

Company:	Marathon Oil	Local Co-ordinate Reference:	Well AV #17H
Project:	Lea County, NM	TVD Reference:	Well @ 3721.00usft (GL: 3696' + KB: 25' (H&P594))
Site:	Battle 34	MD Reference:	Well @ 3721.00usft (GL: 3696' + KB: 25' (H&P594))
Well:	AV #17H	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
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	AV #17H		
Well Position	+N/-S	0.00 usft	Northing: 525,065.53 usft
	+E/-W	0.00 usft	Easting: 739,768.57 usft
Position Uncertainty	0.00 usft	Wellhead Elevation:	usft
		Latitude:	32.441120
		Longitude:	-103.556140
		Ground Level:	3,696.00 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 C		
Audit Notes:			
Version:	Phase:	PLAN	Tie On Depth: 0.00
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)
	0.00	0.00	0.00
			Direction (°)
			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	14,476.66	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 AV #17H
Project:	Lea County, NM	TVD Reference:	Well @ 3721.00usft (GL: 3696' + KB: 25' (H&P594))
Site:	Battle 34	MD Reference:	Well @ 3721.00usft (GL: 3696' + KB: 25' (H&P594))
Well:	AV #17H	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	AV #17H			
Well Position	+N/-S	0.00 usft	Northing: 525,065.53 usft	Latitude: 32.441120
	+E/-W	0.00 usft	Easting: 739,768.57 usft	Longitude: -103.556140
Position Uncertainty	0.00 usft	Wellhead Elevation:	usft	Ground Level: 3,696.00 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	14,476.66	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	

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Site:	Battle 34	MD Reference:	Well @ 3721.00usft (GL: 3696' + KB: 25' (H&P594))
Well:	AV #17H	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	0.00	0.00	1,300.00	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
1,500.00	0.00	0.00	1,500.00	0.00	0.00	0.00	0.00	0.00	0.00
1,600.00	2.00	70.16	1,599.98	0.59	1.64	-0.58	2.00	2.00	0.00
1,700.00	4.00	70.16	1,699.84	2.37	6.56	-2.31	2.00	2.00	0.00
1,800.00	6.00	70.16	1,799.45	5.33	14.76	-5.19	2.00	2.00	0.00
1,900.00	8.00	70.16	1,898.70	9.46	26.23	-9.23	2.00	2.00	0.00
2,000.00	10.00	70.16	1,997.47	14.77	40.94	-14.40	2.00	2.00	0.00
2,100.00	10.00	70.16	2,095.95	20.66	57.27	-20.15	0.00	0.00	0.00
2,200.00	10.00	70.16	2,194.43	26.55	73.61	-25.90	0.00	0.00	0.00
2,300.00	10.00	70.16	2,292.91	32.45	89.94	-31.64	0.00	0.00	0.00
2,400.00	10.00	70.16	2,391.39	38.34	106.28	-37.39	0.00	0.00	0.00
2,500.00	10.00	70.16	2,489.87	44.23	122.61	-43.14	0.00	0.00	0.00
2,600.00	10.00	70.16	2,588.35	50.12	138.95	-48.89	0.00	0.00	0.00
2,700.00	10.00	70.16	2,686.83	56.02	155.28	-54.63	0.00	0.00	0.00
2,800.00	10.00	70.16	2,785.31	61.91	171.62	-60.38	0.00	0.00	0.00
2,900.00	10.00	70.16	2,883.79	67.80	187.95	-66.13	0.00	0.00	0.00
3,000.00	10.00	70.16	2,982.27	73.70	204.28	-71.87	0.00	0.00	0.00
3,100.00	10.00	70.16	3,080.75	79.59	220.62	-77.62	0.00	0.00	0.00
3,200.00	10.00	70.16	3,179.23	85.48	236.95	-83.37	0.00	0.00	0.00
3,300.00	10.00	70.16	3,277.72	91.37	253.29	-89.11	0.00	0.00	0.00
3,400.00	10.00	70.16	3,376.20	97.27	269.62	-94.86	0.00	0.00	0.00
3,500.00	10.00	70.16	3,474.68	103.16	285.96	-100.61	0.00	0.00	0.00
3,600.00	10.00	70.16	3,573.16	109.05	302.29	-106.36	0.00	0.00	0.00
3,700.00	10.00	70.16	3,671.64	114.94	318.63	-112.10	0.00	0.00	0.00
3,800.00	10.00	70.16	3,770.12	120.84	334.96	-117.85	0.00	0.00	0.00
3,900.00	10.00	70.16	3,868.60	126.73	351.29	-123.60	0.00	0.00	0.00
4,000.00	10.00	70.16	3,967.08	132.62	367.63	-129.34	0.00	0.00	0.00
4,100.00	10.00	70.16	4,065.56	138.51	383.96	-135.09	0.00	0.00	0.00
4,200.00	10.00	70.16	4,164.04	144.41	400.30	-140.84	0.00	0.00	0.00
4,300.00	10.00	70.16	4,262.52	150.30	416.63	-146.58	0.00	0.00	0.00
4,400.00	10.00	70.16	4,361.00	156.19	432.97	-152.33	0.00	0.00	0.00
4,500.00	10.00	70.16	4,459.48	162.08	449.30	-158.08	0.00	0.00	0.00
4,600.00	10.00	70.16	4,557.97	167.98	465.64	-163.83	0.00	0.00	0.00
4,700.00	10.00	70.16	4,656.45	173.87	481.97	-169.57	0.00	0.00	0.00

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Well:	AV #17H	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)
4,800.00	10.00	70.16	4,754.93	179.76	498.30	-175.32	0.00	0.00	0.00
4,900.00	10.00	70.16	4,853.41	185.65	514.64	-181.07	0.00	0.00	0.00
5,000.00	10.00	70.16	4,951.89	191.55	530.97	-186.81	0.00	0.00	0.00
5,100.00	10.00	70.16	5,050.37	197.44	547.31	-192.56	0.00	0.00	0.00
5,200.00	10.00	70.16	5,148.85	203.33	563.64	-198.31	0.00	0.00	0.00
5,300.00	10.00	70.16	5,247.33	209.23	579.98	-204.05	0.00	0.00	0.00
5,400.00	10.00	70.16	5,345.81	215.12	596.31	-209.80	0.00	0.00	0.00
5,500.00	10.00	70.16	5,444.29	221.01	612.65	-215.55	0.00	0.00	0.00
5,600.00	10.00	70.16	5,542.77	226.90	628.98	-221.30	0.00	0.00	0.00
5,700.00	10.00	70.16	5,641.25	232.80	645.31	-227.04	0.00	0.00	0.00
5,800.00	10.00	70.16	5,739.73	238.69	661.65	-232.79	0.00	0.00	0.00
5,900.00	10.00	70.16	5,838.22	244.58	677.98	-238.54	0.00	0.00	0.00
6,000.00	10.00	70.16	5,936.70	250.47	694.32	-244.28	0.00	0.00	0.00
6,100.00	10.00	70.16	6,035.18	256.37	710.65	-250.03	0.00	0.00	0.00
6,200.00	10.00	70.16	6,133.66	262.26	726.99	-255.78	0.00	0.00	0.00
6,300.00	10.00	70.16	6,232.14	268.15	743.32	-261.52	0.00	0.00	0.00
6,400.00	10.00	70.16	6,330.62	274.04	759.66	-267.27	0.00	0.00	0.00
6,500.00	10.00	70.16	6,429.10	279.94	775.99	-273.02	0.00	0.00	0.00
6,600.00	10.00	70.16	6,527.58	285.83	792.32	-278.77	0.00	0.00	0.00
6,700.00	10.00	70.16	6,626.06	291.72	808.66	-284.51	0.00	0.00	0.00
6,800.00	10.00	70.16	6,724.54	297.61	824.99	-290.26	0.00	0.00	0.00
6,900.00	10.00	70.16	6,823.02	303.51	841.33	-296.01	0.00	0.00	0.00
7,000.00	10.00	70.16	6,921.50	309.40	857.66	-301.75	0.00	0.00	0.00
7,100.00	10.00	70.16	7,019.99	315.29	874.00	-307.50	0.00	0.00	0.00
7,200.00	10.00	70.16	7,118.47	321.18	890.33	-313.25	0.00	0.00	0.00
7,300.00	10.00	70.16	7,216.95	327.08	906.67	-318.99	0.00	0.00	0.00
7,400.00	10.00	70.16	7,315.43	332.97	923.00	-324.74	0.00	0.00	0.00
7,500.00	10.00	70.16	7,413.91	338.86	939.33	-330.49	0.00	0.00	0.00
7,600.00	10.00	70.16	7,512.39	344.76	955.67	-336.24	0.00	0.00	0.00
7,700.00	10.00	70.16	7,610.87	350.65	972.00	-341.98	0.00	0.00	0.00
7,800.00	10.00	70.16	7,709.35	356.54	988.34	-347.73	0.00	0.00	0.00
7,900.00	10.00	70.16	7,807.83	362.43	1,004.67	-353.48	0.00	0.00	0.00
8,000.00	10.00	70.16	7,906.31	368.33	1,021.01	-359.22	0.00	0.00	0.00
8,049.30	10.00	70.16	7,954.87	371.23	1,029.06	-362.06	0.00	0.00	0.00
8,100.00	8.99	70.16	8,004.87	374.07	1,036.93	-364.82	2.00	-2.00	0.00
8,200.00	6.99	70.16	8,103.89	378.78	1,049.99	-369.42	2.00	-2.00	0.00
8,300.00	4.99	70.16	8,203.34	382.32	1,059.80	-372.87	2.00	-2.00	0.00
8,400.00	2.99	70.16	8,303.10	384.68	1,066.34	-375.17	2.00	-2.00	0.00
8,500.00	0.99	70.16	8,403.03	385.86	1,069.60	-376.32	2.00	-2.00	0.00
8,549.30	0.00	0.00	8,452.33	386.00	1,070.00	-376.46	2.00	-2.00	0.00
8,600.00	0.00	0.00	8,503.03	386.00	1,070.00	-376.46	0.00	0.00	0.00
8,700.00	0.00	0.00	8,603.03	386.00	1,070.00	-376.46	0.00	0.00	0.00

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Project:	Lea County, NM	TVD Reference:	Well @ 3721.00usft (GL: 3696' + KB: 25' (H&P594))
Site:	Battle 34	MD Reference:	Well @ 3721.00usft (GL: 3696' + KB: 25' (H&P594))
Well:	AV #17H	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)
8,800.00	0.00	0.00	8,703.03	386.00	1,070.00	-376.46	0.00	0.00	0.00
8,900.00	0.00	0.00	8,803.03	386.00	1,070.00	-376.46	0.00	0.00	0.00
9,000.00	0.00	0.00	8,903.03	386.00	1,070.00	-376.46	0.00	0.00	0.00
9,064.97	0.00	0.00	8,968.00	386.00	1,070.00	-376.46	0.00	0.00	0.00
[Battle34AV#17H]KOP									
9,100.00	3.50	171.95	9,003.01	384.94	1,070.15	-375.40	10.00	10.00	0.00
9,150.00	8.50	171.95	9,052.72	379.76	1,070.88	-370.22	10.00	10.00	0.00
9,200.00	13.50	171.95	9,101.78	370.32	1,072.22	-360.76	10.00	10.00	0.00
9,250.00	18.50	171.95	9,149.83	356.67	1,074.15	-347.10	10.00	10.00	0.00
9,300.00	23.50	171.95	9,196.49	338.94	1,076.66	-329.34	10.00	10.00	0.00
9,350.00	28.50	171.95	9,241.42	317.24	1,079.73	-307.61	10.00	10.00	0.00
9,400.00	33.50	171.95	9,284.26	291.75	1,083.33	-282.09	10.00	10.00	0.00
9,450.00	38.50	171.95	9,324.70	262.65	1,087.45	-252.96	10.00	10.00	0.00
9,500.00	43.50	171.95	9,362.42	230.18	1,092.04	-220.45	10.00	10.00	0.00
9,550.00	48.50	171.95	9,397.14	194.58	1,097.07	-184.81	10.00	10.00	0.00
9,600.00	53.50	171.95	9,428.59	156.12	1,102.51	-146.30	10.00	10.00	0.00
9,650.00	58.50	171.95	9,456.54	115.08	1,108.32	-105.21	10.00	10.00	0.00
9,700.00	63.50	171.95	9,480.77	71.80	1,114.44	-61.87	10.00	10.00	0.00
9,750.00	68.50	171.95	9,501.10	26.58	1,120.83	-16.60	10.00	10.00	0.00
9,800.00	73.50	171.95	9,517.37	-20.21	1,127.45	30.25	10.00	10.00	0.00
9,850.00	78.50	171.95	9,529.46	-68.24	1,134.24	78.33	10.00	10.00	0.00
9,900.00	83.50	171.95	9,537.28	-117.12	1,141.16	127.27	10.00	10.00	0.00
9,950.00	88.50	171.95	9,540.76	-166.49	1,148.14	176.70	10.00	10.00	0.00
9,961.97	89.70	171.95	9,540.95	-178.34	1,149.82	188.57	10.00	10.00	0.00
10,000.00	89.70	173.09	9,541.15	-216.05	1,154.77	226.32	3.00	0.00	3.00
10,100.00	89.70	176.09	9,541.67	-315.59	1,164.19	325.94	3.00	0.00	3.00
10,200.00	89.70	179.09	9,542.20	-415.49	1,168.39	425.87	3.00	0.00	3.00
10,213.18	89.70	179.49	9,542.27	-428.67	1,168.56	439.05	3.00	0.00	3.00
10,300.00	89.70	179.49	9,542.72	-515.48	1,169.34	525.87	0.00	0.00	0.00
10,400.00	89.70	179.49	9,543.25	-615.47	1,170.23	625.87	0.00	0.00	0.00
10,500.00	89.70	179.49	9,543.77	-715.47	1,171.13	725.87	0.00	0.00	0.00
10,600.00	89.70	179.49	9,544.30	-815.46	1,172.02	825.86	0.00	0.00	0.00
10,700.00	89.70	179.49	9,544.82	-915.46	1,172.92	925.86	0.00	0.00	0.00
10,800.00	89.70	179.49	9,545.34	-1,015.45	1,173.82	1,025.86	0.00	0.00	0.00
10,900.00	89.70	179.49	9,545.87	-1,115.45	1,174.71	1,125.86	0.00	0.00	0.00
11,000.00	89.70	179.49	9,546.39	-1,215.44	1,175.61	1,225.86	0.00	0.00	0.00
11,100.00	89.70	179.49	9,546.92	-1,315.44	1,176.51	1,325.86	0.00	0.00	0.00
11,200.00	89.70	179.49	9,547.44	-1,415.43	1,177.40	1,425.86	0.00	0.00	0.00
11,300.00	89.70	179.49	9,547.97	-1,515.43	1,178.30	1,525.85	0.00	0.00	0.00
11,400.00	89.70	179.49	9,548.49	-1,615.42	1,179.19	1,625.85	0.00	0.00	0.00
11,500.00	89.70	179.49	9,549.01	-1,715.42	1,180.09	1,725.85	0.00	0.00	0.00
11,600.00	89.70	179.49	9,549.54	-1,815.41	1,180.99	1,825.85	0.00	0.00	0.00

Company:	Marathon Oil	Local Co-ordinate Reference:	Well AV #17H
Project:	Lea County, NM	TVD Reference:	Well @ 3721.00usft (GL: 3696' + KB: 25' (H&P594))
Site:	Battle 34	MD Reference:	Well @ 3721.00usft (GL: 3696' + KB: 25' (H&P594))
Well:	AV #17H	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)
11,700.00	89.70	179.49	9,550.06	-1,915.40	1,181.88	1,925.85	0.00	0.00	0.00
11,800.00	89.70	179.49	9,550.59	-2,015.40	1,182.78	2,025.85	0.00	0.00	0.00
11,900.00	89.70	179.49	9,551.11	-2,115.39	1,183.68	2,125.85	0.00	0.00	0.00
12,000.00	89.70	179.49	9,551.64	-2,215.39	1,184.57	2,225.84	0.00	0.00	0.00
12,100.00	89.70	179.49	9,552.16	-2,315.38	1,185.47	2,325.84	0.00	0.00	0.00
12,200.00	89.70	179.49	9,552.68	-2,415.38	1,186.36	2,425.84	0.00	0.00	0.00
12,300.00	89.70	179.49	9,553.21	-2,515.37	1,187.26	2,525.84	0.00	0.00	0.00
12,400.00	89.70	179.49	9,553.73	-2,615.37	1,188.16	2,625.84	0.00	0.00	0.00
12,500.00	89.70	179.49	9,554.26	-2,715.36	1,189.05	2,725.84	0.00	0.00	0.00
12,600.00	89.70	179.49	9,554.78	-2,815.36	1,189.95	2,825.84	0.00	0.00	0.00
12,700.00	89.70	179.49	9,555.31	-2,915.35	1,190.85	2,925.84	0.00	0.00	0.00
12,800.00	89.70	179.49	9,555.83	-3,015.35	1,191.74	3,025.83	0.00	0.00	0.00
12,900.00	89.70	179.49	9,556.35	-3,115.34	1,192.64	3,125.83	0.00	0.00	0.00
13,000.00	89.70	179.49	9,556.88	-3,215.33	1,193.53	3,225.83	0.00	0.00	0.00
13,100.00	89.70	179.49	9,557.40	-3,315.33	1,194.43	3,325.83	0.00	0.00	0.00
13,200.00	89.70	179.49	9,557.93	-3,415.32	1,195.33	3,425.83	0.00	0.00	0.00
13,300.00	89.70	179.49	9,558.45	-3,515.32	1,196.22	3,525.83	0.00	0.00	0.00
13,400.00	89.70	179.49	9,558.98	-3,615.31	1,197.12	3,625.83	0.00	0.00	0.00
13,500.00	89.70	179.49	9,559.50	-3,715.31	1,198.02	3,725.82	0.00	0.00	0.00
13,600.00	89.70	179.49	9,560.02	-3,815.30	1,198.91	3,825.82	0.00	0.00	0.00
13,700.00	89.70	179.49	9,560.55	-3,915.30	1,199.81	3,925.82	0.00	0.00	0.00
13,800.00	89.70	179.49	9,561.07	-4,015.29	1,200.70	4,025.82	0.00	0.00	0.00
13,900.00	89.70	179.49	9,561.60	-4,115.29	1,201.60	4,125.82	0.00	0.00	0.00
14,000.00	89.70	179.49	9,562.12	-4,215.28	1,202.50	4,225.82	0.00	0.00	0.00
14,100.00	89.70	179.49	9,562.65	-4,315.28	1,203.39	4,325.82	0.00	0.00	0.00
14,200.00	89.70	179.49	9,563.17	-4,415.27	1,204.29	4,425.81	0.00	0.00	0.00
14,300.00	89.70	179.49	9,563.69	-4,515.26	1,205.19	4,525.81	0.00	0.00	0.00
14,400.00	89.70	179.49	9,564.22	-4,615.26	1,206.08	4,625.81	0.00	0.00	0.00
14,476.74	89.70	179.49	9,564.62	-4,691.99	1,206.77	4,702.55	0.00	0.00	0.00

[Battle34AV#17H]LTP/BHL

Design Targets

Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
[Battle34AV#17H]KOP - plan hits target center - Point	0.00	0.01	8,968.00	386.00	1,070.00	525,451.53	740,838.57	32.442160	-103.552663
[Battle34AV#17H]LTP/BI - plan hits target center - Point	0.00	0.00	9,564.62	-4,691.99	1,206.77	520,373.54	740,975.34	32.428199	-103.552340

Company:	Marathon Oil	Local Co-ordinate Reference:	Well AV #17H
Project:	Lea County, NM	TVD Reference:	Well @ 3721.00usft (GL: 3696' + KB: 25' (H&P594))
Site:	Battle 34	MD Reference:	Well @ 3721.00usft (GL: 3696' + KB: 25' (H&P594))
Well:	AV #17H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	Prelim Plan C	Database:	WellPlanner1

Checked By: _____	Approved By: _____	Date: _____
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Marathon Oil
Lea County, NM
Battle 34
AV #17H
Prelim Plan C
GL: 3696' + 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 @ 3721.00usft (GL: 3696' + KB: 25' (H&P594))

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Spot
0.00	0.00	525065.53	739768.57	32.441120	-103.556139	

SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dieg	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	70.16	1997.47	14.77	40.94	2.00	-14.40
4	8049.30	10.00	70.16	7954.87	371.23	1029.06	0.00	-362.06
5	8549.30	0.00	0.00	8452.33	386.00	1070.00	2.00	-376.46
6	9064.97	0.00	0.00	8968.00	386.00	1070.00	0.00	-376.46
7	9961.97	89.70	171.95	9540.95	-178.34	1149.82	10.00	188.57
8	10213.18	89.70	179.49	9542.27	-428.67	1168.56	3.00	439.05
9	14476.74	89.70	179.49	9564.62	-4691.99	1206.77	0.00	4702.55

WELLBORE TARGET DETAILS (MAP CO-ORDINATES)

Name	TVD	+N/-S	+E/-W	Northing	Easting
[Battle34AV#17H]KOP	8968.00	386.00	1070.00	525451.53	740838.57
[Battle34AV#17H]LTP/BHL	9564.62	-4691.99	1206.77	520373.54	740975.34



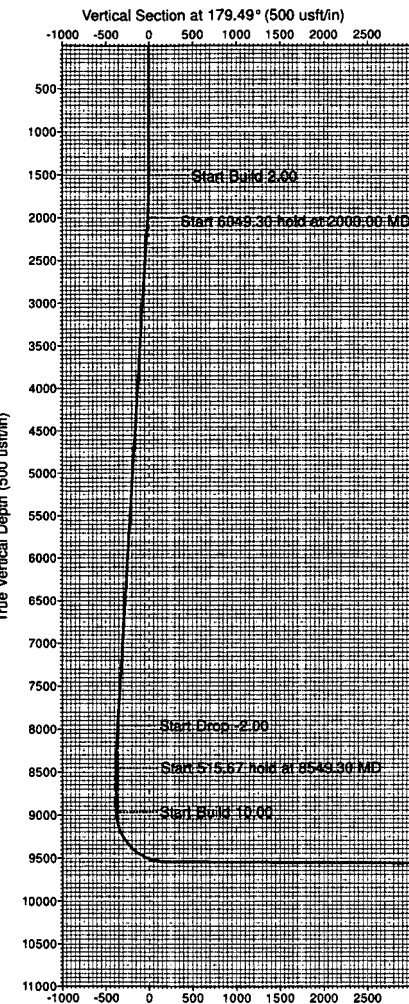
Azimuths to Grid North
 True North: -0.42°
 Magnetic North: 6.30°

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: 9540' TVD @ 0' VS: 89.7° INC

