DATE IN 8/8/01	DATE 8/28/01	ENGINEER MS	LOGGED IN KW	TYPE NSL	APP NO. 122048777

ABOVE THIS LINE FOR DIVISION USE ONLY

NEW MEXICO OIL CONSERVATION DIVISION
- Engineering Bureau -
1220 South St. Francis Drive, Santa Fe, NM 87505

ADMINISTRATIVE APPLICATION CHECKLIST

THIS CHECKLIST IS MANDATORY FOR ALL ADMINISTRATIVE APPLICATIONS FOR EXCEPTIONS TO DIVISION RULES AND REGULATIONS WHICH REQUIRE PROCESSING AT THE DIVISION LEVEL IN SANTA FE

Application Acronyms:

[NSL-Non-Standard Location] [NSP-Non-Standard Proration Unit] [SD-Simultaneous Dedication]
[DHC-Downhole Commingling] [CTB-Lease Commingling] [PLC-Pool/Lease Commingling]
[PC-Pool Commingling] [OLS - Off-Lease Storage] [OLM-Off-Lease Measurement]
[WFX-Waterflood Expansion] [PMX-Pressure Maintenance Expansion]
[SWD-Salt Water Disposal] [IPI-Injection Pressure Increase]
[EOR-Qualified Enhanced Oil Recovery Certification] [PPR-Positive Production Response]

01 AUG -8 PM 12:19 OIL CONSERVATION DIV.

[1] TYPE OF APPLICATION - Check Those Which Apply for [A]

[A] Location - Spacing Unit - Simultaneous Dedication
☒ NSL ☐ NSP ☐ SD

Check One Only for [B] or [C]

[B] Commingling - Storage - Measurement
☐ DHC ☐ CTB ☐ PLC ☐ PC ☐ OLS ☐ OLM

[C] Injection - Disposal - Pressure Increase - Enhanced Oil Recovery
☐ WFX ☐ PMX ☐ SWD ☐ IPI ☐ EOR ☐ PPR

[D] Other: Specify _____

[2] NOTIFICATION REQUIRED TO: - Check Those Which Apply, or Does Not Apply

[A] ☐ Working, Royalty or Overriding Royalty Interest Owners

[B] ☐ Offset Operators, Leaseholders or Surface Owner

[C] ☐ Application is One Which Requires Published Legal Notice

[D] ☐ Notification and/or Concurrent Approval by BLM or SLO
U.S. Bureau of Land Management - Commissioner of Public Lands, State Land Office

[E] ☐ For all of the above, Proof of Notification or Publication is Attached, and/or,

[F] ☐ Waivers are Attached

[3] **SUBMIT ACCURATE AND COMPLETE INFORMATION REQUIRED TO PROCESS THE TYPE OF APPLICATION INDICATED ABOVE.**

[4] **CERTIFICATION:** I hereby certify that the information submitted with this application for administrative approval is accurate and complete to the best of my knowledge. I also understand that **no action** will be taken on this application until the required information and notifications are submitted to the Division.

Note: Statement must be completed by an individual with managerial and/or supervisory capacity.

Print or Type Name	Signature	Title	Date
		Attorney	8/8/01

KELLAHIN & KELLAHIN
Attorneys At Law
P.O. Box 2265
Santa Fe, N.M. 87504-2265

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TELEFAX (505) 982-2047

W. THOMAS KELLAHIN*

*NEW MEXICO BOARD OF LEGAL SPECIALIZATION RECOGNIZED SPECIALIST IN THE AREA OF NATURAL RESOURCES-OIL AND GAS LAW

JASON KELLAHIN (RETIRED 1991)

August 8, 2001

HAND DELIVERED

Mr. Michael E. Stogner
Oil Conservation Division
1220 South Saint Francis Drive
Santa Fe, New Mexico 87505

(30-015-31655)

RE: **Indian Hills Unit Well No. 30**
Indian Basin-Morrow Gas Pool
Administrative Application of
Marathon Oil Company for Approval
of an Unorthodox Subsurface Location,
Eddy County, New Mexico

Dear Mr. Stogner:

On behalf of Marathon Oil Company ("Marathon"), please find enclosed their administrative application for approval of an unorthodox oil well location for its Indian Hills Unit Well No. 30 which has been drilled from a surface location of 1494 feet FSL and 688 feet FWL to a bottom hole location in the Morrow formation of 1364 feet FNL and 1578 feet FWL Section 20, T21S, R24E and dedicated to a standard 640-acre gas proration and spacing unit consisting of all of Section 20 for production from the Indian Basin-Morrow Gas Pool.

The primary objective of the well had been as a Devonian SWD well. However, as Mr. Millican explains in his letter, Marathon changes its plan and ultimately elected to complete the well int he Morrow formation. The pool rules require standard well locations to be not closer than 660 feet to the outer boundary nor closer than 330 feet to any interior quarter-quarter section line. The well is too close to the north and east boundaries of the SW/4NW/4 of this section. Because this is an interior encroachment, it is my understanding that no notification is required to either the Morrow owners in the NW/4 of this section or offset operators/working interest owners in Sections 17, 18 or 19.

If you have any questions or if I have mistakenly interpreted the notification rules, please call me.

Very truly yours,

W. Thomas Kellahin

fxc: Marathon Oil Company
Attn: Steven F. Millican

Southern Business Unit
Domestic Production

Marathon Oil Company

P.O. Box 552
Midland, TX 79702-0552
Telephone 915/682-1626

August 3, 2001

Mr. Michael Stogner
Oil Conservation Division
1220 S. St. Francis Dr.
Santa Fe, New Mexico 87504

RE: *Application for administrative approval for an exception to the well location requirements provided within the "Special Rules and Regulations for the Indian Basin Morrow Gas Pool," as promulgated by the New Mexico Oil Conservation Division Orders No. R-8170-O-1/R-2441-B, issued in Case No. 11512 and dated July 31, 1996, and R-8170-O-2/R-2441-C, dated August 15, 1996, for the infill well, Indian Hills Unit Well No. 30.*

Dear Mr. Stogner:

Marathon Oil Company respectfully requests administrative approval to produce the Morrow formation from the unorthodox bottom hole location of Indian Hills Unit Well No. 30. This well has a surface location of 1494' FSL and 688' FWL, Section 20, Township 21 South, Range 24 East. The top of Morrow formation is at 1493' FNL and 1523' FWL, and the bottom of the Morrow formation is at 1364' FNL and 1578' FWL of Section 20, Township 21 South, Range 24 East (please see Attachment #1 – Bottom hole location of Indian Hills Unit Well No. 30). This well is unorthodox in the Morrow formation because it infringes upon the 330-foot quarter-quarter setbacks as set forth by the above referenced Division Orders.

In support of this application, details will be provided as to why the Indian Hills Unit Well No. 30 was not drilled to a standard Morrow bottom hole location. These details will include a discussion of how the well fits into Marathon's reservoir management plan, the surface location of the well, the direction plan, and drilling history of the well.

Reservoir Management Plan:

Marathon's original plan for the Indian Hills Unit Well No. 30 was for the well to be a temporary Devonian disposal well for 6-24 months. As Marathon enters its final anticipated infill development phase of the Indian Basin Associated Pool, water production is reaching peak levels. Water removal from the Upper Pennsylvanian formation is critical to lowering reservoir pressure and allowing co-production of the remaining recoverable oil and gas reserves. Marathon's water production is expected to temporarily exceed the current disposal capacity provided by its five existing Devonian

disposal wells. Thus Marathon had a need for a temporary Devonian disposal well. Marathon's reservoir model of the Upper Pennsylvanian formation suggests that in the next one to two years, water production from the field will decline as the aquifer supporting the reservoir will not be able to support the numerous high volume wells producing from the Upper Pennsylvanian formation. The need for the additional disposal capacity is expected to last no more than two years.

After abandoning the Devonian, the Indian Hills Unit Well No. 30 was planned to become the Upper Pennsylvanian producer for the NW/4 of Section 20. This location provides the 160-acre well spacing that Marathon currently believes is optimal for gas recovery from the Upper Pennsylvanian formation. This is also advantageous for the location of the Devonian because the well's bottom hole location is located approximately one half mile away from the current salt water disposal wells and hence minimizes the risk of pressure interference with current disposal wells.

Marathon's third and final objective of the Indian Hills Unit Well No. 30 was to evaluate the Morrow formation in the NW/4 of Section 20. The Indian Basin Morrow Gas Pool continues to be a secondary objective that can only be economically explored in conjunction with the drilling of an Upper Pennsylvanian well (please refer to Page 2, subsection 5(a) of Case No. 11512, dated July 31, 1996, regarding Division Order R-8170-O-1).

Spiraling drilling costs have forced Marathon to prematurely end the year 2001 drilling program and ultimately reconsider how the Indian Hills Unit Well No. 30 can be best utilized. Because no additional wells will be drilled this year, Marathon's current water disposal capacity is expected to remain adequate for at least six to twelve months. Hence the Indian Hills Unit Well No. 30 will not be completed in the Devonian until sometime in the year 2002. If the water production decline from the field exceeds current expectations, additional salt water disposal may never be needed. Marathon cannot complete Indian Hills Unit Well No. 30 to the Upper Pennsylvanian formation at this time because the current disposal wells will not be able to handle the anticipated 10,000 barrels of water per day that such a completion could produce. Therefore, at this point in time, the Indian Hills Unit Well No. 30 is an unutilized wellbore.

Surface Location:

In planning a surface location for Indian Hills Unit Well No. 30, several considerations had to be made prior to selecting the current location of 1494' FSL and 688' FWL in Section 20 (please see Attachment #2 – Surface Topographic/Facility map). Extensive topographical relief throughout Section 20 resulted in the well being pushed into the SW/4 of the section. By placing the well in close proximity to the existing Rocky Hills #2 salt-water disposal well and using a portion of its drilling pad, Marathon was able to significantly reduce surface disturbance. The final benefit of the location is the close proximity to the existing injection facilities, which thus minimizes the environmental risk associated with disposal lines.

Directional Plan

Marathon's directional plan for Indian Hills Unit Well No. 30 was designed primarily around the desired bottom hole locations of the Upper Pennsylvanian and Devonian formations. Because the Morrow was the lowest priority horizon for the Indian Hills Unit Well No. 30, the downhole location was optimized for the Upper Pennsylvanian and Devonian formations. Two geologic features dominated the directional planning for the Indian Hills Unit Well No. 30. The first of these is a fault that cuts north-south through Section 20 (please see Attachment #3 - Structure Map of the Upper Pennsylvanian formation). The second feature is the transition zone between the productive dolomite facies and the non-productive limestone facies of the Upper Pennsylvanian formation.

Marathon does not currently have 3D seismic data over Section 20. As a result, the precise location of the fault and the transition zone are not known. Marathon wanted to remain a safe distance from both of the above geologic features. Since there is limited information on the nature of the fault in Section 20, it is currently unknown if the fault is a sealing feature or an open flow conduit. If the bottom hole location was to have encroached on the fault, Marathon is concerned that a sealing fault could limit injectivity into the Devonian. On the flip side, if the fault is an open conduit, water disposal near the fault could result in water migration up the fault into the Upper Pennsylvanian formation. Indian Hills Unit Well No. 30 is a northern step-out in the Upper Pennsylvanian from existing production. Due to the poor well control of the dolomite/limestone transition zone, the directional plan attempted to keep a sufficient distance from the transition zone to ensure sufficient dolomite was drilled to efficiently drain the NW/4 of Section 20.

Drilling History:

Marathon ultimately had severe difficulty drilling the Indian Hills Unit Well No. 30. A total of 107 days and nearly $5,000,000 were spent drilling the well due to multiple sidetrack attempts. In order to hit the bottom hole targets desired by the reservoir management plan from the surface location selected, Indian Hills Unit Well No. 30 had to be directionally drilled into the NW/4 of Section 20 resulting in a directional kick of over 2500' to the top of the Devonian formation.

While drilling the original directional plan, the drill string became stuck in the Upper Pennsylvanian at ~8200' due to differential sticking and what was believed to be sloughing shale from the Wolfcamp formation. Fishing operations for the bottom hole assembly were unsuccessful and Marathon was forced to sidetrack around the fish. The first sidetrack was kicked off at ~6100' to the east of the original well path (please refer to Attachment #4). Unfortunately, the first sidetrack became stuck again in the Upper Pennsylvanian formation at ~8100'. This time, torque and drag resulting from numerous doglegs up the hole and differential sticking were believed to be the cause. Fishing operations were again unsuccessful thus leaving a 400' fish in the hole.

After revising the casing program and the directional drilling technique, the well was plugged back to above 4000' to get above the doglegs that were believed to be primarily responsible for losing the first sidetrack. In order to further minimize doglegs on the second sidetrack, Marathon had to sidetrack to the west of the original directional plan. Marathon was ultimately able to successfully drill the well to total depth.

Waivers:

All offset operators have been notified by Certified Mail of Marathon's intentions of producing the Unorthodox Morrow bottom hole location in Indian Hills Unit Well No. 30. Enclosed is a copy of the waiver letter that was sent to all offset operators.

Marathon regrets that this unorthodox application was not submitted prior to drilling the well to a nonstandard location. Several members of our team attended your recent Industry Training Seminar presentation in Midland, Texas on May 16, 2001. Because the Indian Hills Unit Well No. 30 was spudded on April 7 of this year, Marathon was unable to apply what we learned in your course to this well. However, we now have a much clearer understanding of the importance of ensuring all potentially productive formations are penetrated at orthodox locations. Further, where an orthodox location is not possible for all depths, we are now aware that administrative approval for any unorthodox formation should be received prior to commencement of drilling operations.

Should you have any questions/comments/concerns, please contact me at (915) 687-8306.

Respectfully,

Steven F. Millican
Operations Engineer
Marathon Oil Company

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
		Indian Basin Morrow

Property Code	Property Name	Well Number
	INDIAN HILLS UNIT	30

OGRID No.	Operator Name	Elevation
14021	MARATHON OIL COMPANY	3783'

Surface Location

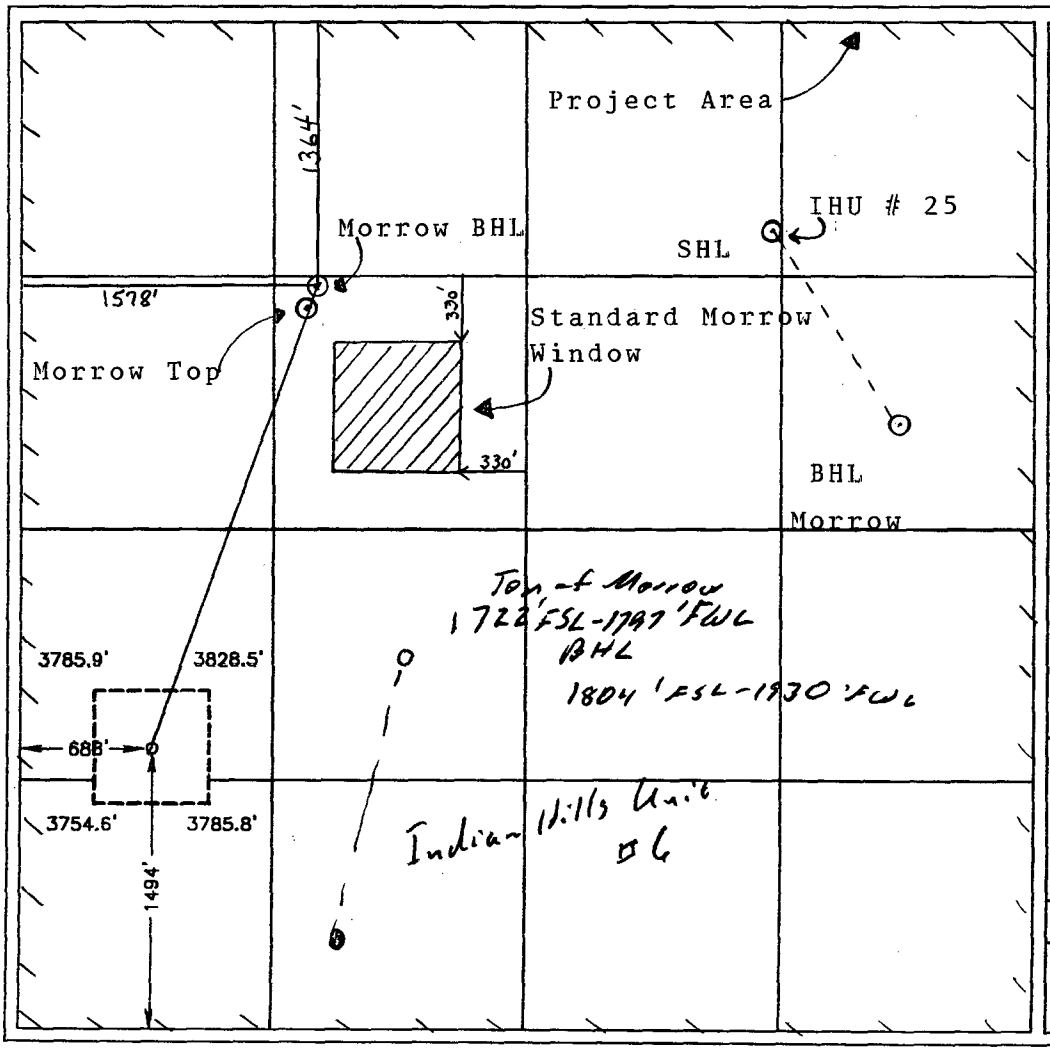
UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
L	20	21-S	24-E		1494	SOUTH	688	WEST	EDDY

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	20	21-S	24-E		1364	NORTH	1578	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



OPERATOR CERTIFICATION

I hereby certify the the information contained herein is true and complete to the best of my knowledge and belief.

Signature

Jerry Fletcher
Printed Name

Engineer Tech.
Title

8/03/01
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 supervison, and that the same is true and correct to the best of my belief.

JANUARY 30, 2001
Date Surveyed AWB

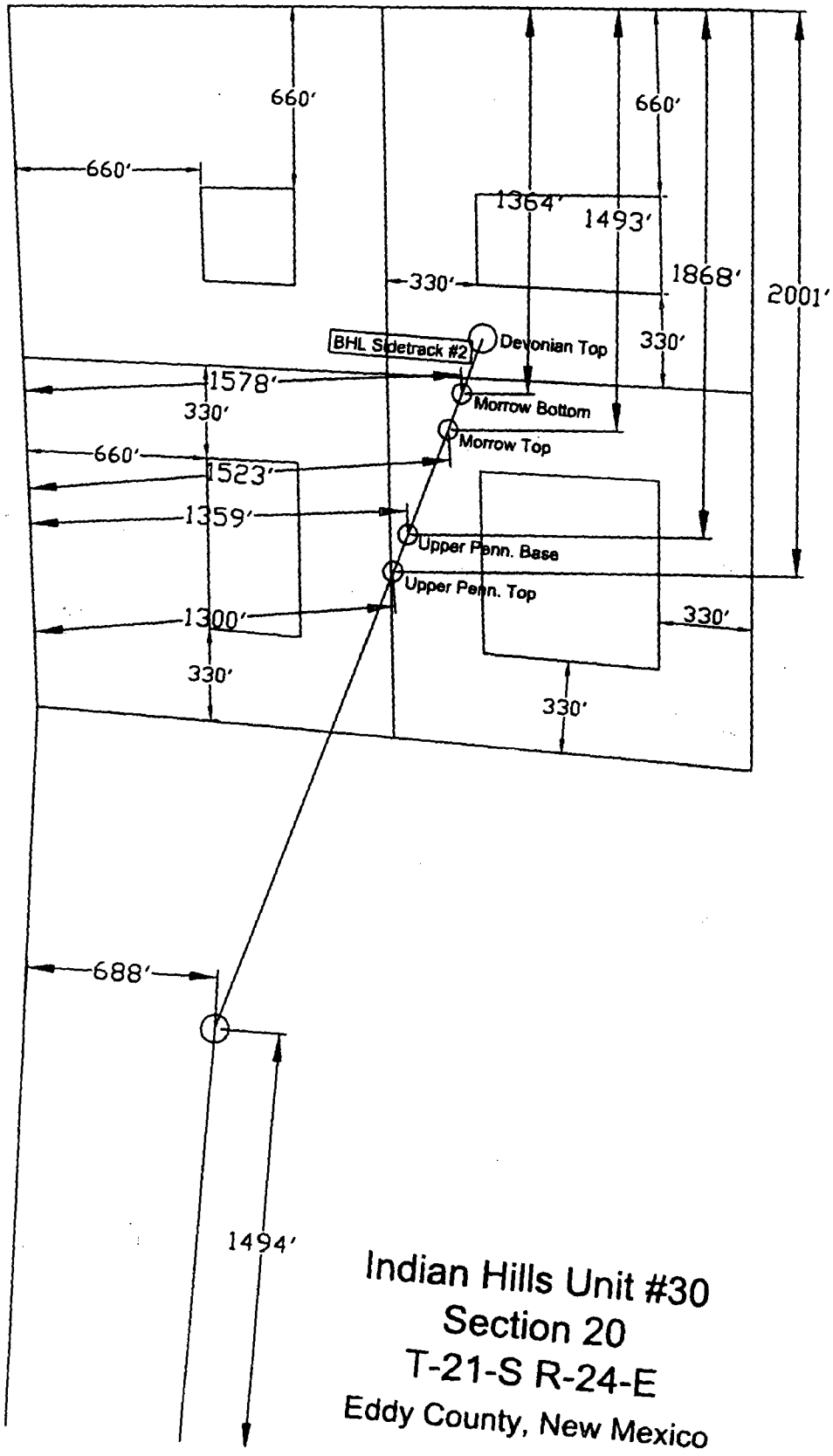
Signature & Seal of Professional Surveyor

RONALD J. EIDSON
NEW MEXICO
3239
REGISTERED PROFESSIONAL SURVEYOR

01-11-0166

Certificate No. RONALD J. EIDSON 3239
GARY EIDSON 12841

ATTACHMENT # 1

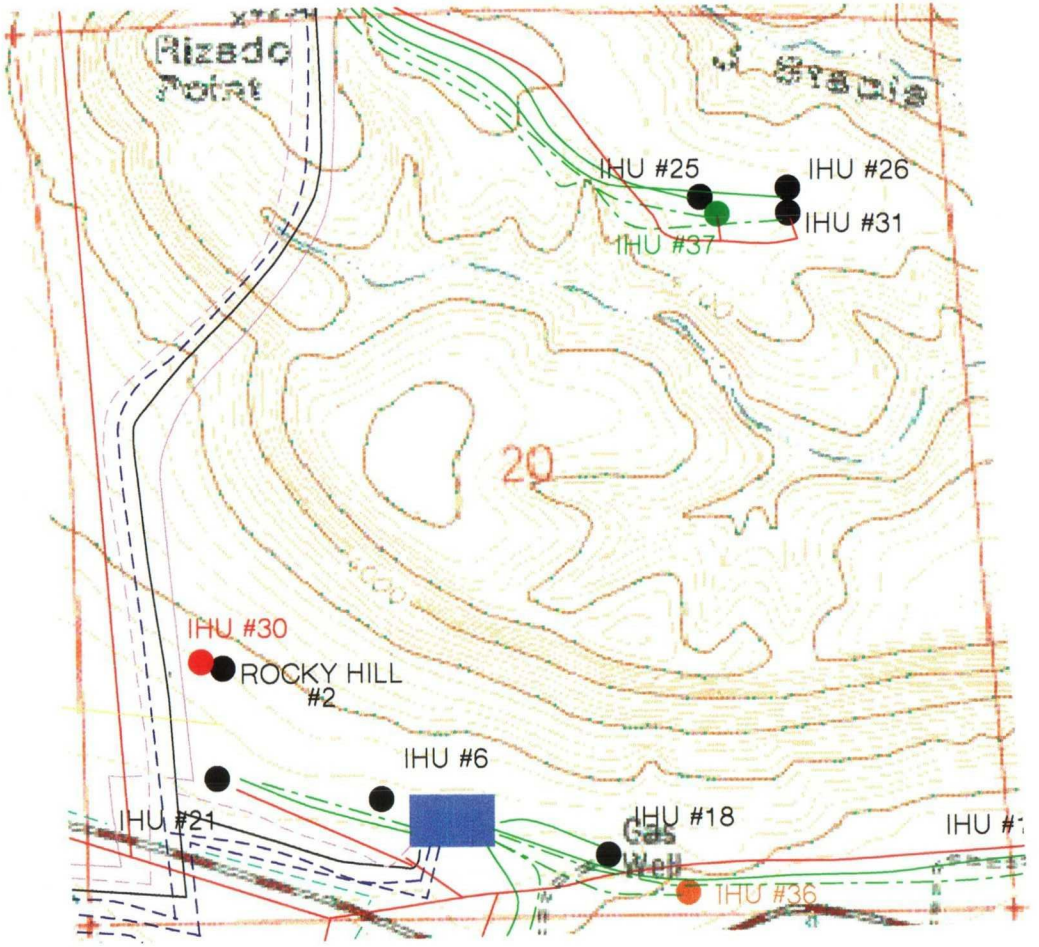


Indian Hills Unit #30
Section 20
T-21-S R-24-E
Eddy County, New Mexico

1 INCH = 600'

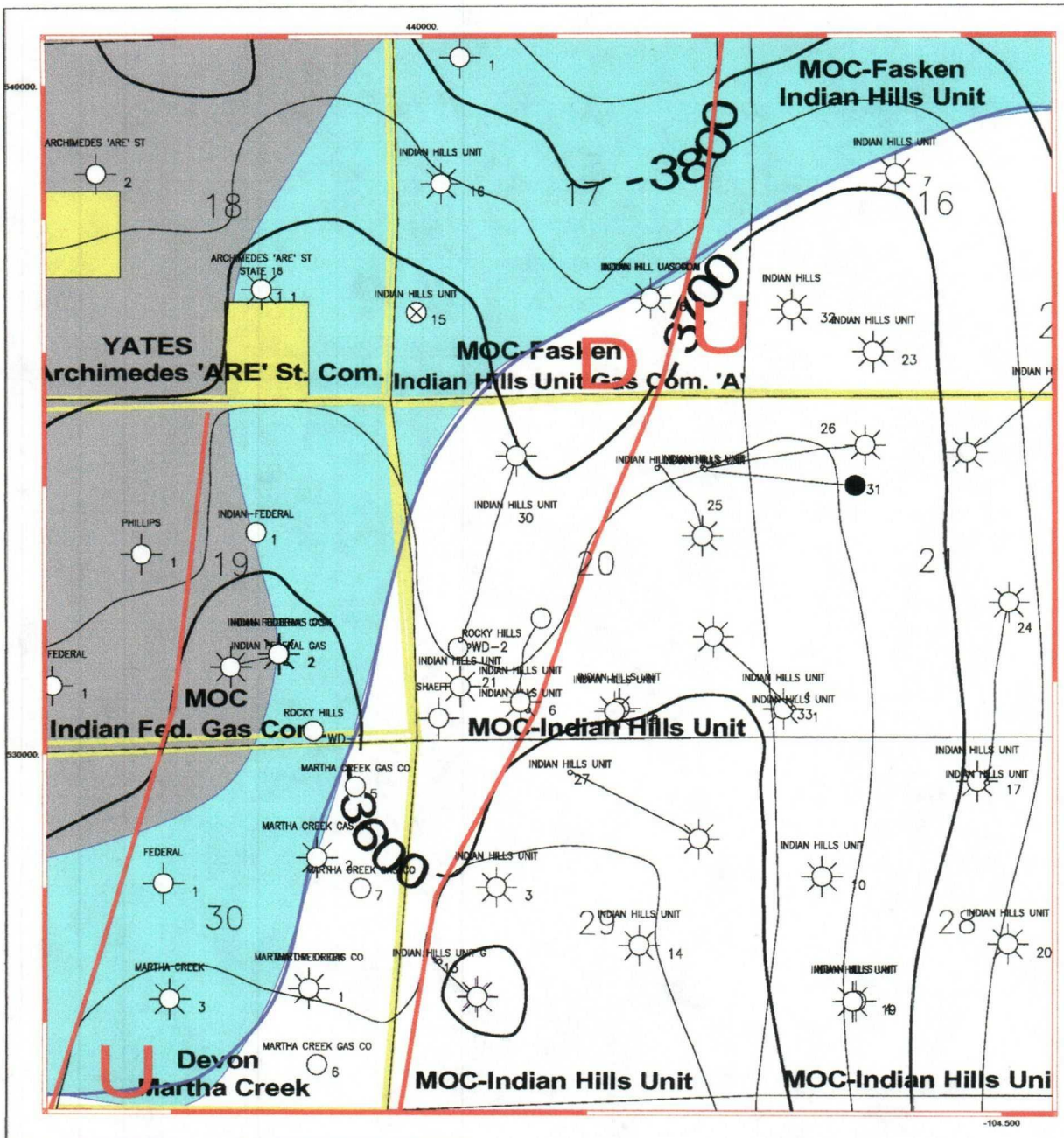
#2

ATTACHMENT #2



- PRODUCING WELLS
- PENDING WELLS
- PLANNED WELLS
- CONTINGENT WELLS
- EXISTING DUAL FLOWLINES
- PROPOSED DUAL FLOWLINES
- EXISTING ELECTRICAL LINES
- PROPOSED ELECTRIC LINES
- FLUID GATHERING SYSTEM
- OIL GATHERING SYSTEM
- LOW PRESSURE GAS GATHERING SYSTEM
- HIGH PRESSURE GAS GATHERING SYSTEM
- COMPRESSOR FUEL LINE
- COMPRESSOR DISCHARGE LINE
- PROPOSED MORROW GAS GATHERING SYSTEM
- SWD INJECTION LINE
- ROADWAY
- CENTRAL FACILITY
- SATELLITE STATIONS
- COMPRESSOR STATION

ATTACHMENT # 3



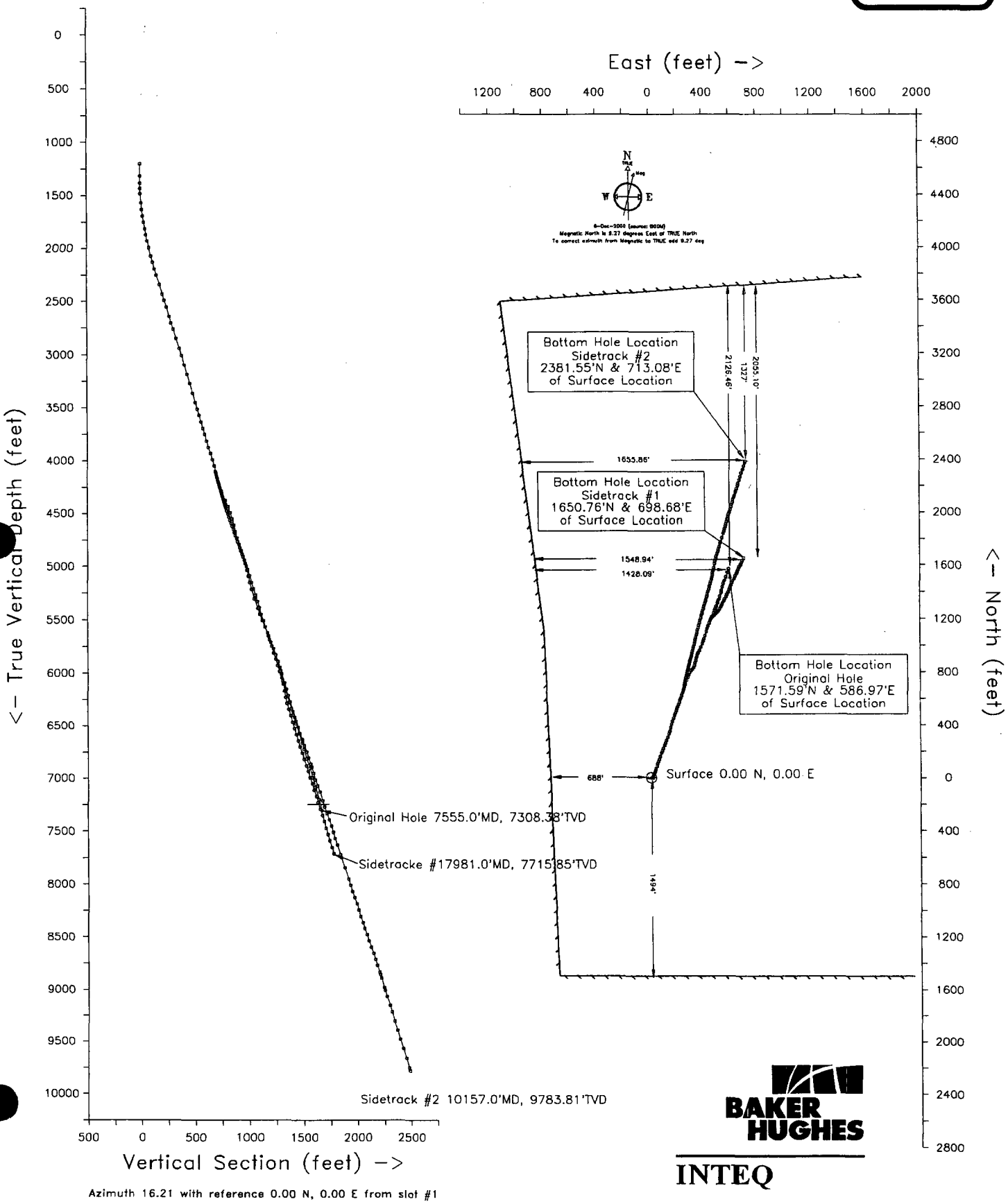
#4

ATTACHMENT # 4

Marathon Oil Company

Structure : Indian Hills Unit No. 30 Slot : slot #1

Field : Indian Basin Location : EDDY COUNTY, NM.



BAKER HUGHES

INTEQ