



Marathon Oil

Marathon Oil

Lea County, NM

Urraca Fed Com 23-32-11

SB #4H

OH

1-20-2019
FEB 20 2019
RECEIVED

Design: Gyros/MWD 1342'-15513' PTB 15582'

Standard Survey Report

11 September, 2018



Company:	Marathon Oil	Local Co-ordinate Reference:	Well SB #4H
Project:	Lea County, NM	TVD Reference:	Well @ 3739.50usft (GL: 3713' + KB: 26.5' (H&P480))
Site:	Urraca Fed Com 23-32-11	MD Reference:	Well @ 3739.50usft (GL: 3713' + KB: 26.5' (H&P480))
Well:	SB #4H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	Gyros/MWD 1342'-15513' PTB 15582'	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	Latitude:	32.325352
From:	Map	Easting:	710,463.30 usft	Longitude:	-103.651998
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "	Grid Convergence:	0.36 °

Well	SB #4H					
Well Position	+N/-S	0.00 usft	Northing:	482,748.57 usft	Latitude:	32.325352
	+E/-W	0.00 usft	Easting:	710,463.30 usft	Longitude:	-103.651998
Position Uncertainty		0.00 usft	Wellhead Elevation:	usft	Ground Level:	3,713.00 usft

Wellbore	OH				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	User Defined	8/18/2018	6.93	60.07	48,115.40

Design	Gyros/MWD 1342'-15513' PTB 15582'				
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	179.62	

Survey Program	Date	9/11/2018			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
100.00	1,200.00	Survey #1 (OH)	GYRO-NS-CT	OWSG XYZ Accel with XY Static and Continuous Gyro	
1,342.00	15,582.00	Survey #2 (OH)	MWD+IFR1	OWSG MWD + IFR1	

Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
1.08	0.01	44.82	1.08	0.00	0.00	0.00	0.75	0.75	0.00	
[UrracaFed#4H]FTP										
100.00	0.75	44.82	100.00	0.46	0.46	-0.46	0.75	0.75	0.00	
200.00	0.46	38.98	199.99	1.24	1.18	-1.23	0.30	-0.29	-5.84	
300.00	0.05	333.08	299.99	1.59	1.41	-1.58	0.44	-0.41	-65.90	
400.00	0.16	71.37	399.99	1.68	1.52	-1.66	0.17	0.11	98.29	
500.00	0.23	99.04	499.99	1.69	1.85	-1.68	0.12	0.07	27.67	

Company:	Marathon Oil	Local Co-ordinate Reference:	Well SB #4H
Project:	Lea County, NM	TVD Reference:	Well @ 3739.50usft (GL: 3713' + KB: 26.5' (H&P480))
Site:	Urraca Fed Com 23-32-11	MD Reference:	Well @ 3739.50usft (GL: 3713' + KB: 26.5' (H&P480))
Well:	SB #4H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	Gyros/MWD 1342'-15513' PTB 15582'	Database:	WellPlanner1

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
600.00	0.21	65.53	599.99	1.73	2.22	-1.72	0.13	-0.02	-33.51
700.00	0.17	83.33	699.99	1.83	2.53	-1.81	0.07	-0.04	17.80
800.00	0.10	134.89	799.99	1.78	2.74	-1.76	0.13	-0.07	51.56
900.00	0.38	132.24	899.99	1.50	3.05	-1.48	0.28	0.28	-2.65
1,000.00	0.59	137.02	999.98	0.90	3.64	-0.87	0.21	0.21	4.78
1,100.00	0.15	144.99	1,099.98	0.41	4.07	-0.39	0.44	-0.44	7.97
1,200.00	0.34	356.54	1,199.98	0.60	4.13	-0.57	0.47	0.19	-148.45
1,342.00	0.70	244.10	1,341.98	0.64	3.32	-0.62	0.62	0.25	-79.18
1,436.00	1.10	237.20	1,435.97	-0.10	2.05	0.11	0.44	0.43	-7.34
1,531.00	0.90	244.50	1,530.95	-0.91	0.61	0.91	0.25	-0.21	7.68
1,625.00	0.80	241.80	1,624.94	-1.54	-0.64	1.53	0.11	-0.11	-2.87
1,720.00	0.60	227.40	1,719.93	-2.19	-1.59	2.18	0.28	-0.21	-15.16
1,814.00	0.60	223.00	1,813.93	-2.88	-2.29	2.87	0.05	0.00	-4.68
1,908.00	0.30	209.60	1,907.93	-3.46	-2.74	3.44	0.34	-0.32	-14.26
2,003.00	0.30	205.60	2,002.92	-3.90	-2.97	3.88	0.02	0.00	-4.21
2,097.00	0.20	196.00	2,096.92	-4.28	-3.13	4.26	0.11	-0.11	-10.21
2,191.00	0.30	200.20	2,190.92	-4.66	-3.26	4.64	0.11	0.11	4.47
2,286.00	0.30	181.30	2,285.92	-5.15	-3.35	5.12	0.10	0.00	-19.89
2,380.00	0.10	165.00	2,379.92	-5.47	-3.33	5.45	0.22	-0.21	-17.34
2,475.00	0.30	126.40	2,474.92	-5.70	-3.11	5.68	0.24	0.21	-40.63
2,569.00	0.30	92.90	2,568.92	-5.86	-2.67	5.84	0.18	0.00	-35.64
2,664.00	0.20	50.60	2,663.92	-5.77	-2.29	5.75	0.21	-0.11	-44.53
2,758.00	0.10	41.90	2,757.92	-5.60	-2.11	5.59	0.11	-0.11	-9.26
2,853.00	0.10	101.10	2,852.92	-5.55	-1.97	5.54	0.10	0.00	62.32
2,947.00	0.10	160.80	2,946.92	-5.65	-1.86	5.64	0.11	0.00	63.51
3,042.00	0.20	83.80	3,041.92	-5.71	-1.67	5.70	0.21	0.11	-81.05
3,136.00	0.20	102.00	3,135.92	-5.72	-1.35	5.72	0.07	0.00	19.36
3,231.00	0.30	89.60	3,230.92	-5.76	-0.94	5.75	0.12	0.11	-13.05
3,325.00	0.40	82.70	3,324.91	-5.71	-0.37	5.71	0.12	0.11	-7.34
3,419.00	0.40	56.80	3,418.91	-5.49	0.23	5.49	0.19	0.00	-27.55
3,514.00	0.40	3.00	3,513.91	-4.98	0.53	4.98	0.38	0.00	-56.63
3,608.00	0.60	3.80	3,607.91	-4.16	0.58	4.16	0.21	0.21	0.85
3,703.00	0.70	18.20	3,702.90	-3.11	0.79	3.12	0.20	0.11	15.16
3,797.00	0.80	14.70	3,796.89	-1.93	1.14	1.94	0.12	0.11	-3.72
3,892.00	1.00	11.10	3,891.88	-0.48	1.47	0.49	0.22	0.21	-3.79
3,986.00	1.40	24.10	3,985.86	1.37	2.09	-1.36	0.51	0.43	13.83
4,081.00	1.50	57.30	4,080.83	3.11	3.61	-3.08	0.88	0.11	34.95
4,175.00	1.70	82.20	4,174.79	3.96	6.03	-3.92	0.76	0.21	26.49
4,269.00	1.00	89.10	4,268.77	4.16	8.23	-4.11	0.76	-0.74	7.34
4,364.00	0.60	123.40	4,363.76	3.90	9.48	-3.84	0.64	-0.42	36.11
4,458.00	1.20	111.30	4,457.75	3.27	10.80	-3.20	0.67	0.64	-12.87
4,553.00	1.80	115.60	4,552.71	2.27	13.08	-2.18	0.64	0.63	4.53

Company:	Marathon Oil	Local Co-ordinate Reference:	Well SB #4H
Project:	Lea County, NM	TVD Reference:	Well @ 3739.50usft (GL: 3713' + KB: 26.5' (H&P480))
Site:	Urraca Fed Com 23-32-11	MD Reference:	Well @ 3739.50usft (GL: 3713' + KB: 26.5' (H&P480))
Well:	SB #4H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	Gyros/MWD 1342'-15513' PTB 15582'	Database:	WellPlanner1

Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
4,647.00	1.50	121.00	4,646.68	1.00	15.46	-0.89	0.36	-0.32	5.74	
4,742.00	1.10	125.50	4,741.65	-0.17	17.27	0.29	0.43	-0.42	4.74	
4,820.00	1.00	120.90	4,819.64	-0.96	18.46	1.08	0.17	-0.13	-5.90	
4,917.00	0.80	130.90	4,916.63	-1.84	19.70	1.97	0.26	-0.21	10.31	
5,012.00	1.00	267.40	5,011.62	-2.31	19.37	2.44	1.76	0.21	143.68	
5,106.00	1.50	335.70	5,105.60	-1.22	18.05	1.34	1.56	0.53	72.66	
5,201.00	3.30	10.80	5,200.52	2.59	18.05	-2.47	2.36	1.89	36.95	
5,296.00	5.30	22.80	5,295.25	9.33	20.26	-9.19	2.30	2.11	12.63	
5,390.00	7.00	25.90	5,388.71	18.48	24.45	-18.32	1.84	1.81	3.30	
5,485.00	8.90	28.50	5,482.79	30.15	30.48	-29.95	2.04	2.00	2.74	
5,579.00	9.30	30.00	5,575.60	43.12	37.75	-42.86	0.49	0.43	1.60	
5,673.00	8.90	27.80	5,668.42	56.13	44.94	-55.83	0.56	-0.43	-2.34	
5,767.00	8.40	28.40	5,761.35	68.60	51.60	-68.25	0.54	-0.53	0.64	
5,862.00	8.80	33.50	5,855.29	80.76	58.91	-80.37	0.91	0.42	5.37	
5,956.00	9.00	35.60	5,948.15	92.74	67.16	-92.29	0.41	0.21	2.23	
6,050.00	8.70	35.40	6,041.03	104.51	75.55	-104.01	0.32	-0.32	-0.21	
6,145.00	8.80	34.90	6,134.93	116.33	83.87	-115.77	0.13	0.11	-0.53	
6,240.00	9.10	32.50	6,228.77	128.62	92.07	-128.01	0.50	0.32	-2.53	
6,334.00	9.10	32.90	6,321.59	141.13	100.10	-140.47	0.07	0.00	0.43	
6,429.00	9.20	31.80	6,415.38	153.89	108.18	-153.17	0.21	0.11	-1.16	
6,523.00	9.00	31.70	6,508.20	166.54	116.01	-165.76	0.21	-0.21	-0.11	
6,618.00	8.80	33.10	6,602.05	178.95	123.88	-178.12	0.31	-0.21	1.47	
6,712.00	8.50	31.30	6,694.98	190.91	131.41	-190.03	0.43	-0.32	-1.91	
6,806.00	11.00	31.20	6,787.62	204.51	139.67	-203.58	2.66	2.66	-0.11	
6,901.00	11.80	31.40	6,880.74	220.56	149.43	-219.56	0.84	0.84	0.21	
6,995.00	11.60	30.70	6,972.79	236.89	159.26	-235.83	0.26	-0.21	-0.74	
7,089.00	10.20	33.90	7,085.09	251.92	168.73	-250.80	1.62	-1.49	3.40	
7,184.00	8.50	48.80	7,158.84	263.53	178.70	-262.34	3.10	-1.79	15.68	
7,278.00	7.80	50.00	7,251.89	272.21	188.82	-270.95	0.77	-0.74	1.28	
7,373.00	5.60	66.00	7,346.25	278.24	197.99	-276.92	3.02	-2.32	16.84	
7,467.00	3.20	99.70	7,439.98	279.66	204.77	-278.30	3.65	-2.55	35.85	
7,561.00	1.30	80.80	7,533.90	279.39	208.41	-278.00	2.14	-2.02	-20.11	
7,656.00	1.20	77.30	7,628.88	279.78	210.44	-278.38	0.13	-0.11	-3.68	
7,750.00	0.60	143.40	7,722.87	279.60	211.70	-278.19	1.17	-0.64	70.32	
7,845.00	0.70	153.20	7,817.86	278.69	212.25	-277.27	0.16	0.11	10.32	
7,939.00	0.70	175.90	7,911.86	277.60	212.55	-276.18	0.29	0.00	24.15	
8,033.00	0.80	145.30	8,005.85	276.49	212.97	-275.07	0.43	0.11	-32.55	
8,128.00	0.80	178.50	8,100.84	275.28	213.36	-273.86	0.48	0.00	34.95	
8,218.00	0.90	185.30	8,190.83	273.95	213.32	-272.53	0.16	0.11	7.56	
8,312.00	0.90	188.10	8,284.82	272.48	213.14	-271.06	0.05	0.00	2.98	
8,406.00	1.00	189.60	8,378.80	270.94	212.90	-269.52	0.11	0.11	1.60	
8,501.00	1.10	192.00	8,473.79	269.23	212.57	-267.82	0.11	0.11	2.53	

Company:	Marathon Oil	Local Co-ordinate Reference:	Well SB #4H
Project:	Lea County, NM	TVD Reference:	Well @ 3739.50usft (GL: 3713' + KB: 26.5' (H&P480))
Site:	Urraca Fed Com 23-32-11	MD Reference:	Well @ 3739.50usft (GL: 3713' + KB: 26.5' (H&P480))
Well:	SB #4H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	Gyros/MWD 1342'-15513' PTB 15582'	Database:	WellPlanner1

Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
8,595.00	1.30	194.90	8,567.77	267.32	212.11	-265.91	0.22	0.21	3.09
8,690.00	1.60	207.80	8,662.74	265.11	211.22	-263.70	0.46	0.32	13.58
8,784.00	1.00	202.50	8,756.71	263.19	210.29	-261.79	0.65	-0.64	-5.64
8,879.00	0.80	233.90	8,851.70	262.03	209.44	-260.64	0.55	-0.21	33.05
8,973.00	0.90	225.40	8,945.69	261.13	208.38	-259.74	0.17	0.11	-9.04
9,067.00	1.20	238.10	9,039.68	260.09	207.02	-258.71	0.40	0.32	13.51
9,162.00	1.50	264.50	9,134.65	259.44	204.94	-258.08	0.72	0.32	27.79
9,256.00	2.20	276.60	9,228.60	259.53	201.92	-258.19	0.85	0.74	12.87
9,350.00	1.20	249.90	9,322.56	259.40	199.21	-258.07	1.33	-1.06	-28.40
9,444.00	1.50	253.40	9,416.53	258.71	197.10	-257.40	0.33	0.32	3.72
9,539.00	0.50	244.60	9,511.52	258.18	195.54	-256.88	1.06	-1.05	-9.26
9,633.00	1.50	247.20	9,605.50	257.53	194.03	-256.23	1.06	1.06	2.77
9,728.00	1.90	259.30	9,700.46	256.75	191.34	-255.48	0.56	0.42	12.74
9,822.00	0.80	266.50	9,794.43	256.42	189.15	-255.16	1.18	-1.17	7.66
9,917.00	0.60	267.50	9,889.43	256.36	187.99	-255.11	0.21	-0.21	1.05
10,012.00	0.60	265.70	9,984.42	256.30	187.00	-255.05	0.02	0.00	-1.89
10,106.00	0.80	251.30	10,078.41	256.05	185.89	-254.81	0.28	0.21	-15.32
10,201.00	0.80	264.90	10,173.40	255.78	184.60	-254.55	0.20	0.00	14.32
10,298.00	0.90	266.50	10,270.39	255.67	183.16	-254.45	0.11	0.10	1.65
10,384.28	2.28	182.08	10,356.65	253.92	182.42	-252.70	2.74	1.60	-97.85
[UrracaFed#4H]KOP									
10,393.00	2.50	180.00	10,365.36	253.56	182.42	-252.34	2.74	2.56	-23.81
10,487.00	12.90	163.60	10,458.39	241.41	185.39	-240.17	11.20	11.06	-17.45
10,582.00	21.70	172.30	10,549.02	213.77	190.75	-212.50	9.63	9.26	9.16
10,677.00	31.80	180.60	10,633.77	171.21	192.84	-169.93	11.31	10.63	8.74
10,771.00	45.00	176.30	10,707.29	113.01	194.74	-111.72	14.32	14.04	-4.57
10,866.00	55.10	176.20	10,768.21	40.44	199.50	-39.11	10.63	10.63	-0.11
10,960.00	63.00	174.40	10,816.52	-39.84	206.15	41.20	8.56	8.40	-1.91
11,055.00	67.10	173.20	10,856.58	-125.44	215.47	126.87	4.47	4.32	-1.26
11,150.00	70.50	173.60	10,890.93	-213.41	225.64	214.91	3.60	3.58	0.42
11,244.00	77.00	179.50	10,917.24	-303.41	230.99	304.93	9.17	6.91	6.28
11,269.00	80.80	180.50	10,922.06	-327.93	230.99	329.46	15.70	15.20	4.00
11,363.00	91.80	181.30	10,928.11	-421.58	229.51	423.09	11.73	11.70	0.85
11,458.00	92.30	182.40	10,924.72	-516.47	226.45	517.96	1.27	0.53	1.16
11,552.00	91.30	183.00	10,921.76	-610.32	222.02	611.78	1.24	-1.06	0.64
11,646.00	91.60	183.90	10,919.38	-704.12	216.37	705.54	1.01	0.32	0.96
11,741.00	90.10	183.30	10,917.97	-798.91	210.41	800.29	1.70	-1.58	-0.63
11,835.00	88.40	181.70	10,919.21	-892.81	206.31	894.16	2.48	-1.81	-1.70
11,930.00	88.30	182.00	10,921.94	-987.72	203.24	989.05	0.33	-0.11	0.32
12,024.00	88.40	182.60	10,924.65	-1,081.61	199.47	1,082.91	0.65	0.11	0.64
12,095.00	88.70	183.30	10,926.44	-1,152.49	195.82	1,153.76	1.07	0.42	0.99
12,189.00	88.20	182.30	10,928.99	-1,246.34	191.23	1,247.58	1.19	-0.53	-1.06

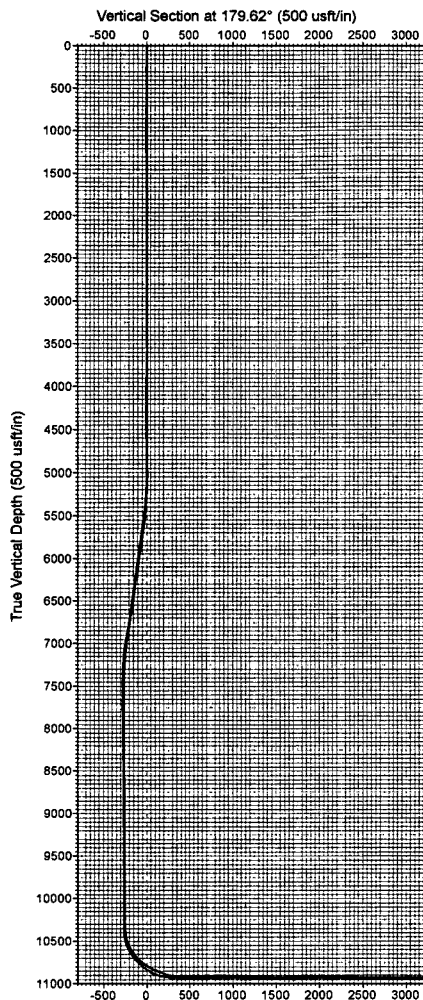
Company:	Marathon Oil	Local Co-ordinate Reference:	Well SB #4H
Project:	Lea County, NM	TVD Reference:	Well @ 3739.50usft (GL: 3713' + KB: 26.5' (H&P480))
Site:	Urraca Fed Com 23-32-11	MD Reference:	Well @ 3739.50usft (GL: 3713' + KB: 26.5' (H&P480))
Well:	SB #4H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	Gyros/MWD 1342'-15513' PTB 15582'	Database:	WellPlanner1

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
12,284.00	88.50	181.00	10,931.72	-1,341.26	188.49	1,342.48	1.40	0.32	-1.37
12,378.00	89.40	180.10	10,933.44	-1,435.24	187.59	1,436.45	1.35	0.96	-0.96
12,472.00	90.50	179.60	10,933.53	-1,529.24	187.84	1,530.45	1.29	1.17	-0.53
12,567.00	91.30	180.50	10,932.03	-1,624.22	187.75	1,625.43	1.27	0.84	0.95
12,661.00	91.20	180.20	10,929.98	-1,718.20	187.18	1,719.40	0.34	-0.11	-0.32
12,755.00	91.30	178.80	10,927.93	-1,812.17	188.00	1,813.38	1.49	0.11	-1.49
12,850.00	91.70	179.00	10,925.45	-1,907.12	189.82	1,908.34	0.47	0.42	0.21
12,944.00	89.90	179.30	10,924.13	-2,001.10	191.22	2,002.32	1.94	-1.91	0.32
13,038.00	89.40	179.60	10,924.71	-2,095.09	192.12	2,096.32	0.62	-0.53	0.32
13,133.00	89.30	180.80	10,925.79	-2,190.08	191.79	2,191.31	1.27	-0.11	1.26
13,227.00	88.30	179.90	10,927.75	-2,284.06	191.21	2,285.27	1.43	-1.06	-0.96
13,322.00	88.40	178.00	10,930.49	-2,379.00	192.95	2,380.22	2.00	0.11	-2.00
13,416.00	88.40	177.10	10,933.11	-2,472.87	196.97	2,474.13	0.96	0.00	-0.96
13,511.00	88.60	177.80	10,935.60	-2,567.75	201.19	2,569.02	0.77	0.21	0.74
13,605.00	90.00	177.40	10,936.75	-2,661.65	205.13	2,662.96	1.55	1.49	-0.43
13,699.00	90.30	178.80	10,936.50	-2,755.60	208.25	2,756.92	1.52	0.32	1.49
13,794.00	90.50	179.90	10,935.84	-2,850.59	209.32	2,851.92	1.18	0.21	1.16
13,888.00	90.00	179.50	10,935.43	-2,944.59	209.82	2,945.91	0.68	-0.53	-0.43
13,983.00	89.90	179.50	10,935.51	-3,039.58	210.65	3,040.91	0.11	-0.11	0.00
14,077.00	89.70	180.50	10,935.84	-3,133.58	210.65	3,134.91	1.08	-0.21	1.06
14,172.00	88.70	179.40	10,937.17	-3,228.57	210.73	3,229.90	1.56	-1.05	-1.16
14,266.00	88.10	179.00	10,939.79	-3,322.52	212.04	3,323.86	0.77	-0.64	-0.43
14,361.00	87.90	178.80	10,943.11	-3,417.45	213.86	3,418.79	0.30	-0.21	-0.21
14,455.00	87.70	178.80	10,946.72	-3,511.36	215.83	3,512.71	0.21	-0.21	0.00
14,550.00	88.80	179.30	10,949.62	-3,606.30	217.40	3,607.66	1.27	1.16	0.53
14,644.00	89.40	179.40	10,951.09	-3,700.28	218.47	3,701.65	0.65	0.64	0.11
14,738.00	91.10	179.70	10,950.68	-3,794.27	219.21	3,795.64	1.84	1.81	0.32
14,833.00	91.20	180.10	10,948.78	-3,889.25	219.37	3,890.62	0.43	0.11	0.42
14,927.00	90.70	180.40	10,947.22	-3,983.24	218.96	3,984.60	0.62	-0.53	0.32
15,021.00	89.40	181.50	10,947.14	-4,077.22	217.41	4,078.58	1.81	-1.38	1.17
15,116.00	89.00	181.20	10,948.46	-4,172.19	215.17	4,173.52	0.53	-0.42	-0.32
15,210.00	88.90	181.30	10,950.19	-4,266.15	213.12	4,267.47	0.15	-0.11	0.11
15,305.00	88.70	181.70	10,952.18	-4,361.10	210.63	4,362.40	0.47	-0.21	0.42
15,399.00	91.50	181.80	10,952.01	-4,455.04	207.76	4,456.32	2.98	2.98	0.11
15,493.00	90.70	182.00	10,950.21	-4,548.97	204.65	4,550.23	0.88	-0.85	0.21
15,513.00	90.40	182.40	10,950.01	-4,568.96	203.88	4,570.21	2.50	-1.50	2.00
Last Survey: 15513' MD, 10950' TVD - [UrracaFed#4H]LTP/BHL									
15,582.00	90.40	182.40	10,949.53	-4,637.89	200.99	4,639.13	0.00	0.00	0.00
PTB: 15582' MD, 10950' TVD									

Company:	Marathon Oil	Local Co-ordinate Reference:	Well SB #4H
Project:	Lea County, NM	TVD Reference:	Well @ 3739.50usft (GL: 3713' + KB: 26.5' (H&P480))
Site:	Urraca Fed Com 23-32-11	MD Reference:	Well @ 3739.50usft (GL: 3713' + KB: 26.5' (H&P480))
Well:	SB #4H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	Gyros/MWD 1342'-15513' PTB 15582'	Database:	WellPlanner1

Design Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
15,513.00	10,950.01	-4,568.96	203.88	Last Survey: 15513' MD, 10950' TVD
15,582.00	10,949.53	-4,637.89	200.99	PTB: 15582' MD, 10950' TVD



Marathon Oil
Lea County, NM
Urraca Fed Com 23-32-11
SB #4H
Plan #1
GL: 3713' + 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 @ 3739.50usft (GL: 3713' + KB: 26.5' (H&P480))

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Spot
0.00	0.00	482748.57	710463.30	32.325352	-103.651998	

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	5100.00	0.00	0.00	5100.00	0.00	0.00	0.00	0.00
3	5600.00	10.00	37.01	5597.47	34.75	26.20	2.00	-34.58
4	7002.58	10.00	37.01	6978.74	229.25	172.80	0.00	-228.09
5	7502.58	0.00	0.00	7476.20	264.00	199.00	2.00	-262.67
6	10383.38	0.00	0.00	10357.00	264.00	199.00	0.00	-262.67
7	11283.37	90.00	179.62	10929.96	-308.94	202.79	10.00	310.28
8	15567.57	90.00	179.62	10930.00	-4593.04	231.10	0.00	4594.47
9	15612.57	90.00	179.62	10930.00	-4638.04	231.40	0.00	4639.47

WELLBORE TARGET DETAILS (MAP CO-ORDINATES)

Name	TVD	+N/-S	+E/-W	Northing	Easting
UrracaFed#4HJFTP	0.00	33.73	200.41	482782.30	710683.71
UrracaFed#4HJIKOP	10357.00	264.00	199.00	483012.57	710682.30
UrracaFed#4HJLTP/BHL	10930.00	-4593.04	231.10	478155.53	710694.40



PRODIRECTIONAL



Azimuths to Grid North
True North: 0.38°
Magnetic North: 6.57°

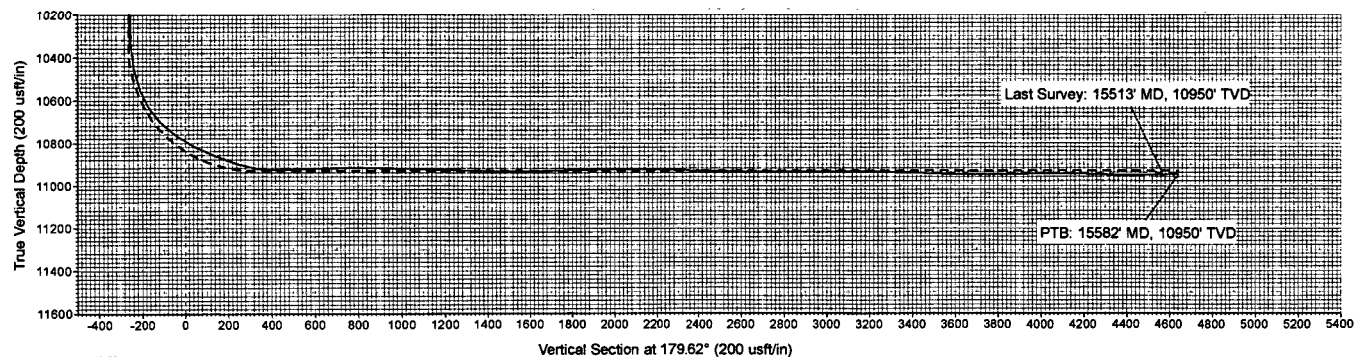
Magnetic Field
Strength: 48115.4nT
Dip Angle: 60.07°
Date: 8/18/2018
Model: USER DEFINED

Azimuth Corrections

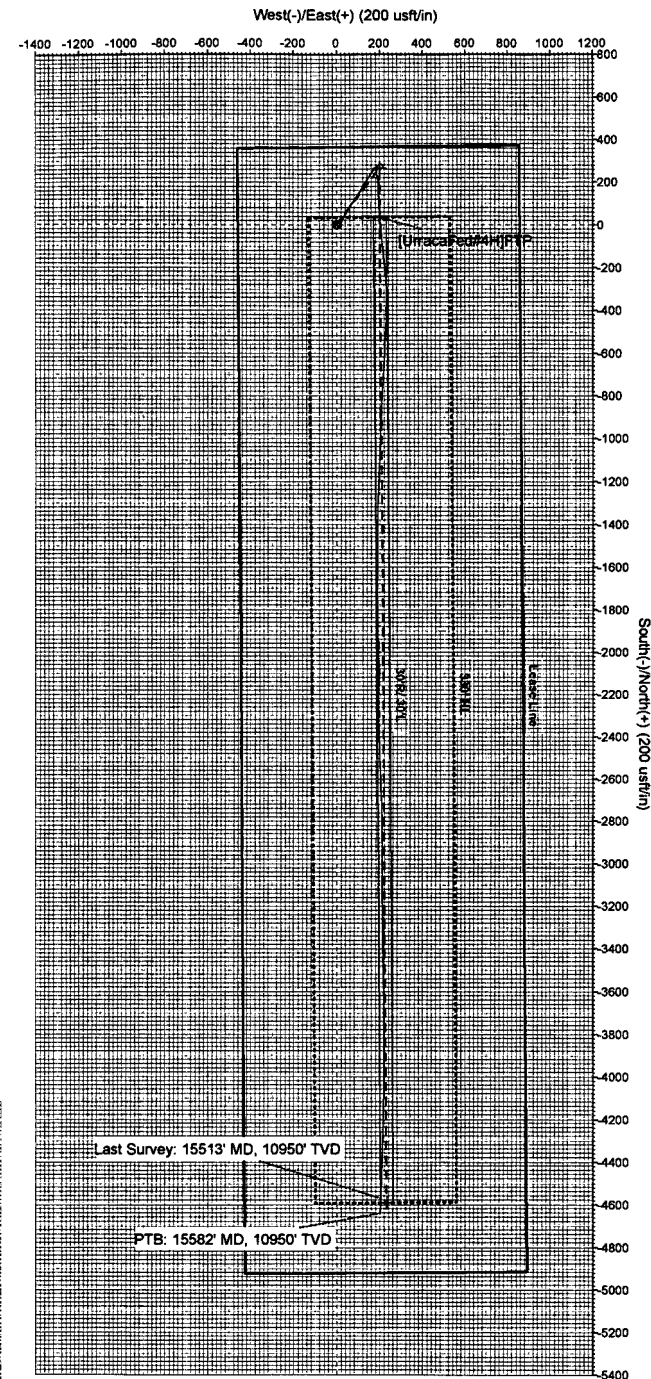
Total Magnetic Corr. (M to G): 6.57°

Declination (M to T): 6.93° East

Target Line: 10930' TVD @ 0° VS :: 90° INC



36" x 48"



Last Survey: 15513' MD, 10950' TVD

PTB: 15582' MD, 10950' TVD

Last Survey: 15513' MD, 10950' TVD

PTB: 15582' MD, 10950' TVD