



Marathon Oil

Marathon Oil

Lea County, NM

Dee Boot Fee 24-34-26 (3-6-7-19)

WA #6H

Lateral

Design: Lateral 12195'-17470' PTB 17522'

Survey Report

16 August, 2018



Company: Marathon Oil	Local Co-ordinate Reference: Well WA #6H
Project: Lea County, NM	TVD Reference: Well @ 3473.50usft (GL 3447' + KB: 26.5' (H&P480))
Site: Dee Boot Fee 24-34-26 (3-6-7-19)	MD Reference: Well @ 3473.50usft (GL 3447' + KB: 26.5' (H&P480))
Well: WA #6H	North Reference: Grid
Wellbore: Lateral	Survey Calculation Method: Minimum Curvature
Design: Lateral 12195'-17470' PTB 17522'	Database: WellPlanner1

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

Site	Dee Boot Fee 24-34-26 (3-6-7-19)				
Site Position:		Northing:	435,782.47 usft	Latitude:	32.194895
From:	Map	Easting:	777,788.07 usft	Longitude:	-103.435339
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "	Grid Convergence:	0.48 °

Well	WA #6H					
Well Position	+N/-S	0.00 usft	Northing:	435,782.47 usft	Latitude:	32.194896
	+E/-W	0.00 usft	Easting:	777,728.07 usft	Longitude:	-103.435533
Position Uncertainty		0.00 usft	Wellhead Elevation:	usft	Ground Level:	3,447.00 usft

Wellbore	Lateral					
Magnetics	Model Name	Sample Date	Declination	Dip Angle	Field Strength	
			(°)	(°)	(nT)	
	User Defined	4/26/2018	6.73	59.91	48,029.80	

Design	Lateral 12195'-17470' PTB 17522'				
Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	12,122.00
Vertical Section:	Depth From (TVD)	+N/-S	+E/-W	Direction	
	(usft)	(usft)	(usft)	(°)	
	0.00	0.00	0.00	179.51	



Professional Directional
Survey Report



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From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
100.00	1,029.00	Survey #1 (Pilot)	GYRO-NS-CT	OWSG XYZ Accel with XY Static and Continuous Gyro
1,118.00	12,122.00	Survey #2 (Pilot)	MWD+IFR1	OWSG MWD + IFR1
12,195.00	17,522.00	Survey #1 (Lateral)	MWD+IFR1	OWSG MWD + IFR1

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	V. Sec (usft)	N/S (usft)	E/W (usft)	Closure Distance	Closure Azimuth	Northing (usft)	Easting (usft)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	435,782.47	777,728.07
[KnifeFight#6H]FTP										
100.00	0.46	57.92	100.00	-0.21	0.21	0.34	0.40	57.92	435,782.68	777,728.41
200.00	0.60	34.63	199.99	-0.85	0.86	0.98	1.30	48.76	435,783.33	777,729.05
300.00	0.70	37.35	299.99	-1.76	1.77	1.65	2.42	42.86	435,784.24	777,729.72
400.00	0.89	43.38	399.98	-2.80	2.82	2.55	3.80	42.08	435,785.29	777,730.62
500.00	1.20	46.37	499.96	-4.08	4.11	3.84	5.63	43.06	435,786.58	777,731.91
600.00	1.34	48.37	599.94	-5.56	5.61	5.47	7.84	44.29	435,788.08	777,733.54
700.00	1.60	49.95	699.90	-7.22	7.29	7.42	10.40	45.51	435,789.76	777,735.49
800.00	1.95	48.41	799.86	-9.23	9.31	9.76	13.49	46.33	435,791.78	777,737.83
900.00	2.28	45.82	899.79	-11.72	11.83	12.46	17.18	46.48	435,794.30	777,740.53
1,000.00	2.51	43.61	999.70	-14.67	14.80	15.39	21.35	46.12	435,797.27	777,743.46
1,029.00	2.56	41.02	1,028.67	-15.61	15.75	16.26	22.63	45.91	435,798.22	777,744.33
1,118.00	2.30	39.70	1,117.59	-18.46	18.62	18.70	26.39	45.12	435,801.09	777,746.77
1,148.00	2.20	39.00	1,147.57	-19.37	19.53	19.45	27.56	44.88	435,802.00	777,747.52
1,238.00	0.40	50.20	1,237.54	-20.90	21.08	20.78	29.60	44.59	435,803.55	777,748.85
1,329.00	0.10	303.10	1,328.54	-21.14	21.32	20.95	29.90	44.50	435,803.79	777,749.02
1,421.00	0.00	13.80	1,420.54	-21.19	21.37	20.89	29.88	44.35	435,803.84	777,748.96
1,515.00	1.00	325.50	1,514.54	-21.87	22.04	20.42	30.05	42.81	435,804.51	777,748.49
1,610.00	2.40	306.30	1,609.49	-23.75	23.90	18.35	30.13	37.51	435,806.37	777,746.42
1,704.00	2.90	305.50	1,703.39	-26.32	26.45	14.83	30.32	29.27	435,808.92	777,742.90

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MD Reference: Well @ 3473.50usft (GL 3447' + KB: 26.5' (H&P480))
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: WellPlanner1

Survey												
MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	V. Sec (usft)	N/S (usft)	E/W (usft)	Closure Distance	Closure Azimuth	Northing (usft)	Easting (usft)		
1,799.00	2.80	305.30	1,798.27	-29.09	29.19	10.98	31.18	20.61	435,811.66	777,739.05		
1,893.00	2.50	305.70	1,892.17	-31.64	31.71	7.44	32.57	13.20	435,814.18	777,735.51		
1,987.00	3.00	305.10	1,986.07	-34.29	34.32	3.76	34.53	6.25	435,816.79	777,731.83		
2,082.00	3.80	307.20	2,080.90	-37.66	37.65	-0.78	37.66	358.81	435,820.12	777,727.29		
2,176.00	3.70	306.90	2,174.70	-41.40	41.36	-5.69	41.75	352.17	435,823.83	777,722.38		
2,271.00	4.20	307.50	2,269.47	-45.41	45.32	-10.90	46.61	346.48	435,827.79	777,717.17		
2,365.00	5.10	308.50	2,363.16	-50.15	50.01	-16.90	52.79	341.33	435,832.48	777,711.17		
2,460.00	6.30	308.50	2,457.69	-56.09	55.89	-24.28	60.93	336.51	435,838.36	777,703.79		
2,554.00	8.60	311.70	2,550.89	-64.06	63.77	-33.57	72.07	332.24	435,846.24	777,694.50		
2,649.00	10.10	314.30	2,644.62	-74.70	74.32	-44.83	86.79	328.90	435,856.79	777,683.24		
2,743.00	9.90	314.90	2,737.20	-86.26	85.78	-56.46	102.69	326.65	435,868.25	777,671.61		
2,838.00	10.00	315.80	2,830.77	-98.03	97.45	-67.99	118.83	325.10	435,879.92	777,660.08		
2,932.00	9.90	316.10	2,923.35	-109.80	109.13	-79.28	134.89	324.00	435,891.60	777,648.79		
3,027.00	8.80	317.40	3,017.09	-121.13	120.36	-89.87	150.21	323.25	435,902.83	777,638.20		
3,121.00	8.40	318.60	3,110.03	-131.65	130.80	-99.27	164.21	322.80	435,913.27	777,628.80		
3,216.00	8.40	319.60	3,204.01	-142.22	141.29	-108.36	178.06	322.52	435,923.76	777,619.71		
3,310.00	7.30	321.60	3,297.13	-152.19	151.20	-116.52	190.89	322.38	435,933.67	777,611.55		
3,405.00	6.60	322.90	3,391.43	-161.34	160.29	-123.56	202.39	322.37	435,942.76	777,604.51		
3,499.00	6.60	323.70	3,484.81	-170.06	168.95	-130.02	213.19	322.42	435,951.42	777,598.05		
3,594.00	4.80	323.80	3,579.34	-177.71	176.56	-135.60	222.62	322.48	435,959.03	777,592.47		
3,688.00	4.10	325.50	3,673.05	-183.69	182.50	-139.82	229.91	322.54	435,964.97	777,588.25		
3,783.00	3.00	316.50	3,767.87	-188.32	187.10	-143.46	235.77	322.52	435,969.57	777,584.61		
3,877.00	2.30	307.90	3,861.77	-191.29	190.05	-146.64	240.04	322.35	435,972.52	777,581.43		
3,972.00	2.20	318.70	3,956.70	-193.86	192.59	-149.35	243.71	322.21	435,975.06	777,578.72		
4,066.00	0.20	290.20	4,050.67	-195.28	194.00	-150.69	245.65	322.16	435,976.47	777,577.38		
4,161.00	1.30	165.20	4,145.66	-194.30	193.02	-150.57	244.80	322.04	435,975.49	777,577.50		
4,255.00	1.10	195.80	4,239.64	-192.40	191.12	-150.55	243.29	321.77	435,973.59	777,577.52		

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Well WA #6H
 Well @ 3473.50usft (GL 3447' + KB: 26.5' (H&P480))
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Survey											
MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	V. Sec (usft)	N/S (usft)	E/W (usft)	Closure Distance	Closure Azimuth	Northing (usft)	Easting (usft)	
4,349.00	0.90	185.70	4,333.63	-190.80	189.51	-150.87	242.23	321.48	435,971.98	777,577.20	
4,444.00	1.00	174.30	4,428.62	-189.23	187.95	-150.86	241.00	321.25	435,970.42	777,577.21	
4,538.00	1.00	176.40	4,522.60	-187.59	186.31	-150.73	239.65	321.03	435,968.78	777,577.34	
4,633.00	1.20	144.00	4,617.59	-185.96	184.68	-150.09	237.98	320.90	435,967.15	777,577.98	
4,727.00	1.90	121.80	4,711.55	-184.32	183.06	-148.19	235.52	321.01	435,965.53	777,579.88	
4,822.00	2.60	110.20	4,806.48	-182.72	181.49	-144.82	232.19	321.41	435,963.96	777,583.25	
4,917.00	2.30	139.00	4,901.40	-180.51	179.30	-141.55	228.44	321.71	435,961.77	777,586.52	
5,011.00	3.30	155.80	4,995.28	-176.60	175.41	-139.21	223.94	321.56	435,957.88	777,588.86	
5,106.00	2.60	148.90	5,090.16	-172.24	171.07	-136.97	219.15	321.32	435,953.54	777,591.10	
5,200.00	1.60	163.70	5,184.09	-169.14	167.99	-135.50	215.83	321.11	435,950.46	777,592.57	
5,295.00	0.90	148.80	5,279.07	-167.22	166.08	-134.74	213.86	320.95	435,948.55	777,593.33	
5,389.00	1.00	148.60	5,373.06	-165.89	164.75	-133.93	212.32	320.89	435,947.22	777,594.14	
5,484.00	1.00	156.90	5,468.04	-164.41	163.28	-133.18	210.70	320.80	435,945.75	777,594.89	
5,599.00	0.50	113.30	5,583.03	-163.28	162.15	-132.32	209.29	320.78	435,944.62	777,595.75	
5,662.00	0.40	111.90	5,646.03	-163.09	161.96	-131.86	208.86	320.85	435,944.43	777,596.21	
5,756.00	0.60	113.50	5,740.03	-162.76	161.64	-131.11	208.13	320.95	435,944.11	777,596.96	
5,850.00	0.70	93.10	5,834.02	-162.52	161.42	-130.08	207.31	321.14	435,943.89	777,597.99	
5,944.00	0.80	100.40	5,928.01	-162.36	161.27	-128.87	206.43	321.37	435,943.74	777,599.20	
6,039.00	0.70	87.80	6,023.01	-162.26	161.17	-127.63	205.59	321.62	435,943.64	777,600.44	
6,133.00	1.00	65.00	6,117.00	-162.61	161.54	-126.32	205.06	321.98	435,944.01	777,601.75	
6,227.00	1.20	49.50	6,210.98	-163.59	162.53	-124.82	204.93	322.47	435,945.00	777,603.25	
6,322.00	0.40	324.10	6,305.97	-164.50	163.44	-124.26	205.31	322.75	435,945.91	777,603.81	
6,417.00	0.60	294.90	6,400.97	-164.98	163.92	-124.91	206.09	322.69	435,946.39	777,603.16	
6,511.00	0.80	309.00	6,494.96	-165.61	164.54	-125.86	207.16	322.59	435,947.01	777,602.21	
6,605.00	1.00	325.70	6,588.95	-166.71	165.63	-126.84	208.62	322.56	435,948.10	777,601.23	
6,700.00	0.90	336.00	6,683.94	-168.08	167.00	-127.61	210.17	322.62	435,949.47	777,600.46	
6,794.00	1.00	327.70	6,777.92	-169.45	168.36	-128.35	211.70	322.68	435,950.83	777,599.72	

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Survey											
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6,889.00	0.80	293.00	6,872.91	-170.42	169.32	-129.40	213.11	322.61	435,951.79	777,598.67	
6,983.00	0.70	280.60	6,966.90	-170.80	169.68	-130.57	214.10	322.42	435,952.15	777,597.50	
7,078.00	0.70	287.20	7,061.90	-171.08	169.96	-131.69	215.01	322.23	435,952.43	777,596.38	
7,173.00	0.70	294.60	7,156.89	-171.51	170.38	-132.77	216.00	322.07	435,952.85	777,595.30	
7,267.00	0.80	298.00	7,250.88	-172.06	170.92	-133.88	217.11	321.93	435,953.39	777,594.19	
7,362.00	1.00	302.40	7,345.87	-172.83	171.68	-135.16	218.50	321.79	435,954.15	777,592.91	
7,456.00	1.10	319.10	7,439.85	-173.96	172.80	-136.44	220.18	321.71	435,955.27	777,591.63	
7,551.00	1.50	320.30	7,534.83	-175.62	174.45	-137.84	222.33	321.69	435,956.92	777,590.23	
7,645.00	0.60	320.00	7,628.81	-176.95	175.77	-138.94	224.05	321.68	435,958.24	777,589.13	
7,740.00	0.00	255.80	7,723.81	-177.34	176.15	-139.26	224.55	321.67	435,958.62	777,588.81	
7,834.00	0.30	319.70	7,817.81	-177.52	176.34	-139.42	224.79	321.67	435,958.81	777,588.65	
7,929.00	0.40	295.40	7,912.81	-177.86	176.67	-139.88	225.34	321.63	435,959.14	777,588.19	
8,023.00	0.50	305.50	8,006.81	-178.24	177.05	-140.51	226.03	321.56	435,959.52	777,587.56	
8,117.00	0.40	313.60	8,100.80	-178.71	177.51	-141.08	226.75	321.52	435,959.98	777,586.99	
8,212.00	0.60	280.70	8,195.80	-179.04	177.84	-141.81	227.45	321.43	435,960.31	777,586.26	
8,306.00	0.80	275.80	8,289.79	-179.21	177.99	-142.94	228.29	321.23	435,960.46	777,585.13	
8,401.00	0.90	270.50	8,384.78	-179.29	178.07	-144.35	229.23	320.97	435,960.54	777,583.72	
8,495.00	0.50	239.70	8,478.78	-179.10	177.87	-145.44	229.76	320.73	435,960.34	777,582.63	
8,590.00	0.70	233.40	8,573.77	-178.56	177.31	-146.27	229.85	320.48	435,959.78	777,581.80	
8,684.00	0.80	232.10	8,667.76	-177.82	176.57	-147.25	229.91	320.17	435,959.04	777,580.82	
8,779.00	0.80	237.30	8,762.75	-177.06	175.80	-148.33	230.01	319.84	435,958.27	777,579.74	
8,873.00	1.00	246.60	8,856.74	-176.39	175.12	-149.63	230.34	319.49	435,957.59	777,578.44	
8,967.00	0.90	282.30	8,950.73	-176.24	174.95	-151.11	231.17	319.18	435,957.42	777,576.96	
9,062.00	1.00	298.70	9,045.72	-176.81	175.51	-152.56	232.55	319.00	435,957.98	777,575.51	
9,156.00	0.10	235.90	9,139.71	-177.16	175.86	-153.35	233.33	318.91	435,958.33	777,574.72	
9,251.00	0.30	264.70	9,234.71	-177.09	175.79	-153.67	233.48	318.84	435,958.26	777,574.40	
9,345.00	0.80	256.80	9,328.71	-176.93	175.61	-154.55	233.93	318.65	435,958.08	777,573.52	

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MD Reference:
North Reference:
Survey Calculation Method:
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 WellPlanner1

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9,439.00	1.30	252.60	9,422.69	-176.47	175.14	-156.21	234.68	318.27	435,957.61	777,571.86	
9,533.00	1.10	271.90	9,516.67	-176.20	174.85	-158.12	235.75	317.88	435,957.32	777,569.95	
9,628.00	1.20	268.20	9,611.65	-176.21	174.85	-160.03	237.03	317.53	435,957.32	777,568.04	
9,722.00	1.10	251.50	9,705.63	-175.91	174.53	-161.87	238.04	317.16	435,957.00	777,566.20	
9,817.00	0.70	235.20	9,800.62	-175.30	173.91	-163.21	238.50	316.82	435,956.38	777,564.86	
9,911.00	1.10	246.80	9,894.61	-174.63	173.23	-164.51	238.90	316.48	435,955.70	777,563.56	
10,006.00	0.40	211.70	9,989.60	-174.00	172.59	-165.52	239.13	316.20	435,955.06	777,562.55	
10,100.00	0.80	231.90	10,083.59	-173.32	171.90	-166.21	239.12	315.96	435,954.37	777,561.86	
10,195.00	1.70	258.10	10,178.57	-172.64	171.20	-168.11	239.94	315.52	435,953.67	777,559.96	
10,289.00	1.20	232.50	10,272.54	-171.77	170.32	-170.26	240.82	315.01	435,952.79	777,557.81	
10,384.00	0.80	222.00	10,367.53	-170.68	169.22	-171.49	240.92	314.62	435,951.69	777,556.58	
10,478.00	0.70	192.10	10,461.52	-169.64	168.17	-172.05	240.59	314.35	435,950.64	777,556.02	
10,573.00	0.30	232.80	10,556.52	-168.92	167.45	-172.37	240.32	314.17	435,949.92	777,555.70	
10,667.00	0.80	178.00	10,650.51	-168.12	166.65	-172.54	239.88	314.00	435,949.12	777,555.53	
10,762.00	0.80	185.70	10,745.50	-166.80	165.33	-172.59	239.00	313.77	435,947.80	777,555.48	
10,856.00	0.80	216.60	10,839.49	-165.62	164.15	-173.04	238.51	313.49	435,946.62	777,555.03	
10,951.00	1.60	254.70	10,934.47	-164.75	163.26	-174.72	239.13	313.06	435,945.73	777,553.35	
11,045.00	1.20	260.40	11,028.45	-164.26	162.75	-176.95	240.42	312.61	435,945.22	777,551.12	
11,139.00	0.30	272.00	11,122.44	-164.11	162.60	-178.17	241.21	312.38	435,945.07	777,549.90	
11,234.00	0.50	310.80	11,217.43	-164.40	162.88	-178.73	241.81	312.34	435,945.35	777,549.34	
11,329.00	0.70	287.90	11,312.43	-164.86	163.33	-179.60	242.76	312.28	435,945.80	777,548.47	
11,423.00	1.10	273.10	11,406.42	-165.09	163.55	-181.05	243.98	312.09	435,946.02	777,547.02	
11,517.00	0.90	324.40	11,500.41	-165.75	164.20	-182.38	245.40	312.00	435,946.67	777,545.69	
11,612.00	0.50	288.00	11,595.40	-166.50	164.93	-183.21	246.51	312.00	435,947.40	777,544.86	
11,706.00	0.60	306.40	11,689.39	-166.92	165.35	-183.99	247.38	311.95	435,947.82	777,544.08	
11,801.00	0.50	323.20	11,784.39	-167.55	165.98	-184.64	248.28	311.95	435,948.45	777,543.43	
11,817.00	0.50	327.20	11,800.39	-167.67	166.10	-184.72	248.41	311.96	435,948.57	777,543.35	

Company: Marathon Oil
Project: Lea County, NM
Site: Dee Boot Fee 24-34-26 (3-6-7-19)
Well: WA #6H
Wellbore: Lateral
Design: Lateral 12195'-17470' PTB 17522'

Local Co-ordinate Reference: Well WA #6H
TVD Reference: Well @ 3473.50usft (GL 3447' + KB: 26.5' (H&P480))
MD Reference: Well @ 3473.50usft (GL 3447' + KB: 26.5' (H&P480))
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: WellPlanner1

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	V. Sec (usft)	N/S (usft)	E/W (usft)	Closure Distance	Closure Azimuth	Northing (usft)	Easting (usft)
11,847.00	0.40	341.60	11,830.39	-167.88	166.30	-184.82	248.63	311.98	435,948.77	777,543.25
11,933.00	0.80	344.40	11,916.38	-168.74	167.17	-185.08	249.40	312.09	435,949.64	777,542.99
12,028.00	1.20	335.30	12,011.37	-170.29	168.71	-185.68	250.88	312.26	435,951.18	777,542.39
12,122.00	2.00	310.70	12,105.33	-172.27	170.67	-187.33	253.42	312.34	435,953.14	777,540.74
Tie into Pilot: 12122' MD										
12,156.61	3.01	212.73	12,139.92	-171.91	170.30	-188.28	253.87	312.13	435,952.77	777,539.79
[KnifeFight#6H]KOP										
12,195.00	7.00	194.40	12,178.16	-168.80	167.19	-189.41	252.64	311.44	435,949.66	777,538.66
12,227.00	12.00	193.80	12,209.71	-163.69	162.07	-190.68	250.25	310.36	435,944.54	777,537.39
12,321.00	25.70	187.70	12,298.46	-133.90	132.24	-195.77	236.25	304.04	435,914.71	777,532.30
12,416.00	37.50	170.20	12,379.40	-84.71	83.05	-193.60	210.66	293.22	435,865.52	777,534.47
12,511.00	42.80	173.50	12,452.00	-24.02	22.44	-185.01	186.37	276.92	435,804.91	777,543.06
12,605.00	48.50	176.20	12,517.69	42.94	-44.47	-179.06	184.50	256.05	435,738.00	777,549.01
12,700.00	59.70	174.90	12,573.31	119.58	-121.06	-173.04	211.18	235.02	435,661.41	777,555.03
12,794.00	59.10	173.90	12,621.16	200.17	-201.59	-165.15	260.59	219.33	435,580.88	777,562.92
12,889.00	69.10	176.10	12,662.60	285.25	-286.61	-157.78	327.17	208.83	435,495.86	777,570.29
12,905.00	72.00	176.40	12,667.93	300.31	-301.66	-156.79	339.98	207.46	435,480.81	777,571.28
13,000.00	74.90	176.10	12,694.99	391.22	-392.52	-150.83	420.50	201.02	435,389.95	777,577.24
13,094.00	83.70	175.10	12,712.43	483.28	-484.52	-143.74	505.39	196.52	435,297.95	777,584.33
13,188.00	86.90	176.60	12,720.13	576.75	-577.95	-136.97	593.95	193.33	435,204.52	777,591.10
13,283.00	90.20	177.10	12,722.53	671.61	-672.76	-131.75	685.54	191.08	435,109.71	777,596.32
13,377.00	87.90	175.40	12,724.09	765.43	-766.53	-125.60	776.76	189.31	435,015.94	777,602.47
13,471.00	88.90	177.90	12,726.71	859.27	-860.33	-120.11	868.67	187.95	434,922.14	777,607.96
13,565.00	89.80	175.80	12,727.78	953.16	-954.17	-114.95	961.07	186.87	434,828.30	777,613.12
13,660.00	91.20	179.10	12,726.95	1,048.08	-1,049.06	-110.72	1,054.89	186.02	434,733.41	777,617.35
13,754.00	90.90	181.10	12,725.23	1,142.05	-1,143.04	-110.89	1,148.41	185.54	434,639.43	777,617.18
13,848.00	88.50	179.20	12,725.72	1,236.03	-1,237.03	-111.13	1,242.01	185.13	434,545.44	777,616.94

Company: Marathon Oil
Project: Lea County, NM
Site: Dee Boot Fee 24-34-26 (3-6-7-19)
Well: WA #6H
Wellbore: Lateral
Design: Lateral 12195'-17470' PTB 17522'

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

Well WA #6H
 Well @ 3473.50usft (GL 3447' + KB: 26.5' (H&P480))
 Well @ 3473.50usft (GL 3447' + KB: 26.5' (H&P480))
 Grid
 Minimum Curvature
 WellPlanner1

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	V. Sec (usft)	N/S (usft)	E/W (usft)	Closure Distance	Closure Azimuth	Northing (usft)	Easting (usft)
13,942.00	90.20	181.10	12,726.79	1,330.01	-1,331.01	-111.38	1,335.67	184.78	434,451.46	777,616.69
14,036.00	91.10	181.40	12,725.72	1,423.96	-1,424.98	-113.43	1,429.49	184.55	434,357.49	777,614.64
14,131.00	89.10	180.10	12,725.56	1,518.93	-1,519.97	-114.67	1,524.29	184.31	434,262.50	777,613.40
14,225.00	87.60	178.30	12,728.26	1,612.89	-1,613.91	-113.36	1,617.89	184.02	434,168.56	777,614.71
14,319.00	92.10	180.60	12,728.51	1,706.85	-1,707.88	-112.46	1,711.58	183.77	434,074.59	777,615.61
14,413.00	92.90	181.60	12,724.41	1,800.73	-1,801.77	-114.26	1,805.39	183.63	433,980.70	777,613.81
14,508.00	92.00	181.30	12,720.35	1,895.59	-1,896.65	-116.66	1,900.24	183.52	433,885.82	777,611.41
14,602.00	93.10	181.50	12,716.17	1,989.44	-1,990.53	-118.96	1,994.08	183.42	433,791.94	777,609.11
14,696.00	90.50	182.30	12,713.21	2,083.30	-2,084.42	-122.07	2,087.99	183.35	433,698.05	777,606.00
14,791.00	90.80	183.50	12,712.14	2,178.13	-2,179.29	-126.88	2,182.98	183.33	433,603.18	777,601.19
14,885.00	89.50	180.60	12,711.89	2,272.02	-2,273.22	-130.24	2,276.95	183.28	433,509.25	777,597.83
14,980.00	87.70	178.50	12,714.21	2,366.99	-2,368.18	-129.50	2,371.72	183.13	433,414.29	777,598.57
15,075.00	88.30	178.30	12,717.53	2,461.91	-2,463.08	-126.85	2,466.35	182.95	433,319.39	777,601.22
15,169.00	89.80	177.30	12,719.08	2,555.85	-2,557.00	-123.24	2,559.97	182.76	433,225.47	777,604.83
15,264.00	89.50	179.90	12,719.66	2,650.83	-2,651.96	-120.92	2,654.72	182.61	433,130.51	777,607.15
15,358.00	92.40	181.50	12,718.11	2,744.78	-2,745.93	-122.06	2,748.64	182.55	433,036.54	777,606.01
15,453.00	94.10	185.00	12,712.72	2,839.41	-2,840.60	-127.44	2,843.46	182.57	432,941.87	777,600.63
15,547.00	90.90	182.20	12,708.62	2,933.06	-2,934.31	-133.33	2,937.34	182.60	432,848.16	777,594.74
15,642.00	89.90	181.00	12,707.96	3,027.99	-3,029.27	-135.98	3,032.32	182.57	432,753.20	777,592.09
15,736.00	90.20	183.20	12,707.87	3,121.89	-3,123.20	-139.43	3,126.31	182.56	432,659.27	777,588.64
15,831.00	91.10	184.50	12,706.80	3,216.61	-3,217.97	-145.81	3,221.27	182.59	432,564.50	777,582.26
15,926.00	91.70	178.00	12,704.47	3,311.48	-3,312.87	-147.88	3,316.17	182.56	432,469.60	777,580.19
16,020.00	87.70	173.70	12,704.96	3,405.25	-3,406.58	-141.08	3,409.50	182.37	432,375.89	777,586.99
16,115.00	88.10	172.70	12,708.45	3,499.61	-3,500.85	-129.84	3,503.26	182.12	432,281.62	777,598.23
16,209.00	90.90	175.90	12,709.27	3,593.20	-3,594.36	-120.50	3,596.38	181.92	432,188.11	777,607.57
16,304.00	93.60	175.50	12,705.54	3,687.90	-3,689.01	-113.39	3,690.75	181.76	432,093.46	777,614.68
16,398.00	93.80	179.00	12,699.47	3,781.62	-3,782.69	-108.89	3,784.26	181.65	431,999.78	777,619.18

Company: Marathon Oil
Project: Lea County, NM
Site: Dee Boot Fee 24-34-26 (3-6-7-19)
Well: WA #6H
Wellbore: Lateral
Design: Lateral 12195'-17470' PTB 17522'

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

Well WA #6H
 Well @ 3473.50usft (GL 3447' + KB: 26.5' (H&P480))
 Well @ 3473.50usft (GL 3447' + KB: 26.5' (H&P480))
 Grid
 Minimum Curvature
 WellPlanner1

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	V. Sec (usft)	N/S (usft)	E/W (usft)	Closure Distance	Closure Azimuth	Northing (usft)	Easting (usft)
16,493.00	93.50	179.40	12,693.42	3,876.43	-3,877.49	-107.56	3,878.98	181.59	431,904.98	777,620.51
16,587.00	93.80	179.00	12,687.44	3,970.23	-3,971.29	-106.25	3,972.71	181.53	431,811.18	777,621.82
16,682.00	93.00	178.60	12,681.80	4,065.06	-4,066.10	-104.27	4,067.44	181.47	431,716.37	777,623.80
16,776.00	92.50	180.40	12,677.29	4,158.95	-4,159.98	-103.45	4,161.27	181.42	431,622.49	777,624.62
16,871.00	93.00	181.20	12,672.73	4,253.81	-4,254.86	-104.77	4,256.15	181.41	431,527.61	777,623.30
16,965.00	89.00	180.80	12,671.09	4,347.75	-4,348.82	-106.41	4,350.12	181.40	431,433.65	777,621.66
17,060.00	89.10	183.00	12,672.67	4,442.65	-4,443.74	-109.56	4,445.10	181.41	431,338.73	777,618.51
17,154.00	87.60	183.00	12,675.38	4,536.43	-4,537.57	-114.48	4,539.02	181.45	431,244.90	777,613.59
17,249.00	89.40	181.20	12,677.86	4,631.29	-4,632.47	-117.96	4,633.97	181.46	431,150.00	777,610.11
17,344.00	91.60	182.60	12,677.03	4,726.20	-4,727.41	-121.11	4,728.96	181.47	431,055.06	777,606.96
17,438.00	91.70	183.20	12,674.33	4,819.99	-4,821.25	-125.86	4,822.89	181.50	430,961.22	777,602.21
17,470.00	91.90	183.00	12,673.32	4,851.92	-4,853.18	-127.59	4,854.86	181.51	430,929.29	777,600.48
Last Survey: 17470' MD, 12673' TVD - [KnifeFight#6H]LTP/BHL										
17,522.00	91.90	183.00	12,671.60	4,903.79	-4,905.08	-130.31	4,906.81	181.52	430,877.39	777,597.76
PTB: 17522' MD, 12672' TVD										

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
12,122.00	12,105.33	170.67	-187.33	Tie into Pilot: 12122' MD
17,470.00	12,673.32	-4,853.18	-127.59	Last Survey: 17470' MD, 12673' TVD
17,522.00	12,671.60	-4,905.08	-130.31	PTB: 17522' MD, 12672' TVD



Marathon Oil
Lea County, NM
Dee Boot Fee 24-34-26 (3-6-7-19)
WA #6H
Plan #5
GL 3447' + KB: 26.5' (H&P480)

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

RKB Elevation: Well @ 3473.50usft (GL 3447' + KB: 26.5' (H&P480))

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Spot
0.00	0.00	435782.47	777728.07	32.194896	-103.435533	

SECTION DETAILS- PILOT

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	VSect
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	1500.00	0.00	0.00	1500.00	0.00	0.00	0.00	0.00
3	2500.00	10.00	318.58	2494.93	65.27	-57.59	1.00	-65.76
4	2803.06	10.00	318.58	2793.38	104.73	-92.41	0.00	-105.52
5	3803.06	0.00	0.00	3788.31	170.00	-150.00	1.00	-171.28
6	12155.74	0.00	0.00	12141.00	170.00	-150.00	0.00	-171.28
7	13061.77	90.60	179.51	12713.93	-408.96	-145.04	10.00	407.71
8	17513.75	90.60	179.51	12667.11	-4860.53	-106.88	0.00	4859.44
9	17558.75	90.60	179.51	12666.64	-4905.53	-106.49	0.00	4904.44

SECTION DETAILS- LATERAL

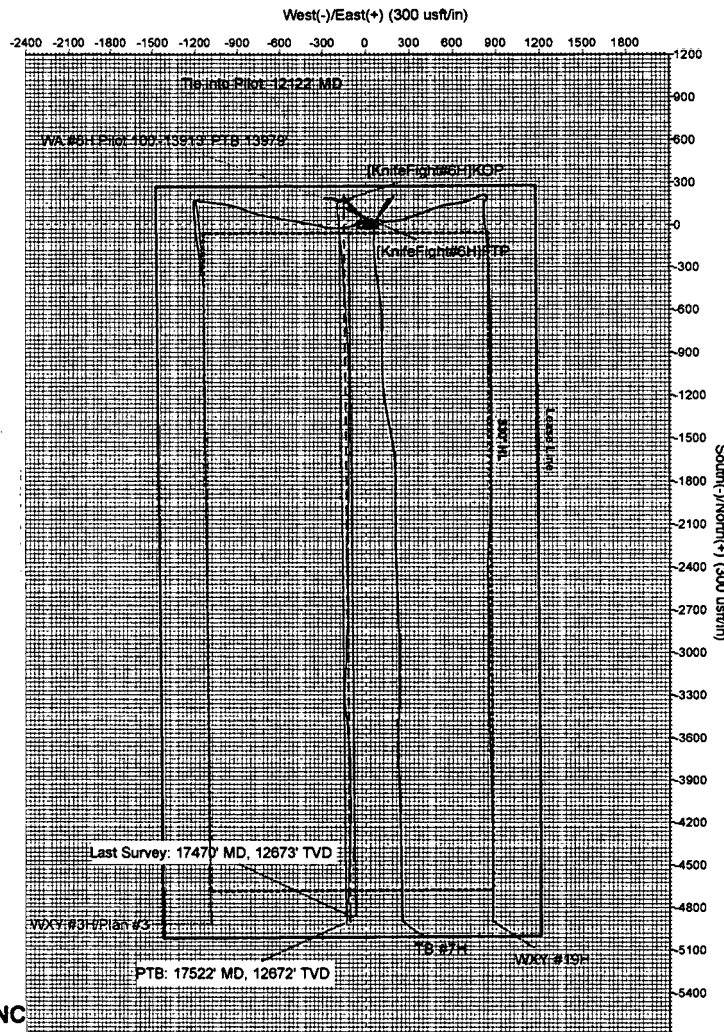
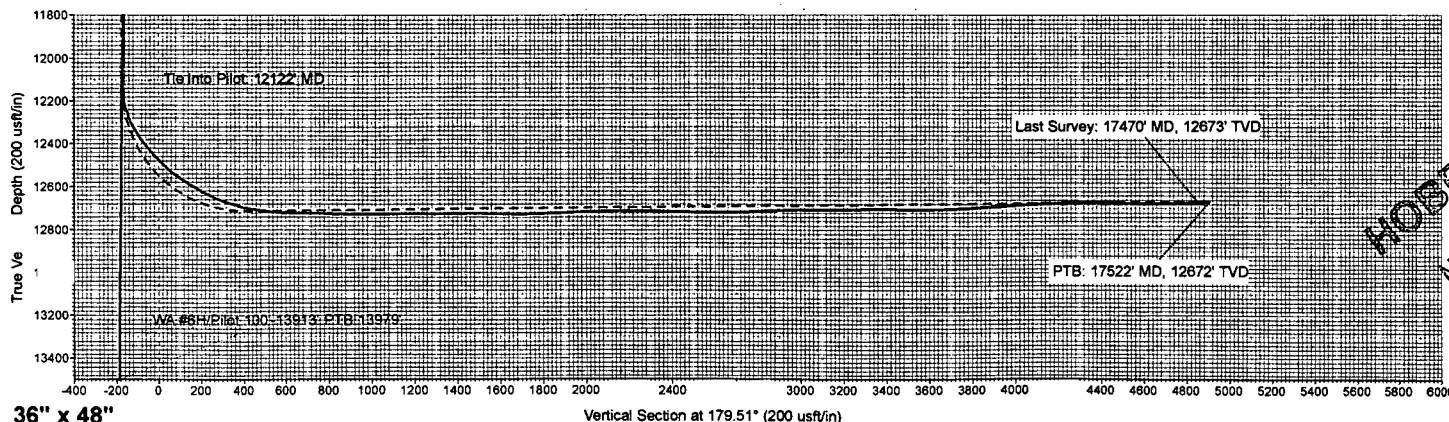
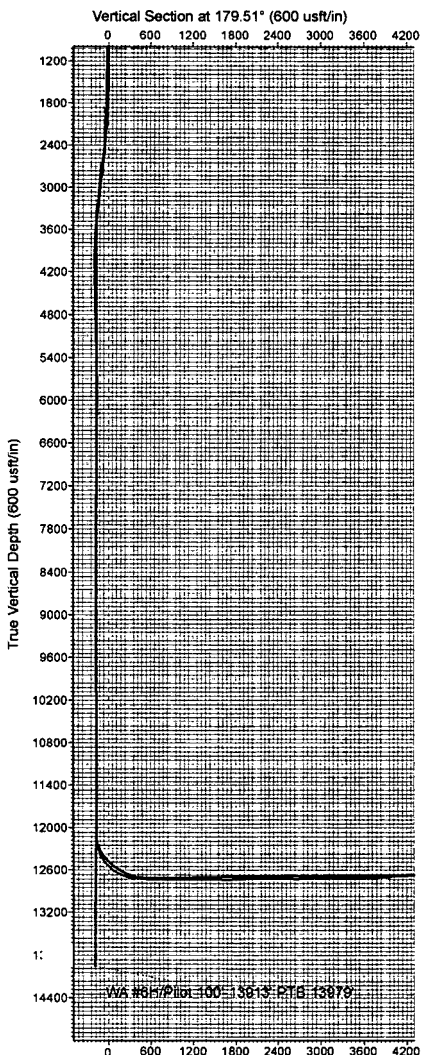
Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	VSect
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	1500.00	0.00	0.00	1500.00	0.00	0.00	0.00	0.00
3	2500.00	10.00	318.58	2494.93	65.27	-57.59	1.00	-65.76
4	2803.06	10.00	318.58	2793.38	104.73	-92.41	0.00	-105.52
5	3803.06	0.00	0.00	3788.31	170.00	-150.00	1.00	-171.28
6	12155.74	0.00	0.00	12141.00	170.00	-150.00	0.00	-171.28
7	13061.77	90.60	179.51	12713.93	-408.96	-145.04	10.00	407.71
8	17513.75	90.60	179.51	12667.11	-4860.53	-106.88	0.00	4859.44
9	17558.75	90.60	179.51	12666.64	-4905.53	-106.49	0.00	4904.44

WELLBORE TARGET DETAILS (MAP CO-ORDINATES)

Name	TVD	+N/-S	+E/-W	Northing	Easting
[KnifeFight#6H]FTP	0.00	117.80	-149.80	435900.27	777578.27
[KnifeFight#6H]KOP	12141.00	170.00	-150.00	435952.47	777578.07
[KnifeFight#6H]LTP/BHL	12667.11	-4860.53	-106.88	430821.94	777621.19



Target Line: 12718' TVD @ 0' VS, 90.6° INC



HOBBS OCD
NOV 05 2018
RECEIVED



Azimuths to Grid North
 True North: -0.48°
 Magnetic North: 6.25°
 Magnetic Field
 Strength: 48029.8nT
 Dip Angle: 53.91°
 Date: 4/26/2018
 Model: USER DEFINED

Azimuth Corrections
 Total Magnetic Corr. (M to G): 6.25°
 Declination (M to T): 6.73° East

36" x 48"