-C, and R-9922-D and the general rules for the Associated Gas Pools of Southeast New Mexico as promulgated by Division Order No. R-5533. These rules require wells to be located no closer than 660 feet to the outer boundary of the proration/spacing unit and no closer than 330 feet to the governmental quarter/quarter section line. The proposed Indian Hills Unit Well No. 31 is unorthodox because the wellbore will penetrate the Upper Pennsylvanian interval within the 660 foot setback from the western outer boundary of the 320-acre "stand-up" gas proration unit dedicated to the west half of Section 21 (please see Attachment #1 - Well Location and Acreage Dedication Plats, Attachment #2 - Location Verification Map, and Attachment #3 - Vicinity Map). Based on the proposed directional plan, it is expected that the Upper Pennsylvanian formation will be penetrated at 2,286' FNL & 340' FWL in Section 21, to the anticipated terminus of the wellbore at 2,467' FNL & 496' FWL in Section 21 (please see Attachment #4 - Directional Plat supplied by Baker Inteq, Marathon's proposed directional drilling company for the well).

In support of this application, specific details will be provided for the proposed unorthodox location. These details will include a brief Indian Hills Unit Well No. 31 history, the proration units related to the proposed well work, how the proposed sidetrack

fits into Marathon's reservoir management plan, and why the proposed location is geologically superior to a standard location in Section 21.

### **Well History:**

The Indian Hills Unit Well No. 31 was directionally drilled in February, 2001, to a total depth of 8,982' MD. The well was completed in the Upper Pennsylvanian formation and placed on production. Production from this well has recently dropped significantly and continues to be on an extremely steep decline. In order to most optimally drain the Upper Pennsylvanian reservoir, Marathon's proposed plan is to first squeeze off the existing Upper Pennsylvanian formation perforations and sidetrack the well to a more southern bottomhole location.

### **Proration Unit:**

Currently, the Indian Hills Unit Well No. 31 is dedicated to a standard proration unit consisting of the west half of Section 21, Township 21 South, Range 24 East. The proposed sidetrack will remain within this same proration unit. There are presently two other wells, the Indian Hills Unit Well No. 1 (API No. 30-015-10066), and the Indian Hills Unit Well No. 36 (API No. 30-015-32140), which also produce from this proration unit. For your information, the Indian Hills Unit Well No. 1 is producing from a non-standard location as per Administrative Order NSL-4649 (BHL). Further, there is an additional well in the western half of Section 21, the Indian Hills Unit Well No. 26 (API No. 30-015-31274), but this well produces from the deeper Morrow formation (please see Attachment #5 – Indian Basin field map covering Sections 21 and 24, Township 21 South, Range 24 East). The Indian Hills Unit is operated by Marathon Oil Company. Marathon has a 99.54544% working interest and Nearburg Exploration has a 0.45456% working interest. The ownership of this proration unit is identical to Section 20 which offsets to the west of the proposed unorthodox location in the Upper Pennsylvanian formation.

### **Geologic Issues:**

The Indian Basin Upper Pennsylvanian Associated Pool is predominantly composed of dolomite and limestone sequences. With current technology, only the dolomite sequences have proved productive and economic. The proposed location for the sidetrack of the Indian Hills Unit Well No. 31 is expected to encounter minimal limestone because of dolomitic facies in all offsetting wells, and is expected to better develop the central area of the productive dolomite horizons within the Indian Hills Unit. Furthermore, the proposed penetration point at 2,286' FNL & 340' FWL in Section 21 is structurally on strike to the existing Indian Hills Unit Well No. 31 and is equivalent to the nearby and highly productive Indian Hills Unit Well No. 36 wellbore. A cross section between these wells has been generated for clarification purposes (please see Attachment #6).

### **Reservoir Management Plan:**

Marathon is pursuing its final anticipated infill development phase of the Indian Basin Upper Pennsylvanian Associated Gas Pool. The objective of this program is to infill drill

the oil column from the current 160-acre well density to an 80-acre well density. The proposed 80-acre infill program will improve oil recovery while minimizing both economic and reservoir waste.

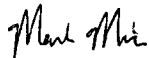
It is Marathon's belief that the proposed unorthodox location represents a superior location for optimal reservoir drainage than a standard location. The BHL of the Upper Pennsylvanian in the sidetracked Indian Hills Unit Well No. 31 provides a well balanced and near equal inter-well spacing between the existing wells. This 'equal' inter-well spacing will minimize well-to-well interference and hence maximize reserve recovery.

**Notifications:**

It is Marathon's understanding that because the gas spacing unit towards which the Indian Hills Unit Well No. 31 will be unorthodox is identical in ownership to that of the proposed, standard, 320-acre gas spacing unit, no waivers or notifications are required.

Should you have any questions/comments/concerns, please contact me at (713) 296-1921.

Respectfully,

A handwritten signature in cursive script, appearing to read "Mark Mick".

Mark Mick  
Operations Engineer  
Indian Basin Asset Team  
Marathon Oil Company

## DISTRICT I

P.O. Box 1000, Hobbs, NM 88241-1000

## 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

For Lease - 3 Copies

## DISTRICT II

P.O. Drawer 80, Artesia, NM 88211-0710

## OIL CONSERVATION DIVISION

P.O. Box 2088

Santa Fe, New Mexico 87504-2088

## DISTRICT III

1000 Elia Braxos Rd., Aztec, NM 87410

## DISTRICT IV

P.O. Box 2088, Santa Fe, N.M. 87504-2088

## WELL LOCATION AND ACREAGE DEDICATION PLAT

☐ AMENDED REPORT

API Number <b>30-015-31534</b>	Pool Code	Pool Name <b>INDIAN BASIN U. PENN. ASSOC.</b>
Property Code	Property Name <b>INDIAN HILLS UNIT</b>	Well Number <b>31</b>
OGRID No.	Operator Name <b>MARATHON OIL COMPANY</b>	Elevation <b>4149'</b>

## Surface Location

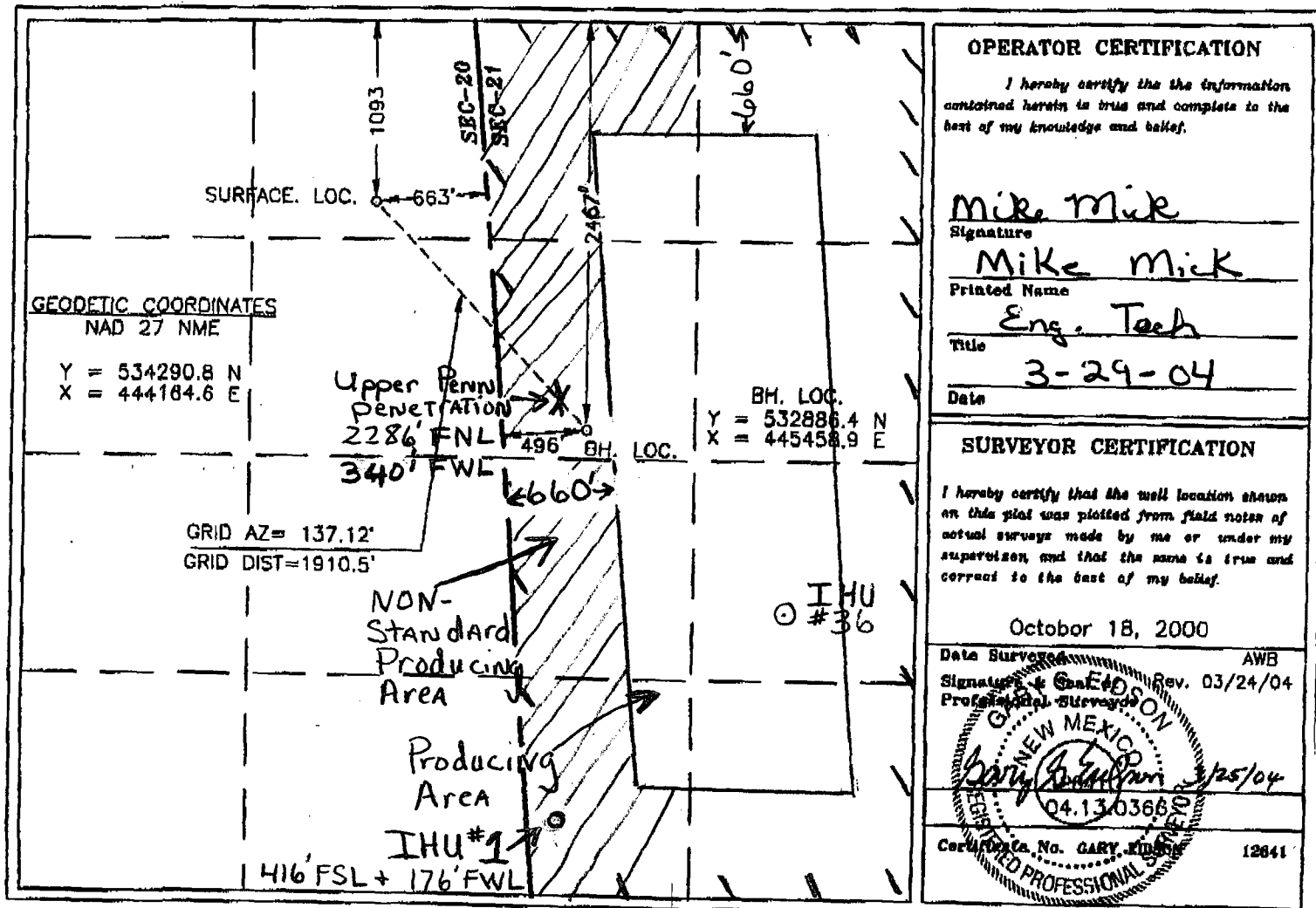
UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
A	20	21-S	24-E		1093	NORTH	663	EAST	EDDY

## Bottom Hole Location If Different From Surface

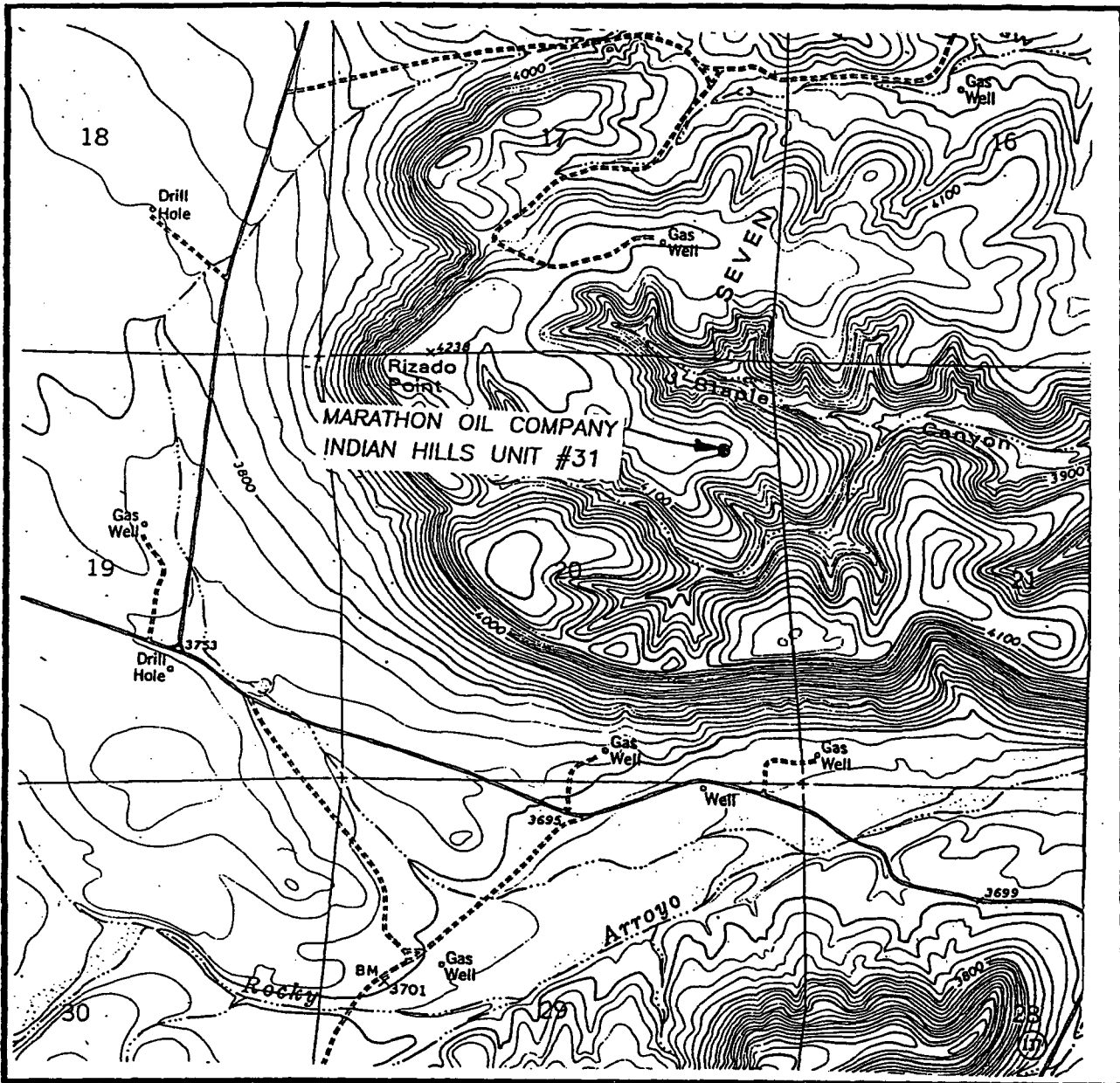
UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
E	21	21-S	24-E		2467'	NORTH	496'	WEST	EDDY

Dedicated Acres <b>320 W/2</b>	Joint or Infill	Consolidation Code	Order No.
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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



# LOCATION VERIFICATION MAP



SCALE: 1" = 2000'

CONTOUR INTERVAL - 20'

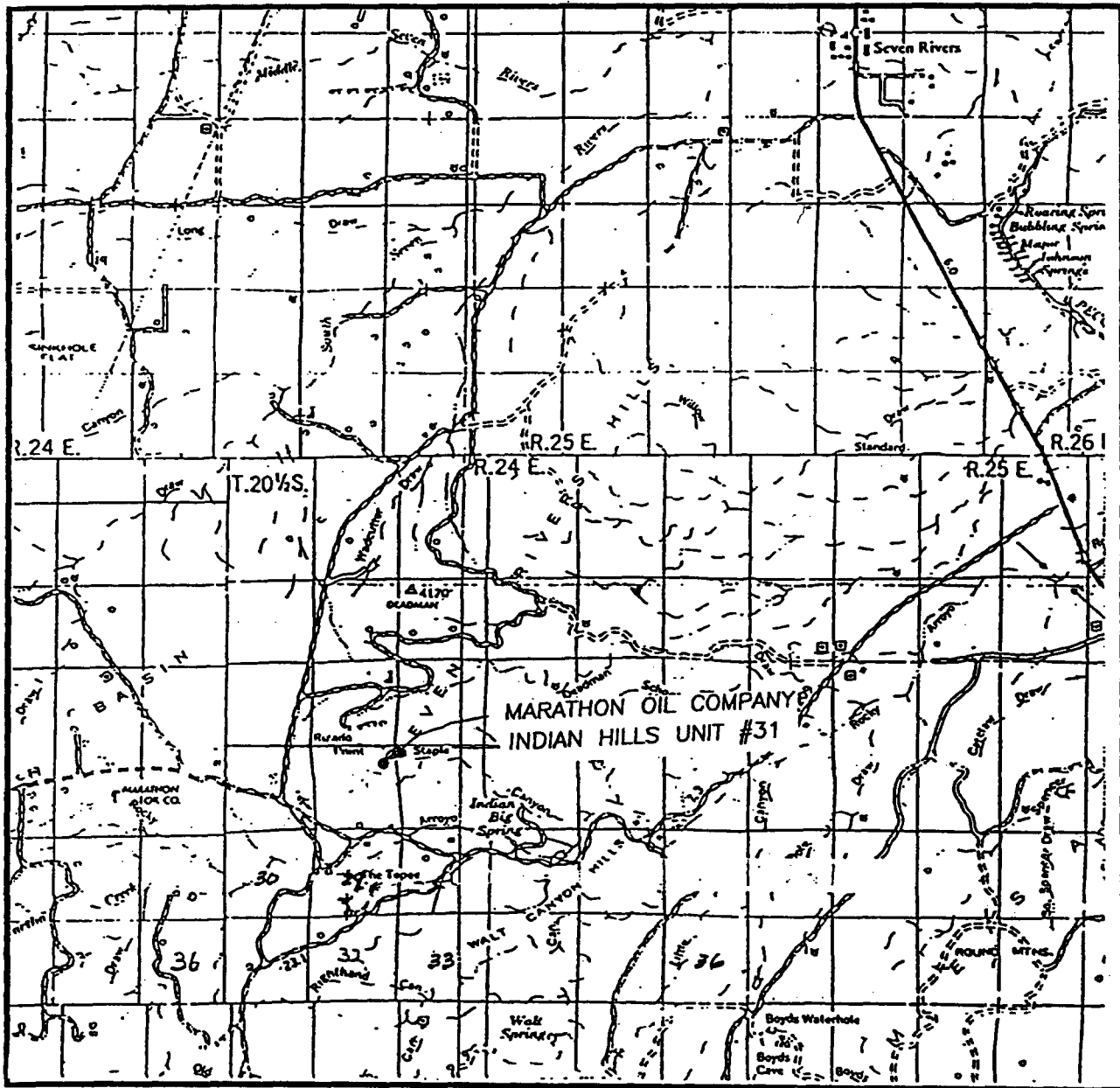
SEC. 20 TWP. 21-S RGE. 24-ESURVEY N.M.P.M.COUNTY EDDYDESCRIPTION 1093' FNL & 663' FELELEVATION 4149OPERATOR MARATHON OIL COMPANYLEASE INDIAN HILLS UNIT

U.S.G.S. TOPOGRAPHIC MAP

MARTHA CREEK, N.M.

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

## VICINITY MAP



SCALE: 1" = 2 MILES

SEC. 20 TWP. 21-S RGE. 24-ESURVEY N.M.P.M.COUNTY EDDYDESCRIPTION 1093' FNL & 663' FELELEVATION 4149OPERATOR MARATHON OIL COMPANYLEASE INDIAN HILLS UNITJOHN WEST SURVEYING  
HOBBS, NEW MEXICO

(505) 393-3117



## Marathon Oil Company

Structure : Indian Hills Unit No. 31

Slot : IHU #31

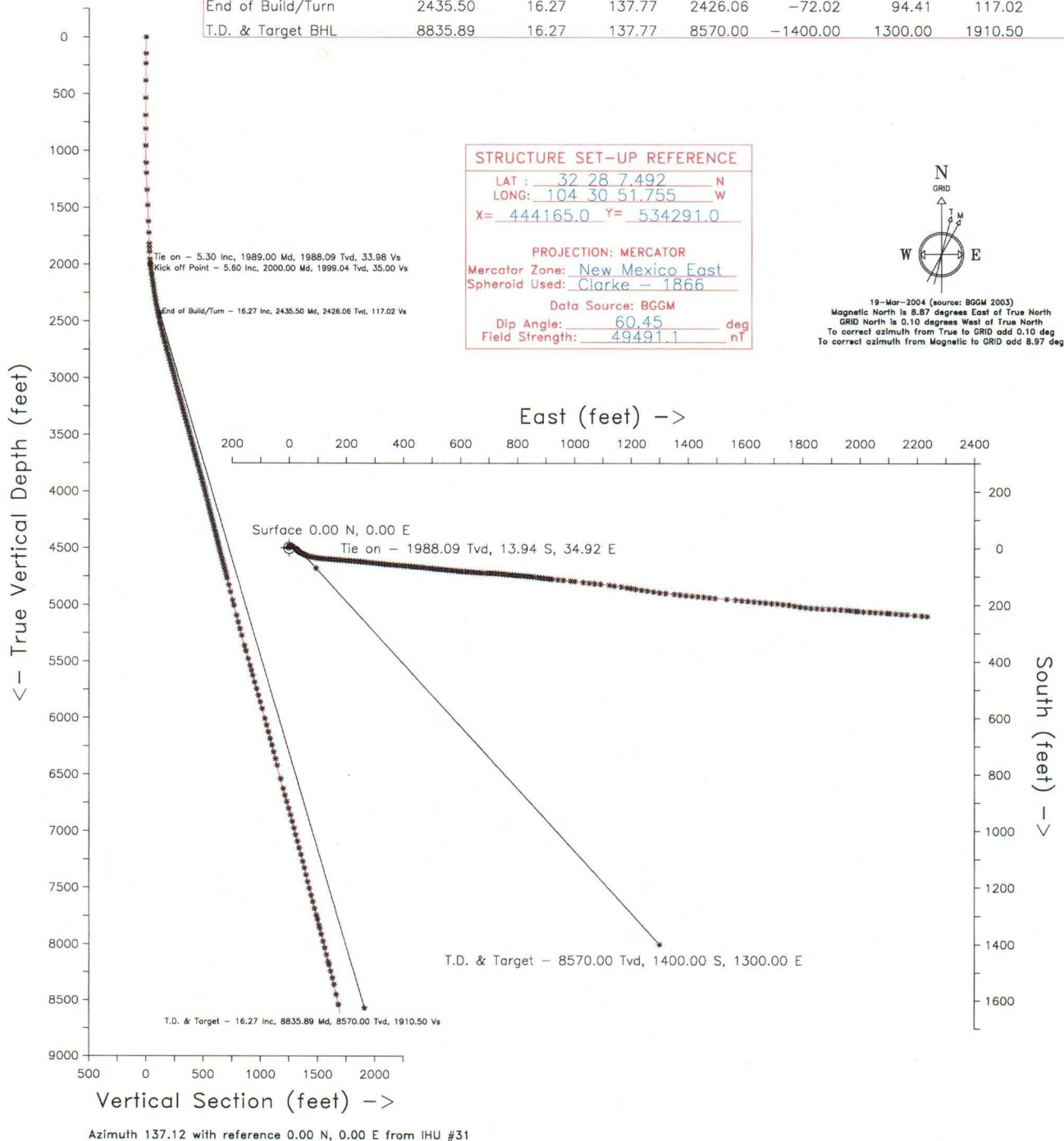
Field : Indian Basin

Location : EDDY COUNTY, NM.

Created by: danf  
 Date plotted : 19-Mar-2004  
 Plot Reference is ST P1.  
 Coordinates are in feet reference IHU #31.  
 True Vertical Depths are reference rotary table.  
 31stp1  
 --- Baker Hughes INTEQ ---

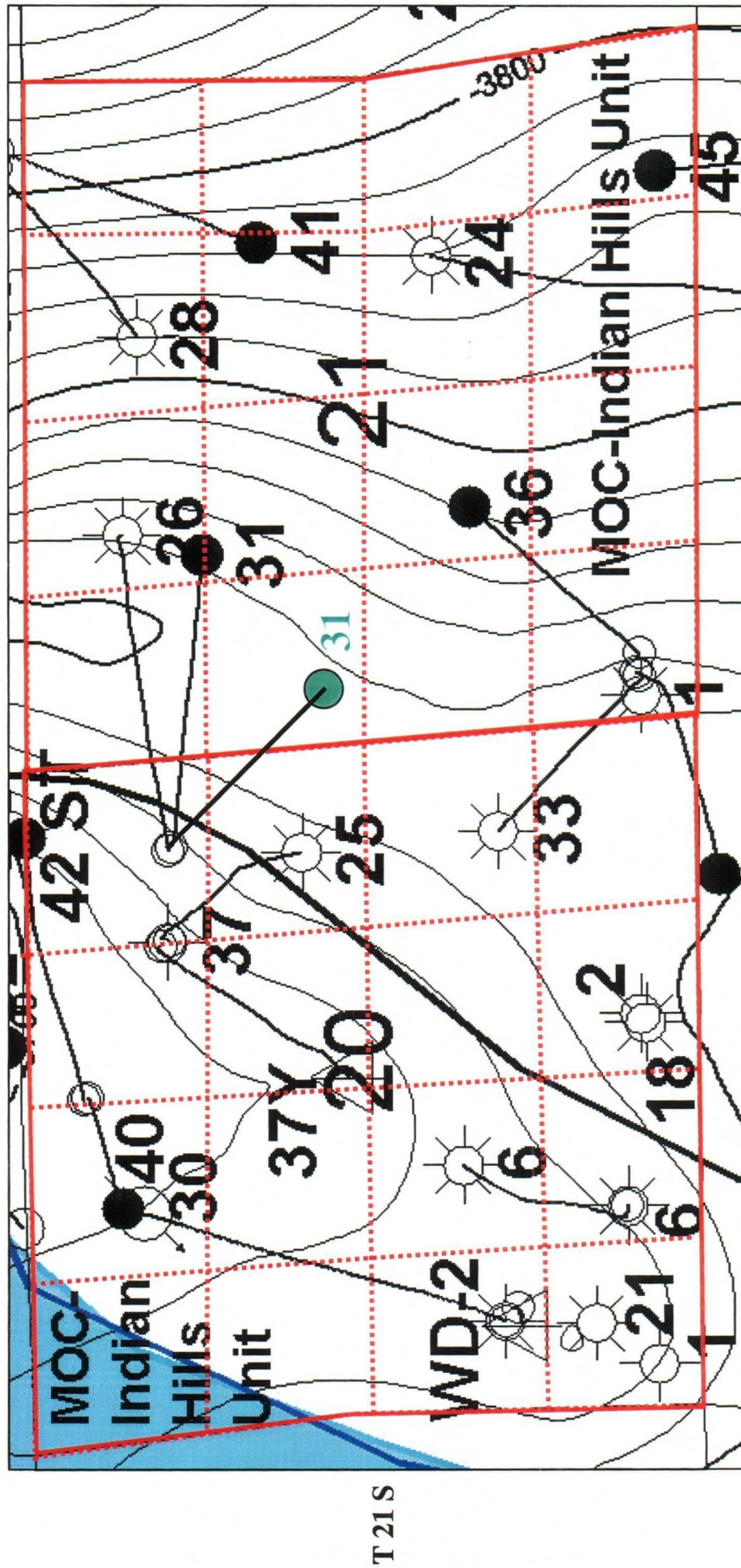
## ----- WELL PROFILE DATA -----

Point	MD	Inc	Dir	TVD	North	East	V. Sect	Deg/100
Tie on	1989.00	5.30	126.30	1988.09	-13.94	34.92	33.98	0.00
KOP	2000.00	5.60	124.80	1999.04	-14.54	35.77	35.00	3.02
End of Build/Turn	2435.50	16.27	137.77	2426.06	-72.02	94.41	117.02	2.50
T.D. & Target BHL	8835.89	16.27	137.77	8570.00	-1400.00	1300.00	1910.50	0.00





# STRUCTURAL ELEVATION, TOP OF UPPER PENNSYLVANIAN AND PROPOSED IHU #31 LOCATION



T 21 S

R 24 E



ATTACHMENT  
#6

3001532140  
Marathon  
Indian Hills Unit #36  
KB 3685



## **Stogner, Michael**

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**From:** Stogner, Michael  
**Sent:** Thursday, April 22, 2004 5:13 PM  
**To:** Mark Mick (E-mail)  
**Subject:** Indian Hills Unit #31

I am in the process of preparing an non-standard location order for your application filed on March 31st. From your application the proposed directional plan anticipates the Upper Pennsylvanian formation will be penetrated at a sub-surface location 2286' FNL & 340' FWL of Section 21.

At what depth is this expected to occur?

**Stogner, Michael**

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**From:** Mick, Mark S. [msmick@marathonoil.com]  
**Sent:** Friday, April 23, 2004 8:58 AM  
**To:** MSTOGNER@state.nm.us  
**Subject:** Indian Hills Unit #31

Mr. Stogner,

In response to your e-mailed question (copied below) regarding Marathon's non-standard location application for the Indian Hills Unit #31, I have provided the penetration depths as you requested. As you mentioned, we anticipate the Upper Pennsylvanian formation to be penetrated at a sub-surface location 2,286' FNL & 340' FWL of Section

21. This corresponds to the following approximate depths:

- -3,610' SSTVD
- 7,780' TVD
- 8,013' MD

I hope this provides you with the information you need, but if not please do not hesitate to let me know.

By the way, if it would not be too much trouble, could you please replace the "msmick1@yahoo.com" e-mail address in your records with my Marathon e-mail address of "msmick@marathonoil.com"? I only check that Yahoo address (which I primarily use for personal issues) every other day or so, but of course check my Marathon address numerous times during the day.

Thank you very much,

Mark Mick

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**Mark S. Mick**

Operations Engineer  
Indian Basin Asset Team  
Marathon Oil Company  
Office: (713) 296-1921  
Cell: (713) 408-2247  
Fax: (713) 296-4441  
[msmick@marathonoil.com](mailto:msmick@marathonoil.com)

**From:** "Stogner, Michael" <MSTOGNER@state.nm.us>  
**To:** "Mark Mick (E-mail)" <msmick1@yahoo.com>  
**Subject:** Indian Hills Unit #31  
**Date:** Thu, 22 Apr 2004 17:12:43 -0600

I am in the process of preparing an non-standard location order for your application filed on March 31st. From your application the proposed directional plan anticipates the Upper Pennsylvanian formation will be penetrated at a sub-surface location 2286' FNL & 340' FWL of Section 21.

4/23/2004