

DATE 4/16/03	SUSPENSE 5-6-03	ENGINEER WVJ	LOGGED IN KV	TYPE NSL	OKPV0310738106
---------------------	------------------------	---------------------	---------------------	-----------------	-----------------------

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]

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

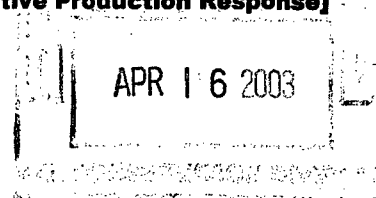
[A] Location - Spacing Unit - Simultaneous Dedication
☒ NSL ☐ NSP ☐ SD

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.

Steve Millican

Print or Type Name

Signature

Production Engineer

Title

4/11/03

Date

SFMillican@MarathonOil.com

e-mail Address



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

April 15, 2003

Mr. Richard Ezeanyim
Oil Conservation Division
1220 S. St. Francis Dr.
Santa Fe New Mexico 87504

RE: Indian Hills Unit Well No. 52 Unorthodox Location
Indian Basin Upper Pennsylvanian Associated Gas Pool
Surface location 1265' FSL & 2073' FEL, Section 17, Township 21 South, Range 24 East
Penetration Point 280' FSL & 2073' FEL, Section 17, Township 21 South, Range 24 East
Terminus location 69' FSL & 2089' FEL, Section 17, Township 21 South, Range 24 East

Dear Mr. Ezeanyim,

By means of this application, Marathon Oil Company respectfully requests Non-Standard location approval for the proposed Indian Hills Unit Well No. 52 with a surface location of 1265' FSL & 2073' FEL, Section 17, Township 21 South, Range 24 East, and a terminus location of 69' FSL & 2089' FEL, Section 17, Township 21 South, Range 24-East, dedicated to a standard spacing unit consisting of 343.86 acres in the South half of Section 17.

Marathon proposes to complete the Indian Hills Unit Well No. 52 in the "Indian Basin Upper Pennsylvanian Associated Gas Pool" as promulgated by the New Mexico Oil Conservation Division Order No's R-9922, R-9922-A, R-9922-B, R-9922-C, R-9922-D and R-9922-E and the general rules for the Associated Gas Pools of Southeast New Mexico as promulgated by Division Order No. R-5333. 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. 52 is unorthodox because the penetration point and terminus for the Upper Pennsylvanian Associated Gas Pool are less than 660 feet from the Southern boundary of the 343.86 acre "lay down" gas proration unit located in the South half of Section 17, Township 21 South, Range 24 East (please see Attachments #1-A & #1-B – Well Location and Acreage Plats, Attachment #1-C – Location Verification Map, Attachment #1-D – Vicinity Map, Attachment #1-E – Section 17 & 20 Quarter/Quarter Distance Map). Based on the proposed directional plan, it is expected that the top of the Upper Pennsylvanian formation will be penetrated at **280** feet FSL & **2073** feet FEL of Section 17, and the terminus will be **69** feet FSL & **2089** feet FEL of Section 17 (please see Attachment #2 & #2A – Directional Plats supplied by Baker Inteq, Marathon's proposed directional drilling contractor).

Participating Area

The proposed well is located within the Indian Hills Unit Upper Pennsylvanian Participating Area (please see Attachment #3). The Indian Hills Unit is operated by Marathon Oil Company. Indian Hills Unit Well No. 52 is proposed to be dedicated to a standard lay down spacing unit consisting of 343.86 acres in the South Half of Section 17, Township 21 South, Range 24 East. The ownership of the proposed spacing unit is identical to Sections 16, 20, and 21 which offset the proposed unorthodox location in the Upper Pennsylvanian Associated Gas Pool. Marathon Oil Company has 99.5444% working interest while Nearburg Exploration has a 0.45456% working interest.

Directional Wellbore

The Indian Hills Unit Well No. 52 is proposed as a directionally drilled wellbore. Marathon's development of Sections 16, 17, 20 and 21, Township 21 South, Range 24 East, has relied heavily on directionally drilled wellbores because of the extreme topographical relief caused by the Seven Rivers Azotea Mesa (please see Attachment #4 East Indian Basin Topographical Map). As a result there are only a few wells on the Mesa that have been able to be drilled vertically to a standard target. The only suitable surface location Marathon could locate for a standard vertical wellbore in the Southeast quarter of Section 17 was west of the Indian Hills Unit Gas Com "A" Well No. 6 (API No. 30-015-20006). That well was a dry hole in the Upper Pennsylvanian formation so the location was deemed geologically unacceptable for a straight hole. However, as that surface location satisfies the Bureau of Land Management's (BLM) requirements of minimizing surface disturbance on the Azotea Mesa, it is therefore proposed to drill directionally from that location to the optimal bottom hole location.

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 proven productive and economic. The proposed Indian Hills Unit Well No. 52 is an attempt to further delineate and develop the Northwestern extent of the productive dolomite horizons in the Indian Hills Unit.

Based on open hole logs from offsetting wells, it is Marathon's current interpretation that a rapid and complete transition from dolomite to limestone facies occurs in the Southern half of Section 17. Reference is made to Attachment # 5 - Indian Basin Field map. The dark blue line shows the dolomite to limestone interface. Areas of the map that are green and yellow represent primarily dolomite facies while the blue shaded areas represent primarily limestone facies. A cross section of open hole logs has been attached (Attachment # 6). The cross section between Indian Hills Unit Well Nos. 6, 42 (API No. 30-015-32355) and 15 (API No. 30-015-29870) also demonstrates the rapid transition from dolomite to limestone facies. Productive dolomite is colored pink on the cross section.

In summary, Marathon believes that the transition to limestone occurs somewhere North of the Southern line of Section 17 and South of a line between the Indian Hills Unit Well Nos. 6 and 15. Because of the geologic uncertainty in where the transition happens, Marathon strongly believes the best bottom hole location to encounter economic and productive dolomite, as well as to efficiently drain the reservoir, is the proposed unorthodox location herein.

Reservoir Management Plan

Marathon is completing the 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 original 160 acre well density to an 80 acre well density. It is Marathon's belief that the oil zone should be developed on a tighter spacing than the 160 acre development of the gas zone. The proposed 80 acre infill program will improve oil recovery while minimizing both economic and reservoir waste.

We further believe that the proposed unorthodox BHL represents a superior location in regards to both reservoir drainage and geologic risk. The BHL of the Upper Pennsylvanian in the Indian Hills Unit Well No. 52 provides for a well balanced and near equal inter- well spacing between the existing Indian Hills Unit Well Nos. 25, 26, 31, 32, 40 and 42. The "equal" inter-well spacing will minimize well-to- well interference and maximize reserves recovery. The Indian Hills Unit Well No. 42 was granted an Unorthodox Location approval for many of the same reasons stated above on Administrative Order # NSL-4755 (BHL) dated July 3, 2002.

Notifications:

It is Marathon's understanding that since the working interest and mineral ownership are the same in the gas proration unit for the proposed well and the affected offset gas proration unit, no waivers are required.

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

Respectfully,

A handwritten signature in black ink, appearing to read 'Steve Millican', with a stylized, flowing script.

Steve Millican
Production Engineer
Marathon Oil Company

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

State of New Mexico
Energy, Minerals and Natural Resources Department

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

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

OIL CONSERVATION DIVISION

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

DISTRICT III
1000 Rio Brazos 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	Pool Code	Pool Name
	33685	Indian Basin Upper Penn. Assoc.
Property Code	Property Name	Well Number
	INDIAN HILLS UNIT	52
OGRID No.	Operator Name	Elevation
14021	MARATHON OIL COMPANY	4207'

Surface Location


UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
7	17	21-S	24-E		1265	SOUTH	2073	EAST	EDDY

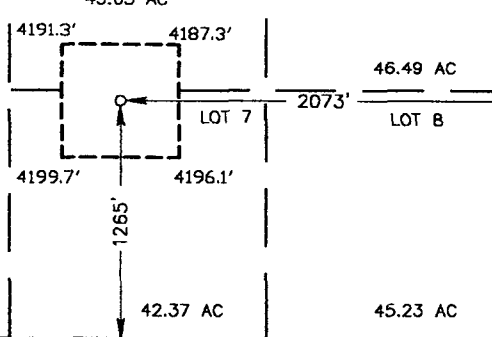
Bottom Hole Location If Different From Surface

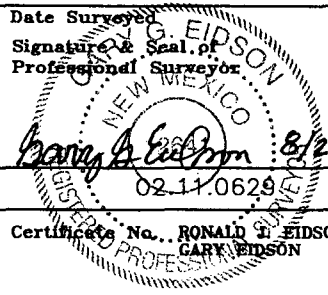
UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
7	17	21-S	24-E		69	SOUTH	2089	EAST	EDDY

Dedicated Acres	Joint or Infill	Consolidation Code	Order No.
320 S/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.  Signature Jerry Fletcher Printed Name Engineer Tech. Title 4/8/03 Date	
GEODETIC COORDINATES NAD 27 NME Y = 536748.8 X = 442733.4 LAT. 32°28'31.79"N LONG. 104°31'08.51"W					
LOT 4	LOT 3	LOT 2	LOT 1		
41.03 AC	41.25 AC	43.63 AC	46.49 AC		
LOT 5	LOT 6	LOT 7	LOT 8		
41.82 AC	42.04 AC	42.37 AC	45.23 AC		



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. AUGUST 26, 2002 Date Surveyed Signature & Seal of Professional Surveyor  Certificate No. RONALD J. EIDSON 3239 GARY EIDSON 12641		AWB
--	--	-----

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 33685	Pool Name Indian Basin Upper Penn. Assoc.
Property Code	Property Name Indian Hills Unit	Well Number 52
OGRID No. 14021	Operator Name MARATHON OIL COMPANY	Elevation 4207

Surface Location

UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
7	17	21-S	24-E		1265	SOUTH	2073	EAST	EDDY

Bottom Hole Location If Different From Surface

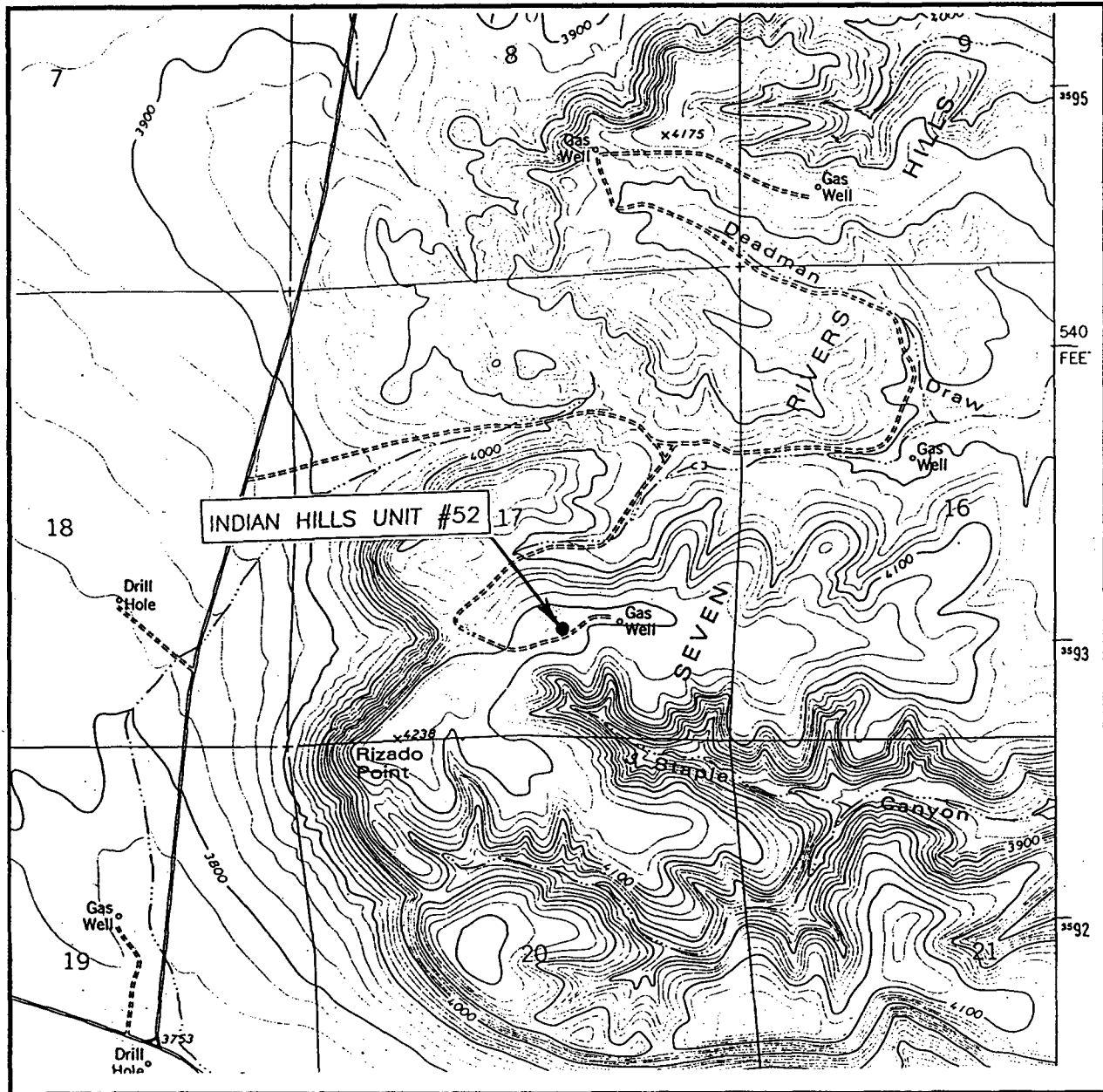
UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
7	17	21-S	24-E		69	SOUTH	2089	EAST	EDDY

Dedicated Acres	Joint or Infill	Consolidation Code	Order No.
320 S/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>OPERATOR CERTIFICATION</p> <p>I hereby certify the the information contained herein is true and complete to the best of my knowledge and belief.</p> <p>Signature <u>Jerry Fletcher</u></p> <p>Printed Name Jerry Fletcher</p> <p>Title Engineer Tech.</p> <p>Date 4/8/03</p>
		<p>SURVEYOR CERTIFICATION</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 knowledge and belief.</p> <p>Date Surveyed</p> <p>Signature & Seal of Professional Surveyor</p> <p>Certificate No.</p>

LOCATION VERIFICATION MAP

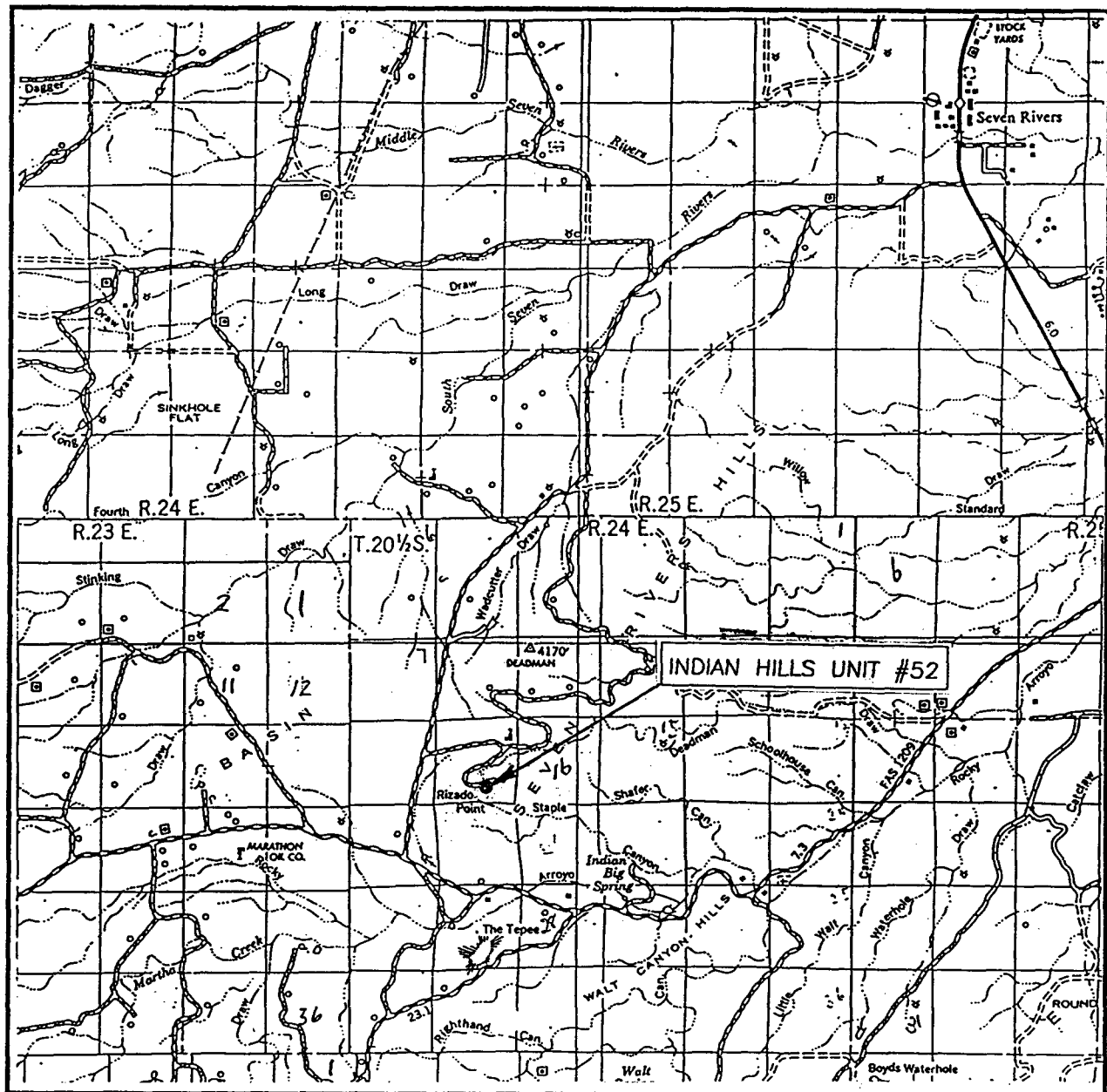


SCALE: 1" = 2000'

CONTOUR INTERVAL: 20'
MARTHA CREEK, N.M.SEC. 17 TWP. 21-S RGE. 24-ESURVEY N.M.P.M.COUNTY EDDYDESCRIPTION 1265' FSL 2073' FELELEVATION 4207'OPERATOR MARATHON OIL COMPANYLEASE INDIAN HILLS UNITU.S.G.S. TOPOGRAPHIC MAP
MARTHA CREEK, N.M.

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

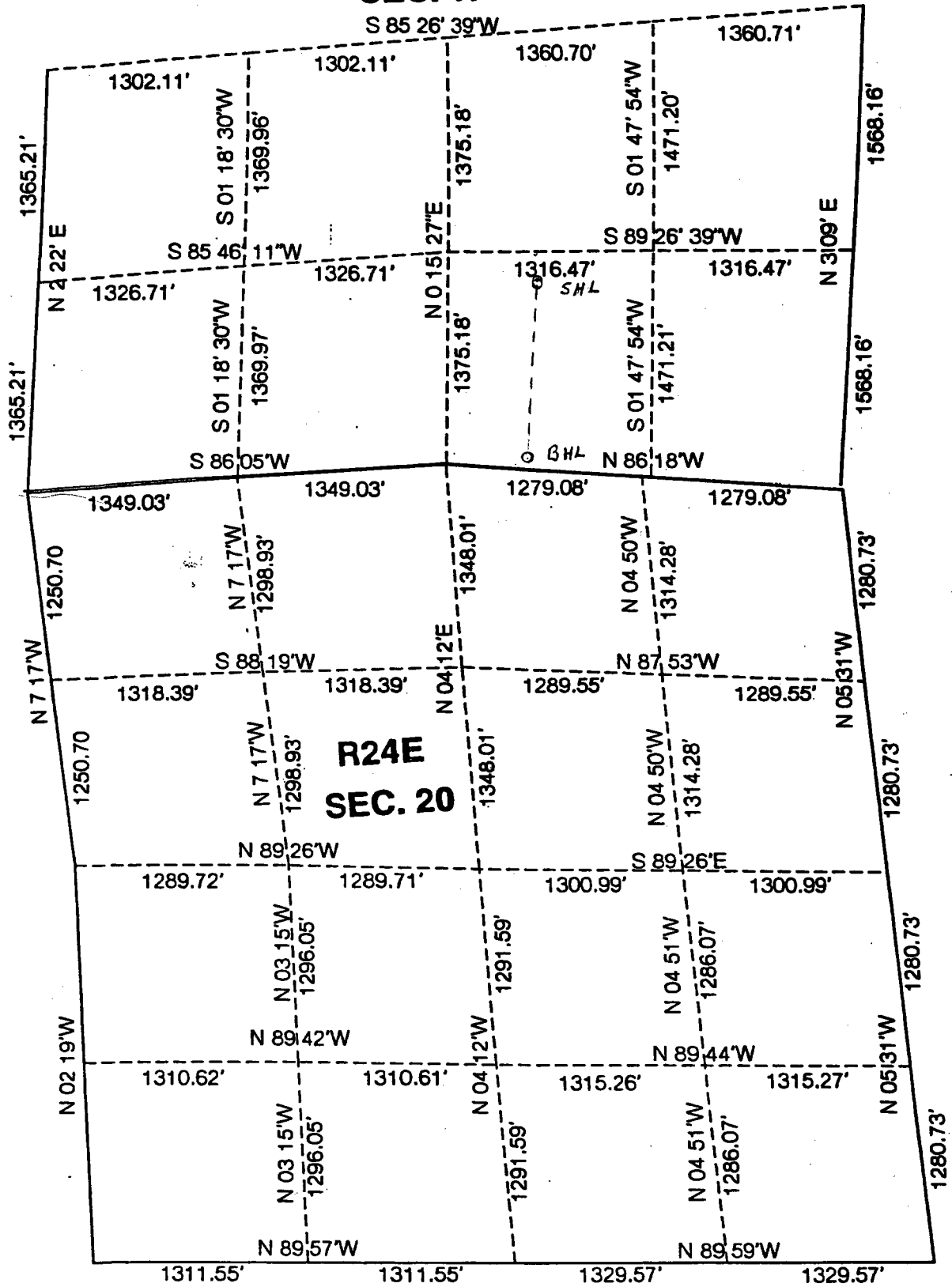
VICINITY MAP



SCALE: 1" = 2 MILES

SEC. 17 TWP. 21-S RGE. 24-ESURVEY N.M.P.M.COUNTY EDDYDESCRIPTION 1265' FSL 2073' FELELEVATION 4207'OPERATOR MARATHON OIL COMPANYLEASE INDIAN HILLS UNIT

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

**T21S R24E
SEC. 17**

Approved By: _____
 Title: _____
 Date: _____



INTEQ

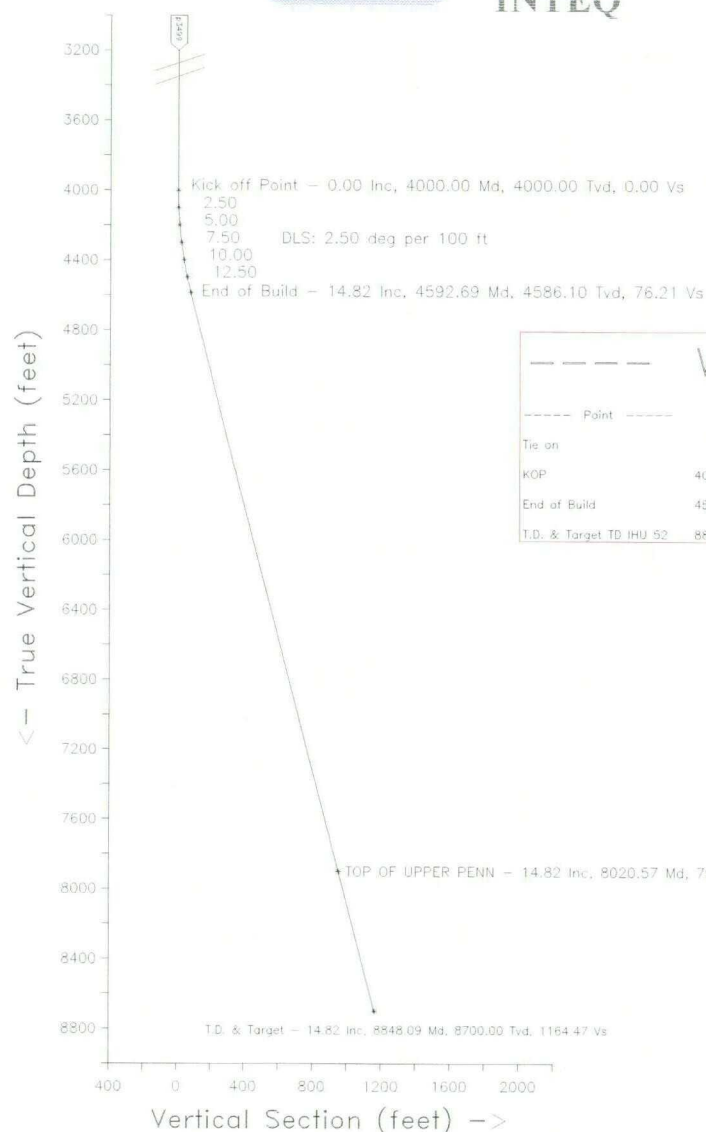
Marathon Oil Company

Structure : Indian Hills Unit 52

Slot : slot #1

Field : INDIAN BASIN

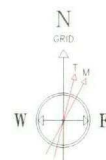
Location : Eddy County New Mexico



Azimuth 184.55 with reference 0.00 N, 0.00 E from slot #1

PROPOSED BHL
 1164.47' ON AZI 184.55 DEGS
 FROM SURFACE LOCATION
 M.D: 8848.09' T.V.D: 8700.00'
 S- 1160.80' W- 92.40'
 X= 442641.0 Y= 535588.0

Point	MD	Inc	Dir	TVD	North	East	V. Sect	Deg/100
Tie on	0.00	0.00	184.55	0.00	0.00	0.00	0.00	0.00
KOP	4000.00	0.00	184.55	4000.00	0.00	0.00	0.00	0.00
End of Build	4592.69	14.82	184.55	4586.10	-75.97	-6.05	76.21	2.50
T.D. & Target TD IHU 52	8848.09	14.82	184.55	8700.00	-1160.80	-92.40	1164.47	0.00



TOP OF UPPER PENN - 7900.00 Tvd, 949.84 S, 75.61 W

1-Oct-2002 (source: BGGM)
 Magnetic North is 9.06 degrees East of True North
 GRID North is 0.10 degrees West of True North
 To correct azimuth from True to GRID add 0.10 deg
 To correct azimuth from Magnetic to GRID add 9.16 deg

STRUCTURE SET-UP REFERENCE

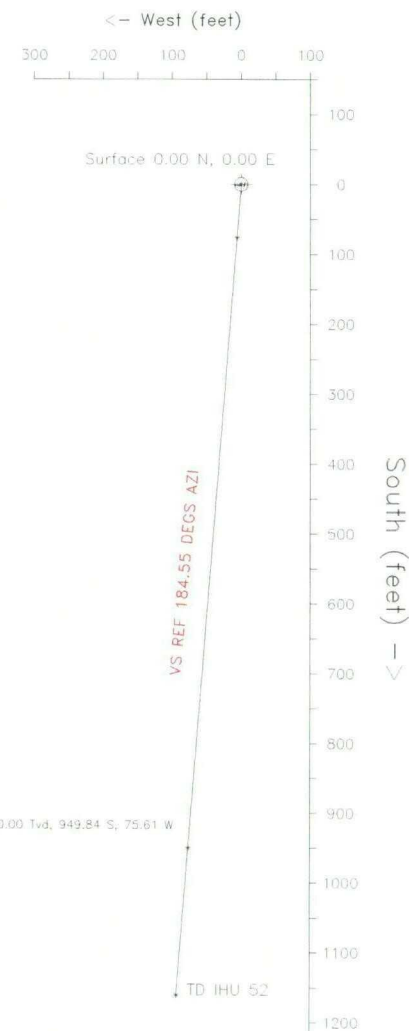
LAT : 32 28 31.789 N
 LONG: 104 31 8.515 W
 X= 442733.4 Y= 536748.8

PROJECTION: MERCATOR

Mercator Zone: New Mexico East
 Spheroid Used: Clarke - 1866

Data Source: BGGM

Dip Angle: 60.47 deg
 Field Strength: 49612.08 nT



Created By kellym
 Date plotted : 2-Apr-2003
 Plot Reference is PD 2DJ RC/DH.
 Coordinates are in feet reference slot #1.
 True Vertical Depths are reference rotary table.
 ihu52
 --- Baker Hughes INTEQ ---

Marathon Oil Company

Structure : Indian Hills Unit 52

Slot : slot #1

Field : INDIAN BASIN

Location : Eddy County New Mexico

Created By kellym

Date plotted : 10-Apr-2003

Plot Reference is PO 2DJ RC/DH .

Coordinates are in feet reference slot #1.

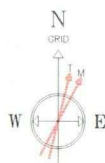
True Vertical Depths are reference rotary table.

ihu52II

--- Baker Hughes INTEQ ---



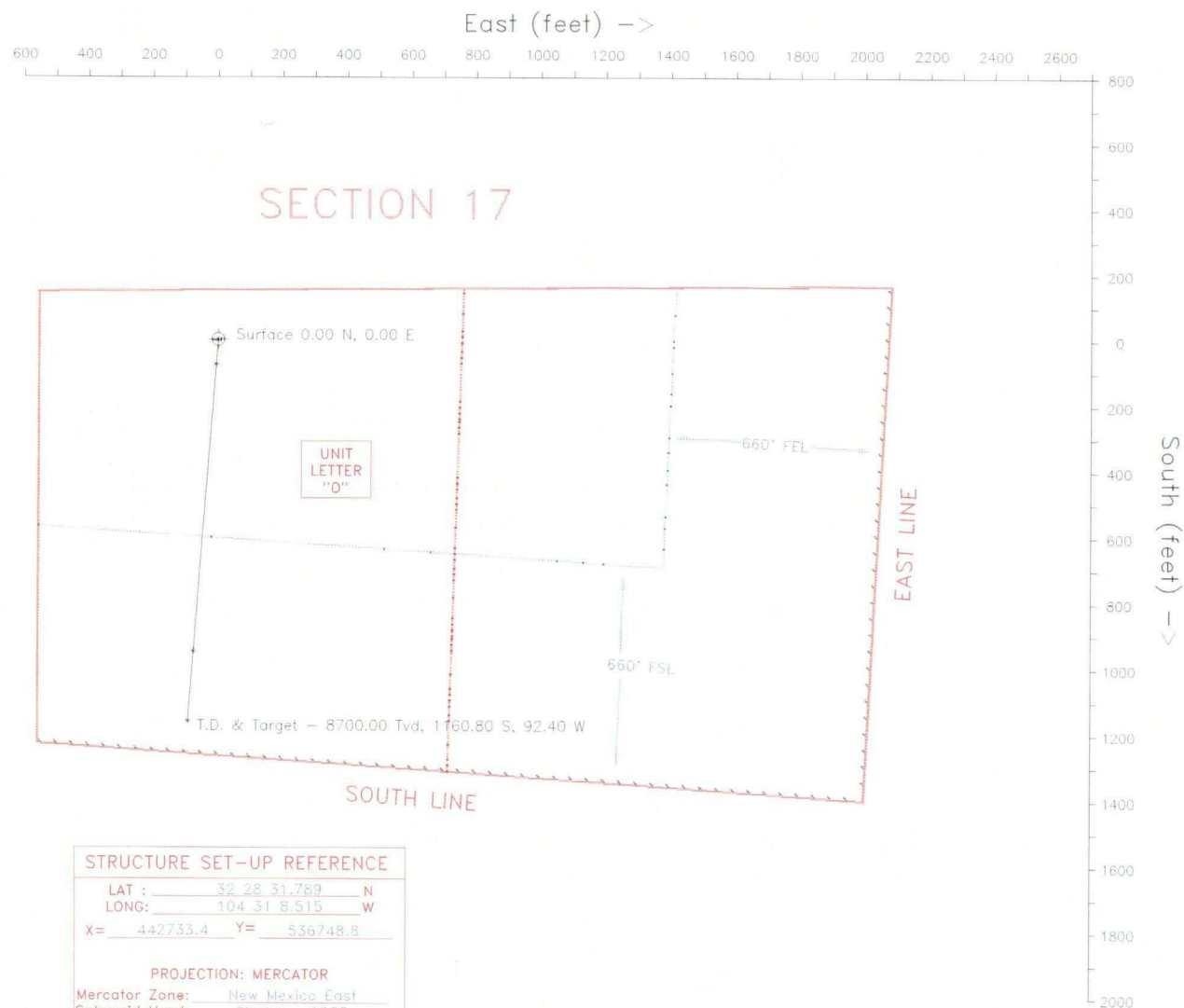
INTEQ



1-Oct-2002 (source: BCGM)
 Magnetic North is 9.06 degrees East of True North
 GRID North is 0.10 degrees West of True North
 To correct azimuth from True to GRID add 0.10 deg.
 To correct azimuth from Magnetic to GRID add 9.16 deg.

PROPOSED BHL
 1164.47' ON AZI 184.55 DEGS
 FROM SURFACE LOCATION
 M.D: 8848.09' T.V.D: 8700.00'
 S- 1160.80' W- 92.40'
 X= 442641.00 Y= 535588.00

69' FROM SOUTH LINE
 2089' FROM EAST LINE



STRUCTURE SET-UP REFERENCE

LAT : 32 28 31.769 N
 LONG: 104 31 8.515 W
 X= 442733.4 Y= 536748.8

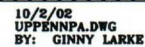
PROJECTION: MERCATOR

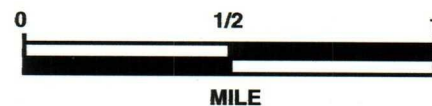
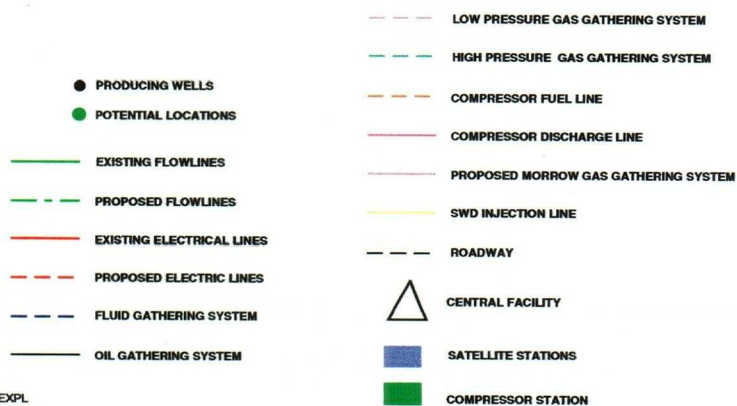
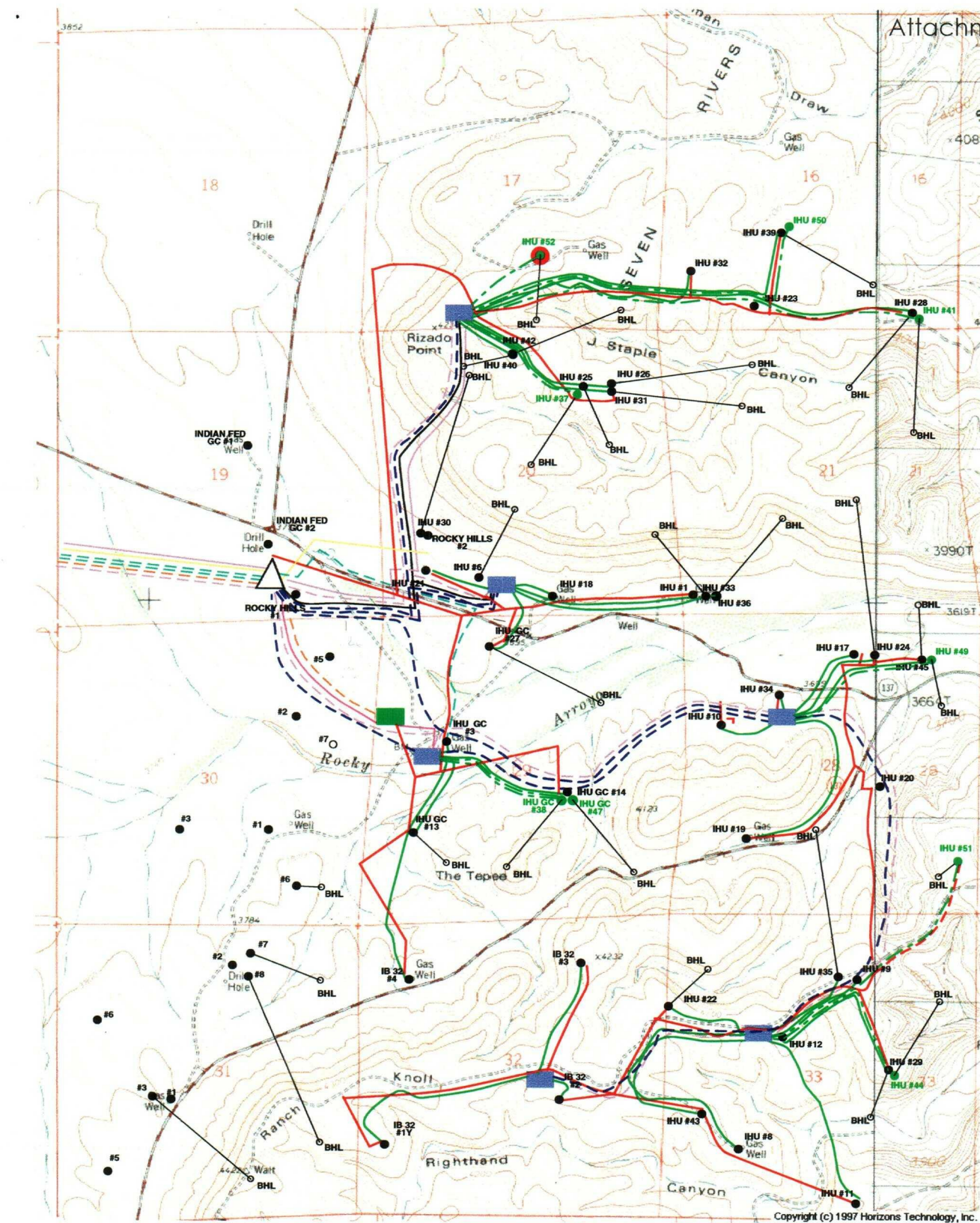
Mercator Zone: New Mexico East

Spheroid Used: Clarke - 1866

Data Source: BCGM

Dip Angle: 60.47 deg
 Field Strength: 49612.08 nT

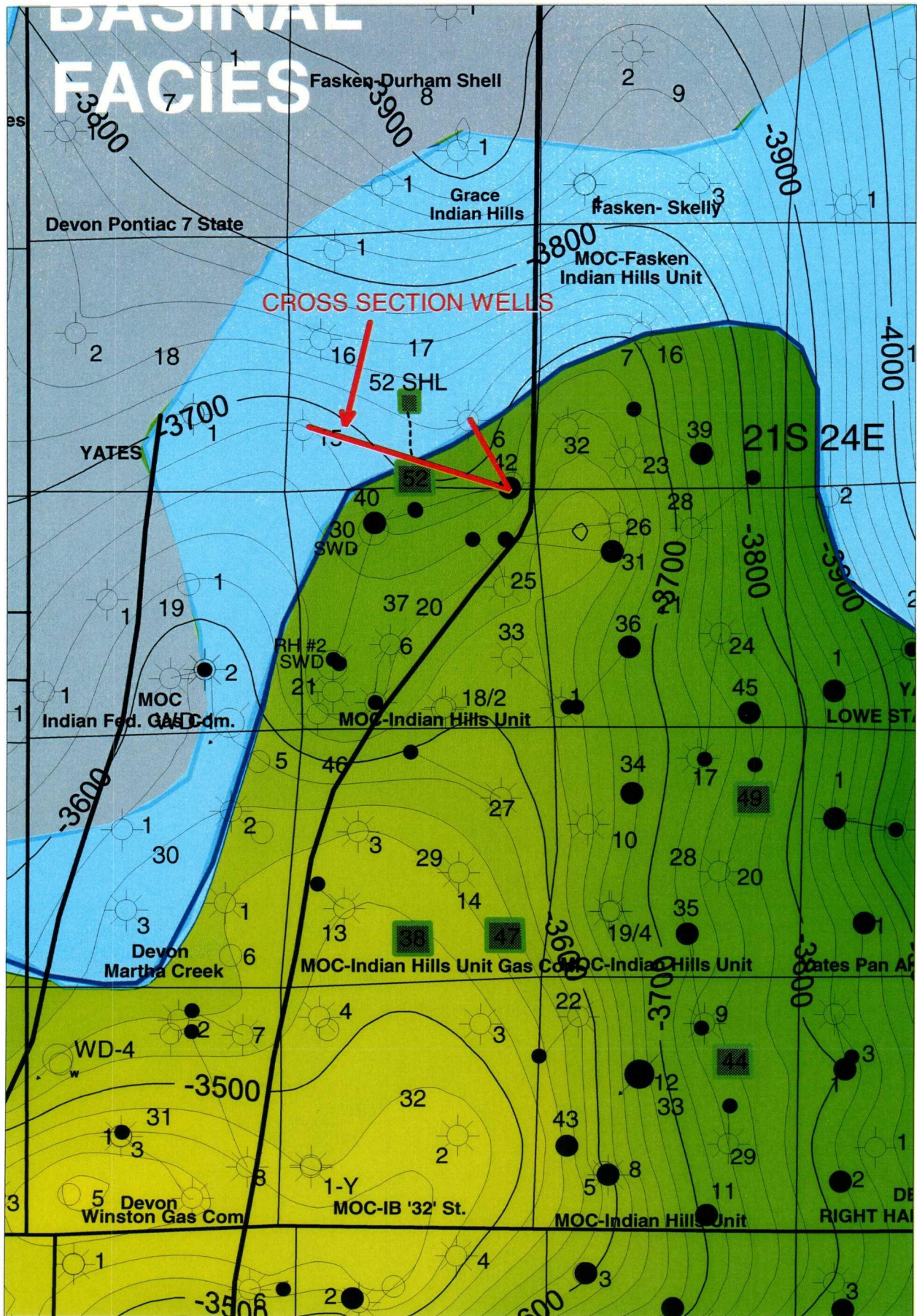




**MARATHON OIL COMPANY
SOUTHERN BUSINESS UNIT**

EAST INDIAN BASIN

EDDY COUNTY, NEW MEXICO



1 inch = 2974.167 feet

RESERVOIR RISK- IHU 52 NSL

Attachment #6

1
FASSEN OIL & RANCH LTD
INDIAN HILLS UNIT 15
021.08 024.0E 017
30015298700000

2
MARATHON OIL COMPANY
INDIAN HILLS UNIT 42-ST
021.08 024.0E 020
30015323550100

3
MARATHON
INDIAN HILLS UNIT 6-A
021.08 024.0E02 017
30015200060000

