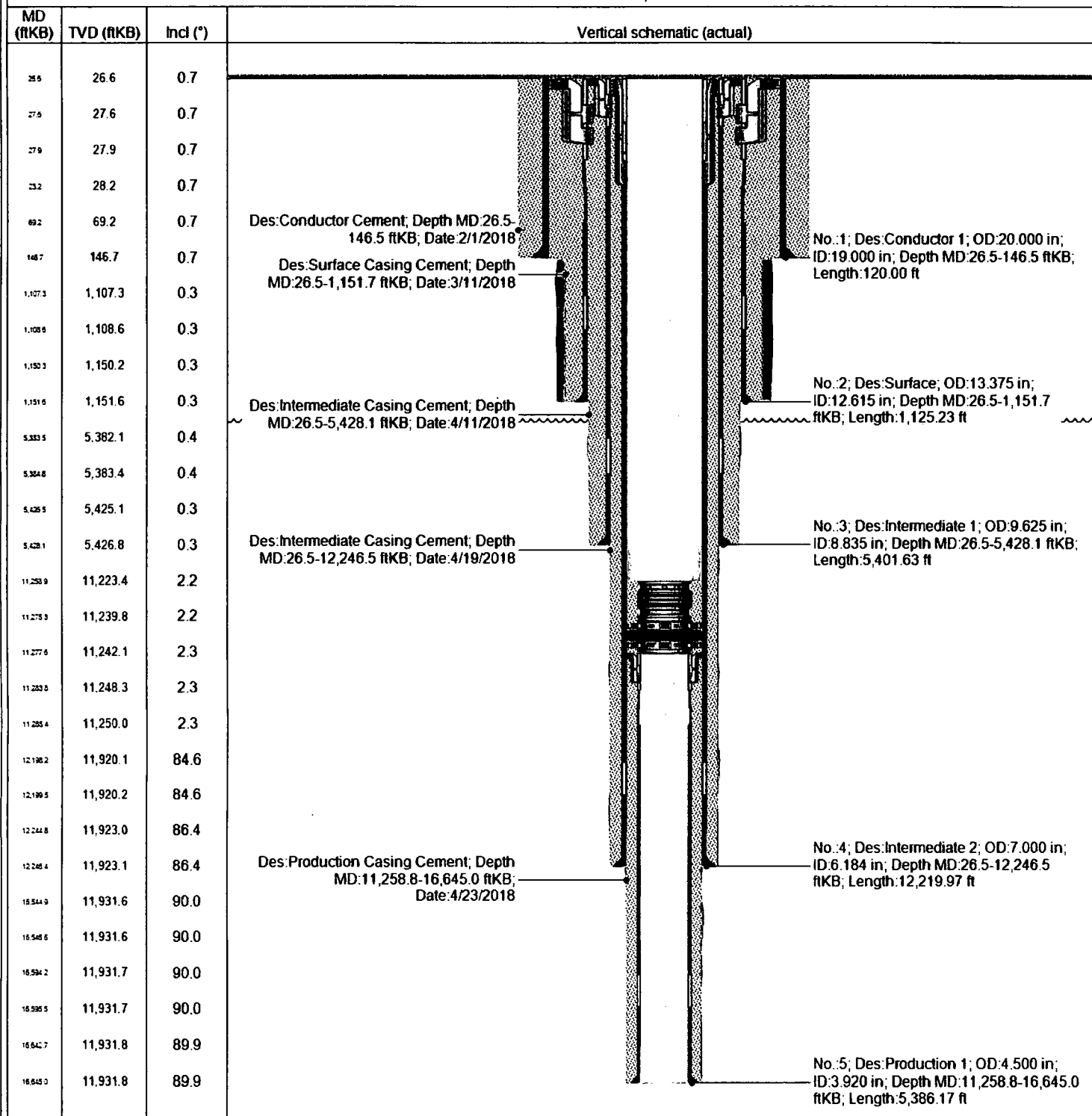


Wellbore Schematic

Well Name: **FLOWMASTER 24 34 15 TBU 5H**

State/Province NEW MEXICO	Prospect Area RED HILLS	Field Name	Well Subtype	Lat/Long Datum NAD27	Latitude (°) 32.223735	Longitude (°) -103.462115
Well Configuration Type HORIZONTAL	Well Objective EXPLOITATION	Well Status DRILLING	Ground Elevation (ft) 3,520.00	KB-Ground Distance (ft) 26.50		

HORIZONTAL - FLOWMASTER 24 34 15 TBU 5H, 4/30/2018 8:40:25 AM



Directions to Well: FROM THE INTERSECTION OF STATE HIGHWAY 128 (EAST KANSAS AVENUE) AND STATE HIGHWAY 18 IN THE CITY OF JAL, NEW MEXICO, TRAVEL WEST ON SAID STATE HIGHWAY 128 FOR 18.0 MILES TO CONTY ROAD 2-B ON THE RIGHT. TRAVEL NORTH ON COUNTY ROAD 2-B FOR 0.8 MILES TO A LEASE ROAD ON THE RIGHT. TRAVEL EAST ON LEASE ROAD FOR 0.2 MILES TO PROPOSED WELL 475 FEET ON THE LEFT.



Marathon Oil
Lea County, NM
Flowmaster 24-34-16 (4-5-8)
TBU No. 6H
Plan #3 - FINAL PVA
GL: 3520' + KB: 26.5' (H&P480)

US State Plane 1927 (Exact solution)
NAD 1927 (NADCON CONUS)
Clarke 1866
New Mexico East 3001
Mean Sea Level

RKB Elevation: Well @ 3546.50usft (GL: 3520' + KB: 26.5' (H&P480))

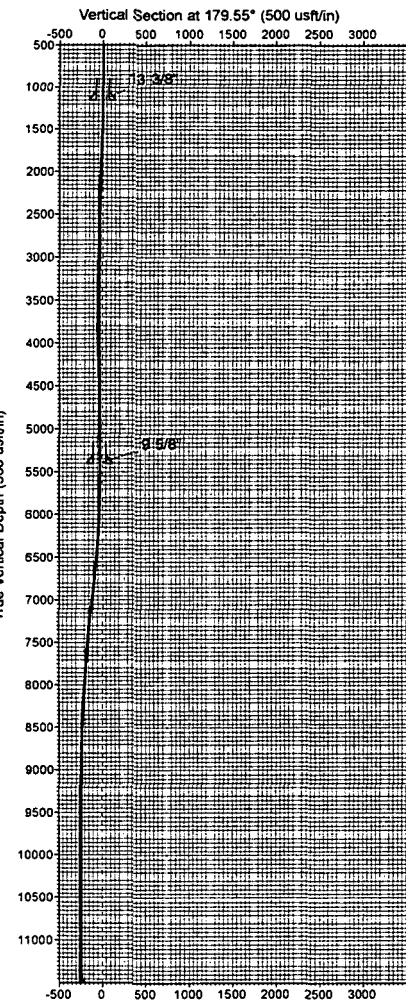
+N-S	+E-W	Northing	Easting	Latitude	Longitude	Slot
0.00	0.00	448206.72	769431.32	32° 13' 25.451076 N	103° 27' 43.478936 W	

SECTION DETAILS

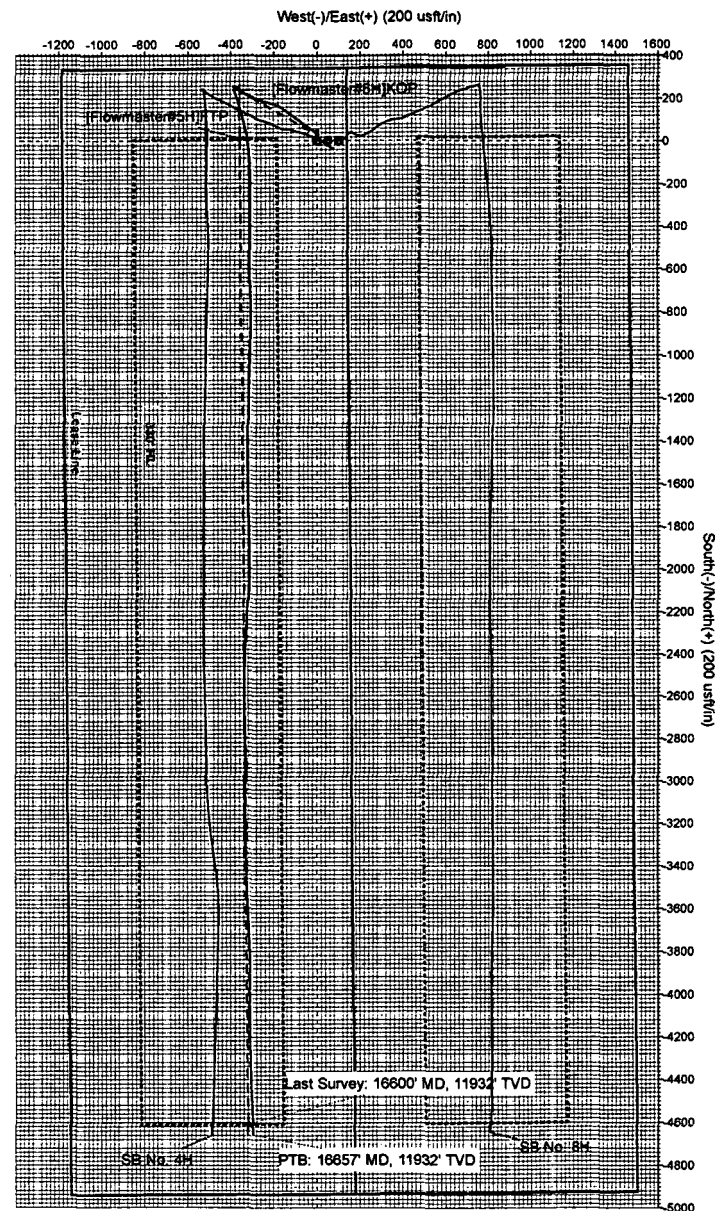
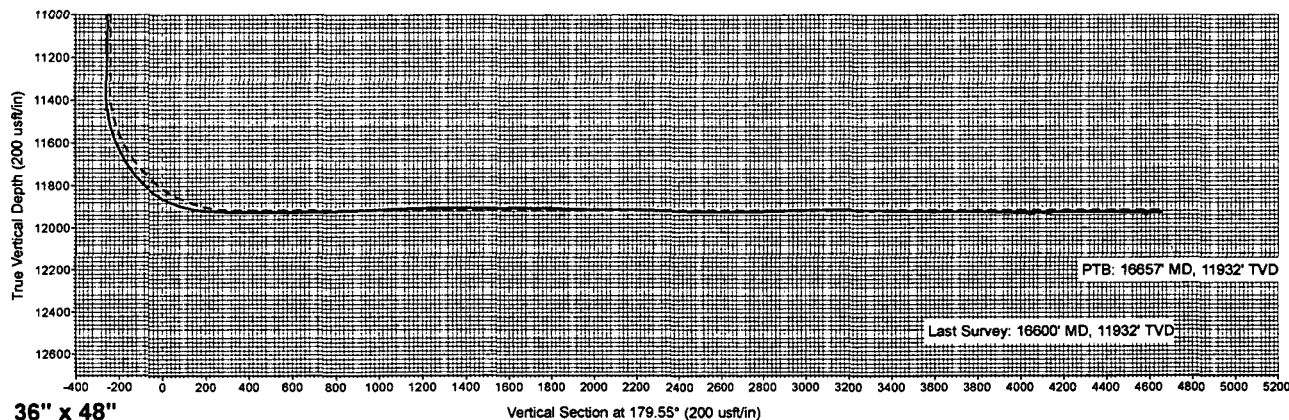
Sec	MD	Inc	Azi	TVD	+N-S	+E-W	Dleg	VSect
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	1250.00	0.00	0.00	1250.00	0.00	0.00	0.00	0.00
3	1650.00	2.00	0.00	1649.92	6.98	0.00	0.50	-6.98
4	2150.00	2.00	0.00	2149.81	24.43	0.00	0.00	-24.43
5	2418.87	0.00	0.00	2418.23	28.08	0.00	0.75	-28.08
6	5500.44	0.00	0.00	5500.00	28.08	0.00	0.00	-28.08
7	6500.51	10.00	300.25	6495.00	72.94	-75.21	1.00	-73.52
8	8136.87	10.00	300.25	8106.50	216.07	-320.70	0.00	-218.59
9	8636.91	0.00	0.00	8604.00	238.00	-358.30	2.00	-240.81
10	11378.91	0.00	0.00	11346.00	238.00	-358.30	0.00	-240.81
11	12278.90	90.00	179.55	11918.96	-334.93	-353.82	10.00	332.15
12	16554.21	90.00	179.55	11919.00	-4610.11	-320.42	0.00	4607.45
13	16599.21	90.00	179.55	11919.00	-4655.11	-320.07	0.00	4652.45

WELLBORE TARGET DETAILS (MAP CO-ORDINATES)

Name	TVD	+N-S	+E-W	Northing	Easting
[Flowmaster#5H]FTP	0.00	9.41	-358.53	448216.13	769074.79
[Flowmaster#5H]KOP	11346.00	238.00	-358.30	448444.72	769073.02
[Flowmaster#5H]LTP/BHL	11919.00	-4610.11	-320.42	441596.81	769110.80



Target Line: 11919' TVD @ 0° VS: 90° INC



Azimuths to Grid North
True North: -0.47°
Magnetic North: 6.33°

Magnetic Field
Strength: 48032.0nT
Dip Angle: 59.98°
Date: 3/5/2018
Model: USER DEFINED

Azimuth Corrections

Total Magnetic Corr. (M to G): 6.33°
Declination (M to T): 6.79° East



Marathon Oil

Marathon Oil

Lea County, NM

Flowmaster 24-34-15 (4-5-8)

TBU No. 5H

OH

Design: OH 194'-16600' PTB 16657'

Survey Report

24 April, 2018





Professional Directional
Survey Report



Company: Marathon Oil
Project: Lea County, NM
Site: Flowmaster 24-34-15 (4-5-8)
Well: TBU No. 5H
Wellbore: OH
Design: OH 194'-16600' PTB 16657'

Local Co-ordinate Reference: Well TBU No. 5H
TVD Reference: Well @ 3546.50usft (GL: 3520' + KB: 26.5' (H&P480))
MD Reference: Well @ 3546.50usft (GL: 3520' + KB: 26.5' (H&P480))
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: WellPlanner1

Project: Lea County, NM

Map System: US State Plane 1927 (Exact solution)
Geo Datum: NAD 1927 (NADCON CONUS)
Map Zone: New Mexico East 3001

System Datum: Mean Sea Level

Site: Flowmaster 24-34-15 (4-5-8)

Site Position:		Northing:	446,206.72 usft	Latitude:	32° 13' 25.447064 N
From:	Map	Easting:	769,481.32 usft	Longitude:	103° 27' 42.896930 W
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "	Grid Convergence:	0.46 °

Well: TBU No. 5H

Well Position	+N/-S	0.00 usft	Northing:	446,206.72 usft	Latitude:	32° 13' 25.451076 N
	+E/-W	0.00 usft	Easting:	769,431.32 usft	Longitude:	103° 27' 43.478936 W
Position Uncertainty		0.00 usft	Wellhead Elevation:	usft	Ground Level:	3,520.00 usft

Wellbore: OH

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	User Defined	3/5/2018	6.79	59.98	48,032.00

Design: OH 194'-16600' PTB 16657'

Audit Notes:

Version: 1.0 Phase: ACTUAL Tie On Depth: 0.00

Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.00	0.00	0.00	179.55



Professional Directional Survey Report



Company: Marathon Oil
Project: Lea County, NM
Site: Flowmaster 24-34-15 (4-5-8)
Well: TBU No. 5H
Wellbore: OH
Design: OH 194'-16600' PTB 16657'

Local Co-ordinate Reference: Well TBU No. 5H
TVD Reference: Well @ 3546.50usft (GL: 3520' + KB: 26.5' (H&P480))
MD Reference: Well @ 3546.50usft (GL: 3520' + KB: 26.5' (H&P480))
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: WellPlanner1

Survey Program Date 4/24/2018

From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
194.00	1,088.00	Survey #1 (OH)	MWD+IFR1	OWSG MWD + IFR1
1,229.00	5,370.00	Survey #2 (OH)	MWD+IFR1	OWSG MWD + IFR1
5,502.00	16,657.00	Survey #3 (OH)	MWD+IFR1	OWSG MWD + IFR1

MD (usft)	Inc (")	Azi (azimuth) (")	TVD (usft)	V. Sec (usft)	N/S (usft)	E/W (usft)	Closure Distance (usft)	Closure Azimuth (")	Northing (usft)	Easting (usft)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	446,206.72	769,431.32
194.00	0.70	147.60	194.00	1.01	-1.00	0.63	1.19	147.60	446,205.72	769,431.95
224.00	0.80	145.60	223.99	1.33	-1.33	0.85	1.58	147.33	446,205.39	769,432.17
314.00	0.40	186.90	313.99	2.17	-2.16	1.17	2.45	151.57	446,204.56	769,432.49
405.00	0.40	169.80	404.99	2.80	-2.79	1.19	3.03	156.93	446,203.93	769,432.51
497.00	0.30	170.10	496.98	3.35	-3.34	1.29	3.58	158.95	446,203.38	769,432.61
588.00	0.40	161.50	587.98	3.89	-3.88	1.43	4.13	159.79	446,202.84	769,432.75
679.00	0.10	121.10	678.98	4.23	-4.22	1.60	4.51	159.28	446,202.50	769,432.92
770.00	0.20	143.70	769.98	4.40	-4.39	1.76	4.73	158.17	446,202.33	769,433.08
861.00	0.10	44.60	860.98	4.47	-4.46	1.91	4.85	156.84	446,202.26	769,433.23
953.00	0.30	57.50	952.98	4.29	-4.27	2.17	4.79	153.10	446,202.45	769,433.49
1,045.00	0.30	339.00	1,044.98	3.94	-3.92	2.28	4.53	149.76	446,202.80	769,433.60
1,088.00	0.30	343.10	1,087.98	3.72	-3.70	2.21	4.31	149.17	446,203.02	769,433.53
1,229.00	0.30	3.10	1,228.98	3.00	-2.98	2.12	3.66	144.56	446,203.74	769,433.44
1,320.00	0.40	357.10	1,319.98	2.44	-2.43	2.12	3.22	138.87	446,204.29	769,433.44
1,411.00	1.50	350.50	1,410.96	0.95	-0.94	1.91	2.12	116.13	446,205.78	769,433.23
1,503.00	3.00	350.00	1,502.89	-2.61	2.62	1.29	2.92	26.20	446,209.34	769,432.61
1,597.00	2.70	351.00	1,596.77	-7.23	7.23	0.52	7.25	4.09	446,213.95	769,431.84
1,692.00	2.50	350.40	1,691.67	-11.49	11.48	-0.18	11.49	359.11	446,218.20	769,431.14
1,786.00	2.20	349.70	1,785.59	-15.29	15.28	-0.84	15.30	356.84	446,222.00	769,430.48

Company: Marathon Oil
Project: Lea County, NM
Site: Flowmaster 24-34-15 (4-5-8)
Well: TBU No. 5H
Wellbore: OH
Design: OH 194'-16600' PTB 16657'

Local Co-ordinate Reference:
TVD Reference:
MD Reference:
North Reference:
Survey Calculation Method:
Database:

Well TBU No. 5H
 Well @ 3546.50usft (GL: 3520' + KB: 26.5' (H&P480))
 Well @ 3546.50usft (GL: 3520' + KB: 26.5' (H&P480))
 Grid
 Minimum Curvature
 WellPlanner1

Survey											
MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	V. Sec (usft)	N/S (usft)	E/W (usft)	Closure Distance (usft)	Closure Azimuth (°)	Northing (usft)	Easting (usft)	
1,881.00	2.20	349.80	1,880.52	-18.88	18.87	-1.49	18.93	355.48	446,225.59	769,429.83	
1,975.00	2.10	347.20	1,974.46	-22.34	22.33	-2.19	22.43	354.39	446,229.05	769,429.13	
2,070.00	2.00	350.00	2,069.40	-25.68	25.66	-2.87	25.81	353.63	446,232.38	769,428.45	
2,164.00	1.00	348.30	2,163.36	-28.10	28.07	-3.32	28.27	353.26	446,234.79	769,428.00	
2,259.00	0.80	346.10	2,258.35	-29.56	29.53	-3.64	29.75	352.96	446,236.25	769,427.68	
2,353.00	0.90	344.60	2,352.34	-30.91	30.88	-4.00	31.14	352.62	446,237.60	769,427.32	
2,447.00	0.80	337.70	2,446.33	-32.23	32.20	-4.44	32.50	352.14	446,238.92	769,426.88	
2,542.00	0.70	339.40	2,541.32	-33.39	33.35	-4.90	33.71	351.64	446,240.07	769,426.42	
2,636.00	0.70	342.60	2,635.32	-34.48	34.44	-5.27	34.84	351.29	446,241.16	769,426.05	
2,731.00	0.50	321.20	2,730.31	-35.36	35.32	-5.71	35.77	350.82	446,242.04	769,425.61	
2,825.00	0.60	336.10	2,824.31	-36.13	36.09	-6.16	36.61	350.31	446,242.81	769,425.16	
2,920.00	0.70	326.20	2,919.30	-37.07	37.02	-6.69	37.62	349.76	446,243.74	769,424.63	
3,014.00	0.70	341.40	3,013.29	-38.10	38.04	-7.19	38.72	349.30	446,244.76	769,424.13	
3,109.00	0.60	342.80	3,108.29	-39.13	39.07	-7.52	39.79	349.10	446,245.79	769,423.80	
3,203.00	0.80	4.60	3,202.28	-40.25	40.19	-7.61	40.91	349.27	446,246.91	769,423.71	
3,298.00	0.90	13.60	3,297.27	-41.64	41.58	-7.39	42.23	349.93	446,248.30	769,423.93	
3,392.00	1.00	29.60	3,391.26	-43.06	43.01	-6.81	43.55	351.01	446,249.73	769,424.51	
3,487.00	1.10	38.60	3,486.24	-44.49	44.44	-5.83	44.82	352.53	446,251.16	769,425.49	
3,581.00	1.40	39.80	3,580.22	-46.07	46.03	-4.53	46.25	354.38	446,252.75	769,426.79	
3,676.00	1.60	36.50	3,675.19	-48.01	47.99	-3.00	48.08	356.42	446,254.71	769,428.32	
3,770.00	2.00	38.00	3,769.14	-50.34	50.34	-1.21	50.35	358.62	446,257.06	769,430.11	
3,864.00	1.60	70.20	3,863.10	-52.06	52.07	1.04	52.08	1.14	446,258.79	769,432.36	
3,959.00	2.20	130.80	3,958.05	-51.30	51.33	3.66	51.46	4.08	446,258.05	769,434.98	
4,053.00	2.60	143.50	4,051.97	-48.39	48.44	6.30	48.85	7.41	446,255.16	769,437.62	
4,148.00	1.50	179.70	4,146.91	-45.40	45.46	7.59	46.09	9.47	446,252.18	769,438.91	
4,242.00	1.60	208.00	4,240.88	-43.02	43.07	6.98	43.64	9.20	446,249.79	769,438.30	
4,336.00	1.50	204.60	4,334.84	-40.75	40.80	5.85	41.21	8.16	446,247.52	769,437.17	

Company: Marathon Oil
Project: Lea County, NM
Site: Flowmaster 24-34-15 (4-5-8)
Well: TBU No. 5H
Wellbore: OH
Design: OH 194'-16600' PTB 16657'

Local Co-ordinate Reference:
TVD Reference:
MD Reference:
North Reference:
Survey Calculation Method:
Database:

Well TBU No. 5H
 Well @ 3546.50usft (GL: 3520' + KB: 26.5' (H&P480))
 Well @ 3546.50usft (GL: 3520' + KB: 26.5' (H&P480))
 Grid
 Minimum Curvature
 WellPlanner1

Survey											
MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	V. Sec (usft)	N/S (usft)	E/W (usft)	Closure Distance (usft)	Closure Azimuth (°)	Northing (usft)	Easting (usft)	
4,431.00	1.40	211.20	4,429.81	-38.63	38.67	4.73	38.96	6.97	446,245.39	769,436.05	
4,525.00	1.10	207.10	4,523.79	-36.86	36.89	3.72	37.08	5.76	446,243.61	769,435.04	
4,620.00	1.50	162.40	4,618.77	-34.86	34.89	3.68	35.08	6.03	446,241.61	769,435.00	
4,714.00	1.90	144.60	4,712.73	-32.41	32.45	4.96	32.82	8.69	446,239.17	769,436.28	
4,809.00	0.70	217.00	4,807.71	-30.66	30.70	5.52	31.19	10.20	446,237.42	769,436.84	
4,903.00	0.60	194.90	4,901.70	-29.73	29.77	5.05	30.19	9.63	446,236.49	769,436.37	
4,997.00	1.50	132.40	4,995.69	-28.41	28.46	5.83	29.05	11.58	446,235.18	769,437.15	
5,092.00	2.00	125.60	5,090.64	-26.59	26.66	8.10	27.86	16.90	446,233.38	769,439.42	
5,187.00	0.30	233.80	5,185.62	-25.47	25.55	9.25	27.17	19.90	446,232.27	769,440.57	
5,281.00	1.10	289.90	5,279.62	-25.64	25.71	8.20	26.98	17.69	446,232.43	769,439.52	
5,370.00	0.40	296.20	5,368.61	-26.08	26.14	7.12	27.09	15.23	446,232.86	769,438.44	
5,502.00	0.20	359.80	5,500.61	-26.52	26.57	6.70	27.40	14.16	446,233.29	769,438.02	
5,565.00	0.20	9.30	5,563.61	-26.73	26.79	6.72	27.62	14.08	446,233.51	769,438.04	
5,659.00	0.90	313.10	5,657.60	-27.40	27.45	6.21	28.15	12.74	446,234.17	769,437.53	
5,753.00	1.60	296.60	5,751.58	-28.51	28.55	4.49	28.90	8.95	446,235.27	769,435.81	
5,847.00	1.50	334.60	5,845.55	-30.22	30.24	2.79	30.37	5.28	446,236.96	769,434.11	
5,942.00	4.40	311.50	5,940.41	-33.79	33.78	-0.47	33.79	359.20	446,240.50	769,430.85	
6,036.00	5.00	309.70	6,034.10	-38.84	38.79	-6.32	39.30	350.74	446,245.51	769,425.00	
6,130.00	5.10	307.00	6,127.73	-44.02	43.92	-12.81	45.75	343.74	446,250.64	769,418.51	
6,225.00	6.70	305.50	6,222.22	-49.84	49.68	-20.70	53.82	337.38	446,256.40	769,410.62	
6,319.00	6.90	302.80	6,315.56	-56.16	55.92	-29.91	63.42	331.86	446,262.64	769,401.41	
6,413.00	6.80	305.10	6,408.89	-62.49	62.18	-39.20	73.51	327.77	446,268.90	769,392.12	
6,508.00	9.00	306.40	6,502.99	-70.22	69.83	-49.79	85.76	324.51	446,276.55	769,381.53	
6,602.00	9.40	306.40	6,595.78	-79.23	78.74	-61.89	100.15	321.84	446,285.46	769,369.43	
6,697.00	9.40	307.70	6,689.50	-88.67	88.09	-74.27	115.22	319.87	446,294.81	769,357.05	
6,791.00	9.70	306.90	6,782.20	-98.22	97.54	-86.67	130.49	318.38	446,304.26	769,344.65	
6,886.00	10.00	307.80	6,875.80	-108.18	107.40	-99.59	146.47	317.16	446,314.12	769,331.73	

Company: Marathon Oil
Project: Lea County, NM
Site: Flowmaster 24-34-15 (4-5-8)
Well: TBU No. 5H
Wellbore: OH
Design: OH 194'-16600' PTB 16657'

Local Co-ordinate Reference:
TVD Reference:
MD Reference:
North Reference:
Survey Calculation Method:
Database:

Well TBU No. 5H
 Well @ 3546.50usft (GL: 3520' + KB: 26.5' (H&P480))
 Well @ 3546.50usft (GL: 3520' + KB: 26.5' (H&P480))
 Grid
 Minimum Curvature
 WellPlanner1

Survey											
MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	V. Sec (usft)	N/S (usft)	E/W (usft)	Closure Distance (usft)	Closure Azimuth (°)	Northing (usft)	Easting (usft)	
6,980.00	9.80	306.70	6,968.40	-118.07	117.19	-112.45	162.41	316.18	446,323.91	769,318.87	
7,074.00	9.70	306.80	7,061.04	-127.69	126.71	-125.21	178.14	315.34	446,333.43	769,306.11	
7,169.00	9.20	307.80	7,154.75	-137.24	136.16	-137.62	193.59	314.69	446,342.88	769,293.70	
7,263.00	8.90	307.90	7,247.58	-146.40	145.23	-149.29	208.28	314.21	446,351.95	769,282.03	
7,358.00	10.20	304.50	7,341.26	-155.78	154.51	-162.03	223.89	313.64	446,361.23	769,269.29	
7,452.00	11.90	292.30	7,433.53	-164.30	162.90	-177.86	241.18	312.49	446,369.62	769,253.46	
7,546.00	12.10	289.90	7,525.48	-171.47	169.94	-196.09	259.48	310.91	446,376.66	769,235.23	
7,641.00	12.00	288.20	7,618.38	-178.09	176.41	-214.83	277.98	309.39	446,383.13	769,216.49	
7,735.00	12.20	287.10	7,710.29	-184.21	182.38	-233.61	296.37	307.98	446,389.10	769,197.71	
7,829.00	12.00	285.20	7,802.21	-189.84	187.86	-252.53	314.74	306.65	446,394.58	769,178.79	
7,924.00	10.10	291.80	7,895.44	-195.66	193.55	-269.80	332.04	305.66	446,400.27	769,161.52	
8,019.00	9.10	292.70	7,989.11	-201.77	199.54	-284.46	347.47	305.05	446,406.26	769,146.86	
8,113.00	8.60	290.00	8,081.99	-207.15	204.81	-297.92	361.53	304.51	446,411.53	769,133.40	
8,207.00	8.20	287.80	8,174.99	-211.70	209.27	-310.91	374.78	303.94	446,415.99	769,120.41	
8,302.00	7.60	299.30	8,269.09	-216.94	214.41	-322.84	387.55	303.59	446,421.13	769,108.48	
8,396.00	7.10	299.70	8,362.32	-222.94	220.33	-333.31	399.55	303.47	446,427.05	769,098.01	
8,491.00	6.30	297.50	8,456.67	-228.33	225.65	-343.03	410.59	303.34	446,432.37	769,088.29	
8,585.00	4.70	317.30	8,550.24	-233.60	230.86	-350.22	419.46	303.39	446,437.58	769,081.10	
8,679.00	2.40	323.90	8,644.05	-238.05	235.28	-353.99	425.05	303.61	446,442.00	769,077.33	
8,774.00	2.30	321.90	8,738.97	-241.18	238.39	-356.34	428.73	303.78	446,445.11	769,074.98	
8,868.00	2.10	312.10	8,832.90	-243.84	241.03	-358.78	432.22	303.89	446,447.75	769,072.54	
8,963.00	2.30	315.10	8,927.83	-246.38	243.54	-361.42	435.82	303.97	446,450.26	769,069.90	
9,057.00	0.60	282.00	9,021.80	-247.83	244.98	-363.23	438.12	304.00	446,451.70	769,068.09	
9,151.00	1.10	293.60	9,115.79	-248.30	245.45	-364.54	439.47	303.95	446,452.17	769,066.78	
9,246.00	1.10	296.10	9,210.77	-249.08	246.21	-366.19	441.27	303.92	446,452.93	769,065.13	
9,340.00	1.50	295.20	9,304.75	-250.02	247.13	-368.12	443.38	303.88	446,453.85	769,063.20	
9,435.00	1.70	295.70	9,399.71	-251.18	248.27	-370.51	446.00	303.83	446,454.99	769,060.81	

Company: Marathon Oil
Project: Lea County, NM
Site: Flowmaster 24-34-15 (4-5-8)
Well: TBU No. 5H
Wellbore: OH
Design: OH 194'-16600' PTB 16657'

Local Co-ordinate Reference: Well TBU No. 5H
TVD Reference: Well @ 3546.50usft (GL: 3520' + KB: 26.5' (H&P480))
MD Reference: Well @ 3546.50usft (GL: 3520' + KB: 26.5' (H&P480))
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: WellPlanner1

Survey											
MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	V. Sec (usft)	N/S (usft)	E/W (usft)	Closure Distance (usft)	Closure Azimuth (°)	Northing (usft)	Easting (usft)	
9,529.00	0.30	182.00	9,493.70	-251.55	248.63	-371.78	447.25	303.77	446,455.35	769,059.54	
9,624.00	0.10	11.60	9,588.70	-251.38	248.47	-371.77	447.15	303.76	446,455.19	769,059.55	
9,718.00	0.30	296.10	9,682.70	-251.57	248.65	-371.97	447.43	303.76	446,455.37	769,059.35	
9,812.00	1.00	290.30	9,776.69	-251.97	249.05	-372.96	448.47	303.73	446,455.77	769,058.36	
9,907.00	0.50	152.30	9,871.69	-251.89	248.97	-373.55	448.91	303.68	446,455.69	769,057.77	
10,001.00	0.10	99.90	9,965.69	-251.51	248.59	-373.28	448.48	303.66	446,455.31	769,058.04	
10,095.00	0.20	307.80	10,059.69	-251.60	248.68	-373.33	448.57	303.67	446,455.40	769,057.99	
10,189.00	0.40	333.80	10,153.68	-252.00	249.07	-373.60	449.01	303.69	446,455.79	769,057.72	
10,284.00	0.80	325.00	10,248.68	-252.84	249.91	-374.13	449.92	303.74	446,456.63	769,057.19	
10,378.00	0.60	100.20	10,342.68	-253.29	250.36	-374.02	450.08	303.80	446,457.08	769,057.30	
10,473.00	0.40	165.60	10,437.67	-252.88	249.95	-373.45	449.38	303.80	446,456.67	769,057.87	
10,567.00	0.80	254.90	10,531.67	-252.39	249.47	-374.00	449.56	303.70	446,456.19	769,057.32	
10,662.00	1.50	267.60	10,626.65	-252.18	249.24	-375.88	451.01	303.55	446,455.96	769,055.44	
10,756.00	0.20	302.00	10,720.64	-252.23	249.28	-377.25	452.17	303.46	446,456.00	769,054.07	
10,851.00	0.40	288.20	10,815.64	-252.43	249.47	-377.71	452.65	303.44	446,456.19	769,053.61	
10,945.00	0.40	287.50	10,909.63	-252.63	249.67	-378.33	453.29	303.42	446,456.39	769,052.99	
11,040.00	0.70	244.30	11,004.63	-252.49	249.52	-379.17	453.90	303.35	446,456.24	769,052.15	
11,134.00	0.90	298.60	11,098.62	-252.60	249.62	-380.33	454.93	303.28	446,456.34	769,050.99	
11,229.00	2.00	320.90	11,193.59	-254.26	251.26	-382.04	457.26	303.33	446,457.98	769,049.28	
11,322.00	2.50	335.00	11,286.52	-257.37	254.36	-383.92	460.53	303.53	446,461.08	769,047.40	
11,417.00	1.00	185.90	11,381.50	-258.43	255.42	-384.88	461.92	303.57	446,462.14	769,046.44	
11,464.00	5.70	176.40	11,428.40	-255.69	252.68	-384.77	460.32	303.29	446,459.40	769,046.55	
11,511.00	10.00	169.70	11,474.95	-249.34	246.33	-383.90	456.13	302.69	446,453.05	769,047.42	
11,558.00	14.40	164.30	11,520.88	-239.67	236.68	-381.58	449.03	301.81	446,443.40	769,049.74	
11,606.00	19.40	163.10	11,566.79	-226.26	223.30	-377.65	438.73	300.60	446,430.02	769,053.67	
11,653.00	23.50	162.70	11,610.53	-209.80	206.88	-372.59	426.17	299.04	446,413.60	769,058.73	
11,700.00	27.70	163.00	11,652.90	-190.35	187.48	-366.61	411.76	297.08	446,394.20	769,064.71	

Company: Marathon Oil
Project: Lea County, NM
Site: Flowmaster 24-34-15 (4-5-8)
Well: TBU No. 5H
Wellbore: OH
Design: OH 194'-16600' PTB 16657'

Local Co-ordinate Reference:
TVD Reference:
MD Reference:
North Reference:
Survey Calculation Method:
Database:

Well TBU No. 5H
 Well @ 3546.50usft (GL: 3520' + KB: 26.5' (H&P480))
 Well @ 3546.50usft (GL: 3520' + KB: 26.5' (H&P480))
 Grid
 Minimum Curvature
 WellPlanner1

Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	V. Sec (usft)	N/S (usft)	E/W (usft)	Closure Distance (usft)	Closure Azimuth (°)	Northing (usft)	Easting (usft)
11,747.00	32.30	164.00	11,693.60	-167.77	164.95	-359.95	395.94	294.62	446,371.67	769,071.37
11,795.00	37.10	164.50	11,733.05	-141.42	138.65	-352.54	378.83	291.47	446,345.37	769,078.78
11,826.00	40.00	164.20	11,757.29	-122.78	120.05	-347.33	367.49	289.07	446,326.77	769,083.99
11,890.00	45.80	166.20	11,804.15	-80.58	77.94	-336.25	345.16	283.05	446,284.66	769,095.07
11,937.00	54.50	168.40	11,834.24	-45.35	42.77	-328.36	331.14	277.42	446,249.49	769,102.96
11,984.00	62.40	171.40	11,858.82	-5.89	3.37	-321.39	321.41	270.60	446,210.09	769,109.93
12,031.00	66.20	174.10	11,879.20	36.15	-38.63	-316.06	318.42	263.03	446,168.09	769,115.26
12,079.00	71.10	176.40	11,896.67	80.71	-83.17	-312.38	323.26	255.09	446,123.55	769,118.94
12,126.00	76.70	178.00	11,909.70	125.81	-128.25	-310.18	335.65	247.54	446,078.47	769,121.14
12,169.00	83.40	179.70	11,917.13	168.13	-170.57	-309.34	353.25	241.13	446,036.15	769,121.98
12,209.00	85.00	180.20	11,921.17	207.93	-210.36	-309.30	374.06	235.78	445,996.36	769,122.02
12,316.00	89.10	180.90	11,926.68	314.75	-317.19	-310.33	443.75	224.37	445,889.53	769,120.99
12,410.00	88.60	180.40	11,928.56	408.71	-411.17	-311.40	515.78	217.14	445,795.55	769,119.92
12,505.00	90.40	180.10	11,929.39	503.69	-506.16	-311.81	594.49	211.63	445,700.56	769,119.51
12,599.00	89.70	178.70	11,929.31	597.69	-600.15	-310.83	675.87	207.38	445,606.57	769,120.49
12,693.00	91.00	178.10	11,928.74	691.67	-694.11	-308.20	759.46	203.94	445,512.61	769,123.12
12,788.00	92.40	179.90	11,925.92	786.62	-789.05	-306.55	846.50	201.23	445,417.67	769,124.77
12,882.00	93.20	181.50	11,921.33	880.48	-882.92	-307.69	935.00	199.21	445,323.80	769,123.63
12,976.00	91.80	180.90	11,917.23	974.35	-976.81	-309.66	1,024.72	197.59	445,229.91	769,121.66
13,071.00	92.20	182.20	11,913.91	1,069.23	-1,071.72	-312.23	1,116.27	196.24	445,135.00	769,119.09
13,165.00	91.70	182.20	11,910.71	1,163.08	-1,165.59	-315.83	1,207.62	195.16	445,041.13	769,115.49
13,260.00	90.70	181.30	11,908.72	1,257.98	-1,260.53	-318.73	1,300.20	194.19	444,946.19	769,112.59
13,354.00	89.80	180.80	11,908.31	1,351.95	-1,354.51	-320.46	1,391.90	193.31	444,852.21	769,110.86
13,449.00	88.70	179.50	11,909.56	1,446.93	-1,449.50	-320.70	1,484.55	192.48	444,757.22	769,110.62
13,543.00	90.90	180.10	11,909.88	1,540.92	-1,543.49	-320.38	1,576.39	191.73	444,663.23	769,110.94
13,638.00	90.00	179.60	11,909.14	1,635.92	-1,638.48	-320.13	1,669.46	191.06	444,568.24	769,111.19
13,732.00	89.30	178.70	11,909.71	1,729.91	-1,732.47	-318.73	1,761.55	190.42	444,474.25	769,112.59

Company: Marathon Oil
Project: Lea County, NM
Site: Flowmaster 24-34-15 (4-5-8)
Well: TBU No. 5H
Wellbore: OH
Design: OH 194'-16600' PTB 16657'

Local Co-ordinate Reference: Well TBU No. 5H
TVD Reference: Well @ 3546.50usft (GL: 3520' + KB: 26.5' (H&P480))
MD Reference: Well @ 3546.50usft (GL: 3520' + KB: 26.5' (H&P480))
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: WellPlanner1

Survey											
MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	V. Sec (usft)	N/S (usft)	E/W (usft)	Closure Distance (usft)	Closure Azimuth (°)	Northing (usft)	Easting (usft)	
13,826.00	88.00	178.10	11,911.93	1,823.87	-1,826.40	-316.11	1,853.56	189.82	444,380.32	769,115.21	
13,920.00	88.60	179.00	11,914.72	1,917.81	-1,920.33	-313.73	1,945.79	189.28	444,286.39	769,117.59	
14,015.00	89.40	180.90	11,916.37	2,012.79	-2,015.31	-313.65	2,039.57	188.85	444,191.41	769,117.67	
14,109.00	90.00	183.20	11,916.87	2,106.69	-2,109.24	-317.01	2,132.93	188.55	444,097.48	769,114.31	
14,204.00	88.70	183.90	11,917.94	2,201.45	-2,204.05	-322.89	2,227.58	188.33	444,002.67	769,108.43	
14,298.00	87.40	183.60	11,921.14	2,295.14	-2,297.80	-329.04	2,321.23	188.15	443,908.92	769,102.28	
14,393.00	89.40	182.50	11,923.80	2,389.92	-2,392.62	-334.09	2,415.83	187.95	443,814.10	769,097.23	
14,487.00	89.40	180.50	11,924.78	2,483.86	-2,486.58	-336.55	2,509.25	187.71	443,720.14	769,094.77	
14,582.00	88.10	180.30	11,926.85	2,578.82	-2,581.55	-337.21	2,603.48	187.44	443,625.17	769,094.11	
14,677.00	91.60	179.00	11,927.10	2,673.80	-2,676.53	-336.63	2,697.62	187.17	443,530.19	769,094.69	
14,772.00	91.40	178.20	11,924.61	2,768.76	-2,771.47	-334.31	2,791.56	186.88	443,435.25	769,097.01	
14,866.00	90.90	177.70	11,922.73	2,862.70	-2,865.39	-330.95	2,884.44	186.59	443,341.33	769,100.37	
14,961.00	92.40	180.60	11,919.99	2,957.65	-2,960.33	-329.54	2,978.61	186.35	443,246.39	769,101.78	
15,055.00	91.00	180.30	11,917.20	3,051.59	-3,054.28	-330.28	3,072.08	186.17	443,152.44	769,101.04	
15,150.00	89.40	179.90	11,916.87	3,146.58	-3,149.27	-330.44	3,166.56	185.99	443,057.45	769,100.88	
15,245.00	87.70	179.50	11,919.27	3,241.55	-3,244.24	-329.95	3,260.97	185.81	442,962.48	769,101.37	
15,339.00	89.90	178.80	11,921.24	3,335.52	-3,338.20	-328.55	3,354.33	185.62	442,868.52	769,102.77	
15,433.00	87.80	179.00	11,923.13	3,429.49	-3,432.16	-326.75	3,447.68	185.44	442,774.56	769,104.57	
15,528.00	89.40	176.70	11,925.45	3,524.41	-3,527.06	-323.19	3,541.83	185.24	442,679.66	769,108.13	
15,623.00	89.80	177.90	11,926.11	3,619.33	-3,621.95	-318.71	3,635.94	185.03	442,584.77	769,112.61	
15,717.00	89.40	176.40	11,926.77	3,713.24	-3,715.82	-314.04	3,729.07	184.83	442,490.90	769,117.28	
15,812.00	89.10	179.40	11,928.01	3,808.18	-3,810.74	-310.56	3,823.38	184.66	442,395.98	769,120.76	
15,906.00	89.10	180.90	11,929.49	3,902.17	-3,904.73	-310.80	3,917.08	184.55	442,301.99	769,120.52	
16,001.00	88.30	180.10	11,931.65	3,997.13	-3,999.70	-311.63	4,011.82	184.46	442,207.02	769,119.69	
16,095.00	91.30	180.10	11,931.97	4,091.11	-4,093.69	-311.80	4,105.54	184.36	442,113.03	769,119.52	
16,190.00	91.60	179.40	11,929.57	4,186.08	-4,188.65	-311.38	4,200.21	184.25	442,018.07	769,119.94	
16,284.00	90.40	179.10	11,927.93	4,280.06	-4,282.63	-310.15	4,293.85	184.14	441,924.09	769,121.17	

Company: Marathon Oil
Project: Lea County, NM
Site: Flowmaster 24-34-15 (4-5-8)
Well: TBU No. 5H
Wellbore: OH
Design: OH 194'-16600' PTB 16657'

Local Co-ordinate Reference:
TVD Reference:
MD Reference:
North Reference:
Survey Calculation Method:
Database:

Well TBU No. 5H
 Well @ 3546.50usft (GL: 3520' + KB: 26.5' (H&P480))
 Well @ 3546.50usft (GL: 3520' + KB: 26.5' (H&P480))
 Grid
 Minimum Curvature
 WellPlanner1

Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	V. Sec (usft)	N/S (usft)	E/W (usft)	Closure Distance (usft)	Closure Azimuth (°)	Northing (usft)	Easting (usft)
16,379.00	88.90	178.30	11,928.51	4,375.05	-4,377.60	-308.00	4,388.42	184.02	441,829.12	769,123.32
16,474.00	88.30	177.60	11,930.83	4,469.98	-4,472.51	-304.60	4,482.87	183.90	441,734.21	769,126.72
16,568.00	90.50	177.00	11,931.82	4,563.90	-4,566.39	-300.17	4,576.25	183.76	441,640.33	769,131.15
16,600.00	89.90	176.90	11,931.70	4,595.86	-4,598.35	-298.47	4,608.02	183.71	441,608.37	769,132.85
Last Survey: 16600' MD, 11932' TVD										
16,657.00	89.90	176.90	11,931.80	4,652.80	-4,655.26	-295.39	4,664.63	183.63	441,551.46	769,135.93
PTB: 16657' MD, 11932' TVD										

Design Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
16,600.00	11,931.70	-4,598.35	-298.47	Last Survey: 16600' MD, 11932' TVD
16,657.00	11,931.80	-4,655.26	-295.39	PTB: 16657' MD, 11932' TVD