



Marathon Oil

Marathon Oil

Eddy County, NM

Trebuchet Fee 23-28-19

WA #5H

OH

Design: OH 150'-14090' PTB 14145'

Survey Report

22 May, 2018

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DISTRICT II-ARTESIA O.C.D.





Professional Directional
Survey Report



Company:	Marathon Oil	Local Co-ordinate Reference:	Well WA #5H
Project:	Eddy County, NM	TVD Reference:	Well @ 3112.00usft (GL: 3087' + KB: 25' (Prec594))
Site:	Trebuchet Fee 23-28-19	MD Reference:	Well @ 3112.00usft (GL: 3087' + KB: 25' (Prec594))
Well:	WA #5H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH 150'-14090' PTB 14145'	Database:	WellPlanner1

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

Site	Trebuchet Fee 23-28-19		
Site Position:		Northing:	467,096.80 usft
From:	Map	Easting:	562,703.28 usft
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "
		Latitude:	32.284003
		Longitude:	-104.130434
		Grid Convergence:	0.11 °

Well	WA #5H					
Well Position	+N/-S	0.00 usft	Northing:	467,096.80 usft	Latitude:	32.284003
	+E/-W	0.00 usft	Easting:	562,673.28 usft	Longitude:	-104.130531
Position Uncertainty	0.00 usft		Wellhead Elevation:	usft	Ground Level:	3,087.00 usft

Wellbore	OH				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	HDGM	4/1/2018	7.30	60.05	48,014.70

Design		OH 150'-14090' PTB 14145'		
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	359.95

Survey Program		Date 5/22/2018		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
150.00	14,145.00	Survey #1 (OH)	MWD+IFR1	OWSG MWD + IFR1



Professional Directional Survey Report



Company: Marathon Oil
Project: Eddy County, NM
Site: Trebuchet Fee 23-28-19
Well: WA #5H
Wellbore: OH
Design: OH 150'-14090' PTB 14145'

Local Co-ordinate Reference: Well WA #5H
TVD Reference: Well @ 3112.00usft (GL: 3087' + KB: 25' (Prec594))
MD Reference: Well @ 3112.00usft (GL: 3087' + KB: 25' (Prec594))
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)	
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	467,096.80	562,673.28	
150.00	0.30	0.00	150.00	0.39	0.39	0.00	0.39	0.00	467,097.19	562,673.28	
236.00	0.70	200.20	236.00	0.12	0.12	-0.18	0.22	304.53	467,096.92	562,673.10	
327.00	0.40	193.40	326.99	-0.71	-0.71	-0.45	0.84	212.34	467,096.09	562,672.83	
419.00	0.60	196.40	418.99	-1.48	-1.48	-0.66	1.62	203.94	467,095.32	562,672.62	
479.00	0.30	146.10	478.99	-1.91	-1.91	-0.66	2.02	199.00	467,094.89	562,672.62	
598.00	0.60	92.90	597.98	-2.20	-2.20	0.14	2.21	176.43	467,094.60	562,673.42	
689.00	1.00	66.50	688.98	-1.91	-1.91	1.34	2.33	144.91	467,094.89	562,674.62	
780.00	1.00	72.10	779.96	-1.35	-1.35	2.83	3.13	115.52	467,095.45	562,676.11	
872.00	0.70	144.30	871.95	-1.56	-1.56	3.92	4.22	111.70	467,095.24	562,677.20	
963.00	1.10	163.20	962.94	-2.85	-2.85	4.49	5.32	122.35	467,093.95	562,677.77	
1,053.00	0.40	170.50	1,052.93	-3.99	-3.98	4.80	6.23	129.71	467,092.82	562,678.08	
1,142.00	0.70	183.90	1,141.93	-4.84	-4.83	4.81	6.82	135.13	467,091.97	562,678.09	
1,230.00	0.50	170.70	1,229.93	-5.75	-5.75	4.84	7.51	139.92	467,091.05	562,678.12	
1,320.00	0.90	189.80	1,319.92	-6.84	-6.83	4.78	8.34	145.03	467,089.97	562,678.06	
1,409.00	0.90	202.40	1,408.91	-8.17	-8.17	4.39	9.27	151.72	467,088.63	562,677.67	
1,499.00	0.60	223.90	1,498.90	-9.16	-9.16	3.80	9.92	157.48	467,087.64	562,677.08	
1,588.00	0.80	207.70	1,587.89	-10.05	-10.05	3.19	10.54	162.41	467,086.75	562,676.47	
1,677.00	1.40	173.00	1,676.88	-11.68	-11.67	3.03	12.06	165.45	467,085.13	562,676.31	
1,766.00	2.40	138.50	1,765.83	-14.15	-14.15	4.40	14.82	162.74	467,082.65	562,677.68	
1,855.00	2.50	137.00	1,854.75	-16.97	-16.96	6.95	18.33	157.71	467,079.84	562,680.23	
1,944.00	3.20	129.80	1,943.64	-19.98	-19.97	10.19	22.42	152.98	467,076.83	562,683.47	
2,033.00	4.10	138.60	2,032.46	-23.96	-23.95	14.20	27.84	149.34	467,072.85	562,687.48	
2,123.00	5.40	149.40	2,122.15	-30.03	-30.01	18.48	35.25	148.37	467,066.79	562,691.76	
2,213.00	6.00	153.10	2,211.70	-37.87	-37.85	22.77	44.17	148.97	467,058.95	562,696.05	
2,302.00	4.80	156.20	2,300.31	-45.43	-45.41	26.37	52.51	149.85	467,051.39	562,699.65	
2,391.00	4.20	158.10	2,389.03	-51.86	-51.84	29.09	59.44	150.70	467,044.96	562,702.37	



Professional Directional Survey Report



Company:	Marathon Oil	Local Co-ordinate Reference:	Well WA #5H
Project:	Eddy County, NM	TVD Reference:	Well @ 3112.00usft (GL: 3087' + KB: 25' (Prec594))
Site:	Trebuchet Fee 23-28-19	MD Reference:	Well @ 3112.00usft (GL: 3087' + KB: 25' (Prec594))
Well:	WA #5H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH 150'-14090' PTB 14145'	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)
2,439.00	3.70	161.20	2,436.92	-54.96	-54.93	30.25	62.71	151.16	467,041.87	562,703.53
2,486.00	3.60	152.90	2,483.82	-57.71	-57.68	31.41	65.68	151.43	467,039.12	562,704.69
2,575.00	3.50	151.10	2,572.65	-62.58	-62.55	33.99	71.19	151.48	467,034.25	562,707.27
2,664.00	4.20	183.50	2,661.46	-68.21	-68.18	35.11	76.69	152.75	467,028.62	562,708.39
2,754.00	4.50	183.90	2,751.20	-75.02	-74.99	34.67	82.62	155.19	467,021.81	562,707.95
2,843.00	2.60	176.40	2,840.03	-80.52	-80.49	34.56	87.60	156.77	467,016.31	562,707.84
2,932.00	2.70	172.90	2,928.93	-84.62	-84.59	34.94	91.52	157.55	467,012.21	562,708.22
3,022.00	2.60	169.20	3,018.84	-88.73	-88.69	35.59	95.57	158.14	467,008.11	562,708.87
3,111.00	3.30	206.80	3,107.73	-92.99	-92.96	34.81	99.27	159.47	467,003.84	562,708.09
3,200.00	3.50	212.50	3,196.57	-97.57	-97.54	32.20	102.72	161.73	466,999.26	562,705.48
3,289.00	3.40	207.40	3,285.41	-102.20	-102.18	29.52	106.36	163.88	466,994.62	562,702.80
3,379.00	3.30	209.90	3,375.25	-106.82	-106.79	27.00	110.15	165.81	466,990.01	562,700.28
3,468.00	2.00	195.30	3,464.16	-110.53	-110.51	25.32	113.37	167.10	466,986.29	562,698.60
3,557.00	1.40	175.10	3,553.12	-113.11	-113.09	25.00	115.82	167.54	466,983.71	562,698.28
3,646.00	1.20	173.30	3,642.10	-115.12	-115.10	25.20	117.83	167.65	466,981.70	562,698.48
3,735.00	1.20	174.10	3,731.08	-116.98	-116.95	25.40	119.68	167.74	466,979.85	562,698.68
3,824.00	2.40	185.10	3,820.03	-119.76	-119.74	25.33	122.39	168.05	466,977.06	562,698.61
3,913.00	3.30	186.20	3,908.92	-124.16	-124.14	24.89	126.61	168.66	466,972.66	562,698.17
4,003.00	3.10	186.30	3,998.78	-129.15	-129.13	24.35	131.41	169.32	466,967.67	562,697.63
4,092.00	3.30	186.00	4,087.64	-134.09	-134.07	23.81	136.17	169.93	466,962.73	562,697.09
4,181.00	3.00	185.10	4,176.51	-138.96	-138.94	23.34	140.89	170.46	466,957.86	562,696.62
4,270.00	2.90	184.50	4,265.39	-143.52	-143.50	22.96	145.33	170.91	466,953.30	562,696.24
4,359.00	2.50	188.20	4,354.29	-147.69	-147.67	22.50	149.37	171.34	466,949.13	562,695.78
4,448.00	2.30	187.20	4,443.21	-151.38	-151.36	22.00	152.95	171.73	466,945.44	562,695.28
4,537.00	2.30	190.30	4,532.14	-154.91	-154.89	21.46	156.37	172.11	466,941.91	562,694.74
4,626.00	2.20	192.20	4,621.07	-158.34	-158.32	20.78	159.68	172.52	466,938.48	562,694.06
4,715.00	1.90	189.90	4,710.01	-161.46	-161.44	20.16	162.70	172.88	466,935.36	562,693.44

Company: Marathon Oil
Project: Eddy County, NM
Site: Trebuchet Fee 23-28-19
Well: WA #5H
Wellbore: OH
Design: OH 150'-14090' PTB 14145'

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

Well WA #5H
 Well @ 3112.00usft (GL: 3087' + KB: 25' (Prec594))
 Well @ 3112.00usft (GL: 3087' + KB: 25' (Prec594))
 Grid
 Minimum Curvature
 WellPlanner1

Survey											
MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	V. Sec (usft)	N/S (usft)	E/W (usft)	Closure Distance (usft)	Closure Azimuth (°)	Northing (usft)	Easting (usft)	
4,805.00	2.00	190.50	4,799.96	-164.47	-164.46	19.62	165.62	173.20	466,932.34	562,692.90	
4,894.00	2.00	193.00	4,888.91	-167.51	-167.50	18.99	168.57	173.53	466,929.30	562,692.27	
4,984.00	1.90	190.20	4,978.86	-170.51	-170.49	18.37	171.48	173.85	466,926.31	562,691.65	
5,073.00	1.90	194.10	5,067.81	-173.39	-173.38	17.75	174.28	174.15	466,923.42	562,691.03	
5,163.00	0.60	260.50	5,157.79	-174.92	-174.90	16.92	175.72	174.47	466,921.90	562,690.20	
5,251.00	1.30	328.00	5,245.78	-174.15	-174.13	15.94	174.86	174.77	466,922.67	562,689.22	
5,341.00	1.00	329.60	5,335.76	-172.60	-172.59	15.00	173.24	175.03	466,924.21	562,688.28	
5,430.00	1.00	334.10	5,424.75	-171.23	-171.22	14.27	171.81	175.24	466,925.58	562,687.55	
5,520.00	1.00	332.60	5,514.73	-169.83	-169.82	13.56	170.36	175.43	466,926.98	562,686.84	
5,609.00	1.00	315.80	5,603.72	-168.58	-168.57	12.66	169.05	175.70	466,928.23	562,685.94	
5,698.00	0.80	314.40	5,692.71	-167.59	-167.58	11.68	167.99	176.01	466,929.22	562,684.96	
5,788.00	0.50	292.00	5,782.70	-167.00	-166.99	10.87	167.35	176.28	466,929.81	562,684.15	
5,877.00	0.60	279.40	5,871.70	-166.78	-166.77	10.05	167.07	176.55	466,930.03	562,683.33	
5,966.00	1.00	285.50	5,960.69	-166.49	-166.49	8.84	166.72	176.96	466,930.31	562,682.12	
6,055.00	1.20	284.40	6,049.67	-166.05	-166.05	7.19	166.20	177.52	466,930.75	562,680.47	
6,144.00	1.30	295.60	6,138.65	-165.38	-165.38	5.37	165.47	178.14	466,931.42	562,678.65	
6,234.00	1.70	300.50	6,228.62	-164.26	-164.26	3.30	164.29	178.85	466,932.54	562,676.58	
6,323.00	1.80	311.00	6,317.58	-162.67	-162.67	1.11	162.68	179.61	466,934.13	562,674.39	
6,412.00	1.90	316.30	6,406.53	-160.69	-160.69	-0.96	160.69	180.34	466,936.11	562,672.32	
6,501.00	1.50	331.60	6,495.49	-158.60	-158.60	-2.54	158.62	180.92	466,938.20	562,670.74	
6,590.00	0.60	348.40	6,584.48	-157.11	-157.12	-3.19	157.15	181.16	466,939.68	562,670.09	
6,679.00	1.00	346.80	6,673.47	-155.90	-155.90	-3.46	155.94	181.27	466,940.90	562,669.82	
6,769.00	0.90	345.20	6,763.46	-154.45	-154.46	-3.82	154.50	181.42	466,942.34	562,669.46	
6,859.00	0.70	4.40	6,853.45	-153.22	-153.23	-3.95	153.28	181.48	466,943.57	562,669.33	
6,947.00	0.60	27.50	6,941.44	-152.28	-152.28	-3.70	152.33	181.39	466,944.52	562,669.58	
7,037.00	0.40	22.80	7,031.44	-151.57	-151.57	-3.36	151.61	181.27	466,945.23	562,669.92	
7,126.00	0.50	336.80	7,120.44	-150.93	-150.93	-3.39	150.97	181.29	466,945.87	562,669.89	



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Site:	Trebuchet Fee 23-28-19	MD Reference:	Well @ 3112.00usft (GL: 3087' + KB: 25' (Prec594))
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Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH 150'-14090' PTB 14145'	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)	
7,216.00	0.80	323.70	7,210.43	-150.06	-150.06	-3.92	150.11	181.50	466,946.74	562,669.36	
7,301.00	0.40	323.30	7,295.43	-149.34	-149.35	-4.45	149.41	181.71	466,947.45	562,668.83	
7,390.00	1.40	265.90	7,384.41	-149.17	-149.17	-5.72	149.28	182.20	466,947.63	562,667.56	
7,479.00	2.10	244.60	7,473.37	-149.94	-149.95	-8.28	150.18	183.16	466,946.85	562,665.00	
7,568.00	1.10	274.60	7,562.34	-150.57	-150.58	-10.60	150.96	184.03	466,946.22	562,662.68	
7,657.00	0.60	187.70	7,651.33	-150.97	-150.98	-11.52	151.41	184.36	466,945.82	562,661.76	
7,746.00	1.00	228.30	7,740.32	-151.94	-151.95	-12.16	152.44	184.57	466,944.85	562,661.12	
7,836.00	1.20	111.00	7,830.32	-152.80	-152.82	-11.86	153.27	184.44	466,943.98	562,661.42	
7,925.00	1.40	75.80	7,919.29	-152.87	-152.88	-9.94	153.21	183.72	466,943.92	562,663.34	
8,014.00	0.40	99.50	8,008.28	-152.66	-152.67	-8.58	152.91	183.22	466,944.13	562,664.70	
8,104.00	0.10	306.10	8,098.28	-152.67	-152.67	-8.33	152.90	183.12	466,944.13	562,664.95	
8,193.00	1.60	137.80	8,187.27	-153.54	-153.55	-7.56	153.73	182.82	466,943.25	562,665.72	
8,282.00	1.20	111.90	8,276.24	-154.81	-154.82	-5.86	154.93	182.17	466,941.98	562,667.42	
8,371.00	1.30	114.20	8,365.22	-155.57	-155.58	-4.08	155.63	181.50	466,941.22	562,669.20	
8,460.00	0.70	139.80	8,454.21	-156.40	-156.41	-2.81	156.43	181.03	466,940.39	562,670.47	
8,550.00	0.30	140.70	8,544.21	-157.01	-157.01	-2.30	157.02	180.84	466,939.79	562,670.98	
8,639.00	0.60	42.10	8,633.20	-156.84	-156.84	-1.84	156.85	180.67	466,939.96	562,671.44	
8,729.00	1.00	6.20	8,723.20	-155.71	-155.71	-1.44	155.72	180.53	466,941.09	562,671.84	
8,818.00	0.80	322.50	8,812.19	-154.45	-154.45	-1.73	154.46	180.64	466,942.35	562,671.55	
8,907.00	1.40	293.70	8,901.17	-153.51	-153.52	-3.11	153.55	181.16	466,943.28	562,670.17	
8,952.00	4.30	346.20	8,946.11	-151.65	-151.66	-4.01	151.71	181.52	466,945.14	562,669.27	
8,997.00	10.00	351.50	8,990.75	-146.15	-146.15	-5.00	146.24	181.96	466,950.65	562,668.28	
9,086.00	19.30	1.00	9,076.77	-123.74	-123.75	-5.88	123.89	182.72	466,973.05	562,667.40	
9,176.00	27.90	2.80	9,159.17	-87.78	-87.78	-4.59	87.90	182.99	467,009.02	562,668.69	
9,266.00	36.90	354.10	9,235.12	-39.74	-39.75	-6.35	40.25	189.07	467,057.05	562,666.93	
9,355.00	46.50	354.30	9,301.49	19.10	19.09	-12.31	22.71	327.18	467,115.89	562,660.97	
9,444.00	55.70	1.00	9,357.36	88.17	88.16	-14.88	89.41	350.42	467,184.96	562,658.40	



Professional Directional Survey Report



Company: Marathon Oil
Project: Eddy County, NM
Site: Trebuchet Fee 23-28-19
Well: WA #5H
Wellbore: OH
Design: OH 150'-14090' PTB 14145'

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

Well WA #5H
Well @ 3112.00usft (GL: 3087' + KB: 25' (Prec594))
Well @ 3112.00usft (GL: 3087' + KB: 25' (Prec594))
Grid
Minimum Curvature
WellPlanner1

Survey											
MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	V. Sec (usft)	N/S (usft)	E/W (usft)	Closure Distance (usft)	Closure Azimuth (°)	Northing (usft)	Easting (usft)	
9,533.00	65.50	7.60	9,401.03	165.31	165.30	-8.87	165.54	356.93	467,262.10	562,664.41	
9,623.00	73.70	4.60	9,432.38	249.10	249.11	0.03	249.11	0.01	467,345.91	562,673.31	
9,712.00	79.30	1.60	9,453.16	335.47	335.48	4.68	335.51	0.80	467,432.28	562,677.96	
9,802.00	84.60	358.90	9,465.76	424.54	424.55	5.06	424.58	0.68	467,521.35	562,678.34	
9,945.00	87.60	356.70	9,475.48	567.09	567.09	-0.42	567.09	359.96	467,663.89	562,672.86	
10,039.00	86.80	359.80	9,480.08	660.92	660.92	-3.29	660.93	359.71	467,757.72	562,669.99	
10,132.00	86.30	0.20	9,485.67	753.75	753.75	-3.29	753.76	359.75	467,850.55	562,669.99	
10,226.00	89.00	0.40	9,489.53	847.66	847.66	-2.80	847.66	359.81	467,944.46	562,670.48	
10,320.00	90.10	0.70	9,490.27	941.65	941.65	-1.90	941.65	359.88	468,038.45	562,671.38	
10,415.00	89.70	0.30	9,490.43	1,036.65	1,036.65	-1.07	1,036.65	359.94	468,133.45	562,672.21	
10,509.00	90.90	1.50	9,489.94	1,130.63	1,130.63	0.41	1,130.63	0.02	468,227.43	562,673.69	
10,603.00	90.20	3.30	9,489.04	1,224.53	1,224.54	4.34	1,224.55	0.20	468,321.34	562,677.62	
10,696.00	92.00	2.70	9,487.25	1,317.38	1,317.39	9.21	1,317.42	0.40	468,414.19	562,682.49	
10,791.00	93.80	2.80	9,482.45	1,412.14	1,412.16	13.76	1,412.22	0.56	468,508.96	562,687.04	
10,886.00	92.30	1.20	9,477.39	1,506.94	1,506.96	17.07	1,507.05	0.65	468,603.76	562,690.35	
10,980.00	93.00	1.60	9,473.04	1,600.81	1,600.83	19.36	1,600.95	0.69	468,697.63	562,692.64	
11,074.00	88.60	0.10	9,471.73	1,694.76	1,694.78	20.76	1,694.91	0.70	468,791.58	562,694.04	
11,169.00	87.60	0.50	9,474.88	1,789.71	1,789.73	21.26	1,789.85	0.68	468,886.53	562,694.54	
11,263.00	86.90	0.30	9,479.39	1,883.60	1,883.62	21.91	1,883.74	0.67	468,980.42	562,695.19	
11,358.00	90.90	2.40	9,481.22	1,978.53	1,978.55	24.15	1,978.70	0.70	469,075.35	562,697.43	
11,451.00	90.20	1.80	9,480.32	2,071.46	2,071.48	27.56	2,071.66	0.76	469,168.28	562,700.84	
11,545.00	90.80	1.80	9,479.50	2,165.40	2,165.43	30.51	2,165.64	0.81	469,262.23	562,703.79	
11,639.00	89.10	0.90	9,479.58	2,259.37	2,259.40	32.72	2,259.64	0.83	469,356.20	562,706.00	
11,733.00	88.60	1.00	9,481.47	2,353.34	2,353.37	34.28	2,353.62	0.83	469,450.17	562,707.56	
11,826.00	90.00	358.40	9,482.61	2,446.32	2,446.35	33.79	2,446.58	0.79	469,543.15	562,707.07	
11,921.00	88.60	357.40	9,483.77	2,541.25	2,541.27	30.31	2,541.46	0.68	469,638.07	562,703.59	
12,016.00	90.10	356.70	9,484.85	2,636.12	2,636.14	25.43	2,636.26	0.55	469,732.94	562,698.71	

Company: Marathon Oil
Project: Eddy County, NM
Site: Trebuchet Fee 23-28-19
Well: WA #5H
Wellbore: OH
Design: OH 150'-14090' PTB 14145'

Local Co-ordinate Reference: Well WA #5H
TVD Reference: Well @ 3112.00usft (GL: 3087' + KB: 25' (Prec594))
MD Reference: Well @ 3112.00usft (GL: 3087' + KB: 25' (Prec594))
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)
12,110.00	91.00	356.60	9,483.94	2,729.95	2,729.97	19.93	2,730.05	0.42	469,826.77	562,693.21
12,204.00	91.60	356.30	9,481.81	2,823.75	2,823.77	14.11	2,823.80	0.29	469,920.57	562,687.39
12,299.00	91.30	355.90	9,479.41	2,918.51	2,918.52	7.65	2,918.53	0.15	470,015.32	562,680.93
12,393.00	92.20	358.90	9,476.54	3,012.36	3,012.37	3.39	3,012.37	0.06	470,109.17	562,676.67
12,487.00	92.80	359.20	9,472.44	3,106.26	3,106.26	1.84	3,106.26	0.03	470,203.06	562,675.12
12,581.00	93.10	0.70	9,467.60	3,200.13	3,200.13	1.75	3,200.14	0.03	470,296.93	562,675.03
12,676.00	88.80	1.40	9,466.02	3,295.08	3,295.08	3.49	3,295.08	0.06	470,391.88	562,676.77
12,770.00	88.10	1.50	9,468.57	3,389.01	3,389.02	5.87	3,389.02	0.10	470,485.82	562,679.15
12,864.00	87.00	0.70	9,472.58	3,482.90	3,482.91	7.67	3,482.92	0.13	470,579.71	562,680.95
12,959.00	87.60	0.60	9,477.06	3,577.79	3,577.80	8.75	3,577.81	0.14	470,674.60	562,682.03
13,053.00	88.60	2.00	9,480.18	3,671.71	3,671.72	10.88	3,671.74	0.17	470,768.52	562,684.16
13,147.00	86.90	1.10	9,483.87	3,765.60	3,765.61	13.42	3,765.63	0.20	470,862.41	562,686.70
13,242.00	89.60	2.20	9,486.77	3,860.50	3,860.52	16.16	3,860.55	0.24	470,957.32	562,689.44
13,336.00	91.00	2.90	9,486.27	3,954.40	3,954.42	20.34	3,954.47	0.29	471,051.22	562,693.62
13,429.00	93.00	0.60	9,483.03	4,047.29	4,047.31	23.18	4,047.37	0.33	471,144.11	562,696.46
13,524.00	90.50	1.10	9,480.13	4,142.22	4,142.24	24.59	4,142.32	0.34	471,239.04	562,697.87
13,618.00	90.30	3.40	9,479.47	4,236.14	4,236.16	28.28	4,236.26	0.38	471,332.96	562,701.56
13,712.00	90.50	0.80	9,478.82	4,330.06	4,330.09	31.72	4,330.21	0.42	471,426.89	562,705.00
13,806.00	90.80	0.40	9,477.75	4,424.05	4,424.08	32.71	4,424.20	0.42	471,520.88	562,705.99
13,900.00	90.80	0.70	9,476.44	4,518.03	4,518.07	33.61	4,518.19	0.43	471,614.87	562,706.89
13,996.00	91.70	1.00	9,474.34	4,614.00	4,614.03	35.03	4,614.16	0.44	471,710.83	562,708.31
14,090.00	92.40	2.40	9,470.98	4,707.89	4,707.93	37.82	4,708.08	0.46	471,804.73	562,711.10
Last Survey: 14090' MD, 9471' TVD										
14,145.00	92.40	2.40	9,468.68	4,762.79	4,762.83	40.12	4,763.00	0.48	471,859.63	562,713.40
PTB: 14145' MD, 9469' TVD										

Company: Marathon Oil
Project: Eddy County, NM
Site: Trebuchet Fee 23-28-19
Well: WA #5H
Wellbore: OH
Design: OH 150'-14090' PTB 14145'

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

Well WA #5H
 Well @ 3112.00usft (GL: 3087' + KB: 25' (Prec594))
 Well @ 3112.00usft (GL: 3087' + KB: 25' (Prec594))
 Grid
 Minimum Curvature
 WellPlanner1

Design Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
14,090.00	9,470.98	4,707.93	37.82	Last Survey: 14090' MD, 9471' TVD
14,145.00	9,468.68	4,762.83	40.12	PTB: 14145' MD, 9469' TVD



Marathon Oil
Eddy County, NM
Trebuchet Fee 23-28-19
WA #5H
Plan #1 - FINAL PVA
GL: 3087' + KB: 25' (Prec594)

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

RKB Elevation: Well @ 3112.00usft (GL: 3087' + KB: 25' (Prec594))

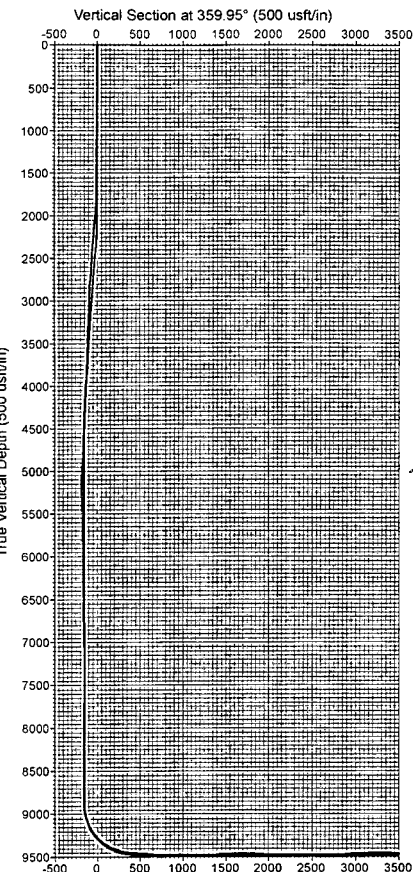
+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Spot
0.00	0.00	467096.80	562673.28	32.284003	-104.130531	

SECTION DETAILS

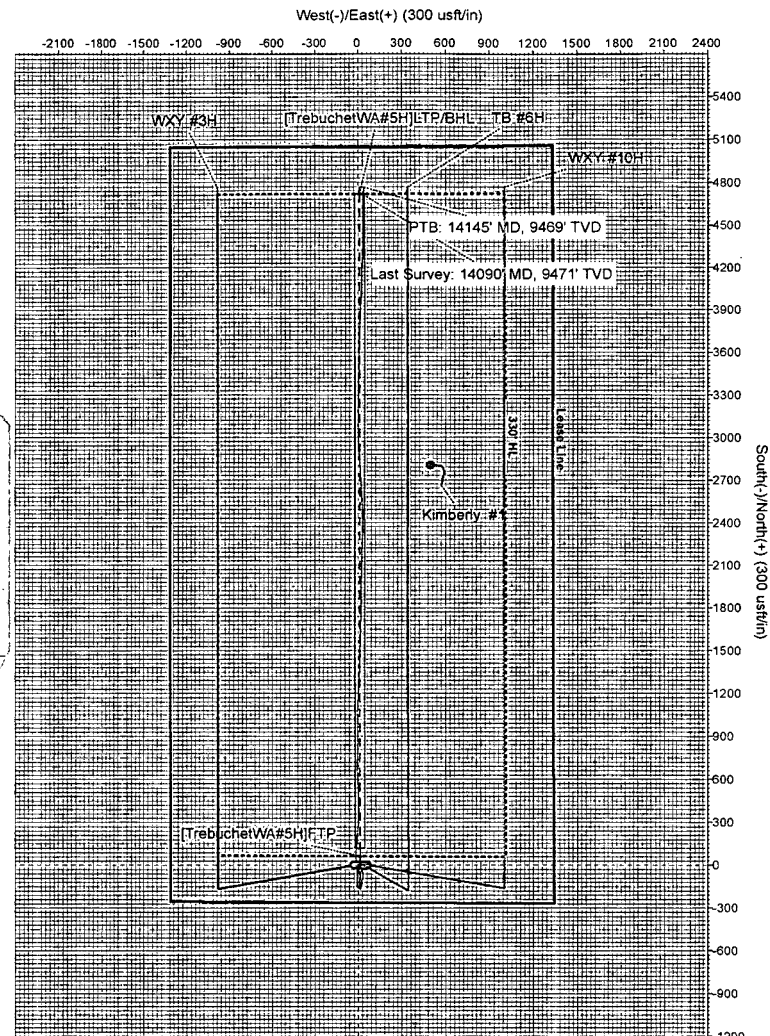
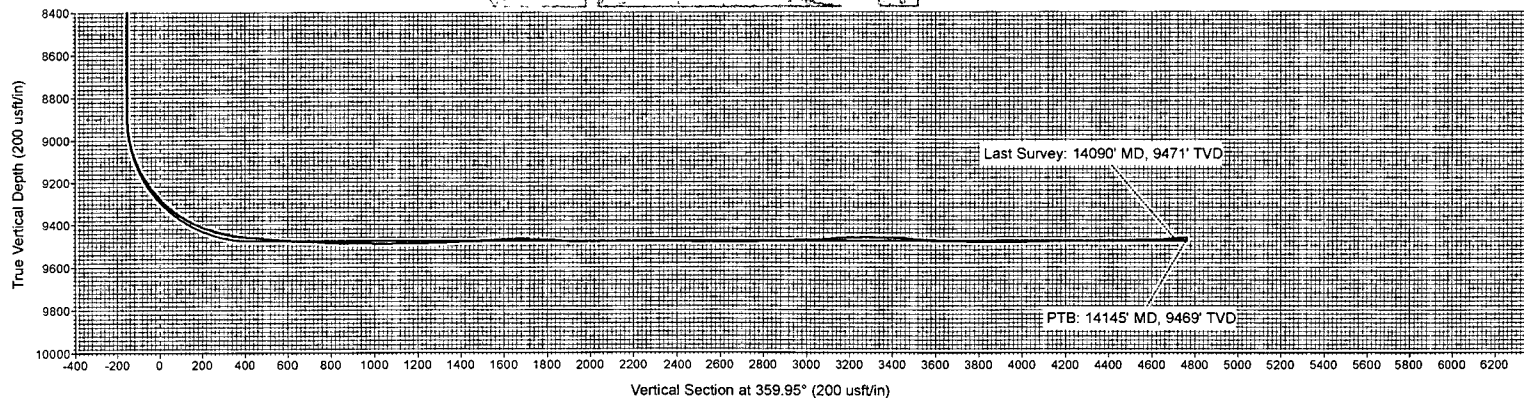
Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	Vsect
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	2000.00	0.00	0.00	2000.00	0.00	0.00	0.00	0.00
3	2200.00	4.00	175.00	2199.84	-6.95	0.61	2.00	-6.95
4	4200.06	4.00	175.00	4195.03	-145.94	12.77	0.00	-145.95
5	4400.06	0.00	0.00	4394.87	-152.89	13.38	2.00	-152.90
6	8910.24	0.00	0.00	8905.04	-152.89	13.38	0.00	-152.90
7	9810.24	90.00	359.95	9478.00	420.07	12.92	10.00	420.06
8	14107.73	90.00	359.95	9478.00	4717.56	9.46	0.00	4717.55
9	14152.73	90.00	359.95	9478.00	4762.56	9.42	0.00	4762.55

WELLBORE TARGET DETAILS (MAP CO-ORDINATES)

Name	TVD	+N/-S	+E/-W	Northing	Easting
[TrebuchetWA#5H]FTP	0.00	62.94	13.88	467159.74	562687.16
[TrebuchetWA#5H]LTP/BHL	9478.00	4717.56	9.46	471814.36	562682.74



Target Line: 9478' TVD @ 0' VS: 90° INC



Azimuths to Grid North
True North: -0.11°
Magnetic North: 7.19°

Magnetic Field
Strength: 48014.7nT
Dip Angle: 60.05°
Date: 4/1/2018
Model: HDGM

Azimuth Corrections

Total Magnetic Corr. (M to G): 7.19°

Declination (M to T): 7.30° East