



Marathon Oil

Marathon Oil

Eddy County, NM

Mariner Fee 23-28-19

WA #10H

OH

Design: OH 181'-14580' PTB 14633'

Survey Report

25 June, 2018

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DISTRICT II-ARTESIA O.C.D.





Professional Directional Survey Report



Company: Marathon Oil	Local Co-ordinate Reference:	Well WA #10H
Project: Eddy County, NM	TVD Reference:	Well @ 3092.50usft (GL: 3066' + KB: 26.5' (H&P423))
Site: Mariner Fee 23-28-19	MD Reference:	Well @ 3092.50usft (GL: 3066' + KB: 26.5' (H&P423))
Well: WA #10H	North Reference:	Grid
Wellbore: OH	Survey Calculation Method:	Minimum Curvature
Design: OH 181'-14580' PTB 14633'	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	Mariner Fee 23-28-19				
Site Position:	Northing:	472,817.80 usft	Latitude:	32.299718	
From: Map	Easting:	564,941.79 usft	Longitude:	-104.123154	
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "	Grid Convergence:	0.11 °

Well	WA #10H					
Well Position	+N/-S	0.00 usft	Northing:	472,817.80 usft	Latitude:	32.299717
	+E/-W	0.00 usft	Easting:	564,991.79 usft	Longitude:	-104.122992
Position Uncertainty	0.00 usft		Wellhead Elevation:	usft	Ground Level:	3,066.00 usft

Wellbore	OH				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	HDGM	4/20/2018	7.28	60.07	48,015.30

Design	OH 181'-14580' PTB 14633'				
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	179.89	

Survey Program	Date 6/25/2018				
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
181.00	14,633.00	Survey #1 (OH)	MWD+IFR1	OWSG MWD + IFR1	

Company: Marathon Oil
Project: Eddy County, NM
Site: Mariner Fee 23-28-19
Well: WA #10H
Wellbore: OH
Design: OH 181'-14580' PTB 14633'

Local Co-ordinate Reference: Well WA #10H
TVD Reference: Well @ 3092.50usft (GL: 3066' + KB: 26.5' (H&P423))
MD Reference: Well @ 3092.50usft (GL: 3066' + KB: 26.5' (H&P423))
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	472,817.80	564,991.79	
181.00	1.20	44.80	180.99	-1.34	1.34	1.34	1.90	44.80	472,819.14	564,993.13	
242.00	1.20	81.60	241.97	-1.89	1.89	2.42	3.07	51.96	472,819.69	564,994.21	
333.00	1.30	110.80	332.95	-1.66	1.66	4.33	4.63	68.96	472,819.46	564,996.12	
375.00	1.50	110.80	374.94	-1.29	1.30	5.28	5.44	76.18	472,819.10	564,997.07	
515.00	1.30	106.70	514.90	-0.18	0.19	8.52	8.52	88.70	472,817.99	565,000.31	
606.00	1.40	97.40	605.87	0.27	-0.25	10.61	10.61	91.33	472,817.55	565,002.40	
700.00	1.10	87.20	699.85	0.38	-0.35	12.65	12.65	91.59	472,817.45	565,004.44	
795.00	0.80	72.40	794.84	0.13	-0.11	14.19	14.19	90.43	472,817.69	565,005.98	
889.00	0.60	73.30	888.83	-0.20	0.23	15.29	15.29	89.12	472,818.03	565,007.08	
984.00	0.30	68.90	983.83	-0.44	0.47	16.00	16.00	88.33	472,818.27	565,007.79	
1,079.00	0.30	29.90	1,078.83	-0.74	0.77	16.35	16.37	87.30	472,818.57	565,008.14	
1,173.00	0.20	75.10	1,172.83	-1.00	1.03	16.64	16.67	86.47	472,818.83	565,008.43	
1,268.00	0.10	118.90	1,267.83	-1.00	1.03	16.87	16.90	86.51	472,818.83	565,008.66	
1,363.00	0.10	175.70	1,362.83	-0.87	0.91	16.95	16.97	86.94	472,818.71	565,008.74	
1,458.00	0.10	30.20	1,457.83	-0.86	0.90	16.99	17.02	86.98	472,818.70	565,008.78	
1,552.00	0.30	8.80	1,551.83	-1.18	1.21	17.07	17.12	85.95	472,819.01	565,008.86	
1,647.00	1.20	81.50	1,646.82	-1.57	1.60	18.10	18.17	84.94	472,819.40	565,009.89	
1,741.00	2.60	99.50	1,740.76	-1.36	1.40	21.17	21.22	86.23	472,819.20	565,012.96	
1,836.00	3.70	107.00	1,835.62	-0.09	0.14	26.23	26.23	89.68	472,817.94	565,018.02	
1,931.00	4.00	106.90	1,930.41	1.78	-1.71	32.33	32.38	93.04	472,816.09	565,024.12	
2,025.00	4.90	110.30	2,024.12	4.14	-4.06	39.23	39.44	95.91	472,813.74	565,031.02	
2,120.00	6.10	109.30	2,118.68	7.23	-7.14	47.80	48.33	98.49	472,810.66	565,039.59	
2,215.00	7.00	106.90	2,213.06	10.60	-10.49	58.11	59.04	100.23	472,807.31	565,049.90	
2,310.00	7.40	108.10	2,307.31	14.20	-14.07	69.46	70.87	101.45	472,803.73	565,061.25	
2,367.00	7.00	110.30	2,363.86	16.56	-16.42	76.21	77.95	102.16	472,801.38	565,068.00	
2,477.00	7.80	115.40	2,472.95	22.12	-21.94	89.24	91.89	103.82	472,795.86	565,081.03	

Company: Marathon Oil
Project: Eddy County, NM
Site: Mariner Fee 23-28-19
Well: WA #10H
Wellbore: OH
Design: OH 181'-14580' PTB 14633'

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

Well WA #10H
 Well @ 3092.50usft (GL: 3066' + KB: 26.5' (H&P423))
 Well @ 3092.50usft (GL: 3066' + KB: 26.5' (H&P423))
 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)	
2,572.00	9.70	118.70	2,566.84	28.75	-28.55	102.08	106.00	105.63	472,789.25	565,093.87	
2,667.00	11.50	115.60	2,660.21	36.72	-36.49	117.64	123.17	107.23	472,781.31	565,109.43	
2,761.00	12.30	113.70	2,752.19	44.82	-44.56	135.26	142.41	108.23	472,773.24	565,127.05	
2,856.00	12.00	112.00	2,845.06	52.62	-52.33	153.68	162.35	108.80	472,765.47	565,145.47	
2,951.00	12.00	111.60	2,937.99	59.99	-59.66	172.02	182.08	109.13	472,758.14	565,163.81	
3,046.00	11.90	110.80	3,030.93	67.14	-66.78	190.36	201.73	109.33	472,751.02	565,182.15	
3,140.00	12.70	112.40	3,122.77	74.56	-74.16	208.97	221.74	109.54	472,743.64	565,200.76	
3,235.00	12.40	113.00	3,215.50	82.56	-82.12	228.02	242.36	109.81	472,735.68	565,219.81	
3,329.00	11.70	111.20	3,307.43	89.99	-89.51	246.19	261.96	109.98	472,728.29	565,237.98	
3,424.00	12.10	115.40	3,400.39	97.77	-97.27	264.17	281.51	110.21	472,720.53	565,255.96	
3,519.00	12.60	116.80	3,493.19	106.75	-106.21	282.41	301.72	110.61	472,711.59	565,274.20	
3,614.00	12.50	116.80	3,585.92	116.09	-115.52	300.84	322.25	111.01	472,702.28	565,292.63	
3,709.00	12.30	116.60	3,678.71	125.30	-124.68	319.06	342.56	111.34	472,693.12	565,310.85	
3,804.00	12.50	116.90	3,771.49	134.51	-133.87	337.28	362.87	111.65	472,683.93	565,329.07	
3,898.00	12.10	116.50	3,863.33	143.55	-142.86	355.17	382.82	111.91	472,674.94	565,346.96	
3,993.00	12.00	116.70	3,956.24	152.46	-151.74	372.90	402.59	112.14	472,666.06	565,364.69	
4,088.00	12.10	116.70	4,049.15	161.41	-160.66	390.62	422.37	112.36	472,657.14	565,382.41	
4,183.00	12.10	116.90	4,142.03	170.42	-169.63	408.39	442.22	112.56	472,648.17	565,400.18	
4,277.00	12.30	116.90	4,233.91	179.44	-178.62	426.11	462.03	112.74	472,639.18	565,417.90	
4,372.00	12.30	116.80	4,326.73	188.61	-187.76	444.17	482.22	112.92	472,630.04	565,435.96	
4,467.00	11.80	116.90	4,419.64	197.61	-196.72	461.86	502.01	113.07	472,621.08	565,453.65	
4,562.00	11.20	115.90	4,512.73	206.06	-205.14	478.82	520.92	113.19	472,612.66	565,470.61	
4,657.00	10.60	115.70	4,606.02	213.91	-212.96	495.00	538.86	113.28	472,604.84	565,486.79	
4,752.00	11.40	115.00	4,699.27	221.70	-220.72	511.38	556.98	113.35	472,597.08	565,503.17	
4,847.00	11.40	114.40	4,792.40	229.58	-228.57	528.44	575.75	113.39	472,589.23	565,520.23	
4,942.00	11.40	114.80	4,885.52	237.43	-236.38	545.51	594.52	113.43	472,581.42	565,537.30	
5,037.00	11.30	115.00	4,978.66	245.33	-244.26	562.47	613.21	113.47	472,573.54	565,554.26	

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5,132.00	10.90	115.40	5,071.89	253.15	-252.04	579.02	631.50	113.52	472,565.76	565,570.81	
5,226.00	11.50	115.70	5,164.10	261.06	-259.92	595.49	649.74	113.58	472,557.88	565,587.28	
5,321.00	11.80	115.40	5,257.14	269.37	-268.19	612.80	668.91	113.64	472,549.61	565,604.59	
5,416.00	11.30	114.80	5,350.21	277.47	-276.26	630.02	687.93	113.68	472,541.54	565,621.81	
5,511.00	10.80	113.90	5,443.45	285.01	-283.77	646.61	706.14	113.69	472,534.03	565,638.40	
5,606.00	11.00	112.20	5,536.74	292.07	-290.80	663.14	724.10	113.68	472,527.00	565,654.93	
5,701.00	10.40	111.20	5,630.09	298.63	-297.33	679.52	741.72	113.63	472,520.47	565,671.31	
5,796.00	9.90	110.80	5,723.60	304.66	-303.33	695.15	758.45	113.57	472,514.47	565,686.94	
5,891.00	9.90	110.90	5,817.18	310.50	-309.14	710.42	774.76	113.52	472,508.66	565,702.21	
5,985.00	9.40	110.30	5,909.85	316.08	-314.69	725.16	790.50	113.46	472,503.11	565,716.95	
6,081.00	8.60	108.60	6,004.67	321.12	-319.70	739.32	805.48	113.38	472,498.10	565,731.11	
6,175.00	8.10	108.90	6,097.68	325.53	-324.08	752.25	819.09	113.31	472,493.72	565,744.04	
6,270.00	7.10	106.80	6,191.84	329.41	-327.95	764.20	831.60	113.23	472,489.85	565,755.99	
6,365.00	6.70	103.50	6,286.15	332.43	-330.94	775.21	842.89	113.12	472,486.86	565,767.00	
6,460.00	6.00	100.00	6,380.57	334.60	-333.09	785.49	853.20	112.98	472,484.71	565,777.28	
6,555.00	5.10	98.10	6,475.12	336.08	-334.55	794.56	862.12	112.83	472,483.25	565,786.35	
6,650.00	3.80	92.00	6,569.83	336.80	-335.26	801.88	869.15	112.69	472,482.54	565,793.67	
6,744.00	4.30	105.70	6,663.60	337.87	-336.32	808.39	875.56	112.59	472,481.48	565,800.18	
6,839.00	5.40	112.10	6,758.26	340.53	-338.96	815.96	883.57	112.56	472,478.84	565,807.75	
6,934.00	5.50	111.30	6,852.83	343.88	-342.30	824.34	892.59	112.55	472,475.50	565,816.13	
7,028.00	5.40	111.40	6,946.41	347.15	-345.55	832.66	901.51	112.54	472,472.25	565,824.45	
7,123.00	5.50	113.50	7,040.98	350.61	-349.00	841.00	910.53	112.54	472,468.80	565,832.79	
7,218.00	5.10	112.00	7,135.57	354.02	-352.39	849.09	919.31	112.54	472,465.41	565,840.88	
7,313.00	4.80	111.40	7,230.22	357.07	-355.43	856.70	927.51	112.53	472,462.37	565,848.49	
7,407.00	4.40	114.00	7,323.91	359.99	-358.33	863.66	935.04	112.53	472,459.47	565,855.45	
7,502.00	4.60	114.80	7,418.62	363.08	-361.41	870.45	942.49	112.55	472,456.39	565,862.24	
7,596.00	4.30	114.10	7,512.34	366.11	-364.43	877.08	949.78	112.56	472,453.37	565,868.87	

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Project: Eddy County, NM
Site: Mariner Fee 23-28-19
Well: WA #10H
Wellbore: OH
Design: OH 181'-14580' PTB 14633'

Local Co-ordinate Reference: Well WA #10H
TVD Reference: Well @ 3092.50usft (GL: 3066' + KB: 26.5' (H&P423))
MD Reference: Well @ 3092.50usft (GL: 3066' + KB: 26.5' (H&P423))
North Reference: Grid
Survey Calculation Method: Minimum Curvature
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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)	
7,691.00	3.90	114.00	7,607.09	368.89	-367.20	883.29	956.57	112.57	472,450.60	565,875.08	
7,786.00	3.90	116.70	7,701.87	371.67	-369.96	889.12	963.02	112.59	472,447.84	565,880.91	
7,880.00	3.70	116.90	7,795.67	374.49	-372.77	894.68	969.24	112.62	472,445.03	565,886.47	
7,975.00	3.30	116.90	7,890.49	377.12	-375.39	899.86	975.02	112.64	472,442.41	565,891.65	
8,070.00	3.00	119.80	7,985.35	379.60	-377.87	904.45	980.21	112.67	472,439.93	565,896.24	
8,165.00	2.40	120.20	8,080.24	381.85	-380.10	908.33	984.65	112.71	472,437.70	565,900.12	
8,259.00	2.20	123.60	8,174.16	383.84	-382.09	911.53	988.38	112.74	472,435.71	565,903.32	
8,354.00	2.30	127.60	8,269.09	386.02	-384.26	914.56	992.01	112.79	472,433.54	565,906.35	
8,449.00	2.10	139.40	8,364.02	388.51	-386.75	917.20	995.41	112.86	472,431.05	565,908.99	
8,544.00	2.10	138.90	8,458.96	391.15	-389.38	919.48	998.53	112.95	472,428.42	565,911.27	
8,638.00	1.90	134.20	8,552.90	393.53	-391.77	921.73	1,001.53	113.03	472,426.03	565,913.52	
8,733.00	2.50	119.50	8,647.83	395.66	-393.88	924.66	1,005.06	113.07	472,423.92	565,916.45	
8,828.00	2.80	110.80	8,742.73	397.51	-395.73	928.64	1,009.44	113.08	472,422.07	565,920.43	
8,905.00	2.50	108.90	8,819.65	398.73	-396.94	931.98	1,012.99	113.07	472,420.86	565,923.77	
9,012.00	5.80	124.50	8,926.35	402.56	-400.76	938.65	1,020.62	113.12	472,417.04	565,930.44	
9,107.00	17.00	140.10	9,019.35	416.00	-414.18	951.56	1,037.79	113.52	472,403.62	565,943.35	
9,201.00	27.70	156.60	9,106.24	446.75	-444.89	969.11	1,066.35	114.66	472,372.91	565,960.90	
9,296.00	34.70	168.50	9,187.53	493.64	-491.75	983.31	1,099.41	116.57	472,326.05	565,975.10	
9,390.00	45.70	172.10	9,259.23	553.39	-551.48	993.30	1,136.12	119.04	472,266.32	565,985.09	
9,485.00	52.90	174.30	9,321.14	624.87	-622.95	1,001.74	1,179.64	121.88	472,194.85	565,993.53	
9,579.00	59.40	175.70	9,373.47	702.62	-700.68	1,008.51	1,228.02	124.79	472,117.12	566,000.30	
9,674.00	66.60	175.90	9,416.57	786.99	-785.04	1,014.70	1,282.93	127.73	472,032.76	566,006.49	
9,769.00	73.90	177.10	9,448.66	876.18	-874.23	1,020.13	1,343.48	130.60	471,943.57	566,011.92	
9,813.00	78.60	178.20	9,459.11	918.88	-916.92	1,021.88	1,372.94	131.90	471,900.88	566,013.67	
9,895.00	81.70	178.30	9,473.14	999.63	-997.66	1,024.34	1,429.90	134.24	471,820.14	566,016.13	
9,990.00	86.70	177.10	9,482.73	1,094.04	-1,092.07	1,028.14	1,499.89	136.73	471,725.73	566,019.93	
10,084.00	89.20	177.40	9,486.10	1,187.87	-1,185.89	1,032.65	1,572.48	138.95	471,631.91	566,024.44	

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Project: Eddy County, NM
Site: Mariner Fee 23-28-19
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Wellbore: OH
Design: OH 181'-14580' PTB 14633'

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

Well WA #10H
 Well @ 3092.50usft (GL: 3066' + KB: 26.5' (H&P423))
 Well @ 3092.50usft (GL: 3066' + KB: 26.5' (H&P423))
 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)	
10,178.00	88.20	177.00	9,488.23	1,281.74	-1,279.75	1,037.24	1,647.31	140.98	471,538.05	566,029.03	
10,272.00	87.90	177.90	9,491.43	1,375.60	-1,373.61	1,041.42	1,723.76	142.83	471,444.19	566,033.21	
10,366.00	88.60	179.40	9,494.30	1,469.53	-1,467.53	1,043.63	1,800.78	144.58	471,350.27	566,035.42	
10,460.00	90.60	179.50	9,494.96	1,563.52	-1,561.52	1,044.53	1,878.67	146.22	471,256.28	566,036.32	
10,554.00	89.30	179.20	9,495.04	1,657.52	-1,655.51	1,045.60	1,958.06	147.72	471,162.29	566,037.39	
10,648.00	91.30	177.30	9,494.54	1,751.47	-1,749.46	1,048.47	2,039.58	149.07	471,068.34	566,040.26	
10,742.00	90.80	176.70	9,492.82	1,845.33	-1,843.31	1,053.39	2,123.07	150.25	470,974.49	566,045.18	
10,838.00	90.90	176.80	9,491.40	1,941.18	-1,939.15	1,058.83	2,209.39	151.36	470,878.65	566,050.62	
10,932.00	89.50	176.80	9,491.07	2,035.04	-2,033.00	1,064.08	2,294.63	152.37	470,784.80	566,055.87	
11,026.00	89.10	177.20	9,492.22	2,128.91	-2,126.86	1,069.00	2,380.40	153.32	470,690.94	566,060.79	
11,121.00	91.00	177.50	9,492.14	2,223.81	-2,221.76	1,073.39	2,467.46	154.21	470,596.04	566,065.18	
11,215.00	89.50	177.40	9,491.73	2,317.72	-2,315.66	1,077.57	2,554.10	155.05	470,502.14	566,069.36	
11,309.00	88.00	176.70	9,493.78	2,411.58	-2,409.51	1,082.41	2,641.47	155.81	470,408.29	566,074.20	
11,403.00	90.30	175.30	9,495.17	2,505.35	-2,503.26	1,088.96	2,729.86	156.49	470,314.54	566,080.75	
11,498.00	89.10	174.80	9,495.67	2,600.01	-2,597.90	1,097.16	2,820.08	157.10	470,219.90	566,088.95	
11,593.00	91.00	176.10	9,495.59	2,694.71	-2,692.60	1,104.70	2,910.40	157.69	470,125.20	566,096.49	
11,688.00	93.20	177.00	9,492.10	2,789.48	-2,787.36	1,110.41	3,000.39	158.28	470,030.44	566,102.20	
11,781.00	92.80	177.40	9,487.24	2,882.25	-2,880.12	1,114.95	3,088.39	158.84	469,937.68	566,106.74	
11,876.00	91.50	177.10	9,483.67	2,977.08	-2,974.94	1,119.50	3,178.61	159.38	469,842.86	566,111.29	
11,970.00	90.80	176.40	9,481.79	3,070.92	-3,068.77	1,124.83	3,268.42	159.87	469,749.03	566,116.62	
12,065.00	89.50	175.40	9,481.54	3,165.69	-3,163.52	1,131.62	3,359.82	160.32	469,654.28	566,123.41	
12,159.00	88.10	174.80	9,483.51	3,259.34	-3,257.15	1,139.65	3,450.77	160.72	469,560.65	566,131.44	
12,253.00	87.50	173.50	9,487.11	3,352.79	-3,350.59	1,149.22	3,542.20	161.07	469,467.21	566,141.01	
12,347.00	90.60	176.50	9,488.67	3,446.42	-3,444.20	1,157.41	3,633.47	161.43	469,373.60	566,149.20	
12,441.00	94.60	177.60	9,484.41	3,540.18	-3,537.96	1,162.24	3,723.97	161.81	469,279.84	566,154.03	
12,534.00	90.90	178.70	9,479.95	3,633.02	-3,630.79	1,165.24	3,813.19	162.21	469,187.01	566,157.03	
12,629.00	91.30	182.50	9,478.12	3,727.97	-3,725.74	1,164.24	3,903.41	162.65	469,092.06	566,156.03	

Company: Marathon Oil
Project: Eddy County, NM
Site: Mariner Fee 23-28-19
Well: WA #10H
Wellbore: OH
Design: OH 181'-14580' PTB 14633'

Local Co-ordinate Reference: Well WA #10H
TVD Reference: Well @ 3092.50usft (GL: 3066' + KB: 26.5' (H&P423))
MD Reference: Well @ 3092.50usft (GL: 3066' + KB: 26.5' (H&P423))
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)	
12,723.00	88.30	182.50	9,478.45	3,821.86	-3,819.64	1,160.15	3,991.94	163.10	468,998.16	566,151.94	
12,817.00	86.30	183.30	9,482.88	3,915.62	-3,913.41	1,155.40	4,080.41	163.55	468,904.39	566,147.19	
12,911.00	85.70	182.90	9,489.44	4,009.25	-4,007.05	1,150.32	4,168.89	163.98	468,810.75	566,142.11	
13,006.00	86.00	183.70	9,496.31	4,103.83	-4,101.64	1,144.87	4,258.42	164.40	468,716.16	566,136.66	
13,100.00	86.10	183.40	9,502.79	4,197.42	-4,195.24	1,139.06	4,347.12	164.81	468,622.56	566,130.85	
13,193.00	88.90	184.90	9,506.84	4,290.06	-4,287.89	1,132.34	4,434.89	165.21	468,529.91	566,124.13	
13,287.00	92.60	185.50	9,505.61	4,383.63	-4,381.48	1,123.82	4,523.31	165.61	468,436.32	566,115.61	
13,381.00	92.80	185.40	9,501.19	4,477.08	-4,474.95	1,114.90	4,611.75	166.01	468,342.85	566,106.69	
13,476.00	94.90	186.40	9,494.81	4,571.34	-4,569.23	1,105.16	4,700.98	166.40	468,248.57	566,096.95	
13,571.00	95.10	185.30	9,486.53	4,665.47	-4,663.37	1,095.52	4,790.32	166.78	468,154.43	566,087.31	
13,665.00	86.60	185.10	9,485.13	4,758.97	-4,756.89	1,087.01	4,879.51	167.13	468,060.91	566,078.80	
13,759.00	87.40	184.30	9,490.05	4,852.51	-4,850.44	1,079.31	4,969.08	167.46	467,967.36	566,071.10	
13,854.00	87.80	184.20	9,494.03	4,947.15	-4,945.10	1,072.28	5,060.02	167.77	467,872.70	566,064.07	
13,948.00	88.60	183.60	9,496.98	5,040.87	-5,038.83	1,065.89	5,150.34	168.06	467,778.97	566,057.68	
14,043.00	87.40	184.20	9,500.30	5,135.58	-5,133.55	1,059.43	5,241.73	168.34	467,684.25	566,051.22	
14,137.00	91.40	184.40	9,501.28	5,229.28	-5,227.27	1,052.39	5,332.15	168.62	467,590.53	566,044.18	
14,231.00	94.00	185.40	9,496.86	5,322.80	-5,320.81	1,044.37	5,422.34	168.90	467,496.99	566,036.16	
14,326.00	93.10	186.20	9,490.97	5,417.12	-5,415.14	1,034.79	5,513.12	169.18	467,402.66	566,026.58	
14,421.00	90.70	185.90	9,487.82	5,511.51	-5,509.55	1,024.78	5,604.05	169.46	467,308.25	566,016.57	
14,515.00	90.60	186.50	9,486.76	5,604.93	-5,603.00	1,014.63	5,694.12	169.74	467,214.80	566,006.42	
14,580.00	90.20	186.30	9,486.30	5,669.51	-5,667.59	1,007.38	5,756.42	169.92	467,150.21	565,999.17	
Last Survey: 14580' MD, 9486' TVD											
14,633.00	90.20	186.30	9,486.12	5,722.18	-5,720.27	1,001.57	5,807.29	170.07	467,097.53	565,993.36	
PTB: 14633' MD, 9486' TVD											



Professional Directional
Survey Report

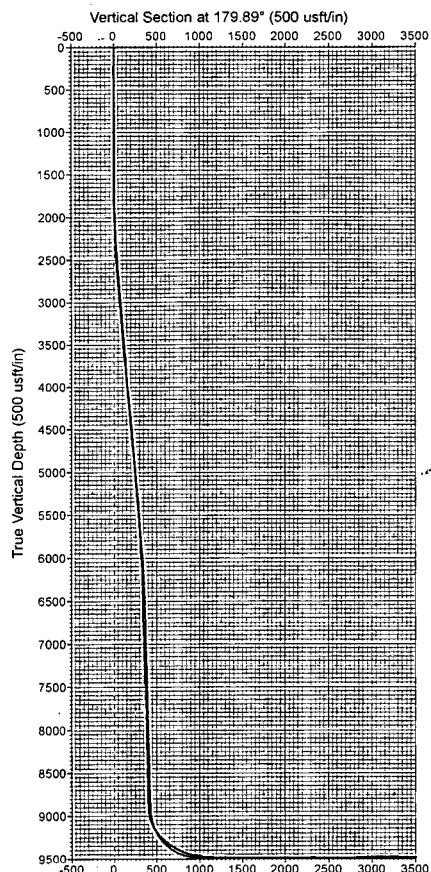


Company:	Marathon Oil	Local Co-ordinate Reference:	Well WA #10H
Project:	Eddy County, NM	TVD Reference:	Well @ 3092.50usft (GL: 3066' + KB: 26.5' (H&P423))
Site:	Mariner Fee 23-28-19	MD Reference:	Well @ 3092.50usft (GL: 3066' + KB: 26.5' (H&P423))
Well:	WA #10H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH 181'-14580' PTB 14633'	Database:	WellPlanner1

Design Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
14,580.00	9,486.30	-5,667.59	1,007.38	Last Survey: 14580' MD, 9486' TVD
14,633.00	9,486.12	-5,720.27	1,001.57	PTB: 14633' MD, 9486' TVD

Marathon Oil Corporation

Marathon Oil
Eddy County, NM
Mariner Fee 23-28-19
WA #10H
Plan #3
GL: 3066' + KB: 26.5' (H&P423)



RKB Elevation: Well @ 3092.50usft (GL: 3066' + KB: 26.5' (H&P423))

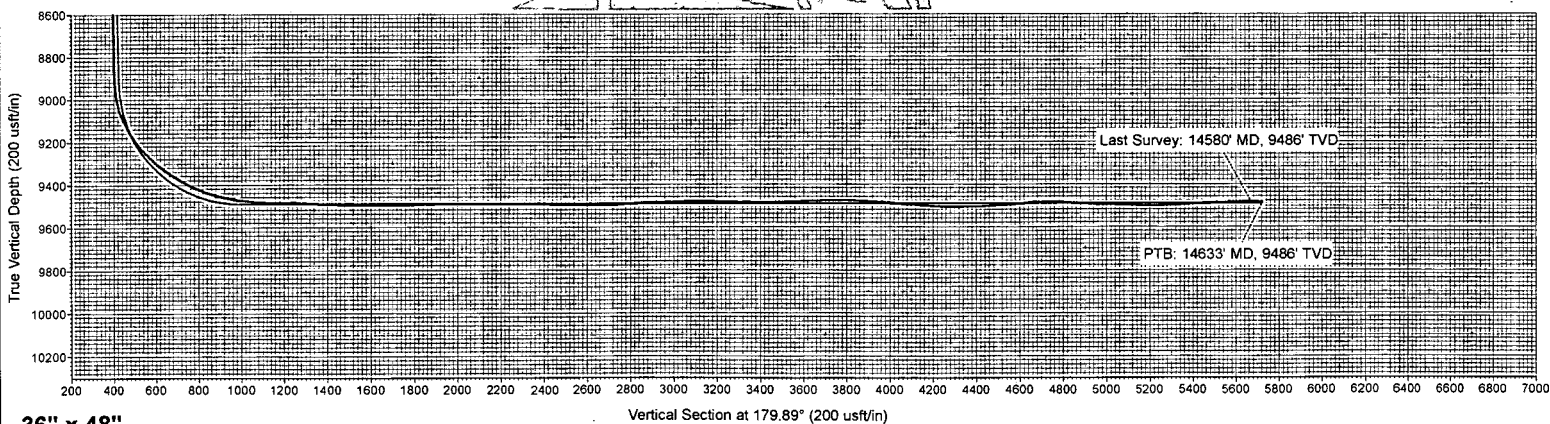
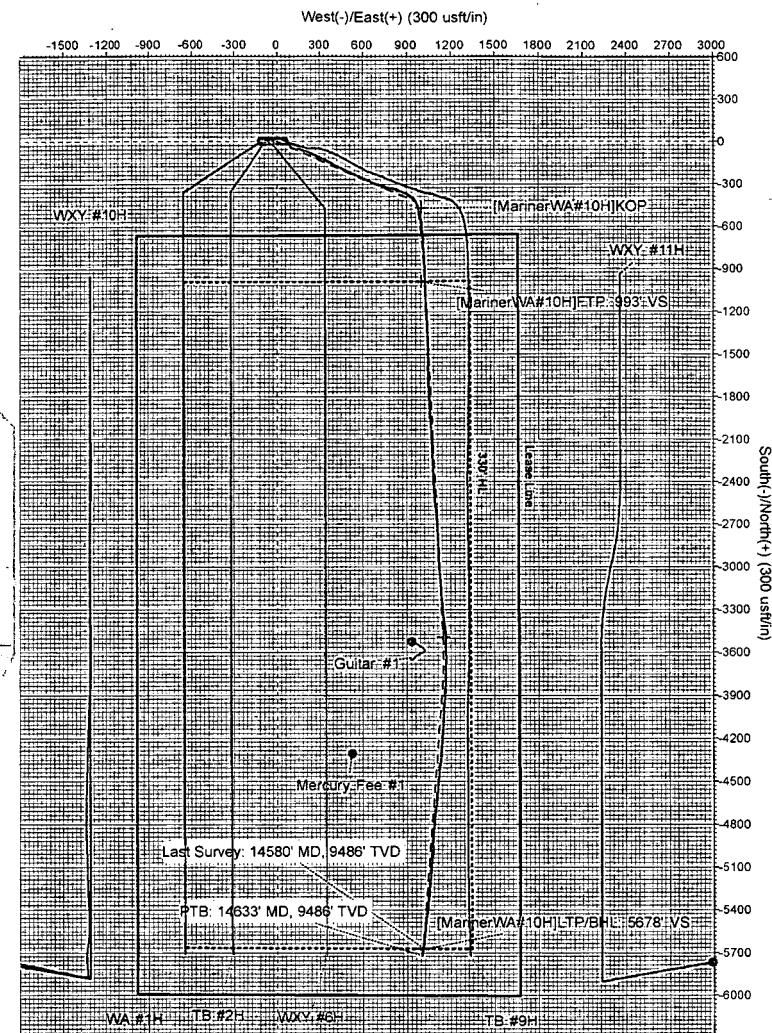
	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
	0.00	0.00	472817.80	564991.79	32.299717	-104.122992	

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	VSec
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	2681.00	11.81	113.75	2672.65	-48.85	111.01	1.00	49.06
4	6080.30	11.81	113.75	6000.00	-329.05	747.82	0.00	330.48
5	6470.80	4.00	113.75	6386.49	-350.66	796.94	2.00	352.19
6	9026.54	4.00	113.75	8936.00	-422.46	960.12	0.00	424.31
7	9908.67	90.00	177.19	9490.00	-992.76	1022.79	10.00	994.72
8	12416.73	90.00	177.19	9490.00	-3497.81	1145.66	0.00	3500.00
9	12768.07	90.00	184.22	9490.00	-3848.90	1141.34	2.00	3851.09
10	14599.87	90.00	184.22	9490.00	-5675.74	1006.59	0.00	5677.66
11	14644.87	90.00	184.22	9490.00	-5720.62	1003.28	0.00	5722.53

WELLBORE/TARGET DETAILS (MAP CO-ORDINATES)

Name	TVD	+N/-S	+E/-W	Northing	Easting
[MarinerWA#10H]FTP: 993' VS	0.00	-990.60	997.76	471827.20	565989.55
[MarinerWA#10H]KOP	8969.13	-469.00	967.00	472348.80	565988.79
[MarinerWA#10H]LTP/BHL: 5678' VS	9490.00	-5675.74	1006.59	467142.06	565998.38
[MarinerWA#10H]P	9490.00	-3497.81	1145.66	469319.99	566137.45

Target Line: 9490' TVD @ 0° VS: 90° INC



Azimuths to Grid North
True North: -0.11°
Magnetic North: 7.17°
Magnetic Field
Strength: 48015.3nT
Dip Angle: 60.07°
Date: 4/20/2018
Model: HDGM

Azimuth Corrections

Total Magnetic Corr. (M to G): 7.17°

Declination (M to T): 7.28° East