

Database:	WellPlanner1	Local Co-ordinate Reference:	Well SB #15H
Company:	Marathon Oil	TVD Reference:	Well @ 3721.50usft (GL: 3695' + KB: 26.5' (H&P480))
Project:	Lea County, NM	MD Reference:	Well @ 3721.50usft (GL: 3695' + KB: 26.5' (H&P480))
Site:	Battle 34	North Reference:	Grid
Well:	SB #15H	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	SB #15H		
Well Position	+N/-S	0.00 usft	Northing: 525,062.61 usft
	+E/-W	0.00 usft	Easting: 739,708.64 usft
Position Uncertainty	0.00 usft	Wellhead Elevation:	Latitude: 32.441113
			Longitude: -103.556334
			Ground Level: 3,695.00 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
			(°)
			179.47

Plan Survey Tool Program		Date 10/23/2018		
Depth From	Depth To	Survey (Wellbore)	Tool Name	Remarks
(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	15,928.40 Prelim Plan A (OH)	MWD+IFR1	
			OWSG MWD + IFR1	

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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	
1,500.00	0.00	0.00	1,500.00	0.00	0.00	0.00	0.00	0.00	0.00	
2,000.00	10.00	322.43	1,997.47	34.50	-26.54	2.00	2.00	0.00	322.43	
4,615.61	10.00	322.43	4,573.33	394.50	-303.46	0.00	0.00	0.00	0.00	
5,115.61	0.00	0.00	5,070.80	429.00	-330.00	2.00	-2.00	0.00	180.00	
10,468.81	0.00	0.00	10,424.00	429.00	-330.00	0.00	0.00	0.00	0.00	[Battle34SB#15H]KOI
11,365.81	89.70	187.75	10,996.95	-135.75	-406.86	10.00	10.00	0.00	187.75	
11,641.76	89.70	179.47	10,998.39	-410.92	-424.22	3.00	0.00	-3.00	-90.00	
15,928.49	89.70	179.47	11,020.58	-4,697.40	-384.66	0.00	0.00	0.00	0.00	[Battle34SB#15H]LTP

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Project:	Lea County, NM	MD Reference:	Well @ 3721.50usft (GL: 3695' + KB: 26.5' (H&P480))
Site:	Battle 34	North Reference:	Grid
Well:	SB #15H	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)	
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
[Battle34SB#15H]FTP										
100.00	0.00	0.00	100.00	0.00	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	0.00
300.00	0.00	0.00	300.00	0.00	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	0.00
500.00	0.00	0.00	500.00	0.00	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	0.00
700.00	0.00	0.00	700.00	0.00	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	0.00
900.00	0.00	0.00	900.00	0.00	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	0.00
1,100.00	0.00	0.00	1,100.00	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	0.00
1,300.00	0.00	0.00	1,300.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1,400.00	0.00	0.00	1,400.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1,500.00	0.00	0.00	1,500.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1,600.00	2.00	322.43	1,599.98	1.38	-1.06	-1.39	2.00	2.00	0.00	0.00
1,700.00	4.00	322.43	1,699.84	5.53	-4.25	-5.57	2.00	2.00	0.00	0.00
1,800.00	6.00	322.43	1,799.45	12.44	-9.57	-12.53	2.00	2.00	0.00	0.00
1,900.00	8.00	322.43	1,898.70	22.10	-17.00	-22.25	2.00	2.00	0.00	0.00
2,000.00	10.00	322.43	1,997.47	34.50	-26.54	-34.74	2.00	2.00	0.00	0.00
2,100.00	10.00	322.43	2,095.95	48.26	-37.12	-48.60	0.00	0.00	0.00	0.00
2,200.00	10.00	322.43	2,194.43	62.02	-47.71	-62.46	0.00	0.00	0.00	0.00
2,300.00	10.00	322.43	2,292.91	75.79	-58.30	-76.32	0.00	0.00	0.00	0.00
2,400.00	10.00	322.43	2,391.39	89.55	-68.89	-90.19	0.00	0.00	0.00	0.00
2,500.00	10.00	322.43	2,489.87	103.32	-79.47	-104.05	0.00	0.00	0.00	0.00
2,600.00	10.00	322.43	2,588.35	117.08	-90.06	-117.91	0.00	0.00	0.00	0.00
2,700.00	10.00	322.43	2,686.83	130.84	-100.65	-131.77	0.00	0.00	0.00	0.00
2,800.00	10.00	322.43	2,785.31	144.61	-111.24	-145.63	0.00	0.00	0.00	0.00
2,900.00	10.00	322.43	2,883.79	158.37	-121.82	-159.49	0.00	0.00	0.00	0.00
3,000.00	10.00	322.43	2,982.27	172.13	-132.41	-173.35	0.00	0.00	0.00	0.00
3,100.00	10.00	322.43	3,080.75	185.90	-143.00	-187.21	0.00	0.00	0.00	0.00
3,200.00	10.00	322.43	3,179.23	199.66	-153.59	-201.07	0.00	0.00	0.00	0.00
3,300.00	10.00	322.43	3,277.72	213.43	-164.17	-214.94	0.00	0.00	0.00	0.00
3,400.00	10.00	322.43	3,376.20	227.19	-174.76	-228.80	0.00	0.00	0.00	0.00
3,500.00	10.00	322.43	3,474.68	240.95	-185.35	-242.66	0.00	0.00	0.00	0.00
3,600.00	10.00	322.43	3,573.16	254.72	-195.94	-256.52	0.00	0.00	0.00	0.00
3,700.00	10.00	322.43	3,671.64	268.48	-206.52	-270.38	0.00	0.00	0.00	0.00
3,800.00	10.00	322.43	3,770.12	282.24	-217.11	-284.24	0.00	0.00	0.00	0.00
3,900.00	10.00	322.43	3,868.60	296.01	-227.70	-298.10	0.00	0.00	0.00	0.00
4,000.00	10.00	322.43	3,967.08	309.77	-238.29	-311.96	0.00	0.00	0.00	0.00
4,100.00	10.00	322.43	4,065.56	323.54	-248.87	-325.82	0.00	0.00	0.00	0.00
4,200.00	10.00	322.43	4,164.04	337.30	-259.46	-339.69	0.00	0.00	0.00	0.00
4,300.00	10.00	322.43	4,262.52	351.06	-270.05	-353.55	0.00	0.00	0.00	0.00
4,400.00	10.00	322.43	4,361.00	364.83	-280.64	-367.41	0.00	0.00	0.00	0.00
4,500.00	10.00	322.43	4,459.48	378.59	-291.22	-381.27	0.00	0.00	0.00	0.00
4,600.00	10.00	322.43	4,557.97	392.36	-301.81	-395.13	0.00	0.00	0.00	0.00
4,615.61	10.00	322.43	4,573.33	394.50	-303.46	-397.29	0.00	0.00	0.00	0.00
4,700.00	8.31	322.43	4,656.65	405.15	-311.65	-408.01	2.00	-2.00	0.00	0.00
4,800.00	6.31	322.43	4,755.83	415.23	-319.41	-418.17	2.00	-2.00	0.00	0.00
4,900.00	4.31	322.43	4,855.40	422.57	-325.06	-425.56	2.00	-2.00	0.00	0.00



Marathon Oil

Professional Directional Planning Report



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Site:	Battle 34	North Reference:	Grid
Well:	SB #15H	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)
5,000.00	2.31	322.43	4,955.23	427.15	-328.58	-430.17	2.00	-2.00	0.00
5,100.00	0.31	322.43	5,055.19	428.97	-329.97	-432.00	2.00	-2.00	0.00
5,115.61	0.00	0.00	5,070.80	429.00	-330.00	-432.03	2.00	-2.00	0.00
5,200.00	0.00	0.00	5,155.19	429.00	-330.00	-432.03	0.00	0.00	0.00
5,300.00	0.00	0.00	5,255.19	429.00	-330.00	-432.03	0.00	0.00	0.00
5,400.00	0.00	0.00	5,355.19	429.00	-330.00	-432.03	0.00	0.00	0.00
5,500.00	0.00	0.00	5,455.19	429.00	-330.00	-432.03	0.00	0.00	0.00
5,600.00	0.00	0.00	5,555.19	429.00	-330.00	-432.03	0.00	0.00	0.00
5,700.00	0.00	0.00	5,655.19	429.00	-330.00	-432.03	0.00	0.00	0.00
5,800.00	0.00	0.00	5,755.19	429.00	-330.00	-432.03	0.00	0.00	0.00
5,900.00	0.00	0.00	5,855.19	429.00	-330.00	-432.03	0.00	0.00	0.00
6,000.00	0.00	0.00	5,955.19	429.00	-330.00	-432.03	0.00	0.00	0.00
6,100.00	0.00	0.00	6,055.19	429.00	-330.00	-432.03	0.00	0.00	0.00
6,200.00	0.00	0.00	6,155.19	429.00	-330.00	-432.03	0.00	0.00	0.00
6,300.00	0.00	0.00	6,255.19	429.00	-330.00	-432.03	0.00	0.00	0.00
6,400.00	0.00	0.00	6,355.19	429.00	-330.00	-432.03	0.00	0.00	0.00
6,500.00	0.00	0.00	6,455.19	429.00	-330.00	-432.03	0.00	0.00	0.00
6,600.00	0.00	0.00	6,555.19	429.00	-330.00	-432.03	0.00	0.00	0.00
6,700.00	0.00	0.00	6,655.19	429.00	-330.00	-432.03	0.00	0.00	0.00
6,800.00	0.00	0.00	6,755.19	429.00	-330.00	-432.03	0.00	0.00	0.00
6,900.00	0.00	0.00	6,855.19	429.00	-330.00	-432.03	0.00	0.00	0.00
7,000.00	0.00	0.00	6,955.19	429.00	-330.00	-432.03	0.00	0.00	0.00
7,100.00	0.00	0.00	7,055.19	429.00	-330.00	-432.03	0.00	0.00	0.00
7,200.00	0.00	0.00	7,155.19	429.00	-330.00	-432.03	0.00	0.00	0.00
7,300.00	0.00	0.00	7,255.19	429.00	-330.00	-432.03	0.00	0.00	0.00
7,400.00	0.00	0.00	7,355.19	429.00	-330.00	-432.03	0.00	0.00	0.00
7,500.00	0.00	0.00	7,455.19	429.00	-330.00	-432.03	0.00	0.00	0.00
7,600.00	0.00	0.00	7,555.19	429.00	-330.00	-432.03	0.00	0.00	0.00
7,700.00	0.00	0.00	7,655.19	429.00	-330.00	-432.03	0.00	0.00	0.00
7,800.00	0.00	0.00	7,755.19	429.00	-330.00	-432.03	0.00	0.00	0.00
7,900.00	0.00	0.00	7,855.19	429.00	-330.00	-432.03	0.00	0.00	0.00
8,000.00	0.00	0.00	7,955.19	429.00	-330.00	-432.03	0.00	0.00	0.00
8,100.00	0.00	0.00	8,055.19	429.00	-330.00	-432.03	0.00	0.00	0.00
8,200.00	0.00	0.00	8,155.19	429.00	-330.00	-432.03	0.00	0.00	0.00
8,300.00	0.00	0.00	8,255.19	429.00	-330.00	-432.03	0.00	0.00	0.00
8,400.00	0.00	0.00	8,355.19	429.00	-330.00	-432.03	0.00	0.00	0.00
8,500.00	0.00	0.00	8,455.19	429.00	-330.00	-432.03	0.00	0.00	0.00
8,600.00	0.00	0.00	8,555.19	429.00	-330.00	-432.03	0.00	0.00	0.00
8,700.00	0.00	0.00	8,655.19	429.00	-330.00	-432.03	0.00	0.00	0.00
8,800.00	0.00	0.00	8,755.19	429.00	-330.00	-432.03	0.00	0.00	0.00
8,900.00	0.00	0.00	8,855.19	429.00	-330.00	-432.03	0.00	0.00	0.00
9,000.00	0.00	0.00	8,955.19	429.00	-330.00	-432.03	0.00	0.00	0.00
9,100.00	0.00	0.00	9,055.19	429.00	-330.00	-432.03	0.00	0.00	0.00
9,200.00	0.00	0.00	9,155.19	429.00	-330.00	-432.03	0.00	0.00	0.00
9,300.00	0.00	0.00	9,255.19	429.00	-330.00	-432.03	0.00	0.00	0.00
9,400.00	0.00	0.00	9,355.19	429.00	-330.00	-432.03	0.00	0.00	0.00
9,500.00	0.00	0.00	9,455.19	429.00	-330.00	-432.03	0.00	0.00	0.00
9,600.00	0.00	0.00	9,555.19	429.00	-330.00	-432.03	0.00	0.00	0.00
9,700.00	0.00	0.00	9,655.19	429.00	-330.00	-432.03	0.00	0.00	0.00
9,800.00	0.00	0.00	9,755.19	429.00	-330.00	-432.03	0.00	0.00	0.00
9,900.00	0.00	0.00	9,855.19	429.00	-330.00	-432.03	0.00	0.00	0.00
10,000.00	0.00	0.00	9,955.19	429.00	-330.00	-432.03	0.00	0.00	0.00

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Company:	Marathon Oil	TVD Reference:	Well @ 3721.50usft (GL: 3695' + KB: 26.5' (H&P480))
Project:	Lea County, NM	MD Reference:	Well @ 3721.50usft (GL: 3695' + KB: 26.5' (H&P480))
Site:	Battle 34	North Reference:	Grid
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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	10,055.19	429.00	-330.00	-432.03	0.00	0.00	0.00	
10,200.00	0.00	0.00	10,155.19	429.00	-330.00	-432.03	0.00	0.00	0.00	
10,300.00	0.00	0.00	10,255.19	429.00	-330.00	-432.03	0.00	0.00	0.00	
10,400.00	0.00	0.00	10,355.19	429.00	-330.00	-432.03	0.00	0.00	0.00	
10,468.81	0.00	0.00	10,424.00	429.00	-330.00	-432.03	0.00	0.00	0.00	
[Battle34SB#15H]KOP										
10,500.00	3.12	187.75	10,455.18	428.16	-330.11	-431.19	10.00	10.00	0.00	
10,550.00	8.12	187.75	10,504.92	423.31	-330.77	-426.35	10.00	10.00	0.00	
10,600.00	13.12	187.75	10,554.05	414.18	-332.02	-417.24	10.00	10.00	0.00	
10,650.00	18.12	187.75	10,602.19	400.85	-333.83	-403.92	10.00	10.00	0.00	
10,700.00	23.12	187.75	10,648.97	383.41	-336.21	-386.50	10.00	10.00	0.00	
10,750.00	28.12	187.75	10,694.04	361.99	-339.12	-365.11	10.00	10.00	0.00	
10,800.00	33.12	187.75	10,737.06	336.76	-342.55	-339.92	10.00	10.00	0.00	
10,850.00	38.12	187.75	10,777.69	307.92	-346.48	-311.11	10.00	10.00	0.00	
10,900.00	43.12	187.75	10,815.63	275.68	-350.87	-278.91	10.00	10.00	0.00	
10,950.00	48.12	187.75	10,850.59	240.28	-355.68	-243.56	10.00	10.00	0.00	
11,000.00	53.12	187.75	10,882.30	202.00	-360.89	-205.32	10.00	10.00	0.00	
11,050.00	58.12	187.75	10,910.53	161.12	-366.46	-164.50	10.00	10.00	0.00	
11,100.00	63.12	187.75	10,935.05	117.96	-372.33	-121.40	10.00	10.00	0.00	
11,150.00	68.12	187.75	10,955.68	72.85	-378.47	-76.35	10.00	10.00	0.00	
11,200.00	73.12	187.75	10,972.27	26.13	-384.83	-29.69	10.00	10.00	0.00	
11,250.00	78.12	187.75	10,984.68	-21.85	-391.36	18.22	10.00	10.00	0.00	
11,300.00	83.12	187.75	10,992.83	-70.71	-398.01	67.03	10.00	10.00	0.00	
11,350.00	88.12	187.75	10,996.65	-120.09	-404.73	116.34	10.00	10.00	0.00	
11,365.81	89.70	187.75	10,996.95	-135.75	-406.86	131.98	10.00	10.00	0.00	
11,400.00	89.70	186.72	10,997.13	-169.67	-411.17	165.86	3.00	0.00	-3.00	
11,500.00	89.70	183.72	10,997.65	-269.24	-420.27	265.35	3.00	0.00	-3.00	
11,600.00	89.70	180.72	10,998.17	-369.16	-424.15	365.22	3.00	0.00	-3.00	
11,641.76	89.70	179.47	10,998.39	-410.92	-424.22	406.98	3.00	0.00	-3.00	
11,700.00	89.70	179.47	10,998.69	-469.15	-423.68	465.21	0.00	0.00	0.00	
11,800.00	89.70	179.47	10,999.21	-569.15	-422.76	565.21	0.00	0.00	0.00	
11,900.00	89.70	179.47	10,999.73	-669.14	-421.84	665.21	0.00	0.00	0.00	
12,000.00	89.70	179.47	11,000.24	-769.13	-420.92	765.21	0.00	0.00	0.00	
12,100.00	89.70	179.47	11,000.76	-869.13	-419.99	865.21	0.00	0.00	0.00	
12,200.00	89.70	179.47	11,001.28	-969.12	-419.07	965.21	0.00	0.00	0.00	
12,300.00	89.70	179.47	11,001.80	-1,069.12	-418.15	1,065.20	0.00	0.00	0.00	
12,400.00	89.70	179.47	11,002.31	-1,169.11	-417.22	1,165.20	0.00	0.00	0.00	
12,500.00	89.70	179.47	11,002.83	-1,269.11	-416.30	1,265.20	0.00	0.00	0.00	
12,600.00	89.70	179.47	11,003.35	-1,369.10	-415.38	1,365.20	0.00	0.00	0.00	
12,700.00	89.70	179.47	11,003.87	-1,469.10	-414.46	1,465.20	0.00	0.00	0.00	
12,800.00	89.70	179.47	11,004.39	-1,569.09	-413.53	1,565.20	0.00	0.00	0.00	
12,900.00	89.70	179.47	11,004.90	-1,669.08	-412.61	1,665.20	0.00	0.00	0.00	
13,000.00	89.70	179.47	11,005.42	-1,769.08	-411.69	1,765.19	0.00	0.00	0.00	
13,100.00	89.70	179.47	11,005.94	-1,869.07	-410.76	1,865.19	0.00	0.00	0.00	
13,200.00	89.70	179.47	11,006.46	-1,969.07	-409.84	1,965.19	0.00	0.00	0.00	
13,300.00	89.70	179.47	11,006.97	-2,069.06	-408.92	2,065.19	0.00	0.00	0.00	
13,400.00	89.70	179.47	11,007.49	-2,169.06	-408.00	2,165.19	0.00	0.00	0.00	
13,500.00	89.70	179.47	11,008.01	-2,269.05	-407.07	2,265.19	0.00	0.00	0.00	
13,600.00	89.70	179.47	11,008.53	-2,369.05	-406.15	2,365.19	0.00	0.00	0.00	
13,700.00	89.70	179.47	11,009.04	-2,469.04	-405.23	2,465.19	0.00	0.00	0.00	
13,800.00	89.70	179.47	11,009.56	-2,569.03	-404.30	2,565.18	0.00	0.00	0.00	
13,900.00	89.70	179.47	11,010.08	-2,669.03	-403.38	2,665.18	0.00	0.00	0.00	

Database:	WellPlanner1	Local Co-ordinate Reference:	Well SB #15H
Company:	Marathon Oil	TVD Reference:	Well @ 3721.50usft (GL: 3695' + KB: 26.5' (H&P480))
Project:	Lea County, NM	MD Reference:	Well @ 3721.50usft (GL: 3695' + KB: 26.5' (H&P480))
Site:	Battle 34	North Reference:	Grid
Well:	SB #15H	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)
14,000.00	89.70	179.47	11,010.60	-2,769.02	-402.46	2,765.18	0.00	0.00	0.00
14,100.00	89.70	179.47	11,011.11	-2,869.02	-401.54	2,865.18	0.00	0.00	0.00
14,200.00	89.70	179.47	11,011.63	-2,969.01	-400.61	2,965.18	0.00	0.00	0.00
14,300.00	89.70	179.47	11,012.15	-3,069.01	-399.69	3,065.18	0.00	0.00	0.00
14,400.00	89.70	179.47	11,012.67	-3,169.00	-398.77	3,165.18	0.00	0.00	0.00
14,500.00	89.70	179.47	11,013.19	-3,268.99	-397.84	3,265.17	0.00	0.00	0.00
14,600.00	89.70	179.47	11,013.70	-3,368.99	-396.92	3,365.17	0.00	0.00	0.00
14,700.00	89.70	179.47	11,014.22	-3,468.98	-396.00	3,465.17	0.00	0.00	0.00
14,800.00	89.70	179.47	11,014.74	-3,568.98	-395.07	3,565.17	0.00	0.00	0.00
14,900.00	89.70	179.47	11,015.26	-3,668.97	-394.15	3,665.17	0.00	0.00	0.00
15,000.00	89.70	179.47	11,015.77	-3,768.97	-393.23	3,765.17	0.00	0.00	0.00
15,100.00	89.70	179.47	11,016.29	-3,868.96	-392.31	3,865.17	0.00	0.00	0.00
15,200.00	89.70	179.47	11,016.81	-3,968.96	-391.38	3,965.17	0.00	0.00	0.00
15,300.00	89.70	179.47	11,017.33	-4,068.95	-390.46	4,065.16	0.00	0.00	0.00
15,400.00	89.70	179.47	11,017.84	-4,168.94	-389.54	4,165.16	0.00	0.00	0.00
15,500.00	89.70	179.47	11,018.36	-4,268.94	-388.61	4,265.16	0.00	0.00	0.00
15,600.00	89.70	179.47	11,018.88	-4,368.93	-387.69	4,365.16	0.00	0.00	0.00
15,700.00	89.70	179.47	11,019.40	-4,468.93	-386.77	4,465.16	0.00	0.00	0.00
15,800.00	89.70	179.47	11,019.92	-4,568.92	-385.85	4,565.16	0.00	0.00	0.00
15,900.00	89.70	179.47	11,020.43	-4,668.92	-384.92	4,665.16	0.00	0.00	0.00
15,928.49	89.70	179.47	11,020.58	-4,697.40	-384.66	4,693.64	0.00	0.00	0.00

[Battle34SB#15H]LTP/BHL



Marathon Oil
Lea County, NM
Battle 34
SB #15H
Prelim Plan A
GL: 3695' + 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 @ 3721.50usft (GL: 3695' + KB: 26.5' (H&P480))

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.00	0.00	525062.61	739708.64	32.441113	-103.556334	

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	1500.00	0.00	0.00	1500.00	0.00	0.00	0.00	0.00
3	2000.00	10.00	322.43	1997.47	34.50	-26.54	2.00	-34.74
4	4615.61	10.00	322.43	4573.33	394.50	-303.46	0.00	-397.29
5	5115.61	0.00	0.00	5070.80	429.00	-330.00	2.00	-432.03
6	10468.81	0.00	0.00	10424.00	429.00	-330.00	0.00	-432.03
7	11365.81	89.70	187.75	10996.95	-135.75	-406.86	10.00	131.98
8	11641.76	89.70	179.47	10998.39	-410.92	-424.22	3.00	406.98
9	15928.49	89.70	179.47	11020.58	-4697.40	-384.66	0.00	4693.64

WELLBORE TARGET DETAILS (MAP CO-ORDINATES)

Name	TVD	+N/-S	+E/-W	Northing	Easting
[Battle34SB#15H]FTP	0.00	379.06	-431.18	525441.67	739277.46
[Battle34SB#15H]KOP	10424.00	429.00	-330.00	525491.61	739378.64
[Battle34SB#15H]LTP/BHL	11020.58	-4697.40	-384.66	520365.21	739323.98



PRODIRECTIONAL

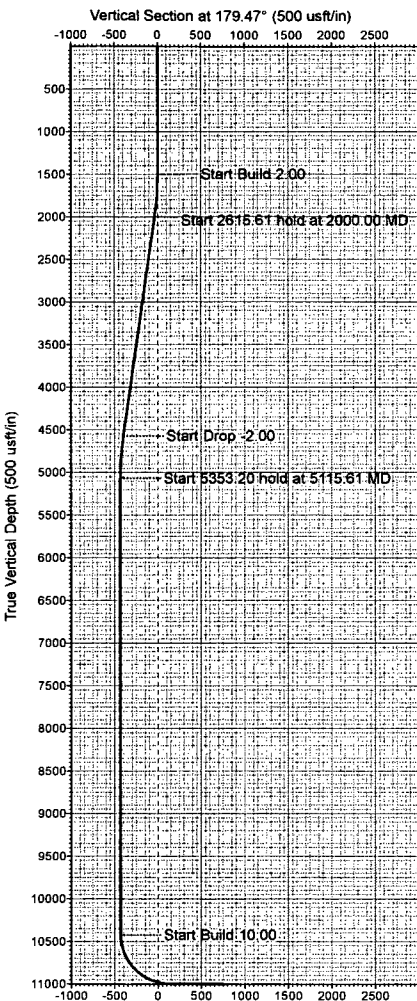


Azimuths to Grid North
True North: -0.42°
Magnetic North: 6.30°
Magnetic Field
Strength: 48128.7nT
Dip Angle: 60.28°
Date: 10/23/2018
Model: HDGM

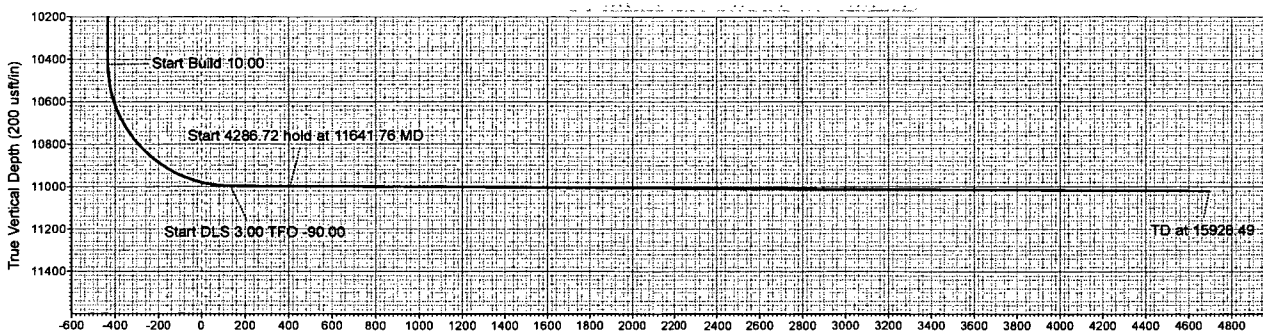
Azimuth Corrections

Total Magnetic Corr. (M to G): 6.30°

Declination (M to T): 6.72° East



Target Line: 10996' TVD @ 0° VS: 89.7° INC



36" x 48"

Vertical Section at 179.47° (200 usft/in)

