



Marathon Oil

Marathon Oil

Eddy County, NM

Mariner Fee 23-28-19

WA #1H

OH

Design: Gyro/MWD 27'-14576' PTB 14625'

Survey Report

12 June, 2018

RECEIVED

JUN 11 2019

DISTRICT II-ARTESIA O.C.D.



PRO DIRECTIONAL

Company:	Marathon Oil	Local Co-ordinate Reference:	Well WA #1H
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 #1H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	Gyro/MWD 27'-14576' PTB 14625'	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
From:	Map	Easting:	564,941.79 usft
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "
		Latitude:	32.299718
		Longitude:	-104.123154
		Grid Convergence:	0.11 °

Well	WA #1H		
Well Position	+N-S	0.00 usft	Northing:
	+E-W	0.00 usft	Easting:
Position Uncertainty	0.00 usft		Wellhead Elevation:
			usft
			Latitude:
			32.299718
			Longitude:
			-104.123348
			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
			48,015.10

Design	Gyro/MWD 27'-14576' PTB 14625'		
Audit Notes:			
Version:	1.0	Phase:	ACTUAL
		Tie On Depth:	0.00
Vertical Section:	Depth From (TVD)	+N/-S	+E/-W
	(usft)	(usft)	(usft)
	0.00	0.00	0.00
			Direction
			(°)
			179.92



Professional Directional Survey Report



Company:	Marathon Oil	Local Co-ordinate Reference:	Well WA #1H
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 #1H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	Gyro/MWD 27'-14576' PTB 14625'	Database:	WellPlanner1

Survey Program		Date 6/12/2018		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
27.00	437.00	Survey #1 (OH)	GYRO-MWD	OWSG Gyro MWD
512.00	14,625.00	Survey #2 (OH)	MWD+IFR1	OWSG MWD + IFR1

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	564,881.79
27.00	0.00	0.00	27.00	0.00	0.00	0.00	0.00	0.00	472,817.80	564,881.79
72.00	0.50	258.53	72.00	0.04	-0.04	-0.19	0.20	258.53	472,817.76	564,881.60
167.00	0.84	358.15	167.00	-0.58	0.57	-0.62	0.85	312.77	472,818.37	564,881.17
258.00	0.47	344.65	257.99	-1.60	1.60	-0.74	1.76	335.15	472,819.40	564,881.05
349.00	1.32	325.75	348.98	-2.83	2.83	-1.43	3.17	333.17	472,820.63	564,880.36
437.00	1.30	333.16	436.95	-4.56	4.56	-2.45	5.17	331.72	472,822.36	564,879.34
512.00	1.60	333.30	511.93	-6.26	6.25	-3.31	7.07	332.13	472,824.05	564,878.48
603.00	1.50	340.70	602.90	-8.52	8.51	-4.27	9.52	333.35	472,826.31	564,877.52
698.00	1.20	345.30	697.87	-10.65	10.65	-4.93	11.73	335.13	472,828.45	564,876.86
793.00	0.90	351.60	792.85	-12.35	12.35	-5.30	13.43	336.78	472,830.15	564,876.49
887.00	0.70	339.00	886.85	-13.62	13.61	-5.61	14.72	337.61	472,831.41	564,876.18
982.00	0.60	333.90	981.84	-14.61	14.60	-6.04	15.80	337.54	472,832.40	564,875.75
1,077.00	0.60	330.30	1,076.83	-15.49	15.48	-6.50	16.79	337.22	472,833.28	564,875.29
1,172.00	1.10	226.40	1,171.83	-15.29	15.28	-7.41	16.98	334.14	472,833.08	564,874.38
1,266.00	2.00	220.50	1,265.79	-13.43	13.41	-9.13	16.22	325.77	472,831.21	564,872.66
1,361.00	2.60	221.40	1,360.72	-10.55	10.54	-11.63	15.69	312.18	472,828.34	564,870.16
1,456.00	3.40	218.20	1,455.58	-6.73	6.71	-14.80	16.24	294.38	472,824.51	564,866.99
1,550.00	3.50	220.00	1,549.41	-2.34	2.32	-18.36	18.51	277.19	472,820.12	564,863.43
1,645.00	3.80	209.10	1,644.22	2.62	-2.65	-21.76	21.92	263.04	472,815.15	564,860.03
1,740.00	4.60	185.90	1,738.97	9.16	-9.20	-23.68	25.40	248.78	472,808.60	564,858.11

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Wellbore: OH
Design: Gyro/MWD 27'-14576' PTB 14625'

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

Well WA #1H
 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)	
1,834.00	5.20	182.50	1,832.63	17.17	-17.20	-24.25	29.73	234.66	472,800.60	564,857.54	
1,929.00	5.10	190.10	1,927.25	25.62	-25.66	-25.18	35.95	224.46	472,792.14	564,856.61	
2,024.00	6.00	191.00	2,021.80	34.65	-34.69	-26.87	43.88	217.76	472,783.11	564,854.92	
2,119.00	5.90	192.00	2,116.29	44.30	-44.34	-28.83	52.89	213.04	472,773.46	564,852.96	
2,214.00	6.60	201.60	2,210.73	54.15	-54.19	-31.86	62.86	210.45	472,763.61	564,849.93	
2,308.00	8.50	219.30	2,303.92	64.54	-64.59	-38.25	75.07	210.63	472,753.21	564,843.54	
2,361.00	9.30	223.80	2,356.28	70.65	-70.71	-43.69	83.12	211.71	472,747.09	564,838.10	
2,472.00	10.10	230.20	2,465.70	83.34	-83.42	-57.38	101.25	214.52	472,734.38	564,824.41	
2,567.00	11.30	236.00	2,559.05	93.86	-93.96	-71.50	118.07	217.27	472,723.84	564,810.29	
2,661.00	14.10	239.40	2,650.74	104.81	-104.94	-88.99	137.59	220.30	472,712.86	564,792.80	
2,756.00	14.80	239.00	2,742.73	116.92	-117.08	-109.35	160.20	223.05	472,700.72	564,772.44	
2,851.00	14.10	239.00	2,834.73	129.11	-129.29	-129.67	183.11	225.09	472,688.51	564,752.12	
2,945.00	13.90	239.00	2,925.93	140.79	-141.00	-149.16	205.26	226.61	472,676.80	564,732.63	
3,040.00	13.60	238.90	3,018.21	152.41	-152.65	-168.51	227.37	227.83	472,665.15	564,713.28	
3,135.00	13.40	238.80	3,110.59	163.85	-164.12	-187.49	249.17	228.80	472,653.68	564,694.30	
3,229.00	12.40	238.70	3,202.21	174.72	-175.00	-205.43	269.87	229.57	472,642.80	564,676.36	
3,324.00	11.60	238.10	3,295.14	185.04	-185.35	-222.25	289.40	230.17	472,632.45	564,659.54	
3,419.00	13.10	240.60	3,387.94	195.35	-195.68	-239.74	309.46	230.78	472,622.12	564,642.05	
3,514.00	13.50	240.40	3,480.39	206.08	-206.44	-258.76	331.03	231.42	472,611.36	564,623.03	
3,609.00	13.50	240.30	3,572.76	217.03	-217.42	-278.04	352.95	231.98	472,600.38	564,603.75	
3,704.00	12.90	240.50	3,665.25	227.72	-228.13	-296.90	374.42	232.46	472,589.67	564,584.89	
3,799.00	12.70	241.20	3,757.89	237.94	-238.38	-315.28	395.26	232.91	472,579.42	564,566.51	
3,894.00	12.00	242.80	3,850.69	247.46	-247.93	-333.21	415.33	233.35	472,569.87	564,548.58	
3,988.00	11.70	243.50	3,942.69	256.16	-256.65	-350.44	434.37	233.78	472,561.15	564,531.35	
4,083.00	11.80	244.10	4,035.70	264.68	-265.19	-367.79	453.43	234.21	472,552.61	564,514.00	
4,178.00	11.70	244.60	4,128.71	273.03	-273.56	-385.23	472.49	234.62	472,544.24	564,496.56	
4,273.00	11.90	245.40	4,221.70	281.21	-281.77	-402.84	491.61	235.03	472,536.03	564,478.95	

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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)
4,367.00	11.80	245.80	4,313.70	289.16	-289.75	-420.42	510.59	235.43	472,528.05	564,461.37
4,462.00	11.60	246.90	4,406.72	296.86	-297.48	-438.06	529.52	235.82	472,520.32	564,443.73
4,557.00	10.80	246.10	4,499.91	304.19	-304.83	-454.99	547.66	236.18	472,512.97	564,426.80
4,652.00	9.70	246.20	4,593.40	311.01	-311.67	-470.45	564.32	236.48	472,506.13	564,411.34
4,746.00	9.20	245.40	4,686.12	317.31	-317.99	-484.53	579.55	236.72	472,499.81	564,397.26
4,841.00	8.40	244.00	4,780.00	323.50	-324.19	-497.67	593.95	236.92	472,493.61	564,384.12
4,936.00	8.00	242.70	4,874.03	329.55	-330.27	-509.78	607.41	237.06	472,487.53	564,372.01
5,031.00	6.20	246.80	4,968.30	334.59	-335.32	-520.37	619.05	237.20	472,482.48	564,361.42
5,126.00	5.70	247.50	5,062.79	338.41	-339.15	-529.44	628.75	237.36	472,478.65	564,352.35
5,220.00	3.80	241.00	5,156.46	341.69	-342.44	-536.48	636.46	237.45	472,475.36	564,345.31
5,315.00	3.50	237.60	5,251.27	344.77	-345.52	-541.68	642.50	237.47	472,472.28	564,340.11
5,410.00	3.10	236.60	5,346.11	347.73	-348.49	-546.28	647.97	237.46	472,469.31	564,335.51
5,505.00	2.00	276.60	5,441.02	348.95	-349.71	-550.07	651.82	237.55	472,468.09	564,331.72
5,600.00	1.60	283.10	5,535.97	348.45	-349.22	-553.01	654.04	237.73	472,468.58	564,328.78
5,695.00	1.30	271.90	5,630.94	348.11	-348.89	-555.37	655.87	237.86	472,468.91	564,326.42
5,790.00	1.20	260.80	5,725.92	348.23	-349.01	-557.43	657.68	237.95	472,468.79	564,324.36
5,884.00	1.10	254.20	5,819.90	348.63	-349.41	-559.27	659.45	238.00	472,468.39	564,322.52
5,979.00	1.30	249.90	5,914.88	349.25	-350.03	-561.16	661.38	238.05	472,467.77	564,320.63
6,074.00	0.80	82.10	6,009.88	349.53	-350.31	-561.52	661.83	238.04	472,467.49	564,320.27
6,169.00	1.20	105.50	6,104.86	349.70	-350.49	-559.90	660.55	237.95	472,467.31	564,321.89
6,264.00	1.00	156.30	6,199.85	350.73	-351.51	-558.61	660.00	237.82	472,466.29	564,323.18
6,358.00	1.10	188.80	6,293.83	352.37	-353.15	-558.42	660.72	237.69	472,464.65	564,323.37
6,453.00	1.10	216.80	6,388.81	354.00	-354.79	-559.10	662.17	237.60	472,463.01	564,322.69
6,548.00	1.00	348.90	6,483.81	353.92	-354.70	-559.81	662.72	237.64	472,463.10	564,321.98
6,642.00	0.30	299.20	6,577.80	352.99	-353.78	-560.18	662.54	237.73	472,464.02	564,321.61
6,737.00	0.30	314.60	6,672.80	352.70	-353.48	-560.58	662.72	237.77	472,464.32	564,321.21
6,832.00	0.10	221.10	6,767.80	352.59	-353.37	-560.81	662.86	237.78	472,464.43	564,320.98

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Project: Eddy County, NM
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Wellbore: OH
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Local Co-ordinate Reference:
TVD Reference:
MD Reference:
North Reference:
Survey Calculation Method:
Database:

Well WA #1H
 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)
6,927.00	0.30	167.10	6,862.80	352.89	-353.67	-560.81	663.02	237.76	472,464.13	564,320.98
7,021.00	1.50	127.00	6,956.79	353.87	-354.65	-559.77	662.66	237.64	472,463.15	564,322.02
7,116.00	1.50	136.90	7,051.75	355.53	-356.31	-557.93	662.00	237.44	472,461.49	564,323.86
7,211.00	1.50	144.00	7,146.72	357.45	-358.22	-556.35	661.70	237.22	472,459.58	564,325.44
7,305.00	1.80	145.90	7,240.68	359.67	-360.44	-554.80	661.60	236.99	472,457.36	564,326.99
7,400.00	1.60	153.00	7,335.64	362.09	-362.86	-553.36	661.72	236.75	472,454.94	564,328.43
7,495.00	1.10	76.50	7,430.62	363.06	-363.83	-551.87	661.01	236.60	472,453.97	564,329.92
7,590.00	1.50	33.10	7,525.60	361.80	-362.57	-550.30	659.01	236.62	472,455.23	564,331.49
7,685.00	1.10	25.80	7,620.57	359.94	-360.71	-549.23	657.09	236.70	472,457.09	564,332.56
7,779.00	1.40	37.80	7,714.55	358.23	-358.99	-548.13	655.23	236.78	472,458.81	564,333.66
7,873.00	1.10	31.10	7,808.53	356.55	-357.31	-546.96	653.33	236.84	472,460.49	564,334.83
7,968.00	0.90	24.10	7,903.51	355.09	-355.85	-546.19	651.88	236.92	472,461.95	564,335.60
8,062.00	0.70	353.60	7,997.50	353.84	-354.61	-545.95	651.00	237.00	472,463.19	564,335.84
8,157.00	0.70	305.50	8,092.50	352.93	-353.69	-546.49	650.96	237.09	472,464.11	564,335.30
8,252.00	0.50	189.50	8,187.50	353.00	-353.76	-547.03	651.45	237.11	472,464.04	564,334.76
8,347.00	1.10	304.70	8,282.49	352.89	-353.65	-547.84	652.08	237.16	472,464.15	564,333.95
8,441.00	1.70	282.40	8,376.46	352.07	-352.84	-549.95	653.41	237.32	472,464.96	564,331.84
8,536.00	2.50	273.30	8,471.40	351.64	-352.42	-553.39	656.08	237.51	472,465.38	564,328.40
8,630.00	1.80	326.30	8,565.34	350.29	-351.07	-556.26	657.78	237.74	472,466.73	564,325.53
8,725.00	1.70	341.40	8,660.30	347.72	-348.49	-557.54	657.49	237.99	472,469.31	564,324.25
8,820.00	1.40	337.70	8,755.26	345.31	-346.09	-558.43	656.97	238.21	472,471.71	564,323.36
8,915.00	1.80	181.00	8,850.25	345.72	-346.50	-558.89	657.59	238.20	472,471.30	564,322.90
9,009.00	10.40	173.40	8,943.63	355.65	-356.43	-557.94	662.07	237.43	472,461.37	564,323.85
9,104.00	19.00	172.20	9,035.43	379.54	-380.31	-554.85	672.68	235.57	472,437.49	564,326.94
9,199.00	26.90	175.00	9,122.85	416.33	-417.10	-550.87	690.97	232.87	472,400.70	564,330.92
9,294.00	35.90	178.00	9,203.85	465.68	-466.45	-548.02	719.65	229.60	472,351.35	564,333.77
9,389.00	45.50	179.60	9,275.80	527.55	-528.31	-546.81	760.34	225.99	472,289.49	564,334.98



Professional Directional Survey Report



Company: Marathon Oil
Project: Eddy County, NM
Site: Mariner Fee 23-28-19
Well: WA #1H
Wellbore: OH
Design: Gyro/MWD 27'-14576' PTB 14625'

Local Co-ordinate Reference: Well WA #1H
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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)
9,483.00	55.70	180.30	9,335.38	600.09	-600.85	-546.78	812.40	222.30	472,216.95	564,335.01
9,548.00	60.00	182.30	9,369.96	655.09	-655.85	-548.05	854.69	219.88	472,161.95	564,333.74
9,636.00	66.30	182.50	9,409.69	733.49	-734.26	-551.34	918.21	216.90	472,083.54	564,330.45
9,730.00	76.10	178.90	9,439.96	822.34	-823.11	-552.34	991.26	213.86	471,994.69	564,329.45
9,824.00	80.30	178.60	9,459.17	914.31	-915.08	-550.34	1,067.82	211.02	471,902.72	564,331.45
9,918.00	86.30	177.40	9,470.14	1,007.57	-1,008.34	-547.07	1,147.18	208.48	471,809.46	564,334.72
10,013.00	88.00	177.20	9,474.86	1,102.35	-1,103.11	-542.60	1,229.34	206.19	471,714.69	564,339.19
10,107.00	88.50	177.30	9,477.73	1,196.21	-1,196.96	-538.10	1,312.35	204.21	471,620.84	564,343.69
10,201.00	90.20	179.40	9,478.80	1,290.16	-1,290.90	-535.39	1,397.52	202.53	471,526.90	564,346.40
10,295.00	90.40	180.10	9,478.30	1,384.15	-1,384.90	-534.98	1,484.64	201.12	471,432.90	564,346.81
10,389.00	89.90	180.00	9,478.06	1,478.15	-1,478.90	-535.06	1,572.72	199.89	471,338.90	564,346.73
10,483.00	88.30	180.10	9,479.53	1,572.14	-1,572.89	-535.14	1,661.43	198.79	471,244.91	564,346.65
10,577.00	88.90	180.10	9,481.83	1,666.11	-1,666.86	-535.31	1,750.70	197.80	471,150.94	564,346.48
10,671.00	90.60	179.50	9,482.24	1,760.10	-1,760.85	-534.98	1,840.33	196.90	471,056.95	564,346.81
10,765.00	88.80	179.40	9,482.73	1,854.09	-1,854.84	-534.08	1,930.20	196.06	470,962.96	564,347.71
10,861.00	90.90	178.80	9,482.99	1,950.08	-1,950.82	-532.57	2,022.21	195.27	470,866.98	564,349.22
10,955.00	93.80	179.40	9,479.13	2,043.98	-2,044.72	-531.09	2,112.57	194.56	470,773.08	564,350.70
11,049.00	91.80	180.10	9,474.54	2,137.86	-2,138.60	-530.68	2,203.46	193.94	470,679.20	564,351.11
11,144.00	90.50	181.00	9,472.63	2,232.83	-2,233.58	-531.60	2,295.97	193.39	470,584.22	564,350.19
11,238.00	92.50	180.00	9,470.17	2,326.79	-2,327.54	-532.42	2,387.65	192.88	470,490.26	564,349.37
11,332.00	91.90	180.50	9,466.56	2,420.72	-2,421.47	-532.83	2,479.40	192.41	470,396.33	564,348.96
11,427.00	91.50	180.40	9,463.75	2,515.67	-2,516.42	-533.57	2,572.37	191.97	470,301.38	564,348.22
11,521.00	89.80	180.10	9,462.68	2,609.66	-2,610.41	-533.98	2,664.47	191.56	470,207.39	564,347.81
11,616.00	90.20	181.10	9,462.68	2,704.65	-2,705.40	-534.98	2,757.79	191.19	470,112.40	564,346.81
11,711.00	90.20	181.50	9,462.35	2,799.63	-2,800.38	-537.13	2,851.43	190.86	470,017.42	564,344.66
11,804.00	90.60	182.40	9,461.70	2,892.56	-2,893.32	-540.30	2,943.34	190.58	469,924.48	564,341.49
11,899.00	88.00	182.20	9,462.86	2,987.47	-2,988.23	-544.11	3,037.36	190.32	469,829.57	564,337.68

Company:	Marathon Oil	Local Co-ordinate Reference:	Well WA #1H
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 #1H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	Gyro/MWD 27'-14576' PTB 14625'	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)	
11,993.00	85.90	181.00	9,467.86	3,081.29	-3,082.05	-546.73	3,130.17	190.06	469,735.75	564,335.06	
12,065.00	86.00	179.80	9,472.95	3,153.10	-3,153.87	-547.23	3,200.99	189.84	469,663.93	564,334.56	
12,160.00	88.40	178.50	9,477.59	3,247.97	-3,248.74	-545.82	3,294.27	189.54	469,569.06	564,335.97	
12,254.00	90.70	178.10	9,478.32	3,341.92	-3,342.69	-543.04	3,386.51	189.23	469,475.11	564,338.75	
12,348.00	90.40	178.10	9,477.42	3,435.87	-3,436.63	-539.92	3,478.78	188.93	469,381.17	564,341.87	
12,441.00	92.20	177.70	9,475.31	3,528.79	-3,529.54	-536.51	3,570.08	188.64	469,288.26	564,345.28	
12,535.00	92.30	178.00	9,471.62	3,622.65	-3,623.40	-532.99	3,662.39	188.37	469,194.40	564,348.80	
12,630.00	93.10	178.40	9,467.15	3,717.50	-3,718.25	-530.01	3,755.83	188.11	469,099.55	564,351.78	
12,724.00	90.70	178.60	9,464.03	3,811.42	-3,812.16	-527.55	3,848.49	187.88	469,005.64	564,354.24	
12,818.00	91.30	178.60	9,462.39	3,905.38	-3,906.11	-525.25	3,941.27	187.66	468,911.69	564,356.54	
12,912.00	91.00	178.70	9,460.50	3,999.33	-4,000.07	-523.04	4,034.12	187.45	468,817.73	564,358.75	
13,007.00	91.20	178.60	9,458.68	4,094.29	-4,095.02	-520.80	4,128.01	187.25	468,722.78	564,360.99	
13,101.00	91.50	179.30	9,456.46	4,188.25	-4,188.98	-519.08	4,221.02	187.06	468,628.82	564,362.71	
13,194.00	91.70	180.50	9,453.87	4,281.22	-4,281.94	-518.92	4,313.27	186.91	468,535.86	564,362.87	
13,288.00	90.30	181.30	9,452.23	4,375.18	-4,375.92	-520.39	4,406.75	186.78	468,441.88	564,361.40	
13,382.00	90.60	183.40	9,451.49	4,469.09	-4,469.83	-524.25	4,500.47	186.69	468,347.97	564,357.54	
13,477.00	88.70	182.90	9,452.07	4,563.93	-4,564.68	-529.47	4,595.28	186.62	468,253.12	564,352.32	
13,572.00	89.20	182.70	9,453.81	4,658.80	-4,659.55	-534.11	4,690.06	186.54	468,158.25	564,347.68	
13,666.00	90.00	183.10	9,454.47	4,752.67	-4,753.42	-538.86	4,783.87	186.47	468,064.38	564,342.93	
13,760.00	89.60	183.30	9,454.79	4,846.51	-4,847.28	-544.11	4,877.72	186.40	467,970.52	564,337.68	
13,855.00	88.20	180.50	9,456.62	4,941.43	-4,942.20	-547.26	4,972.40	186.32	467,875.60	564,334.53	
13,949.00	89.00	181.50	9,458.92	5,035.38	-5,036.15	-548.90	5,065.98	186.22	467,781.65	564,332.89	
14,044.00	87.10	178.40	9,462.15	5,130.31	-5,131.08	-548.82	5,160.35	186.11	467,686.72	564,332.97	
14,138.00	87.90	178.50	9,466.25	5,224.19	-5,224.96	-546.28	5,253.44	185.97	467,592.84	564,335.51	
14,232.00	88.90	178.30	9,468.87	5,318.12	-5,318.88	-543.65	5,346.59	185.84	467,498.92	564,338.14	
14,327.00	89.40	178.60	9,470.28	5,413.07	-5,413.84	-541.08	5,440.81	185.71	467,403.96	564,340.71	
14,421.00	89.30	178.50	9,471.35	5,507.04	-5,507.80	-538.71	5,534.08	185.59	467,310.00	564,343.08	

Company: Marathon Oil
Project: Eddy County, NM
Site: Mariner Fee 23-28-19
Well: WA #1H
Wellbore: OH
Design: Gyro/MWD 27'-14576' PTB 14625'

Local Co-ordinate Reference: Well WA #1H
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)
14,516.00	89.80	178.60		9,472.10	5,602.01	-5,602.77	-536.30	5,628.37	185.47	467,215.03	564,345.49
14,576.00	89.40	178.70		9,472.51	5,662.00	-5,662.75	-534.89	5,687.95	185.40	467,155.05	564,346.90
Last Survey: 14576' MD, 9473' TVD											
14,625.00	89.40	178.70		9,473.03	5,710.98	-5,711.73	-533.78	5,736.62	185.34	467,106.07	564,348.01
PTB: 14625' MD											

Design Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates			
		+N/-S (usft)	+E/-W (usft)	Comment	
14,576.00	9,472.51	-5,662.75	-534.89	Last Survey: 14576' MD, 9473' TVD	
14,625.00	9,473.03	-5,711.73	-533.78	PTB: 14625' MD	



Marathon Oil
Eddy County, NM
Mariner Fee 23-28-19
WA #1H
Plan #2 - FINAL PVA
GL: 3066' + KB: 26.5' (H&P423)

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

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

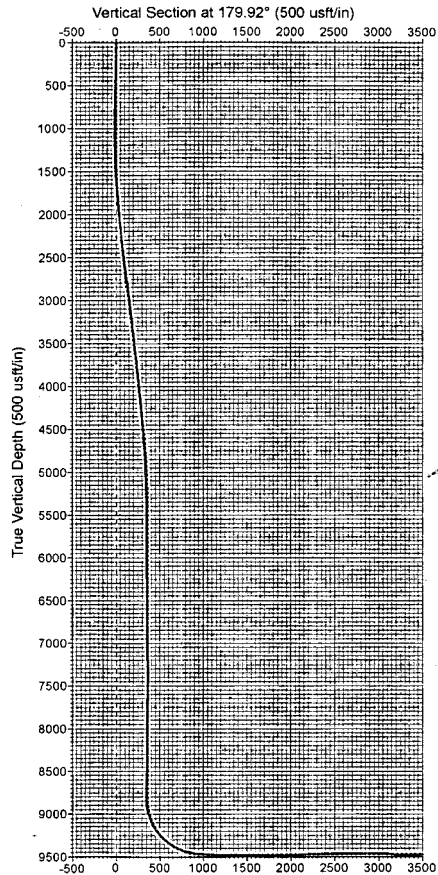
+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Spot
0.00	0.00	472817.80	564881.79	32.299718	-104.123348	

SECTION DETAILS

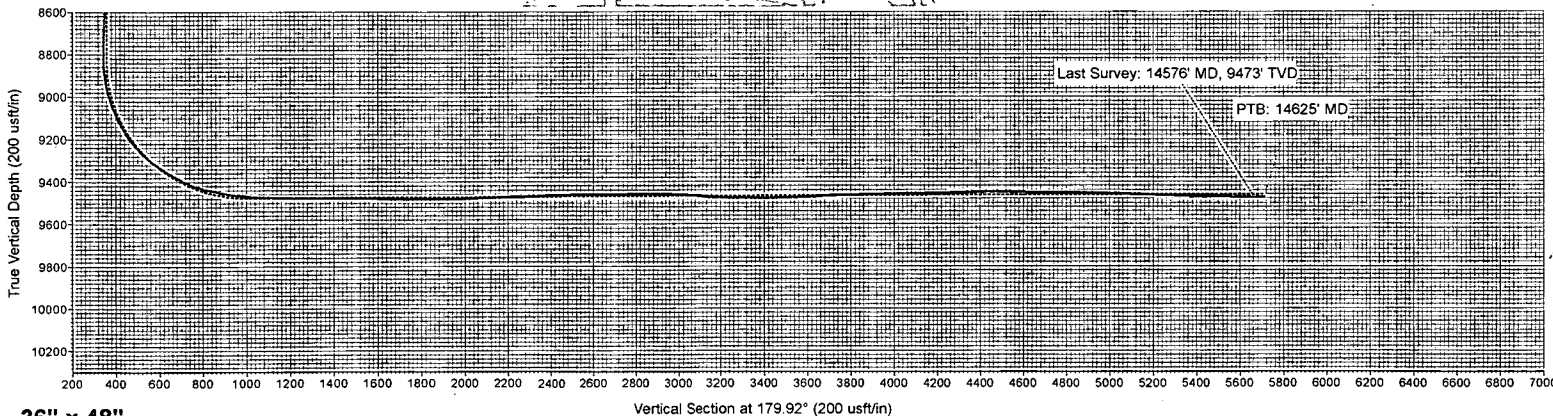
Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	VSed
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	1200.00	0.00	0.00	1200.00	0.00	0.00	0.00	0.00
3	2400.00	12.00	236.65	2391.25	-68.83	-104.59	1.00	68.69
4	4545.91	12.00	236.65	4490.26	-314.11	-477.28	0.00	313.45
5	5345.91	0.00	0.00	5284.43	-360.00	-547.00	1.50	359.24
6	8901.48	0.00	0.00	8840.00	-360.00	-547.00	0.00	359.24
7	9903.72	90.20	179.92	9476.62	-998.86	-546.11	9.00	998.09
8	14571.79	90.20	179.92	9460.22	-5666.89	-539.64	0.00	5666.13
9	14616.79	90.20	179.92	9460.06	-5711.89	-539.58	0.00	5711.13

WELLBORE TARGET DETAILS (MAP CO-ORDINATES)

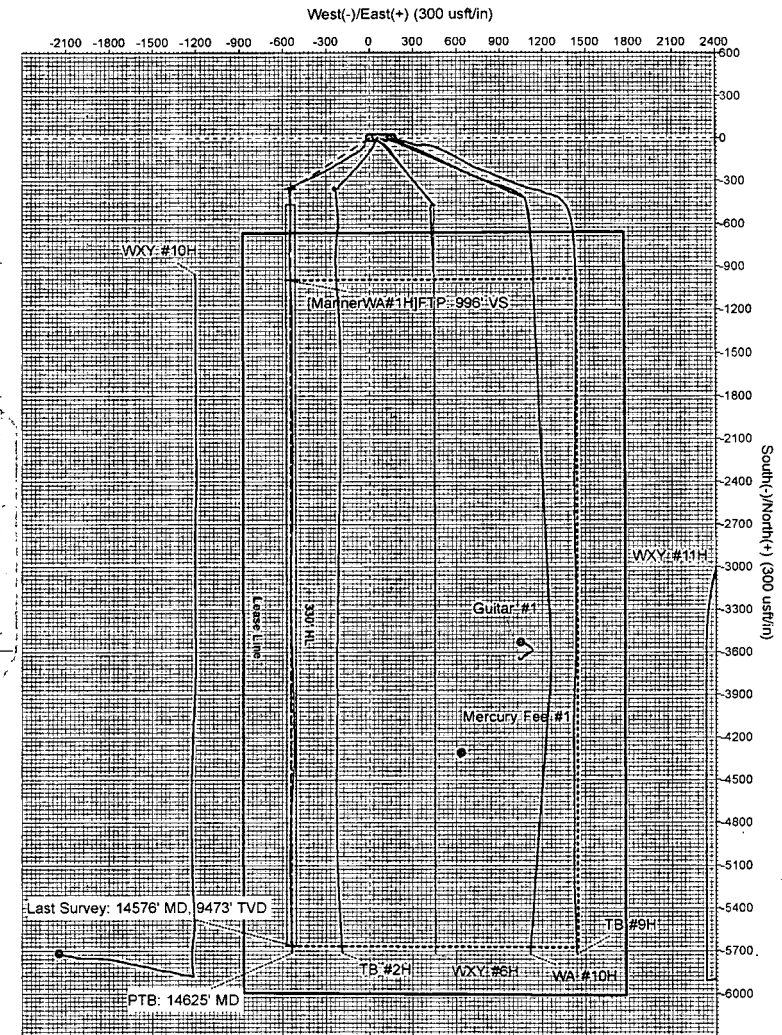
Name	TVD	+N/-S	+E/-W	Northing	Easting
[MarinerWA#1H]FTP: 996' VS	0.00	-997.07	-546.34	471820.73	564335.45
[MarinerWA#1H]KOP	8840.00	-360.00	-547.00	472457.80	564334.79
[MarinerWA#1H]LTP/BHL: 5666' VS	9460.22	-5666.89	-539.64	467150.91	564342.15



Target Line: 9480' TVD @ 0' VS: 90.2° INC



36" x 48"



Azimuths to Grid North
True North: -0.11°
Magnetic North: 7.17°

Magnetic Field
Strength: 48015 nT
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