



Marathon Oil

Marathon Oil

Lea County, NM

Urraca Fed Com 23-32-11

AV #24H

OH

Design: Gyro/MWD 1338'-14292' PTB 14356'

Survey Report

03 October, 2018

HOBBS OCD
FEB 20 2019
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Company:	Marathon Oil	Local Co-ordinate Reference:	Well AV #24H
Project:	Lea County, NM	TVD Reference:	Well @ 3742.50usft (GL: 3716' + KB: 26.5' (H&P480))
Site:	Urraca Fed Com 23-32-11	MD Reference:	Well @ 3742.50usft (GL: 3716' + KB: 26.5' (H&P480))
Well:	AV #24H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	Gyro/MWD 1338'-14292' PTB 14356'	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		Urraca Fed Com 23-32-11			
Site Position:		Northing:		482,748.57 usft	
From:		Easting:		710,463.30 usft	
Position Uncertainty:		Slot Radius:		13-3/16 "	
Map		Latitude:		32.325352	
0.00 usft		Longitude:		-103.651998	
		Grid Convergence:		0.36 °	

Well		AV #24H				
Well Position	+N/-S	0.00 usft	Northing:	482,660.76 usft	Latitude:	32.325091
	+E/-W	0.00 usft	Easting:	711,628.83 usft	Longitude:	-103.648227
Position Uncertainty		0.00 usft	Wellhead Elevation:	usft	Ground Level:	3,716.00 usft

Wellbore	OH				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	User Defined	9/7/2018	6.92	60.07	48,103.00

Design		Gyro/MWD 1338'-14292' PTB 14356'		
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	179.61

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Project: Lea County, NM
Site: Urraca Fed Com 23-32-11
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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 AV #24H
 Well @ 3742.50usft (GL: 3716' + KB: 26.5' (H&P480))
 Well @ 3742.50usft (GL: 3716' + KB: 26.5' (H&P480))
 Grid
 Minimum Curvature
 WellPlanner1

Survey Program **Date** 10/3/2018

From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
91.79	1,248.00	Survey #1 (OH)	GYRO-NS-CT	OWSG XYZ Accel with XY Static and Continuous Gyro
1,338.00	14,356.00	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	482,660.76	711,628.83
91.79	0.10	101.12	91.79	0.02	-0.02	0.08	0.08	101.12	482,660.74	711,628.91
186.18	0.23	95.04	186.18	0.05	-0.05	0.35	0.35	97.85	482,660.71	711,629.18
277.36	0.36	104.58	277.36	0.14	-0.14	0.81	0.82	99.57	482,660.62	711,629.64
368.97	0.56	98.23	368.97	0.28	-0.27	1.53	1.55	100.11	482,660.49	711,630.36
460.59	0.94	105.40	460.58	0.55	-0.54	2.70	2.75	101.25	482,660.22	711,631.53
551.59	1.22	109.14	551.56	1.08	-1.05	4.33	4.46	103.65	482,659.71	711,633.16
643.10	1.11	108.19	643.05	1.69	-1.65	6.09	6.31	105.13	482,659.11	711,634.92
734.86	1.01	108.77	734.80	2.24	-2.19	7.70	8.01	105.84	482,658.57	711,636.53
826.38	0.84	105.88	826.30	2.69	-2.63	9.11	9.48	106.09	482,658.13	711,637.94
918.39	0.80	107.31	918.31	3.08	-3.00	10.38	10.80	106.15	482,657.76	711,639.21
1,009.46	0.46	111.91	1,009.37	3.41	-3.33	11.32	11.80	106.39	482,657.43	711,640.15
1,101.98	0.35	124.78	1,101.89	3.71	-3.63	11.90	12.44	106.97	482,657.13	711,640.73
1,193.32	0.29	131.51	1,193.23	4.03	-3.94	12.30	12.92	107.77	482,656.82	711,641.13
1,248.00	0.16	102.10	1,247.91	4.14	-4.05	12.48	13.12	107.98	482,656.71	711,641.31
1,338.00	0.10	122.10	1,337.91	4.20	-4.12	12.67	13.32	108.01	482,656.64	711,641.50
1,432.00	0.20	176.40	1,431.90	4.41	-4.33	12.75	13.46	108.74	482,656.43	711,641.58
1,527.00	0.20	272.30	1,526.90	4.57	-4.48	12.59	13.37	109.60	482,656.28	711,641.42
1,621.00	0.10	279.30	1,620.90	4.55	-4.46	12.35	13.13	109.88	482,656.30	711,641.18
1,715.00	0.30	226.80	1,714.90	4.70	-4.62	12.09	12.94	110.92	482,656.14	711,640.92
1,810.00	0.40	225.10	1,809.90	5.10	-5.02	11.67	12.71	113.29	482,655.74	711,640.50



Professional Directional Survey Report



Company: Marathon Oil
Project: Lea County, NM
Site: Urraca Fed Com 23-32-11
Well: AV #24H
Wellbore: OH
Design: Gyro/MWD 1338'-14292' PTB 14356'

Local Co-ordinate Reference: Well AV #24H
TVD Reference: Well @ 3742.50usft (GL: 3716' + KB: 26.5' (H&P480))
MD Reference: Well @ 3742.50usft (GL: 3716' + 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 (usft)	Closure Azimuth (°)	Northing (usft)	Easting (usft)	
1,904.00	0.40	243.80	1,903.90	5.48	-5.40	11.14	12.38	115.86	482,655.36	711,639.97	
1,999.00	0.30	251.70	1,998.90	5.70	-5.63	10.61	12.01	117.93	482,655.13	711,639.44	
2,093.00	0.20	180.80	2,092.90	5.94	-5.87	10.37	11.92	119.49	482,654.89	711,639.20	
2,188.00	0.20	139.40	2,187.90	6.23	-6.16	10.48	12.16	120.44	482,654.60	711,639.31	
2,282.00	0.10	10.90	2,281.90	6.27	-6.20	10.60	12.28	120.33	482,654.56	711,639.43	
2,377.00	0.20	80.60	2,376.90	6.17	-6.09	10.78	12.38	119.47	482,654.67	711,639.61	
2,471.00	0.10	202.90	2,470.90	6.22	-6.14	10.91	12.52	119.38	482,654.62	711,639.74	
2,566.00	0.10	191.50	2,565.90	6.37	-6.30	10.86	12.56	120.11	482,654.46	711,639.69	
2,661.00	0.20	30.30	2,660.90	6.31	-6.24	10.93	12.58	119.71	482,654.52	711,639.76	
2,755.00	0.30	350.20	2,754.89	5.93	-5.85	10.97	12.43	118.08	482,654.91	711,639.80	
2,849.00	0.20	337.70	2,848.89	5.53	-5.46	10.87	12.16	116.68	482,655.30	711,639.70	
2,944.00	0.20	356.60	2,943.89	5.21	-5.14	10.79	11.96	115.47	482,655.62	711,639.62	
3,038.00	0.30	35.60	3,037.89	4.85	-4.78	10.93	11.93	113.61	482,655.98	711,639.76	
3,133.00	0.30	20.40	3,132.89	4.42	-4.34	11.16	11.97	111.26	482,656.42	711,639.99	
3,228.00	0.30	0.10	3,227.89	3.94	-3.86	11.25	11.89	108.94	482,656.90	711,640.08	
3,322.00	0.10	56.80	3,321.89	3.65	-3.57	11.32	11.86	107.50	482,657.19	711,640.15	
3,416.00	0.30	354.00	3,415.89	3.36	-3.28	11.36	11.82	106.10	482,657.48	711,640.19	
3,511.00	0.30	336.30	3,510.89	2.88	-2.80	11.23	11.58	104.02	482,657.96	711,640.06	
3,605.00	0.10	22.90	3,604.89	2.58	-2.50	11.17	11.44	102.64	482,658.26	711,640.00	
3,700.00	0.30	354.40	3,699.89	2.26	-2.18	11.17	11.38	101.04	482,658.58	711,640.00	
3,794.00	0.10	76.80	3,793.89	1.99	-1.92	11.23	11.39	99.68	482,658.84	711,640.06	
3,889.00	0.60	144.90	3,888.88	2.38	-2.30	11.60	11.82	101.24	482,658.46	711,640.43	
3,983.00	0.90	137.50	3,982.88	3.33	-3.25	12.38	12.80	104.71	482,657.51	711,641.21	
4,077.00	1.40	135.80	4,076.86	4.71	-4.62	13.68	14.44	108.66	482,656.14	711,642.51	
4,172.00	1.90	130.90	4,171.82	6.59	-6.48	15.68	16.96	112.46	482,654.28	711,644.51	
4,266.00	1.40	157.20	4,265.78	8.68	-8.56	17.30	19.30	116.33	482,652.20	711,646.13	
4,361.00	1.00	179.20	4,360.76	10.58	-10.46	17.76	20.61	120.49	482,650.30	711,646.59	

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Survey											
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4,455.00	1.30	151.00	4,454.74	12.34	-12.21	18.29	21.99	123.73	482,648.55	711,647.12	
4,550.00	1.30	109.00	4,549.72	13.64	-13.51	19.83	23.99	124.26	482,647.25	711,648.66	
4,644.00	1.70	83.20	4,643.69	13.84	-13.69	22.22	26.10	121.63	482,647.07	711,651.05	
4,739.00	0.80	92.20	4,738.66	13.71	-13.55	24.29	27.81	119.15	482,647.21	711,653.12	
4,817.00	0.10	58.60	4,816.66	13.70	-13.53	24.89	28.33	118.53	482,647.23	711,653.72	
4,910.00	0.20	133.90	4,909.66	13.77	-13.60	25.07	28.53	118.48	482,647.16	711,653.90	
5,005.00	1.00	63.20	5,004.65	13.52	-13.34	25.93	29.16	117.23	482,647.42	711,654.76	
5,099.00	4.50	52.40	5,098.53	10.92	-10.72	29.59	31.47	109.92	482,650.04	711,658.42	
5,194.00	5.00	53.00	5,193.21	6.20	-5.96	35.85	36.34	99.43	482,654.80	711,664.68	
5,288.00	7.00	51.20	5,286.69	0.20	0.10	43.58	43.58	89.87	482,660.86	711,672.41	
5,382.00	8.80	42.80	5,379.79	-8.60	8.96	52.93	53.69	80.39	482,669.72	711,681.76	
5,476.00	9.90	31.30	5,472.55	-20.72	21.15	62.02	65.52	71.17	482,681.91	711,690.85	
5,571.00	10.20	28.30	5,566.09	-35.05	35.53	70.25	78.72	63.17	482,696.29	711,699.08	
5,665.00	10.30	28.20	5,658.59	-49.73	50.26	78.17	92.93	57.26	482,711.02	711,707.00	
5,760.00	10.10	28.00	5,752.09	-64.52	65.10	86.09	107.94	52.90	482,725.86	711,714.92	
5,854.00	10.10	27.10	5,844.64	-79.08	79.72	93.71	123.03	49.61	482,740.48	711,722.54	
5,949.00	11.20	34.20	5,938.00	-94.07	94.77	102.70	139.74	47.30	482,755.53	711,731.53	
6,043.00	11.60	45.00	6,030.16	-108.22	109.00	114.51	158.09	46.41	482,769.76	711,743.34	
6,138.00	11.80	45.80	6,123.18	-121.65	122.53	128.23	177.36	46.30	482,783.29	711,757.06	
6,233.00	10.30	41.80	6,216.42	-134.67	135.63	140.85	195.54	46.08	482,796.39	711,769.68	
6,327.00	10.40	42.10	6,308.89	-147.15	148.19	152.14	212.39	45.75	482,808.95	711,780.97	
6,421.00	8.60	36.10	6,401.60	-159.06	160.17	161.97	227.79	45.32	482,820.93	711,790.80	
6,516.00	8.50	34.80	6,495.55	-170.51	171.67	170.17	241.72	44.75	482,832.43	711,799.00	
6,610.00	9.10	43.50	6,588.44	-181.54	182.77	179.25	256.00	44.44	482,843.53	711,808.08	
6,705.00	9.20	46.10	6,682.23	-192.19	193.48	189.89	271.10	44.46	482,854.24	711,818.72	
6,800.00	9.30	45.30	6,776.00	-202.78	204.15	200.82	286.37	44.53	482,864.91	711,829.65	
6,894.00	9.40	46.70	6,868.75	-213.31	214.76	211.80	301.63	44.60	482,875.52	711,840.63	

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Wellbore: OH
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North Reference: Grid
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Survey											
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6,989.00	9.10	46.40	6,962.51	-223.74	225.26	222.89	316.89	44.70	482,886.02	711,851.72	
7,083.00	9.10	46.10	7,055.33	-233.94	235.54	233.63	331.75	44.77	482,896.30	711,862.46	
7,178.00	8.80	47.20	7,149.17	-244.02	245.68	244.38	346.53	44.85	482,906.44	711,873.21	
7,272.00	8.40	46.40	7,242.12	-253.57	255.30	254.62	360.57	44.92	482,916.06	711,883.45	
7,367.00	9.30	41.20	7,335.99	-264.06	265.87	264.70	375.17	44.87	482,926.63	711,893.53	
7,461.00	9.30	39.60	7,428.75	-275.56	277.43	274.55	390.32	44.70	482,938.19	711,903.38	
7,556.00	9.40	41.00	7,522.49	-287.26	289.20	284.53	405.71	44.53	482,949.96	711,913.36	
7,650.00	9.40	40.90	7,615.23	-298.79	300.80	294.59	421.03	44.40	482,961.56	711,923.42	
7,744.00	9.20	43.00	7,707.99	-310.02	312.10	304.74	436.20	44.32	482,972.86	711,933.57	
7,839.00	9.00	43.30	7,801.80	-320.91	323.06	315.02	451.23	44.28	482,983.82	711,943.85	
7,933.00	8.80	44.20	7,894.66	-331.34	333.56	325.08	465.77	44.26	482,994.32	711,953.91	
8,028.00	8.40	43.90	7,988.60	-341.49	343.77	334.95	479.97	44.26	483,004.53	711,963.78	
8,122.00	6.80	47.90	8,081.77	-350.10	352.45	343.84	492.39	44.29	483,013.21	711,972.67	
8,217.00	5.00	50.30	8,176.26	-356.47	358.87	351.20	502.13	44.38	483,019.63	711,980.03	
8,311.00	2.70	58.60	8,270.04	-360.21	362.64	356.24	508.35	44.49	483,023.40	711,985.07	
8,405.00	2.50	45.90	8,363.95	-362.76	365.22	359.61	512.54	44.56	483,025.98	711,988.44	
8,500.00	0.60	351.80	8,458.91	-364.69	367.15	361.02	514.92	44.52	483,027.91	711,989.85	
8,594.00	0.60	306.90	8,552.91	-365.47	367.94	360.56	515.15	44.42	483,028.70	711,989.39	
8,689.00	0.50	306.90	8,647.90	-366.03	368.48	359.83	515.03	44.32	483,029.24	711,988.66	
8,783.00	0.40	312.80	8,741.90	-366.50	368.95	359.26	514.97	44.24	483,029.71	711,988.09	
8,877.00	0.30	269.20	8,835.90	-366.72	369.17	358.78	514.79	44.18	483,029.93	711,987.61	
8,972.00	0.10	12.70	8,930.90	-366.80	369.25	358.55	514.68	44.16	483,030.01	711,987.38	
9,039.00	0.30	46.50	8,997.90	-366.98	369.43	358.69	514.91	44.15	483,030.19	711,987.52	
9,066.00	0.10	53.20	9,024.90	-367.04	369.49	358.76	515.00	44.16	483,030.25	711,987.59	
9,161.00	1.50	163.20	9,119.89	-365.90	368.35	359.18	514.48	44.28	483,029.11	711,988.01	
9,255.00	14.30	172.70	9,212.80	-353.14	355.60	361.02	506.74	45.43	483,016.36	711,989.85	
9,349.00	27.20	167.10	9,300.53	-320.50	323.01	367.32	489.14	48.67	482,983.77	711,996.15	

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Wellbore: OH
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North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: WellPlanner1

Survey											
MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	V. Sec (usft)	N/S (usft)	E/W (usft)	Closure Distance (usft)	Closure Azimuth (°)	Northing (usft)	Easting (usft)	
9,444.00	35.00	169.10	9,381.81	-272.44	275.01	377.33	466.92	53.91	482,935.77	712,006.16	
9,538.00	44.50	174.30	9,454.02	-212.98	215.61	385.72	441.89	60.80	482,876.37	712,014.55	
9,633.00	57.40	178.30	9,513.76	-139.49	142.15	390.24	415.32	69.98	482,802.91	712,019.07	
9,727.00	61.30	180.20	9,561.67	-58.85	61.31	391.27	396.04	81.09	482,722.07	712,020.10	
9,822.00	62.60	181.40	9,606.35	25.17	-22.52	390.09	390.74	93.30	482,638.24	712,018.92	
9,916.00	70.20	186.50	9,643.97	110.95	-108.34	384.06	399.04	105.75	482,552.42	712,012.89	
10,011.00	77.80	186.50	9,670.14	201.55	-199.01	373.73	423.41	118.04	482,461.75	712,002.56	
10,105.00	82.80	184.60	9,685.97	293.67	-291.20	364.78	466.75	128.60	482,369.56	711,993.61	
10,200.00	89.80	179.30	9,692.10	388.30	-385.85	361.57	528.79	136.86	482,274.91	711,990.40	
10,224.00	90.20	179.60	9,692.10	412.30	-409.85	361.80	546.70	138.56	482,250.91	711,990.63	
10,318.00	92.20	178.90	9,690.14	506.28	-503.82	363.03	620.99	144.22	482,156.94	711,991.86	
10,413.00	92.10	179.60	9,686.57	601.21	-598.74	364.28	700.85	148.68	482,062.02	711,993.11	
10,507.00	90.30	180.70	9,684.60	695.18	-692.71	364.03	782.54	152.28	481,968.05	711,992.86	
10,601.00	92.50	180.90	9,682.31	789.12	-786.67	362.72	866.27	155.25	481,874.09	711,991.55	
10,696.00	91.50	182.30	9,678.99	884.00	-881.57	360.07	952.27	157.78	481,779.19	711,988.90	
10,790.00	89.80	182.50	9,677.92	977.88	-975.48	356.13	1,038.46	159.94	481,685.28	711,984.96	
10,884.00	88.10	183.10	9,679.65	1,071.72	-1,069.35	351.54	1,125.65	161.80	481,591.41	711,980.37	
10,979.00	89.40	183.60	9,681.72	1,166.49	-1,164.16	345.99	1,214.49	163.45	481,496.60	711,974.82	
11,073.00	90.40	181.80	9,681.88	1,260.35	-1,258.05	341.56	1,303.59	164.81	481,402.71	711,970.39	
11,168.00	87.30	179.00	9,683.79	1,355.30	-1,353.01	340.90	1,395.29	165.86	481,307.75	711,969.73	
11,262.00	88.30	179.30	9,687.40	1,449.22	-1,446.93	342.29	1,486.86	166.69	481,213.83	711,971.12	
11,356.00	90.30	179.30	9,688.55	1,543.21	-1,540.91	343.44	1,578.72	167.44	481,119.85	711,972.27	
11,451.00	91.20	179.00	9,687.30	1,638.20	-1,635.89	344.85	1,671.84	168.10	481,024.87	711,973.68	
11,545.00	91.10	179.10	9,685.42	1,732.18	-1,729.86	346.41	1,764.20	168.68	480,930.90	711,975.24	
11,640.00	89.80	178.00	9,684.67	1,827.15	-1,824.82	348.81	1,857.86	169.18	480,835.94	711,977.64	
11,734.00	91.20	178.20	9,683.85	1,921.11	-1,918.76	351.93	1,950.77	169.61	480,742.00	711,980.76	
11,829.00	90.20	178.60	9,682.69	2,016.08	-2,013.72	354.58	2,044.70	170.01	480,647.04	711,983.41	

Company:	Marathon Oil	Local Co-ordinate Reference:	Well AV #24H
Project:	Lea County, NM	TVD Reference:	Well @ 3742.50usft (GL: 3716' + KB: 26.5' (H&P480))
Site:	Urraca Fed Com 23-32-11	MD Reference:	Well @ 3742.50usft (GL: 3716' + KB: 26.5' (H&P480))
Well:	AV #24H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	Gyro/MWD 1338'-14292' PTB 14356'	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)	
11,923.00	90.90	178.70	9,681.79	2,110.07	-2,107.69	356.79	2,137.67	170.39	480,553.07	711,985.62	
12,017.00	89.50	179.00	9,681.46	2,204.06	-2,201.66	358.68	2,230.69	170.75	480,459.10	711,987.51	
12,111.00	88.20	180.10	9,683.35	2,298.03	-2,295.64	359.42	2,323.61	171.10	480,365.12	711,988.25	
12,206.00	89.60	180.40	9,685.17	2,393.01	-2,390.62	359.00	2,417.42	171.46	480,270.14	711,987.83	
12,300.00	91.40	180.70	9,684.35	2,486.99	-2,484.61	358.10	2,510.28	171.80	480,176.15	711,986.93	
12,396.00	91.70	181.30	9,681.75	2,582.92	-2,580.56	356.43	2,605.06	172.14	480,080.20	711,985.26	
12,491.00	89.70	181.30	9,680.59	2,677.87	-2,675.52	354.27	2,698.87	172.46	479,985.24	711,983.10	
12,585.00	90.20	181.20	9,680.67	2,771.83	-2,769.50	352.22	2,791.81	172.75	479,891.26	711,981.05	
12,679.00	88.30	180.40	9,681.90	2,865.80	-2,863.48	350.91	2,884.90	173.01	479,797.28	711,979.74	
12,774.00	88.60	180.10	9,684.47	2,960.76	-2,958.44	350.50	2,979.13	173.24	479,702.32	711,979.33	
12,868.00	88.90	180.10	9,686.52	3,054.73	-3,052.42	350.33	3,072.45	173.45	479,608.34	711,979.16	
12,962.00	88.80	178.20	9,688.41	3,148.70	-3,146.38	351.73	3,165.98	173.62	479,514.38	711,980.56	
13,057.00	88.70	178.10	9,690.48	3,243.65	-3,241.31	354.79	3,260.67	173.75	479,419.45	711,983.62	
13,151.00	88.60	178.10	9,692.70	3,337.59	-3,335.23	357.91	3,354.38	173.87	479,325.53	711,986.74	
13,246.00	89.30	178.00	9,694.44	3,432.54	-3,430.16	361.14	3,449.12	173.99	479,230.60	711,989.97	
13,340.00	89.30	178.40	9,695.59	3,526.50	-3,524.11	364.09	3,542.87	174.10	479,136.65	711,992.92	
13,434.00	89.70	178.00	9,696.41	3,620.47	-3,618.06	367.04	3,636.63	174.21	479,042.70	711,995.87	
13,529.00	90.20	176.90	9,696.49	3,715.40	-3,712.96	371.27	3,731.48	174.29	478,947.80	712,000.10	
13,623.00	90.60	176.50	9,695.83	3,809.28	-3,806.80	376.68	3,825.39	174.35	478,853.96	712,005.51	
13,718.00	89.50	176.00	9,695.75	3,904.11	-3,901.60	382.89	3,920.34	174.40	478,759.16	712,011.72	
13,812.00	90.30	177.90	9,695.92	3,998.01	-3,995.46	387.90	4,014.24	174.45	478,665.30	712,016.73	
13,907.00	93.00	178.80	9,693.18	4,092.94	-4,090.37	390.63	4,108.98	174.54	478,570.39	712,019.46	
14,001.00	93.30	179.20	9,688.02	4,186.79	-4,184.21	392.27	4,202.56	174.64	478,476.55	712,021.10	
14,096.00	92.70	181.00	9,683.04	4,281.65	-4,279.08	392.10	4,297.01	174.76	478,381.68	712,020.93	
14,190.00	93.20	181.70	9,678.21	4,375.48	-4,372.93	389.89	4,390.28	174.90	478,287.83	712,018.72	
14,285.00	93.80	181.50	9,672.41	4,470.25	-4,467.71	387.24	4,484.46	175.05	478,193.05	712,016.07	

Company:	Marathon Oil	Local Co-ordinate Reference:	Well AV #24H
Project:	Lea County, NM	TVD Reference:	Well @ 3742.50usft (GL: 3716' + KB: 26.5' (H&P480))
Site:	Urraca Fed Com 23-32-11	MD Reference:	Well @ 3742.50usft (GL: 3716' + KB: 26.5' (H&P480))
Well:	AV #24H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	Gyro/MWD 1338'-14292' PTB 14356'	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)	
14,292.00	93.90	181.90	9,671.94	4,477.23	-4,474.69	387.04	4,491.40	175.06	478,186.07	712,015.87	
Last Survey: 14292' MD, 9672' TVD											
14,356.00	93.90	181.90	9,667.58	4,541.03	-4,538.51	384.92	4,554.81	175.15	478,122.25	712,013.75	
PTB: 14356' MD, 9668' TVD											

Design Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment	
		+N/-S (usft)	+E/-W (usft)		
14,292.00	9,671.94	-4,474.69	387.04	Last Survey: 14292' MD, 9672' TVD	
14,356.00	9,667.58	-4,538.51	384.92	PTB: 14356' MD, 9668' TVD	

Marathon Oil Corporation

Marathon Oil
Lea County, NM
Urraca Fed Com 23-32-11
AV #24H
Plan #1
GL: 3716' + 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 @ 3742.50usft (GL: 3716' + KB: 26.5' (H&P480))

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.00	0.00	462680.76	711628.83	32.325091	-103.648227	

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	5000.00	0.00	0.00	5000.00	0.00	0.00	0.00	0.00
3	5500.00	10.00	43.91	5497.47	31.35	30.19	2.00	-31.15
4	7900.59	10.00	43.91	7881.59	331.65	319.31	0.00	-329.47
5	8400.59	0.00	0.00	8359.05	363.00	349.50	2.00	-360.61
6	9158.54	0.00	0.00	9117.00	363.00	349.50	0.00	-360.61
7	10058.53	90.00	179.61	9889.96	-208.94	353.40	10.00	212.34
8	14342.93	90.00	179.61	9690.00	-4494.24	382.57	0.00	4496.74
9	14387.93	90.00	179.61	9690.00	-4539.24	382.88	0.00	4541.74

WELLBORE TARGET DETAILS (MAP CO-ORDINATES)

Name	TVD	+N/-S	+E/-W	Northing	Easting
[UrracaFedAV#24H]FTP	0.00	133.73	351.44	482794.49	711980.27
[UrracaFedAV#24H]KOP	9117.00	363.00	349.50	483023.76	711978.33
[UrracaFedAV#24H]LTP/BHL	9690.00	-4494.24	382.57	478168.52	712011.40



Azimuths to Grid North
True North: -0.37°
Magnetic North: 6.55°

Magnetic Field
Strength: 48103.0anT
Dip Angle: 60.07°
Date: 9/7/2018
Model: USER DEFINED

Azimuth Corrections

Total Magnetic Corr. (M to G): 6.55°

Declination (M to T): 6.92° East

Target Line: 9690' TVD @ 0° VS :: 90° INC

