

PRO DIRECTIONAL

HOBBS OCD

JAN 14 2020

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Marathon Oil

Corporation

Will Kane 15 WA Fee No. 6H(OH)
Lea County, NM

October 22, 2019

Job No. LNM1519719
API No. 30-025-45997

Survey Completion Report

Double Sided



Marathon Oil

Marathon Oil

Lea County, NM

Will Kane 15 WA Fee

No. 6H

OH

Survey: ProDirectional

Survey Report

22 October, 2019





ProDirectional Survey Report



Company: Marathon Oil
Project: Lea County, NM(NAD 83)
Site: Will Kane 15 WA Fee
Well: No. 6H
Wellbore: OH
Design: Gyro/MWD-100'-13420', PTB: 13491'

Local Co-ordinate Reference: Well No. 6H
TVD Reference: Well @ 3533.00usft
MD Reference: Well @ 3533.00usft
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: WellPlanner1

Survey Program		Date	10/22/2019		
From (usft)	To (usft)	Survey (Wellbore)		Tool Name	Description
100.00	1,270.00	Survey #1 (OH)		Standard Keeper 103	Standard Wireline Keeper ver 1.0.3
1,434.00	13,491.00	Survey #2 (OH)		MWD+HDGM	OWSG MWD + HRGM

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	441,865.15	813,397.33
100.00	0.85	221.54	100.00	-0.55	-0.56	-0.49	0.74	221.54	441,864.59	813,396.84
125.00	0.86	222.34	124.99	-0.83	-0.83	-0.74	1.11	221.67	441,864.32	813,396.59
150.00	0.87	223.29	149.99	-1.10	-1.11	-1.00	1.49	221.96	441,864.04	813,396.33
175.00	1.07	220.62	174.99	-1.42	-1.42	-1.28	1.92	221.93	441,863.73	813,396.05
200.00	1.11	222.88	199.98	-1.77	-1.78	-1.60	2.39	221.90	441,863.37	813,395.73
225.00	1.10	220.31	224.98	-2.13	-2.14	-1.92	2.87	221.85	441,863.01	813,395.41
250.00	0.96	220.22	249.97	-2.47	-2.48	-2.21	3.32	221.64	441,862.67	813,395.12
275.00	0.96	223.59	274.97	-2.78	-2.79	-2.49	3.74	221.67	441,862.36	813,394.84
300.00	0.96	229.41	299.97	-3.06	-3.08	-2.79	4.16	222.15	441,862.07	813,394.54
325.00	0.94	232.03	324.96	-3.32	-3.34	-3.11	4.57	222.92	441,861.81	813,394.22
350.00	0.84	227.29	349.96	-3.57	-3.60	-3.41	4.95	223.46	441,861.55	813,393.92
375.00	0.98	229.09	374.96	-3.83	-3.86	-3.70	5.35	223.82	441,861.29	813,393.63
400.00	0.99	227.15	399.95	-4.12	-4.15	-4.02	5.78	224.14	441,861.00	813,393.31
425.00	0.86	231.73	424.95	-4.38	-4.41	-4.33	6.18	224.47	441,860.74	813,393.00
450.00	0.87	223.48	449.95	-4.63	-4.66	-4.61	6.56	224.65	441,860.49	813,392.72
475.00	0.86	223.93	474.94	-4.90	-4.94	-4.87	6.93	224.60	441,860.21	813,392.46
500.00	0.78	224.16	499.94	-5.15	-5.19	-5.12	7.29	224.57	441,859.96	813,392.21
525.00	0.85	222.30	524.94	-5.41	-5.45	-5.36	7.65	224.51	441,859.70	813,391.97
550.00	0.99	226.70	549.94	-5.70	-5.74	-5.64	8.05	224.51	441,859.41	813,391.69
575.00	0.86	228.67	574.93	-5.97	-6.01	-5.94	8.45	224.66	441,859.14	813,391.39

Company: Marathon Oil
Project: Lea County, NM(NAD 83)
Site: Will Kane 15 WA Fee
Well: No. 6H
Wellbore: OH
Design: Gyro/MWD-100'-13420', PTB: 13491'

Local Co-ordinate Reference: Well No. 6H
TVD Reference: Well @ 3533.00usft
MD Reference: Well @ 3533.00usft
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)
1,270.00	1.61	230.39	1,269.80	-15.36	-15.48	-15.12	21.64	224.33	441,849.67	813,382.21
1,434.00	1.85	266.31	1,433.73	-16.97	-17.12	-19.54	25.97	228.77	441,848.03	813,377.79
Pro MWD First Survey: 1434' MD										
1,524.00	2.51	209.27	1,523.67	-18.77	-18.93	-21.95	28.99	229.22	441,846.22	813,375.38
1,613.00	4.22	188.70	1,612.52	-23.69	-23.87	-23.40	33.42	224.43	441,841.28	813,373.93
1,703.00	4.26	184.30	1,702.27	-30.29	-30.47	-24.15	38.88	218.39	441,834.68	813,373.18
1,792.00	4.62	182.99	1,791.00	-37.16	-37.35	-24.58	44.71	213.35	441,827.80	813,372.75
1,882.00	4.62	187.47	1,880.71	-44.37	-44.56	-25.24	51.22	209.53	441,820.59	813,372.09
1,971.00	4.48	186.50	1,969.43	-51.37	-51.57	-26.10	57.80	206.85	441,813.58	813,371.23
2,060.00	4.48	190.19	2,058.16	-58.24	-58.45	-27.11	64.43	204.89	441,806.70	813,370.22
2,150.00	4.57	189.05	2,147.88	-65.23	-65.45	-28.30	71.30	203.38	441,799.70	813,369.03
2,239.00	4.40	185.27	2,236.61	-72.13	-72.35	-29.17	78.01	201.96	441,792.80	813,368.16
2,329.00	4.18	187.64	2,326.35	-78.81	-79.04	-29.92	84.51	200.74	441,786.11	813,367.41
2,418.00	2.37	193.88	2,415.21	-83.80	-84.04	-30.80	89.50	200.12	441,781.11	813,366.53
2,507.00	1.71	173.67	2,504.15	-86.91	-87.14	-31.09	92.52	199.63	441,778.01	813,366.24
2,596.00	0.66	93.43	2,593.13	-88.26	-88.50	-30.43	93.58	198.98	441,776.65	813,366.90
2,686.00	0.84	62.31	2,683.13	-88.00	-88.22	-29.33	92.97	198.39	441,776.93	813,368.00
2,775.00	0.84	81.56	2,772.12	-87.61	-87.82	-28.11	92.21	197.75	441,777.33	813,369.22
2,864.00	1.27	58.62	2,861.10	-87.01	-87.21	-26.62	91.18	196.97	441,777.94	813,370.71
2,954.00	1.41	53.00	2,951.08	-85.84	-86.03	-24.88	89.55	196.13	441,779.12	813,372.45
3,043.00	1.23	62.93	3,040.05	-84.76	-84.93	-23.16	88.03	195.25	441,780.22	813,374.17
3,132.00	1.36	38.67	3,129.03	-83.51	-83.67	-21.65	86.43	194.51	441,781.48	813,375.68
3,221.00	1.32	41.92	3,218.01	-81.93	-82.09	-20.30	84.56	193.89	441,783.06	813,377.03
3,310.00	1.58	47.02	3,306.98	-80.34	-80.49	-18.72	82.63	193.09	441,784.66	813,378.61
3,400.00	0.44	63.63	3,396.96	-79.35	-79.49	-17.50	81.39	192.42	441,785.66	813,379.83
3,489.00	0.35	99.40	3,485.96	-79.25	-79.38	-16.93	81.16	192.04	441,785.77	813,380.40
3,579.00	0.22	168.92	3,575.96	-79.47	-79.59	-16.63	81.31	191.80	441,785.56	813,380.70

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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)
6,081.00	7.21	223.86	6,066.86	-228.25	-229.27	-134.24	265.68	210.35	441,635.88	813,263.09
6,171.00	7.47	220.78	6,156.12	-236.70	-237.77	-141.98	276.93	210.84	441,627.38	813,255.35
6,260.00	7.34	223.06	6,244.38	-245.17	-246.30	-149.64	288.20	211.28	441,618.85	813,247.69
6,349.00	7.21	222.80	6,332.66	-253.37	-254.55	-157.31	299.24	211.72	441,610.60	813,240.02
6,439.00	6.81	222.54	6,421.99	-261.39	-262.63	-164.76	310.03	212.10	441,602.52	813,232.57
6,528.00	6.86	224.91	6,510.35	-268.98	-270.28	-172.08	320.41	212.48	441,594.87	813,225.25
6,617.00	6.64	222.62	6,598.74	-276.48	-277.83	-179.32	330.67	212.84	441,587.32	813,218.01
6,706.00	6.68	221.22	6,687.14	-284.11	-285.51	-186.21	340.87	213.11	441,579.64	813,211.12
6,796.00	6.81	222.54	6,776.51	-291.92	-293.38	-193.27	351.32	213.38	441,571.77	813,204.06
6,885.00	5.32	220.78	6,865.01	-298.89	-300.39	-199.53	360.62	213.59	441,564.76	813,197.80
6,973.00	5.10	224.29	6,952.65	-304.74	-306.28	-204.93	368.52	213.79	441,558.87	813,192.40
7,063.00	5.19	221.13	7,042.29	-310.63	-312.21	-210.40	376.49	213.98	441,552.94	813,186.93
7,152.00	5.10	219.37	7,130.93	-316.68	-318.30	-215.55	384.42	214.11	441,546.85	813,181.78
7,242.00	4.97	221.22	7,220.58	-322.66	-324.33	-220.66	392.28	214.23	441,540.82	813,176.67
7,331.00	5.05	222.98	7,309.24	-328.39	-330.09	-225.87	399.98	214.38	441,535.06	813,171.46
7,421.00	4.92	218.93	7,398.90	-334.25	-335.99	-231.00	407.74	214.51	441,529.16	813,166.33
7,510.00	5.10	223.77	7,487.56	-340.04	-341.82	-236.13	415.45	214.64	441,523.33	813,161.20
7,599.00	4.97	222.10	7,576.22	-345.71	-347.54	-241.45	423.18	214.79	441,517.61	813,155.88
7,689.00	4.97	219.20	7,665.88	-351.59	-353.45	-246.53	430.93	214.90	441,511.70	813,150.80
7,778.00	4.97	224.12	7,754.55	-357.31	-359.21	-251.65	438.59	215.01	441,505.94	813,145.68
7,868.00	5.27	220.95	7,844.19	-363.19	-365.13	-257.07	446.55	215.15	441,500.02	813,140.26
7,957.00	3.74	208.74	7,932.91	-368.79	-370.76	-261.15	453.50	215.16	441,494.39	813,136.18
8,047.00	4.04	208.65	8,022.70	-374.12	-376.11	-264.08	459.57	215.07	441,489.04	813,133.25
8,136.00	2.59	210.58	8,111.55	-378.59	-380.60	-266.61	464.69	215.01	441,484.55	813,130.72
8,225.00	2.15	203.99	8,200.48	-381.83	-383.85	-268.31	468.33	214.95	441,481.30	813,129.02
8,315.00	2.24	196.87	8,290.41	-385.05	-387.08	-269.51	471.66	214.85	441,478.07	813,127.82
8,404.00	2.24	195.20	8,379.34	-388.38	-390.42	-270.47	474.95	214.71	441,474.73	813,126.86

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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)
10,905.00	1.19	247.23	10,879.16	-435.32	-437.68	-312.66	537.88	215.54	441,427.47	813,084.67
10,995.00	1.10	230.80	10,969.15	-436.21	-438.58	-314.19	539.51	215.62	441,426.57	813,083.14
11,084.00	1.23	299.70	11,058.13	-436.27	-438.65	-315.68	540.43	215.74	441,426.50	813,081.65
11,174.00	2.24	271.23	11,148.09	-435.73	-438.13	-318.28	541.54	216.00	441,427.02	813,079.05
11,264.00	2.37	270.96	11,238.02	-435.64	-438.06	-321.90	543.62	216.31	441,427.09	813,075.43
11,353.00	2.68	267.89	11,326.93	-435.65	-438.11	-325.82	545.98	216.64	441,427.04	813,071.51
11,443.00	2.07	261.30	11,416.85	-435.95	-438.43	-329.53	548.46	216.93	441,426.72	813,067.80
11,532.00	0.35	213.75	11,505.83	-436.40	-438.90	-331.27	549.88	217.04	441,426.25	813,066.06
11,621.00	0.88	222.45	11,594.83	-437.13	-439.63	-331.88	550.84	217.05	441,425.52	813,065.45
11,726.00	1.23	227.37	11,699.81	-438.48	-440.99	-333.25	552.75	217.08	441,424.16	813,064.08
11,827.00	1.89	219.28	11,800.77	-440.49	-443.01	-335.10	555.48	217.10	441,422.14	813,062.23
11,897.00	1.05	157.67	11,870.75	-441.97	-444.50	-335.59	556.96	217.05	441,420.65	813,061.74
11,987.00	15.38	16.08	11,959.73	-431.22	-433.72	-331.95	546.17	217.43	441,431.43	813,065.38
12,076.00	27.16	7.91	12,042.53	-399.69	-402.15	-325.86	517.60	219.02	441,463.00	813,071.47
12,165.00	34.37	7.64	12,118.96	-354.66	-357.07	-319.72	479.29	221.84	441,508.08	813,077.61
12,255.00	39.52	6.06	12,190.87	-301.02	-303.38	-313.31	436.12	225.92	441,561.77	813,084.02
12,345.00	44.66	359.21	12,257.67	-240.86	-243.20	-310.72	394.58	231.95	441,621.95	813,086.61
12,435.00	53.63	357.62	12,316.48	-172.88	-175.23	-312.67	358.42	240.73	441,689.92	813,084.66
12,524.00	61.41	2.37	12,364.26	-97.89	-100.24	-312.54	328.22	252.22	441,764.91	813,084.79
12,614.00	69.67	3.07	12,401.49	-16.17	-18.48	-308.64	309.19	266.57	441,846.67	813,088.69
12,704.00	78.64	0.79	12,426.04	70.25	67.95	-305.76	313.22	282.53	441,933.10	813,091.57
12,794.00	88.04	0.79	12,436.47	159.52	157.24	-304.53	342.73	297.31	442,022.39	813,092.80
12,884.00	85.45	359.73	12,441.58	249.36	247.08	-304.12	391.84	309.09	442,112.23	813,093.21
12,974.00	87.25	358.86	12,447.31	339.17	336.89	-305.23	454.60	317.82	442,202.04	813,092.10
13,063.00	93.27	1.23	12,446.90	428.12	425.84	-305.16	523.89	324.37	442,290.99	813,092.17
13,152.00	88.75	2.11	12,445.34	517.02	514.76	-302.57	597.10	329.55	442,379.91	813,094.76
13,242.00	88.62	0.61	12,447.40	606.95	604.71	-300.43	675.23	333.58	442,469.86	813,096.90

PRO-DIRECTIONAL



Marathon Oil Corporation

**Will Kane 15 WA Fee No. 6H(ST01)
Lea County, NM**

October 22, 2019

**Job No. LNM1519719
API No. 30-025-45997**

Survey Completion Report



Marathon Oil

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Lea County, NM

Will Kane 15 WA Fee

No. 6H

ST01

Survey: ProDirectional

Survey Report

22 October, 2019





ProDirectional Survey Report



Company: Marathon Oil
Project: Lea County, NM(NAD 83)
Site: Will Kane 15 WA Fee
Well: No. 6H
Wellbore: ST01
Design: MWD-13014'-17244', PTB: 17303'

Local Co-ordinate Reference: Well No. 6H
TVD Reference: Well @ 3533.00usft
MD Reference: Well @ 3533.00usft
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: WellPlanner1

Survey Program Date 10/22/2019

From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
100.00	1,270.00	Survey #1 (OH)	Standard Keeper 103	Standard Wireline Keeper ver 1.0.3
1,434.00	12,974.00	Survey #2 (OH)	MWD+HDGM	OWSG MWD + HRGM
13,014.00	17,303.00	Survey #1 (ST01)	MWD+HDGM	OWSG MWD + HRGM

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)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	441,865.15	813,397.33
100.00	0.85	221.54	100.00	-0.55	-0.56	-0.49	0.74	221.54	441,864.59	813,396.84
125.00	0.86	222.34	124.99	-0.83	-0.83	-0.74	1.11	221.67	441,864.32	813,396.59
150.00	0.87	223.29	149.99	-1.10	-1.11	-1.00	1.49	221.96	441,864.04	813,396.33
175.00	1.07	220.62	174.99	-1.42	-1.42	-1.28	1.92	221.93	441,863.73	813,396.05
200.00	1.11	222.88	199.98	-1.77	-1.78	-1.60	2.39	221.90	441,863.37	813,395.73
225.00	1.10	220.31	224.98	-2.13	-2.14	-1.92	2.87	221.85	441,863.01	813,395.41
250.00	0.96	220.22	249.97	-2.47	-2.48	-2.21	3.32	221.64	441,862.67	813,395.12
275.00	0.96	223.59	274.97	-2.78	-2.79	-2.49	3.74	221.67	441,862.36	813,394.84
300.00	0.96	229.41	299.97	-3.06	-3.08	-2.79	4.16	222.15	441,862.07	813,394.54
325.00	0.94	232.03	324.96	-3.32	-3.34	-3.11	4.57	222.92	441,861.81	813,394.22
350.00	0.84	227.29	349.96	-3.57	-3.60	-3.41	4.95	223.46	441,861.55	813,393.92
375.00	0.98	229.09	374.96	-3.83	-3.86	-3.70	5.35	223.82	441,861.29	813,393.63
400.00	0.99	227.15	399.95	-4.12	-4.15	-4.02	5.78	224.14	441,861.00	813,393.31
425.00	0.86	231.73	424.95	-4.38	-4.41	-4.33	6.18	224.47	441,860.74	813,393.00
450.00	0.87	223.48	449.95	-4.63	-4.66	-4.61	6.56	224.65	441,860.49	813,392.72
475.00	0.86	223.93	474.94	-4.90	-4.94	-4.87	6.93	224.60	441,860.21	813,392.46
500.00	0.78	224.16	499.94	-5.15	-5.19	-5.12	7.29	224.57	441,859.96	813,392.21
525.00	0.85	222.30	524.94	-5.41	-5.45	-5.36	7.65	224.51	441,859.70	813,391.97
550.00	0.99	226.70	549.94	-5.70	-5.74	-5.64	8.05	224.51	441,859.41	813,391.69



ProDirectional Survey Report



Company: Marathon Oil
Project: Lea County, NM(NAD 83)
Site: Will Kane 15 WA Fee
Well: No. 6H
Wellbore: ST01
Design: MWD-13014'-17244', PTB: 17303'

Local Co-ordinate Reference: Well No. 6H
TVD Reference: Well @ 3533.00usft
MD Reference: Well @ 3533.00usft
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)
1,250.00	1.60	226.07	1,249.81	-14.99	-15.11	-14.70	21.08	224.22	441,850.04	813,382.63
1,270.00	1.61	230.39	1,269.80	-15.36	-15.48	-15.12	21.64	224.33	441,849.67	813,382.21
1,434.00	1.85	266.31	1,433.73	-16.97	-17.12	-19.54	25.97	228.77	441,848.03	813,377.79
1,524.00	2.51	209.27	1,523.67	-18.77	-18.93	-21.95	28.99	229.22	441,846.22	813,375.38
1,613.00	4.22	188.70	1,612.52	-23.69	-23.87	-23.40	33.42	224.43	441,841.28	813,373.93
1,703.00	4.26	184.30	1,702.27	-30.29	-30.47	-24.15	38.88	218.39	441,834.68	813,373.18
1,792.00	4.62	182.99	1,791.00	-37.16	-37.35	-24.58	44.71	213.35	441,827.80	813,372.75
1,882.00	4.62	187.47	1,880.71	-44.37	-44.56	-25.24	51.22	209.53	441,820.59	813,372.09
1,971.00	4.48	186.50	1,969.43	-51.37	-51.57	-26.10	57.80	206.85	441,813.58	813,371.23
2,060.00	4.48	190.19	2,058.16	-58.24	-58.45	-27.11	64.43	204.89	441,806.70	813,370.22
2,150.00	4.57	189.05	2,147.88	-65.23	-65.45	-28.30	71.30	203.38	441,799.70	813,369.03
2,239.00	4.40	185.27	2,236.61	-72.13	-72.35	-29.17	78.01	201.96	441,792.80	813,368.16
2,329.00	4.18	187.64	2,326.35	-78.81	-79.04	-29.92	84.51	200.74	441,786.11	813,367.41
2,418.00	2.37	193.88	2,415.21	-83.80	-84.04	-30.80	89.50	200.12	441,781.11	813,366.53
2,507.00	1.71	173.67	2,504.15	-86.91	-87.14	-31.09	92.52	199.63	441,778.01	813,366.24
2,596.00	0.66	93.43	2,593.13	-88.26	-88.50	-30.43	93.58	198.98	441,776.65	813,366.90
2,686.00	0.84	62.31	2,683.13	-88.00	-88.22	-29.33	92.97	198.39	441,776.93	813,368.00
2,775.00	0.84	81.56	2,772.12	-87.61	-87.82	-28.11	92.21	197.75	441,777.33	813,369.22
2,864.00	1.27	58.62	2,861.10	-87.01	-87.21	-26.62	91.18	196.97	441,777.94	813,370.71
2,954.00	1.41	53.00	2,951.08	-85.84	-86.03	-24.88	89.55	196.13	441,779.12	813,372.45
3,043.00	1.23	62.93	3,040.05	-84.76	-84.93	-23.16	88.03	195.25	441,780.22	813,374.17
3,132.00	1.36	38.67	3,129.03	-83.51	-83.67	-21.65	86.43	194.51	441,781.48	813,375.68
3,221.00	1.32	41.92	3,218.01	-81.93	-82.09	-20.30	84.56	193.89	441,783.06	813,377.03
3,310.00	1.58	47.02	3,306.98	-80.34	-80.49	-18.72	82.63	193.09	441,784.66	813,378.61
3,400.00	0.44	63.63	3,396.96	-79.35	-79.49	-17.50	81.39	192.42	441,785.66	813,379.83
3,489.00	0.35	99.40	3,485.96	-79.25	-79.38	-16.93	81.16	192.04	441,785.77	813,380.40
3,579.00	0.22	168.92	3,575.96	-79.47	-79.59	-16.63	81.31	191.80	441,785.56	813,380.70



ProDirectional Survey Report



Company: Marathon Oil
Project: Lea County, NM(NAD 83)
Site: Will Kane 15 WA Fee
Well: No. 6H
Wellbore: ST01
Design: MWD-13014'-17244', PTB: 17303'

Local Co-ordinate Reference: Well No. 6H
TVD Reference: Well @ 3533.00usft
MD Reference: Well @ 3533.00usft
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)
6,081.00	7.21	223.86	6,066.86	-228.25	-229.27	-134.24	265.68	210.35	441,635.88	813,263.09
6,171.00	7.47	220.78	6,156.12	-236.70	-237.77	-141.98	276.93	210.84	441,627.38	813,255.35
6,260.00	7.34	223.06	6,244.38	-245.17	-246.30	-149.64	288.20	211.28	441,618.85	813,247.69
6,349.00	7.21	222.80	6,332.66	-253.37	-254.55	-157.31	299.24	211.72	441,610.60	813,240.02
6,439.00	6.81	222.54	6,421.99	-261.39	-262.63	-164.76	310.03	212.10	441,602.52	813,232.57
6,528.00	6.86	224.91	6,510.35	-268.98	-270.28	-172.08	320.41	212.48	441,594.87	813,225.25
6,617.00	6.64	222.62	6,598.74	-276.48	-277.83	-179.32	330.67	212.84	441,587.32	813,218.01
6,706.00	6.68	221.22	6,687.14	-284.11	-285.51	-186.21	340.87	213.11	441,579.64	813,211.12
6,796.00	6.81	222.54	6,776.51	-291.92	-293.38	-193.27	351.32	213.38	441,571.77	813,204.06
6,885.00	5.32	220.78	6,865.01	-298.89	-300.39	-199.53	360.82	213.59	441,564.76	813,197.80
6,973.00	5.10	224.29	6,952.65	-304.74	-306.28	-204.93	368.52	213.79	441,558.87	813,192.40
7,063.00	5.19	221.13	7,042.29	-310.83	-312.21	-210.40	376.49	213.98	441,552.94	813,186.93
7,152.00	5.10	219.37	7,130.93	-316.68	-318.30	-215.55	384.42	214.11	441,546.85	813,181.78
7,242.00	4.97	221.22	7,220.58	-322.66	-324.33	-220.66	392.28	214.23	441,540.82	813,176.67
7,331.00	5.05	222.98	7,309.24	-328.39	-330.09	-225.87	399.98	214.38	441,535.06	813,171.46
7,421.00	4.92	218.93	7,398.90	-334.25	-335.99	-231.00	407.74	214.51	441,529.16	813,166.33
7,510.00	5.10	223.77	7,487.56	-340.04	-341.82	-236.13	415.45	214.64	441,523.33	813,161.20
7,599.00	4.97	222.10	7,576.22	-345.71	-347.54	-241.45	423.18	214.79	441,517.61	813,155.88
7,689.00	4.97	219.20	7,665.88	-351.59	-353.45	-246.53	430.93	214.90	441,511.70	813,150.80
7,778.00	4.97	224.12	7,754.55	-357.31	-359.21	-251.65	438.59	215.01	441,505.94	813,145.68
7,868.00	5.27	220.95	7,844.19	-363.19	-365.13	-257.07	446.55	215.15	441,500.02	813,140.26
7,957.00	3.74	208.74	7,932.91	-368.79	-370.76	-261.15	453.50	215.16	441,494.39	813,136.18
8,047.00	4.04	208.65	8,022.70	-374.12	-376.11	-264.08	459.57	215.07	441,489.04	813,133.25
8,136.00	2.59	210.58	8,111.55	-378.59	-380.60	-266.61	464.69	215.01	441,484.55	813,130.72
8,225.00	2.15	203.99	8,200.48	-381.83	-383.85	-268.31	468.33	214.95	441,481.30	813,129.02
8,315.00	2.24	196.87	8,290.41	-385.05	-387.08	-269.51	471.66	214.85	441,478.07	813,127.82
8,404.00	2.24	195.20	8,379.34	-388.38	-390.42	-270.47	474.95	214.71	441,474.73	813,126.86



ProDirectional Survey Report



Company: Marathon Oil
Project: Lea County, NM(NAD 83)
Site: Will Kane 15 WA Fee
Well: No. 6H
Wellbore: ST01
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Local Co-ordinate Reference: Well No. 6H
TVD Reference: Well @ 3533.00usft
MD Reference: Well @ 3533.00usft
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)
10,905.00	1.19	247.23	10,879.16	-435.32	-437.68	-312.66	537.88	215.54	441,427.47	813,084.67
10,995.00	1.10	230.80	10,969.15	-436.21	-438.58	-314.19	539.51	215.62	441,426.57	813,083.14
11,084.00	1.23	299.70	11,058.13	-436.27	-438.65	-315.68	540.43	215.74	441,426.50	813,081.65
11,174.00	2.24	271.23	11,148.09	-435.73	-438.13	-318.28	541.54	216.00	441,427.02	813,079.05
11,264.00	2.37	270.96	11,238.02	-435.64	-438.06	-321.90	543.62	216.31	441,427.09	813,075.43
11,353.00	2.68	267.89	11,326.93	-435.65	-438.11	-325.82	545.98	216.64	441,427.04	813,071.51
11,443.00	2.07	261.30	11,416.85	-435.95	-438.43	-329.53	548.46	216.93	441,426.72	813,067.80
11,532.00	0.35	213.75	11,505.83	-436.40	-438.90	-331.27	549.88	217.04	441,426.25	813,066.06
11,621.00	0.88	222.45	11,594.83	-437.13	-439.63	-331.88	550.84	217.05	441,425.52	813,065.45
11,726.00	1.23	227.37	11,699.81	-438.48	-440.99	-333.25	552.75	217.08	441,424.16	813,064.08
11,827.00	1.89	219.28	11,800.77	-440.49	-443.01	-335.10	555.48	217.10	441,422.14	813,062.23
11,897.00	1.05	157.67	11,870.75	-441.97	-444.50	-335.59	556.96	217.05	441,420.65	813,061.74
11,987.00	15.38	16.08	11,959.73	-431.22	-433.72	-331.95	546.17	217.43	441,431.43	813,065.38
12,076.00	27.16	7.91	12,042.53	-399.69	-402.15	-325.86	517.60	219.02	441,463.00	813,071.47
12,165.00	34.37	7.64	12,118.96	-354.66	-357.07	-319.72	479.29	221.84	441,508.08	813,077.61
12,255.00	39.52	6.06	12,190.87	-301.02	-303.38	-313.31	436.12	225.92	441,561.77	813,084.02
12,345.00	44.66	359.21	12,257.67	-240.86	-243.20	-310.72	394.58	231.95	441,621.95	813,086.61
12,435.00	53.63	357.62	12,316.48	-172.88	-175.23	-312.67	358.42	240.73	441,689.92	813,084.66
12,524.00	61.41	2.37	12,364.26	-97.89	-100.24	-312.54	328.22	252.22	441,764.91	813,084.79
12,614.00	69.67	3.07	12,401.49	-16.17	-18.48	-308.64	309.19	266.57	441,846.67	813,088.69
12,704.00	78.64	0.79	12,426.04	70.25	67.95	-305.76	313.22	282.53	441,933.10	813,091.57
12,794.00	88.04	0.79	12,436.47	159.52	157.24	-304.53	342.73	297.31	442,022.39	813,092.80
12,884.00	85.45	359.73	12,441.58	249.36	247.08	-304.12	391.84	309.09	442,112.23	813,093.21
12,974.00	87.25	358.86	12,447.31	339.17	336.89	-305.23	454.60	317.82	442,202.04	813,092.10
13,014.00	89.71	359.73	12,448.37	379.15	376.87	-305.72	485.28	320.95	442,242.02	813,091.61
First ST01 Survey: 13014' MD										
13,059.00	88.35	3.16	12,449.13	424.11	421.84	-304.59	520.31	324.17	442,286.99	813,092.74

Company: Marathon Oil
Project: Lea County, NM(NAD 83)
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Local Co-ordinate Reference: Well No. 6H
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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)
15,566.00	89.63	4.57	12,460.17	2,925.91	2,923.58	-321.90	2,941.25	353.72	444,788.73	813,075.43
15,656.00	89.58	0.44	12,460.79	3,015.77	3,013.47	-317.96	3,030.20	353.98	444,878.62	813,079.37
15,745.00	90.68	3.07	12,460.59	3,104.70	3,102.42	-315.24	3,118.40	354.20	444,967.57	813,082.09
15,835.00	89.63	358.50	12,460.35	3,194.65	3,192.39	-314.01	3,207.79	354.38	445,057.54	813,083.32
15,925.00	90.11	358.68	12,460.55	3,284.64	3,282.36	-316.22	3,297.56	354.50	445,147.51	813,081.11
16,015.00	91.74	359.65	12,459.10	3,374.62	3,372.33	-317.53	3,387.25	354.62	445,237.48	813,079.80
16,104.00	90.33	1.23	12,457.49	3,463.59	3,461.31	-316.85	3,475.78	354.77	445,326.46	813,080.48
16,194.00	88.84	2.11	12,458.14	3,553.53	3,551.27	-314.23	3,565.14	354.94	445,416.42	813,083.10
16,284.00	91.12	3.86	12,458.17	3,643.36	3,641.14	-309.54	3,654.27	355.14	445,506.29	813,087.79
16,373.00	87.43	2.11	12,459.30	3,732.17	3,729.99	-304.91	3,742.43	355.33	445,595.14	813,092.42
16,462.00	86.29	357.71	12,464.18	3,821.01	3,818.83	-305.04	3,831.00	355.43	445,683.98	813,092.29
16,552.00	92.35	357.10	12,465.24	3,910.90	3,908.69	-309.12	3,920.90	355.48	445,773.84	813,088.21
16,641.00	89.14	355.08	12,464.09	3,999.71	3,997.46	-315.18	4,009.87	355.49	445,862.61	813,082.15
16,731.00	90.55	356.04	12,464.33	4,089.49	4,087.19	-322.15	4,099.86	355.49	445,952.34	813,075.18
16,821.00	91.87	356.39	12,462.43	4,179.31	4,176.97	-328.09	4,189.83	355.51	446,042.12	813,069.24
16,911.00	93.58	358.15	12,458.15	4,269.13	4,266.76	-332.37	4,279.68	355.55	446,131.91	813,064.96
17,000.00	90.64	359.56	12,454.87	4,358.05	4,355.67	-334.15	4,368.47	355.61	446,220.82	813,063.18
17,090.00	87.82	358.50	12,456.08	4,448.03	4,445.64	-335.67	4,458.29	355.68	446,310.79	813,061.66
17,180.00	88.70	358.86	12,458.82	4,537.98	4,535.57	-337.74	4,548.13	355.74	446,400.72	813,059.59
17,244.00	90.90	359.21	12,459.04	4,601.97	4,599.56	-338.82	4,612.02	355.79	446,464.71	813,058.51
Last Survey: 17244' MD										
17,303.00	90.90	359.21	12,458.11	4,660.96	4,658.54	-339.64	4,670.91	355.83	446,523.69	813,057.69
PTB: 17303' MD										