

Company:	Marathon Oil	Local Co-ordinate Reference:	Well SB No. 3H
Project:	Eddy County, NM	TVD Reference:	Well @ 3095.00usft (GL: 3068' + KB: 27' (PD582))
Site:	Hades 2	MD Reference:	Well @ 3095.00usft (GL: 3068' + KB: 27' (PD582))
Well:	SB No. 3H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	Prelim Plan A	Database:	WellPlanner1

Project:	Eddy 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		Hades 2			
Site Position:		Northing:	487,686.32 usft	Latitude:	32.340452
From:	Map	Easting:	586,821.45 usft	Longitude:	-104.052216
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "	Grid Convergence:	0.15 °

Well		SB No. 3H				
Well Position	+N/-S	0.00 usft	Northing:	487,686.32 usft	Latitude:	32.340452
	+E/-W	0.00 usft	Easting:	586,821.45 usft	Longitude:	-104.052216
Position Uncertainty		0.00 usft	Wellhead Elevation:	usft	Ground Level:	3,068.00 usft

Wellbore		OH			
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	HDGM	6/18/2019	7.12	60.07	47,918.30

Design		Prelim Plan A		
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	180.37

Survey Tool Program		Date	6/18/2019		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
0.00	13,317.64	Prelim Plan A (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
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

Company:	Marathon Oil	Local Co-ordinate Reference:	Well SB No. 3H
Project:	Eddy County, NM	TVD Reference:	Well @ 3095.00usft (GL: 3068' + KB: 27' (PD582))
Site:	Hades 2	MD Reference:	Well @ 3095.00usft (GL: 3068' + KB: 27' (PD582))
Well:	SB No. 3H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	Prelim Plan A	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)
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	9.35	1,599.98	1.72	0.28	-1.72	2.00	2.00	0.00
1,700.00	4.00	9.35	1,699.84	6.89	1.13	-6.89	2.00	2.00	0.00
1,800.00	6.00	9.35	1,799.45	15.49	2.55	-15.50	2.00	2.00	0.00
1,900.00	8.00	9.35	1,898.70	27.51	4.53	-27.54	2.00	2.00	0.00
2,000.00	10.00	9.35	1,997.47	42.94	7.07	-42.99	2.00	2.00	0.00
2,100.00	10.00	9.35	2,095.95	60.08	9.89	-60.14	0.00	0.00	0.00
2,200.00	10.00	9.35	2,194.43	77.21	12.71	-77.29	0.00	0.00	0.00
2,300.00	10.00	9.35	2,292.91	94.35	15.53	-94.45	0.00	0.00	0.00
2,400.00	10.00	9.35	2,391.39	111.48	18.35	-111.60	0.00	0.00	0.00
2,500.00	10.00	9.35	2,489.87	128.62	21.17	-128.75	0.00	0.00	0.00
2,600.00	10.00	9.35	2,588.35	145.75	23.99	-145.90	0.00	0.00	0.00
2,700.00	10.00	9.35	2,686.83	162.88	26.81	-163.05	0.00	0.00	0.00
2,800.00	10.00	9.35	2,785.31	180.02	29.63	-180.21	0.00	0.00	0.00
2,900.00	10.00	9.35	2,883.79	197.15	32.45	-197.36	0.00	0.00	0.00
3,000.00	10.00	9.35	2,982.27	214.29	35.27	-214.51	0.00	0.00	0.00
3,100.00	10.00	9.35	3,080.75	231.42	38.09	-231.66	0.00	0.00	0.00
3,200.00	10.00	9.35	3,179.23	248.56	40.92	-248.81	0.00	0.00	0.00
3,300.00	10.00	9.35	3,277.72	265.69	43.74	-265.97	0.00	0.00	0.00
3,400.00	10.00	9.35	3,376.20	282.82	46.56	-283.12	0.00	0.00	0.00
3,500.00	10.00	9.35	3,474.68	299.96	49.38	-300.27	0.00	0.00	0.00
3,600.00	10.00	9.35	3,573.16	317.09	52.20	-317.42	0.00	0.00	0.00
3,700.00	10.00	9.35	3,671.64	334.23	55.02	-334.57	0.00	0.00	0.00
3,800.00	10.00	9.35	3,770.12	351.36	57.84	-351.73	0.00	0.00	0.00
3,900.00	10.00	9.35	3,868.60	368.49	60.66	-368.88	0.00	0.00	0.00
3,956.09	10.00	9.35	3,923.84	378.11	62.24	-378.50	0.00	0.00	0.00
4,000.00	9.12	9.35	3,967.14	385.30	63.43	-385.70	2.00	-2.00	0.00
4,100.00	7.12	9.35	4,066.13	399.24	65.72	-399.66	2.00	-2.00	0.00
4,200.00	5.12	9.35	4,165.55	409.76	67.45	-410.19	2.00	-2.00	0.00
4,300.00	3.12	9.35	4,265.29	416.86	68.62	-417.29	2.00	-2.00	0.00
4,400.00	1.12	9.35	4,365.22	420.51	69.22	-420.95	2.00	-2.00	0.00
4,456.09	0.00	0.00	4,421.30	421.05	69.31	-421.49	2.00	-2.00	0.00
4,500.00	0.00	0.00	4,465.21	421.05	69.31	-421.49	0.00	0.00	0.00
4,600.00	0.00	0.00	4,565.21	421.05	69.31	-421.49	0.00	0.00	0.00
4,700.00	0.00	0.00	4,665.21	421.05	69.31	-421.49	0.00	0.00	0.00
4,800.00	0.00	0.00	4,765.21	421.05	69.31	-421.49	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)	
4,900.00	0.00	0.00	4,865.21	421.05	69.31	-421.49	0.00	0.00	0.00	
5,000.00	0.00	0.00	4,965.21	421.05	69.31	-421.49	0.00	0.00	0.00	
5,100.00	0.00	0.00	5,065.21	421.05	69.31	-421.49	0.00	0.00	0.00	
5,200.00	0.00	0.00	5,165.21	421.05	69.31	-421.49	0.00	0.00	0.00	
5,300.00	0.00	0.00	5,265.21	421.05	69.31	-421.49	0.00	0.00	0.00	
5,400.00	0.00	0.00	5,365.21	421.05	69.31	-421.49	0.00	0.00	0.00	
5,500.00	0.00	0.00	5,465.21	421.05	69.31	-421.49	0.00	0.00	0.00	
5,600.00	0.00	0.00	5,565.21	421.05	69.31	-421.49	0.00	0.00	0.00	
5,700.00	0.00	0.00	5,665.21	421.05	69.31	-421.49	0.00	0.00	0.00	
5,800.00	0.00	0.00	5,765.21	421.05	69.31	-421.49	0.00	0.00	0.00	
5,900.00	0.00	0.00	5,865.21	421.05	69.31	-421.49	0.00	0.00	0.00	
6,000.00	0.00	0.00	5,965.21	421.05	69.31	-421.49	0.00	0.00	0.00	
6,100.00	0.00	0.00	6,065.21	421.05	69.31	-421.49	0.00	0.00	0.00	
6,200.00	0.00	0.00	6,165.21	421.05	69.31	-421.49	0.00	0.00	0.00	
6,300.00	0.00	0.00	6,265.21	421.05	69.31	-421.49	0.00	0.00	0.00	
6,400.00	0.00	0.00	6,365.21	421.05	69.31	-421.49	0.00	0.00	0.00	
6,500.00	0.00	0.00	6,465.21	421.05	69.31	-421.49	0.00	0.00	0.00	
6,600.00	0.00	0.00	6,565.21	421.05	69.31	-421.49	0.00	0.00	0.00	
6,700.00	0.00	0.00	6,665.21	421.05	69.31	-421.49	0.00	0.00	0.00	
6,800.00	0.00	0.00	6,765.21	421.05	69.31	-421.49	0.00	0.00	0.00	
6,900.00	0.00	0.00	6,865.21	421.05	69.31	-421.49	0.00	0.00	0.00	
7,000.00	0.00	0.00	6,965.21	421.05	69.31	-421.49	0.00	0.00	0.00	
7,100.00	0.00	0.00	7,065.21	421.05	69.31	-421.49	0.00	0.00	0.00	
7,200.00	0.00	0.00	7,165.21	421.05	69.31	-421.49	0.00	0.00	0.00	
7,300.00	0.00	0.00	7,265.21	421.05	69.31	-421.49	0.00	0.00	0.00	
7,400.00	0.00	0.00	7,365.21	421.05	69.31	-421.49	0.00	0.00	0.00	
7,500.00	0.00	0.00	7,465.21	421.05	69.31	-421.49	0.00	0.00	0.00	
7,600.00	0.00	0.00	7,565.21	421.05	69.31	-421.49	0.00	0.00	0.00	
7,700.00	0.00	0.00	7,665.21	421.05	69.31	-421.49	0.00	0.00	0.00	
7,800.00	0.00	0.00	7,765.21	421.05	69.31	-421.49	0.00	0.00	0.00	
7,847.79	0.00	0.00	7,813.00	421.05	69.31	-421.49	0.00	0.00	0.00	
[HadesSB#3H]FTP										
7,850.00	0.22	180.37	7,815.21	421.05	69.31	-421.48	10.00	10.00	0.00	
7,900.00	5.22	180.37	7,865.14	418.67	69.29	-419.11	10.00	10.00	0.00	
7,950.00	10.22	180.37	7,914.67	411.96	69.25	-412.40	10.00	10.00	0.00	
8,000.00	15.22	180.37	7,963.43	400.95	69.18	-401.39	10.00	10.00	0.00	
8,050.00	20.22	180.37	8,011.04	385.74	69.08	-386.17	10.00	10.00	0.00	
8,100.00	25.22	180.37	8,057.15	366.43	68.96	-366.87	10.00	10.00	0.00	
8,150.00	30.22	180.37	8,101.39	343.18	68.81	-343.62	10.00	10.00	0.00	
8,200.00	35.22	180.37	8,143.45	316.16	68.64	-316.60	10.00	10.00	0.00	
8,250.00	40.22	180.37	8,182.98	285.58	68.44	-286.02	10.00	10.00	0.00	
8,300.00	45.22	180.37	8,219.70	251.67	68.22	-252.11	10.00	10.00	0.00	

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Well:	SB No. 3H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	Prelim Plan A	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)	
8,350.00	50.22	180.37	8,253.33	214.69	67.99	-215.12	10.00	10.00	0.00	
8,400.00	55.22	180.37	8,283.61	174.92	67.73	-175.35	10.00	10.00	0.00	
8,450.00	60.22	180.37	8,310.30	132.66	67.46	-133.09	10.00	10.00	0.00	
8,500.00	65.22	180.37	8,333.21	88.23	67.18	-88.67	10.00	10.00	0.00	
8,550.00	70.22	180.37	8,352.16	41.98	66.88	-42.41	10.00	10.00	0.00	
8,600.00	75.22	180.37	8,367.00	-5.75	66.57	5.32	10.00	10.00	0.00	
8,650.00	80.22	180.37	8,377.63	-54.59	66.26	54.16	10.00	10.00	0.00	
8,700.00	85.22	180.37	8,383.97	-104.17	65.94	103.74	10.00	10.00	0.00	
8,747.78	90.00	180.37	8,385.96	-151.89	65.64	151.46	10.00	10.00	0.00	
8,800.00	90.00	180.37	8,385.96	-204.11	65.30	203.68	0.00	0.00	0.00	
8,900.00	90.00	180.37	8,385.96	-304.11	64.66	303.68	0.00	0.00	0.00	
9,000.00	90.00	180.37	8,385.96	-404.10	64.02	403.68	0.00	0.00	0.00	
9,100.00	90.00	180.37	8,385.96	-504.10	63.38	503.68	0.00	0.00	0.00	
9,200.00	90.00	180.37	8,385.96	-604.10	62.74	603.68	0.00	0.00	0.00	
9,300.00	90.00	180.37	8,385.96	-704.10	62.10	703.68	0.00	0.00	0.00	
9,400.00	90.00	180.37	8,385.96	-804.10	61.45	803.68	0.00	0.00	0.00	
9,500.00	90.00	180.37	8,385.96	-904.09	60.81	903.68	0.00	0.00	0.00	
9,600.00	90.00	180.37	8,385.97	-1,004.09	60.17	1,003.68	0.00	0.00	0.00	
9,700.00	90.00	180.37	8,385.97	-1,104.09	59.53	1,103.68	0.00	0.00	0.00	
9,800.00	90.00	180.37	8,385.97	-1,204.09	58.89	1,203.68	0.00	0.00	0.00	
9,900.00	90.00	180.37	8,385.97	-1,304.09	58.25	1,303.68	0.00	0.00	0.00	
10,000.00	90.00	180.37	8,385.97	-1,404.08	57.61	1,403.68	0.00	0.00	0.00	
10,100.00	90.00	180.37	8,385.97	-1,504.08	56.97	1,503.68	0.00	0.00	0.00	
10,200.00	90.00	180.37	8,385.97	-1,604.08	56.33	1,603.68	0.00	0.00	0.00	
10,300.00	90.00	180.37	8,385.97	-1,704.08	55.68	1,703.68	0.00	0.00	0.00	
10,400.00	90.00	180.37	8,385.97	-1,804.08	55.04	1,803.68	0.00	0.00	0.00	
10,500.00	90.00	180.37	8,385.97	-1,904.07	54.40	1,903.68	0.00	0.00	0.00	
10,600.00	90.00	180.37	8,385.98	-2,004.07	53.76	2,003.68	0.00	0.00	0.00	
10,700.00	90.00	180.37	8,385.98	-2,104.07	53.12	2,103.68	0.00	0.00	0.00	
10,800.00	90.00	180.37	8,385.98	-2,204.07	52.48	2,203.68	0.00	0.00	0.00	
10,900.00	90.00	180.37	8,385.98	-2,304.07	51.84	2,303.68	0.00	0.00	0.00	
11,000.00	90.00	180.37	8,385.98	-2,404.06	51.20	2,403.68	0.00	0.00	0.00	
11,100.00	90.00	180.37	8,385.98	-2,504.06	50.56	2,503.68	0.00	0.00	0.00	
11,200.00	90.00	180.37	8,385.98	-2,604.06	49.91	2,603.68	0.00	0.00	0.00	
11,300.00	90.00	180.37	8,385.98	-2,704.06	49.27	2,703.68	0.00	0.00	0.00	
11,400.00	90.00	180.37	8,385.98	-2,804.05	48.63	2,803.68	0.00	0.00	0.00	
11,500.00	90.00	180.37	8,385.98	-2,904.05	47.99	2,903.68	0.00	0.00	0.00	
11,600.00	90.00	180.37	8,385.98	-3,004.05	47.35	3,003.68	0.00	0.00	0.00	
11,700.00	90.00	180.37	8,385.99	-3,104.05	46.71	3,103.68	0.00	0.00	0.00	
11,800.00	90.00	180.37	8,385.99	-3,204.05	46.07	3,203.68	0.00	0.00	0.00	
11,900.00	90.00	180.37	8,385.99	-3,304.04	45.43	3,303.68	0.00	0.00	0.00	
12,000.00	90.00	180.37	8,385.99	-3,404.04	44.78	3,403.68	0.00	0.00	0.00	

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Project:	Eddy County, NM	TVD Reference:	Well @ 3095.00usft (GL: 3068' + KB: 27' (PD582))
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Well:	SB No. 3H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	Prelim Plan A	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)	
12,100.00	90.00	180.37	8,385.99	-3,504.04	44.14	3,503.68	0.00	0.00	0.00	
12,200.00	90.00	180.37	8,385.99	-3,604.04	43.50	3,603.68	0.00	0.00	0.00	
12,300.00	90.00	180.37	8,385.99	-3,704.04	42.86	3,703.68	0.00	0.00	0.00	
12,400.00	90.00	180.37	8,385.99	-3,804.03	42.22	3,803.68	0.00	0.00	0.00	
12,500.00	90.00	180.37	8,385.99	-3,904.03	41.58	3,903.68	0.00	0.00	0.00	
12,600.00	90.00	180.37	8,385.99	-4,004.03	40.94	4,003.68	0.00	0.00	0.00	
12,700.00	90.00	180.37	8,385.99	-4,104.03	40.30	4,103.68	0.00	0.00	0.00	
12,800.00	90.00	180.37	8,386.00	-4,204.03	39.66	4,203.68	0.00	0.00	0.00	
12,900.00	90.00	180.37	8,386.00	-4,304.02	39.01	4,303.68	0.00	0.00	0.00	
13,000.00	90.00	180.37	8,386.00	-4,404.02	38.37	4,403.68	0.00	0.00	0.00	
13,100.00	90.00	180.37	8,386.00	-4,504.02	37.73	4,503.68	0.00	0.00	0.00	
13,200.00	90.00	180.37	8,386.00	-4,604.02	37.09	4,603.68	0.00	0.00	0.00	
13,300.00	90.00	180.37	8,386.00	-4,704.02	36.45	4,703.68	0.00	0.00	0.00	
13,318.64	90.00	180.37	8,386.00	-4,722.66	36.33	4,722.33	0.00	0.00	0.00	
[HadesSB#3H]LTP/BHL										

Design Targets										
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude	
[HadesSB#3H]FTP	0.00	0.00	7,813.00	421.05	69.31	488,107.37	586,890.76	32.341609	-104.051988	
- hit/miss target										
- plan hits target center										
- Point										
[HadesSB#3H]LTP/BHL	0.00	0.01	8,386.00	-4,722.66	36.33	482,963.66	586,857.78	32.327470	-104.052139	
- plan hits target center										
- Point										

Checked By: _____	Approved By: _____	Date: _____
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