



Marathon Oil
Lea County, NM
Battle 34
WC #20H
Prelim Plan C
GL: 3697' + KB: 25' (H&P594)

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

RKB Elevation: Well @ 3722.00usft (GL: 3697' + KB: 25' (H&P594))

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Spot
0.00	0.00	525067.12	739798.51	32.441124	-103.556042	

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	1200.00	0.00	0.00	1200.00	0.00	0.00	0.00	0.00
3	1700.00	10.00	71.24	1697.47	14.00	41.21	2.00	-13.63
4	8081.81	10.00	71.24	7982.32	370.44	1090.51	0.00	-360.72
5	8581.81	0.00	0.00	8479.78	384.44	1131.72	2.00	-374.35
6	11860.02	0.00	0.00	11758.00	384.44	1131.72	0.00	-374.35
7	12757.01	89.70	179.49	12330.95	-185.49	1136.78	10.00	195.60
8	17265.35	89.70	179.49	12354.63	-4693.58	1176.83	0.00	4703.87

WELLBORE TARGET DETAILS (MAP CO-ORDINATES)

Name	TVD	+N/-S	+E/-W	Northing	Easting
[Battle34WC#20H]KOP	11758.00	384.44	1131.72	525451.56	740930.23
[Battle34WC#20H]LTP/BHL	12354.63	-4693.58	1176.83	520373.54	740975.34



ProDirectional



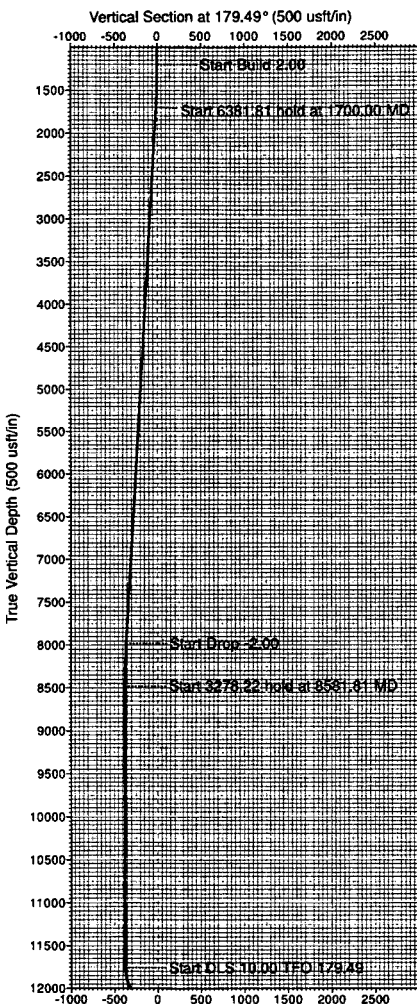
Azimuths to Grid North
True North: -0.42°
Magnetic North: 6.30°

Magnetic Field
Strength: 48128.7nT
Dip Angle: 60.28°
Date: 10/23/2018
Model: HDGM

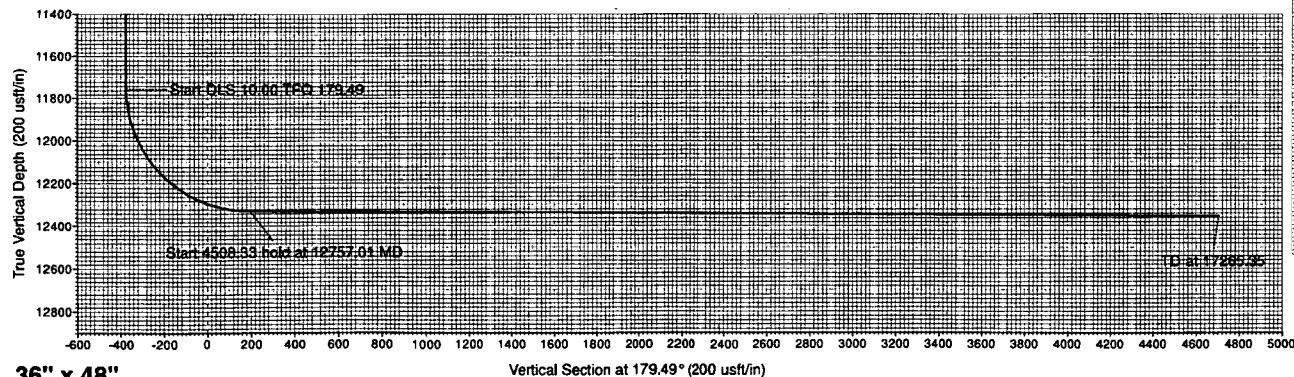
Azimuth Corrections

Total Magnetic Corr. (M to G): 6.30°

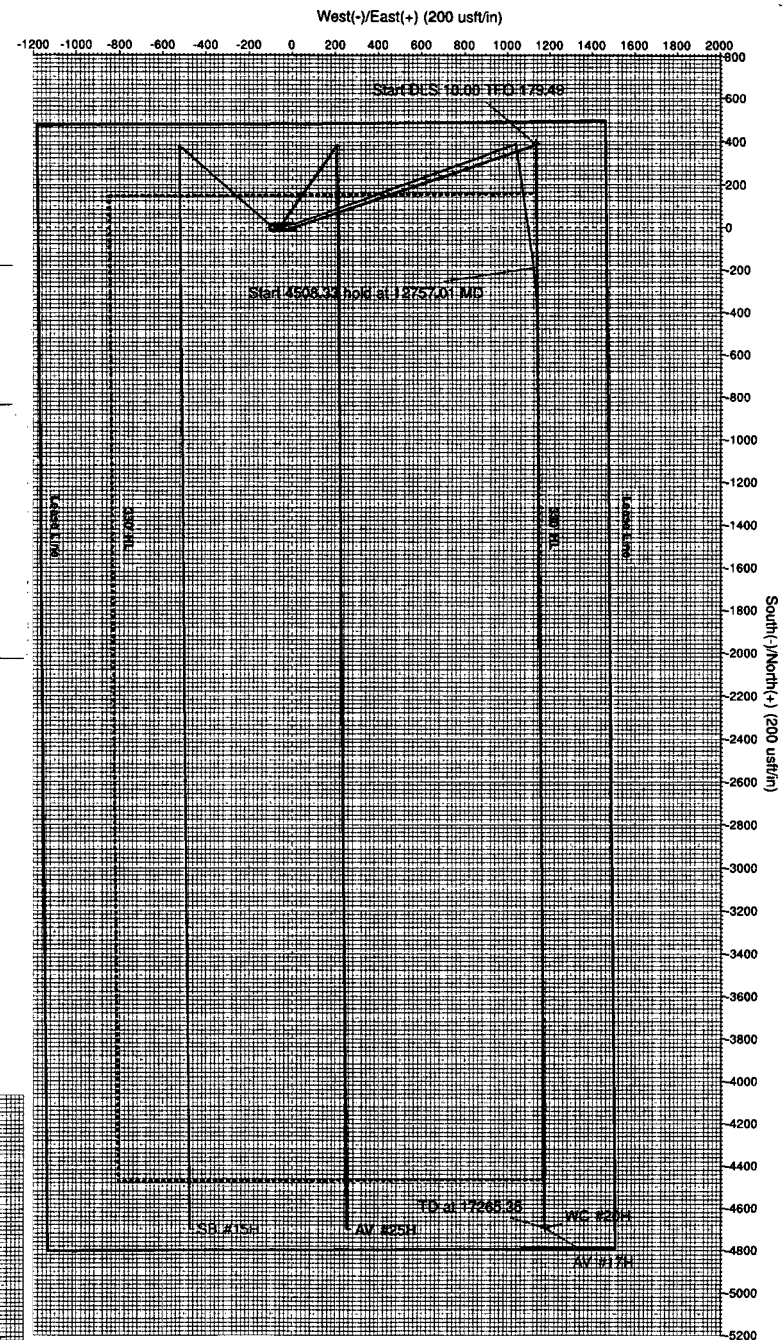
Declination (M to T): 6.72° East



Target Line: 12330' TVD @ 0° VS: 89.7° INC



36" x 48"



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Company:	Marathon Oil	Local Co-ordinate Reference:	Well WC #20H
Project:	Lea County, NM	TVD Reference:	Well @ 3722.00usft (GL: 3697' + KB: 25' (H&P594))
Site:	Battle 34	MD Reference:	Well @ 3722.00usft (GL: 3697' + KB: 25' (H&P594))
Well:	WC #20H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	Prelim Plan C	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	Battle 34			
Site Position:		Northing:	525,062.61 usft	Latitude: 32.441113
From: Map		Easting:	739,708.64 usft	Longitude: -103.556334
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "	Grid Convergence: 0.42 °

Well	WC #20H			
Well Position	+N/-S	0.00 usft	Northing: 525,067.12 usft	Latitude: 32.441124
	+E/-W	0.00 usft	Easting: 739,798.51 usft	Longitude: -103.556043
Position Uncertainty		0.00 usft	Wellhead Elevation: usft	Ground Level: 3,697.00 usft

Wellbore	OH				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	HDGM	10/23/2018	6.72	60.28	48,128.70

Design	Prelim Plan C			
Audit Notes:				
Version:	Phase:	PLAN	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.00	0.00	0.00	179.49

Survey Tool Program	Date 2/12/2019			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
0.00	1,850.00	Prelim Plan C (OH)	MWD+IFR1	OWSG MWD + IFR1
1,850.00	5,400.00	Prelim Plan C (OH)	MWD+IFR1	OWSG MWD + IFR1
5,400.00	10,000.00	Prelim Plan C (OH)	MWD+IFR1	OWSG MWD + IFR1
10,000.00	17,265.35	Prelim Plan C (OH)	MWD+IFR1	OWSG MWD + IFR1

Planned 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
100.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00
200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00	0.00	0.00
300.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	0.00
400.00	0.00	0.00	400.00	0.00	0.00	0.00	0.00	0.00	0.00
500.00	0.00	0.00	500.00	0.00	0.00	0.00	0.00	0.00	0.00

Company:	Marathon Oil	Local Co-ordinate Reference:	Well WC #20H
Project:	Lea County, NM	TVD Reference:	Well @ 3722.00usft (GL: 3697' + KB: 25' (H&P594))
Site:	Battle 34	MD Reference:	Well @ 3722.00usft (GL: 3697' + KB: 25' (H&P594))
Well:	WC #20H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	Prelim Plan C	Database:	WellPlanner1

Planned 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	0.00	0.00	600.00	0.00	0.00	0.00	0.00	0.00	0.00
700.00	0.00	0.00	700.00	0.00	0.00	0.00	0.00	0.00	0.00
800.00	0.00	0.00	800.00	0.00	0.00	0.00	0.00	0.00	0.00
900.00	0.00	0.00	900.00	0.00	0.00	0.00	0.00	0.00	0.00
1,000.00	0.00	0.00	1,000.00	0.00	0.00	0.00	0.00	0.00	0.00
1,100.00	0.00	0.00	1,100.00	0.00	0.00	0.00	0.00	0.00	0.00
1,200.00	0.00	0.00	1,200.00	0.00	0.00	0.00	0.00	0.00	0.00
1,300.00	2.00	71.24	1,299.98	0.56	1.65	-0.55	2.00	2.00	0.00
1,400.00	4.00	71.24	1,399.84	2.24	6.61	-2.19	2.00	2.00	0.00
1,500.00	6.00	71.24	1,499.45	5.05	14.86	-4.92	2.00	2.00	0.00
1,600.00	8.00	71.24	1,598.70	8.97	26.40	-8.73	2.00	2.00	0.00
1,700.00	10.00	71.24	1,697.47	14.00	41.21	-13.63	2.00	2.00	0.00
1,800.00	10.00	71.24	1,795.95	19.58	57.65	-19.07	0.00	0.00	0.00
1,900.00	10.00	71.24	1,894.43	25.17	74.09	-24.51	0.00	0.00	0.00
2,000.00	10.00	71.24	1,992.91	30.75	90.54	-29.95	0.00	0.00	0.00
2,100.00	10.00	71.24	2,091.39	36.34	106.98	-35.39	0.00	0.00	0.00
2,200.00	10.00	71.24	2,189.87	41.93	123.42	-40.83	0.00	0.00	0.00
2,300.00	10.00	71.24	2,288.35	47.51	139.86	-46.26	0.00	0.00	0.00
2,400.00	10.00	71.24	2,386.83	53.10	156.30	-51.70	0.00	0.00	0.00
2,500.00	10.00	71.24	2,485.31	58.68	172.75	-57.14	0.00	0.00	0.00
2,600.00	10.00	71.24	2,583.79	64.27	189.19	-62.58	0.00	0.00	0.00
2,700.00	10.00	71.24	2,682.27	69.85	205.63	-68.02	0.00	0.00	0.00
2,800.00	10.00	71.24	2,780.75	75.44	222.07	-73.46	0.00	0.00	0.00
2,900.00	10.00	71.24	2,879.23	81.02	238.51	-78.90	0.00	0.00	0.00
3,000.00	10.00	71.24	2,977.72	86.61	254.96	-84.33	0.00	0.00	0.00
3,100.00	10.00	71.24	3,076.20	92.19	271.40	-89.77	0.00	0.00	0.00
3,200.00	10.00	71.24	3,174.68	97.78	287.84	-95.21	0.00	0.00	0.00
3,300.00	10.00	71.24	3,273.16	103.36	304.28	-100.65	0.00	0.00	0.00
3,400.00	10.00	71.24	3,371.64	108.95	320.72	-106.09	0.00	0.00	0.00
3,500.00	10.00	71.24	3,470.12	114.53	337.17	-111.53	0.00	0.00	0.00
3,600.00	10.00	71.24	3,568.60	120.12	353.61	-116.97	0.00	0.00	0.00
3,700.00	10.00	71.24	3,667.08	125.70	370.05	-122.41	0.00	0.00	0.00
3,800.00	10.00	71.24	3,765.56	131.29	386.49	-127.84	0.00	0.00	0.00
3,900.00	10.00	71.24	3,864.04	136.88	402.94	-133.28	0.00	0.00	0.00
4,000.00	10.00	71.24	3,962.52	142.46	419.38	-138.72	0.00	0.00	0.00
4,100.00	10.00	71.24	4,061.00	148.05	435.82	-144.16	0.00	0.00	0.00
4,200.00	10.00	71.24	4,159.48	153.63	452.26	-149.60	0.00	0.00	0.00
4,300.00	10.00	71.24	4,257.97	159.22	468.70	-155.04	0.00	0.00	0.00
4,400.00	10.00	71.24	4,356.45	164.80	485.15	-160.48	0.00	0.00	0.00
4,500.00	10.00	71.24	4,454.93	170.39	501.59	-165.92	0.00	0.00	0.00
4,600.00	10.00	71.24	4,553.41	175.97	518.03	-171.35	0.00	0.00	0.00
4,700.00	10.00	71.24	4,651.89	181.56	534.47	-176.79	0.00	0.00	0.00

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Planned 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)
4,800.00	10.00	71.24	4,750.37	187.14	550.91	-182.23	0.00	0.00	0.00
4,900.00	10.00	71.24	4,848.85	192.73	567.36	-187.67	0.00	0.00	0.00
5,000.00	10.00	71.24	4,947.33	198.31	583.80	-193.11	0.00	0.00	0.00
5,100.00	10.00	71.24	5,045.81	203.90	600.24	-198.55	0.00	0.00	0.00
5,200.00	10.00	71.24	5,144.29	209.48	616.68	-203.99	0.00	0.00	0.00
5,300.00	10.00	71.24	5,242.77	215.07	633.12	-209.43	0.00	0.00	0.00
5,400.00	10.00	71.24	5,341.25	220.65	649.57	-214.86	0.00	0.00	0.00
5,500.00	10.00	71.24	5,439.73	226.24	666.01	-220.30	0.00	0.00	0.00
5,600.00	10.00	71.24	5,538.22	231.83	682.45	-225.74	0.00	0.00	0.00
5,700.00	10.00	71.24	5,636.70	237.41	698.89	-231.18	0.00	0.00	0.00
5,800.00	10.00	71.24	5,735.18	243.00	715.33	-236.62	0.00	0.00	0.00
5,900.00	10.00	71.24	5,833.66	248.58	731.78	-242.06	0.00	0.00	0.00
6,000.00	10.00	71.24	5,932.14	254.17	748.22	-247.50	0.00	0.00	0.00
6,100.00	10.00	71.24	6,030.62	259.75	764.66	-252.94	0.00	0.00	0.00
6,200.00	10.00	71.24	6,129.10	265.34	781.10	-258.37	0.00	0.00	0.00
6,300.00	10.00	71.24	6,227.58	270.92	797.54	-263.81	0.00	0.00	0.00
6,400.00	10.00	71.24	6,326.06	276.51	813.99	-269.25	0.00	0.00	0.00
6,500.00	10.00	71.24	6,424.54	282.09	830.43	-274.69	0.00	0.00	0.00
6,600.00	10.00	71.24	6,523.02	287.68	846.87	-280.13	0.00	0.00	0.00
6,700.00	10.00	71.24	6,621.50	293.26	863.31	-285.57	0.00	0.00	0.00
6,800.00	10.00	71.24	6,719.99	298.85	879.76	-291.01	0.00	0.00	0.00
6,900.00	10.00	71.24	6,818.47	304.43	896.20	-296.44	0.00	0.00	0.00
7,000.00	10.00	71.24	6,916.95	310.02	912.64	-301.88	0.00	0.00	0.00
7,100.00	10.00	71.24	7,015.43	315.60	929.08	-307.32	0.00	0.00	0.00
7,200.00	10.00	71.24	7,113.91	321.19	945.52	-312.76	0.00	0.00	0.00
7,300.00	10.00	71.24	7,212.39	326.78	961.97	-318.20	0.00	0.00	0.00
7,400.00	10.00	71.24	7,310.87	332.36	978.41	-323.64	0.00	0.00	0.00
7,500.00	10.00	71.24	7,409.35	337.95	994.85	-329.08	0.00	0.00	0.00
7,600.00	10.00	71.24	7,507.83	343.53	1,011.29	-334.52	0.00	0.00	0.00
7,700.00	10.00	71.24	7,606.31	349.12	1,027.73	-339.95	0.00	0.00	0.00
7,800.00	10.00	71.24	7,704.79	354.70	1,044.18	-345.39	0.00	0.00	0.00
7,900.00	10.00	71.24	7,803.27	360.29	1,060.62	-350.83	0.00	0.00	0.00
8,000.00	10.00	71.24	7,901.75	365.87	1,077.06	-356.27	0.00	0.00	0.00
8,081.81	10.00	71.24	7,982.32	370.44	1,090.51	-360.72	0.00	0.00	0.00
8,100.00	9.64	71.24	8,000.25	371.44	1,093.45	-361.69	2.00	-2.00	0.00
8,200.00	7.64	71.24	8,099.11	376.27	1,107.67	-366.39	2.00	-2.00	0.00
8,300.00	5.64	71.24	8,198.43	379.99	1,118.61	-370.01	2.00	-2.00	0.00
8,400.00	3.64	71.24	8,298.10	382.59	1,126.26	-372.55	2.00	-2.00	0.00
8,500.00	1.64	71.24	8,397.99	384.06	1,130.61	-373.99	2.00	-2.00	0.00
8,581.81	0.00	0.00	8,479.78	384.44	1,131.72	-374.35	2.00	-2.00	0.00
8,600.00	0.00	0.00	8,497.98	384.44	1,131.72	-374.35	0.00	0.00	0.00
8,700.00	0.00	0.00	8,597.98	384.44	1,131.72	-374.35	0.00	0.00	0.00

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8,800.00	0.00	0.00	8,697.98	384.44	1,131.72	-374.35	0.00	0.00	0.00
8,900.00	0.00	0.00	8,797.98	384.44	1,131.72	-374.35	0.00	0.00	0.00
9,000.00	0.00	0.00	8,897.98	384.44	1,131.72	-374.35	0.00	0.00	0.00
9,100.00	0.00	0.00	8,997.98	384.44	1,131.72	-374.35	0.00	0.00	0.00
9,200.00	0.00	0.00	9,097.98	384.44	1,131.72	-374.35	0.00	0.00	0.00
9,300.00	0.00	0.00	9,197.98	384.44	1,131.72	-374.35	0.00	0.00	0.00
9,400.00	0.00	0.00	9,297.98	384.44	1,131.72	-374.35	0.00	0.00	0.00
9,500.00	0.00	0.00	9,397.98	384.44	1,131.72	-374.35	0.00	0.00	0.00
9,600.00	0.00	0.00	9,497.98	384.44	1,131.72	-374.35	0.00	0.00	0.00
9,700.00	0.00	0.00	9,597.98	384.44	1,131.72	-374.35	0.00	0.00	0.00
9,800.00	0.00	0.00	9,697.98	384.44	1,131.72	-374.35	0.00	0.00	0.00
9,900.00	0.00	0.00	9,797.98	384.44	1,131.72	-374.35	0.00	0.00	0.00
10,000.00	0.00	0.00	9,897.98	384.44	1,131.72	-374.35	0.00	0.00	0.00
10,100.00	0.00	0.00	9,997.98	384.44	1,131.72	-374.35	0.00	0.00	0.00
10,200.00	0.00	0.00	10,097.98	384.44	1,131.72	-374.35	0.00	0.00	0.00
10,300.00	0.00	0.00	10,197.98	384.44	1,131.72	-374.35	0.00	0.00	0.00
10,400.00	0.00	0.00	10,297.98	384.44	1,131.72	-374.35	0.00	0.00	0.00
10,500.00	0.00	0.00	10,397.98	384.44	1,131.72	-374.35	0.00	0.00	0.00
10,600.00	0.00	0.00	10,497.98	384.44	1,131.72	-374.35	0.00	0.00	0.00
10,700.00	0.00	0.00	10,597.98	384.44	1,131.72	-374.35	0.00	0.00	0.00
10,800.00	0.00	0.00	10,697.98	384.44	1,131.72	-374.35	0.00	0.00	0.00
10,900.00	0.00	0.00	10,797.98	384.44	1,131.72	-374.35	0.00	0.00	0.00
11,000.00	0.00	0.00	10,897.98	384.44	1,131.72	-374.35	0.00	0.00	0.00
11,100.00	0.00	0.00	10,997.98	384.44	1,131.72	-374.35	0.00	0.00	0.00
11,200.00	0.00	0.00	11,097.98	384.44	1,131.72	-374.35	0.00	0.00	0.00
11,300.00	0.00	0.00	11,197.98	384.44	1,131.72	-374.35	0.00	0.00	0.00
11,400.00	0.00	0.00	11,297.98	384.44	1,131.72	-374.35	0.00	0.00	0.00
11,500.00	0.00	0.00	11,397.98	384.44	1,131.72	-374.35	0.00	0.00	0.00
11,600.00	0.00	0.00	11,497.98	384.44	1,131.72	-374.35	0.00	0.00	0.00
11,700.00	0.00	0.00	11,597.98	384.44	1,131.72	-374.35	0.00	0.00	0.00
11,800.00	0.00	0.00	11,697.98	384.44	1,131.72	-374.35	0.00	0.00	0.00
11,860.02	0.00	0.00	11,758.00	384.44	1,131.72	-374.35	0.00	0.00	0.00
[Battle34WC#20H]KOP									
11,900.00	4.00	179.49	11,797.94	383.05	1,131.73	-372.96	10.00	10.00	0.00
11,950.00	9.00	179.49	11,847.61	377.39	1,131.78	-367.30	10.00	10.00	0.00
12,000.00	14.00	179.49	11,896.59	367.43	1,131.87	-357.34	10.00	10.00	0.00
12,050.00	19.00	179.49	11,944.52	353.23	1,132.00	-343.14	10.00	10.00	0.00
12,100.00	24.00	179.49	11,991.02	334.92	1,132.16	-324.83	10.00	10.00	0.00
12,150.00	29.00	179.49	12,035.76	312.62	1,132.36	-302.52	10.00	10.00	0.00
12,200.00	34.00	179.49	12,078.37	286.50	1,132.59	-276.41	10.00	10.00	0.00
12,250.00	39.00	179.49	12,118.56	256.77	1,132.85	-246.68	10.00	10.00	0.00
12,300.00	44.00	179.49	12,155.99	223.66	1,133.15	-213.56	10.00	10.00	0.00

Company:	Marathon Oil	Local Co-ordinate Reference:	Well WC #20H
Project:	Lea County, NM	TVD Reference:	Well @ 3722.00usft (GL: 3697' + KB: 25' (H&P594))
Site:	Battle 34	MD Reference:	Well @ 3722.00usft (GL: 3697' + KB: 25' (H&P594))
Well:	WC #20H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	Prelim Plan C	Database:	WellPlanner1

Planned 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)
12,350.00	49.00	179.49	12,190.40	187.40	1,133.47	-177.31	10.00	10.00	0.00
12,400.00	54.00	179.49	12,221.52	148.29	1,133.82	-138.19	10.00	10.00	0.00
12,450.00	59.00	179.49	12,249.11	106.61	1,134.19	-96.51	10.00	10.00	0.00
12,500.00	64.00	179.49	12,272.96	62.68	1,134.58	-52.58	10.00	10.00	0.00
12,550.00	69.00	179.49	12,292.89	16.85	1,134.99	-6.74	10.00	10.00	0.00
12,600.00	74.00	179.49	12,308.76	-30.55	1,135.41	40.66	10.00	10.00	0.00
12,650.00	79.00	179.49	12,320.43	-79.15	1,135.84	89.26	10.00	10.00	0.00
12,700.00	84.00	179.49	12,327.82	-128.58	1,136.28	138.69	10.00	10.00	0.00
12,750.00	89.00	179.49	12,330.87	-178.47	1,136.72	188.58	10.00	10.00	0.00
12,757.01	89.70	179.49	12,330.95	-185.49	1,136.78	195.60	10.00	10.00	0.00
12,800.00	89.70	179.49	12,331.18	-228.47	1,137.16	238.58	0.00	0.00	0.00
12,900.00	89.70	179.49	12,331.70	-328.46	1,138.05	338.58	0.00	0.00	0.00
13,000.00	89.70	179.49	12,332.23	-428.46	1,138.94	438.58	0.00	0.00	0.00
13,100.00	89.70	179.49	12,332.75	-528.45	1,139.83	538.58	0.00	0.00	0.00
13,200.00	89.70	179.49	12,333.28	-628.45	1,140.72	638.58	0.00	0.00	0.00
13,300.00	89.70	179.49	12,333.80	-728.44	1,141.61	738.58	0.00	0.00	0.00
13,400.00	89.70	179.49	12,334.33	-828.44	1,142.49	838.57	0.00	0.00	0.00
13,500.00	89.70	179.49	12,334.85	-928.43	1,143.38	938.57	0.00	0.00	0.00
13,600.00	89.70	179.49	12,335.38	-1,028.43	1,144.27	1,038.57	0.00	0.00	0.00
13,700.00	89.70	179.49	12,335.90	-1,128.42	1,145.16	1,138.57	0.00	0.00	0.00
13,800.00	89.70	179.49	12,336.43	-1,228.42	1,146.05	1,238.57	0.00	0.00	0.00
13,900.00	89.70	179.49	12,336.95	-1,328.41	1,146.94	1,338.57	0.00	0.00	0.00
14,000.00	89.70	179.49	12,337.48	-1,428.41	1,147.82	1,438.57	0.00	0.00	0.00
14,100.00	89.70	179.49	12,338.00	-1,528.40	1,148.71	1,538.56	0.00	0.00	0.00
14,200.00	89.70	179.49	12,338.53	-1,628.40	1,149.60	1,638.56	0.00	0.00	0.00
14,300.00	89.70	179.49	12,339.05	-1,728.39	1,150.49	1,738.56	0.00	0.00	0.00
14,400.00	89.70	179.49	12,339.58	-1,828.38	1,151.38	1,838.56	0.00	0.00	0.00
14,500.00	89.70	179.49	12,340.11	-1,928.38	1,152.27	1,938.56	0.00	0.00	0.00
14,600.00	89.70	179.49	12,340.63	-2,028.37	1,153.15	2,038.56	0.00	0.00	0.00
14,700.00	89.70	179.49	12,341.16	-2,128.37	1,154.04	2,138.56	0.00	0.00	0.00
14,800.00	89.70	179.49	12,341.68	-2,228.36	1,154.93	2,238.56	0.00	0.00	0.00
14,900.00	89.70	179.49	12,342.21	-2,328.36	1,155.82	2,338.55	0.00	0.00	0.00
15,000.00	89.70	179.49	12,342.73	-2,428.35	1,156.71	2,438.55	0.00	0.00	0.00
15,100.00	89.70	179.49	12,343.26	-2,528.35	1,157.60	2,538.55	0.00	0.00	0.00
15,200.00	89.70	179.49	12,343.78	-2,628.34	1,158.48	2,638.55	0.00	0.00	0.00
15,300.00	89.70	179.49	12,344.31	-2,728.34	1,159.37	2,738.55	0.00	0.00	0.00
15,400.00	89.70	179.49	12,344.83	-2,828.33	1,160.26	2,838.55	0.00	0.00	0.00
15,500.00	89.70	179.49	12,345.36	-2,928.33	1,161.15	2,938.55	0.00	0.00	0.00
15,600.00	89.70	179.49	12,345.88	-3,028.32	1,162.04	3,038.54	0.00	0.00	0.00
15,700.00	89.70	179.49	12,346.41	-3,128.32	1,162.93	3,138.54	0.00	0.00	0.00
15,800.00	89.70	179.49	12,346.93	-3,228.31	1,163.81	3,238.54	0.00	0.00	0.00
15,900.00	89.70	179.49	12,347.46	-3,328.30	1,164.70	3,338.54	0.00	0.00	0.00

Company:	Marathon Oil	Local Co-ordinate Reference:	Well WC #20H
Project:	Lea County, NM	TVD Reference:	Well @ 3722.00usft (GL: 3697' + KB: 25' (H&P594))
Site:	Battle 34	MD Reference:	Well @ 3722.00usft (GL: 3697' + KB: 25' (H&P594))
Well:	WC #20H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	Prelim Plan C	Database:	WellPlanner1

Planned 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)
16,000.00	89.70	179.49	12,347.98	-3,428.30	1,165.59	3,438.54	0.00	0.00	0.00
16,100.00	89.70	179.49	12,348.51	-3,528.29	1,166.48	3,538.54	0.00	0.00	0.00
16,200.00	89.70	179.49	12,349.03	-3,628.29	1,167.37	3,638.54	0.00	0.00	0.00
16,300.00	89.70	179.49	12,349.56	-3,728.28	1,168.25	3,738.53	0.00	0.00	0.00
16,400.00	89.70	179.49	12,350.09	-3,828.28	1,169.14	3,838.53	0.00	0.00	0.00
16,500.00	89.70	179.49	12,350.61	-3,928.27	1,170.03	3,938.53	0.00	0.00	0.00
16,600.00	89.70	179.49	12,351.14	-4,028.27	1,170.92	4,038.53	0.00	0.00	0.00
16,700.00	89.70	179.49	12,351.66	-4,128.26	1,171.81	4,138.53	0.00	0.00	0.00
16,800.00	89.70	179.49	12,352.19	-4,228.26	1,172.70	4,238.53	0.00	0.00	0.00
16,900.00	89.70	179.49	12,352.71	-4,328.25	1,173.58	4,338.53	0.00	0.00	0.00
17,000.00	89.70	179.49	12,353.24	-4,428.25	1,174.47	4,438.52	0.00	0.00	0.00
17,100.00	89.70	179.49	12,353.76	-4,528.24	1,175.36	4,538.52	0.00	0.00	0.00
17,200.00	89.70	179.49	12,354.29	-4,628.24	1,176.25	4,638.52	0.00	0.00	0.00
17,265.35	89.70	179.49	12,354.63	-4,693.58	1,176.83	4,703.87	0.00	0.00	0.00
[Battle34WC#20H]LTP/BHL									

Design Targets

Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
- hit/miss target									
- Shape									
[Battle34WC#20H]KOP	0.00	0.01	11,758.00	384.44	1,131.72	525,451.56	740,930.23	32.442158	-103.552365
- plan hits target center									
- Point									
[Battle34WC#20H]LTP/E	0.00	0.00	12,354.63	-4,693.58	1,176.83	520,373.54	740,975.34	32.428199	-103.552340
- plan hits target center									
- Point									

Checked By: _____ Approved By: _____ Date: _____