

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

FORM APPROVED
OMB NO. 1004-0137
Expires March 31, 2007

SUNDRY NOTICES AND REPORTS ON WELLS

Do not use this form for proposals to drill or to re-enter an abandoned well. Use Form 3160-3 (APD) for such proposals.

SUBMIT IN TRIPLICATE - Other instructions on reverse side

1. Type of Well

☐ Oil Well ☒ Gas Well ☐ Other

2. Name of Operator

Marathon Oil Company

3a. Address

P.O. Box 3487 Houston, TX 77253-3487

3b. Phone No. (include area code)

713-296-2096

4. Location of Well (Footage, Sec., T., R., M., or Survey Description)

1494'FSL & 688'FWL, UL"L", Sec 20, T21S, R24E Surface Hole Location
1584'FNL & 1332'FWL, UL"F", Sec 20, T21S, R24E Top of Morrow Formation
1308'FNL & 1441 FWL, UL"C", Sec 20, T21S, R24E, PBID @ 10556'

5. Lease Serial No.

LC 064391 B

6. If Indian, Allottee or Tribe Name

7. If Unit or CA/Agreement, Name and/or No.

NM 70964

8. Well Name and No.

Indian Hills Unit No. 30

9. API Well No.

30-015-31655

10. Field and Pool, or Exploratory Area

Indian Basin Morrow

11. County or Parish, State

Eddy NM

12. CHECK APPROPRIATE BOX(ES) TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

TYPE OF SUBMISSION

☒ Notice of Intent

☐ Subsequent Report

☐ Final Abandonment Notice

TYPE OF ACTION

☐ Acidize

☐ Alter Casing

☐ Casing Repair

☐ Change Plans

☐ Convert to Injection

☐ Deepen

☐ Fracture Treat

☐ New Construction

☐ Plug and Abandon

☐ Plug Back

☐ Production (Start/Resume)

☐ Reclamation

☒ Recomplete

☐ Temporarily Abandon

☐ Water Disposal

☐ Water Shut-Off

☐ Well Integrity

☐ Other

13. Describe Proposed or Completed Operation (clearly state all pertinent details, including estimated starting date of any proposed work and approximate duration thereof. If the proposal is to deepen directionally or recompleate horizontally, give subsurface locations and measured and true vertical depths of all pertinent markers and zones. Attach the Bond under which the work will be performed or provide the Bond No. on file with BLM/BIA. Required subsequent reports shall be filed within 30 days following completion of the involved operations. If the operation results in a multiple completion or recompleation in a new interval, a Form 3160-4 shall be filed once testing has been completed. Final Abandonment Notices shall be filed only after all requirements, including reclamation, have been completed, and the operator has determined that the final site is ready for final inspection.)

Marathon Oil Company is proposing to re-complete the Indian Hills Unit No. 30 well to the Morrow formation. This well was simultaneously used as a Devonian SWd and a Morrow producer prior to plugging back the Devonian, squeezing the Morrow and recompleting at a test interval in the Mississippian formation. It has been determined that the well is not capable of making production in the Mississippian in economic quantities. Therefore Marathon intends to plug back the Mississippian and recompleate to the Morrow. Please see attached workover procedure for details of well work to be undertaken. Also, attached is a copy of the directional survey for the well, and a drawn plat showing bottom hole, current plug back and top of the morrow formation.

APPROVED FOR 12 MONTH PERIOD
ENDING March 1, 2008

Send subsequent sundry and
completion report when
completed.

14. I hereby certify that the foregoing is true and correct
Name (Printed/Typed)

Charles E. Kendrix

Title

Regulatory Compliance Representative

Date 03/01/2007

APPROVED

THIS SPACE FOR FEDERAL OR STATE OFFICE USE

Approved by

Title

Mar Date 5 2007

Conditions of approval, if any, are attached. Approval of this notice 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.

Office

WESLEY W. INGRAM
PETROLEUM ENGINEER

Title 18 U.S.C. Section 1001, and Title 43 U.S.C. Section 1212, 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.

Recompletion Procedure

INDIAN HILLS UNIT No. 30

Morrow Recompletion

Surface Hole Location: 1494' FSL & 688' FWL, Section 20, Township 21 South, Range 24 East
 Directional Well w/Bottom Hole Location in Section 20 Township 21 South, Range 24 East
 Indian Basin Field, Eddy Co, NM

Purpose: Recomplete the Morrow Formation

Elevation/Depths: GL: 3791' KB: 3817' TD: 11,443' PBTD: 10,556'

Surface Casing: 13-3/8", 54# J-55 set @ 1205'. Cemented w/ unknown volume of cement. Did not circulate. Topped out cement to surface w/ 1".

Production Casing: 9-5/8", 40#, 43.5# & 47# L-80 set @ 8191'. DV tool @ 6680'. 1st stage – 580 sacks of N2 foamed premium cement tailed w/ 100 sacks of neat cement. Opened DV tool and circulated off 25 sacks to surface. 2nd stage – 1450 sacks cement. Circulated 125 sacks to surface.

Production Liner: 7", 26#, L-80 flush joint casing run from liner hanger to 10,748'. Liner hanger set at 8026' w/ a drift diameter of 6.315'. Cemented w/ 350 sacks. Drilled 25' of cement off top of liner hanger.

Production Tubing: 2 7/8" L-80 Tubing @ 10,284', 2 7/8" On/Off Tool w/ 2.313" X Profile, PLS Packer @ 10253', 2 7/8" XN Profile Nipple

Perforations: 9866'-9887', 9958'-9966', 9969'-9982', 6 SPF - Morrow perfs Squeezed 10,351'-10,371', 10,406'-10,416', 10,514'-10,540', 2 SPF- Mississippian Perfs 10,748' to 11,443' - Devonian Open Hole Squeezed.

Pressure Information: Morrow formation (sweet gas) @ ~4000 psi.

Safety:

- Hold daily safety meeting explaining the proposed procedure.
- H2S concentration - 5,000 ppm
- Keep TIW valve on rig floor at all times.
- Keep kill-string in well at night if tbg is pulled.
- Follow MOC SOP's throughout job.

Tubular Data:

Size, Wt, Grade	ID (in.)	Drift (in.)	80% Burst (psig)	Collapse (psig)	bbls/Mft
9-5/8", 40.5#, L-80	8.835	8.679	4600	3090	75.8
9-5/8", 43.5#, L-80	8.755	8.599	5064	3810	74.4
9-5/8", 47.0#, L-80	8.681	8.525	5496	4750	73.2
7", 26.0#, L-80	6.276	6.151	5792	5410	38.3
3 1/2", 9.3#, L-80	2.992	2.867	8128	10,530	8.70
2 7/8", 6.5#, L-80	2.441	2.347	8456	11,160	5.79
2 3/8", 4.7#, L-80	1.995	1.901	8960	11,780	3.87

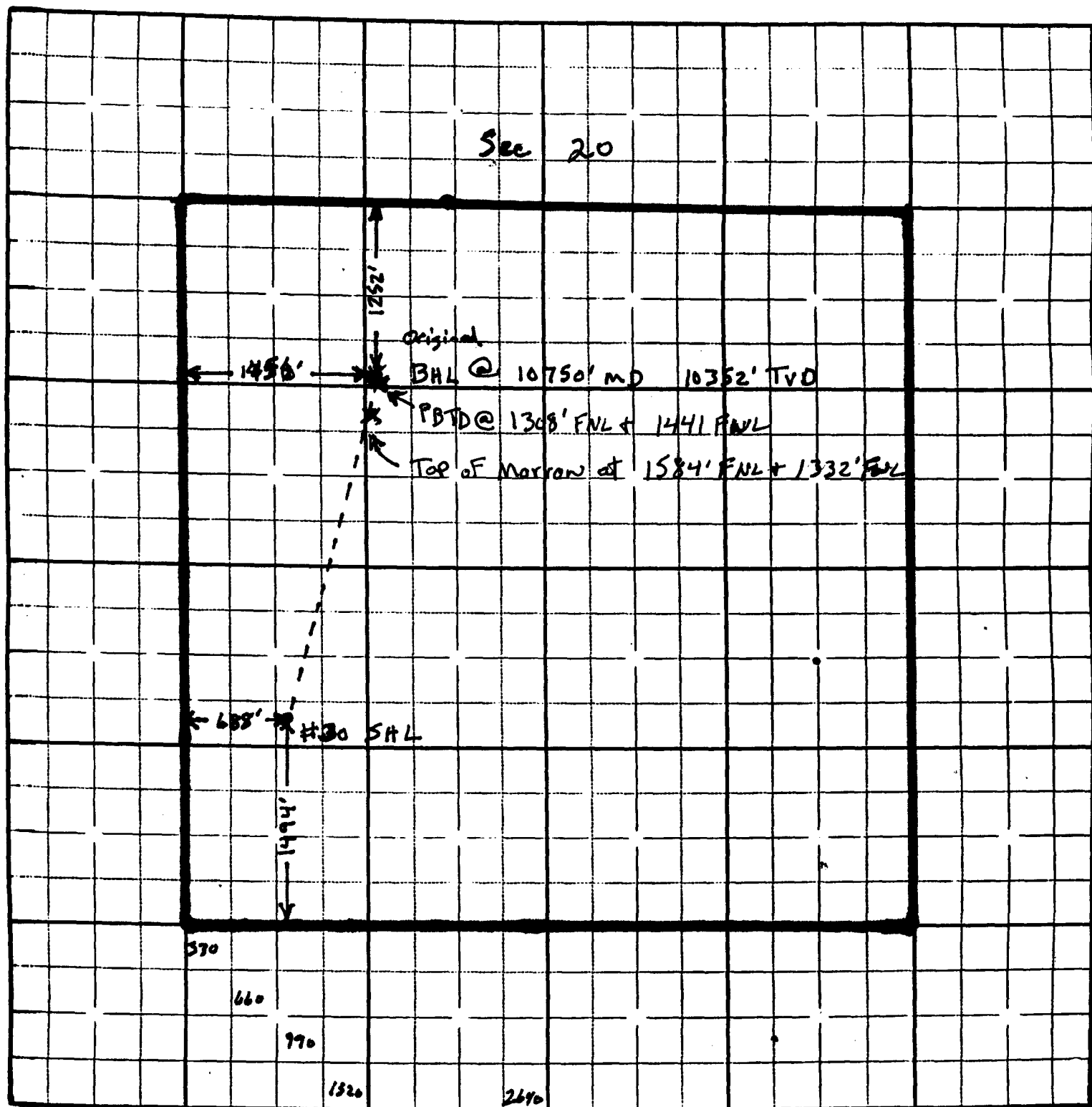
Safety Numbers: Carlsbad Hospital – (505)-885-2111 +0
Artesia Hospital – (505)-748-3333
Fire Department - (505)-885-3124
Eddy County Sheriff – (505)-887-7551
NM State Police - (505)-622-7200

Procedure:

1. Approximately 48 hours prior to MIRU tie in flow line to sales line and bleed pressure off tubing.
2. Rig Supervisor & pulling unit operator inspect the well & location prior to rigging up. Make sure all associated personnel have proper PPE for the proposed job. Check inspection date of last anchor test and retest to 22,500 lbs. if necessary.
3. MIRU Pulling unit, make sure geronimo line is staked securely, H₂S monitors is in place, guardrails are in place & the unit is properly grounded to the wellhead. RU reverse unit with pump and mud pit. Spot two 500 bbl frac tanks. Fill one with fresh water and place 130 bbls of 7 1/2% KCL containing 1.5 gals/1000 gals of Clay-Stay in other.
4. Install 7-1/16" 1500 Series hydraulic BOPs w/ 2-7/8" pipe rams & blind rams (equipped w/ valved outlets below blinds). Have 3 1/2" rams available. Test pipe rams & blind rams to 1000 psig.
5. Kill well if necessary with 7 1/2% KCL water w/ Clay-Stay. Equalize PLS packer @ 10,253'. Release packer. Displace 50 bbls of 7 1/2% KCL water w/ Clay-Stay down tubing and POOH laying down the 2 7/8" tubing.
6. RU Baker. Install pack off. PU 7" CIBP with GR-CCL tool. RIH and pull GR-CCL strip from 10,350' to 9000'. Correlate to open hole logs dated. Set 7" CIBP at ~10,300'. Load casing and test CIBP to 1000 psi at surface. Bleed off pressure and RIH and dump bail 50' of cement on top of CIBP at 10,300'. RD Baker.
7. PU 4 1/2" TCP guns set to fire 5 SPF at 60 degree phasing from 9728' to 9748', mechanical firing head, auto release, 2 3/8" sub, 2 3/8" XN nipple (x=1.875", n=1.791"), 1 jt of 2 3/8" tubing, 2 7/8" x 2 3/8" XO, 7" x 2 7/8" PSL packer, 2 7/8" x 2 3/8" XO, on-off tool with 1.875" profile, 2 3/8" x 3 1/2" XO and RIH picking up 3 1/2", 9.3 lb/ft, L-80 workstring, hydrotesting to 8000 psi below the slips.
8. Sub workstring out to get on depth to perforate. RU Baker and verify packer setting. Correlate to open hole logs dated.
9. Pump 55 bbls of 7 1/2% KCL water w/ Clay-Stay down tubing followed by 55 bbls of fresh water.
10. Set packer. NU frac valve. RU flow back manifold to frac tank. Swab 3 1/2" to ~6600'. RD swab.
11. Drop bar to shoot perforating charges. Monitor tubing pressure. Flow well back if warranted.
12. If well flows and dies, RU swab and attempt to kick well off.
13. RIH with sinker bar to verify that guns have dropped.
14. Spot CO₂ transports with 120 tons of CO₂ available for frac job.

15. RU Halliburton for foamed frac stimulation. Load backside and install pop-off valve on casing set at 1000 psi. (Or as recommended by Halliburton). Conduct CO₂ frac on upper Morrow perfs 9728-48' with up to 3 #/gals ceramic-20/40 and 65% CO₂ as per Halliburton's procedure.
16. Flow well back to frac tank through choke as soon as possible. Monitor fluid recovery and tubing pressures.
17. If well dies, RU swab and attempt to kick well off. A pressure build up may be requested based on the zone's performance.
18. RU slick line unit. RU lubricator and RIH with no-go to clear tubing to lower most profile nipple. POOH. RIH and set blanking plug in lowest R-nipple with a 1.875" profile. POOH. RIH and set "dart" in blanking plug. Blow down tubing and check for flow. POOH and rig down slick line unit.
19. Release from on-off tool and let tubing annulus equalize. POOH laying down 3 1/2" workstring.
20. PU redressed on-off tool and RIH with 2 3/8", 4.6 #/ft, L-80 production tubing to within 10' of on-off tool. Displace 25 bbls of 7 1/2% KCL water to end of tubing (volume will be determined by est. BHP). Space out tubing and engage on-off tool. RU swab and swab tubing to desired fluid level over plug. RD swab. ND BOPE.
21. Install 2 3/8" tree in place of 2 7/8" tree. RDMO pulling unit. Tie well into flow back equipment.
22. RU slick line unit. RU lubricator and RIH with no-go to clear 2 3/8" tubing to blanking plug. POOH. RIH and retrieve "dart" in blanking plug. POOH. RIH and retrieve blanking plug body. POOH and rig down slick line unit. Open well to facilities. Maintain low choke settings during initial production. MIRU swab unit if necessary to kick off well.

Township 21-south, Range 24 East, County Eddy, State NM



CENTRAL FILE

RECORD OF SURVEY

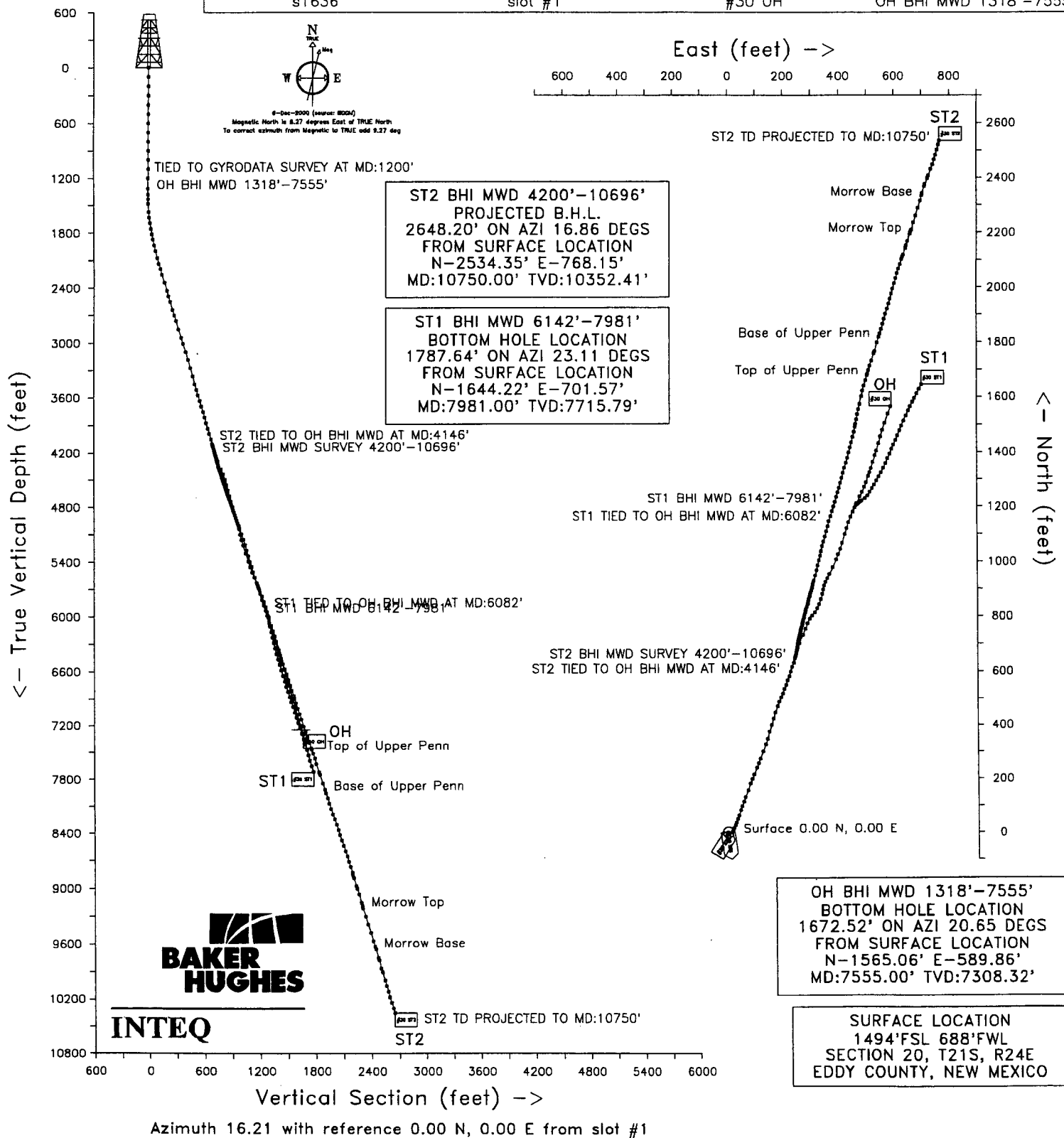
MARATHON OIL COMPANY

**INDIAN HILLS UNIT #30
INDIAN BASIN
EDDY COUNTY
NEW MEXICO**

August 23, 2001



INTEQ



Marathon Oil Company
Indian Hills Unit No. 30

#30 OH
slot #1
Indian Basin
EDDY COUNTY, NM.

SURVEY LISTING

by
Baker Hughes INTEQ

Your ref : OH BHI MWD 1318'-7555'
Our ref : svy1636
License :

Date printed : 23-Aug-2001
Date created : 29-Mar-2001
Last revised : 23-Aug-2001

Field is centred on n32 30 0.000,w104 30 0
Structure is centred on n32 30 0.000,w104 30 0

Slot location is n32 30 0.000,w104 30 0.000
Slot Grid coordinates are N 545652.918, E 448616.515
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 No. 30, #30 OH
Indian Basin, EDDY COUNTY, NM.

SURVEY LISTING Page 1
Your ref : OH BHI MWD 1318'-7555'
Last revised : 23-Aug-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
0.00	0.00	0.00	0.00	0.00 N	0.00 E	0.00	0.00
100.00	0.40	301.14	100.00	0.18 N	0.30 W	0.40	0.06
200.00	0.30	266.90	200.00	0.35 N	0.86 W	0.23	0.02
300.00	0.34	276.86	300.00	0.37 N	1.41 W	0.07	-0.16
400.00	0.22	203.21	399.99	0.23 N	1.79 W	0.35	-0.42
500.00	0.39	155.07	499.99	0.26 S	1.72 W	0.29	-0.85
600.00	0.46	163.42	599.99	0.95 S	1.46 W	0.09	-1.41
700.00	0.12	190.51	699.99	1.44 S	1.36 W	0.36	-1.83
800.00	0.41	118.15	799.99	1.71 S	1.07 W	0.39	-1.98
900.00	0.45	121.63	899.99	2.09 S	0.42 W	0.05	-2.10
1000.00	0.71	130.16	999.98	2.69 S	0.39 E	0.27	-2.38
1100.00	1.07	150.07	1099.97	3.90 S	1.33 E	0.47	-3.18
1200.00	1.09	148.90	1199.95	5.52 S	2.29 E	0.03	-4.36
1318.00	1.40	151.70	1317.92	7.75 S	3.55 E	0.27	-6.00
1385.00	1.10	134.00	1384.91	8.92 S	4.40 E	0.72	-6.79
1433.00	1.50	62.40	1432.90	8.95 S	5.29 E	3.24	-6.50
1483.00	2.50	50.80	1482.87	7.96 S	6.71 E	2.15	-5.07
1572.00	4.80	38.80	1571.68	3.83 S	10.55 E	2.71	0.15
1635.00	6.40	31.10	1634.38	1.23 N	14.02 E	2.80	6.11
1696.00	8.00	25.80	1694.90	7.97 N	17.62 E	2.84	13.69
1759.00	9.40	23.70	1757.17	16.62 N	21.60 E	2.28	23.19
1822.00	10.60	21.90	1819.21	26.71 N	25.83 E	1.97	34.12
1879.00	11.70	20.50	1875.14	36.99 N	29.81 E	1.99	45.15
1942.00	12.90	19.50	1936.69	49.60 N	34.39 E	1.93	58.56
2004.00	14.30	19.10	1996.95	63.36 N	39.21 E	2.26	73.14
2086.00	15.60	19.10	2076.17	83.35 N	46.13 E	1.59	94.28
2149.00	15.80	19.10	2136.82	99.46 N	51.71 E	0.32	111.32
2211.00	16.40	19.80	2196.39	115.67 N	57.43 E	1.02	128.51
2274.00	16.60	19.80	2256.79	132.51 N	63.49 E	0.32	146.40
2365.00	16.70	20.20	2343.98	157.01 N	72.41 E	0.17	172.48
2459.00	16.60	20.90	2434.04	182.23 N	81.87 E	0.24	199.41
2522.00	16.30	21.20	2494.46	198.88 N	88.27 E	0.49	217.25
2585.00	16.20	21.60	2554.94	215.29 N	94.71 E	0.24	234.88
2679.00	16.90	20.90	2645.05	240.25 N	104.41 E	0.77	261.65
2742.00	17.10	20.90	2705.30	257.46 N	110.98 E	0.32	280.07
2804.00	17.10	21.20	2764.55	274.47 N	117.53 E	0.14	298.30
2897.00	17.30	21.20	2853.40	300.11 N	127.47 E	0.22	325.80
2992.00	17.90	18.80	2943.95	327.10 N	137.28 E	0.99	354.52
3061.00	18.20	17.00	3009.55	347.44 N	143.85 E	0.92	375.87
3154.00	16.70	16.70	3098.27	374.13 N	151.94 E	1.62	403.69
3247.00	15.60	16.70	3187.60	398.91 N	159.37 E	1.18	429.49
3339.00	15.10	16.30	3276.32	422.26 N	166.29 E	0.56	453.78
3433.00	15.30	17.00	3367.03	445.87 N	173.35 E	0.29	478.36
3525.00	15.50	18.80	3455.73	469.12 N	180.86 E	0.56	502.76
3589.00	16.20	20.50	3517.29	485.57 N	186.75 E	1.31	520.24
3651.00	16.70	21.60	3576.76	501.96 N	193.05 E	0.95	537.79
3713.00	16.10	21.20	3636.23	518.25 N	199.44 E	0.98	555.30
3774.00	15.80	20.50	3694.88	533.92 N	205.41 E	0.58	572.06
3836.00	15.80	20.20	3754.54	549.75 N	211.28 E	0.13	588.94
3899.00	15.60	19.80	3815.19	565.77 N	217.11 E	0.36	605.99

All data is in feet unless otherwise stated.
Coordinates from slot #1 and TVD from rotary table.
Bottom hole distance is 1672.52 on azimuth 20.65 degrees from wellhead.
Vertical section is from wellhead on azimuth 20.73 degrees.
Calculation uses the minimum curvature method.
Presented by Baker Hughes INTEQ

Marathon Oil Company
Indian Hills Unit No. 30, #30 OH
Indian Basin, EDDY COUNTY, NM.

SURVEY LISTING Page 2
Your ref : OH BHI MWD 1318'-7555'
Last revised : 23-Aug-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
3961.00	16.00	19.50	3874.85	581.66 N	222.79 E	0.66	622.87
4023.00	16.20	19.10	3934.42	597.89 N	228.47 E	0.37	640.05
4084.00	16.10	18.40	3993.01	613.96 N	233.92 E	0.36	657.01
4146.00	15.70	16.70	4052.64	630.15 N	239.05 E	0.99	673.97
4208.00	15.80	15.60	4112.31	646.32 N	243.73 E	0.51	690.74
4270.00	16.20	15.20	4171.91	662.79 N	248.27 E	0.67	707.76
4334.00	18.10	18.40	4233.06	680.84 N	253.75 E	3.31	726.58
4397.00	19.10	20.90	4292.63	700.15 N	260.66 E	3.14	747.08
4492.00	22.90	20.90	4381.31	731.95 N	272.80 E	2.32	781.13
4554.00	21.10	19.80	4438.96	753.35 N	280.75 E	1.74	803.95
4616.00	18.60	21.90	4497.27	773.02 N	288.21 E	4.19	825.00
4677.00	15.60	30.40	4555.58	789.13 N	296.00 E	6.39	842.81
4739.00	14.20	40.60	4615.50	802.10 N	305.17 E	4.79	858.19
4802.00	14.00	36.30	4676.60	814.11 N	314.71 E	1.69	872.80
4866.00	15.70	27.20	4738.47	828.05 N	323.25 E	4.50	888.86
4928.00	17.20	20.90	4797.94	844.08 N	330.36 E	3.76	906.36
4989.00	18.50	17.40	4856.00	861.74 N	336.47 E	2.76	925.05
5052.00	17.00	13.80	4916.00	880.22 N	341.65 E	2.95	944.17
5115.00	14.60	11.40	4976.62	896.95 N	345.42 E	3.95	961.15
5178.00	12.70	14.20	5037.84	911.45 N	348.69 E	3.19	975.87
5240.00	13.20	23.30	5098.27	924.56 N	353.16 E	3.38	989.71
5302.00	14.80	26.80	5158.42	938.13 N	359.53 E	2.92	1004.66
5365.00	16.80	26.10	5219.04	953.49 N	367.17 E	3.19	1021.73
5456.00	19.30	23.30	5305.56	979.12 N	378.90 E	2.91	1049.85
5549.00	18.70	21.20	5393.49	1007.13 N	390.37 E	0.98	1080.11
5612.00	18.70	20.20	5453.17	1026.03 N	397.51 E	0.51	1100.31
5675.00	19.80	18.76	5512.64	1045.61 N	404.43 E	1.90	1121.07
5737.00	21.18	17.36	5570.72	1066.24 N	411.15 E	2.36	1142.75
5831.00	21.60	17.40	5658.24	1098.96 N	421.39 E	0.45	1176.97
5893.00	21.90	18.10	5715.83	1120.84 N	428.40 E	0.64	1199.91
5956.00	20.80	19.80	5774.51	1142.54 N	435.84 E	2.00	1222.84
6018.00	19.30	22.30	5832.75	1162.37 N	443.45 E	2.79	1244.09
6082.00	17.10	24.40	5893.54	1180.73 N	451.36 E	3.59	1264.05
6142.00	15.60	25.80	5951.12	1196.03 N	458.51 E	2.58	1280.89
6205.00	15.70	26.10	6011.78	1211.31 N	465.95 E	0.20	1297.82
6298.00	17.80	25.10	6100.83	1235.49 N	477.51 E	2.28	1324.52
6359.00	18.90	24.40	6158.73	1252.93 N	485.55 E	1.84	1343.68
6421.00	17.60	22.60	6217.61	1270.73 N	493.30 E	2.29	1363.07
6484.00	16.00	20.50	6277.92	1287.65 N	500.00 E	2.72	1381.27
6577.00	14.10	18.40	6367.72	1310.41 N	508.07 E	2.13	1405.41
6638.00	14.40	18.80	6426.85	1324.64 N	512.86 E	0.52	1420.41
6699.00	14.80	18.80	6485.88	1339.20 N	517.81 E	0.66	1435.78
6793.00	15.60	18.40	6576.59	1362.55 N	525.67 E	0.86	1460.41
6887.00	16.60	17.70	6666.90	1387.34 N	533.74 E	1.08	1486.45
6950.00	17.10	16.70	6727.19	1404.78 N	539.14 E	0.92	1504.67
7043.00	16.60	15.90	6816.20	1430.66 N	546.71 E	0.59	1531.55
7136.00	15.60	14.50	6905.55	1455.54 N	553.48 E	1.15	1557.22
7229.00	15.20	17.00	6995.22	1479.31 N	560.18 E	0.83	1581.82
7325.00	15.90	18.70	7087.70	1503.80 N	568.07 E	0.87	1607.52
7450.00	16.90	20.50	7207.61	1537.04 N	579.93 E	0.90	1642.80

All data is in feet unless otherwise stated.
Coordinates from slot #1 and TVD from rotary table.
Bottom hole distance is 1672.52 on azimuth 20.65 degrees from wellhead.
Vertical section is from wellhead on azimuth 20.73 degrees.
Calculation uses the minimum curvature method.
Presented by Baker Hughes INTEQ

Marathon Oil Company
Indian Hills Unit No. 30, #30 OH
Indian Basin, EDDY COUNTY, NM.

SURVEY LISTING Page 3
Your ref : OH BHI MWD 1318'-7555'
Last revised : 23-Aug-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	
7552.00	16.03	18.56	7305.43	1564.27 N	589.60 E	1.01	1671.70	Top of Fish #1
7555.00	16.00	18.50	7308.32	1565.06 N	589.86 E	1.01	1672.52	

All data is in feet unless otherwise stated.
Coordinates from slot #1 and TVD from rotary table.
Bottom hole distance is 1672.52 on azimuth 20.65 degrees from wellhead.
Vertical section is from wellhead on azimuth 20.73 degrees.
Calculation uses the minimum curvature method.
Presented by Baker Hughes INTEQ

Marathon Oil Company
Indian Hills Unit No. 30.#30 OH
Indian Basin,EDDY COUNTY, NM.

SURVEY LISTING Page 4
Your ref : OH BHI MWD 1318'-7555'
Last revised : 23-Aug-2001

<u>Comments in wellpath</u>			
MD	TVD	Rectangular Coords.	Comment
100.00	100.00	0.18 N	0.30 W GYRODATA GYRO SURVEY 0'-7025'
200.00	200.00	0.35 N	0.86 W Date Ran: 06.07.01
300.00	300.00	0.37 N	1.41 W Surveyor: John Zugg
1200.00	1199.95	5.52 S	2.29 E TIED TO GYRODATA SURVEY AT MD:1200'
1318.00	1317.92	7.75 S	3.55 E OH BHI MWD 1318'-7555'
7552.00	7305.43	1564.27 N	589.60 E Top of Fish #1

<u>Targets associated with this wellpath</u>				
Target name	Geographic Location	T.V.D.	Rectangular Coordinates	Revised
PBHL/TD		11250.00	2676.12N 1012.82E	16-Feb-2001

Marathon Oil Company
Indian Hills Unit No. 30

#30 ST1
slot #1
Indian Basin
EDDY COUNTY, NM.

S U R V E Y L I S T I N G

by
Baker Hughes INTEQ

Your ref : ST1 BHI MWD 6142'-7981'
Our ref : svy1698
License :

Date printed : 23-Aug-2001
Date created : 21-May-2001
Last revised : 23-Aug-2001

Field is centred on n32 30 0.000,w104 30 0
Structure is centred on n32 30 0.000,w104 30 0

Slot location is n32 30 0.000,w104 30 0.000
Slot Grid coordinates are N 545652.918, E 448616.515
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 No. 30, #30 ST1
Indian Basin, EDDY COUNTY, NM.

SURVEY LISTING Page 1
Your ref : ST1 BHI MWD 6142'-7981'
Last revised : 23-Aug-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
0.00	0.00	0.00	0.00	0.00 N	0.00 E	0.00	0.00
100.00	0.40	301.14	100.00	0.18 N	0.30 W	0.40	0.06 GYRODATA GYRO SURVEY 0'-7025'
200.00	0.30	266.90	200.00	0.35 N	0.86 W	0.23	0.02 Date Ran: 06.07.01
300.00	0.34	276.86	300.00	0.37 N	1.41 W	0.07	-0.16 Surveyor: John Zugg
400.00	0.22	203.21	399.99	0.23 N	1.79 W	0.35	-0.42
500.00	0.39	155.07	499.99	0.26 S	1.72 W	0.29	-0.85
600.00	0.46	163.42	599.99	0.95 S	1.46 W	0.09	-1.41
700.00	0.12	190.51	699.99	1.44 S	1.36 W	0.36	-1.83
800.00	0.41	118.15	799.99	1.71 S	1.07 W	0.39	-1.98
900.00	0.45	121.63	899.99	2.09 S	0.42 W	0.05	-2.10
1000.00	0.71	130.16	999.98	2.69 S	0.39 E	0.27	-2.38
1100.00	1.07	150.07	1099.97	3.90 S	1.33 E	0.47	-3.18
1200.00	1.09	148.90	1199.95	5.52 S	2.29 E	0.03	-4.36 TIED TO GYRODATA SURVEY AT MD:1200'
1318.00	1.40	151.70	1317.92	7.75 S	3.55 E	0.27	-6.00 OH BHI MWD 1318'-7555'
1385.00	1.10	134.00	1384.91	8.92 S	4.40 E	0.72	-6.79
1433.00	1.50	62.40	1432.90	8.95 S	5.29 E	3.24	-6.50
1483.00	2.50	50.80	1482.87	7.96 S	6.71 E	2.15	-5.07
1572.00	4.80	38.80	1571.68	3.83 S	10.55 E	2.71	0.15
1635.00	6.40	31.10	1634.38	1.23 N	14.02 E	2.80	6.11
1696.00	8.00	25.80	1694.90	7.97 N	17.62 E	2.84	13.69
1759.00	9.40	23.70	1757.17	16.62 N	21.60 E	2.28	23.19
1822.00	10.60	21.90	1819.21	26.71 N	25.83 E	1.97	34.12
1879.00	11.70	20.50	1875.14	36.99 N	29.81 E	1.99	45.15
1942.00	12.90	19.50	1936.69	49.60 N	34.39 E	1.93	58.56
2004.00	14.30	19.10	1996.95	63.36 N	39.21 E	2.26	73.14
2086.00	15.60	19.10	2076.17	83.35 N	46.13 E	1.59	94.28
2149.00	15.80	19.10	2136.82	99.46 N	51.71 E	0.32	111.32
2211.00	16.40	19.80	2196.39	115.67 N	57.43 E	1.02	128.51
2274.00	16.60	19.80	2256.79	132.51 N	63.49 E	0.32	146.40
2365.00	16.70	20.20	2343.98	157.01 N	72.41 E	0.17	172.48
2459.00	16.60	20.90	2434.04	182.23 N	81.87 E	0.24	199.41
2522.00	16.30	21.20	2494.46	198.88 N	88.27 E	0.49	217.25
2585.00	16.20	21.60	2554.94	215.29 N	94.71 E	0.24	234.88
2679.00	16.90	20.90	2645.05	240.25 N	104.41 E	0.77	261.65
2742.00	17.10	20.90	2705.30	257.46 N	110.98 E	0.32	280.07
2804.00	17.10	21.20	2764.55	274.47 N	117.53 E	0.14	298.30
2897.00	17.30	21.20	2853.40	300.11 N	127.47 E	0.22	325.80
2992.00	17.90	18.80	2943.95	327.10 N	137.28 E	0.99	354.52
3061.00	18.20	17.00	3009.55	347.44 N	143.85 E	0.92	375.87
3154.00	16.70	16.70	3098.27	374.13 N	151.94 E	1.62	403.69
3247.00	15.60	16.70	3187.60	398.91 N	159.37 E	1.18	429.49
3339.00	15.10	16.30	3276.32	422.26 N	166.29 E	0.56	453.78
3433.00	15.30	17.00	3367.03	445.87 N	173.35 E	0.29	478.36
3525.00	15.50	18.80	3455.73	469.12 N	180.86 E	0.56	502.76
3589.00	16.20	20.50	3517.29	485.57 N	186.75 E	1.31	520.24
3651.00	16.70	21.60	3576.76	501.96 N	193.05 E	0.95	537.79
3713.00	16.10	21.20	3636.23	518.25 N	199.44 E	0.98	555.30
3774.00	15.80	20.50	3694.88	533.92 N	205.41 E	0.58	572.06
3836.00	15.80	20.20	3754.54	549.75 N	211.28 E	0.13	588.94
3899.00	15.60	19.80	3815.19	565.77 N	217.11 E	0.36	605.99

All data is in feet unless otherwise stated.
Coordinates from slot #1 and TVD from rotary table.
Bottom hole distance is 1787.64 on azimuth 23.11 degrees from wellhead.
Vertical section is from N 0.00 E 0.00 on azimuth 20.73 degrees.
Calculation uses the minimum curvature method.
Presented by Baker Hughes INTEQ

Marathon Oil Company
Indian Hills Unit No. 30, #30 ST1
Indian Basin, EDDY COUNTY, NM.

SURVEY LISTING Page 2
Your ref : ST1 BHI MWD 6142'-7981'
Last revised : 23-Aug-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	
3961.00	16.00	19.50	3874.85	581.66 N	222.79 E	0.66	622.87	
4023.00	16.20	19.10	3934.42	597.89 N	228.47 E	0.37	640.05	
4084.00	16.10	18.40	3993.01	613.96 N	233.92 E	0.36	657.01	
4146.00	15.70	16.70	4052.64	630.15 N	239.05 E	0.99	673.97	
4208.00	15.80	15.60	4112.31	646.32 N	243.73 E	0.51	690.74	
4270.00	16.20	15.20	4171.91	662.79 N	248.27 E	0.67	707.76	
4334.00	18.10	18.40	4233.06	680.84 N	253.75 E	3.31	726.58	
4397.00	19.90	20.90	4292.63	700.15 N	260.66 E	3.14	747.08	
4492.00	22.10	20.90	4381.31	731.95 N	272.80 E	2.32	781.13	
4554.00	21.10	19.80	4438.96	753.35 N	280.75 E	1.74	803.95	
4616.00	18.60	21.90	4497.27	773.02 N	288.21 E	4.19	824.99	
4677.00	15.60	30.40	4555.58	789.13 N	296.00 E	6.39	842.81	
4739.00	14.20	40.60	4615.50	802.10 N	305.17 E	4.79	858.19	
4802.00	14.00	36.30	4676.60	814.11 N	314.71 E	1.69	872.80	
4866.00	15.70	27.20	4738.47	828.05 N	323.25 E	4.50	888.86	
4928.00	17.20	20.90	4797.94	844.08 N	330.36 E	3.76	906.36	
4989.00	18.50	17.40	4856.00	861.74 N	336.47 E	2.76	925.05	
5052.00	17.00	13.80	4916.00	880.22 N	341.65 E	2.95	944.17	
5115.00	14.60	11.40	4976.62	896.95 N	345.42 E	3.95	961.15	
5178.00	12.70	14.20	5037.84	911.45 N	348.69 E	3.19	975.87	
5240.00	13.20	23.30	5098.27	924.56 N	353.16 E	3.38	989.71	
5302.00	14.80	26.80	5158.42	938.13 N	359.53 E	2.92	1004.66	
5365.00	16.80	26.10	5219.04	953.49 N	367.17 E	3.19	1021.73	
5456.00	19.30	23.30	5305.56	979.12 N	378.90 E	2.91	1049.85	
5549.00	18.70	21.20	5393.49	1007.13 N	390.37 E	0.98	1080.11	
5612.00	18.70	20.20	5453.17	1026.03 N	397.51 E	0.51	1100.31	
5675.00	19.80	18.76	5512.64	1045.61 N	404.43 E	1.90	1121.07	
5737.00	21.18	17.36	5570.72	1066.24 N	411.15 E	2.36	1142.75	
5831.00	21.60	17.40	5658.24	1098.96 N	421.39 E	0.45	1176.97	
5893.00	21.90	18.10	5715.83	1120.84 N	428.40 E	0.64	1199.91	
5956.00	20.80	19.80	5774.51	1142.54 N	435.84 E	2.00	1222.84	
6018.00	19.30	22.30	5832.75	1162.37 N	443.45 E	2.79	1244.09	
6082.00	17.10	24.40	5893.54	1180.73 N	451.36 E	3.59	1264.05	ST1 TIED TO OH BHI MWD AT MD:6082'
6142.00	14.90	29.30	5951.22	1195.49 N	458.78 E	4.30	1280.49	ST1 BHI MWD 6142'-7981'
6180.00	13.00	38.80	5988.10	1203.09 N	463.85 E	7.82	1289.38	
6210.00	12.50	45.50	6017.36	1207.99 N	468.28 E	5.20	1295.54	
6242.00	12.40	50.40	6048.61	1212.61 N	473.39 E	3.31	1301.67	
6272.00	12.20	53.60	6077.92	1216.54 N	478.43 E	2.37	1307.13	
6304.00	12.60	53.20	6109.18	1220.64 N	483.94 E	1.28	1312.91	
6367.00	12.90	49.00	6170.62	1229.37 N	494.75 E	1.55	1324.91	
6430.00	13.90	40.20	6231.91	1239.77 N	504.95 E	3.60	1338.24	
6492.00	14.90	33.50	6291.97	1252.10 N	514.15 E	3.13	1353.03	
6553.00	15.30	29.30	6350.87	1265.66 N	522.42 E	1.91	1368.64	
6614.00	15.60	29.30	6409.66	1279.83 N	530.37 E	0.49	1384.71	
6676.00	15.90	30.00	6469.33	1294.46 N	538.70 E	0.57	1401.33	
6737.00	16.20	28.20	6527.96	1309.19 N	546.90 E	0.95	1418.02	
6799.00	16.60	27.60	6587.43	1324.66 N	555.09 E	0.70	1435.39	
6860.00	17.20	25.80	6645.80	1340.51 N	563.05 E	1.31	1453.02	
6923.00	18.00	25.90	6705.85	1357.65 N	571.36 E	1.27	1471.99	
6985.00	18.30	24.04	6764.76	1375.16 N	579.51 E	1.05	1491.25	

All data is in feet unless otherwise stated.
Coordinates from slot #1 and TVD from rotary table.
Bottom hole distance is 1787.64 on azimuth 23.11 degrees from wellhead.
Vertical section is from N 0.00 E 0.00 on azimuth 20.73 degrees.
Calculation uses the minimum curvature method.
Presented by Baker Hughes INTEQ

Marathon Oil Company
Indian Hills Unit No. 30, #30 ST1
Indian Basin, EDDY COUNTY, NM.

SURVEY LISTING Page 3
Your ref : ST1 BHI MWD 6142'-7981'
Last revised : 23-Aug-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
7047.00	17.70	22.30	6823.73	1392.77 N	587.05 E	1.30	1510.39
7109.00	17.50	22.30	6882.83	1410.11 N	594.16 E	0.32	1529.13
7169.00	17.30	23.30	6940.08	1426.65 N	601.11 E	0.60	1547.06
7230.00	17.10	23.70	6998.35	1443.19 N	608.31 E	0.38	1565.08
7292.00	17.40	23.70	7057.57	1460.03 N	615.70 E	0.48	1583.44
7354.00	17.70	23.30	7116.68	1477.17 N	623.15 E	0.52	1602.11
7416.00	18.00	23.70	7175.70	1494.60 N	630.73 E	0.52	1621.09
7479.00	18.40	24.40	7235.54	1512.57 N	638.75 E	0.72	1640.74
7544.00	18.30	24.00	7297.24	1531.23 N	647.14 E	0.25	1661.16
7606.00	17.70	23.30	7356.20	1548.78 N	654.82 E	1.03	1680.30
7668.00	16.40	25.80	7415.48	1565.32 N	662.36 E	2.41	1698.43
7731.00	15.20	27.20	7476.10	1580.67 N	670.01 E	2.00	1715.50
7793.00	15.60	27.20	7535.87	1595.32 N	677.53 E	0.65	1731.86
7855.00	16.60	26.50	7595.44	1610.66 N	685.30 E	1.64	1748.95
7919.00	17.20	25.80	7656.67	1627.36 N	693.50 E	0.99	1767.48
7981.00	17.90	25.40	7715.79	1644.22 N	701.57 E	1.15	1786.10

All data is in feet unless otherwise stated.
Coordinates from slot #1 and TVD from rotary table.
Bottom hole distance is 1787.64 on azimuth 23.11 degrees from wellhead.
Vertical section is from N 0.00 E 0.00 on azimuth 20.73 degrees.
Calculation uses the minimum curvature method.
Presented by Baker Hughes INTEQ

Marathon Oil Company
 Indian Hills Unit No. 30, #30 ST1
 Indian Basin, EDDY COUNTY, NM.

SURVEY LISTING Page 4
 Your ref : ST1 BHI MWD 6142'-7981'
 Last revised : 23-Aug-2001

Comments in wellpath

MD	TVD	Rectangular Coords.		Comment
100.00	100.00	0.18 N	0.30 W	GYRODATA GYRO SURVEY 0'-7025'
200.00	200.00	0.35 N	0.86 W	Date Ran: 06.07.01
300.00	300.00	0.37 N	1.41 W	Surveyor: John Zugg
1200.00	1199.95	5.52 S	2.29 E	TIED TO GYRODATA SURVEY AT MD:1200'
1318.00	1317.92	7.75 S	3.55 E	OH BHI MWD 1318'-7555'
6082.00	5893.54	1180.73 N	451.36 E	ST1 TIED TO OH BHI MWD AT MD:6082'
6142.00	5951.22	1195.49 N	458.78 E	ST1 BHI MWD 6142'-7981'

Targets associated with this wellpath

Target name	Geographic Location	T.V.D.	Rectangular Coordinates		Revised
PBHL/TD		11250.00	2676.12N	1012.82E	5-May-2001

Marathon Oil Company
Indian Hills Unit No. 30

#30 ST2
slot #1
Indian Basin
EDDY COUNTY, NM.

SURVEY LISTING

by
Baker Hughes INTEQ

Your ref : ST2 BHI MWD 4200'-10696'
Our ref : svy1712
License :

Date printed : 23-Aug-2001
Date created : 20-Jun-2001
Last revised : 23-Aug-2001

Field is centred on n32 30 0.000,w104 30 0
Structure is centred on n32 30 0.000,w104 30 0

Slot location is n32 30 0.000,w104 30 0.000
Slot Grid coordinates are N 545652.918, E 448616.515
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 No. 30, #30 ST2
Indian Basin, EDDY COUNTY, NM.

SURVEY LISTING Page 1
Your ref : ST2 BHI MWD 4200'-10696'
Last revised : 23-Aug-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
0.00	0.00	0.00	0.00	0.00 N	0.00 E	0.00	0.00
100.00	0.40	301.14	100.00	0.18 N	0.30 W	0.40	0.09
200.00	0.30	266.90	200.00	0.35 N	0.86 W	0.23	0.09
300.00	0.34	276.86	300.00	0.37 N	1.41 W	0.07	-0.04
400.00	0.22	203.21	399.99	0.23 N	1.79 W	0.35	-0.28
500.00	0.39	155.07	499.99	0.26 S	1.72 W	0.29	-0.73
600.00	0.46	163.42	599.99	0.95 S	1.46 W	0.09	-1.32
700.00	0.12	190.51	699.99	1.44 S	1.36 W	0.36	-1.76
800.00	0.41	118.15	799.99	1.71 S	1.07 W	0.39	-1.94
900.00	0.45	121.63	899.99	2.09 S	0.42 W	0.05	-2.12
1000.00	0.71	130.16	999.98	2.69 S	0.39 E	0.27	-2.48
1100.00	1.07	150.07	1099.97	3.90 S	1.33 E	0.47	-3.37
1200.00	1.09	148.90	1199.95	5.52 S	2.29 E	0.03	-4.67
1318.00	1.40	151.70	1317.92	7.75 S	3.55 E	0.27	-6.45
1385.00	1.10	134.00	1384.91	8.92 S	4.40 E	0.72	-7.34
1433.00	1.50	62.40	1432.90	8.95 S	5.29 E	3.24	-7.12
1483.00	2.50	50.80	1482.87	7.96 S	6.71 E	2.15	-5.77
1572.00	4.80	38.80	1571.68	3.83 S	10.55 E	2.71	-0.73
1635.00	6.40	31.10	1634.38	1.23 N	14.02 E	2.80	5.10
1696.00	8.00	25.80	1694.90	7.97 N	17.62 E	2.84	12.57
1759.00	9.40	23.70	1757.17	16.62 N	21.60 E	2.28	21.99
1822.00	10.60	21.90	1819.21	26.71 N	25.83 E	1.97	32.86
1879.00	11.70	20.50	1875.14	36.99 N	29.81 E	1.99	43.84
1942.00	12.90	19.50	1936.69	49.60 N	34.39 E	1.93	57.23
2004.00	14.30	19.10	1996.95	63.36 N	39.21 E	2.26	71.79
2086.00	15.60	19.10	2076.17	83.35 N	46.13 E	1.59	92.92
2149.00	15.80	19.10	2136.82	99.46 N	51.71 E	0.32	109.94
2211.00	16.40	19.80	2196.39	115.67 N	57.43 E	1.02	127.11
2274.00	16.60	19.80	2256.79	132.51 N	63.49 E	0.32	144.97
2365.00	16.70	20.20	2343.98	157.01 N	72.41 E	0.17	170.98
2459.00	16.60	20.90	2434.04	182.23 N	81.87 E	0.24	197.84
2522.00	16.30	21.20	2494.46	198.88 N	88.27 E	0.49	215.61
2585.00	16.20	21.60	2554.94	215.29 N	94.71 E	0.24	233.17
2679.00	16.90	20.90	2645.05	240.25 N	104.41 E	0.77	259.84
2742.00	17.10	20.90	2705.30	257.46 N	110.98 E	0.32	278.20
2804.00	17.10	21.20	2764.55	274.47 N	117.53 E	0.14	296.37
2897.00	17.30	21.20	2853.40	300.11 N	127.47 E	0.22	323.76
2992.00	17.90	18.80	2943.95	327.10 N	137.28 E	0.99	352.42
3061.00	18.20	17.00	3009.55	347.44 N	143.85 E	0.92	373.79
3154.00	16.70	16.70	3098.27	374.13 N	151.94 E	1.62	401.67
3247.00	15.60	16.70	3187.60	398.91 N	159.37 E	1.18	427.54
3339.00	15.10	16.30	3276.32	422.26 N	166.29 E	0.56	451.89
3433.00	15.30	17.00	3367.03	445.87 N	173.35 E	0.29	476.54
3525.00	15.50	18.80	3455.73	469.12 N	180.86 E	0.56	500.96
3589.00	16.20	20.50	3517.29	485.57 N	186.75 E	1.31	518.40
3651.00	16.70	21.60	3576.76	501.96 N	193.05 E	0.95	535.89
3713.00	16.10	21.20	3636.23	518.25 N	199.44 E	0.98	553.33
3774.00	15.80	20.50	3694.88	533.92 N	205.41 E	0.58	570.04
3836.00	15.80	20.20	3754.54	549.75 N	211.28 E	0.13	586.87
3899.00	15.60	19.80	3815.19	565.77 N	217.11 E	0.36	603.88

All data is in feet unless otherwise stated.
Coordinates from slot #1 and TVD from rotary table.
Bottom hole distance is 2648.20 on azimuth 16.86 degrees from wellhead.
Vertical section is from wellhead on azimuth 16.21 degrees.
Calculation uses the minimum curvature method.
Presented by Baker Hughes INTEQ

Marathon Oil Company
Indian Hills Unit No. 30, #30 ST2
Indian Basin, EDDY COUNTY, NM.

SURVEY LISTING Page 2
Your ref : ST2 BHI MWD 4200'-10696'
Last revised : 23-Aug-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
3961.00	16.00	19.50	3874.85	581.66 N	222.79 E	0.66	620.73
4023.00	16.20	19.10	3934.42	597.89 N	228.47 E	0.37	637.90
4084.00	16.10	18.40	3993.01	613.96 N	233.92 E	0.36	654.85
4146.00	15.70	16.70	4052.64	630.15 N	239.05 E	0.99	671.83 ST2 TIED TO OH BHI MWD AT MD:4146'
4200.00	15.70	15.60	4104.62	644.19 N	243.11 E	0.55	686.44 ST2 BHI MWD SURVEY 4200'-10696'
4210.00	15.80	15.20	4114.25	646.80 N	243.83 E	1.48	689.16
4220.00	15.90	15.20	4123.87	649.44 N	244.55 E	1.00	691.89
4230.00	15.90	14.90	4133.49	652.08 N	245.26 E	0.82	694.63
4240.00	16.10	14.50	4143.10	654.75 N	245.96 E	2.28	697.38
4265.00	15.70	14.20	4167.14	661.39 N	247.66 E	1.63	704.23
4280.00	15.60	13.50	4181.59	665.31 N	248.63 E	1.42	708.27
4295.00	15.20	12.40	4196.05	669.20 N	249.52 E	3.30	712.25
4311.00	14.80	11.40	4211.50	673.25 N	250.37 E	2.98	716.38
4325.00	14.50	10.00	4225.05	676.73 N	251.03 E	3.31	719.90
4342.00	14.50	9.30	4241.50	680.92 N	251.74 E	1.03	724.13
4359.00	14.50	8.60	4257.96	685.13 N	252.41 E	1.03	728.35
4373.00	14.60	8.20	4271.51	688.61 N	252.92 E	1.01	731.84
4388.00	14.70	8.20	4286.03	692.36 N	253.46 E	0.67	735.59
4404.00	14.80	8.60	4301.50	696.39 N	254.06 E	0.89	739.63
4420.00	15.00	8.80	4316.96	700.46 N	254.68 E	1.29	743.71
4435.00	15.40	9.40	4331.44	704.34 N	255.30 E	2.87	747.61
4450.00	15.60	10.80	4345.89	708.29 N	256.00 E	2.83	751.60
4467.00	16.00	11.90	4362.25	712.83 N	256.92 E	2.94	756.21
4482.00	16.30	12.00	4376.66	716.91 N	257.78 E	2.01	760.37
4499.00	16.40	12.80	4392.97	721.58 N	258.81 E	1.45	765.14
4513.00	16.40	13.10	4406.40	725.43 N	259.69 E	0.61	769.09
4530.00	16.80	12.80	4422.69	730.17 N	260.78 E	2.41	773.94
4546.00	16.90	13.50	4438.00	734.68 N	261.84 E	1.41	778.57
4559.00	17.10	13.10	4450.44	738.38 N	262.71 E	1.78	782.37
4590.00	17.50	13.50	4480.03	747.35 N	264.83 E	1.35	791.57
4621.00	17.70	13.50	4509.58	756.47 N	267.02 E	0.65	800.94
4653.00	18.20	13.50	4540.02	766.06 N	269.32 E	1.56	810.79
4683.00	18.50	13.50	4568.50	775.24 N	271.53 E	1.00	820.22
4714.00	18.90	13.50	4597.86	784.90 N	273.85 E	1.29	830.15
4746.00	19.20	13.10	4628.11	795.07 N	276.25 E	1.02	840.58
4777.00	19.60	13.50	4657.35	805.09 N	278.62 E	1.36	850.86
4807.00	19.20	14.80	4685.65	814.75 N	281.05 E	1.96	860.82
4837.00	18.90	15.20	4714.00	824.21 N	283.59 E	1.09	870.61
4869.00	18.90	15.20	4744.28	834.21 N	286.31 E	0.00	880.97
4901.00	18.90	15.60	4774.55	844.21 N	289.06 E	0.40	891.34
4930.00	18.50	14.50	4802.02	853.18 N	291.47 E	1.84	900.63
4961.00	18.70	14.50	4831.40	862.76 N	293.95 E	0.65	910.52
4992.00	18.90	14.50	4860.75	872.43 N	296.45 E	0.65	920.50
5023.00	19.10	14.20	4890.06	882.21 N	298.95 E	0.72	930.59
5055.00	19.10	14.90	4920.30	892.34 N	301.58 E	0.72	941.06
5085.00	18.60	14.90	4948.69	901.71 N	304.07 E	1.67	950.75
5115.00	18.70	15.25	4977.11	910.97 N	306.57 E	0.50	960.34
5145.00	18.70	14.50	5005.53	920.27 N	309.04 E	0.80	969.95
5177.00	18.10	14.50	5035.89	930.05 N	311.57 E	1.87	980.05
5239.00	18.00	14.20	5094.84	948.66 N	316.33 E	0.22	999.25

All data is in feet unless otherwise stated.
Coordinates from slot #1 and TVD from rotary table.
Bottom hole distance is 2648.20 on azimuth 16.86 degrees from wellhead.
Vertical section is from wellhead on azimuth 16.21 degrees.
Calculation uses the minimum curvature method.
Presented by Baker Hughes INTEQ

Marathon Oil Company
Indian Hills Unit No. 30, #30 ST2
Indian Basin, EDDY COUNTY, NM.

SURVEY LISTING Page 3
Your ref : ST2 BHI MWD 4200'-10696'
Last revised : 23-Aug-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	
5302.00	17.70	14.20	5154.81	967.38 N	321.07 E	0.48	1018.55	
5364.00	17.20	13.80	5213.96	985.42 N	325.57 E	0.83	1037.13	
5427.00	16.60	13.80	5274.24	1003.20 N	329.93 E	0.95	1055.43	
5489.00	16.50	13.80	5333.67	1020.36 N	334.15 E	0.16	1073.07	
5550.00	16.70	13.50	5392.13	1037.29 N	338.26 E	0.36	1090.48	
5612.00	17.00	13.50	5451.46	1054.77 N	342.45 E	0.48	1108.43	
5674.00	17.30	13.80	5510.71	1072.53 N	346.77 E	0.50	1126.70	
5735.00	17.60	14.20	5568.90	1090.28 N	351.19 E	0.53	1144.97	
5798.00	17.10	14.90	5629.03	1108.46 N	355.91 E	0.86	1163.75	
5862.00	17.50	15.20	5690.14	1126.84 N	360.86 E	0.64	1182.78	
5924.00	17.60	15.60	5749.25	1144.87 N	365.82 E	0.25	1201.47	
5992.00	16.90	16.30	5814.19	1164.26 N	371.36 E	1.07	1221.64	
6055.00	17.10	16.30	5874.44	1181.93 N	376.53 E	0.32	1240.06	
6116.00	17.14	16.30	5932.74	1199.17 N	381.57 E	0.07	1258.01	
6177.00	16.40	15.60	5991.14	1216.09 N	386.41 E	1.26	1275.61	
6239.00	16.79	15.60	6050.56	1233.15 N	391.17 E	0.63	1293.32	
6300.00	17.05	15.95	6108.92	1250.23 N	396.00 E	0.46	1311.07	
6362.00	17.49	15.95	6168.12	1267.93 N	401.05 E	0.71	1329.48	
6422.00	18.00	16.30	6225.27	1285.50 N	406.13 E	0.87	1347.77	
6484.00	18.28	16.65	6284.19	1304.01 N	411.61 E	0.48	1367.07	
6545.00	18.10	16.60	6342.14	1322.25 N	417.06 E	0.30	1386.11	
6607.00	18.20	16.30	6401.05	1340.78 N	422.53 E	0.22	1405.42	
6668.00	17.93	15.25	6459.05	1358.98 N	427.67 E	0.69	1424.34	
6731.00	18.72	15.25	6518.85	1378.09 N	432.88 E	1.25	1444.14	
6792.00	18.90	16.30	6576.59	1397.01 N	438.23 E	0.63	1463.81	
6851.00	18.80	16.60	6632.43	1415.30 N	443.62 E	0.24	1482.87	
6914.00	18.72	15.25	6692.08	1434.78 N	449.18 E	0.70	1503.13	
6976.00	18.63	13.84	6750.82	1453.99 N	454.17 E	0.74	1522.97	
7037.00	18.40	12.43	6808.66	1472.86 N	458.57 E	0.83	1542.32	
7100.00	16.80	10.68	6868.71	1491.51 N	462.40 E	2.67	1561.30	
7131.00	16.70	9.60	6898.40	1500.31 N	463.97 E	1.05	1570.18	
7192.00	16.60	9.60	6956.84	1517.54 N	466.89 E	0.16	1587.55	
7254.00	17.30	10.70	7016.15	1535.33 N	470.08 E	1.24	1605.52	
7317.00	17.90	11.40	7076.20	1554.03 N	473.73 E	1.01	1624.49	
7379.00	18.40	12.80	7135.11	1572.91 N	477.78 E	1.07	1643.75	
7468.00	19.20	14.20	7219.36	1600.79 N	484.48 E	1.03	1672.40	
7530.00	18.90	13.10	7277.97	1620.46 N	489.26 E	0.75	1692.62	
7593.00	18.60	14.90	7337.62	1640.11 N	494.16 E	1.03	1712.85	
7656.00	18.10	15.90	7397.42	1659.23 N	499.42 E	0.94	1732.68	
7719.00	17.60	17.00	7457.39	1677.75 N	504.89 E	0.96	1751.99	
7736.00	17.60	17.08	7473.59	1682.66 N	506.39 E	0.15	1757.13	Top of Upper Penn
7781.00	17.60	17.30	7516.49	1695.66 N	510.41 E	0.15	1770.74	
7842.00	17.70	17.71	7574.61	1713.30 N	515.98 E	0.26	1789.23	
7903.00	17.70	17.36	7632.73	1730.98 N	521.57 E	0.17	1807.77	
7996.00	17.90	17.00	7721.28	1758.14 N	529.96 E	0.25	1836.19	
8027.00	18.02	17.36	7750.76	1767.28 N	532.79 E	0.53	1845.75	
8130.00	18.10	17.00	7848.69	1797.78 N	542.22 E	0.13	1877.68	
8202.00	17.34	17.25	7917.27	1818.73 N	548.67 E	1.06	1899.59	Base of Upper Penn
8244.00	16.90	17.40	7957.41	1830.53 N	552.35 E	1.06	1911.95	
8305.00	16.50	16.30	8015.84	1847.31 N	557.43 E	0.84	1929.48	

All data is in feet unless otherwise stated.
Coordinates from slot #1 and TVD from rotary table.
Bottom hole distance is 2648.20 on azimuth 16.86 degrees from wellhead.
Vertical section is from wellhead on azimuth 16.21 degrees.
Calculation uses the minimum curvature method.
Presented by Baker Hughes INTEQ

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	
8367.00	17.58	15.60	8075.12	1864.78 N	562.42 E	1.77	1947.65	
8429.00	18.28	15.60	8134.11	1883.16 N	567.55 E	1.13	1966.73	
8490.00	18.11	15.60	8192.06	1901.51 N	572.68 E	0.28	1985.78	
8552.00	18.28	15.60	8250.95	1920.15 N	577.88 E	0.27	2005.14	
8615.00	18.46	15.95	8310.74	1939.26 N	583.28 E	0.34	2024.99	
8676.00	18.02	15.95	8368.68	1957.62 N	588.53 E	0.72	2044.08	
8735.00	18.46	16.30	8424.71	1975.36 N	593.66 E	0.77	2062.55	
8796.00	18.46	16.70	8482.58	1993.88 N	599.14 E	0.21	2081.87	
8859.00	18.54	16.70	8542.32	2013.02 N	604.89 E	0.13	2101.85	
8922.00	18.02	16.65	8602.14	2031.95 N	610.56 E	0.83	2121.61	
8984.00	17.31	16.65	8661.22	2049.98 N	615.95 E	1.15	2140.43	
9043.00	17.60	16.65	8717.50	2066.93 N	621.02 E	0.49	2158.12	
9104.00	17.40	17.71	8775.68	2084.46 N	626.44 E	0.62	2176.46	
9167.00	16.70	19.50	8835.91	2101.96 N	632.32 E	1.39	2194.92	
9197.00	16.30	19.50	8864.67	2110.00 N	635.17 E	1.33	2203.42	
9229.00	16.20	20.20	8895.39	2118.42 N	638.21 E	0.69	2212.36	
9319.00	16.70	17.00	8981.71	2142.57 N	646.32 E	1.15	2237.82	
9351.00	16.80	16.30	9012.35	2151.40 N	648.97 E	0.70	2247.04	
9411.00	16.50	16.30	9069.84	2167.90 N	653.79 E	0.50	2264.23	
9505.00	16.30	17.00	9160.01	2193.33 N	661.39 E	0.30	2290.77	
9541.00	16.07	17.63	9194.59	2202.91 N	664.38 E	0.81	2300.80	Morrow Top
9567.00	15.90	18.10	9219.58	2209.72 N	666.58 E	0.81	2307.96	
9661.00	17.10	15.90	9309.71	2235.25 N	674.36 E	1.44	2334.65	
9751.00	17.70	15.90	9395.59	2261.14 N	681.74 E	0.67	2361.56	
9845.00	17.80	18.10	9485.12	2288.54 N	690.12 E	0.72	2390.21	
9938.00	17.30	15.30	9573.79	2315.39 N	698.18 E	1.05	2418.24	
10005.00	17.08	15.23	9637.80	2334.49 N	703.39 E	0.32	2438.04	Morrow Base
10031.00	17.00	15.20	9662.66	2341.85 N	705.39 E	0.32	2445.66	
10126.00	15.50	19.10	9753.86	2367.24 N	713.19 E	1.95	2472.23	
10157.00	15.40	20.40	9783.74	2375.02 N	715.98 E	1.16	2480.47	
10249.00	15.00	23.00	9872.52	2397.43 N	724.89 E	0.86	2504.48	
10290.00	14.80	22.90	9912.14	2407.13 N	729.00 E	0.49	2514.94	
10383.00	16.70	18.00	10001.65	2430.79 N	737.75 E	2.49	2540.10	
10446.00	16.90	18.00	10061.96	2448.10 N	743.38 E	0.32	2558.30	
10509.00	16.90	17.30	10122.24	2465.56 N	748.93 E	0.32	2576.61	
10571.00	16.90	15.90	10181.57	2482.83 N	754.08 E	0.66	2594.63	
10634.00	17.40	14.90	10241.76	2500.74 N	759.01 E	0.92	2613.21	
10696.00	17.50	15.25	10300.91	2518.69 N	763.85 E	0.23	2631.79	
10750.00	17.50	15.50	10352.41	2534.35 N	768.15 E	0.14	2648.03	ST2 TD PROJECTED TO MD:10750'

All data is in feet unless otherwise stated.
Coordinates from slot #1 and TVD from rotary table.
Bottom hole distance is 2648.20 on azimuth 16.86 degrees from wellhead.
Vertical section is from wellhead on azimuth 16.21 degrees.
Calculation uses the minimum curvature method.
Presented by Baker Hughes INTEQ

Marathon Oil Company
Indian Hills Unit No. 30, #30 ST2
Indian Basin, EDDY COUNTY, NM.

SURVEY LISTING Page 5
Your ref : ST2 BHI MWD 4200'-10696'
Last revised : 23-Aug-2001

Comments in wellpath

MD	TVD	Rectangular Coords.		Comment
100.00	100.00	0.18 N	0.30 W	GYRODATA GYRO SURVEY 0'-7025'
200.00	200.00	0.35 N	0.86 W	Date Ran: 06.07.01
300.00	300.00	0.37 N	1.41 W	Surveyor: John Zugg
1200.00	1199.95	5.52 S	2.29 E	TIED TO GYRODATA SURVEY AT MD:1200'
1318.00	1317.92	7.75 S	3.55 E	OH BHI MWD 1318'-7555'
4146.00	4052.64	630.15 N	239.05 E	ST2 TIED TO OH BHI MWD AT MD:4146'
4200.00	4104.62	644.19 N	243.11 E	ST2 BHI MWD SURVEY 4200'-10696'
7736.00	7473.59	1682.66 N	506.39 E	Top of Upper Penn
8202.00	7917.27	1818.73 N	548.67 E	Base of Upper Penn
9541.00	9194.59	2202.91 N	664.38 E	Morrow Top
10005.00	9637.80	2334.49 N	703.39 E	Morrow Base
10750.00	10352.41	2534.35 N	768.15 E	ST2 TD PROJECTED TO MD:10750'

Targets associated with this wellpath

Target name	Geographic Location	T.V.D.	Rectangular Coordinates	Revised
Top of Fish #1		7250.00	1540.05N 575.00E	6-Jun-2001