



NM OIL CONSERVATION
ARTESIA DISTRICT

DEC 04 2017

RECEIVED

Marathon Oil

Eddy County, NM

Cass 16 State

No. 3H

30-015-43869

OH

Design: OH 81' - 13714' PTB 13777'

Standard Survey Report

17 July, 2017



Company: Marathon Oil
Project: Eddy County, NM
Site: Cass 16 State
Well: No. 3H
Wellbore: OH
Design: OH 81' - 13714' PTB 13777'

Local Co-ordinate Reference: Well No. 3H
TVD Reference: Well @ 3185.00usft (GL: 3160' + KB: 25' (H&P498))
MD Reference: Well @ 3185.00usft (GL: 3160' + KB: 25' (H&P498))
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: WellPlanner1

Project	Eddy County, NM		
Map System:	US State Plane 1927 (Exact solution)	System Datum:	Mean Sea Level
Geo Datum:	NAD 1927 (NADCON CONUS)		
Map Zone:	New Mexico East 3001		

Site	Cass 16 State			
Site Position:		Northing:	475,277.35 usft	Latitude: 32.3065858
From:	Map	Easting:	540,500.53 usft	Longitude: -104.2022462
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "	Grid Convergence: 0.07 °

Well	No. 3H			
Well Position	+N/-S	0.00 usft	Northing: 475,277.35 usft	Latitude: 32.3065858
	+E/-W	0.00 usft	Easting: 540,500.53 usft	Longitude: -104.2022462
Position Uncertainty	0.00 usft	Wellhead Elevation:	usft	Ground Level: 3,160.00 usft

Wellbore	OH				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	HDGM	7/5/2017	7.42	60.10	48,096.50

Design	OH 81' - 13714' PTB 13777'			
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	88.16

Survey Program	Date 7/17/2017			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
81.00	423.00	Survey #1 (OH)	GYRO-MWD	OWSG Gyro MWD
514.00	13,777.00	Survey #2 (OH)	MWD+IFR1	OWSG MWD + IFR1

Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
81.00	0.11	157.00	81.00	-0.07	0.03	0.03	0.14	0.14	0.00
173.00	0.54	9.48	173.00	0.27	0.14	0.15	0.69	0.47	-160.35
269.00	0.25	64.78	269.00	0.81	0.40	0.43	0.47	-0.30	57.60
361.00	1.04	289.01	360.99	1.17	-0.21	-0.17	1.34	0.86	-147.58
423.00	1.01	293.16	422.98	1.57	-1.24	-1.19	0.13	-0.05	6.69
514.00	1.10	291.40	513.97	2.20	-2.79	-2.72	0.11	0.10	-1.93
606.00	1.00	297.20	605.95	2.89	-4.33	-4.23	0.16	-0.11	6.30

Company: Marathon Oil
Project: Eddy County, NM
Site: Cass 16 State
Well: No. 3H
Wellbore: OH
Design: OH 81' - 13714' PTB 13777'

Local Co-ordinate Reference: Well No. 3H
TVD Reference: Well @ 3185.00usft (GL: 3160' + KB: 25' (H&P498))
MD Reference: Well @ 3185.00usft (GL: 3160' + KB: 25' (H&P498))
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: WellPlanner1

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
698.00	1.00	297.90	697.94	3.63	-5.75	-5.63	0.01	0.00	0.76
792.00	1.10	332.90	791.92	4.82	-6.89	-6.73	0.68	0.11	37.23
887.00	0.90	313.60	886.91	6.15	-7.84	-7.64	0.41	-0.21	-20.32
982.00	0.90	318.80	981.90	7.22	-8.88	-8.64	0.09	0.00	5.47
1,076.00	0.80	330.10	1,075.89	8.35	-9.69	-9.42	0.21	-0.11	12.02
1,171.00	0.60	37.60	1,170.88	9.31	-9.72	-9.41	0.84	-0.21	71.05
1,265.00	1.50	97.10	1,264.87	9.55	-8.20	-7.88	1.39	0.96	63.30
1,360.00	2.20	105.20	1,359.82	8.92	-5.20	-4.91	0.78	0.74	8.53
1,454.00	1.80	120.60	1,453.76	7.70	-2.19	-1.94	0.71	-0.43	16.38
1,549.00	2.60	117.20	1,548.69	5.95	1.01	1.20	0.85	0.84	-3.58
1,644.00	2.70	130.80	1,643.59	3.50	4.62	4.73	0.67	0.11	14.32
1,738.00	3.00	140.10	1,737.47	0.17	7.88	7.88	0.59	0.32	9.89
1,833.00	2.20	168.60	1,832.38	-3.52	9.83	9.71	1.57	-0.84	30.00
1,907.00	2.00	181.20	1,906.33	-6.21	10.08	9.88	0.68	-0.27	17.03
2,016.00	1.90	171.20	2,015.27	-9.89	10.32	10.00	0.32	-0.09	-9.17
2,111.00	2.00	242.20	2,110.22	-12.22	9.10	8.70	2.39	0.11	74.74
2,205.00	2.40	255.70	2,204.15	-13.48	5.74	5.30	0.69	0.43	14.36
2,300.00	2.30	257.00	2,299.07	-14.40	1.95	1.49	0.12	-0.11	1.37
2,394.00	2.30	255.50	2,393.00	-15.29	-1.71	-2.20	0.06	0.00	-1.60
2,489.00	2.90	285.30	2,487.90	-15.14	-5.88	-6.36	1.53	0.63	31.37
2,584.00	2.80	282.50	2,582.79	-14.00	-10.46	-10.90	0.18	-0.11	-2.95
2,679.00	2.70	279.60	2,677.68	-13.12	-14.93	-15.34	0.18	-0.11	-3.05
2,773.00	3.70	286.20	2,771.53	-11.91	-20.03	-20.40	1.13	1.06	7.02
2,868.00	3.70	285.40	2,866.33	-10.24	-25.93	-26.24	0.05	0.00	-0.84
2,962.00	3.70	286.10	2,960.14	-8.59	-31.76	-32.02	0.05	0.00	0.74
3,057.00	5.30	298.20	3,054.84	-5.67	-38.58	-38.74	1.95	1.68	12.74
3,152.00	5.30	299.30	3,149.44	-1.45	-46.27	-46.29	0.11	0.00	1.16
3,246.00	6.30	293.40	3,242.95	2.72	-54.79	-54.67	1.24	1.06	-6.28
3,341.00	8.20	285.40	3,337.19	6.59	-66.11	-65.86	2.26	2.00	-8.42
3,436.00	9.30	277.40	3,431.09	9.38	-80.25	-79.91	1.72	1.16	-8.42
3,530.00	9.40	265.40	3,523.85	9.75	-95.44	-95.07	2.07	0.11	-12.77
3,625.00	7.90	258.00	3,617.77	7.77	-109.56	-109.25	1.96	-1.58	-7.79
3,719.00	6.20	264.90	3,711.06	5.97	-120.93	-120.68	2.02	-1.81	7.34
3,814.00	4.80	273.10	3,805.62	5.73	-130.01	-129.76	1.69	-1.47	8.63
3,909.00	4.80	270.60	3,900.29	5.99	-137.95	-137.69	0.22	0.00	-2.63
4,004.00	4.50	269.70	3,994.97	6.01	-145.65	-145.39	0.32	-0.32	-0.95
4,098.00	4.10	269.10	4,088.71	5.94	-152.70	-152.43	0.43	-0.43	-0.64
4,193.00	4.00	267.30	4,183.47	5.73	-159.41	-159.14	0.17	-0.11	-1.89
4,287.00	3.80	266.20	4,277.25	5.37	-165.79	-165.53	0.23	-0.21	-1.17
4,382.00	3.70	263.50	4,372.05	4.81	-171.98	-171.73	0.21	-0.11	-2.84
4,476.00	3.70	261.50	4,465.85	4.02	-177.99	-177.77	0.14	0.00	-2.13
4,571.00	4.20	239.50	4,560.63	1.80	-184.02	-183.87	1.67	0.53	-23.16

Company: Marathon Oil
Project: Eddy County, NM
Site: Cass 16 State
Well: No. 3H
Wellbore: OH
Design: OH 81' - 13714' PTB 13777'

Local Co-ordinate Reference: Well No. 3H
TVD Reference: Well @ 3185.00usft (GL: 3160' + KB: 25' (H&P498))
MD Reference: Well @ 3185.00usft (GL: 3160' + KB: 25' (H&P498))
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: WellPlanner1

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
4,665.00	4.30	256.30	4,654.38	-0.78	-190.41	-190.34	1.32	0.11	17.87
4,760.00	4.20	267.90	4,749.12	-1.75	-197.35	-197.30	0.91	-0.11	12.21
4,855.00	3.70	268.60	4,843.89	-1.96	-203.89	-203.85	0.53	-0.53	0.74
4,949.00	3.40	269.80	4,937.71	-2.04	-209.71	-209.66	0.33	-0.32	1.28
5,044.00	3.20	267.50	5,032.55	-2.16	-215.17	-215.13	0.25	-0.21	-2.42
5,139.00	1.20	273.20	5,127.48	-2.22	-218.82	-218.77	2.12	-2.11	6.00
5,233.00	1.30	266.80	5,221.46	-2.23	-220.86	-220.82	0.18	0.11	-6.81
5,328.00	0.30	109.10	5,316.45	-2.37	-221.70	-221.67	1.66	-1.05	-166.00
5,423.00	0.20	58.70	5,411.45	-2.37	-221.33	-221.29	0.24	-0.11	-53.05
5,517.00	0.40	357.40	5,505.45	-1.95	-221.20	-221.15	0.37	0.21	-65.21
5,612.00	2.10	116.50	5,600.43	-2.40	-219.66	-219.62	2.44	1.79	125.37
5,706.00	1.80	124.90	5,694.37	-4.01	-216.91	-216.92	0.44	-0.32	8.94
5,801.00	2.20	112.60	5,789.32	-5.57	-214.00	-214.07	0.62	0.42	-12.95
5,896.00	2.40	103.40	5,884.24	-6.73	-210.38	-210.49	0.44	0.21	-9.68
5,990.00	2.30	110.40	5,978.16	-7.84	-206.70	-206.84	0.32	-0.11	7.45
6,085.00	1.20	155.70	6,073.12	-9.41	-204.50	-204.70	1.78	-1.16	47.68
6,180.00	0.70	111.80	6,168.11	-10.53	-203.55	-203.79	0.89	-0.53	-46.21
6,274.00	2.20	76.90	6,262.08	-10.34	-201.26	-201.49	1.78	1.60	-37.13
6,369.00	2.50	75.60	6,357.00	-9.41	-197.48	-197.68	0.32	0.32	-1.37
6,463.00	2.20	73.90	6,450.92	-8.40	-193.76	-193.93	0.33	-0.32	-1.81
6,558.00	2.10	68.80	6,545.85	-7.27	-190.39	-190.52	0.23	-0.11	-5.37
6,653.00	2.50	48.90	6,640.78	-5.27	-187.20	-187.28	0.93	0.42	-20.95
6,747.00	3.00	57.50	6,734.67	-2.60	-183.58	-183.57	0.69	0.53	9.15
6,842.00	2.00	48.00	6,829.58	-0.16	-180.26	-180.17	1.14	-1.05	-10.00
6,939.00	1.30	280.60	6,926.56	1.18	-180.08	-179.95	3.07	-0.72	-131.34
7,031.00	2.00	267.90	7,018.52	1.31	-182.71	-182.57	0.85	0.76	-13.80
7,126.00	2.70	257.50	7,113.44	0.76	-186.55	-186.43	0.86	0.74	-10.95
7,220.00	3.10	255.40	7,207.32	-0.36	-191.17	-191.08	0.44	0.43	-2.23
7,315.00	2.80	255.70	7,302.19	-1.58	-195.91	-195.86	0.32	-0.32	0.32
7,409.00	2.30	256.20	7,396.10	-2.59	-199.96	-199.94	0.53	-0.53	0.53
7,504.00	1.40	212.70	7,491.05	-4.02	-202.44	-202.47	1.69	-0.95	-45.79
7,598.00	1.30	216.20	7,585.02	-5.85	-203.69	-203.77	0.14	-0.11	3.72
7,693.00	1.00	228.80	7,680.01	-7.27	-204.95	-205.08	0.41	-0.32	13.26
7,788.00	1.60	261.90	7,774.98	-8.00	-206.89	-207.04	0.99	0.63	34.84
7,882.00	1.40	248.90	7,868.95	-8.60	-209.26	-209.43	0.42	-0.21	-13.83
7,977.00	1.90	265.50	7,963.91	-9.14	-211.91	-212.10	0.72	0.53	17.47
8,071.00	1.80	248.10	8,057.86	-9.81	-214.83	-215.04	0.60	-0.11	-18.51
8,166.00	0.50	177.20	8,152.84	-10.78	-216.20	-216.43	1.79	-1.37	-74.63
8,261.00	0.10	33.20	8,247.84	-11.13	-216.13	-216.38	0.61	-0.42	-151.58
8,355.00	0.50	230.50	8,341.84	-11.32	-216.40	-216.66	0.63	0.43	-173.09
8,447.00	0.80	230.30	8,433.84	-11.99	-217.21	-217.48	0.33	0.33	-0.22
8,542.00	4.60	37.80	8,528.75	-9.40	-215.38	-215.57	5.67	4.00	176.32

Company: Marathon Oil
Project: Eddy County, NM
Site: Cass 16 State
Well: No. 3H
Wellbore: OH
Design: OH 81' - 13714' PTB 13777'

Local Co-ordinate Reference: Well No. 3H
TVD Reference: Well @ 3185.00usft (GL: 3160' + KB: 25' (H&P498))
MD Reference: Well @ 3185.00usft (GL: 3160' + KB: 25' (H&P498))
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: WellPlanner1

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
8,573.00	8.40	39.90	8,559.54	-6.68	-213.17	-213.27	12.28	12.26	6.77
8,605.00	12.40	40.40	8,591.01	-2.27	-209.44	-209.40	12.50	12.50	1.56
8,636.00	15.60	44.50	8,621.09	3.24	-204.36	-204.15	10.80	10.32	13.23
8,668.00	18.50	53.00	8,651.68	9.37	-197.29	-196.88	11.93	9.06	26.56
8,700.00	21.40	60.00	8,681.76	15.35	-188.17	-187.58	11.73	9.06	21.88
8,731.00	24.50	65.60	8,710.31	20.83	-177.42	-176.66	12.22	10.00	18.06
8,763.00	27.50	71.10	8,739.07	25.97	-164.38	-163.46	12.02	9.38	17.19
8,794.00	29.50	77.80	8,766.32	29.90	-150.14	-149.11	12.16	6.45	21.61
8,826.00	31.30	84.10	8,793.93	32.42	-134.17	-133.06	11.43	5.63	19.69
8,857.00	34.10	89.30	8,820.02	33.35	-117.46	-116.33	12.79	9.03	16.77
8,889.00	36.20	93.30	8,846.18	32.92	-99.06	-97.95	9.74	6.56	12.50
8,920.00	38.80	93.70	8,870.78	31.77	-80.22	-79.16	8.42	8.39	1.29
8,952.00	41.70	90.70	8,895.20	30.99	-59.57	-58.54	10.90	9.06	-9.38
8,983.00	44.80	89.00	8,917.78	31.05	-38.33	-37.31	10.68	10.00	-5.48
9,054.00	51.70	83.90	8,965.04	34.46	14.47	15.56	11.09	9.72	-7.18
9,085.00	53.20	87.90	8,983.94	36.20	38.97	40.11	11.32	4.84	12.90
9,117.00	55.30	89.70	9,002.64	36.74	64.93	66.08	7.99	6.56	5.63
9,148.00	57.80	92.60	9,019.72	36.21	90.79	91.90	11.22	8.06	9.35
9,179.00	58.50	92.30	9,036.08	35.09	117.09	118.16	2.40	2.26	-0.97
9,211.00	59.30	92.90	9,052.61	33.85	144.47	145.48	2.97	2.50	1.88
9,242.00	60.30	91.90	9,068.21	32.72	171.23	172.20	4.26	3.23	-3.23
9,273.00	65.10	90.50	9,082.42	32.16	198.77	199.70	15.99	15.48	-4.52
9,304.00	70.20	89.90	9,094.20	32.06	227.43	228.34	16.55	16.45	-1.94
9,335.00	75.40	89.70	9,103.37	32.16	257.03	257.93	16.79	16.77	-0.65
9,367.00	78.30	89.50	9,110.65	32.38	288.19	289.08	9.08	9.06	-0.63
9,398.00	80.50	89.30	9,116.35	32.70	318.66	319.54	7.13	7.10	-0.65
9,429.00	82.60	90.10	9,120.91	32.86	349.32	350.19	7.24	6.77	2.58
9,460.00	83.40	89.60	9,124.68	32.94	380.09	380.95	3.04	2.58	-1.61
9,523.00	83.50	89.30	9,131.87	33.54	442.67	443.52	0.50	0.16	-0.48
9,618.00	86.00	88.90	9,140.56	35.03	537.25	538.10	2.66	2.63	-0.42
9,712.00	85.90	88.70	9,147.20	36.99	631.00	631.86	0.24	-0.11	-0.21
9,806.00	88.80	88.80	9,151.55	39.04	724.86	725.74	3.09	3.09	0.11
9,900.00	89.00	88.10	9,153.35	41.58	818.81	819.73	0.77	0.21	-0.74
9,994.00	92.90	88.00	9,151.79	44.78	912.73	913.69	4.15	4.15	-0.11
10,088.00	92.60	86.80	9,147.28	49.04	1,006.52	1,007.58	1.31	-0.32	-1.28
10,183.00	92.80	86.00	9,142.81	55.00	1,101.23	1,102.42	0.87	0.21	-0.84
10,277.00	92.30	87.80	9,138.62	60.07	1,194.99	1,196.30	1.99	-0.53	1.91
10,371.00	88.90	91.60	9,137.64	60.56	1,288.95	1,290.23	5.42	-3.62	4.04
10,466.00	87.20	91.90	9,140.87	57.67	1,383.85	1,384.99	1.82	-1.79	0.32
10,561.00	87.30	91.70	9,145.43	54.68	1,478.70	1,479.69	0.24	0.11	-0.21
10,655.00	86.90	88.60	9,150.19	54.44	1,572.56	1,573.50	3.32	-0.43	-3.30
10,750.00	87.50	87.90	9,154.83	57.34	1,667.40	1,668.39	0.97	0.63	-0.74

Company: Marathon Oil
Project: Eddy County, NM
Site: Cass 16 State
Well: No. 3H
Wellbore: OH
Design: OH 81' - 13714' PTB 13777'

Local Co-ordinate Reference: Well No. 3H
TVD Reference: Well @ 3185.00usft (GL: 3160' + KB: 25' (H&P498))
MD Reference: Well @ 3185.00usft (GL: 3160' + KB: 25' (H&P498))
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: WellPlanner1

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
10,845.00	87.50	88.30	9,158.97	60.48	1,762.26	1,763.29	0.42	0.00	0.42
10,939.00	84.10	87.50	9,165.86	63.92	1,855.93	1,857.03	3.72	-3.62	-0.85
11,033.00	83.60	87.30	9,175.93	68.16	1,949.29	1,950.48	0.57	-0.53	-0.21
11,129.00	84.10	87.70	9,186.21	72.32	2,044.65	2,045.92	0.67	0.52	0.42
11,223.00	87.20	88.00	9,193.34	75.83	2,138.30	2,139.63	3.31	3.30	0.32
11,317.00	89.30	87.20	9,196.21	79.77	2,232.17	2,233.58	2.39	2.23	-0.85
11,412.00	91.90	86.40	9,195.22	85.07	2,327.01	2,328.54	2.86	2.74	-0.84
11,507.00	91.90	86.50	9,192.07	90.95	2,421.77	2,423.44	0.11	0.00	0.11
11,601.00	92.80	85.80	9,188.21	97.26	2,515.48	2,517.31	1.21	0.96	-0.74
11,696.00	92.30	86.30	9,183.98	103.79	2,610.16	2,612.15	0.74	-0.53	0.53
11,791.00	91.60	87.20	9,180.75	109.18	2,704.95	2,707.06	1.20	-0.74	0.95
11,884.00	89.50	86.80	9,179.86	114.04	2,797.81	2,800.03	2.30	-2.26	-0.43
11,979.00	89.00	88.70	9,181.10	117.77	2,892.73	2,895.02	2.07	-0.53	2.00
12,073.00	87.00	90.10	9,184.38	118.76	2,986.66	2,988.93	2.60	-2.13	1.49
12,168.00	87.70	90.40	9,188.78	118.34	3,081.56	3,083.77	0.80	0.74	0.32
12,262.00	86.20	89.40	9,193.78	118.51	3,175.42	3,177.59	1.92	-1.60	-1.06
12,357.00	85.40	88.40	9,200.73	120.32	3,270.14	3,272.32	1.35	-0.84	-1.05
12,451.00	87.00	87.00	9,206.96	124.09	3,363.86	3,366.11	2.26	1.70	-1.49
12,545.00	89.40	86.30	9,209.92	129.58	3,457.64	3,460.02	2.66	2.55	-0.74
12,639.00	91.20	85.90	9,209.42	135.97	3,551.42	3,553.95	1.96	1.91	-0.43
12,733.00	90.30	85.80	9,208.19	142.77	3,645.16	3,647.87	0.96	-0.96	-0.11
12,827.00	90.60	87.60	9,207.46	148.19	3,739.00	3,741.83	1.94	0.32	1.91
12,921.00	90.60	85.40	9,206.47	153.92	3,832.81	3,835.78	2.34	0.00	-2.34
13,016.00	92.00	88.00	9,204.32	159.39	3,927.62	3,930.71	3.11	1.47	2.74
13,110.00	87.50	89.20	9,204.73	161.69	4,021.57	4,024.68	4.95	-4.79	1.28
13,205.00	87.90	90.70	9,208.54	161.77	4,116.49	4,119.56	1.63	0.42	1.58
13,299.00	89.50	91.90	9,210.67	159.64	4,210.43	4,213.39	2.13	1.70	1.28
13,394.00	89.40	91.80	9,211.58	156.57	4,305.38	4,308.19	0.15	-0.11	-0.11
13,488.00	89.80	92.30	9,212.24	153.21	4,399.32	4,401.97	0.68	0.43	0.53
13,582.00	89.50	90.70	9,212.81	150.75	4,493.28	4,495.80	1.73	-0.32	-1.70
13,676.00	89.40	90.30	9,213.72	149.93	4,587.27	4,589.72	0.44	-0.11	-0.43
13,714.00	89.40	90.60	9,214.11	149.63	4,625.27	4,627.69	0.79	0.00	0.79
Last Survey: 13714' MD, 9214.11' TVD									
13,777.00	89.40	90.60	9,214.77	148.97	4,688.26	4,690.63	0.00	0.00	0.00
PTB: 13777' MD, 9214.77' TVD									

Company: Marathon Oil
Project: Eddy County, NM
Site: Cass 16 State
Well: No. 3H
Wellbore: OH
Design: OH 81' - 13714' PTB 13777'

Local Co-ordinate Reference: Well No. 3H
TVD Reference: Well @ 3185.00usft (GL: 3160' + KB: 25' (H&P498))
MD Reference: Well @ 3185.00usft (GL: 3160' + KB: 25' (H&P498))
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: WellPlanner1

Design Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
13,714.00	9,214.11	149.63	4,625.27	Last Survey: 13714' MD, 9214.11' TVD
13,777.00	9,214.77	148.97	4,688.26	PTB: 13777' MD, 9214.77' TVD



Marathon Oil
Eddy County, NM
Cass 16 State
No. 3H
Plan #3 - FINAL PVA
GL: 3160' + KB: 25' (H&P498)

US State Plane 1983 (Exact solution)
NAD 1983 (State Plane CONUS)
Clarke 1866
New Mexico East 3001
Mean Sea Level

RKB Elevation: Well @ 3185.00usft (GL: 3160' - KB: 25' (H&P498))

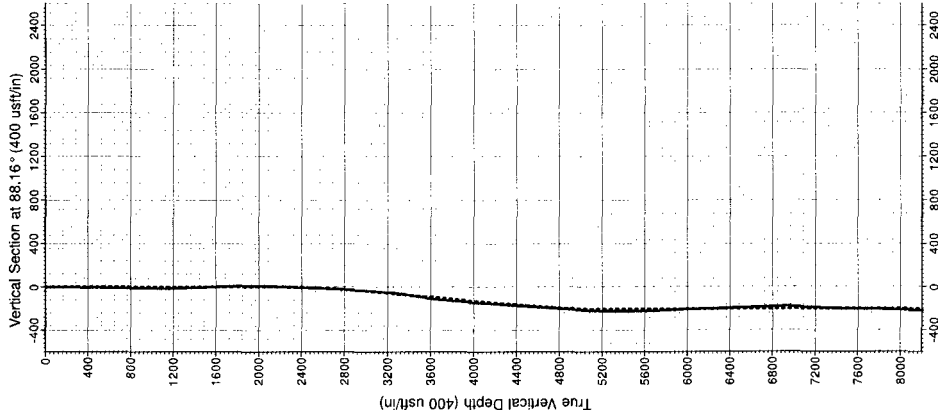
+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.00	0.00	475277.35	540500.53	32.3065858	-104.2022462	

SECTION DETAILS

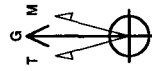
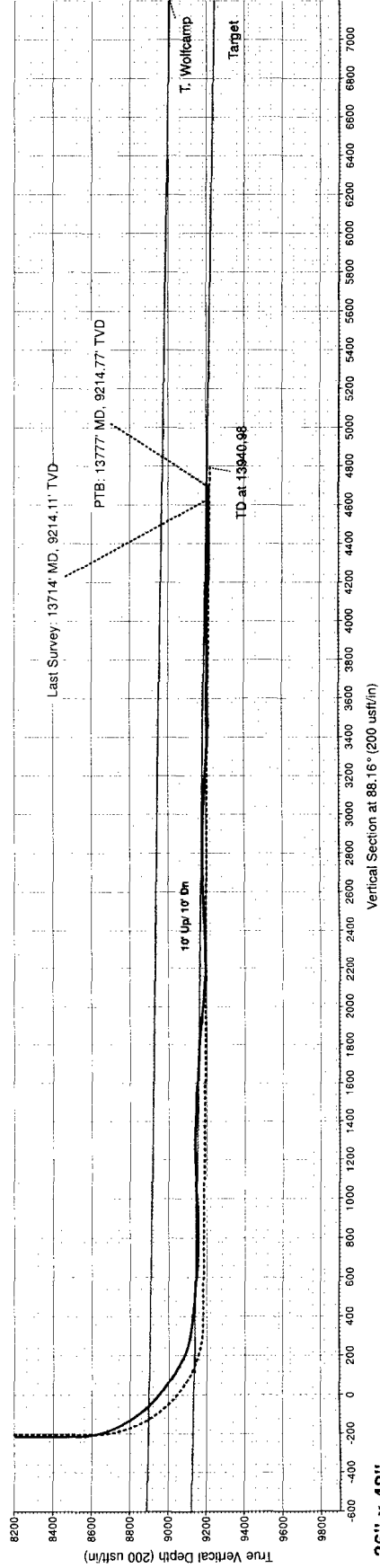
Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	Vsect
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	2200.00	0.00	0.00	2200.00	0.00	0.00	0.00	0.00
3	2866.67	5.00	269.50	2865.82	-0.25	-23.07	0.75	-29.06
4	4644.32	5.00	269.50	4636.71	-1.61	-184.00	0.00	-183.95
5	5145.24	0.00	0.00	5145.24	-1.80	-205.80	0.00	-205.75
6	9511.22	89.50	88.16	9180.94	16.42	361.84	10.00	362.18
7								
8	13940.98	89.50	88.16	9219.82	158.52	4789.15	0.00	4791.77

WELLBORE TARGET DETAILS (MAP CO-ORDINATES)

Name	MD	Inc	Azi	TVD	+N/-S	+E/-W	Northing	Easting
[Cass16State#3HFTP				0.00	6.73	73.59	475284.08	540574.12
[Cass16State#3HJLP				0.00	155.63	4688.39	475432.98	545186.32
[Cass16State#3HKOP				8665.00	-1.80	-205.80	475275.55	540294.73
[Cass16State#3HJLP				9219.82	158.52	4789.15	475435.57	545289.68



Target Line: 9178' TVD @ 0° VS. 89.5° INC



Azimuth to Gie North
True North: -0.07°
Magnetic North: 7.35°
Magnetic Field
Strength: 4806.5nT
Dip Angle: 60.10°
Model: HDGM

Azimuth Corrections

Total Magnetic Corr. (M to G): 7.35°
Declination (M to T): 7.42° East