

PRO DIRECTIONAL

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Marathon Oil Corporation

Will Kane 15 WA Fee No. 11H
Lea County, NM

November 13, 2019

Job No. LNM1519519
API No. 30-025-45998

Survey Completion Report

Double Sided



Marathon Oil

Marathon Oil

Lea County, NM

Will Kane 15 WA Fee

No. 11H

OH

Survey: ProDirectional

Survey Report

13 November, 2019





ProDirectional
Survey Report



Company: Marathon Oil
Project: Lea County, NM(NAD 83)
Site: Will Kane 15 WA Fee
Well: No. 11H
Wellbore: OH
Design: MWD-100'-17387', PTB: 17444'

Local Co-ordinate Reference: Well No. 11H
TVD Reference: Well @ 3533.00usft
MD Reference: Well @ 3533.00usft
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: WellPlanner1

Survey Program Date 11/13/2019

From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
100.00	11,528.00	Survey #1 (OH)	Standard Keeper 103	Standard Wireline Keeper ver 1.0.3
11,564.00	17,444.00	Survey #2 (OH)	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	441,865.27	813,457.33
100.00	0.82	96.54	100.00	-0.09	-0.08	0.71	0.72	96.54	441,865.19	813,458.04
110.00	0.74	97.99	110.00	-0.11	-0.10	0.85	0.85	96.65	441,865.17	813,458.18
120.00	0.76	97.47	119.99	-0.13	-0.12	0.98	0.98	96.79	441,865.15	813,458.31
130.00	0.65	97.79	129.99	-0.14	-0.13	1.10	1.11	96.89	441,865.14	813,458.43
140.00	0.71	97.08	139.99	-0.16	-0.15	1.22	1.22	96.94	441,865.12	813,458.55
150.00	0.70	96.11	149.99	-0.17	-0.16	1.34	1.35	96.91	441,865.11	813,458.67
160.00	0.73	97.44	159.99	-0.19	-0.18	1.46	1.47	96.90	441,865.09	813,458.79
170.00	0.79	94.20	169.99	-0.20	-0.19	1.59	1.60	96.80	441,865.08	813,458.92
180.00	0.81	92.00	179.99	-0.21	-0.20	1.73	1.74	96.50	441,865.07	813,459.06
190.00	0.78	90.91	189.99	-0.22	-0.20	1.87	1.88	96.13	441,865.07	813,459.20
200.00	0.82	94.25	199.99	-0.23	-0.21	2.01	2.02	95.89	441,865.06	813,459.34
210.00	0.84	90.41	209.99	-0.23	-0.21	2.16	2.17	95.65	441,865.06	813,459.49
220.00	0.88	89.94	219.99	-0.24	-0.21	2.31	2.32	95.30	441,865.06	813,459.64
230.00	0.87	92.87	229.98	-0.24	-0.22	2.46	2.47	95.06	441,865.05	813,459.79
240.00	0.82	92.73	239.98	-0.25	-0.22	2.61	2.62	94.93	441,865.05	813,459.94
250.00	0.84	93.04	249.98	-0.26	-0.23	2.75	2.76	94.82	441,865.04	813,460.08
260.00	0.85	91.57	259.98	-0.26	-0.24	2.90	2.91	94.69	441,865.03	813,460.23
270.00	0.88	94.46	269.98	-0.27	-0.25	3.05	3.06	94.61	441,865.02	813,460.38
280.00	0.87	96.08	279.98	-0.29	-0.26	3.20	3.21	94.64	441,865.01	813,460.53
290.00	0.86	94.92	289.98	-0.31	-0.27	3.35	3.36	94.68	441,865.00	813,460.68



ProDirectional
Survey Report



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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)
570.00	0.27	274.06	569.97	-0.58	-0.52	5.63	5.65	95.31	441,864.75	813,462.96
580.00	0.26	274.87	579.97	-0.57	-0.52	5.58	5.60	95.32	441,864.75	813,462.91
590.00	0.27	271.94	589.97	-0.57	-0.52	5.53	5.56	95.34	441,864.75	813,462.86
600.00	0.27	270.19	599.96	-0.57	-0.52	5.49	5.51	95.37	441,864.75	813,462.82
610.00	0.27	269.93	609.96	-0.57	-0.52	5.44	5.46	95.42	441,864.75	813,462.77
620.00	0.26	266.13	619.96	-0.57	-0.52	5.39	5.42	95.48	441,864.75	813,462.72
630.00	0.31	264.88	629.96	-0.57	-0.52	5.34	5.37	95.57	441,864.75	813,462.67
640.00	0.35	264.43	639.96	-0.58	-0.53	5.29	5.31	95.69	441,864.74	813,462.62
650.00	0.38	264.58	649.96	-0.58	-0.53	5.22	5.25	95.83	441,864.74	813,462.55
660.00	0.39	266.49	659.96	-0.59	-0.54	5.16	5.18	95.96	441,864.73	813,462.49
670.00	0.37	265.75	669.96	-0.59	-0.54	5.09	5.12	96.09	441,864.73	813,462.42
680.00	0.36	261.63	679.96	-0.60	-0.55	5.03	5.06	96.24	441,864.72	813,462.36
690.00	0.39	267.12	689.96	-0.60	-0.56	4.96	4.99	96.39	441,864.71	813,462.29
700.00	0.38	267.65	699.96	-0.60	-0.56	4.89	4.93	96.51	441,864.71	813,462.22
710.00	0.38	271.18	709.96	-0.60	-0.56	4.83	4.86	96.61	441,864.71	813,462.16
720.00	0.37	273.11	719.96	-0.60	-0.56	4.76	4.79	96.67	441,864.71	813,462.09
730.00	0.38	273.04	729.96	-0.60	-0.55	4.70	4.73	96.72	441,864.72	813,462.03
740.00	0.40	271.61	739.96	-0.59	-0.55	4.63	4.66	96.79	441,864.72	813,461.96
750.00	0.44	270.71	749.96	-0.59	-0.55	4.56	4.59	96.88	441,864.72	813,461.89
760.00	0.39	273.50	759.96	-0.59	-0.55	4.48	4.52	96.95	441,864.72	813,461.81
770.00	0.40	272.86	769.96	-0.58	-0.54	4.41	4.45	97.01	441,864.73	813,461.74
780.00	0.45	275.17	779.96	-0.58	-0.54	4.34	4.37	97.06	441,864.73	813,461.67
790.00	0.44	273.84	789.96	-0.57	-0.53	4.26	4.30	97.11	441,864.74	813,461.59
800.00	0.47	271.28	799.96	-0.57	-0.53	4.18	4.22	97.20	441,864.74	813,461.51
810.00	0.45	268.01	809.96	-0.57	-0.53	4.10	4.14	97.34	441,864.74	813,461.43
820.00	0.49	269.38	819.96	-0.57	-0.53	4.02	4.06	97.51	441,864.74	813,461.35
830.00	0.50	271.27	829.96	-0.57	-0.53	3.93	3.97	97.67	441,864.74	813,461.26

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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)
1,110.00	0.35	271.88	1,109.95	-0.67	-0.65	1.88	1.99	109.18	441,864.62	813,459.21
1,120.00	0.32	273.12	1,119.95	-0.67	-0.65	1.82	1.93	109.68	441,864.62	813,459.15
1,130.00	0.36	272.72	1,129.95	-0.66	-0.65	1.76	1.88	110.20	441,864.62	813,459.09
1,140.00	0.34	272.41	1,139.95	-0.66	-0.64	1.70	1.82	110.78	441,864.63	813,459.03
1,150.00	0.33	273.20	1,149.95	-0.66	-0.64	1.64	1.76	111.37	441,864.63	813,458.97
1,160.00	0.38	274.50	1,159.95	-0.65	-0.64	1.58	1.70	111.99	441,864.63	813,458.91
1,170.00	0.38	273.69	1,169.95	-0.65	-0.63	1.51	1.64	112.71	441,864.64	813,458.84
1,180.00	0.33	275.96	1,179.95	-0.64	-0.63	1.45	1.58	113.40	441,864.64	813,458.78
1,190.00	0.29	274.84	1,189.95	-0.64	-0.62	1.40	1.53	114.02	441,864.65	813,458.73
1,200.00	0.30	276.96	1,199.95	-0.63	-0.62	1.35	1.48	114.64	441,864.65	813,458.68
1,210.00	0.38	275.56	1,209.95	-0.62	-0.61	1.29	1.42	115.40	441,864.66	813,458.62
1,220.00	0.34	274.60	1,219.95	-0.62	-0.61	1.22	1.37	116.31	441,864.66	813,458.55
1,230.00	0.32	273.43	1,229.95	-0.61	-0.60	1.17	1.31	117.27	441,864.67	813,458.50
1,240.00	0.34	273.38	1,239.95	-0.61	-0.60	1.11	1.26	118.33	441,864.67	813,458.44
1,250.00	0.40	275.65	1,249.95	-0.60	-0.59	1.05	1.20	119.56	441,864.68	813,458.38
1,260.00	0.42	276.57	1,259.95	-0.59	-0.59	0.97	1.14	121.00	441,864.68	813,458.30
1,270.00	0.40	278.35	1,269.95	-0.58	-0.58	0.90	1.07	122.53	441,864.69	813,458.23
1,280.00	0.37	277.33	1,279.95	-0.57	-0.57	0.84	1.01	124.12	441,864.70	813,458.17
1,290.00	0.39	276.12	1,289.95	-0.57	-0.56	0.77	0.95	125.96	441,864.71	813,458.10
1,300.00	0.41	276.04	1,299.95	-0.56	-0.55	0.70	0.89	128.19	441,864.72	813,458.03
1,310.00	0.44	279.38	1,309.95	-0.55	-0.54	0.63	0.83	130.79	441,864.73	813,457.96
1,320.00	0.47	280.71	1,319.95	-0.53	-0.53	0.55	0.76	133.84	441,864.74	813,457.88
1,330.00	0.35	281.03	1,329.95	-0.52	-0.51	0.48	0.70	137.02	441,864.76	813,457.81
1,340.00	0.76	294.12	1,339.95	-0.48	-0.48	0.39	0.62	141.08	441,864.79	813,457.72
1,350.00	1.27	302.68	1,349.95	-0.40	-0.39	0.23	0.46	149.22	441,864.88	813,457.56
1,360.00	1.58	305.32	1,359.94	-0.26	-0.25	0.03	0.26	173.49	441,865.02	813,457.36
1,370.00	1.68	305.84	1,369.94	-0.09	-0.09	-0.20	0.22	246.19	441,865.18	813,457.13

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1,650.00	1.51	129.92	1,649.82	0.60	0.57	-2.66	2.72	282.16	441,865.84	813,454.67
1,660.00	1.75	129.80	1,659.81	0.41	0.39	-2.44	2.47	279.10	441,865.66	813,454.89
1,670.00	2.14	127.15	1,669.81	0.20	0.18	-2.18	2.19	274.75	441,865.45	813,455.15
1,680.00	2.43	126.74	1,679.80	-0.04	-0.06	-1.86	1.86	268.20	441,865.21	813,455.47
1,690.00	2.81	126.88	1,689.79	-0.32	-0.33	-1.49	1.53	257.45	441,864.94	813,455.84
1,700.00	3.21	127.03	1,699.77	-0.64	-0.65	-1.07	1.25	238.87	441,864.62	813,456.26
1,710.00	3.58	126.69	1,709.76	-1.00	-1.00	-0.60	1.17	210.86	441,864.27	813,456.73
1,720.00	3.83	126.64	1,719.74	-1.39	-1.39	-0.08	1.39	183.35	441,863.88	813,457.25
1,730.00	4.06	126.48	1,729.71	-1.80	-1.80	0.47	1.86	165.32	441,863.47	813,457.80
1,740.00	4.37	126.38	1,739.68	-2.25	-2.24	1.06	2.48	154.57	441,863.03	813,458.39
1,750.00	4.56	125.71	1,749.65	-2.71	-2.69	1.69	3.18	147.86	441,862.58	813,459.02
1,760.00	4.70	125.09	1,759.62	-3.18	-3.16	2.35	3.94	143.37	441,862.11	813,459.68
1,770.00	4.77	125.66	1,769.59	-3.67	-3.64	3.02	4.73	140.28	441,861.63	813,460.35
1,780.00	4.87	125.02	1,779.55	-4.16	-4.12	3.71	5.55	138.04	441,861.15	813,461.04
1,790.00	4.89	124.53	1,789.52	-4.65	-4.61	4.41	6.38	136.29	441,860.66	813,461.74
1,800.00	4.89	124.06	1,799.48	-5.14	-5.09	5.11	7.21	134.88	441,860.18	813,462.44
1,810.00	4.93	123.84	1,809.44	-5.62	-5.57	5.82	8.06	133.73	441,859.70	813,463.15
1,820.00	4.92	124.24	1,819.41	-6.11	-6.05	6.53	8.90	132.80	441,859.22	813,463.86
1,830.00	4.93	123.90	1,829.37	-6.60	-6.53	7.24	9.75	132.03	441,858.74	813,464.57
1,840.00	5.02	124.07	1,839.33	-7.09	-7.01	7.96	10.61	131.38	441,858.26	813,465.29
1,850.00	4.92	124.18	1,849.29	-7.58	-7.50	8.68	11.47	130.83	441,857.77	813,466.01
1,860.00	4.97	123.89	1,859.26	-8.07	-7.98	9.39	12.33	130.36	441,857.29	813,466.72
1,870.00	5.00	123.42	1,869.22	-8.56	-8.46	10.12	13.19	129.91	441,856.81	813,467.45
1,880.00	5.04	123.27	1,879.18	-9.05	-8.95	10.85	14.06	129.51	441,856.32	813,468.18
1,890.00	4.94	123.58	1,889.14	-9.53	-9.42	11.58	14.93	129.15	441,855.85	813,468.91
1,900.00	4.87	123.86	1,899.11	-10.01	-9.90	12.29	15.78	128.86	441,855.37	813,469.62
1,910.00	4.99	123.67	1,909.07	-10.50	-10.38	13.00	16.63	128.60	441,854.89	813,470.33

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2,190.00	4.89	121.28		2,188.04	-23.59	-23.28	33.23	40.57	125.02	441,841.99	813,490.56
2,200.00	4.78	121.67		2,198.00	-24.04	-23.72	33.94	41.41	124.95	441,841.55	813,491.27
2,210.00	4.73	122.30		2,207.97	-24.48	-24.16	34.65	42.24	124.89	441,841.11	813,491.98
2,220.00	4.74	122.16		2,217.93	-24.93	-24.60	35.35	43.06	124.84	441,840.67	813,492.68
2,230.00	4.73	121.59		2,227.90	-25.37	-25.04	36.05	43.89	124.78	441,840.23	813,493.38
2,240.00	4.78	121.74		2,237.87	-25.81	-25.47	36.75	44.72	124.73	441,839.80	813,494.08
2,250.00	4.71	120.44		2,247.83	-26.25	-25.90	37.46	45.54	124.66	441,839.37	813,494.79
2,260.00	4.69	121.02		2,257.80	-26.67	-26.32	38.16	46.36	124.59	441,838.95	813,495.49
2,270.00	4.76	121.36		2,267.76	-27.10	-26.75	38.87	47.18	124.53	441,838.52	813,496.20
2,280.00	4.80	120.81		2,277.73	-27.54	-27.18	39.58	48.01	124.47	441,838.09	813,496.91
2,290.00	4.71	121.73		2,287.69	-27.98	-27.61	40.29	48.84	124.42	441,837.66	813,497.62
2,300.00	4.61	121.67		2,297.66	-28.41	-28.03	40.98	49.65	124.37	441,837.24	813,498.31
2,310.00	4.62	121.59		2,307.63	-28.84	-28.45	41.67	50.46	124.33	441,836.82	813,499.00
2,320.00	4.62	122.18		2,317.60	-29.27	-28.88	42.35	51.26	124.29	441,836.39	813,499.68
2,330.00	4.64	121.63		2,327.56	-29.70	-29.31	43.04	52.07	124.25	441,835.96	813,500.37
2,340.00	4.68	120.67		2,337.53	-30.13	-29.73	43.73	52.88	124.21	441,835.54	813,501.06
2,350.00	4.63	120.29		2,347.50	-30.55	-30.14	44.43	53.69	124.15	441,835.13	813,501.76
2,360.00	4.71	119.64		2,357.46	-30.96	-30.55	45.14	54.50	124.09	441,834.72	813,502.47
2,370.00	4.70	119.61		2,367.43	-31.37	-30.95	45.85	55.32	124.02	441,834.32	813,503.18
2,380.00	4.53	120.25		2,377.40	-31.78	-31.35	46.55	56.12	123.96	441,833.92	813,503.88
2,390.00	4.61	120.91		2,387.37	-32.19	-31.76	47.23	56.92	123.91	441,833.51	813,504.56
2,400.00	4.59	121.07		2,397.33	-32.61	-32.17	47.92	57.72	123.87	441,833.10	813,505.25
2,410.00	4.63	120.74		2,407.30	-33.03	-32.58	48.61	58.52	123.83	441,832.69	813,505.94
2,420.00	4.70	120.35		2,417.27	-33.45	-33.00	49.31	59.33	123.79	441,832.27	813,506.64
2,430.00	4.65	120.54		2,427.24	-33.87	-33.41	50.01	60.15	123.74	441,831.86	813,507.34
2,440.00	4.67	120.56		2,437.20	-34.29	-33.82	50.71	60.96	123.70	441,831.45	813,508.04
2,450.00	4.72	120.49		2,447.17	-34.71	-34.24	51.42	61.77	123.66	441,831.03	813,508.75



ProDirectional Survey Report



Company: Marathon Oil
Project: Lea County, NM(NAD 83)
Site: Will Kane 15 WA Fee
Well: No. 11H
Wellbore: OH
Design: MWD-100'-17387', PTB: 17444'

Local Co-ordinate Reference: Well No. 11H
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)
2,730.00	7.17	115.51	2,726.05	-46.70	-46.03	73.17	86.45	122.17	441,819.24	813,530.50
2,740.00	7.33	115.68	2,735.97	-47.26	-46.57	74.31	87.70	122.08	441,818.70	813,531.64
2,750.00	7.51	115.34	2,745.88	-47.82	-47.13	75.48	88.98	121.98	441,818.14	813,532.81
2,760.00	7.52	115.05	2,755.80	-48.39	-47.68	76.66	90.28	121.88	441,817.59	813,533.99
2,770.00	7.55	114.67	2,765.71	-48.95	-48.24	77.85	91.58	121.78	441,817.03	813,535.18
2,780.00	7.70	114.78	2,775.62	-49.52	-48.79	79.06	92.90	121.68	441,816.48	813,536.39
2,790.00	7.62	115.11	2,785.53	-50.09	-49.35	80.27	94.22	121.59	441,815.92	813,537.60
2,800.00	7.60	114.79	2,795.44	-50.66	-49.91	81.47	95.54	121.49	441,815.36	813,538.80
2,810.00	7.71	114.68	2,805.35	-51.23	-50.47	82.68	96.86	121.40	441,814.80	813,540.01
2,820.00	7.82	114.79	2,815.26	-51.81	-51.03	83.90	98.21	121.31	441,814.24	813,541.23
2,830.00	7.66	115.28	2,825.17	-52.39	-51.60	85.12	99.54	121.23	441,813.67	813,542.45
2,840.00	7.64	115.15	2,835.08	-52.97	-52.17	86.33	100.87	121.15	441,813.10	813,543.66
2,850.00	7.67	115.23	2,844.99	-53.55	-52.74	87.53	102.19	121.07	441,812.53	813,544.86
2,860.00	7.78	114.48	2,854.90	-54.12	-53.30	88.75	103.53	120.99	441,811.97	813,546.08
2,870.00	7.69	114.51	2,864.81	-54.69	-53.86	89.98	104.87	120.90	441,811.41	813,547.31
2,880.00	7.67	114.75	2,874.72	-55.26	-54.42	91.19	106.20	120.83	441,810.85	813,548.52
2,890.00	7.73	114.52	2,884.63	-55.83	-54.98	92.41	107.53	120.75	441,810.29	813,549.74
2,900.00	7.78	113.74	2,894.54	-56.39	-55.53	93.64	108.87	120.67	441,809.74	813,550.97
2,910.00	7.90	114.00	2,904.45	-56.96	-56.08	94.89	110.22	120.58	441,809.19	813,552.22
2,920.00	7.81	114.12	2,914.35	-57.52	-56.64	96.14	111.58	120.50	441,808.63	813,553.47
2,930.00	7.75	114.26	2,924.26	-58.09	-57.19	97.37	112.93	120.43	441,808.08	813,554.70
2,940.00	7.72	114.56	2,934.17	-58.66	-57.75	98.60	114.26	120.36	441,807.52	813,555.93
2,950.00	7.86	114.54	2,944.08	-59.23	-58.31	99.83	115.61	120.29	441,806.96	813,557.16
2,960.00	7.91	114.44	2,953.98	-59.81	-58.88	101.08	116.98	120.22	441,806.39	813,558.41
2,970.00	7.76	114.31	2,963.89	-60.39	-59.44	102.32	118.33	120.15	441,805.83	813,559.65
2,980.00	7.77	114.72	2,973.80	-60.96	-60.00	103.55	119.68	120.09	441,805.27	813,560.88
2,990.00	7.81	114.74	2,983.71	-61.54	-60.57	104.78	121.03	120.03	441,804.70	813,562.11



ProDirectional Survey Report



Company: Marathon Oil
Project: Lea County, NM(NAD 83)
Site: Will Kane 15 WA Fee
Well: No. 11H
Wellbore: OH
Design: MWD-100'-17387', PTB: 17444'

Local Co-ordinate Reference: Well No. 11H
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)
3,270.00	8.45	113.16	3,260.88	-77.86	-76.56	141.11	160.54	118.48	441,788.71	813,598.44
3,280.00	8.45	113.21	3,270.77	-78.45	-77.14	142.46	162.00	118.43	441,788.13	813,599.79
3,290.00	8.46	113.29	3,280.66	-79.04	-77.72	143.81	163.47	118.39	441,787.55	813,601.14
3,300.00	8.43	112.94	3,290.55	-79.63	-78.29	145.16	164.93	118.34	441,786.98	813,602.49
3,310.00	8.37	112.75	3,300.44	-80.21	-78.86	146.51	166.38	118.29	441,786.41	813,603.84
3,320.00	8.14	112.61	3,310.34	-80.78	-79.41	147.83	167.81	118.24	441,785.86	813,605.16
3,330.00	7.80	111.86	3,320.24	-81.31	-79.94	149.12	169.19	118.20	441,785.33	813,606.45
3,340.00	7.52	111.54	3,330.15	-81.82	-80.43	150.35	170.52	118.14	441,784.84	813,607.68
3,350.00	7.53	110.53	3,340.07	-82.30	-80.90	151.58	171.82	118.09	441,784.37	813,608.91
3,360.00	7.56	110.05	3,349.98	-82.77	-81.36	152.81	173.12	118.03	441,783.91	813,610.14
3,370.00	7.32	110.57	3,359.90	-83.23	-81.81	154.02	174.40	117.97	441,783.46	813,611.35
3,380.00	7.18	110.79	3,369.82	-83.68	-82.25	155.20	175.65	117.92	441,783.02	813,612.53
3,390.00	7.22	110.97	3,379.74	-84.14	-82.70	156.37	176.90	117.87	441,782.57	813,613.70
3,400.00	7.28	110.76	3,389.66	-84.60	-83.15	157.55	178.15	117.82	441,782.12	813,614.88
3,410.00	7.26	110.73	3,399.58	-85.06	-83.60	158.74	179.40	117.77	441,781.67	813,616.07
3,420.00	7.27	110.60	3,409.50	-85.52	-84.04	159.92	180.66	117.72	441,781.23	813,617.25
3,430.00	7.24	110.03	3,419.42	-85.97	-84.48	161.10	181.91	117.67	441,780.79	813,618.43
3,440.00	7.32	110.43	3,429.34	-86.42	-84.92	162.29	183.17	117.62	441,780.35	813,619.62
3,450.00	7.40	110.37	3,439.25	-86.87	-85.37	163.49	184.44	117.57	441,779.90	813,620.82
3,460.00	7.30	110.33	3,449.17	-87.33	-85.81	164.69	185.71	117.52	441,779.46	813,622.02
3,470.00	7.28	110.02	3,459.09	-87.78	-86.25	165.88	186.97	117.47	441,779.02	813,623.21
3,480.00	7.28	109.79	3,469.01	-88.22	-86.68	167.08	188.22	117.42	441,778.59	813,624.41
3,490.00	7.23	110.23	3,478.93	-88.66	-87.11	168.26	189.48	117.37	441,778.16	813,625.59
3,500.00	7.23	110.06	3,488.85	-89.11	-87.55	169.44	190.72	117.32	441,777.72	813,626.77
3,510.00	7.28	109.66	3,498.77	-89.55	-87.97	170.63	191.98	117.27	441,777.30	813,627.96
3,520.00	7.36	109.08	3,508.69	-89.98	-88.40	171.83	193.24	117.22	441,776.87	813,629.16
3,530.00	7.58	108.89	3,518.61	-90.42	-88.82	173.06	194.53	117.17	441,776.45	813,630.39

Company: Marathon Oil
Project: Lea County, NM(NAD 83)
Site: Will Kane 15 WA Fee
Well: No. 11H
Wellbore: OH
Design: MWD-100'-17387', PTB: 17444'

Local Co-ordinate Reference: Well No. 11H
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)
3,810.00	5.88	114.04	3,796.31	-102.70	-100.80	206.69	229.96	116.00	441,764.47	813,664.02
3,820.00	5.88	114.12	3,806.25	-103.13	-101.21	207.63	230.98	115.99	441,764.06	813,664.96
3,830.00	5.90	114.52	3,816.20	-103.56	-101.64	208.56	232.01	115.98	441,763.63	813,665.89
3,840.00	5.96	114.33	3,826.15	-104.00	-102.06	209.50	233.04	115.97	441,763.21	813,666.83
3,850.00	5.97	114.30	3,836.09	-104.43	-102.49	210.45	234.08	115.97	441,762.78	813,667.78
3,860.00	5.89	114.76	3,846.04	-104.87	-102.92	211.39	235.11	115.96	441,762.35	813,668.72
3,870.00	5.87	114.96	3,855.99	-105.31	-103.35	212.32	236.14	115.96	441,761.92	813,669.65
3,880.00	5.89	115.00	3,865.93	-105.75	-103.78	213.25	237.16	115.95	441,761.49	813,670.58
3,890.00	5.89	114.39	3,875.88	-106.19	-104.21	214.18	238.19	115.95	441,761.06	813,671.51
3,900.00	5.96	114.58	3,885.83	-106.63	-104.64	215.12	239.22	115.94	441,760.63	813,672.45
3,910.00	5.94	115.83	3,895.77	-107.08	-105.08	216.06	240.26	115.94	441,760.19	813,673.39
3,920.00	5.91	116.61	3,905.72	-107.54	-105.54	216.98	241.29	115.94	441,759.73	813,674.31
3,930.00	6.02	116.07	3,915.67	-108.01	-106.00	217.92	242.33	115.94	441,759.27	813,675.25
3,940.00	6.06	114.32	3,925.61	-108.47	-106.45	218.87	243.38	115.94	441,758.82	813,676.20
3,950.00	5.98	115.25	3,935.56	-108.91	-106.89	219.82	244.43	115.93	441,758.38	813,677.15
3,960.00	5.96	116.82	3,945.50	-109.38	-107.34	220.75	245.47	115.93	441,757.93	813,678.08
3,970.00	6.02	117.27	3,955.45	-109.86	-107.82	221.68	246.51	115.94	441,757.45	813,679.01
3,980.00	6.22	116.01	3,965.39	-110.35	-108.29	222.64	247.58	115.94	441,756.98	813,679.97
3,990.00	6.00	116.76	3,975.33	-110.83	-108.77	223.59	248.64	115.94	441,756.50	813,680.92
4,000.00	6.12	117.35	3,985.28	-111.32	-109.25	224.53	249.70	115.95	441,756.02	813,681.86
4,010.00	6.09	117.50	3,995.22	-111.82	-109.74	225.47	250.76	115.95	441,755.53	813,682.80
4,020.00	6.05	117.05	4,005.16	-112.31	-110.22	226.41	251.82	115.96	441,755.05	813,683.74
4,030.00	6.07	117.56	4,015.11	-112.80	-110.71	227.35	252.87	115.96	441,754.56	813,684.68
4,040.00	6.07	118.03	4,025.05	-113.31	-111.20	228.29	253.93	115.97	441,754.07	813,685.62
4,050.00	6.06	118.37	4,035.00	-113.81	-111.70	229.22	254.99	115.98	441,753.57	813,686.55
4,060.00	6.07	118.31	4,044.94	-114.32	-112.20	230.15	256.04	115.99	441,753.07	813,687.48
4,070.00	6.21	117.68	4,054.88	-114.83	-112.70	231.09	257.11	116.00	441,752.57	813,688.42

Company: Marathon Oil
Project: Lea County, NM(NAD 83)
Site: Will Kane 15 WA Fee
Well: No. 11H
Wellbore: OH
Design: MWD-100'-17387', PTB: 17444'

Local Co-ordinate Reference: Well No. 11H
TVD Reference: Well @ 3533.00usft
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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)
4,350.00	6.19	119.62	4,333.25	-129.89	-127.52	257.43	287.28	116.35	441,737.75	813,714.76
4,360.00	6.17	120.21	4,343.19	-130.44	-128.06	258.37	288.36	116.36	441,737.21	813,715.70
4,370.00	6.21	120.21	4,353.13	-130.99	-128.60	259.30	289.44	116.38	441,736.67	813,716.63
4,380.00	6.22	120.30	4,363.07	-131.54	-129.14	260.23	290.52	116.39	441,736.13	813,717.56
4,390.00	6.17	120.59	4,373.01	-132.10	-129.69	261.16	291.59	116.41	441,735.58	813,718.49
4,400.00	6.17	119.95	4,382.96	-132.65	-130.23	262.09	292.66	116.42	441,735.04	813,719.42
4,410.00	6.18	119.47	4,392.90	-133.19	-130.76	263.03	293.74	116.43	441,734.51	813,720.36
4,420.00	6.22	119.39	4,402.84	-133.73	-131.30	263.97	294.82	116.45	441,733.97	813,721.30
4,430.00	6.26	118.61	4,412.78	-134.27	-131.82	264.92	295.90	116.45	441,733.45	813,722.25
4,440.00	6.26	118.46	4,422.72	-134.80	-132.34	265.87	296.99	116.46	441,732.93	813,723.20
4,450.00	6.19	119.12	4,432.66	-135.33	-132.87	266.83	298.08	116.47	441,732.40	813,724.16
4,460.00	6.20	119.27	4,442.60	-135.86	-133.39	267.77	299.15	116.48	441,731.88	813,725.10
4,470.00	6.24	118.18	4,452.54	-136.39	-133.91	268.72	300.24	116.49	441,731.36	813,726.05
4,480.00	6.26	118.26	4,462.49	-136.92	-134.43	269.68	301.32	116.50	441,730.84	813,727.01
4,490.00	6.20	118.74	4,472.43	-137.44	-134.95	270.63	302.41	116.50	441,730.32	813,727.96
4,500.00	6.17	118.85	4,482.37	-137.97	-135.46	271.57	303.49	116.51	441,729.81	813,728.90
4,510.00	6.22	118.80	4,492.31	-138.50	-135.98	272.52	304.56	116.52	441,729.29	813,729.85
4,520.00	6.41	117.60	4,502.25	-139.03	-136.50	273.49	305.66	116.52	441,728.77	813,730.82
4,530.00	6.35	117.09	4,512.19	-139.55	-137.01	274.48	306.77	116.53	441,728.26	813,731.81
4,540.00	6.25	118.87	4,522.13	-140.07	-137.53	275.45	307.87	116.53	441,727.74	813,732.78
4,550.00	6.23	119.54	4,532.07	-140.61	-138.06	276.39	308.96	116.54	441,727.21	813,733.72
4,560.00	6.31	119.16	4,542.01	-141.15	-138.59	277.35	310.05	116.55	441,726.68	813,734.68
4,570.00	6.48	118.03	4,551.95	-141.70	-139.13	278.32	311.16	116.56	441,726.14	813,735.65
4,580.00	6.49	118.15	4,561.88	-142.24	-139.66	279.32	312.29	116.56	441,725.61	813,736.65
4,590.00	6.61	119.22	4,571.82	-142.79	-140.21	280.32	313.43	116.57	441,725.06	813,737.65
4,600.00	6.67	119.76	4,581.75	-143.37	-140.78	281.33	314.58	116.58	441,724.49	813,738.66
4,610.00	6.76	119.26	4,591.68	-143.96	-141.35	282.35	315.75	116.59	441,723.92	813,739.68



ProDirectional Survey Report



Company: Marathon Oil
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Site: Will Kane 15 WA Fee
Well: No. 11H
Wellbore: OH
Design: MWD-100'-17387', PTB: 17444'

Local Co-ordinate Reference: Well No. 11H
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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)
4,890.00	7.05	113.71	4,869.18	-162.22	-159.31	314.95	352.95	116.83	441,705.96	813,772.28
4,900.00	6.87	113.06	4,879.11	-162.71	-159.79	316.07	354.16	116.82	441,705.48	813,773.40
4,910.00	6.79	113.14	4,889.04	-163.19	-160.26	317.16	355.35	116.81	441,705.01	813,774.49
4,920.00	6.78	112.97	4,898.97	-163.66	-160.72	318.25	356.53	116.79	441,704.55	813,775.58
4,930.00	6.81	111.83	4,908.90	-164.12	-161.17	319.34	357.71	116.78	441,704.10	813,776.67
4,940.00	6.85	113.10	4,918.83	-164.58	-161.63	320.44	358.89	116.77	441,703.64	813,777.77
4,950.00	6.84	113.24	4,928.75	-165.06	-162.10	321.54	360.08	116.75	441,703.17	813,778.87
4,960.00	6.84	113.30	4,938.68	-165.54	-162.57	322.63	361.27	116.74	441,702.70	813,779.96
4,970.00	6.91	112.64	4,948.61	-166.02	-163.03	323.73	362.47	116.73	441,702.24	813,781.06
4,980.00	6.91	112.25	4,958.54	-166.49	-163.49	324.84	363.67	116.72	441,701.78	813,782.17
4,990.00	7.00	111.91	4,968.46	-166.96	-163.95	325.97	364.87	116.70	441,701.32	813,783.30
5,000.00	7.06	111.98	4,978.39	-167.42	-164.40	327.10	366.09	116.68	441,700.87	813,784.43
5,010.00	7.06	112.16	4,988.31	-167.90	-164.87	328.24	367.32	116.67	441,700.40	813,785.57
5,020.00	7.11	112.07	4,998.24	-168.37	-165.33	329.38	368.55	116.65	441,699.94	813,786.71
5,030.00	7.27	112.80	5,008.16	-168.86	-165.81	330.54	369.80	116.64	441,699.46	813,787.87
5,040.00	7.35	112.23	5,018.08	-169.36	-166.30	331.72	371.07	116.63	441,698.97	813,789.05
5,050.00	7.42	112.09	5,027.99	-169.85	-166.78	332.91	372.35	116.61	441,698.49	813,790.24
5,060.00	7.55	111.87	5,037.91	-170.35	-167.27	334.11	373.65	116.59	441,698.00	813,791.44
5,070.00	7.56	112.30	5,047.82	-170.86	-167.76	335.33	374.96	116.58	441,697.51	813,792.66
5,080.00	7.66	111.75	5,057.73	-171.37	-168.26	336.56	376.28	116.56	441,697.01	813,793.89
5,090.00	7.66	110.67	5,067.65	-171.86	-168.74	337.80	377.60	116.54	441,696.53	813,795.13
5,100.00	7.94	109.28	5,077.55	-172.33	-169.20	339.08	378.95	116.52	441,696.07	813,796.41
5,110.00	7.91	108.88	5,087.46	-172.80	-169.66	340.38	380.32	116.49	441,695.61	813,797.71
5,120.00	8.00	108.09	5,097.36	-173.25	-170.09	341.69	381.69	116.46	441,695.18	813,799.02
5,130.00	8.10	106.84	5,107.26	-173.68	-170.51	343.03	383.07	116.43	441,694.76	813,800.36
5,140.00	8.18	106.35	5,117.16	-174.10	-170.92	344.39	384.47	116.40	441,694.35	813,801.72
5,150.00	8.43	106.42	5,127.06	-174.52	-171.33	345.77	385.89	116.36	441,693.94	813,803.10



ProDirectional Survey Report



Company: Marathon Oil
Project: Lea County, NM(NAD 83)
Site: Will Kane 15 WA Fee
Well: No. 11H
Wellbore: OH
Design: MWD-100'-17387', PTB: 17444'

Local Co-ordinate Reference: Well No. 11H
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)
5,430.00	6.54	120.70	5,404.14	-189.65	-186.12	382.88	425.72	115.92	441,679.15	813,840.21
5,440.00	6.35	120.95	5,414.08	-190.24	-186.69	383.84	426.83	115.94	441,678.58	813,841.17
5,450.00	6.31	122.05	5,424.02	-190.82	-187.27	384.78	427.93	115.95	441,678.00	813,842.11
5,460.00	6.36	122.07	5,433.96	-191.41	-187.85	385.72	429.03	115.97	441,677.42	813,843.05
5,470.00	6.21	122.96	5,443.90	-192.01	-188.44	386.64	430.12	115.98	441,676.83	813,843.97
5,480.00	6.08	122.91	5,453.84	-192.60	-189.02	387.54	431.18	116.00	441,676.25	813,844.87
5,490.00	6.00	122.65	5,463.78	-193.18	-189.59	388.42	432.22	116.02	441,675.68	813,845.75
5,500.00	6.00	122.21	5,473.73	-193.75	-190.16	389.30	433.26	116.03	441,675.11	813,846.63
5,510.00	5.91	122.13	5,483.67	-194.31	-190.71	390.18	434.29	116.05	441,674.56	813,847.51
5,520.00	5.87	121.69	5,493.62	-194.86	-191.25	391.05	435.32	116.06	441,674.02	813,848.38
5,530.00	5.93	121.18	5,503.57	-195.40	-191.79	391.93	436.34	116.07	441,673.48	813,849.26
5,540.00	5.98	118.25	5,513.51	-195.93	-192.30	392.83	437.37	116.08	441,672.97	813,850.16
5,550.00	6.19	112.46	5,523.46	-196.39	-192.75	393.79	438.43	116.08	441,672.52	813,851.12
5,560.00	6.18	109.25	5,533.40	-196.78	-193.14	394.80	439.51	116.07	441,672.13	813,852.13
5,570.00	6.23	105.42	5,543.34	-197.11	-193.46	395.83	440.57	116.05	441,671.81	813,853.16
5,580.00	6.28	103.93	5,553.28	-197.40	-193.73	396.88	441.64	116.02	441,671.54	813,854.21
5,590.00	6.28	103.66	5,563.22	-197.67	-193.99	397.94	442.71	115.99	441,671.28	813,855.27
5,600.00	6.51	102.27	5,573.16	-197.93	-194.24	399.03	443.80	115.96	441,671.03	813,856.36
5,610.00	6.45	102.13	5,583.10	-198.18	-194.48	400.13	444.89	115.92	441,670.79	813,857.46
5,620.00	6.35	102.47	5,593.03	-198.42	-194.72	401.22	445.97	115.89	441,670.55	813,858.55
5,630.00	6.33	102.60	5,602.97	-198.67	-194.96	402.30	447.05	115.86	441,670.31	813,859.63
5,640.00	6.30	102.31	5,612.91	-198.92	-195.20	403.37	448.12	115.82	441,670.07	813,860.70
5,650.00	6.32	102.02	5,622.85	-199.16	-195.43	404.45	449.19	115.79	441,669.84	813,861.78
5,660.00	6.42	101.74	5,632.79	-199.40	-195.66	405.53	450.26	115.76	441,669.61	813,862.86
5,670.00	6.39	101.73	5,642.73	-199.64	-195.88	406.62	451.35	115.72	441,669.39	813,863.95
5,680.00	6.50	101.27	5,652.66	-199.87	-196.11	407.72	452.44	115.69	441,669.16	813,865.05
5,690.00	6.41	102.29	5,662.60	-200.11	-196.34	408.82	453.53	115.65	441,668.93	813,866.15

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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)
5,970.00	6.23	100.57	5,940.88	-206.53	-202.47	439.23	483.65	114.75	441,662.80	813,896.56
5,980.00	6.03	101.42	5,950.82	-206.74	-202.68	440.28	484.69	114.72	441,662.59	813,897.61
5,990.00	6.04	101.28	5,960.76	-206.96	-202.88	441.31	485.71	114.69	441,662.39	813,898.64
6,000.00	6.15	99.98	5,970.71	-207.16	-203.08	442.35	486.74	114.66	441,662.19	813,899.68
6,010.00	6.17	99.41	5,980.65	-207.35	-203.26	443.41	487.78	114.63	441,662.01	813,900.74
6,020.00	5.97	99.88	5,990.59	-207.54	-203.44	444.45	488.80	114.59	441,661.83	813,901.78
6,030.00	5.95	100.33	6,000.54	-207.73	-203.62	445.47	489.80	114.56	441,661.65	813,902.80
6,040.00	6.03	99.91	6,010.49	-207.92	-203.80	446.50	490.81	114.53	441,661.47	813,903.83
6,050.00	6.04	99.22	6,020.43	-208.11	-203.98	447.54	491.83	114.50	441,661.29	813,904.87
6,060.00	5.93	99.07	6,030.38	-208.28	-204.14	448.57	492.83	114.47	441,661.13	813,905.90
6,070.00	5.88	98.83	6,040.32	-208.45	-204.30	449.58	493.83	114.44	441,660.97	813,906.91
6,080.00	5.86	98.28	6,050.27	-208.62	-204.46	450.59	494.81	114.41	441,660.81	813,907.92
6,090.00	6.13	97.10	6,060.22	-208.76	-204.60	451.63	495.81	114.37	441,660.67	813,908.96
6,100.00	6.11	98.00	6,070.16	-208.91	-204.74	452.69	496.83	114.34	441,660.53	813,910.02
6,110.00	5.99	97.44	6,080.10	-209.07	-204.88	453.73	497.84	114.30	441,660.39	813,911.06
6,120.00	5.98	96.80	6,090.05	-209.20	-205.01	454.76	498.84	114.27	441,660.26	813,912.09
6,130.00	6.06	96.56	6,099.99	-209.34	-205.13	455.81	499.84	114.23	441,660.14	813,913.14
6,140.00	6.02	96.09	6,109.94	-209.46	-205.24	456.85	500.84	114.19	441,660.03	813,914.18
6,150.00	5.93	95.72	6,119.88	-209.58	-205.35	457.89	501.83	114.16	441,659.92	813,915.22
6,160.00	5.91	95.86	6,129.83	-209.69	-205.46	458.91	502.81	114.12	441,659.81	813,916.24
6,170.00	5.91	95.34	6,139.78	-209.80	-205.56	459.94	503.78	114.08	441,659.71	813,917.27
6,180.00	6.09	94.35	6,149.72	-209.90	-205.64	460.98	504.77	114.04	441,659.63	813,918.31
6,190.00	6.12	93.94	6,159.67	-209.99	-205.72	462.04	505.77	114.00	441,659.55	813,919.37
6,200.00	6.04	94.18	6,169.61	-210.07	-205.80	463.10	506.77	113.96	441,659.47	813,920.43
6,210.00	6.01	94.12	6,179.55	-210.16	-205.87	464.14	507.75	113.92	441,659.40	813,921.47
6,220.00	6.13	93.75	6,189.50	-210.24	-205.94	465.20	508.75	113.88	441,659.33	813,922.53
6,230.00	6.12	93.29	6,199.44	-210.31	-206.01	466.26	509.75	113.84	441,659.26	813,923.59

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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)
6,510.00	6.43	96.47	6,477.95	-212.82	-208.25	495.00	537.02	112.82	441,657.02	813,952.33
6,520.00	6.61	97.16	6,487.89	-212.96	-208.38	496.13	538.11	112.78	441,656.89	813,953.46
6,530.00	6.78	97.10	6,497.82	-213.12	-208.53	497.29	539.24	112.75	441,656.74	813,954.62
6,540.00	6.96	96.74	6,507.75	-213.27	-208.67	498.47	540.39	112.72	441,656.60	813,955.80
6,550.00	6.93	97.31	6,517.67	-213.43	-208.82	499.67	541.55	112.68	441,656.45	813,957.00
6,560.00	6.94	98.70	6,527.60	-213.61	-208.99	500.87	542.72	112.65	441,656.28	813,958.20
6,570.00	6.95	98.94	6,537.53	-213.81	-209.17	502.06	543.89	112.62	441,656.10	813,959.39
6,580.00	6.91	99.41	6,547.45	-214.01	-209.36	503.26	545.07	112.59	441,655.91	813,960.59
6,590.00	6.98	98.43	6,557.38	-214.21	-209.55	504.45	546.24	112.56	441,655.72	813,961.78
6,600.00	7.11	97.63	6,567.30	-214.39	-209.72	505.66	547.43	112.53	441,655.55	813,962.99
6,610.00	7.17	98.35	6,577.23	-214.58	-209.90	506.90	548.63	112.49	441,655.37	813,964.23
6,620.00	7.28	99.18	6,587.15	-214.78	-210.09	508.14	549.86	112.46	441,655.18	813,965.47
6,630.00	7.69	100.38	6,597.06	-215.01	-210.31	509.42	551.13	112.43	441,654.96	813,966.75
6,640.00	7.82	102.28	6,606.97	-215.29	-210.57	510.74	552.45	112.41	441,654.70	813,968.07
6,650.00	8.03	104.97	6,616.87	-215.63	-210.90	512.08	553.81	112.38	441,654.37	813,969.41
6,660.00	8.12	106.05	6,626.78	-216.01	-211.27	513.44	555.21	112.37	441,654.00	813,970.77
6,670.00	8.13	106.68	6,636.68	-216.43	-211.67	514.79	556.61	112.35	441,653.60	813,972.12
6,680.00	8.18	107.08	6,646.57	-216.85	-212.08	516.15	558.03	112.34	441,653.19	813,973.48
6,690.00	8.35	106.00	6,656.47	-217.27	-212.49	517.53	559.46	112.32	441,652.78	813,974.86
6,700.00	8.35	106.15	6,666.36	-217.69	-212.90	518.92	560.90	112.31	441,652.37	813,976.25
6,710.00	8.45	105.96	6,676.26	-218.10	-213.30	520.33	562.35	112.29	441,651.97	813,977.66
6,720.00	8.45	105.88	6,686.15	-218.52	-213.70	521.74	563.81	112.27	441,651.57	813,979.07
6,730.00	8.31	106.34	6,696.04	-218.94	-214.11	523.14	565.26	112.26	441,651.16	813,980.47
6,740.00	8.13	106.57	6,705.94	-219.35	-214.51	524.51	566.68	112.24	441,650.76	813,981.84
6,750.00	8.04	106.82	6,715.84	-219.77	-214.92	525.86	568.08	112.23	441,650.35	813,983.19
6,760.00	8.12	106.35	6,725.74	-220.18	-215.32	527.21	569.48	112.22	441,649.95	813,984.54
6,770.00	8.19	106.14	6,735.64	-220.59	-215.71	528.57	570.89	112.20	441,649.56	813,985.90

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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)
7,050.00	9.10	113.67	7,012.39	-236.08	-230.83	568.23	613.32	112.11	441,634.44	814,025.56
7,060.00	9.07	113.71	7,022.26	-236.72	-231.46	569.68	614.90	112.11	441,633.81	814,027.01
7,070.00	9.15	113.62	7,032.13	-237.37	-232.10	571.13	616.49	112.12	441,633.17	814,028.46
7,080.00	9.18	113.48	7,042.01	-238.02	-232.74	572.59	618.08	112.12	441,632.53	814,029.92
7,090.00	9.15	113.50	7,051.88	-238.67	-233.37	574.05	619.67	112.12	441,631.90	814,031.38
7,100.00	9.14	113.08	7,061.75	-239.31	-234.00	575.51	621.26	112.13	441,631.27	814,032.84
7,110.00	9.12	113.08	7,071.63	-239.95	-234.62	576.97	622.85	112.13	441,630.65	814,034.30
7,120.00	9.03	113.89	7,081.50	-240.59	-235.25	578.41	624.42	112.13	441,630.02	814,035.74
7,130.00	9.00	113.57	7,091.38	-241.23	-235.88	579.85	625.99	112.14	441,629.39	814,037.18
7,140.00	9.04	111.62	7,101.25	-241.85	-236.48	581.29	627.58	112.14	441,628.79	814,038.62
7,150.00	9.00	111.58	7,111.13	-242.44	-237.06	582.75	629.12	112.14	441,628.21	814,040.08
7,160.00	9.08	111.61	7,121.01	-243.03	-237.64	584.21	630.70	112.13	441,627.63	814,041.54
7,170.00	9.17	110.80	7,130.88	-243.62	-238.21	585.69	632.28	112.13	441,627.06	814,043.02
7,180.00	9.07	110.49	7,140.75	-244.19	-238.77	587.17	633.87	112.13	441,626.50	814,044.50
7,190.00	8.91	110.99	7,150.63	-244.76	-239.32	588.64	635.43	112.13	441,625.95	814,045.97
7,200.00	8.86	111.24	7,160.51	-245.33	-239.88	590.08	636.97	112.12	441,625.39	814,047.41
7,210.00	9.02	111.18	7,170.39	-245.90	-240.44	591.53	638.53	112.12	441,624.83	814,048.86
7,220.00	9.08	111.15	7,180.26	-246.48	-241.01	592.99	640.10	112.12	441,624.26	814,050.32
7,230.00	8.98	111.31	7,190.14	-247.07	-241.58	594.46	641.67	112.12	441,623.69	814,051.79
7,240.00	8.92	111.43	7,200.02	-247.65	-242.14	595.90	643.22	112.11	441,623.13	814,053.23
7,250.00	8.90	111.67	7,209.90	-248.23	-242.71	597.35	644.77	112.11	441,622.56	814,054.68
7,260.00	8.91	110.84	7,219.78	-248.80	-243.28	598.79	646.32	112.11	441,621.99	814,056.12
7,270.00	8.65	110.51	7,229.66	-249.36	-243.81	600.22	647.85	112.11	441,621.46	814,057.55
7,280.00	8.41	110.55	7,239.55	-249.89	-244.33	601.60	649.33	112.10	441,620.94	814,058.93
7,290.00	8.35	110.57	7,249.44	-250.41	-244.85	602.97	650.79	112.10	441,620.42	814,060.30
7,300.00	8.56	108.94	7,259.33	-250.92	-245.34	604.35	652.25	112.10	441,619.93	814,061.68
7,310.00	8.65	108.57	7,269.22	-251.42	-245.82	605.77	653.75	112.09	441,619.45	814,063.10



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7,590.00	8.39	121.98	7,546.41	-266.62	-260.69	642.28	693.17	112.09	441,604.58	814,099.61
7,600.00	8.38	122.37	7,556.31	-267.41	-261.46	643.52	694.60	112.11	441,603.81	814,100.85
7,610.00	8.37	122.98	7,566.20	-268.20	-262.25	644.74	696.04	112.13	441,603.02	814,102.07
7,620.00	8.35	122.86	7,576.09	-269.00	-263.04	645.96	697.46	112.16	441,602.23	814,103.29
7,630.00	8.43	122.56	7,585.99	-269.80	-263.83	647.19	698.90	112.18	441,601.44	814,104.52
7,640.00	8.39	122.82	7,595.88	-270.61	-264.62	648.42	700.34	112.20	441,600.65	814,105.75
7,650.00	8.42	123.00	7,605.77	-271.41	-265.41	649.65	701.77	112.22	441,599.86	814,106.98
7,660.00	8.50	122.35	7,615.66	-272.22	-266.21	650.89	703.22	112.24	441,599.06	814,108.22
7,670.00	8.57	121.45	7,625.55	-273.01	-266.99	652.15	704.68	112.26	441,598.28	814,109.48
7,680.00	8.45	121.63	7,635.44	-273.80	-267.77	653.41	706.14	112.28	441,597.50	814,110.74
7,690.00	8.43	121.93	7,645.33	-274.58	-268.54	654.65	707.59	112.30	441,596.73	814,111.98
7,700.00	8.48	122.00	7,655.22	-275.37	-269.32	655.90	709.04	112.32	441,595.95	814,113.23
7,710.00	8.53	121.74	7,665.11	-276.17	-270.10	657.16	710.50	112.34	441,595.17	814,114.49
7,720.00	8.39	121.86	7,675.01	-276.95	-270.87	658.41	711.95	112.36	441,594.40	814,115.74
7,730.00	8.32	122.50	7,684.90	-277.74	-271.65	659.64	713.38	112.38	441,593.62	814,116.97
7,740.00	8.33	122.84	7,694.79	-278.53	-272.43	660.86	714.81	112.40	441,592.84	814,118.19
7,750.00	8.29	123.06	7,704.69	-279.33	-273.21	662.07	716.23	112.42	441,592.06	814,119.40
7,760.00	8.34	122.08	7,714.58	-280.12	-273.99	663.29	717.65	112.44	441,591.28	814,120.62
7,770.00	8.29	121.78	7,724.48	-280.89	-274.76	664.52	719.08	112.46	441,590.51	814,121.85
7,780.00	8.26	122.45	7,734.37	-281.67	-275.52	665.74	720.50	112.48	441,589.75	814,123.07
7,790.00	8.32	122.55	7,744.27	-282.46	-276.30	666.95	721.92	112.50	441,588.97	814,124.28
7,800.00	8.39	122.32	7,754.16	-283.25	-277.08	668.18	723.35	112.52	441,588.19	814,125.51
7,810.00	8.34	122.48	7,764.06	-284.04	-277.86	669.41	724.78	112.54	441,587.41	814,126.74
7,820.00	8.34	122.89	7,773.95	-284.83	-278.64	670.63	726.21	112.56	441,586.63	814,127.96
7,830.00	8.37	122.91	7,783.85	-285.63	-279.43	671.85	727.64	112.58	441,585.84	814,129.18
7,840.00	8.45	122.72	7,793.74	-286.44	-280.22	673.08	729.08	112.60	441,585.05	814,130.41
7,850.00	8.46	122.19	7,803.63	-287.24	-281.01	674.32	730.53	112.62	441,584.26	814,131.65



ProDirectional Survey Report



Company: Marathon Oil
Project: Lea County, NM(NAD 83)
Site: Will Kane 15 WA Fee
Well: No. 11H
Wellbore: OH
Design: MWD-100'-17387', PTB: 17444'

Local Co-ordinate Reference: Well No. 11H
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)
8,130.00	6.96	122.29	8,081.05	-308.60	-302.09	705.76	767.69	113.17	441,563.18	814,163.09
8,140.00	6.80	121.62	8,090.98	-309.25	-302.72	706.77	768.87	113.19	441,562.55	814,164.10
8,150.00	6.83	120.42	8,100.91	-309.87	-303.33	707.79	770.05	113.20	441,561.94	814,165.12
8,160.00	6.95	119.74	8,110.84	-310.48	-303.93	708.83	771.24	113.21	441,561.34	814,166.16
8,170.00	6.78	120.12	8,120.76	-311.08	-304.53	709.86	772.43	113.22	441,560.74	814,167.19
8,180.00	6.57	119.44	8,130.70	-311.67	-305.11	710.87	773.58	113.23	441,560.16	814,168.20
8,190.00	6.51	119.37	8,140.63	-312.24	-305.67	711.86	774.71	113.24	441,559.60	814,169.19
8,200.00	6.56	119.09	8,150.57	-312.80	-306.22	712.86	775.85	113.25	441,559.05	814,170.19
8,210.00	6.60	119.29	8,160.50	-313.37	-306.78	713.86	776.99	113.26	441,558.49	814,171.19
8,220.00	6.55	119.46	8,170.43	-313.94	-307.34	714.86	778.12	113.26	441,557.93	814,172.19
8,230.00	6.52	119.86	8,180.37	-314.51	-307.91	715.84	779.26	113.27	441,557.36	814,173.17
8,240.00	6.49	119.62	8,190.31	-315.09	-308.47	716.83	780.38	113.28	441,556.80	814,174.16
8,250.00	6.50	119.42	8,200.24	-315.65	-309.03	717.81	781.51	113.29	441,556.24	814,175.14
8,260.00	6.44	120.02	8,210.18	-316.22	-309.58	718.79	782.63	113.30	441,555.69	814,176.12
8,270.00	6.31	120.96	8,220.12	-316.79	-310.15	719.75	783.73	113.31	441,555.12	814,177.08
8,280.00	6.28	121.23	8,230.06	-317.37	-310.71	720.69	784.81	113.32	441,554.56	814,178.02
8,290.00	6.32	120.48	8,240.00	-317.94	-311.28	721.63	785.90	113.33	441,553.99	814,178.96
8,300.00	6.24	118.81	8,249.94	-318.49	-311.82	722.58	786.99	113.34	441,553.45	814,179.91
8,310.00	5.97	116.21	8,259.88	-318.99	-312.31	723.52	788.05	113.35	441,552.96	814,180.85
8,320.00	5.81	115.36	8,269.83	-319.44	-312.76	724.45	789.07	113.35	441,552.51	814,181.78
8,330.00	5.87	113.91	8,279.77	-319.88	-313.18	725.37	790.09	113.35	441,552.09	814,182.70
8,340.00	6.02	112.66	8,289.72	-320.29	-313.59	726.32	791.13	113.35	441,551.68	814,183.65
8,350.00	5.93	112.46	8,299.67	-320.70	-313.99	727.28	792.17	113.35	441,551.28	814,184.61
8,360.00	5.83	111.66	8,309.61	-321.10	-314.37	728.23	793.19	113.35	441,550.90	814,185.56
8,370.00	5.82	111.58	8,319.56	-321.48	-314.75	729.18	794.21	113.35	441,550.52	814,186.51
8,380.00	5.88	111.73	8,329.51	-321.86	-315.12	730.12	795.23	113.35	441,550.15	814,187.45
8,390.00	5.86	112.59	8,339.46	-322.26	-315.51	731.07	796.25	113.34	441,549.76	814,188.40



ProDirectional Survey Report



Company: Marathon Oil
Project: Lea County, NM(NAD 83)
Site: Will Kane 15 WA Fee
Well: No. 11H
Wellbore: OH
Design: MWD-100'-17387', PTB: 17444'

Local Co-ordinate Reference: Well No. 11H
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)
8,670.00	6.52	112.99	8,617.42	-335.49	-328.45	762.14	829.90	113.31	441,536.82	814,219.47
8,680.00	6.63	111.05	8,627.35	-335.92	-328.88	763.20	831.04	113.31	441,536.39	814,220.53
8,690.00	6.97	108.33	8,637.28	-336.33	-329.28	764.31	832.22	113.31	441,535.99	814,221.64
8,700.00	7.19	106.81	8,647.21	-336.72	-329.65	765.49	833.45	113.30	441,535.62	814,222.82
8,710.00	7.16	106.37	8,657.13	-337.08	-330.01	766.68	834.69	113.29	441,535.26	814,224.01
8,720.00	7.15	105.61	8,667.05	-337.44	-330.35	767.88	835.93	113.28	441,534.92	814,225.21
8,730.00	7.13	105.17	8,676.97	-337.78	-330.68	769.08	837.16	113.27	441,534.59	814,226.41
8,740.00	7.24	104.97	8,686.89	-338.11	-331.00	770.29	838.39	113.25	441,534.27	814,227.62
8,750.00	7.20	105.05	8,696.82	-338.45	-331.33	771.50	839.64	113.24	441,533.94	814,228.83
8,760.00	6.99	104.86	8,706.74	-338.78	-331.65	772.69	840.86	113.23	441,533.62	814,230.02
8,770.00	6.93	104.77	8,716.67	-339.10	-331.96	773.87	842.06	113.22	441,533.31	814,231.20
8,780.00	6.98	104.40	8,726.59	-339.42	-332.26	775.04	843.26	113.21	441,533.01	814,232.37
8,790.00	6.93	104.26	8,736.52	-339.73	-332.56	776.21	844.45	113.19	441,532.71	814,233.54
8,800.00	6.76	104.22	8,746.45	-340.03	-332.86	777.37	845.63	113.18	441,532.41	814,234.70
8,810.00	6.60	104.11	8,756.38	-340.33	-333.14	778.49	846.78	113.17	441,532.13	814,235.82
8,820.00	6.53	104.26	8,766.31	-340.62	-333.42	779.60	847.91	113.16	441,531.85	814,236.93
8,830.00	6.63	103.75	8,776.25	-340.90	-333.70	780.71	849.04	113.14	441,531.57	814,238.04
8,840.00	6.37	104.56	8,786.18	-341.19	-333.97	781.81	850.16	113.13	441,531.30	814,239.14
8,850.00	6.18	105.07	8,796.12	-341.48	-334.25	782.87	851.24	113.12	441,531.02	814,240.20
8,860.00	6.13	104.99	8,806.07	-341.77	-334.53	783.90	852.30	113.11	441,530.74	814,241.23
8,870.00	6.11	104.39	8,816.01	-342.05	-334.80	784.94	853.36	113.10	441,530.47	814,242.27
8,880.00	6.10	104.42	8,825.95	-342.32	-335.07	785.97	854.41	113.09	441,530.20	814,243.30
8,890.00	5.97	105.55	8,835.90	-342.60	-335.34	786.98	855.45	113.08	441,529.93	814,244.31
8,900.00	5.87	105.50	8,845.84	-342.89	-335.61	787.98	856.47	113.07	441,529.66	814,245.31
8,910.00	5.87	105.55	8,855.79	-343.17	-335.89	788.96	857.48	113.06	441,529.38	814,246.29
8,920.00	5.91	105.52	8,865.74	-343.46	-336.16	789.95	858.50	113.05	441,529.11	814,247.28
8,930.00	5.86	105.31	8,875.69	-343.74	-336.44	790.94	859.52	113.04	441,528.83	814,248.27



ProDirectional Survey Report



Company: Marathon Oil
Project: Lea County, NM(NAD 83)
Site: Will Kane 15 WA Fee
Well: No. 11H
Wellbore: OH
Design: MWD-100'-17387', PTB: 17444'

Local Co-ordinate Reference: Well No. 11H
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)
9,210.00	8.28	107.36	9,153.41	-353.90	-346.28	824.61	894.37	112.78	441,518.99	814,281.94
9,220.00	8.20	107.14	9,163.31	-354.34	-346.71	825.98	895.80	112.77	441,518.56	814,283.31
9,230.00	8.24	106.94	9,173.21	-354.77	-347.13	827.35	897.22	112.76	441,518.14	814,284.68
9,240.00	8.17	107.12	9,183.11	-355.20	-347.55	828.72	898.64	112.75	441,517.72	814,286.05
9,250.00	8.04	107.96	9,193.01	-355.63	-347.97	830.06	900.05	112.74	441,517.30	814,287.39
9,260.00	7.92	108.32	9,202.91	-356.08	-348.40	831.38	901.43	112.74	441,516.87	814,288.71
9,270.00	7.92	107.98	9,212.81	-356.52	-348.83	832.69	902.80	112.73	441,516.44	814,290.02
9,280.00	7.97	107.37	9,222.72	-356.95	-349.25	834.01	904.18	112.72	441,516.02	814,291.34
9,290.00	7.70	107.92	9,232.62	-357.38	-349.67	835.30	905.54	112.71	441,515.60	814,292.63
9,300.00	7.47	108.12	9,242.54	-357.80	-350.07	836.56	906.85	112.71	441,515.20	814,293.89
9,310.00	7.34	108.01	9,252.45	-358.21	-350.47	837.78	908.14	112.70	441,514.80	814,295.11
9,320.00	7.29	107.92	9,262.37	-358.61	-350.87	839.00	909.41	112.69	441,514.40	814,296.33
9,330.00	7.21	107.87	9,272.29	-359.01	-351.25	840.20	910.66	112.69	441,514.02	814,297.53
9,340.00	6.95	107.94	9,282.22	-359.40	-351.63	841.37	911.89	112.68	441,513.64	814,298.70
9,350.00	6.78	107.65	9,292.14	-359.78	-352.00	842.51	913.08	112.68	441,513.27	814,299.84
9,360.00	6.79	107.19	9,302.07	-360.14	-352.35	843.63	914.26	112.67	441,512.92	814,300.96
9,370.00	6.80	107.10	9,312.00	-360.50	-352.70	844.77	915.44	112.66	441,512.57	814,302.10
9,380.00	6.62	108.30	9,321.93	-360.86	-353.06	845.88	916.60	112.65	441,512.21	814,303.21
9,390.00	6.44	109.08	9,331.87	-361.24	-353.42	846.96	917.74	112.65	441,511.85	814,304.29
9,400.00	6.40	109.01	9,341.81	-361.61	-353.78	848.01	918.85	112.65	441,511.49	814,305.34
9,410.00	6.36	109.00	9,351.75	-361.99	-354.15	849.06	919.96	112.64	441,511.12	814,306.39
9,420.00	6.37	108.44	9,361.68	-362.35	-354.50	850.11	921.07	112.64	441,510.77	814,307.44
9,430.00	6.17	109.40	9,371.62	-362.71	-354.86	851.15	922.16	112.63	441,510.41	814,308.48
9,440.00	5.96	108.89	9,381.57	-363.07	-355.20	852.14	923.21	112.63	441,510.07	814,309.47
9,450.00	5.98	108.15	9,391.51	-363.41	-355.53	853.13	924.25	112.62	441,509.74	814,310.46
9,460.00	5.99	107.08	9,401.46	-363.73	-355.85	854.12	925.29	112.62	441,509.42	814,311.45
9,470.00	5.68	108.58	9,411.41	-364.05	-356.16	855.09	926.30	112.61	441,509.11	814,312.42

Company: Marathon Oil
Project: Lea County, NM(NAD 83)
Site: Will Kane 15 WA Fee
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Design: MWD-100'-17387', PTB: 17444'

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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)
9,750.00	3.24	123.42	9,690.71	-372.34	-364.29	872.69	945.67	112.66	441,500.98	814,330.02
9,760.00	3.26	122.77	9,700.70	-372.66	-364.60	873.17	946.23	112.66	441,500.67	814,330.50
9,770.00	3.25	122.61	9,710.68	-372.97	-364.90	873.64	946.79	112.67	441,500.37	814,330.97
9,780.00	3.24	122.51	9,720.66	-373.28	-365.21	874.12	947.35	112.68	441,500.06	814,331.45
9,790.00	3.23	122.15	9,730.65	-373.58	-365.51	874.60	947.90	112.68	441,499.76	814,331.93
9,800.00	3.16	122.01	9,740.63	-373.88	-365.80	875.07	948.45	112.69	441,499.47	814,332.40
9,810.00	3.08	122.75	9,750.62	-374.18	-366.10	875.53	948.99	112.69	441,499.17	814,332.86
9,820.00	3.02	122.85	9,760.60	-374.47	-366.38	875.98	949.51	112.70	441,498.89	814,333.31
9,830.00	2.97	123.03	9,770.59	-374.76	-366.67	876.42	950.03	112.70	441,498.60	814,333.75
9,840.00	2.83	123.06	9,780.58	-375.04	-366.94	876.84	950.52	112.71	441,498.33	814,334.17
9,850.00	2.75	124.50	9,790.56	-375.31	-367.21	877.25	951.00	112.71	441,498.06	814,334.58
9,860.00	2.73	124.87	9,800.55	-375.59	-367.49	877.64	951.47	112.72	441,497.78	814,334.97
9,870.00	2.77	124.31	9,810.54	-375.86	-367.76	878.03	951.94	112.73	441,497.51	814,335.36
9,880.00	2.80	124.18	9,820.53	-376.14	-368.03	878.43	952.42	112.73	441,497.24	814,335.76
9,890.00	2.75	124.56	9,830.52	-376.42	-368.31	878.83	952.89	112.74	441,496.96	814,336.16
9,900.00	2.70	125.15	9,840.51	-376.69	-368.58	879.22	953.35	112.74	441,496.69	814,336.55
9,910.00	2.73	125.46	9,850.50	-376.97	-368.85	879.61	953.82	112.75	441,496.42	814,336.94
9,920.00	2.78	125.44	9,860.48	-377.25	-369.13	880.00	954.29	112.76	441,496.14	814,337.33
9,930.00	2.78	124.45	9,870.47	-377.54	-369.41	880.40	954.76	112.76	441,495.86	814,337.73
9,940.00	2.76	124.68	9,880.46	-377.81	-369.68	880.80	955.23	112.77	441,495.59	814,338.13
9,950.00	2.72	124.10	9,890.45	-378.09	-369.95	881.19	955.70	112.77	441,495.32	814,338.52
9,960.00	2.73	123.80	9,900.44	-378.36	-370.22	881.59	956.17	112.78	441,495.05	814,338.92
9,970.00	2.72	122.36	9,910.43	-378.62	-370.48	881.99	956.64	112.78	441,494.79	814,339.32
9,980.00	2.61	120.09	9,920.42	-378.86	-370.72	882.38	957.10	112.79	441,494.55	814,339.71
9,990.00	2.55	120.80	9,930.41	-379.10	-370.95	882.77	957.54	112.79	441,494.32	814,340.10
10,000.00	2.54	119.82	9,940.40	-379.32	-371.17	883.15	957.98	112.80	441,494.10	814,340.48
10,010.00	2.53	119.82	9,950.39	-379.55	-371.39	883.54	958.42	112.80	441,493.88	814,340.87

Company: Marathon Oil
Project: Lea County, NM(NAD 83)
Site: Will Kane 15 WA Fee
Well: No. 11H
Wellbore: OH
Design: MWD-100'-17387', PTB: 17444'

Local Co-ordinate Reference: Well No. 11H
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)
10,290.00	1.35	102.16	10,230.22	-383.63	-375.39	892.27	968.03	112.82	441,489.88	814,349.60
10,300.00	1.34	102.64	10,240.21	-383.68	-375.44	892.50	968.26	112.81	441,489.83	814,349.83
10,310.00	1.27	101.35	10,250.21	-383.73	-375.49	892.73	968.48	112.81	441,489.78	814,350.06
10,320.00	1.18	97.89	10,260.21	-383.77	-375.53	892.94	968.69	112.81	441,489.74	814,350.27
10,330.00	1.04	97.16	10,270.21	-383.80	-375.55	893.13	968.87	112.81	441,489.72	814,350.46
10,340.00	0.89	90.93	10,280.21	-383.81	-375.56	893.30	969.03	112.80	441,489.71	814,350.63
10,350.00	0.82	90.72	10,290.20	-383.82	-375.57	893.45	969.17	112.80	441,489.70	814,350.78
10,360.00	0.74	90.43	10,300.20	-383.82	-375.57	893.58	969.30	112.80	441,489.70	814,350.91
10,370.00	0.58	91.85	10,310.20	-383.82	-375.57	893.70	969.41	112.79	441,489.70	814,351.03
10,380.00	0.46	102.50	10,320.20	-383.83	-375.58	893.79	969.49	112.79	441,489.69	814,351.12
10,390.00	0.51	106.69	10,330.20	-383.85	-375.60	893.87	969.58	112.79	441,489.67	814,351.20
10,400.00	0.44	102.68	10,340.20	-383.88	-375.62	893.95	969.66	112.79	441,489.65	814,351.28
10,410.00	0.35	106.73	10,350.20	-383.89	-375.64	894.02	969.73	112.79	441,489.63	814,351.35
10,420.00	0.29	129.40	10,360.20	-383.92	-375.67	894.06	969.78	112.79	441,489.60	814,351.39
10,430.00	0.32	125.60	10,370.20	-383.95	-375.70	894.11	969.83	112.79	441,489.57	814,351.44
10,440.00	0.33	125.20	10,380.20	-383.99	-375.73	894.15	969.89	112.79	441,489.54	814,351.48
10,450.00	0.31	128.97	10,390.20	-384.02	-375.76	894.20	969.94	112.79	441,489.51	814,351.53
10,460.00	0.30	135.81	10,400.20	-384.06	-375.80	894.24	969.99	112.79	441,489.47	814,351.57
10,470.00	0.34	130.91	10,410.20	-384.09	-375.84	894.28	970.04	112.80	441,489.43	814,351.61
10,480.00	0.40	122.10	10,420.20	-384.13	-375.88	894.33	970.11	112.80	441,489.39	814,351.66
10,490.00	0.62	120.92	10,430.20	-384.18	-375.92	894.40	970.19	112.80	441,489.35	814,351.73
10,500.00	0.75	127.40	10,440.20	-384.25	-375.99	894.50	970.31	112.80	441,489.28	814,351.83
10,510.00	0.96	131.09	10,450.20	-384.34	-376.09	894.62	970.45	112.80	441,489.18	814,351.95
10,520.00	1.10	131.66	10,460.20	-384.46	-376.20	894.75	970.62	112.80	441,489.07	814,352.08
10,530.00	1.07	130.40	10,470.19	-384.59	-376.33	894.90	970.80	112.81	441,488.94	814,352.23
10,540.00	1.04	132.31	10,480.19	-384.71	-376.45	895.03	970.98	112.81	441,488.82	814,352.36
10,550.00	1.04	132.25	10,490.19	-384.84	-376.57	895.17	971.15	112.82	441,488.70	814,352.50

Company: Marathon Oil
Project: Lea County, NM(NAD 83)
Site: Will Kane 15 WA Fee
Well: No. 11H
Wellbore: OH
Design: MWD-100'-17387', PTB: 17444'

Local Co-ordinate Reference: Well No. 11H
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)
10,830.00	1.31	70.41	10,770.12	-384.36	-376.03	901.29	976.59	112.65	441,489.24	814,358.62
10,840.00	1.22	76.84	10,780.11	-384.30	-375.97	901.50	976.76	112.64	441,489.30	814,358.83
10,850.00	1.18	77.67	10,790.11	-384.25	-375.93	901.70	976.93	112.63	441,489.34	814,359.03
10,860.00	1.22	82.85	10,800.11	-384.22	-375.89	901.91	977.11	112.62	441,489.38	814,359.24
10,870.00	1.19	84.63	10,810.11	-384.20	-375.87	902.12	977.29	112.62	441,489.40	814,359.45
10,880.00	1.10	92.13	10,820.10	-384.19	-375.86	902.32	977.47	112.61	441,489.41	814,359.65
10,890.00	1.05	106.04	10,830.10	-384.22	-375.89	902.50	977.65	112.61	441,489.38	814,359.83
10,900.00	1.07	112.01	10,840.10	-384.28	-375.95	902.68	977.84	112.61	441,489.32	814,360.01
10,910.00	1.13	117.01	10,850.10	-384.37	-376.03	902.85	978.03	112.61	441,489.24	814,360.18
10,920.00	1.15	128.44	10,860.10	-384.47	-376.14	903.02	978.22	112.61	441,489.13	814,360.35
10,930.00	1.21	141.77	10,870.10	-384.62	-376.28	903.16	978.41	112.62	441,488.99	814,360.49
10,940.00	1.39	150.33	10,880.09	-384.81	-376.47	903.29	978.60	112.63	441,488.80	814,360.62
10,950.00	1.54	160.21	10,890.09	-385.04	-376.70	903.39	978.79	112.64	441,488.57	814,360.72
10,960.00	1.69	164.32	10,900.09	-385.31	-376.97	903.48	978.97	112.65	441,488.30	814,360.81
10,970.00	1.86	168.09	10,910.08	-385.61	-377.27	903.55	979.15	112.66	441,488.00	814,360.88
10,980.00	2.07	170.74	10,920.07	-385.95	-377.61	903.61	979.34	112.68	441,487.66	814,360.94
10,990.00	2.27	172.09	10,930.07	-386.33	-377.98	903.67	979.54	112.70	441,487.29	814,361.00
11,000.00	2.41	174.93	10,940.06	-386.73	-378.39	903.72	979.74	112.72	441,486.88	814,361.05
11,010.00	2.52	174.30	10,950.05	-387.16	-378.82	903.76	979.94	112.74	441,486.45	814,361.09
11,020.00	2.69	172.59	10,960.04	-387.61	-379.27	903.81	980.16	112.76	441,486.00	814,361.14
11,030.00	2.78	171.28	10,970.03	-388.09	-379.74	903.88	980.41	112.79	441,485.53	814,361.21
11,040.00	2.82	171.02	10,980.02	-388.57	-380.22	903.95	980.66	112.81	441,485.05	814,361.28
11,050.00	2.78	170.87	10,990.00	-389.05	-380.71	904.03	980.92	112.84	441,484.56	814,361.36
11,060.00	2.84	170.79	10,999.99	-389.54	-381.19	904.11	981.18	112.86	441,484.08	814,361.44
11,070.00	2.92	172.25	11,009.98	-390.03	-381.69	904.18	981.44	112.89	441,483.58	814,361.51
11,080.00	2.91	172.80	11,019.97	-390.54	-382.19	904.25	981.70	112.91	441,483.08	814,361.58
11,090.00	2.95	173.14	11,029.95	-391.05	-382.70	904.31	981.95	112.94	441,482.57	814,361.64

Company: Marathon Oil
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Wellbore: OH
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Local Co-ordinate Reference: Well No. 11H
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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)
11,370.00	3.53	178.55	11,309.54	-406.25	-397.89	905.60	989.16	113.72	441,467.38	814,362.93
11,380.00	3.62	178.50	11,319.52	-406.87	-398.51	905.62	989.42	113.75	441,466.76	814,362.95
11,390.00	3.65	178.51	11,329.50	-407.51	-399.15	905.63	989.69	113.78	441,466.12	814,362.96
11,400.00	3.66	177.36	11,339.48	-408.15	-399.79	905.66	989.97	113.82	441,465.48	814,362.99
11,410.00	3.68	175.55	11,349.46	-408.78	-400.42	905.70	990.26	113.85	441,464.85	814,363.03
11,420.00	3.62	174.97	11,359.44	-409.42	-401.06	905.75	990.57	113.88	441,464.21	814,363.08
11,430.00	3.56	174.93	11,369.42	-410.04	-401.68	905.80	990.87	113.92	441,463.59	814,363.13
11,440.00	3.72	175.35	11,379.40	-410.68	-402.31	905.86	991.18	113.95	441,462.96	814,363.19
11,450.00	3.84	174.59	11,389.37	-411.33	-402.97	905.91	991.50	113.98	441,462.30	814,363.24
11,460.00	4.01	173.59	11,399.35	-412.02	-403.65	905.99	991.84	114.01	441,461.62	814,363.32
11,470.00	4.16	171.68	11,409.32	-412.72	-404.36	906.08	992.21	114.05	441,460.91	814,363.41
11,480.00	4.22	170.06	11,419.30	-413.45	-405.08	906.19	992.61	114.09	441,460.19	814,363.52
11,490.00	4.27	170.97	11,429.27	-414.18	-405.81	906.31	993.02	114.12	441,459.46	814,363.64
11,500.00	4.41	170.21	11,439.24	-414.92	-406.56	906.44	993.44	114.16	441,458.71	814,363.77
11,510.00	4.65	170.22	11,449.21	-415.70	-407.34	906.57	993.88	114.20	441,457.93	814,363.90
11,520.00	4.85	168.12	11,459.18	-416.52	-408.15	906.73	994.36	114.23	441,457.12	814,364.06
11,528.00	5.14	165.85	11,467.15	-417.20	-408.83	906.89	994.78	114.27	441,456.44	814,364.22
11,564.00	7.08	161.80	11,502.94	-420.88	-412.50	907.97	997.28	114.43	441,452.77	814,365.30
Pro MWD First Survey: 11564' MD										
11,606.00	6.46	159.17	11,544.65	-425.56	-417.17	909.62	1,000.72	114.64	441,448.10	814,366.95
11,627.00	6.24	160.40	11,565.52	-427.75	-419.34	910.42	1,002.36	114.73	441,445.93	814,367.75
11,696.00	5.27	156.36	11,634.17	-434.21	-425.78	912.95	1,007.36	115.00	441,439.49	814,370.28
11,786.00	2.51	182.72	11,723.96	-439.98	-431.54	914.52	1,011.22	115.26	441,433.73	814,371.85
11,832.00	1.10	223.50	11,769.94	-441.30	-432.86	914.17	1,011.47	115.34	441,432.41	814,371.50
11,873.00	1.19	346.90	11,810.93	-441.17	-432.73	913.80	1,011.08	115.34	441,432.54	814,371.13
11,961.00	3.60	357.62	11,898.85	-437.51	-429.08	913.48	1,009.23	115.16	441,436.19	814,370.81
11,985.00	3.43	356.13	11,922.81	-436.04	-427.61	913.40	1,008.54	115.09	441,437.66	814,370.73

Company: Marathon Oil
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TVD Reference: Well @ 3533.00usft
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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)
14,493.00	88.62	2.46	12,494.52	1,753.74	1,762.55	943.67	1,999.27	28.16	443,627.82	814,401.00
14,583.00	88.40	1.58	12,496.86	1,843.62	1,852.46	946.84	2,080.41	27.07	443,717.73	814,404.17
14,672.00	89.27	2.19	12,498.67	1,932.53	1,941.39	949.77	2,161.27	26.07	443,806.66	814,407.10
14,761.00	91.03	2.02	12,498.44	2,021.43	2,030.33	953.04	2,242.88	25.15	443,895.60	814,410.37
14,850.00	89.98	3.78	12,497.66	2,110.26	2,119.21	957.54	2,325.49	24.32	443,984.48	814,414.87
14,940.00	89.93	0.61	12,497.73	2,200.15	2,209.13	960.99	2,409.10	23.51	444,074.40	814,418.32
15,030.00	85.05	356.13	12,501.67	2,289.99	2,298.96	958.44	2,490.74	22.63	444,164.23	814,415.77
15,119.00	87.74	356.66	12,507.26	2,378.68	2,387.60	952.85	2,570.71	21.76	444,252.87	814,410.18
15,209.00	91.25	356.04	12,508.06	2,468.53	2,477.40	947.12	2,652.27	20.92	444,342.67	814,404.45
15,298.00	90.11	355.08	12,507.00	2,557.31	2,566.12	940.23	2,732.95	20.12	444,431.39	814,397.56
15,388.00	90.46	358.77	12,506.55	2,647.21	2,655.97	935.41	2,815.88	19.40	444,521.24	814,392.74
15,478.00	91.78	359.65	12,504.79	2,737.19	2,745.95	934.17	2,900.50	18.79	444,611.22	814,391.50
15,568.00	93.45	0.00	12,500.69	2,827.09	2,835.85	933.89	2,985.66	18.23	444,701.12	814,391.22
15,658.00	93.36	0.26	12,495.34	2,916.92	2,925.69	934.10	3,071.19	17.71	444,790.96	814,391.43
15,748.00	90.73	0.88	12,492.13	3,006.84	3,015.62	934.99	3,157.24	17.23	444,880.89	814,392.32
15,838.00	90.86	1.40	12,490.88	3,096.79	3,105.59	936.78	3,243.80	16.79	444,970.86	814,394.11
15,927.00	89.45	2.19	12,490.64	3,185.72	3,194.55	939.57	3,329.85	16.39	445,059.82	814,396.90
16,017.00	89.27	5.36	12,491.65	3,275.45	3,284.33	945.49	3,417.72	16.06	445,149.60	814,402.82
16,107.00	89.67	2.55	12,492.48	3,365.16	3,374.11	951.70	3,505.76	15.75	445,239.38	814,409.03
16,197.00	88.35	3.07	12,494.04	3,454.99	3,463.98	956.11	3,593.51	15.43	445,329.25	814,413.44
16,286.00	90.24	3.34	12,495.13	3,543.79	3,552.83	961.09	3,680.53	15.14	445,418.10	814,418.42
16,374.00	91.08	3.07	12,494.12	3,631.60	3,640.69	966.01	3,766.67	14.86	445,505.96	814,423.34
16,474.00	88.79	354.20	12,494.23	3,731.48	3,740.55	963.63	3,862.68	14.45	445,605.82	814,420.96
16,553.00	89.32	353.32	12,495.53	3,810.07	3,819.07	955.04	3,936.68	14.04	445,684.34	814,412.37
16,643.00	86.86	351.82	12,498.53	3,899.36	3,908.26	943.41	4,020.51	13.57	445,773.53	814,400.74
16,733.00	86.37	351.47	12,503.85	3,988.37	3,997.15	930.36	4,103.99	13.10	445,862.42	814,387.69
16,823.00	91.34	3.07	12,505.65	4,078.10	4,086.85	926.09	4,190.46	12.77	445,952.12	814,383.42

Company: Marathon Oil
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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)
16,912.00	89.76	1.58	12,504.80	4,166.98	4,175.76	929.70	4,278.01	12.55	446,041.03	814,387.03
17,002.00	90.33	2.46	12,504.73	4,256.89	4,265.71	932.87	4,366.52	12.34	446,130.98	814,390.20
17,092.00	89.23	0.61	12,505.07	4,346.83	4,355.67	935.28	4,454.95	12.12	446,220.94	814,392.61
17,182.00	90.20	358.50	12,505.52	4,436.82	4,445.66	934.58	4,542.83	11.87	446,310.93	814,391.91
17,271.00	88.70	358.06	12,506.37	4,525.80	4,534.61	931.91	4,629.38	11.61	446,399.88	814,389.24
17,363.00	89.14	357.36	12,508.11	4,617.74	4,626.52	928.23	4,718.72	11.34	446,491.79	814,385.56
17,387.00	90.90	358.06	12,508.10	4,641.72	4,650.50	927.28	4,742.04	11.28	446,515.77	814,384.61
Last Survey: 17387' MD										
17,444.00	90.90	358.06	12,507.20	4,698.70	4,707.46	925.35	4,797.55	11.12	446,572.73	814,382.68
PTB: 17444' MD										

Design Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
11,564.00	11,502.94	-412.50	907.97	Pro MWD First Survey: 11564' MD
17,387.00	12,508.10	4,650.50	927.28	Last Survey: 17387' MD
17,444.00	12,507.20	4,707.46	925.35	PTB: 17444' MD



ProDirectional Survey Report



Company: Marathon Oil
Project: Lea County, NM(NAD 83)
Site: Will Kane 15 WA Fee
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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)
12,074.00	8.00	356.39	12,011.34	-427.20	-418.77	912.83	1,004.30	114.64	441,446.50	814,370.16
12,164.00	21.98	358.50	12,098.06	-403.99	-395.57	911.99	994.08	113.45	441,469.70	814,369.32
12,254.00	28.44	357.27	12,179.45	-365.69	-357.29	910.52	978.11	111.42	441,507.98	814,367.85
12,344.00	35.38	357.36	12,255.80	-318.18	-309.79	908.30	959.68	108.83	441,555.48	814,365.63
12,433.00	49.23	4.04	12,321.49	-258.52	-250.12	909.49	943.26	105.38	441,615.15	814,366.82
12,523.00	54.95	5.36	12,376.77	-187.84	-179.38	915.34	932.75	101.09	441,685.89	814,372.67
12,613.00	62.42	2.28	12,423.52	-111.24	-102.73	920.38	926.09	96.37	441,762.54	814,377.71
12,703.00	71.25	2.63	12,458.89	-28.69	-20.14	923.93	924.15	91.25	441,845.13	814,381.26
12,793.00	78.73	2.28	12,482.18	58.06	66.65	927.64	930.03	85.89	441,931.92	814,384.97
12,882.00	90.51	5.10	12,490.52	146.26	154.90	933.36	946.12	80.58	442,020.17	814,390.69
12,972.00	89.80	4.57	12,490.27	235.87	244.58	940.94	972.21	75.43	442,109.85	814,398.27
13,061.00	89.58	5.18	12,490.75	324.47	333.26	948.51	1,005.35	70.64	442,198.53	814,405.84
13,151.00	89.27	3.86	12,491.66	414.11	422.97	955.60	1,045.02	66.12	442,288.24	814,412.93
13,241.00	88.18	2.11	12,493.66	503.92	512.82	960.28	1,088.64	61.90	442,378.09	814,417.61
13,329.00	89.14	2.99	12,495.72	591.77	600.71	964.20	1,136.01	58.08	442,465.98	814,421.53
13,419.00	90.68	3.60	12,495.86	681.56	690.56	969.37	1,190.19	54.53	442,555.83	814,426.70
13,509.00	91.56	358.68	12,494.10	771.48	780.49	971.16	1,245.92	51.21	442,645.76	814,428.49
13,598.00	90.77	356.13	12,492.29	860.39	869.38	967.13	1,300.45	48.05	442,734.65	814,424.46
13,688.00	87.47	351.47	12,493.67	949.91	958.80	957.42	1,354.97	44.96	442,824.07	814,414.75
13,778.00	87.47	354.55	12,497.65	1,039.24	1,048.04	946.48	1,412.16	42.09	442,913.31	814,403.81
13,867.00	91.52	2.02	12,498.43	1,128.13	1,136.91	943.82	1,477.62	39.70	443,002.18	814,401.15
13,956.00	90.99	359.38	12,496.48	1,217.08	1,225.88	944.91	1,547.78	37.63	443,091.15	814,402.24
14,045.00	91.21	359.38	12,494.77	1,306.07	1,314.85	943.94	1,618.60	35.67	443,180.12	814,401.27
14,136.00	92.57	359.82	12,491.77	1,397.01	1,405.80	943.31	1,692.96	33.86	443,271.07	814,400.64
14,224.00	91.91	0.70	12,488.33	1,484.94	1,493.73	943.71	1,766.87	32.28	443,359.00	814,401.04
14,314.00	86.81	358.06	12,489.34	1,574.89	1,583.68	942.73	1,843.04	30.76	443,448.95	814,400.06
14,404.00	88.97	0.35	12,492.65	1,664.82	1,673.60	941.49	1,920.24	29.36	443,538.87	814,398.82

Company: Marathon Oil
Project: Lea County, NM(NAD 83)
Site: Will Kane 15 WA Fee
Well: No. 11H
Wellbore: OH
Design: MWD-100'-17387', PTB: 17444'

Local Co-ordinate Reference: Well No. 11H
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)	
11,100.00	3.07	171.79	11,039.94	-391.57	-383.22	904.38	982.22	112.96	441,482.05	814,361.71	
11,110.00	3.17	171.33	11,049.93	-392.11	-383.76	904.46	982.50	112.99	441,481.51	814,361.79	
11,120.00	3.11	170.70	11,059.91	-392.65	-384.30	904.54	982.79	113.02	441,480.97	814,361.87	
11,130.00	3.06	171.58	11,069.90	-393.18	-384.83	904.63	983.08	113.05	441,480.44	814,361.96	
11,140.00	3.05	173.28	11,079.88	-393.71	-385.36	904.70	983.35	113.07	441,479.91	814,362.03	
11,150.00	3.08	173.74	11,089.87	-394.24	-385.89	904.76	983.61	113.10	441,479.38	814,362.09	
11,160.00	3.16	174.08	11,099.85	-394.78	-386.43	904.81	983.88	113.13	441,478.84	814,362.14	
11,170.00	3.12	173.90	11,109.84	-395.33	-386.98	904.87	984.15	113.15	441,478.29	814,362.20	
11,180.00	3.04	172.82	11,119.82	-395.86	-387.51	904.93	984.41	113.18	441,477.76	814,362.26	
11,190.00	2.94	172.68	11,129.81	-396.38	-388.03	905.00	984.68	113.21	441,477.24	814,362.33	
11,200.00	2.87	172.23	11,139.80	-396.89	-388.53	905.07	984.94	113.23	441,476.74	814,362.40	
11,210.00	2.93	172.67	11,149.78	-397.39	-389.03	905.13	985.20	113.26	441,476.24	814,362.46	
11,220.00	2.94	173.25	11,159.77	-397.90	-389.54	905.20	985.45	113.28	441,475.73	814,362.53	
11,230.00	2.96	173.07	11,169.76	-398.41	-390.05	905.26	985.71	113.31	441,475.22	814,362.59	
11,240.00	2.93	173.51	11,179.74	-398.92	-390.56	905.32	985.97	113.34	441,474.71	814,362.65	
11,250.00	2.91	174.82	11,189.73	-399.43	-391.07	905.37	986.22	113.36	441,474.20	814,362.70	
11,260.00	2.96	176.68	11,199.72	-399.94	-391.58	905.41	986.46	113.39	441,473.69	814,362.74	
11,270.00	3.06	178.15	11,209.70	-400.46	-392.10	905.43	986.69	113.42	441,473.17	814,362.76	
11,280.00	3.15	177.05	11,219.69	-401.00	-392.64	905.45	986.92	113.44	441,472.63	814,362.78	
11,290.00	3.16	177.19	11,229.67	-401.55	-393.19	905.48	987.17	113.47	441,472.08	814,362.81	
11,300.00	3.15	178.93	11,239.66	-402.10	-393.74	905.50	987.40	113.50	441,471.53	814,362.83	
11,310.00	3.20	179.16	11,249.64	-402.66	-394.30	905.51	987.63	113.53	441,470.97	814,362.84	
11,320.00	3.30	179.75	11,259.63	-403.22	-394.86	905.51	987.86	113.56	441,470.41	814,362.84	
11,330.00	3.42	179.54	11,269.61	-403.81	-395.45	905.52	988.10	113.59	441,469.82	814,362.85	
11,340.00	3.53	178.45	11,279.59	-404.42	-396.06	905.53	988.35	113.62	441,469.21	814,362.86	
11,350.00	3.52	177.42	11,289.57	-405.03	-396.67	905.55	988.62	113.66	441,468.60	814,362.88	
11,360.00	3.48	177.31	11,299.55	-405.64	-397.28	905.58	988.89	113.69	441,467.99	814,362.91	



ProDirectional Survey Report



Company: Marathon Oil
Project: Lea County, NM(NAD 83)
Site: Will Kane 15 WA Fee
Well: No. 11H
Wellbore: OH
Design: MWD-100'-17387', PTB: 17444'

Local Co-ordinate Reference: Well No. 11H
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)
10,560.00	1.10	124.62	10,500.19	-384.95	-376.69	895.31	971.33	112.82	441,488.58	814,352.64
10,570.00	1.16	118.41	10,510.19	-385.06	-376.79	895.48	971.52	112.82	441,488.48	814,352.81
10,580.00	1.18	109.83	10,520.19	-385.14	-376.87	895.67	971.73	112.82	441,488.40	814,353.00
10,590.00	1.17	105.00	10,530.18	-385.21	-376.93	895.86	971.93	112.82	441,488.34	814,353.19
10,600.00	1.21	105.25	10,540.18	-385.26	-376.99	896.06	972.14	112.82	441,488.28	814,353.39
10,610.00	1.27	105.70	10,550.18	-385.32	-377.05	896.27	972.35	112.82	441,488.22	814,353.60
10,620.00	1.31	104.40	10,560.18	-385.38	-377.11	896.49	972.58	112.81	441,488.16	814,353.82
10,630.00	1.22	101.93	10,570.17	-385.43	-377.16	896.71	972.79	112.81	441,488.11	814,354.04
10,640.00	1.16	100.99	10,580.17	-385.48	-377.20	896.91	973.00	112.81	441,488.07	814,354.24
10,650.00	1.26	100.73	10,590.17	-385.52	-377.24	897.12	973.20	112.81	441,488.03	814,354.45
10,660.00	1.26	95.50	10,600.17	-385.55	-377.27	897.33	973.42	112.80	441,488.00	814,354.66
10,670.00	1.28	88.11	10,610.16	-385.56	-377.27	897.55	973.62	112.80	441,488.00	814,354.88
10,680.00	1.28	81.24	10,620.16	-385.54	-377.25	897.78	973.82	112.79	441,488.02	814,355.11
10,690.00	1.22	76.48	10,630.16	-385.50	-377.21	897.99	974.00	112.79	441,488.06	814,355.32
10,700.00	1.23	77.79	10,640.16	-385.46	-377.16	898.20	974.17	112.78	441,488.11	814,355.53
10,710.00	1.30	76.35	10,650.16	-385.41	-377.11	898.41	974.35	112.77	441,488.16	814,355.74
10,720.00	1.40	71.28	10,660.15	-385.35	-377.05	898.64	974.54	112.76	441,488.22	814,355.97
10,730.00	1.43	69.59	10,670.15	-385.26	-376.97	898.87	974.72	112.75	441,488.30	814,356.20
10,740.00	1.44	68.39	10,680.15	-385.18	-376.88	899.11	974.90	112.74	441,488.39	814,356.44
10,750.00	1.45	69.57	10,690.14	-385.09	-376.79	899.34	975.08	112.73	441,488.48	814,356.67
10,760.00	1.53	70.86	10,700.14	-385.00	-376.70	899.59	975.27	112.72	441,488.57	814,356.92
10,770.00	1.58	67.27	10,710.14	-384.91	-376.60	899.84	975.47	112.71	441,488.67	814,357.17
10,780.00	1.55	65.70	10,720.13	-384.80	-376.49	900.09	975.66	112.70	441,488.78	814,357.42
10,790.00	1.49	67.85	10,730.13	-384.70	-376.39	900.33	975.84	112.69	441,488.88	814,357.66
10,800.00	1.49	70.08	10,740.13	-384.61	-376.29	900.58	976.03	112.68	441,488.98	814,357.91
10,810.00	1.51	70.41	10,750.12	-384.52	-376.21	900.82	976.22	112.67	441,489.06	814,358.15
10,820.00	1.43	69.33	10,760.12	-384.44	-376.12	901.06	976.41	112.66	441,489.15	814,358.39

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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)	
10,020.00	2.50	118.86	9,960.38	-379.77	-371.60	883.92	958.86	112.80	441,493.67	814,341.25	
10,030.00	2.42	117.22	9,970.37	-379.97	-371.81	884.30	959.28	112.80	441,493.46	814,341.63	
10,040.00	2.37	117.83	9,980.36	-380.17	-372.00	884.67	959.70	112.81	441,493.27	814,342.00	
10,050.00	2.34	118.50	9,990.35	-380.36	-372.19	885.03	960.11	112.81	441,493.08	814,342.36	
10,060.00	2.26	119.15	10,000.34	-380.56	-372.39	885.38	960.51	112.81	441,492.88	814,342.71	
10,070.00	2.21	119.05	10,010.33	-380.75	-372.58	885.72	960.90	112.81	441,492.69	814,343.05	
10,080.00	2.19	118.41	10,020.33	-380.94	-372.76	886.06	961.28	112.82	441,492.51	814,343.39	
10,090.00	2.18	117.98	10,030.32	-381.12	-372.94	886.40	961.66	112.82	441,492.33	814,343.73	
10,100.00	2.19	118.00	10,040.31	-381.31	-373.12	886.73	962.04	112.82	441,492.15	814,344.06	
10,110.00	2.12	116.91	10,050.31	-381.48	-373.29	887.07	962.41	112.82	441,491.98	814,344.40	
10,120.00	2.04	114.69	10,060.30	-381.64	-373.45	887.39	962.77	112.82	441,491.82	814,344.72	
10,130.00	1.95	114.53	10,070.29	-381.79	-373.60	887.71	963.12	112.82	441,491.67	814,345.04	
10,140.00	1.93	116.69	10,080.29	-381.94	-373.74	888.02	963.46	112.82	441,491.53	814,345.35	
10,150.00	1.91	116.58	10,090.28	-382.09	-373.89	888.32	963.79	112.83	441,491.38	814,345.65	
10,160.00	1.91	116.05	10,100.28	-382.25	-374.04	888.61	964.13	112.83	441,491.23	814,345.94	
10,170.00	1.91	113.24	10,110.27	-382.39	-374.18	888.92	964.46	112.83	441,491.09	814,346.25	
10,180.00	1.85	112.89	10,120.26	-382.52	-374.31	889.22	964.79	112.83	441,490.96	814,346.55	
10,190.00	1.84	114.41	10,130.26	-382.65	-374.44	889.51	965.11	112.83	441,490.83	814,346.84	
10,200.00	1.86	113.96	10,140.25	-382.78	-374.57	889.81	965.43	112.83	441,490.70	814,347.14	
10,210.00	1.79	112.20	10,150.25	-382.91	-374.70	890.10	965.75	112.83	441,490.57	814,347.43	
10,220.00	1.77	109.70	10,160.24	-383.03	-374.81	890.39	966.06	112.83	441,490.46	814,347.72	
10,230.00	1.81	112.20	10,170.24	-383.14	-374.92	890.68	966.37	112.83	441,490.35	814,348.01	
10,240.00	1.56	110.01	10,180.24	-383.25	-375.02	890.96	966.67	112.83	441,490.25	814,348.29	
10,250.00	1.62	108.31	10,190.23	-383.34	-375.12	891.22	966.94	112.83	441,490.15	814,348.55	
10,260.00	1.63	105.31	10,200.23	-383.43	-375.20	891.49	967.23	112.82	441,490.07	814,348.82	
10,270.00	1.66	105.32	10,210.22	-383.51	-375.27	891.77	967.51	112.82	441,490.00	814,349.10	
10,280.00	1.48	102.79	10,220.22	-383.58	-375.34	892.03	967.78	112.82	441,489.93	814,349.36	

Company: Marathon Oil
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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)
9,480.00	5.29	109.55	9,421.36	-364.37	-356.47	856.00	927.25	112.61	441,508.80	814,313.33
9,490.00	5.13	109.55	9,431.32	-364.69	-356.78	856.85	928.16	112.61	441,508.49	814,314.18
9,500.00	5.03	109.51	9,441.28	-364.99	-357.07	857.69	929.05	112.60	441,508.20	814,315.02
9,510.00	4.84	110.27	9,451.24	-365.29	-357.36	858.50	929.90	112.60	441,507.91	814,315.83
9,520.00	4.60	110.67	9,461.21	-365.58	-357.65	859.27	930.73	112.60	441,507.62	814,316.60
9,530.00	4.41	110.78	9,471.18	-365.87	-357.93	860.00	931.51	112.60	441,507.34	814,317.33
9,540.00	4.29	111.17	9,481.15	-366.15	-358.20	860.71	932.27	112.60	441,507.07	814,318.04
9,550.00	4.41	110.62	9,491.12	-366.42	-358.47	861.42	933.03	112.59	441,506.80	814,318.75
9,560.00	4.29	112.05	9,501.09	-366.71	-358.75	862.12	933.79	112.59	441,506.52	814,319.45
9,570.00	4.14	111.93	9,511.07	-366.99	-359.02	862.81	934.52	112.59	441,506.25	814,320.14
9,580.00	4.01	113.38	9,521.04	-367.27	-359.30	863.46	935.23	112.59	441,505.97	814,320.79
9,590.00	4.19	111.74	9,531.01	-367.55	-359.57	864.12	935.95	112.59	441,505.70	814,321.45
9,600.00	4.22	110.61	9,540.99	-367.82	-359.84	864.81	936.68	112.59	441,505.43	814,322.14
9,610.00	3.88	113.34	9,550.96	-368.09	-360.10	865.46	937.39	112.59	441,505.17	814,322.79
9,620.00	3.70	115.19	9,560.94	-368.37	-360.37	866.06	938.05	112.59	441,504.90	814,323.39
9,630.00	3.71	115.05	9,570.92	-368.65	-360.64	866.65	938.69	112.59	441,504.63	814,323.98
9,640.00	3.69	115.78	9,580.90	-368.93	-360.92	867.23	939.34	112.60	441,504.35	814,324.56
9,650.00	3.57	118.20	9,590.88	-369.22	-361.21	867.80	939.97	112.60	441,504.06	814,325.13
9,660.00	3.43	120.16	9,600.86	-369.52	-361.51	868.33	940.57	112.60	441,503.76	814,325.66
9,670.00	3.36	121.81	9,610.84	-369.83	-361.81	868.84	941.16	112.61	441,503.46	814,326.17
9,680.00	3.30	122.13	9,620.83	-370.14	-362.12	869.33	941.73	112.61	441,503.15	814,326.66
9,690.00	3.27	121.88	9,630.81	-370.45	-362.42	869.81	942.30	112.62	441,502.85	814,327.14
9,700.00	3.27	122.07	9,640.79	-370.76	-362.72	870.30	942.86	112.63	441,502.55	814,327.63
9,710.00	3.25	123.28	9,650.78	-371.07	-363.03	870.78	943.42	112.63	441,502.24	814,328.11
9,720.00	3.25	123.50	9,660.76	-371.39	-363.34	871.25	943.98	112.64	441,501.93	814,328.58
9,730.00	3.34	122.53	9,670.74	-371.70	-363.66	871.73	944.54	112.64	441,501.61	814,329.06
9,740.00	3.29	123.55	9,680.73	-372.02	-363.97	872.22	945.11	112.65	441,501.30	814,329.55



ProDirectional Survey Report



Company: Marathon Oil
Project: Lea County, NM(NAD 83)
Site: Will Kane 15 WA Fee
Well: No. 11H
Wellbore: OH
Design: MWD-100'-17387', PTB: 17444'

Local Co-ordinate Reference: Well No. 11H
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)
8,940.00	5.80	104.93	8,885.63	-344.01	-336.70	791.92	860.52	113.03	441,528.57	814,249.25
8,950.00	5.80	104.66	8,895.58	-344.28	-336.96	792.90	861.52	113.02	441,528.31	814,250.23
8,960.00	5.88	103.78	8,905.53	-344.54	-337.21	793.88	862.53	113.01	441,528.06	814,251.21
8,970.00	5.93	103.82	8,915.48	-344.79	-337.45	794.88	863.55	113.00	441,527.82	814,252.21
8,980.00	5.89	104.92	8,925.42	-345.06	-337.71	795.88	864.56	112.99	441,527.56	814,253.21
8,990.00	5.78	105.59	8,935.37	-345.33	-337.98	796.86	865.57	112.98	441,527.29	814,254.19
9,000.00	5.89	104.63	8,945.32	-345.61	-338.24	797.84	866.58	112.97	441,527.03	814,255.17
9,010.00	6.04	104.28	8,955.27	-345.88	-338.50	798.85	867.61	112.96	441,526.77	814,256.18
9,020.00	5.95	104.80	8,965.21	-346.15	-338.76	799.86	868.64	112.95	441,526.51	814,257.19
9,030.00	5.93	104.67	8,975.16	-346.42	-339.03	800.86	869.66	112.94	441,526.24	814,258.19
9,040.00	5.98	104.49	8,985.10	-346.69	-339.29	801.86	870.69	112.93	441,525.98	814,259.19
9,050.00	6.17	104.64	8,995.05	-346.97	-339.55	802.89	871.74	112.92	441,525.72	814,260.22
9,060.00	6.70	104.81	9,004.99	-347.26	-339.84	803.97	872.85	112.91	441,525.43	814,261.30
9,070.00	7.40	105.82	9,014.91	-347.60	-340.16	805.15	874.06	112.90	441,525.11	814,262.48
9,080.00	8.00	107.22	9,024.82	-347.99	-340.54	806.44	875.39	112.89	441,524.73	814,263.77
9,090.00	8.42	107.22	9,034.72	-348.43	-340.97	807.80	876.81	112.88	441,524.30	814,265.13
9,100.00	8.52	107.07	9,044.61	-348.87	-341.40	809.21	878.28	112.87	441,523.87	814,266.54
9,110.00	8.56	108.04	9,054.50	-349.33	-341.85	810.63	879.76	112.87	441,523.42	814,267.96
9,120.00	8.58	107.87	9,064.39	-349.81	-342.31	812.04	881.24	112.86	441,522.96	814,269.37
9,130.00	8.61	107.76	9,074.27	-350.28	-342.77	813.47	882.73	112.85	441,522.50	814,270.80
9,140.00	8.69	107.81	9,084.16	-350.75	-343.23	814.90	884.23	112.84	441,522.04	814,272.23
9,150.00	8.50	108.11	9,094.05	-351.22	-343.69	816.32	885.72	112.83	441,521.58	814,273.65
9,160.00	8.29	108.02	9,103.94	-351.69	-344.14	817.71	887.17	112.82	441,521.13	814,275.04
9,170.00	8.26	107.65	9,113.84	-352.14	-344.58	819.08	888.61	112.82	441,520.69	814,276.41
9,180.00	8.23	107.27	9,123.73	-352.58	-345.01	820.45	890.04	112.81	441,520.26	814,277.78
9,190.00	8.40	106.68	9,133.63	-353.02	-345.43	821.83	891.47	112.80	441,519.84	814,279.16
9,200.00	8.41	107.00	9,143.52	-353.46	-345.86	823.23	892.93	112.79	441,519.41	814,280.56

Company: Marathon Oil
Project: Lea County, NM(NAD 83)
Site: Will Kane 15 WA Fee
Well: No. 11H
Wellbore: OH
Design: MWD-100'-17387', PTB: 17444'

Local Co-ordinate Reference: Well No. 11H
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)	
8,400.00	5.91	112.88	8,349.40	-322.66	-315.91	732.02	797.27	113.34	441,549.36	814,189.35	
8,410.00	6.03	112.49	8,359.35	-323.07	-316.31	732.98	798.31	113.34	441,548.96	814,190.31	
8,420.00	6.50	112.14	8,369.29	-323.50	-316.72	733.99	799.40	113.34	441,548.55	814,191.32	
8,430.00	6.91	111.10	8,379.22	-323.94	-317.15	735.07	800.57	113.34	441,548.12	814,192.40	
8,440.00	7.09	111.54	8,389.15	-324.39	-317.59	736.21	801.79	113.34	441,547.68	814,193.54	
8,450.00	7.14	112.03	8,399.07	-324.86	-318.05	737.36	803.03	113.33	441,547.22	814,194.69	
8,460.00	7.17	112.20	8,408.99	-325.34	-318.52	738.51	804.27	113.33	441,546.75	814,195.84	
8,470.00	7.37	111.33	8,418.91	-325.82	-318.99	739.69	805.54	113.33	441,546.28	814,197.02	
8,480.00	7.38	112.04	8,428.83	-326.31	-319.47	740.88	806.82	113.33	441,545.80	814,198.21	
8,490.00	7.37	112.79	8,438.75	-326.81	-319.96	742.06	808.10	113.32	441,545.31	814,199.39	
8,500.00	7.34	112.58	8,448.66	-327.31	-320.45	743.25	809.38	113.32	441,544.82	814,200.58	
8,510.00	7.29	112.53	8,458.58	-327.81	-320.94	744.42	810.66	113.32	441,544.33	814,201.75	
8,520.00	7.32	112.83	8,468.50	-328.31	-321.43	745.60	811.93	113.32	441,543.84	814,202.93	
8,530.00	7.31	112.86	8,478.42	-328.82	-321.92	746.77	813.20	113.32	441,543.35	814,204.10	
8,540.00	7.19	112.77	8,488.34	-329.32	-322.41	747.93	814.46	113.32	441,542.86	814,205.26	
8,550.00	7.17	112.55	8,498.26	-329.81	-322.89	749.09	815.71	113.32	441,542.38	814,206.42	
8,560.00	7.28	112.06	8,508.18	-330.30	-323.37	750.25	816.97	113.32	441,541.90	814,207.58	
8,570.00	7.13	112.23	8,518.10	-330.78	-323.84	751.41	818.22	113.32	441,541.43	814,208.74	
8,580.00	6.89	113.29	8,528.03	-331.26	-324.31	752.54	819.44	113.31	441,540.96	814,209.87	
8,590.00	6.77	113.47	8,537.96	-331.74	-324.79	753.63	820.63	113.31	441,540.48	814,210.96	
8,600.00	6.74	113.35	8,547.89	-332.22	-325.25	754.71	821.81	113.31	441,540.02	814,212.04	
8,610.00	6.74	113.71	8,557.82	-332.70	-325.72	755.78	822.98	113.31	441,539.55	814,213.11	
8,620.00	6.68	113.57	8,567.75	-333.18	-326.19	756.85	824.15	113.32	441,539.08	814,214.18	
8,630.00	6.58	113.27	8,577.68	-333.65	-326.65	757.91	825.31	113.32	441,538.62	814,215.24	
8,640.00	6.58	113.15	8,587.62	-334.11	-327.10	758.97	826.45	113.32	441,538.17	814,216.30	
8,650.00	6.60	113.05	8,597.55	-334.57	-327.55	760.02	827.60	113.31	441,537.72	814,217.35	
8,660.00	6.63	112.98	8,607.49	-335.03	-328.00	761.08	828.75	113.31	441,537.27	814,218.41	

Company: Marathon Oil
Project: Lea County, NM(NAD 83)
Site: Will Kane 15 WA Fee
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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)
7,860.00	8.33	122.32	7,813.52	-288.03	-281.79	675.55	731.97	112.64	441,583.48	814,132.88
7,870.00	8.29	122.62	7,823.42	-288.81	-282.57	676.77	733.39	112.66	441,582.70	814,134.10
7,880.00	8.32	123.02	7,833.31	-289.61	-283.35	677.98	734.81	112.68	441,581.92	814,135.31
7,890.00	8.36	122.70	7,843.21	-290.41	-284.14	679.20	736.24	112.70	441,581.13	814,136.53
7,900.00	8.30	122.97	7,853.10	-291.20	-284.92	680.42	737.67	112.72	441,580.35	814,137.75
7,910.00	8.17	123.69	7,863.00	-292.00	-285.71	681.62	739.07	112.74	441,579.56	814,138.95
7,920.00	8.13	124.00	7,872.90	-292.80	-286.50	682.79	740.47	112.76	441,578.77	814,140.12
7,930.00	8.23	123.31	7,882.80	-293.60	-287.29	683.98	741.86	112.78	441,577.98	814,141.31
7,940.00	8.12	123.23	7,892.69	-294.39	-288.07	685.17	743.26	112.80	441,577.20	814,142.50
7,950.00	7.96	123.48	7,902.60	-295.17	-288.84	686.34	744.64	112.82	441,576.43	814,143.67
7,960.00	7.86	123.57	7,912.50	-295.94	-289.60	687.48	745.99	112.84	441,575.67	814,144.81
7,970.00	7.91	123.14	7,922.41	-296.71	-290.35	688.63	747.34	112.86	441,574.92	814,145.96
7,980.00	7.90	123.06	7,932.31	-297.47	-291.10	689.78	748.69	112.88	441,574.17	814,147.11
7,990.00	7.80	123.60	7,942.22	-298.23	-291.85	690.92	750.03	112.90	441,573.42	814,148.25
8,000.00	7.64	124.46	7,952.13	-298.99	-292.60	692.04	751.35	112.92	441,572.67	814,149.37
8,010.00	7.60	124.57	7,962.04	-299.75	-293.35	693.13	752.65	112.94	441,571.92	814,150.46
8,020.00	7.76	123.65	7,971.95	-300.51	-294.10	694.23	753.96	112.96	441,571.17	814,151.56
8,030.00	7.54	124.13	7,981.86	-301.27	-294.85	695.34	755.27	112.98	441,570.42	814,152.67
8,040.00	7.42	125.02	7,991.77	-302.01	-295.58	696.41	756.54	113.00	441,569.69	814,153.74
8,050.00	7.37	125.77	8,001.69	-302.77	-296.33	697.46	757.80	113.02	441,568.94	814,154.79
8,060.00	7.37	126.10	8,011.61	-303.53	-297.08	698.50	759.05	113.04	441,568.19	814,155.83
8,070.00	7.42	125.81	8,021.53	-304.30	-297.84	699.54	760.31	113.06	441,567.43	814,156.87
8,080.00	7.32	124.77	8,031.44	-305.05	-298.58	700.59	761.56	113.08	441,566.69	814,157.92
8,090.00	7.23	124.50	8,041.36	-305.78	-299.30	701.63	762.80	113.10	441,565.97	814,158.96
8,100.00	7.22	124.60	8,051.28	-306.50	-300.01	702.67	764.03	113.12	441,565.26	814,160.00
8,110.00	7.15	124.66	8,061.20	-307.22	-300.72	703.70	765.26	113.14	441,564.55	814,161.03
8,120.00	7.14	123.53	8,071.13	-307.93	-301.42	704.73	766.48	113.16	441,563.85	814,162.06



ProDirectional Survey Report



Company: Marathon Oil
Project: Lea County, NM(NAD 83)
Site: Will Kane 15 WA Fee
Well: No. 11H
Wellbore: OH
Design: MWD-100'-17387', PTB: 17444'

Local Co-ordinate Reference: Well No. 11H
TVD Reference: Well @ 3533.00usft
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North Reference: Grid
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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)
7,320.00	8.38	109.70	7,279.11	-251.91	-246.31	607.17	655.23	112.08	441,618.96	814,064.50
7,330.00	8.31	110.00	7,289.00	-252.42	-246.80	608.53	656.68	112.08	441,618.47	814,065.86
7,340.00	8.50	109.33	7,298.90	-252.92	-247.29	609.91	658.14	112.07	441,617.98	814,067.24
7,350.00	8.64	108.75	7,308.79	-253.42	-247.78	611.32	659.63	112.06	441,617.49	814,068.65
7,360.00	8.21	109.90	7,318.68	-253.92	-248.26	612.70	661.09	112.06	441,617.01	814,070.03
7,370.00	8.02	110.01	7,328.58	-254.41	-248.75	614.03	662.50	112.05	441,616.52	814,071.36
7,380.00	7.99	109.97	7,338.48	-254.90	-249.22	615.34	663.89	112.05	441,616.05	814,072.67
7,390.00	8.07	109.62	7,348.38	-255.39	-249.69	616.65	665.29	112.04	441,615.58	814,073.98
7,400.00	8.11	109.71	7,358.28	-255.87	-250.17	617.98	666.69	112.04	441,615.10	814,075.31
7,410.00	8.01	109.56	7,368.18	-256.36	-250.64	619.30	668.09	112.03	441,614.63	814,076.63
7,420.00	7.94	109.40	7,378.09	-256.83	-251.10	620.61	669.48	112.03	441,614.17	814,077.94
7,430.00	8.03	109.25	7,387.99	-257.30	-251.56	621.92	670.87	112.02	441,613.71	814,079.25
7,440.00	8.18	108.33	7,397.89	-257.77	-252.02	623.25	672.28	112.02	441,613.25	814,080.58
7,450.00	8.11	108.90	7,407.79	-258.23	-252.47	624.59	673.69	112.01	441,612.80	814,081.92
7,460.00	7.91	110.18	7,417.69	-258.71	-252.93	625.91	675.08	112.00	441,612.34	814,083.24
7,470.00	7.85	110.29	7,427.60	-259.20	-253.41	627.19	676.45	112.00	441,611.86	814,084.52
7,480.00	7.87	110.25	7,437.50	-259.68	-253.88	628.48	677.82	112.00	441,611.39	814,085.81
7,490.00	7.94	109.05	7,447.41	-260.16	-254.34	629.77	679.19	111.99	441,610.93	814,087.10
7,500.00	7.75	110.40	7,457.31	-260.63	-254.80	631.06	680.56	111.99	441,610.47	814,088.39
7,510.00	7.73	111.40	7,467.22	-261.12	-255.29	632.31	681.90	111.99	441,609.98	814,089.64
7,520.00	7.72	112.58	7,477.13	-261.64	-255.79	633.56	683.25	111.99	441,609.48	814,090.89
7,530.00	8.01	115.49	7,487.04	-262.21	-256.35	634.81	684.61	111.99	441,608.92	814,092.14
7,540.00	8.17	118.36	7,496.94	-262.86	-256.98	636.06	686.02	112.00	441,608.29	814,093.39
7,550.00	8.18	119.80	7,506.84	-263.56	-257.67	637.31	687.43	112.01	441,607.60	814,094.64
7,560.00	8.23	120.92	7,516.74	-264.29	-258.40	638.54	688.84	112.03	441,606.87	814,095.87
7,570.00	8.42	121.41	7,526.63	-265.05	-259.15	639.78	690.27	112.05	441,606.12	814,097.11
7,580.00	8.51	121.56	7,536.52	-265.83	-259.91	641.03	691.72	112.07	441,605.36	814,098.36

Company: Marathon Oil
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Site: Will Kane 15 WA Fee
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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)
6,780.00	8.17	106.91	6,745.54	-221.01	-216.12	529.93	572.31	112.19	441,649.15	813,987.26
6,790.00	8.19	107.41	6,755.44	-221.44	-216.54	531.29	573.73	112.17	441,648.73	813,988.62
6,800.00	8.19	107.45	6,765.33	-221.88	-216.97	532.65	575.15	112.16	441,648.30	813,989.98
6,810.00	8.25	107.46	6,775.23	-222.32	-217.39	534.02	576.57	112.15	441,647.88	813,991.35
6,820.00	8.25	107.09	6,785.13	-222.76	-217.82	535.39	578.00	112.14	441,647.45	813,992.72
6,830.00	8.26	106.64	6,795.02	-223.19	-218.24	536.76	579.43	112.13	441,647.03	813,994.09
6,840.00	8.28	106.50	6,804.92	-223.62	-218.65	538.14	580.86	112.11	441,646.62	813,995.47
6,850.00	8.44	105.80	6,814.81	-224.03	-219.05	539.54	582.31	112.10	441,646.22	813,996.87
6,860.00	8.45	105.84	6,824.71	-224.45	-219.45	540.95	583.77	112.08	441,645.82	813,998.28
6,870.00	8.31	106.98	6,834.60	-224.87	-219.86	542.35	585.22	112.07	441,645.41	813,999.68
6,880.00	8.34	108.64	6,844.49	-225.33	-220.31	543.72	586.66	112.06	441,644.96	814,001.05
6,890.00	8.55	110.43	6,854.38	-225.83	-220.80	545.11	588.13	112.05	441,644.47	814,002.44
6,900.00	8.83	111.23	6,864.27	-226.38	-221.33	546.52	589.64	112.05	441,643.94	814,003.85
6,910.00	8.91	111.98	6,874.15	-226.96	-221.90	547.95	591.18	112.05	441,643.37	814,005.28
6,920.00	8.91	112.93	6,884.03	-227.57	-222.49	549.39	592.73	112.05	441,642.78	814,006.72
6,930.00	8.98	113.70	6,893.91	-228.20	-223.11	550.81	594.28	112.05	441,642.16	814,008.14
6,940.00	9.06	113.91	6,903.78	-228.84	-223.74	552.25	595.85	112.06	441,641.53	814,009.58
6,950.00	9.10	113.50	6,913.66	-229.49	-224.38	553.69	597.43	112.06	441,640.89	814,011.02
6,960.00	8.99	113.82	6,923.53	-230.13	-225.01	555.13	599.00	112.06	441,640.26	814,012.46
6,970.00	8.98	114.25	6,933.41	-230.78	-225.64	556.56	600.56	112.07	441,639.63	814,013.89
6,980.00	9.13	113.62	6,943.29	-231.43	-226.28	558.00	602.13	112.07	441,638.99	814,015.33
6,990.00	9.31	112.96	6,953.16	-232.08	-226.92	559.47	603.74	112.08	441,638.35	814,016.80
7,000.00	9.27	113.97	6,963.03	-232.74	-227.56	560.95	605.35	112.08	441,637.71	814,018.28
7,010.00	9.15	114.42	6,972.90	-233.41	-228.21	562.41	606.95	112.09	441,637.06	814,019.74
7,020.00	9.18	114.39	6,982.77	-234.08	-228.87	563.86	608.54	112.09	441,636.40	814,021.19
7,030.00	9.22	114.19	6,992.64	-234.75	-229.53	565.32	610.14	112.10	441,635.74	814,022.65
7,040.00	9.19	114.14	7,002.51	-235.42	-230.19	566.78	611.74	112.10	441,635.08	814,024.11

Company: Marathon Oil
Project: Lea County, NM(NAD 83)
Site: Will Kane 15 WA Fee
Well: No. 11H
Wellbore: OH
Design: MWD-100'-17387', PTB: 17444'

Local Co-ordinate Reference: Well No. 11H
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)
6,240.00	5.99	94.21	6,209.38	-210.39	-206.08	467.32	510.74	113.80	441,659.19	813,924.65
6,250.00	5.93	94.91	6,219.33	-210.48	-206.16	468.35	511.72	113.76	441,659.11	813,925.68
6,260.00	5.96	95.10	6,229.28	-210.58	-206.25	469.38	512.70	113.72	441,659.02	813,926.71
6,270.00	6.04	94.73	6,239.22	-210.68	-206.34	470.42	513.69	113.68	441,658.93	813,927.75
6,280.00	6.08	94.77	6,249.17	-210.78	-206.43	471.48	514.69	113.65	441,658.84	813,928.81
6,290.00	6.14	94.39	6,259.11	-210.88	-206.51	472.54	515.69	113.61	441,658.76	813,929.87
6,300.00	6.12	94.13	6,269.05	-210.97	-206.59	473.60	516.70	113.57	441,658.68	813,930.93
6,310.00	6.12	93.88	6,279.00	-211.05	-206.67	474.67	517.71	113.53	441,658.60	813,932.00
6,320.00	6.12	93.61	6,288.94	-211.13	-206.74	475.73	518.71	113.49	441,658.53	813,933.06
6,330.00	5.90	93.69	6,298.88	-211.21	-206.80	476.77	519.69	113.45	441,658.47	813,934.10
6,340.00	5.67	94.00	6,308.83	-211.28	-206.87	477.78	520.64	113.41	441,658.40	813,935.11
6,350.00	5.60	93.90	6,318.78	-211.36	-206.94	478.76	521.57	113.38	441,658.33	813,936.09
6,360.00	5.76	92.96	6,328.73	-211.43	-207.00	479.75	522.50	113.34	441,658.27	813,937.08
6,370.00	5.84	92.66	6,338.68	-211.49	-207.05	480.76	523.45	113.30	441,658.22	813,938.09
6,380.00	5.68	93.19	6,348.63	-211.55	-207.10	481.76	524.39	113.26	441,658.17	813,939.09
6,390.00	5.69	93.74	6,358.58	-211.62	-207.16	482.75	525.32	113.23	441,658.11	813,940.08
6,400.00	5.78	93.64	6,368.53	-211.69	-207.22	483.75	526.26	113.19	441,658.05	813,941.08
6,410.00	5.77	93.41	6,378.48	-211.76	-207.28	484.75	527.21	113.15	441,657.99	813,942.08
6,420.00	5.64	93.91	6,388.43	-211.83	-207.35	485.74	528.15	113.12	441,657.92	813,943.07
6,430.00	5.69	95.36	6,398.38	-211.92	-207.43	486.73	529.08	113.08	441,657.84	813,944.06
6,440.00	5.73	95.37	6,408.34	-212.02	-207.52	487.72	530.03	113.05	441,657.75	813,945.05
6,450.00	5.82	95.68	6,418.28	-212.13	-207.62	488.72	530.99	113.02	441,657.65	813,946.05
6,460.00	5.82	94.94	6,428.23	-212.23	-207.71	489.73	531.96	112.98	441,657.56	813,947.06
6,470.00	5.82	96.07	6,438.18	-212.34	-207.81	490.74	532.92	112.95	441,657.46	813,948.07
6,480.00	5.91	96.28	6,448.13	-212.46	-207.92	491.75	533.90	112.92	441,657.35	813,949.08
6,490.00	6.14	95.65	6,458.07	-212.58	-208.03	492.80	534.91	112.89	441,657.24	813,950.13
6,500.00	6.44	95.25	6,468.01	-212.69	-208.13	493.89	535.95	112.85	441,657.14	813,951.22



ProDirectional Survey Report



Company: Marathon Oil
Project: Lea County, NM(NAD 83)
Site: Will Kane 15 WA Fee
Well: No. 11H
Wellbore: OH
Design: MWD-100'-17387', PTB: 17444'

Local Co-ordinate Reference: Well No. 11H
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)
5,700.00	6.44	101.94	5,672.54	-200.36	-196.57	409.92	454.61	115.62	441,668.70	813,867.25
5,710.00	6.40	101.97	5,682.48	-200.60	-196.80	411.01	455.70	115.59	441,668.47	813,868.34
5,720.00	6.37	101.73	5,692.41	-200.84	-197.03	412.10	456.78	115.55	441,668.24	813,869.43
5,730.00	6.49	100.85	5,702.35	-201.06	-197.25	413.20	457.87	115.52	441,668.02	813,870.53
5,740.00	6.60	101.02	5,712.29	-201.29	-197.47	414.32	458.97	115.48	441,667.80	813,871.65
5,750.00	6.48	101.67	5,722.22	-201.53	-197.69	415.44	460.07	115.45	441,667.58	813,872.77
5,760.00	6.45	101.76	5,732.16	-201.76	-197.92	416.54	461.17	115.41	441,667.35	813,873.87
5,770.00	6.46	102.10	5,742.09	-202.01	-198.15	417.64	462.26	115.38	441,667.12	813,874.97
5,780.00	6.47	101.98	5,752.03	-202.25	-198.39	418.74	463.36	115.35	441,666.88	813,876.07
5,790.00	6.35	101.18	5,761.97	-202.49	-198.61	419.83	464.44	115.32	441,666.66	813,877.16
5,800.00	6.24	101.31	5,771.91	-202.71	-198.83	420.91	465.51	115.28	441,666.44	813,878.24
5,810.00	6.25	101.40	5,781.85	-202.93	-199.04	421.97	466.56	115.25	441,666.23	813,879.30
5,820.00	6.52	100.47	5,791.79	-203.16	-199.25	423.07	467.64	115.22	441,666.02	813,880.40
5,830.00	6.34	101.57	5,801.72	-203.38	-199.46	424.17	468.72	115.19	441,665.81	813,881.50
5,840.00	6.33	101.83	5,811.66	-203.61	-199.69	425.25	469.80	115.15	441,665.58	813,882.58
5,850.00	6.36	101.67	5,821.60	-203.85	-199.91	426.33	470.87	115.12	441,665.36	813,883.66
5,860.00	6.39	101.36	5,831.54	-204.08	-200.13	427.42	471.95	115.09	441,665.14	813,884.75
5,870.00	6.46	100.82	5,841.48	-204.30	-200.35	428.51	473.04	115.06	441,664.92	813,885.84
5,880.00	6.29	101.00	5,851.41	-204.53	-200.56	429.60	474.11	115.03	441,664.71	813,886.93
5,890.00	6.10	101.30	5,861.36	-204.74	-200.77	430.66	475.16	114.99	441,664.50	813,887.99
5,900.00	6.15	101.54	5,871.30	-204.96	-200.98	431.71	476.20	114.96	441,664.29	813,889.04
5,910.00	6.27	101.17	5,881.24	-205.19	-201.19	432.77	477.25	114.93	441,664.08	813,890.10
5,920.00	6.28	101.76	5,891.18	-205.41	-201.41	433.84	478.31	114.90	441,663.86	813,891.17
5,930.00	6.25	101.68	5,901.12	-205.65	-201.63	434.91	479.38	114.87	441,663.64	813,892.24
5,940.00	6.30	101.58	5,911.06	-205.88	-201.85	435.98	480.44	114.84	441,663.42	813,893.31
5,950.00	6.36	101.10	5,921.00	-206.10	-202.07	437.06	481.51	114.81	441,663.20	813,894.39
5,960.00	6.36	100.35	5,930.94	-206.32	-202.27	438.15	482.59	114.78	441,663.00	813,895.48



ProDirectional Survey Report



Company: Marathon Oil
Project: Lea County, NM(NAD 83)
Site: Will Kane 15 WA Fee
Well: No. 11H
Wellbore: OH
Design: MWD-100'-17387', PTB: 17444'

Local Co-ordinate Reference: Well No. 11H
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)
5,160.00	8.43	106.57	5,136.95	-174.95	-171.74	347.18	387.33	116.32	441,693.53	813,804.51
5,170.00	8.54	106.67	5,146.84	-175.38	-172.16	348.59	388.79	116.28	441,693.11	813,805.92
5,180.00	8.63	106.81	5,156.73	-175.82	-172.59	350.02	390.26	116.25	441,692.68	813,807.35
5,190.00	8.72	106.43	5,166.61	-176.27	-173.03	351.47	391.75	116.21	441,692.24	813,808.80
5,200.00	8.86	106.70	5,176.50	-176.72	-173.46	352.93	393.25	116.17	441,691.81	813,810.26
5,210.00	8.88	107.53	5,186.38	-177.19	-173.92	354.40	394.78	116.14	441,691.35	813,811.73
5,220.00	8.99	107.67	5,196.25	-177.67	-174.38	355.89	396.31	116.10	441,690.89	813,813.22
5,230.00	9.02	107.86	5,206.13	-178.16	-174.86	357.38	397.86	116.07	441,690.41	813,814.71
5,240.00	9.03	107.44	5,216.01	-178.65	-175.34	358.87	399.41	116.04	441,689.93	813,816.20
5,250.00	8.90	107.36	5,225.89	-179.13	-175.80	360.36	400.95	116.01	441,689.47	813,817.69
5,260.00	8.99	107.81	5,235.76	-179.61	-176.27	361.84	402.49	115.97	441,689.00	813,819.17
5,270.00	9.00	108.01	5,245.64	-180.11	-176.75	363.33	404.04	115.94	441,688.52	813,820.66
5,280.00	9.06	108.91	5,255.52	-180.62	-177.25	364.82	405.60	115.91	441,688.02	813,822.15
5,290.00	9.02	110.09	5,265.39	-181.16	-177.78	366.30	407.16	115.89	441,687.49	813,823.63
5,300.00	8.65	111.72	5,275.27	-181.72	-178.32	367.73	408.69	115.87	441,686.95	813,825.06
5,310.00	8.47	113.36	5,285.16	-182.30	-178.89	369.11	410.17	115.86	441,686.38	813,826.44
5,320.00	8.40	114.36	5,295.05	-182.91	-179.49	370.45	411.64	115.85	441,685.78	813,827.78
5,330.00	8.37	114.28	5,304.95	-183.52	-180.09	371.78	413.10	115.85	441,685.18	813,829.11
5,340.00	8.11	115.53	5,314.84	-184.13	-180.69	373.08	414.53	115.84	441,684.58	813,830.41
5,350.00	7.74	116.98	5,324.75	-184.76	-181.30	374.31	415.91	115.84	441,683.97	813,831.64
5,360.00	7.49	117.87	5,334.66	-185.38	-181.91	375.49	417.23	115.85	441,683.36	813,832.82
5,370.00	7.36	118.13	5,344.58	-185.99	-182.52	376.63	418.53	115.86	441,682.75	813,833.96
5,380.00	7.19	118.94	5,354.50	-186.61	-183.12	377.74	419.79	115.86	441,682.15	813,835.07
5,390.00	6.99	119.88	5,364.42	-187.22	-183.73	378.82	421.02	115.87	441,681.54	813,836.15
5,400.00	6.83	120.61	5,374.35	-187.84	-184.33	379.86	422.22	115.89	441,680.94	813,837.19
5,410.00	6.75	120.51	5,384.28	-188.45	-184.94	380.88	423.40	115.90	441,680.33	813,838.21
5,420.00	6.70	120.57	5,394.21	-189.05	-185.53	381.88	424.57	115.91	441,679.74	813,839.21



ProDirectional
Survey Report



Company: Marathon Oil
Project: Lea County, NM(NAD 83)
Site: Will Kane 15 WA Fee
Well: No. 11H
Wellbore: OH
Design: MWD-100'-17387', PTB: 17444'

Local Co-ordinate Reference: Well No. 11H
TVD Reference: Well @ 3533.00usft
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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)
4,620.00	6.85	119.01	4,601.61	-144.54	-141.93	283.38	316.94	116.60	441,723.34	813,740.71
4,630.00	6.88	119.57	4,611.54	-145.14	-142.51	284.42	318.13	116.61	441,722.76	813,741.75
4,640.00	6.97	119.28	4,621.47	-145.74	-143.11	285.47	319.33	116.62	441,722.16	813,742.80
4,650.00	7.08	118.83	4,631.39	-146.34	-143.70	286.54	320.56	116.63	441,721.57	813,743.87
4,660.00	7.12	119.79	4,641.31	-146.96	-144.31	287.62	321.79	116.64	441,720.96	813,744.95
4,670.00	7.33	120.22	4,651.23	-147.60	-144.93	288.71	323.05	116.66	441,720.34	813,746.04
4,680.00	7.48	120.01	4,661.15	-148.26	-145.58	289.82	324.33	116.67	441,719.69	813,747.15
4,690.00	7.55	119.93	4,671.06	-148.92	-146.23	290.96	325.64	116.68	441,719.04	813,748.29
4,700.00	7.51	121.00	4,680.98	-149.59	-146.90	292.09	326.95	116.70	441,718.37	813,749.42
4,710.00	7.67	121.15	4,690.89	-150.29	-147.58	293.22	328.26	116.72	441,717.69	813,750.55
4,720.00	7.80	120.51	4,700.80	-150.99	-148.27	294.37	329.61	116.73	441,717.00	813,751.70
4,730.00	7.88	120.61	4,710.71	-151.69	-148.96	295.55	330.97	116.75	441,716.31	813,752.88
4,740.00	8.10	119.89	4,720.61	-152.40	-149.66	296.75	332.35	116.76	441,715.61	813,754.08
4,750.00	8.27	119.54	4,730.51	-153.12	-150.37	297.98	333.78	116.78	441,714.90	813,755.31
4,760.00	8.18	119.78	4,740.40	-153.84	-151.08	299.23	335.20	116.79	441,714.19	813,756.56
4,770.00	8.12	119.88	4,750.30	-154.56	-151.78	300.46	336.62	116.80	441,713.49	813,757.79
4,780.00	8.11	120.08	4,760.20	-155.27	-152.49	301.68	338.03	116.81	441,712.78	813,759.01
4,790.00	8.23	119.73	4,770.10	-155.99	-153.20	302.91	339.45	116.83	441,712.07	813,760.24
4,800.00	8.18	119.70	4,780.00	-156.71	-153.90	304.15	340.87	116.84	441,711.37	813,761.48
4,810.00	8.15	119.21	4,789.90	-157.42	-154.60	305.39	342.29	116.85	441,710.67	813,762.72
4,820.00	8.13	118.49	4,799.80	-158.11	-155.29	306.63	343.71	116.86	441,709.98	813,763.96
4,830.00	8.23	117.41	4,809.70	-158.79	-155.95	307.89	345.13	116.86	441,709.32	813,765.22
4,840.00	8.12	116.26	4,819.59	-159.45	-156.59	309.15	346.55	116.86	441,708.68	813,766.48
4,850.00	7.58	116.14	4,829.50	-160.06	-157.20	310.38	347.92	116.86	441,708.07	813,767.71
4,860.00	7.32	115.37	4,839.42	-160.64	-157.76	311.55	349.21	116.86	441,707.51	813,768.88
4,870.00	7.18	114.61	4,849.34	-161.18	-158.29	312.69	350.48	116.85	441,706.98	813,770.02
4,880.00	7.14	114.23	4,859.26	-161.71	-158.81	313.83	351.72	116.84	441,706.46	813,771.16



ProDirectional Survey Report



Company: Marathon Oil
Project: Lea County, NM(NAD 83)
Site: Will Kane 15 WA Fee
Well: No. 11H
Wellbore: OH
Design: MWD-100'-17387', PTB: 17444'

Local Co-ordinate Reference: Well No. 11H
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)
4,080.00	6.27	117.58	4,064.82	-115.35	-113.21	232.06	258.20	116.01	441,752.06	813,689.39
4,090.00	6.14	118.37	4,074.77	-115.86	-113.71	233.01	259.28	116.01	441,751.56	813,690.34
4,100.00	6.13	118.61	4,084.71	-116.38	-114.22	233.95	260.34	116.02	441,751.05	813,691.28
4,110.00	6.19	118.30	4,094.65	-116.90	-114.73	234.89	261.42	116.03	441,750.54	813,692.22
4,120.00	6.16	118.46	4,104.59	-117.42	-115.25	235.84	262.49	116.04	441,750.02	813,693.17
4,130.00	6.06	119.51	4,114.54	-117.95	-115.76	236.77	263.55	116.05	441,749.51	813,694.10
4,140.00	6.10	118.80	4,124.48	-118.47	-116.28	237.70	264.61	116.07	441,748.99	813,695.03
4,150.00	6.15	118.41	4,134.42	-118.99	-116.79	238.63	265.68	116.08	441,748.48	813,695.96
4,160.00	6.21	118.47	4,144.36	-119.51	-117.30	239.58	266.75	116.09	441,747.97	813,696.91
4,170.00	6.28	118.84	4,154.31	-120.04	-117.82	240.53	267.84	116.10	441,747.45	813,697.86
4,180.00	6.15	119.56	4,164.25	-120.58	-118.35	241.48	268.92	116.11	441,746.92	813,698.81
4,190.00	6.16	120.41	4,174.19	-121.12	-118.89	242.41	269.99	116.13	441,746.38	813,699.74
4,200.00	6.25	119.47	4,184.13	-121.67	-119.43	243.34	271.07	116.14	441,745.84	813,700.67
4,210.00	6.34	118.80	4,194.07	-122.21	-119.96	244.30	272.16	116.15	441,745.31	813,701.63
4,220.00	6.31	119.71	4,204.01	-122.76	-120.50	245.26	273.26	116.16	441,744.77	813,702.59
4,230.00	6.18	120.10	4,213.95	-123.31	-121.04	246.21	274.35	116.18	441,744.23	813,703.54
4,240.00	6.18	120.48	4,223.89	-123.86	-121.58	247.13	275.42	116.20	441,743.69	813,704.46
4,250.00	6.25	120.02	4,233.83	-124.42	-122.13	248.07	276.50	116.21	441,743.14	813,705.40
4,260.00	6.25	119.94	4,243.77	-124.97	-122.67	249.01	277.59	116.23	441,742.60	813,706.34
4,270.00	6.19	120.07	4,253.71	-125.52	-123.21	249.95	278.67	116.24	441,742.06	813,707.28
4,280.00	6.21	120.25	4,263.66	-126.07	-123.76	250.89	279.75	116.26	441,741.51	813,708.22
4,290.00	6.27	120.06	4,273.60	-126.63	-124.30	251.83	280.83	116.27	441,740.97	813,709.16
4,300.00	6.19	120.14	4,283.54	-127.18	-124.85	252.76	281.92	116.29	441,740.42	813,710.09
4,310.00	6.17	120.15	4,293.48	-127.73	-125.39	253.69	282.99	116.30	441,739.88	813,711.02
4,320.00	6.18	119.93	4,303.42	-128.28	-125.93	254.63	284.06	116.31	441,739.34	813,711.96
4,330.00	6.15	119.42	4,313.36	-128.82	-126.46	255.56	285.14	116.33	441,738.81	813,712.89
4,340.00	6.19	119.50	4,323.31	-129.35	-126.99	256.49	286.21	116.34	441,738.28	813,713.82

Company: Marathon Oil
Project: Lea County, NM(NAD 83)
Site: Will Kane 15 WA Fee
Well: No. 11H
Wellbore: OH
Design: MWD-100'-17387', PTB: 17444'

Local Co-ordinate Reference: Well No. 11H
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)
3,540.00	7.69	109.26	3,528.52	-90.86	-89.25	174.32	195.84	117.11	441,776.02	813,631.65
3,550.00	7.53	109.10	3,538.43	-91.31	-89.69	175.57	197.15	117.06	441,775.58	813,632.90
3,560.00	7.46	108.98	3,548.34	-91.75	-90.11	176.80	198.44	117.01	441,775.16	813,634.13
3,570.00	7.52	109.12	3,558.26	-92.18	-90.54	178.04	199.74	116.96	441,774.73	813,635.37
3,580.00	7.62	108.80	3,568.17	-92.62	-90.97	179.28	201.04	116.90	441,774.30	813,636.61
3,590.00	7.58	109.13	3,578.08	-93.06	-91.40	180.53	202.35	116.85	441,773.87	813,637.86
3,600.00	7.56	109.15	3,588.00	-93.51	-91.83	181.78	203.66	116.80	441,773.44	813,639.11
3,610.00	7.54	109.14	3,597.91	-93.95	-92.26	183.02	204.96	116.75	441,773.01	813,640.35
3,620.00	7.65	108.81	3,607.82	-94.39	-92.69	184.27	206.27	116.70	441,772.58	813,641.60
3,630.00	7.70	108.80	3,617.73	-94.83	-93.12	185.53	207.59	116.65	441,772.15	813,642.86
3,640.00	7.66	109.31	3,627.64	-95.28	-93.56	186.80	208.91	116.60	441,771.71	813,644.13
3,650.00	7.60	108.81	3,637.55	-95.73	-93.99	188.05	210.23	116.56	441,771.28	813,645.38
3,660.00	7.55	108.35	3,647.47	-96.16	-94.41	189.30	211.54	116.51	441,770.86	813,646.63
3,670.00	7.67	108.59	3,657.38	-96.59	-94.83	190.56	212.85	116.46	441,770.44	813,647.89
3,680.00	7.64	109.15	3,667.29	-97.03	-95.26	191.82	214.17	116.41	441,770.01	813,649.15
3,690.00	7.59	109.18	3,677.20	-97.48	-95.70	193.07	215.48	116.37	441,769.57	813,650.40
3,700.00	7.60	109.15	3,687.11	-97.92	-96.13	194.32	216.79	116.32	441,769.14	813,651.65
3,710.00	7.75	108.73	3,697.02	-98.37	-96.56	195.58	218.12	116.28	441,768.71	813,652.91
3,720.00	7.71	109.13	3,706.93	-98.82	-97.00	196.85	219.45	116.23	441,768.27	813,654.18
3,730.00	7.56	109.27	3,716.84	-99.27	-97.44	198.11	220.77	116.19	441,767.83	813,655.44
3,740.00	7.42	109.39	3,726.76	-99.71	-97.87	199.34	222.07	116.15	441,767.40	813,656.67
3,750.00	7.15	110.00	3,736.68	-100.15	-98.30	200.53	223.33	116.11	441,766.97	813,657.86
3,760.00	6.90	110.75	3,746.60	-100.58	-98.72	201.68	224.54	116.08	441,766.55	813,659.01
3,770.00	6.55	111.65	3,756.53	-101.02	-99.14	202.77	225.71	116.06	441,766.13	813,660.10
3,780.00	6.20	112.43	3,766.47	-101.44	-99.56	203.80	226.82	116.04	441,765.71	813,661.13
3,790.00	6.07	112.48	3,776.41	-101.86	-99.97	204.79	227.88	116.02	441,765.30	813,662.12
3,800.00	5.95	113.60	3,786.36	-102.28	-100.38	205.75	228.93	116.01	441,764.89	813,663.08

Company: Marathon Oil
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Site: Will Kane 15 WA Fee
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Design: MWD-100'-17387', PTB: 17444'

Local Co-ordinate Reference: Well No. 11H
TVD Reference: Well @ 3533.00usft
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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)
3,000.00	7.78	114.82	2,993.61	-62.12	-61.14	106.01	122.38	119.97	441,804.13	813,563.34
3,010.00	7.88	114.37	3,003.52	-62.70	-61.71	107.25	123.74	119.91	441,803.56	813,564.58
3,020.00	7.90	114.31	3,013.43	-63.27	-62.27	108.50	125.10	119.85	441,803.00	813,565.83
3,030.00	7.87	114.35	3,023.33	-63.85	-62.84	109.75	126.47	119.79	441,802.43	813,567.08
3,040.00	7.96	113.77	3,033.24	-64.42	-63.40	111.01	127.84	119.73	441,801.87	813,568.34
3,050.00	7.89	113.97	3,043.14	-64.99	-63.96	112.27	129.21	119.67	441,801.31	813,569.60
3,060.00	7.86	114.19	3,053.05	-65.56	-64.51	113.52	130.57	119.61	441,800.76	813,570.85
3,070.00	7.92	113.89	3,062.95	-66.13	-65.07	114.77	131.94	119.55	441,800.20	813,572.10
3,080.00	8.16	114.36	3,072.85	-66.72	-65.65	116.05	133.33	119.50	441,799.62	813,573.38
3,090.00	8.26	114.19	3,082.75	-67.32	-66.23	117.35	134.75	119.44	441,799.04	813,574.68
3,100.00	8.04	114.24	3,092.65	-67.91	-66.81	118.65	136.17	119.39	441,798.46	813,575.98
3,110.00	8.10	113.92	3,102.55	-68.49	-67.39	119.93	137.56	119.33	441,797.88	813,577.26
3,120.00	8.10	113.95	3,112.45	-69.08	-67.96	121.22	138.97	119.28	441,797.31	813,578.55
3,130.00	8.24	113.65	3,122.35	-69.66	-68.53	122.52	140.38	119.22	441,796.74	813,579.85
3,140.00	8.24	113.92	3,132.25	-70.25	-69.11	123.83	141.81	119.17	441,796.16	813,581.16
3,150.00	8.20	113.73	3,142.14	-70.84	-69.69	125.14	143.23	119.11	441,795.58	813,582.47
3,160.00	8.25	113.71	3,152.04	-71.43	-70.26	126.44	144.66	119.06	441,795.01	813,583.77
3,170.00	8.15	113.57	3,161.94	-72.01	-70.84	127.75	146.08	119.01	441,794.43	813,585.08
3,180.00	8.15	113.21	3,171.84	-72.59	-71.40	129.05	147.49	118.95	441,793.87	813,586.38
3,190.00	8.27	113.16	3,181.73	-73.16	-71.96	130.37	148.91	118.90	441,793.31	813,587.70
3,200.00	8.31	113.29	3,191.63	-73.74	-72.53	131.69	150.34	118.84	441,792.74	813,589.02
3,210.00	8.39	113.41	3,201.52	-74.33	-73.10	133.02	151.79	118.79	441,792.17	813,590.35
3,220.00	8.47	113.28	3,211.42	-74.93	-73.69	134.37	153.25	118.74	441,791.58	813,591.70
3,230.00	8.48	113.13	3,221.31	-75.52	-74.27	135.72	154.71	118.69	441,791.00	813,593.05
3,240.00	8.34	113.06	3,231.20	-76.10	-74.84	137.07	156.17	118.63	441,790.43	813,594.40
3,250.00	8.38	112.95	3,241.09	-76.69	-75.41	138.41	157.62	118.58	441,789.86	813,595.74
3,260.00	8.47	113.05	3,250.99	-77.27	-75.98	139.76	159.07	118.53	441,789.29	813,597.09



ProDirectional Survey Report



Company: Marathon Oil
Project: Lea County, NM(NAD 83)
Site: Will Kane 15 WA Fee
Well: No. 11H
Wellbore: OH
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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)
2,460.00	4.77	119.23	2,457.13	-35.13	-34.65	52.14	62.60	123.61	441,830.62	813,509.47
2,470.00	4.65	119.05	2,467.10	-35.54	-35.05	52.85	63.42	123.55	441,830.22	813,510.18
2,480.00	4.58	119.15	2,477.07	-35.93	-35.44	53.56	64.22	123.49	441,829.83	813,510.89
2,490.00	4.58	119.21	2,487.04	-36.33	-35.83	54.25	65.02	123.44	441,829.44	813,511.58
2,500.00	4.61	119.77	2,497.00	-36.73	-36.22	54.95	65.82	123.39	441,829.05	813,512.28
2,510.00	4.61	119.74	2,506.97	-37.14	-36.62	55.65	66.62	123.35	441,828.65	813,512.98
2,520.00	4.59	118.96	2,516.94	-37.54	-37.02	56.35	67.42	123.30	441,828.25	813,513.68
2,530.00	4.59	119.38	2,526.91	-37.93	-37.41	57.05	68.22	123.25	441,827.86	813,514.38
2,540.00	4.69	118.83	2,536.88	-38.33	-37.80	57.75	69.02	123.21	441,827.47	813,515.08
2,550.00	4.69	118.14	2,546.84	-38.73	-38.19	58.47	69.84	123.15	441,827.08	813,515.80
2,560.00	4.66	119.54	2,556.81	-39.13	-38.58	59.19	70.65	123.10	441,826.69	813,516.52
2,570.00	4.63	119.75	2,566.78	-39.54	-38.98	59.89	71.46	123.06	441,826.29	813,517.22
2,580.00	4.62	119.58	2,576.74	-39.94	-39.38	60.59	72.26	123.02	441,825.89	813,517.92
2,590.00	4.67	118.98	2,586.71	-40.34	-39.78	61.30	73.07	122.98	441,825.49	813,518.63
2,600.00	4.69	118.32	2,596.68	-40.74	-40.17	62.01	73.89	122.93	441,825.10	813,519.34
2,610.00	4.61	119.09	2,606.64	-41.14	-40.56	62.72	74.69	122.89	441,824.71	813,520.05
2,620.00	4.61	119.16	2,616.61	-41.54	-40.95	63.43	75.50	122.85	441,824.32	813,520.76
2,630.00	4.73	118.68	2,626.58	-41.94	-41.34	64.14	76.31	122.81	441,823.93	813,521.47
2,640.00	4.81	119.68	2,636.54	-42.35	-41.75	64.86	77.14	122.77	441,823.52	813,522.19
2,650.00	4.83	119.57	2,646.51	-42.77	-42.16	65.59	77.98	122.73	441,823.11	813,522.92
2,660.00	4.94	118.84	2,656.47	-43.19	-42.58	66.34	78.83	122.70	441,822.69	813,523.67
2,670.00	5.12	118.52	2,666.43	-43.62	-43.00	67.11	79.70	122.65	441,822.27	813,524.44
2,680.00	5.66	117.19	2,676.39	-44.07	-43.44	67.94	80.64	122.59	441,821.83	813,525.27
2,690.00	6.16	116.45	2,686.34	-44.54	-43.90	68.86	81.66	122.52	441,821.37	813,526.19
2,700.00	6.71	116.26	2,696.27	-45.05	-44.40	69.86	82.78	122.44	441,820.87	813,527.19
2,710.00	7.14	116.42	2,706.20	-45.59	-44.94	70.94	83.98	122.35	441,820.33	813,528.27
2,720.00	7.12	116.07	2,716.12	-46.15	-45.49	72.05	85.21	122.26	441,819.78	813,529.38



ProDirectional Survey Report



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MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	V. Sec (usft)	N/S (usft)	E/W (usft)	Closure Distance (usft)	Closure Azimuth (°)	Northings (usft)	Easting (usft)
1,920.00	5.00	123.80	1,919.03	-10.99	-10.86	13.72	17.50	128.35	441,854.41	813,471.05
1,930.00	4.93	124.45	1,928.99	-11.48	-11.35	14.44	18.37	128.16	441,853.92	813,471.77
1,940.00	4.98	123.74	1,938.96	-11.97	-11.83	15.16	19.23	127.97	441,853.44	813,472.49
1,950.00	4.96	123.51	1,948.92	-12.46	-12.31	15.88	20.09	127.79	441,852.96	813,473.21
1,960.00	5.01	123.58	1,958.88	-12.94	-12.79	16.60	20.96	127.61	441,852.48	813,473.93
1,970.00	4.99	123.36	1,968.84	-13.43	-13.27	17.33	21.83	127.44	441,852.00	813,474.66
1,980.00	4.94	123.20	1,978.80	-13.91	-13.75	18.05	22.69	127.29	441,851.52	813,475.38
1,990.00	4.91	123.06	1,988.77	-14.39	-14.21	18.77	23.55	127.13	441,851.06	813,476.10
2,000.00	4.96	123.01	1,998.73	-14.86	-14.68	19.49	24.40	126.99	441,850.59	813,476.82
2,010.00	5.06	122.12	2,008.69	-15.34	-15.15	20.23	25.28	126.84	441,850.12	813,477.56
2,020.00	4.99	122.43	2,018.65	-15.81	-15.62	20.97	26.15	126.68	441,849.65	813,478.30
2,030.00	4.88	122.55	2,028.62	-16.28	-16.08	21.70	27.01	126.55	441,849.19	813,479.03
2,040.00	4.89	122.78	2,038.58	-16.75	-16.54	22.41	27.86	126.43	441,848.73	813,479.74
2,050.00	4.87	122.66	2,048.54	-17.22	-17.00	23.13	28.71	126.32	441,848.27	813,480.46
2,060.00	4.88	122.47	2,058.51	-17.68	-17.46	23.84	29.55	126.21	441,847.81	813,481.17
2,070.00	4.91	123.10	2,068.47	-18.15	-17.92	24.56	30.41	126.12	441,847.35	813,481.89
2,080.00	4.90	122.82	2,078.44	-18.62	-18.39	25.28	31.26	126.03	441,846.88	813,482.61
2,090.00	4.88	122.79	2,088.40	-19.09	-18.85	26.00	32.11	125.95	441,846.42	813,483.33
2,100.00	4.98	121.90	2,098.36	-19.56	-19.31	26.72	32.97	125.85	441,845.96	813,484.05
2,110.00	4.90	121.71	2,108.32	-20.02	-19.76	27.45	33.83	125.75	441,845.51	813,484.78
2,120.00	4.86	121.52	2,118.29	-20.47	-20.21	28.18	34.68	125.65	441,845.06	813,485.51
2,130.00	4.85	121.36	2,128.25	-20.92	-20.65	28.90	35.52	125.55	441,844.62	813,486.23
2,140.00	4.80	121.30	2,138.22	-21.36	-21.09	29.62	36.36	125.45	441,844.18	813,486.95
2,150.00	4.81	120.22	2,148.18	-21.80	-21.52	30.34	37.19	125.35	441,843.75	813,487.67
2,160.00	4.77	121.49	2,158.15	-22.23	-21.94	31.05	38.03	125.25	441,843.33	813,488.38
2,170.00	4.83	120.68	2,168.11	-22.67	-22.38	31.77	38.86	125.16	441,842.89	813,489.10
2,180.00	4.97	122.83	2,178.08	-23.13	-22.83	32.50	39.71	125.08	441,842.44	813,489.83

Company: Marathon Oil
Project: Lea County, NM(NAD 83)
Site: Will Kane 15 WA Fee
Well: No. 11H
Wellbore: OH
Design: MWD-100'-17387', PTB: 17444'

Local Co-ordinate Reference: Well No. 11H
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)
1,380.00	1.73	304.98	1,379.93	0.09	0.08	-0.44	0.45	280.59	441,865.35	813,456.89
1,390.00	1.84	305.50	1,389.93	0.27	0.26	-0.70	0.75	290.61	441,865.53	813,456.63
1,400.00	1.95	302.91	1,399.92	0.46	0.45	-0.97	1.07	294.76	441,865.72	813,456.36
1,410.00	2.03	301.28	1,409.92	0.64	0.63	-1.27	1.42	296.55	441,865.90	813,456.06
1,420.00	2.07	300.77	1,419.91	0.83	0.82	-1.57	1.77	297.45	441,866.09	813,455.76
1,430.00	2.14	299.04	1,429.90	1.02	1.00	-1.89	2.14	297.87	441,866.27	813,455.44
1,440.00	2.13	297.22	1,439.90	1.20	1.18	-2.22	2.51	297.91	441,866.45	813,455.11
1,450.00	2.13	296.69	1,449.89	1.37	1.34	-2.55	2.88	297.78	441,866.61	813,454.78
1,460.00	2.16	295.52	1,459.88	1.54	1.51	-2.89	3.26	297.59	441,866.78	813,454.44
1,470.00	2.17	295.47	1,469.88	1.70	1.67	-3.23	3.64	297.37	441,866.94	813,454.10
1,480.00	2.16	296.04	1,479.87	1.87	1.84	-3.57	4.01	297.22	441,867.11	813,453.76
1,490.00	2.16	295.57	1,489.86	2.04	2.00	-3.91	4.39	297.10	441,867.27	813,453.42
1,500.00	1.97	294.36	1,499.86	2.19	2.15	-4.23	4.75	296.94	441,867.42	813,453.10
1,510.00	1.51	291.26	1,509.85	2.31	2.27	-4.51	5.05	296.70	441,867.54	813,452.82
1,520.00	0.72	282.30	1,519.85	2.38	2.33	-4.70	5.25	296.40	441,867.60	813,452.63
1,530.00	0.27	183.28	1,529.85	2.37	2.32	-4.76	5.30	296.00	441,867.59	813,452.57
1,540.00	0.84	135.83	1,539.85	2.29	2.25	-4.71	5.22	295.49	441,867.52	813,452.62
1,550.00	1.10	131.14	1,549.85	2.17	2.13	-4.59	5.06	294.90	441,867.40	813,452.74
1,560.00	1.21	132.45	1,559.84	2.04	2.00	-4.44	4.87	294.21	441,867.27	813,452.89
1,570.00	1.32	129.50	1,569.84	1.89	1.85	-4.27	4.65	293.43	441,867.12	813,453.06
1,580.00	1.39	128.22	1,579.84	1.74	1.70	-4.09	4.43	292.62	441,866.97	813,453.24
1,590.00	1.42	128.28	1,589.84	1.59	1.55	-3.89	4.19	291.72	441,866.82	813,453.44
1,600.00	1.52	126.58	1,599.83	1.43	1.40	-3.69	3.95	290.71	441,866.67	813,453.64
1,610.00	1.60	126.30	1,609.83	1.27	1.23	-3.47	3.68	289.56	441,866.50	813,453.86
1,620.00	1.52	128.60	1,619.83	1.10	1.07	-3.26	3.43	288.16	441,866.34	813,454.07
1,630.00	1.45	130.49	1,629.82	0.93	0.90	-3.06	3.19	286.47	441,866.17	813,454.27
1,640.00	1.46	129.69	1,639.82	0.77	0.74	-2.86	2.96	284.49	441,866.01	813,454.47

Company: Marathon Oil
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Local Co-ordinate Reference: Well No. 11H
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 (°)	Northling (usft)	Easting (usft)
840.00	0.47	270.68	839.96	-0.56	-0.53	3.85	3.89	97.82	441,864.74	813,461.18
850.00	0.44	267.65	849.96	-0.56	-0.53	3.77	3.81	97.99	441,864.74	813,461.10
860.00	0.42	265.48	859.96	-0.57	-0.53	3.70	3.73	98.22	441,864.74	813,461.03
870.00	0.45	265.50	869.96	-0.57	-0.54	3.62	3.66	98.48	441,864.73	813,460.95
880.00	0.47	263.67	879.96	-0.58	-0.55	3.54	3.58	98.79	441,864.72	813,460.87
890.00	0.50	266.64	889.96	-0.59	-0.55	3.46	3.50	99.12	441,864.72	813,460.79
900.00	0.46	267.47	899.96	-0.59	-0.56	3.37	3.42	99.41	441,864.71	813,460.70
910.00	0.42	263.16	909.96	-0.60	-0.57	3.30	3.34	99.73	441,864.70	813,460.63
920.00	0.42	262.00	919.96	-0.60	-0.57	3.22	3.27	100.11	441,864.70	813,460.55
930.00	0.48	261.48	929.96	-0.61	-0.59	3.15	3.20	100.55	441,864.68	813,460.48
940.00	0.44	264.08	939.96	-0.62	-0.60	3.07	3.12	101.00	441,864.67	813,460.40
950.00	0.43	266.07	949.96	-0.63	-0.60	2.99	3.05	101.39	441,864.67	813,460.32
960.00	0.41	265.05	959.96	-0.64	-0.61	2.92	2.98	101.78	441,864.66	813,460.25
970.00	0.41	263.15	969.96	-0.64	-0.62	2.85	2.91	102.21	441,864.65	813,460.18
980.00	0.40	262.95	979.96	-0.65	-0.62	2.78	2.85	102.67	441,864.65	813,460.11
990.00	0.38	264.86	989.95	-0.66	-0.63	2.71	2.78	103.12	441,864.64	813,460.04
1,000.00	0.40	267.72	999.95	-0.66	-0.64	2.64	2.72	103.54	441,864.63	813,459.97
1,010.00	0.38	266.22	1,009.95	-0.66	-0.64	2.57	2.65	103.96	441,864.63	813,459.90
1,020.00	0.34	265.48	1,019.95	-0.67	-0.64	2.51	2.59	104.39	441,864.63	813,459.84
1,030.00	0.40	265.95	1,029.95	-0.67	-0.65	2.45	2.53	104.86	441,864.62	813,459.78
1,040.00	0.39	266.08	1,039.95	-0.68	-0.65	2.38	2.46	105.38	441,864.62	813,459.71
1,050.00	0.36	267.05	1,049.95	-0.68	-0.66	2.31	2.40	105.88	441,864.61	813,459.64
1,060.00	0.40	268.02	1,059.95	-0.68	-0.66	2.24	2.34	106.39	441,864.61	813,459.57
1,070.00	0.47	268.38	1,069.95	-0.68	-0.66	2.17	2.27	106.99	441,864.61	813,459.50
1,080.00	0.49	272.00	1,079.95	-0.68	-0.66	2.09	2.19	107.62	441,864.61	813,459.42
1,090.00	0.38	273.44	1,089.95	-0.68	-0.66	2.01	2.11	108.15	441,864.61	813,459.34
1,100.00	0.39	272.32	1,099.95	-0.67	-0.66	1.94	2.05	108.65	441,864.61	813,459.27



ProDirectional Survey Report



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Local Co-ordinate Reference: Well No. 11H
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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)
300.00	0.82	92.60	299.98	-0.32	-0.28	3.50	3.51	94.64	441,864.99	813,460.83
310.00	0.75	90.77	309.98	-0.32	-0.29	3.63	3.65	94.53	441,864.98	813,460.96
320.00	0.73	91.76	319.98	-0.33	-0.29	3.76	3.77	94.42	441,864.98	813,461.09
330.00	0.73	92.73	329.97	-0.33	-0.30	3.89	3.90	94.35	441,864.97	813,461.22
340.00	0.75	92.78	339.97	-0.34	-0.30	4.02	4.03	94.30	441,864.97	813,461.35
350.00	0.68	90.50	349.97	-0.34	-0.31	4.14	4.16	94.22	441,864.96	813,461.47
360.00	0.63	93.19	359.97	-0.35	-0.31	4.26	4.27	94.16	441,864.96	813,461.59
370.00	0.66	94.37	369.97	-0.36	-0.32	4.37	4.38	94.15	441,864.95	813,461.70
380.00	0.63	96.03	379.97	-0.37	-0.33	4.48	4.49	94.17	441,864.94	813,461.81
390.00	0.58	100.48	389.97	-0.38	-0.34	4.59	4.60	94.27	441,864.93	813,461.92
400.00	0.59	104.10	399.97	-0.41	-0.36	4.69	4.70	94.44	441,864.91	813,462.02
410.00	0.64	97.09	409.97	-0.43	-0.38	4.79	4.81	94.57	441,864.89	813,462.12
420.00	0.65	96.22	419.97	-0.44	-0.40	4.90	4.92	94.62	441,864.87	813,462.23
430.00	0.62	97.99	429.97	-0.46	-0.41	5.01	5.03	94.67	441,864.86	813,462.34
440.00	0.61	99.33	439.97	-0.47	-0.43	5.12	5.14	94.76	441,864.84	813,462.45
450.00	0.50	99.84	449.97	-0.49	-0.44	5.22	5.23	94.85	441,864.83	813,462.55
460.00	0.42	103.75	459.97	-0.51	-0.46	5.29	5.31	94.95	441,864.81	813,462.62
470.00	0.41	103.39	469.97	-0.53	-0.48	5.36	5.39	95.06	441,864.79	813,462.69
480.00	0.43	99.10	479.97	-0.54	-0.49	5.44	5.46	95.15	441,864.78	813,462.77
490.00	0.34	99.72	489.97	-0.55	-0.50	5.50	5.53	95.20	441,864.77	813,462.83
500.00	0.28	98.59	499.97	-0.56	-0.51	5.56	5.58	95.24	441,864.76	813,462.89
510.00	0.23	98.84	509.97	-0.57	-0.52	5.60	5.62	95.26	441,864.75	813,462.93
520.00	0.24	101.62	519.97	-0.58	-0.52	5.64	5.66	95.30	441,864.75	813,462.97
530.00	0.18	97.96	529.97	-0.58	-0.53	5.68	5.70	95.33	441,864.74	813,463.01
540.00	0.03	97.17	539.97	-0.58	-0.53	5.69	5.72	95.34	441,864.74	813,463.02
550.00	0.09	282.07	549.97	-0.58	-0.53	5.69	5.71	95.33	441,864.74	813,463.02
560.00	0.19	277.66	559.97	-0.58	-0.53	5.67	5.69	95.31	441,864.74	813,463.00



ProDirectional Survey Report



Company: Marathon Oil
Project: Lea County, NM(NAD 83)
Site: Will Kane 15 WA Fee
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Wellbore: OH
Design: MWD-100'-17387', PTB: 17444'

Local Co-ordinate Reference: Well No. 11H
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Survey Calculation Method: Minimum Curvature
Database: WellPlanner1

Project Lea County, NM(NAD 83)

Map System: US State Plane 1983
Geo Datum: North American Datum 1983
Map Zone: New Mexico Eastern Zone

System Datum: Mean Sea Level

Site Will Kane 15 WA Fee

Site Position:		Northing:	441,865.25 usft	Latitude:	32.211705
From:	Map	Easting:	813,367.40 usft	Longitude:	-103.453772
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "	Grid Convergence:	0.47 °

Well No. 11H, LNM1519519

Well Position	+N/-S	0.00 usft	Northing:	441,865.27 usft	Latitude:	32.211703
	+E/-W	0.00 usft	Easting:	813,457.33 usft	Longitude:	-103.453481
Position Uncertainty		0.00 usft	Wellhead Elevation:	usft	Ground Level:	3,508.00 usft

Wellbore OH

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	HDGM	8/7/2019	6.62	59.87	47,878.10

Design MWD-100'-17387', PTB: 17444'

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	359.47	



PRODIRECTIONAL

Survey Certification Letter

November 13, 2019



Marathon Oil[®]
Corporation

Operator Name: Marathon Oil
Well Name: Will Kane 15 WA Fee No. 11H
County/Parish: Lea County,
State: NM
Rig Name: Precision 594
Job Number: LNM1519519

This is to certify the surveys performed on the referenced well by Professional Directional Ent., Inc. are true and correct MWD Surveys, data provided as follows:

<u>Surveyor</u>	<u>Surveyed Depths</u>	<u>Projection to Bit</u>	<u>Dates Performed</u>	<u>Type of Survey</u>
ProDirectional	11,564' MD – 17,387' MD	17,444' MD	08/07/19 – 10/19/19	MWD

Sincerely,

Mike Coats

Mike Coats
Regulatory Specialist
Professional Directional

850 Conroe Park West Drive | Conroe, TX 77303 | Phone: 936.441.7266

prodirectional.com

The Standard of Excellence in Directional Supervision