

Database:	WellPlanner1	Local Co-ordinate Reference:	Well WC #20H
Company:	Marathon Oil	TVD Reference:	Well @ 3723.50usft (GL: 3697' + KB: 26.5' (H&P480))
Project:	Lea County, NM	MD Reference:	Well @ 3723.50usft (GL: 3697' + KB: 26.5' (H&P480))
Site:	Battle 34	North Reference:	Grid
Well:	WC #20H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Prelim Plan A		

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
From:	Map	Easting:	739,708.64 usft
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16"
		Latitude:	32.441113
		Longitude:	-103.556334
		Grid Convergence:	0.42 °

Well	WC #20H		
Well Position	+N/-S	4.51 usft	Northing: 525,067.12 usft
	+E/-W	89.87 usft	Easting: 739,798.51 usft
Position Uncertainty	0.00 usft	Wellhead Elevation:	
		Latitude:	32.441124
		Longitude:	-103.556043
		Ground Level:	3,697.00 usft

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

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

Plan Survey Tool Program		Date	10/23/2018
Depth From	Depth To	Survey (Wellbore)	Tool Name
(usft)	(usft)		
1	0.00	1,850.00 Prelim Plan A (OH)	MWD+IFR1
			OWSG MWD + IFR1
2	1,850.00	5,400.00 Prelim Plan A (OH)	MWD+IFR1
			OWSG MWD + IFR1
3	5,400.00	10,000.00 Prelim Plan A (OH)	MWD+IFR1
			OWSG MWD + IFR1
4	10,000.00	17,316.80 Prelim Plan A (OH)	MWD+IFR1
			OWSG MWD + IFR1
			Remarks

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Project:	Lea County, NM	MD Reference:	Well @ 3723.50usft (GL: 3697' + KB: 26.5' (H&P480))
Site:	Battle 34	North Reference:	Grid
Well:	WC #20H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Prelim Plan A		

Plan Sections										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	TFO (°)	Target
0.00	0.00	0.00	0.00	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	
1,700.00	10.00	68.99	1,697.47	15.60	40.63	2.00	2.00	0.00	68.99	
8,177.38	10.00	68.99	8,076.44	418.84	1,090.65	0.00	0.00	0.00	0.00	
8,677.38	0.00	0.00	8,573.90	434.44	1,131.28	2.00	-2.00	0.00	180.00	
11,861.48	0.00	0.00	11,758.00	434.44	1,131.28	0.00	0.00	0.00	0.00	[Battle34WC#20H]KC
12,758.50	89.70	179.49	12,330.95	-135.52	1,136.34	10.00	10.00	20.01	179.49	
17,316.80	89.70	179.49	12,354.63	-4,693.58	1,176.83	0.00	0.00	0.00	0.00	[Battle34WC#20H]LTI

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Company: Marathon Oil
Project: Lea County, NM
Site: Battle 34
Well: WC #20H
Wellbore: OH
Design: Prelim Plan A

Local Co-ordinate Reference: Well WC #20H
TVD Reference: Well @ 3723.50usft (GL: 3697' + KB: 26.5' (H&P480))
MD Reference: Well @ 3723.50usft (GL: 3697' + KB: 26.5' (H&P480))
North Reference: Grid
Survey Calculation Method: Minimum Curvature

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
[Battle34WC#20H]FTP									
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
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	68.99	1,299.98	0.63	1.63	-0.61	2.00	2.00	0.00
1,400.00	4.00	68.99	1,399.84	2.50	6.51	-2.44	2.00	2.00	0.00
1,500.00	6.00	68.99	1,499.45	5.63	14.65	-5.50	2.00	2.00	0.00
1,600.00	8.00	68.99	1,598.70	9.99	26.03	-9.76	2.00	2.00	0.00
1,700.00	10.00	68.99	1,697.47	15.60	40.63	-15.24	2.00	2.00	0.00
1,800.00	10.00	68.99	1,795.95	21.83	56.84	-21.32	0.00	0.00	0.00
1,900.00	10.00	68.99	1,894.43	28.05	73.05	-27.40	0.00	0.00	0.00
2,000.00	10.00	68.99	1,992.91	34.28	89.26	-33.48	0.00	0.00	0.00
2,100.00	10.00	68.99	2,091.39	40.50	105.47	-39.56	0.00	0.00	0.00
2,200.00	10.00	68.99	2,189.87	46.73	121.68	-45.64	0.00	0.00	0.00
2,300.00	10.00	68.99	2,288.35	52.95	137.89	-51.72	0.00	0.00	0.00
2,400.00	10.00	68.99	2,386.83	59.18	154.10	-57.81	0.00	0.00	0.00
2,500.00	10.00	68.99	2,485.31	65.40	170.31	-63.89	0.00	0.00	0.00
2,600.00	10.00	68.99	2,583.79	71.63	186.52	-69.97	0.00	0.00	0.00
2,700.00	10.00	68.99	2,682.27	77.86	202.74	-76.05	0.00	0.00	0.00
2,800.00	10.00	68.99	2,780.75	84.08	218.95	-82.13	0.00	0.00	0.00
2,900.00	10.00	68.99	2,879.23	90.31	235.16	-88.21	0.00	0.00	0.00
3,000.00	10.00	68.99	2,977.72	96.53	251.37	-94.29	0.00	0.00	0.00
3,100.00	10.00	68.99	3,076.20	102.76	267.58	-100.37	0.00	0.00	0.00
3,200.00	10.00	68.99	3,174.68	108.98	283.79	-106.45	0.00	0.00	0.00
3,300.00	10.00	68.99	3,273.16	115.21	300.00	-112.53	0.00	0.00	0.00
3,400.00	10.00	68.99	3,371.64	121.43	316.21	-118.61	0.00	0.00	0.00
3,500.00	10.00	68.99	3,470.12	127.66	332.42	-124.69	0.00	0.00	0.00
3,600.00	10.00	68.99	3,568.60	133.88	348.63	-130.77	0.00	0.00	0.00
3,700.00	10.00	68.99	3,667.08	140.11	364.84	-136.86	0.00	0.00	0.00
3,800.00	10.00	68.99	3,765.56	146.33	381.05	-142.94	0.00	0.00	0.00
3,900.00	10.00	68.99	3,864.04	152.56	397.26	-149.02	0.00	0.00	0.00
4,000.00	10.00	68.99	3,962.52	158.78	413.47	-155.10	0.00	0.00	0.00
4,100.00	10.00	68.99	4,061.00	165.01	429.68	-161.18	0.00	0.00	0.00
4,200.00	10.00	68.99	4,159.48	171.23	445.89	-167.26	0.00	0.00	0.00
4,300.00	10.00	68.99	4,257.97	177.46	462.10	-173.34	0.00	0.00	0.00
4,400.00	10.00	68.99	4,356.45	183.69	478.32	-179.42	0.00	0.00	0.00
4,500.00	10.00	68.99	4,454.93	189.91	494.53	-185.50	0.00	0.00	0.00
4,600.00	10.00	68.99	4,553.41	196.14	510.74	-191.58	0.00	0.00	0.00
4,700.00	10.00	68.99	4,651.89	202.36	526.95	-197.66	0.00	0.00	0.00
4,800.00	10.00	68.99	4,750.37	208.59	543.16	-203.74	0.00	0.00	0.00
4,900.00	10.00	68.99	4,848.85	214.81	559.37	-209.82	0.00	0.00	0.00
5,000.00	10.00	68.99	4,947.33	221.04	575.58	-215.90	0.00	0.00	0.00

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Site:	Battle 34	North Reference:	Grid
Well:	WC #20H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Prelim Plan A		

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)
5,100.00	10.00	68.99	5,045.81	227.26	591.79	-221.99	0.00	0.00	0.00
5,200.00	10.00	68.99	5,144.29	233.49	608.00	-228.07	0.00	0.00	0.00
5,300.00	10.00	68.99	5,242.77	239.71	624.21	-234.15	0.00	0.00	0.00
5,400.00	10.00	68.99	5,341.25	245.94	640.42	-240.23	0.00	0.00	0.00
5,500.00	10.00	68.99	5,439.73	252.16	656.63	-246.31	0.00	0.00	0.00
5,600.00	10.00	68.99	5,538.22	258.39	672.84	-252.39	0.00	0.00	0.00
5,700.00	10.00	68.99	5,636.70	264.61	689.05	-258.47	0.00	0.00	0.00
5,800.00	10.00	68.99	5,735.18	270.84	705.26	-264.55	0.00	0.00	0.00
5,900.00	10.00	68.99	5,833.66	277.06	721.47	-270.63	0.00	0.00	0.00
6,000.00	10.00	68.99	5,932.14	283.29	737.68	-276.71	0.00	0.00	0.00
6,100.00	10.00	68.99	6,030.62	289.51	753.90	-282.79	0.00	0.00	0.00
6,200.00	10.00	68.99	6,129.10	295.74	770.11	-288.87	0.00	0.00	0.00
6,300.00	10.00	68.99	6,227.58	301.97	786.32	-294.95	0.00	0.00	0.00
6,400.00	10.00	68.99	6,326.06	308.19	802.53	-301.03	0.00	0.00	0.00
6,500.00	10.00	68.99	6,424.54	314.42	818.74	-307.12	0.00	0.00	0.00
6,600.00	10.00	68.99	6,523.02	320.64	834.95	-313.20	0.00	0.00	0.00
6,700.00	10.00	68.99	6,621.50	326.87	851.16	-319.28	0.00	0.00	0.00
6,800.00	10.00	68.99	6,719.99	333.09	867.37	-325.36	0.00	0.00	0.00
6,900.00	10.00	68.99	6,818.47	339.32	883.58	-331.44	0.00	0.00	0.00
7,000.00	10.00	68.99	6,916.95	345.54	899.79	-337.52	0.00	0.00	0.00
7,100.00	10.00	68.99	7,015.43	351.77	916.00	-343.60	0.00	0.00	0.00
7,200.00	10.00	68.99	7,113.91	357.99	932.21	-349.68	0.00	0.00	0.00
7,300.00	10.00	68.99	7,212.39	364.22	948.42	-355.76	0.00	0.00	0.00
7,400.00	10.00	68.99	7,310.87	370.44	964.63	-361.84	0.00	0.00	0.00
7,500.00	10.00	68.99	7,409.35	376.67	980.84	-367.92	0.00	0.00	0.00
7,600.00	10.00	68.99	7,507.83	382.89	997.05	-374.00	0.00	0.00	0.00
7,700.00	10.00	68.99	7,606.31	389.12	1,013.26	-380.08	0.00	0.00	0.00
7,800.00	10.00	68.99	7,704.79	395.34	1,029.48	-386.17	0.00	0.00	0.00
7,900.00	10.00	68.99	7,803.27	401.57	1,045.69	-392.25	0.00	0.00	0.00
8,000.00	10.00	68.99	7,901.75	407.79	1,061.90	-398.33	0.00	0.00	0.00
8,100.00	10.00	68.99	8,000.24	414.02	1,078.11	-404.41	0.00	0.00	0.00
8,177.38	10.00	68.99	8,076.44	418.84	1,090.65	-409.11	0.00	0.00	0.00
8,200.00	9.55	68.99	8,098.73	420.21	1,094.24	-410.46	2.00	-2.00	0.00
8,300.00	7.55	68.99	8,197.62	425.54	1,108.11	-415.66	2.00	-2.00	0.00
8,400.00	5.55	68.99	8,296.96	429.63	1,118.75	-419.65	2.00	-2.00	0.00
8,500.00	3.55	68.99	8,396.64	432.47	1,126.16	-422.43	2.00	-2.00	0.00
8,600.00	1.55	68.99	8,496.53	434.07	1,130.30	-423.99	2.00	-2.00	0.00
8,677.38	0.00	0.00	8,573.90	434.44	1,131.28	-424.35	2.00	-2.00	0.00
8,700.00	0.00	0.00	8,596.53	434.44	1,131.28	-424.35	0.00	0.00	0.00
8,800.00	0.00	0.00	8,696.53	434.44	1,131.28	-424.35	0.00	0.00	0.00
8,900.00	0.00	0.00	8,796.53	434.44	1,131.28	-424.35	0.00	0.00	0.00
9,000.00	0.00	0.00	8,896.53	434.44	1,131.28	-424.35	0.00	0.00	0.00
9,100.00	0.00	0.00	8,996.53	434.44	1,131.28	-424.35	0.00	0.00	0.00
9,200.00	0.00	0.00	9,096.53	434.44	1,131.28	-424.35	0.00	0.00	0.00
9,300.00	0.00	0.00	9,196.53	434.44	1,131.28	-424.35	0.00	0.00	0.00
9,400.00	0.00	0.00	9,296.53	434.44	1,131.28	-424.35	0.00	0.00	0.00
9,500.00	0.00	0.00	9,396.53	434.44	1,131.28	-424.35	0.00	0.00	0.00
9,600.00	0.00	0.00	9,496.53	434.44	1,131.28	-424.35	0.00	0.00	0.00
9,700.00	0.00	0.00	9,596.53	434.44	1,131.28	-424.35	0.00	0.00	0.00
9,800.00	0.00	0.00	9,696.53	434.44	1,131.28	-424.35	0.00	0.00	0.00
9,900.00	0.00	0.00	9,796.53	434.44	1,131.28	-424.35	0.00	0.00	0.00
10,000.00	0.00	0.00	9,896.53	434.44	1,131.28	-424.35	0.00	0.00	0.00

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Company:	Marathon Oil	TVD Reference:	Well @ 3723.50usft (GL: 3697' + KB: 26.5' (H&P480))
Project:	Lea County, NM	MD Reference:	Well @ 3723.50usft (GL: 3697' + KB: 26.5' (H&P480))
Site:	Battle 34	North Reference:	Grid
Well:	WC #20H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Prelim Plan A		

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)	
10,100.00	0.00	0.00	9,996.53	434.44	1,131.28	-424.35	0.00	0.00	0.00	
10,200.00	0.00	0.00	10,096.53	434.44	1,131.28	-424.35	0.00	0.00	0.00	
10,300.00	0.00	0.00	10,196.53	434.44	1,131.28	-424.35	0.00	0.00	0.00	
10,400.00	0.00	0.00	10,296.53	434.44	1,131.28	-424.35	0.00	0.00	0.00	
10,500.00	0.00	0.00	10,396.53	434.44	1,131.28	-424.35	0.00	0.00	0.00	
10,600.00	0.00	0.00	10,496.53	434.44	1,131.28	-424.35	0.00	0.00	0.00	
10,700.00	0.00	0.00	10,596.53	434.44	1,131.28	-424.35	0.00	0.00	0.00	
10,800.00	0.00	0.00	10,696.53	434.44	1,131.28	-424.35	0.00	0.00	0.00	
10,900.00	0.00	0.00	10,796.53	434.44	1,131.28	-424.35	0.00	0.00	0.00	
11,000.00	0.00	0.00	10,896.53	434.44	1,131.28	-424.35	0.00	0.00	0.00	
11,100.00	0.00	0.00	10,996.53	434.44	1,131.28	-424.35	0.00	0.00	0.00	
11,200.00	0.00	0.00	11,096.53	434.44	1,131.28	-424.35	0.00	0.00	0.00	
11,300.00	0.00	0.00	11,196.53	434.44	1,131.28	-424.35	0.00	0.00	0.00	
11,400.00	0.00	0.00	11,296.53	434.44	1,131.28	-424.35	0.00	0.00	0.00	
11,500.00	0.00	0.00	11,396.53	434.44	1,131.28	-424.35	0.00	0.00	0.00	
11,600.00	0.00	0.00	11,496.53	434.44	1,131.28	-424.35	0.00	0.00	0.00	
11,700.00	0.00	0.00	11,596.53	434.44	1,131.28	-424.35	0.00	0.00	0.00	
11,800.00	0.00	0.00	11,696.53	434.44	1,131.28	-424.35	0.00	0.00	0.00	
11,861.48	0.00	0.00	11,758.00	434.44	1,131.28	-424.35	0.00	0.00	0.00	
[Battle34WC#20H]KOP										
11,900.00	3.85	179.49	11,796.50	433.15	1,131.29	-423.06	10.00	10.00	0.00	
11,950.00	8.85	179.49	11,846.17	427.62	1,131.34	-417.53	10.00	10.00	0.00	
12,000.00	13.85	179.49	11,895.18	417.78	1,131.43	-407.69	10.00	10.00	0.00	
12,050.00	18.85	179.49	11,943.14	403.70	1,131.55	-393.62	10.00	10.00	0.00	
12,100.00	23.85	179.49	11,989.69	385.51	1,131.71	-375.42	10.00	10.00	0.00	
12,150.00	28.85	179.49	12,034.48	363.32	1,131.91	-353.23	10.00	10.00	0.00	
12,200.00	33.85	179.49	12,077.17	337.31	1,132.14	-327.22	10.00	10.00	0.00	
12,250.00	38.85	179.49	12,117.43	307.69	1,132.41	-297.59	10.00	10.00	0.00	
12,300.00	43.85	179.49	12,154.95	274.66	1,132.70	-264.57	10.00	10.00	0.00	
12,350.00	48.85	179.49	12,189.45	238.50	1,133.02	-228.40	10.00	10.00	0.00	
12,400.00	53.85	179.49	12,220.66	199.46	1,133.37	-189.36	10.00	10.00	0.00	
12,450.00	58.85	179.49	12,248.36	157.85	1,133.74	-147.75	10.00	10.00	0.00	
12,500.00	63.85	179.49	12,272.32	113.99	1,134.13	-103.89	10.00	10.00	0.00	
12,550.00	68.85	179.49	12,292.37	68.20	1,134.53	-58.10	10.00	10.00	0.00	
12,600.00	73.85	179.49	12,308.35	20.84	1,134.95	-10.74	10.00	10.00	0.00	
12,650.00	78.85	179.49	12,320.15	-27.73	1,135.39	37.83	10.00	10.00	0.00	
12,700.00	83.85	179.49	12,327.66	-77.14	1,135.82	87.25	10.00	10.00	0.00	
12,750.00	88.85	179.49	12,330.84	-127.02	1,136.27	137.13	10.00	10.00	0.00	
12,758.50	89.70	179.49	12,330.95	-135.52	1,136.34	145.63	10.00	10.00	0.00	
12,800.00	89.70	179.49	12,331.17	-177.02	1,136.71	187.13	0.00	0.00	0.00	
12,900.00	89.70	179.49	12,331.69	-277.01	1,137.60	287.13	0.00	0.00	0.00	
13,000.00	89.70	179.49	12,332.20	-377.01	1,138.49	387.13	0.00	0.00	0.00	
13,100.00	89.70	179.49	12,332.72	-477.00	1,139.38	487.12	0.00	0.00	0.00	
13,200.00	89.70	179.49	12,333.24	-577.00	1,140.26	587.12	0.00	0.00	0.00	
13,300.00	89.70	179.49	12,333.76	-676.99	1,141.15	687.12	0.00	0.00	0.00	
13,400.00	89.70	179.49	12,334.28	-776.99	1,142.04	787.12	0.00	0.00	0.00	
13,500.00	89.70	179.49	12,334.80	-876.98	1,142.93	887.12	0.00	0.00	0.00	
13,600.00	89.70	179.49	12,335.32	-976.98	1,143.82	987.12	0.00	0.00	0.00	
13,700.00	89.70	179.49	12,335.84	-1,076.97	1,144.71	1,087.12	0.00	0.00	0.00	
13,800.00	89.70	179.49	12,336.36	-1,176.97	1,145.59	1,187.12	0.00	0.00	0.00	
13,900.00	89.70	179.49	12,336.88	-1,276.96	1,146.48	1,287.11	0.00	0.00	0.00	
14,000.00	89.70	179.49	12,337.40	-1,376.95	1,147.37	1,387.11	0.00	0.00	0.00	

Database:	WellPlanner1	Local Co-ordinate Reference:	Well WC #20H
Company:	Marathon Oil	TVD Reference:	Well @ 3723.50usft (GL: 3697' + KB: 26.5' (H&P480))
Project:	Lea County, NM	MD Reference:	Well @ 3723.50usft (GL: 3697' + KB: 26.5' (H&P480))
Site:	Battle 34	North Reference:	Grid
Well:	WC #20H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Prelim Plan A		

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)	
14,100.00	89.70	179.49	12,337.92	-1,476.95	1,148.26	1,487.11	0.00	0.00	0.00	
14,200.00	89.70	179.49	12,338.44	-1,576.94	1,149.15	1,587.11	0.00	0.00	0.00	
14,300.00	89.70	179.49	12,338.96	-1,676.94	1,150.03	1,687.11	0.00	0.00	0.00	
14,400.00	89.70	179.49	12,339.48	-1,776.93	1,150.92	1,787.11	0.00	0.00	0.00	
14,500.00	89.70	179.49	12,340.00	-1,876.93	1,151.81	1,887.11	0.00	0.00	0.00	
14,600.00	89.70	179.49	12,340.52	-1,976.92	1,152.70	1,987.10	0.00	0.00	0.00	
14,700.00	89.70	179.49	12,341.04	-2,076.92	1,153.59	2,087.10	0.00	0.00	0.00	
14,800.00	89.70	179.49	12,341.56	-2,176.91	1,154.48	2,187.10	0.00	0.00	0.00	
14,900.00	89.70	179.49	12,342.08	-2,276.91	1,155.36	2,287.10	0.00	0.00	0.00	
15,000.00	89.70	179.49	12,342.59	-2,376.90	1,156.25	2,387.10	0.00	0.00	0.00	
15,100.00	89.70	179.49	12,343.11	-2,476.90	1,157.14	2,487.10	0.00	0.00	0.00	
15,200.00	89.70	179.49	12,343.63	-2,576.89	1,158.03	2,587.10	0.00	0.00	0.00	
15,300.00	89.70	179.49	12,344.15	-2,676.89	1,158.92	2,687.10	0.00	0.00	0.00	
15,400.00	89.70	179.49	12,344.67	-2,776.88	1,159.80	2,787.09	0.00	0.00	0.00	
15,500.00	89.70	179.49	12,345.19	-2,876.88	1,160.69	2,887.09	0.00	0.00	0.00	
15,600.00	89.70	179.49	12,345.71	-2,976.87	1,161.58	2,987.09	0.00	0.00	0.00	
15,700.00	89.70	179.49	12,346.23	-3,076.86	1,162.47	3,087.09	0.00	0.00	0.00	
15,800.00	89.70	179.49	12,346.75	-3,176.86	1,163.36	3,187.09	0.00	0.00	0.00	
15,900.00	89.70	179.49	12,347.27	-3,276.85	1,164.25	3,287.09	0.00	0.00	0.00	
16,000.00	89.70	179.49	12,347.79	-3,376.85	1,165.13	3,387.09	0.00	0.00	0.00	
16,100.00	89.70	179.49	12,348.31	-3,476.84	1,166.02	3,487.08	0.00	0.00	0.00	
16,200.00	89.70	179.49	12,348.83	-3,576.84	1,166.91	3,587.08	0.00	0.00	0.00	
16,300.00	89.70	179.49	12,349.35	-3,676.83	1,167.80	3,687.08	0.00	0.00	0.00	
16,400.00	89.70	179.49	12,349.87	-3,776.83	1,168.69	3,787.08	0.00	0.00	0.00	
16,500.00	89.70	179.49	12,350.39	-3,876.82	1,169.58	3,887.08	0.00	0.00	0.00	
16,600.00	89.70	179.49	12,350.91	-3,976.82	1,170.46	3,987.08	0.00	0.00	0.00	
16,700.00	89.70	179.49	12,351.43	-4,076.81	1,171.35	4,087.08	0.00	0.00	0.00	
16,800.00	89.70	179.49	12,351.95	-4,176.81	1,172.24	4,187.07	0.00	0.00	0.00	
16,900.00	89.70	179.49	12,352.47	-4,276.80	1,173.13	4,287.07	0.00	0.00	0.00	
17,000.00	89.70	179.49	12,352.98	-4,376.80	1,174.02	4,387.07	0.00	0.00	0.00	
17,100.00	89.70	179.49	12,353.50	-4,476.79	1,174.90	4,487.07	0.00	0.00	0.00	
17,200.00	89.70	179.49	12,354.02	-4,576.79	1,175.79	4,587.07	0.00	0.00	0.00	
17,300.00	89.70	179.49	12,354.54	-4,676.78	1,176.68	4,687.07	0.00	0.00	0.00	
17,316.80	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										

Marathon Oil Corporation

Marathon Oil
Lea County, NM
Battle 34
WC #20H
Prelim Plan A
GL: 3697' + 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 @ 3723.50usft (GL: 3697' + KB: 26.5' (H&P480))

+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	68.99	1697.47	15.60	40.63	2.00	-15.24
4	8177.38	10.00	68.99	8076.44	418.84	1090.65	0.00	-409.11
5	8677.38	0.00	0.00	8573.90	434.44	1131.28	2.00	-424.35
6	11861.48	0.00	0.00	11758.00	434.44	1131.28	0.00	-424.35
7	12758.50	89.70	179.49	12330.95	-135.52	1136.34	10.00	145.63
8	17316.80	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]FTP	0.00	384.44	1131.72	525451.56	740930.23
[Battle34WC#20H]KOP	11758.00	434.44	1131.28	525501.56	740929.79
[Battle34WC#20H]LTP/BHL	12354.63	-4693.58	1176.83	520373.54	740975.34



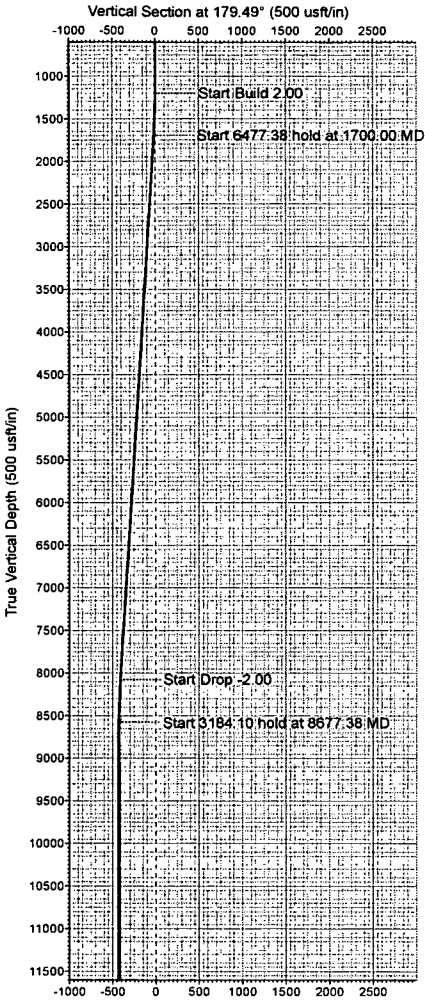
Azimuths to Grid North
True North: -0.42°
Magnetic North: 6.30°

Magnetic Field
Strength: 48126.7nT
Dip Angle: 60.28°
Date: 10/23/2018
Model: HDGM

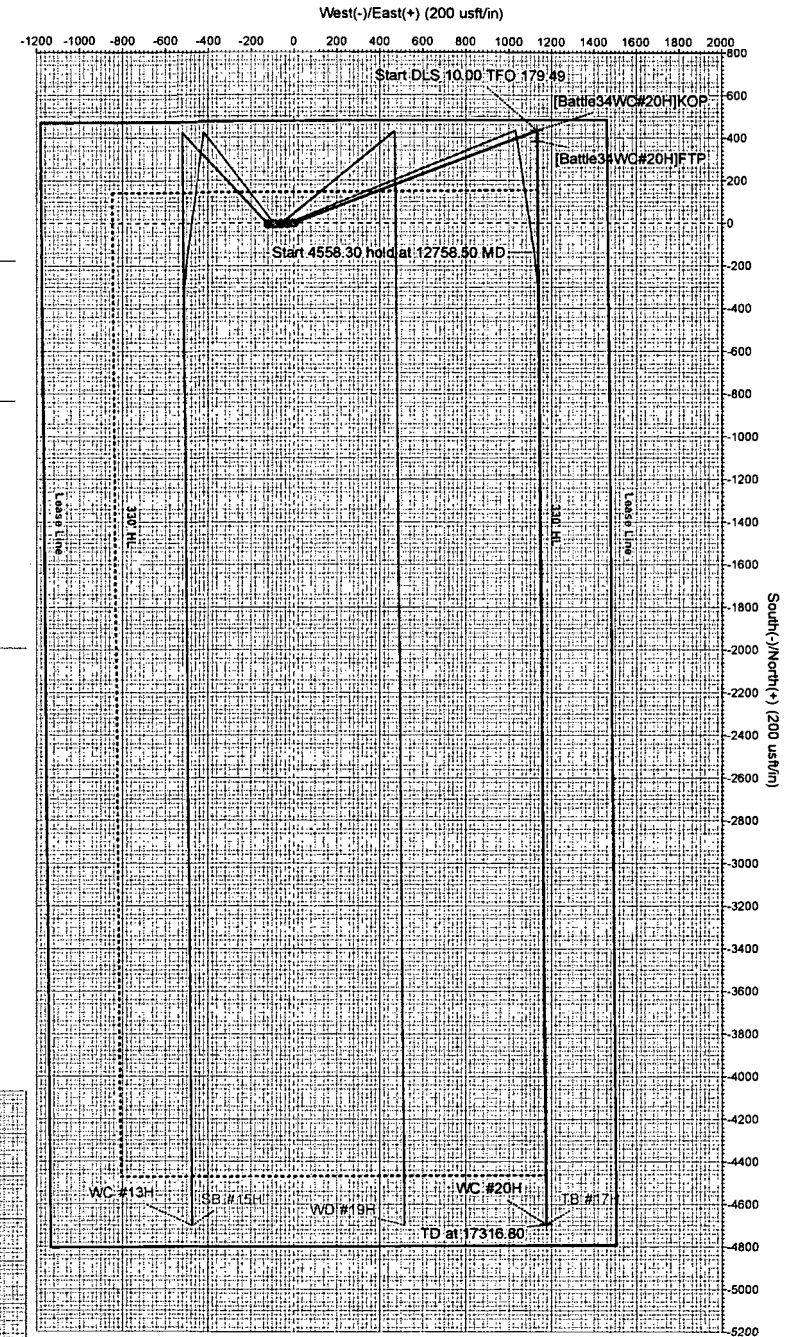
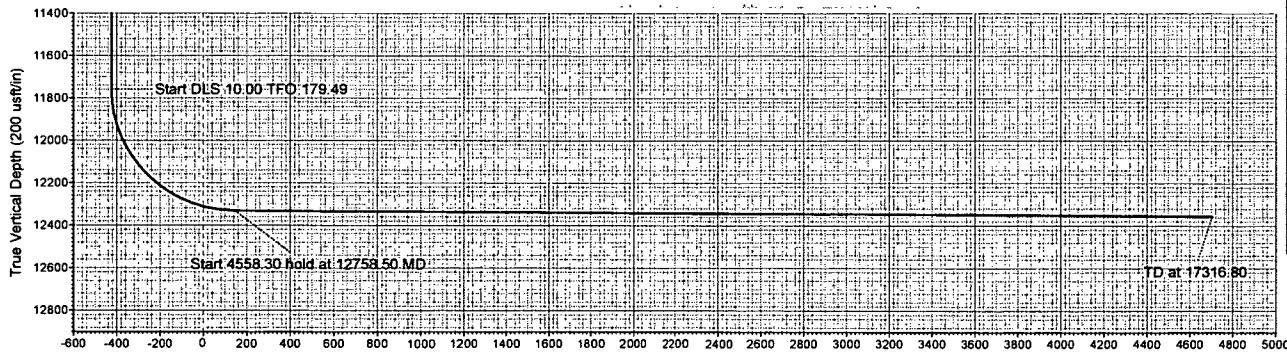
Azimuth Corrections

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"

Vertical Section at 179.49° (200 usft/in)