

**Provide Signature Page for
Directional Survey**



Marathon Oil

**NM OIL CONSERVATION
ARTESIA DISTRICT**

SEP 07 2018

RECEIVED

Marathon Oil

Eddy County, NM

Hermes Fee 23-28-30

TB #9H

OH

30-015-44606

Design: Gyro/MWD 100'-13969' PTB 14025'

Survey Report

12 February, 2018





Professional Directional
Survey Report



Company: Marathon Oil
Project: Eddy County, NM
Site: Hermes Fee 23-28-30
Well: TB #9H
Wellbore: OH
Design: Gyro/MWD 100'-13969' PTB 14025'

Local Co-ordinate Reference: Well TB #9H
TVD Reference: Well @ 3149.50usft (GL: 3123' + KB: 26.5' (H&P480))
MD Reference: Well @ 3149.50usft (GL: 3123' + KB: 26.5' (H&P480))
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: WellPlanner1

Project Eddy County, NM

Map System: US State Plane 1927 (Exact solution)
Geo Datum: NAD 1927 (NADCON CONUS)
Map Zone: New Mexico East 3001

System Datum: Mean Sea Level

Site Hermes Fee 23-28-30

Site Position:		Northing:	461,896.31 usft	Latitude:	32.269695
From:	Lat/Long	Easting:	565,002.00 usft	Longitude:	-104.123028
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "	Grid Convergence:	0.11 °

Well TB #9H

Well Position	+N/-S	0.00 usft	Northing:	461,891.85 usft	Latitude:	32.269678
	+E/-W	0.00 usft	Easting:	565,898.30 usft	Longitude:	-104.120128
Position Uncertainty	0.00 usft	Wellhead Elevation:	usft	Ground Level:	3,123.00 usft	

Wellbore OH

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	User Defined	1/25/2018	7.38	60.04	47,997.30

Design Gyro/MWD 100'-13969' PTB 14025'

Audit Notes:

Version:	1.0	Phase:	ACTUAL	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)	
	0.00	0.00	0.00	359.71	



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Survey Program		Date	2/12/2018		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
100.00	492.00	Gyros (OH)	GYRO-NS-CT	OWSG XYZ Accel with XY Static and Continuous Gyro	
594.00	14,025.00	Survey #2 (OH)	MWD+IFR1	OWSG MWD + IFR1	

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	V. Sec (usft)	N/S (usft)	E/W (usft)	Closure Distance (usft)	Closure Azimuth (°)	Northing (usft)	Easting (usft)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	461,891.85	565,898.30
100.00	0.09	38.01	100.00	0.06	0.06	0.05	0.08	38.01	461,891.91	565,898.35
200.00	0.32	77.89	200.00	0.18	0.18	0.37	0.41	63.75	461,892.03	565,898.67
300.00	0.42	49.73	300.00	0.47	0.48	0.92	1.04	62.62	461,892.33	565,899.22
400.00	0.46	101.01	399.99	0.63	0.64	1.60	1.72	68.21	461,892.49	565,899.90
492.00	0.41	262.43	491.99	0.52	0.52	1.63	1.71	72.20	461,892.37	565,899.93
594.00	0.80	233.60	593.99	0.05	0.05	0.70	0.70	85.61	461,891.90	565,899.00
686.00	1.20	227.60	685.97	-0.97	-0.98	-0.53	1.11	208.52	461,890.87	565,897.77
777.00	1.10	227.80	776.96	-2.20	-2.21	-1.88	2.90	220.46	461,889.64	565,896.42
869.00	1.40	228.60	868.93	-3.53	-3.54	-3.38	4.90	223.64	461,888.31	565,894.92
961.00	1.30	236.80	960.91	-4.83	-4.86	-5.10	7.04	226.37	461,886.99	565,893.20
1,055.00	1.30	233.80	1,054.88	-6.04	-6.07	-6.85	9.15	228.44	461,885.78	565,891.45
1,150.00	1.40	240.20	1,149.86	-7.24	-7.28	-8.72	11.37	230.14	461,884.57	565,889.58
1,244.00	1.40	234.60	1,243.83	-8.47	-8.52	-10.66	13.64	231.36	461,883.33	565,887.64
1,339.00	1.50	233.70	1,338.80	-9.86	-9.93	-12.61	16.05	231.77	461,881.92	565,885.69
1,433.00	1.70	239.70	1,432.76	-11.29	-11.36	-14.80	18.66	232.49	461,880.49	565,883.50
1,528.00	1.90	241.10	1,527.72	-12.74	-12.83	-17.40	21.62	233.58	461,879.02	565,880.90
1,623.00	1.90	239.80	1,622.66	-14.28	-14.39	-20.14	24.75	234.46	461,877.46	565,878.16
1,717.00	1.70	238.30	1,716.62	-15.79	-15.90	-22.67	27.69	234.95	461,875.95	565,875.63
1,811.00	0.40	178.50	1,810.60	-16.84	-16.96	-23.85	29.26	234.57	461,874.89	565,874.45
1,906.00	1.30	92.90	1,905.59	-17.23	-17.35	-22.76	28.62	232.69	461,874.50	565,875.54



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Survey											
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2,000.00	1.80	93.80	1,999.56	-17.40	-17.50	-20.22	26.74	229.13	461,874.35	565,878.08	
2,095.00	1.90	96.30	2,094.51	-17.69	-17.77	-17.17	24.71	224.01	461,874.08	565,881.13	
2,189.00	2.50	108.30	2,188.44	-18.52	-18.59	-13.67	23.08	216.34	461,873.26	565,884.63	
2,284.00	3.00	115.90	2,283.33	-20.28	-20.32	-9.47	22.42	204.99	461,871.53	565,888.83	
2,378.00	2.90	119.40	2,377.20	-22.54	-22.57	-5.19	23.15	192.94	461,869.28	565,893.11	
2,473.00	2.40	118.60	2,472.10	-24.69	-24.70	-1.35	24.73	183.12	461,867.15	565,896.95	
2,544.00	2.10	116.90	2,543.05	-26.00	-26.00	1.12	26.02	177.54	461,865.85	565,899.42	
2,656.00	1.80	109.40	2,654.98	-27.53	-27.51	4.61	27.89	170.49	461,864.34	565,902.91	
2,751.00	2.50	166.10	2,749.93	-30.05	-30.02	6.51	30.72	167.76	461,861.83	565,904.81	
2,845.00	3.00	167.40	2,843.82	-34.45	-34.41	7.54	35.23	167.64	461,857.44	565,905.84	
2,939.00	3.50	145.70	2,937.67	-39.23	-39.18	9.70	40.36	166.10	461,852.67	565,908.00	
3,034.00	4.00	143.80	3,032.46	-44.32	-44.25	13.29	46.20	163.29	461,847.60	565,911.59	
3,128.00	4.10	148.20	3,126.23	-49.84	-49.75	16.99	52.57	161.14	461,842.10	565,915.29	
3,222.00	4.00	151.10	3,220.00	-55.58	-55.48	20.35	59.09	159.86	461,836.37	565,918.65	
3,317.00	3.70	153.90	3,314.78	-61.25	-61.13	23.30	65.42	159.14	461,830.72	565,921.60	
3,411.00	3.60	152.20	3,408.59	-66.60	-66.46	26.01	71.37	158.63	461,825.39	565,924.31	
3,505.00	5.80	160.10	3,502.27	-73.69	-73.54	29.00	79.05	158.48	461,818.31	565,927.30	
3,599.00	6.80	160.90	3,595.70	-83.43	-83.27	32.44	89.36	158.71	461,808.58	565,930.74	
3,694.00	6.80	165.10	3,690.03	-94.20	-94.02	35.73	100.58	159.19	461,797.83	565,934.03	
3,788.00	8.50	164.10	3,783.19	-106.27	-106.08	39.06	113.04	159.78	461,785.77	565,937.36	
3,882.00	9.10	165.70	3,876.09	-120.18	-119.96	42.80	127.37	160.36	461,771.89	565,941.10	
3,976.00	9.40	167.60	3,968.86	-134.89	-134.66	46.29	142.39	161.03	461,757.19	565,944.59	
4,071.00	9.40	169.20	4,062.59	-150.11	-149.86	49.41	157.79	161.75	461,741.99	565,947.71	
4,165.00	9.90	169.30	4,155.26	-165.60	-165.34	52.34	173.43	162.43	461,726.51	565,950.64	
4,260.00	10.40	171.30	4,248.77	-182.12	-181.84	55.16	190.02	163.13	461,710.01	565,953.46	
4,354.00	10.60	163.30	4,341.20	-198.80	-198.51	58.93	207.07	163.47	461,693.34	565,957.23	
4,449.00	10.90	161.60	4,434.54	-215.72	-215.40	64.27	224.79	163.39	461,676.45	565,962.57	



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Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	V. Sec (usft)	N/S (usft)	E/W (usft)	Closure Distance (usft)	Closure Azimuth (°)	Northing (usft)	Easting (usft)
4,543.00	10.50	154.90	4,526.90	-231.95	-231.59	70.71	242.15	163.02	461,660.26	565,969.01
4,638.00	8.70	144.60	4,620.58	-245.68	-245.29	78.55	257.56	162.24	461,646.56	565,976.85
4,732.00	8.00	143.10	4,713.58	-256.75	-256.31	86.59	270.55	161.33	461,635.54	565,984.89
4,827.00	6.10	134.10	4,807.86	-265.59	-265.11	94.19	281.35	160.44	461,626.74	565,992.49
4,921.00	5.40	132.40	4,901.39	-272.08	-271.57	101.04	289.76	159.59	461,620.28	565,999.34
5,016.00	5.10	132.90	4,995.99	-278.00	-277.46	107.43	297.53	158.83	461,614.39	566,005.73
5,110.00	4.50	135.60	5,089.66	-283.51	-282.94	113.07	304.70	158.22	461,608.91	566,011.37
5,205.00	3.30	120.70	5,184.44	-287.59	-287.00	118.03	310.32	157.64	461,604.85	566,016.33
5,299.00	3.20	116.70	5,278.29	-290.18	-289.56	122.70	314.49	157.03	461,602.29	566,021.00
5,394.00	3.40	87.80	5,373.14	-291.29	-290.64	127.89	317.54	156.25	461,601.21	566,026.19
5,488.00	4.30	58.60	5,466.93	-289.37	-288.70	133.68	318.15	155.15	461,603.15	566,031.98
5,583.00	4.30	40.60	5,561.67	-284.84	-284.14	139.04	316.33	153.93	461,607.71	566,037.34
5,677.00	3.90	43.70	5,655.43	-279.88	-279.15	143.54	313.90	152.79	461,612.70	566,041.84
5,771.00	3.70	18.90	5,749.23	-274.71	-273.97	146.73	310.79	151.83	461,617.88	566,045.03
5,866.00	4.80	342.30	5,843.98	-268.02	-267.28	146.52	304.81	151.27	461,624.57	566,044.82
5,960.00	4.60	331.90	5,937.67	-260.94	-260.21	143.55	297.18	151.12	461,631.64	566,041.85
6,055.00	4.00	303.10	6,032.41	-255.74	-255.04	138.98	290.45	151.41	461,636.81	566,037.28
6,149.00	3.50	265.40	6,126.22	-254.15	-253.48	133.37	286.43	152.25	461,638.37	566,031.67
6,243.00	4.00	224.20	6,220.04	-256.71	-256.06	128.22	286.37	153.40	461,635.79	566,026.52
6,338.00	3.40	212.70	6,314.84	-261.43	-260.81	124.39	288.95	154.50	461,631.04	566,022.69
6,432.00	2.50	191.10	6,408.72	-265.78	-265.17	122.49	292.09	155.21	461,626.68	566,020.79
6,527.00	2.20	167.10	6,503.64	-269.59	-268.98	122.50	295.56	155.51	461,622.87	566,020.80
6,621.00	1.50	149.50	6,597.59	-272.42	-271.80	123.52	298.55	155.56	461,620.05	566,021.82
6,715.00	0.40	80.50	6,691.58	-273.43	-272.80	124.47	299.86	155.47	461,619.05	566,022.77
6,810.00	0.80	16.70	6,786.58	-272.74	-272.11	124.99	299.44	155.33	461,619.74	566,023.29
6,904.00	0.80	357.30	6,880.57	-271.46	-270.83	125.15	298.34	155.20	461,621.02	566,023.45
6,999.00	1.10	322.20	6,975.55	-270.07	-269.44	124.56	296.84	155.19	461,622.41	566,022.86



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7,093.00	1.20	278.60	7,069.54	-269.20	-268.58	123.03	295.42	155.39	461,623.27	566,021.33	
7,187.00	1.50	276.60	7,163.51	-268.90	-268.30	120.84	294.25	155.75	461,623.55	566,019.14	
7,282.00	1.10	235.80	7,258.49	-269.26	-268.67	118.85	293.78	156.14	461,623.18	566,017.15	
7,376.00	2.20	180.60	7,352.45	-271.57	-270.98	118.08	295.59	156.45	461,620.87	566,016.38	
7,471.00	3.50	178.30	7,447.33	-276.29	-275.70	118.15	299.95	156.80	461,616.15	566,016.45	
7,566.00	3.60	132.90	7,542.17	-281.23	-280.63	120.42	305.37	156.78	461,611.22	566,018.72	
7,660.00	2.80	116.30	7,636.02	-284.28	-283.65	124.64	309.83	156.28	461,608.20	566,022.94	
7,755.00	2.10	40.90	7,730.96	-284.01	-283.37	127.86	310.88	155.71	461,608.48	566,026.16	
7,849.00	2.30	26.80	7,824.89	-281.04	-280.38	129.84	308.99	155.15	461,611.47	566,028.14	
7,944.00	2.20	30.80	7,919.82	-277.78	-277.11	131.63	306.79	154.59	461,614.74	566,029.93	
8,038.00	1.50	22.40	8,013.77	-275.10	-274.43	133.02	304.97	154.14	461,617.42	566,031.32	
8,132.00	0.90	14.70	8,107.74	-273.25	-272.58	133.68	303.59	153.88	461,619.27	566,031.98	
8,227.00	0.30	301.60	8,202.74	-272.40	-271.72	133.66	302.82	153.81	461,620.13	566,031.96	
8,322.00	1.10	270.10	8,297.73	-272.26	-271.59	132.53	302.20	153.99	461,620.26	566,030.83	
8,416.00	1.20	263.40	8,391.71	-272.36	-271.70	130.65	301.48	154.32	461,620.15	566,028.95	
8,511.00	1.20	233.40	8,486.69	-273.06	-272.41	128.87	301.35	154.68	461,619.44	566,027.17	
8,605.00	2.40	224.50	8,580.65	-275.04	-274.40	126.70	302.24	155.22	461,617.45	566,025.00	
8,699.00	2.20	227.20	8,674.57	-277.65	-277.03	123.99	303.51	155.89	461,614.82	566,022.29	
8,731.00	2.20	221.80	8,706.55	-278.53	-277.91	123.13	303.96	156.10	461,613.94	566,021.43	
8,794.00	1.10	227.40	8,769.52	-279.83	-279.22	121.88	304.66	156.42	461,612.63	566,020.18	
8,825.00	2.50	338.70	8,800.51	-279.40	-278.79	121.42	304.08	156.47	461,613.06	566,019.72	
8,857.00	6.30	348.80	8,832.41	-277.02	-276.41	120.82	301.67	156.39	461,615.44	566,019.12	
8,888.00	9.50	353.80	8,863.11	-272.81	-272.20	120.22	297.57	156.17	461,619.65	566,018.52	
8,920.00	13.10	356.20	8,894.49	-266.56	-265.96	119.69	291.65	155.77	461,625.89	566,017.99	
8,951.00	16.10	356.80	8,924.48	-258.76	-258.16	119.22	284.36	155.21	461,633.69	566,017.52	
8,983.00	19.10	355.80	8,954.98	-249.10	-248.50	118.59	275.35	154.49	461,643.35	566,016.89	
9,077.00	29.80	3.30	9,040.45	-210.32	-209.72	118.81	241.04	150.47	461,682.13	566,017.11	



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9,172.00	41.50	1.60	9,117.51	-155.11	-154.50	121.05	196.28	141.92	461,737.35	566,019.35	
9,266.00	54.90	357.60	9,180.04	-85.22	-84.62	120.31	147.08	125.12	461,807.23	566,018.61	
9,313.00	59.90	358.30	9,205.35	-45.66	-45.06	118.90	127.15	110.76	461,846.79	566,017.20	
9,361.00	64.30	357.50	9,227.81	-3.27	-2.68	117.34	117.37	91.31	461,889.17	566,015.64	
9,455.00	68.80	359.90	9,265.21	82.92	83.51	115.41	142.45	54.11	461,975.36	566,013.71	
9,550.00	74.30	0.60	9,295.26	173.00	173.59	115.81	208.68	33.71	462,065.44	566,014.11	
9,644.00	83.00	1.60	9,313.74	265.04	265.64	117.59	290.51	23.88	462,157.49	566,015.89	
9,669.00	86.00	2.40	9,316.14	289.90	290.51	118.46	313.73	22.18	462,182.36	566,016.76	
9,763.00	86.20	4.50	9,322.53	383.48	384.11	124.11	403.67	17.91	462,275.96	566,022.41	
9,858.00	88.30	5.10	9,327.09	477.99	478.67	132.05	496.55	15.42	462,370.52	566,030.35	
9,952.00	89.90	2.40	9,328.57	571.74	572.44	138.19	588.89	13.57	462,464.29	566,036.49	
10,047.00	90.70	1.60	9,328.07	666.66	667.38	141.51	682.22	11.97	462,559.23	566,039.81	
10,141.00	90.90	1.60	9,326.76	760.60	761.34	144.13	774.86	10.72	462,653.19	566,042.43	
10,236.00	90.60	359.30	9,325.52	855.57	856.32	144.88	868.49	9.60	462,748.17	566,043.18	
10,330.00	91.20	358.80	9,324.04	949.56	950.29	143.32	961.04	8.58	462,842.14	566,041.62	
10,424.00	91.30	358.00	9,321.99	1,043.51	1,044.23	140.70	1,053.67	7.67	462,936.08	566,039.00	
10,519.00	89.20	357.30	9,321.57	1,138.44	1,139.15	136.80	1,147.33	6.85	463,031.00	566,035.10	
10,613.00	89.00	357.10	9,323.05	1,232.34	1,233.02	132.21	1,240.09	6.12	463,124.87	566,030.51	
10,708.00	89.30	357.10	9,324.46	1,327.23	1,327.89	127.40	1,333.99	5.48	463,219.74	566,025.70	
10,802.00	89.20	356.70	9,325.69	1,421.11	1,421.74	122.32	1,427.00	4.92	463,313.59	566,020.62	
10,897.00	89.40	356.50	9,326.85	1,515.96	1,516.57	116.69	1,521.05	4.40	463,408.42	566,014.99	
10,991.00	89.50	358.30	9,327.75	1,609.88	1,610.47	112.42	1,614.38	3.99	463,502.32	566,010.72	
11,085.00	90.20	358.70	9,328.00	1,703.85	1,704.43	109.96	1,707.98	3.69	463,596.28	566,008.26	
11,180.00	90.80	358.70	9,327.17	1,798.83	1,799.40	107.81	1,802.63	3.43	463,691.25	566,006.11	
11,274.00	91.50	358.90	9,325.28	1,892.80	1,893.36	105.84	1,896.32	3.20	463,785.21	566,004.14	
11,369.00	92.20	359.30	9,322.22	1,987.75	1,988.30	104.35	1,991.04	3.00	463,880.15	566,002.65	
11,463.00	91.30	0.90	9,319.35	2,081.70	2,082.25	104.51	2,084.87	2.87	463,974.10	566,002.81	



Professional Directional Survey Report



Company: Marathon Oil
Project: Eddy County, NM
Site: Hermes Fee 23-28-30
Well: TB #9H
Wellbore: OH
Design: Gyro/MWD 100'-13969' PTB 14025'

Local Co-ordinate Reference: Well TB #9H
TVD Reference: Well @ 3149.50usft (GL: 3123' + KB: 26.5' (H&P480))
MD Reference: Well @ 3149.50usft (GL: 3123' + KB: 26.5' (H&P480))
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: WellPlanner1

Survey										
MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	V. Sec (usft)	N/S (usft)	E/W (usft)	Closure Distance (usft)	Closure Azimuth (°)	Northing (usft)	Easting (usft)
11,558.00	91.70	1.60	9,316.86	2,176.63	2,177.20	106.58	2,179.80	2.80	464,069.05	566,004.88
11,652.00	91.60	3.60	9,314.15	2,270.47	2,271.06	110.85	2,273.76	2.79	464,162.91	566,009.15
11,746.00	89.80	5.70	9,313.00	2,364.10	2,364.73	118.47	2,367.70	2.87	464,256.58	566,016.77
11,841.00	87.20	6.50	9,315.49	2,458.47	2,459.15	128.56	2,462.51	2.99	464,351.00	566,026.86
11,935.00	84.50	6.90	9,322.29	2,551.52	2,552.26	139.49	2,556.07	3.13	464,444.11	566,037.79
11,980.00	82.42	6.95	9,327.42	2,595.87	2,596.64	144.88	2,600.67	3.19	464,488.49	566,043.18
EXIT TB: 11980' MD										
12,030.00	80.10	7.00	9,335.02	2,644.89	2,645.69	150.88	2,649.98	3.26	464,537.54	566,049.18
12,061.00	78.20	5.50	9,340.85	2,675.13	2,675.95	154.20	2,680.39	3.30	464,567.80	566,052.50
12,124.00	81.90	3.10	9,351.74	2,736.97	2,737.81	158.84	2,742.41	3.32	464,629.66	566,057.14
12,218.00	93.00	359.80	9,355.92	2,830.68	2,831.53	161.20	2,836.11	3.26	464,723.38	566,059.50
12,287.00	94.30	359.40	9,351.52	2,899.53	2,900.38	160.72	2,904.83	3.17	464,792.23	566,059.02
12,313.00	94.80	357.90	9,349.46	2,925.45	2,926.29	160.11	2,930.67	3.13	464,818.14	566,058.41
12,344.00	95.30	356.50	9,346.73	2,956.30	2,957.14	158.60	2,961.39	3.07	464,848.99	566,056.90
12,376.00	95.70	356.00	9,343.66	2,988.09	2,988.92	156.52	2,993.02	3.00	464,880.77	566,054.82
12,407.00	96.30	355.80	9,340.42	3,018.85	3,019.67	154.31	3,023.61	2.93	464,911.52	566,052.61
12,454.00	97.10	355.80	9,334.94	3,065.42	3,066.23	150.90	3,069.94	2.82	464,958.08	566,049.20
12,502.00	94.40	356.50	9,330.13	3,113.08	3,113.87	147.69	3,117.37	2.72	465,005.72	566,045.99
12,549.00	91.60	357.10	9,327.67	3,159.95	3,160.73	145.07	3,164.06	2.63	465,052.58	566,043.37
12,588.00	91.60	356.93	9,326.58	3,198.90	3,199.66	143.04	3,202.86	2.56	465,091.51	566,041.34
ENTER TB: 12588' MD										
12,596.00	91.60	356.90	9,326.36	3,206.88	3,207.65	142.61	3,210.82	2.55	465,099.50	566,040.91
12,643.00	92.00	356.50	9,324.88	3,253.80	3,254.55	139.91	3,257.55	2.46	465,146.40	566,038.21
12,691.00	92.40	356.60	9,323.04	3,301.69	3,302.42	137.02	3,305.26	2.38	465,194.27	566,035.32
12,785.00	93.20	356.00	9,318.45	3,395.41	3,396.11	130.96	3,398.64	2.21	465,287.96	566,029.26
12,880.00	91.70	358.00	9,314.39	3,490.21	3,490.89	126.00	3,493.16	2.07	465,382.74	566,024.30
12,974.00	90.10	357.90	9,312.91	3,584.15	3,584.81	122.63	3,586.91	1.96	465,476.66	566,020.93



Professional Directional Survey Report

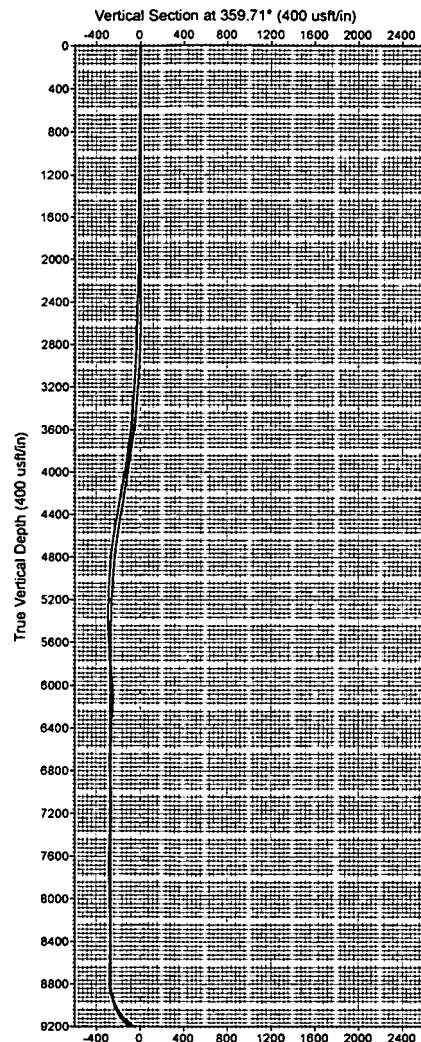


Company: Marathon Oil
Project: Eddy County, NM
Site: Hermes Fee 23-28-30
Well: TB #9H
Wellbore: OH
Design: Gyro/MWD 100'-13969' PTB 14025'

Local Co-ordinate Reference: Well TB #9H
TVD Reference: Well @ 3149.50usft (GL: 3123' + KB: 26.5' (H&P480))
MD Reference: Well @ 3149.50usft (GL: 3123' + KB: 26.5' (H&P480))
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: WellPlanner1

Survey										
MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	V. Sec (usft)	N/S (usft)	E/W (usft)	Closure Distance (usft)	Closure Azimuth (°)	Northing (usft)	Easting (usft)
13,069.00	90.40	357.50	9,312.50	3,679.09	3,679.74	118.82	3,681.65	1.85	465,571.59	566,017.12
13,163.00	91.50	357.90	9,310.94	3,773.02	3,773.65	115.05	3,775.40	1.75	465,665.50	566,013.35
13,258.00	90.60	357.80	9,309.20	3,867.95	3,868.56	111.49	3,870.17	1.65	465,760.41	566,009.79
13,352.00	91.60	357.40	9,307.39	3,961.87	3,962.46	107.55	3,963.92	1.55	465,854.31	566,005.85
13,447.00	92.80	357.30	9,303.75	4,056.71	4,057.29	103.16	4,058.60	1.46	465,949.14	566,001.46
13,541.00	91.50	358.00	9,300.22	4,150.58	4,151.14	99.31	4,152.33	1.37	466,042.99	565,997.61
13,636.00	89.10	0.70	9,299.72	4,245.57	4,246.12	98.23	4,247.25	1.33	466,137.97	565,996.53
13,730.00	88.20	2.20	9,301.94	4,339.49	4,340.06	100.61	4,341.22	1.33	466,231.91	565,998.91
13,825.00	89.30	2.30	9,304.01	4,434.38	4,434.96	104.34	4,436.19	1.35	466,326.81	566,002.64
13,919.00	91.20	2.20	9,303.60	4,528.28	4,528.88	108.03	4,530.17	1.37	466,420.73	566,006.33
13,969.00	92.10	1.60	9,302.16	4,578.22	4,578.83	109.69	4,580.15	1.37	466,470.68	566,007.99
Last Survey: 13696' MD, 9302' TVD										
14,025.00	92.10	1.60	9,300.11	4,634.15	4,634.77	111.25	4,636.11	1.38	466,526.62	566,009.55
PTB: 14025' MD, 9300' TVD										

Design Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
11,980.00	9,327.42	2,596.64	144.88	EXIT TB: 11980' MD
12,588.00	9,326.58	3,199.66	143.04	ENTER TB: 12588' MD
13,969.00	9,302.16	4,578.83	109.69	Last Survey: 13696' MD, 9302' TVD
14,025.00	9,300.11	4,634.77	111.25	PTB: 14025' MD, 9300' TVD



Marathon Oil
Eddy County, NM
Hermes Fee 23-28-30
TB #9H
Plan #4 - FINAL PVA
GL: 3123' + 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 @ 3149.50usft (GL: 3123' + KB: 26.5' (H&P480))

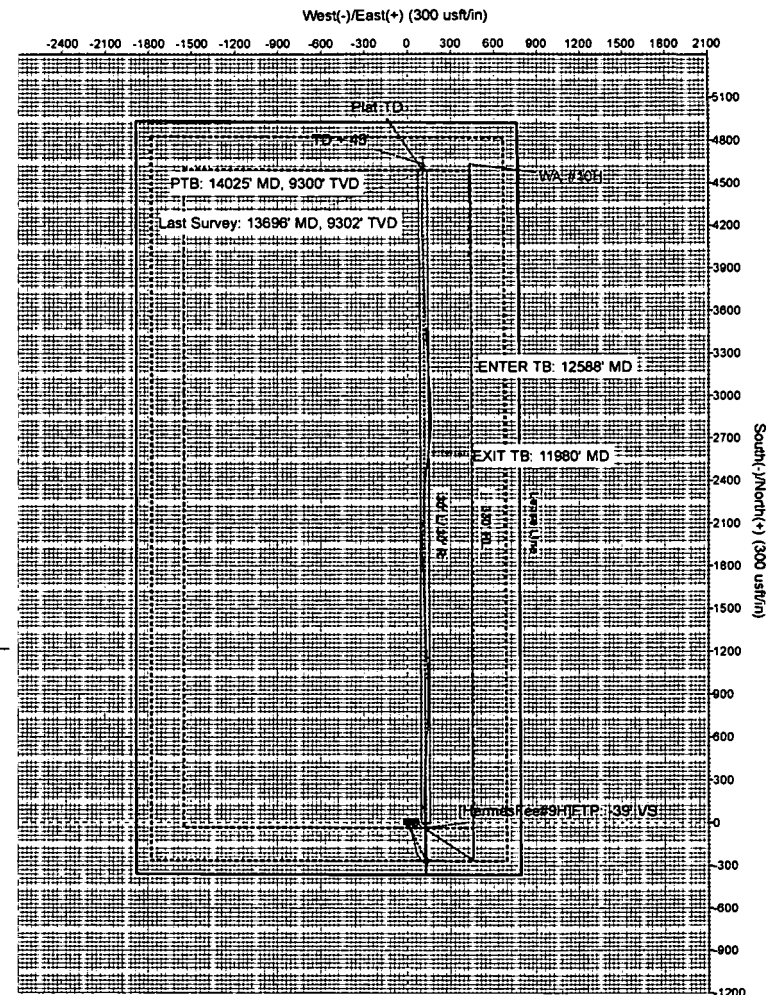
+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Spot
0.00	0.00	461891.85	565898.30	32.269678	-104.120128	

SECTION DETAILS

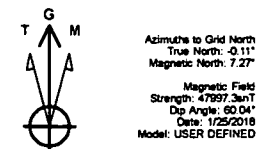
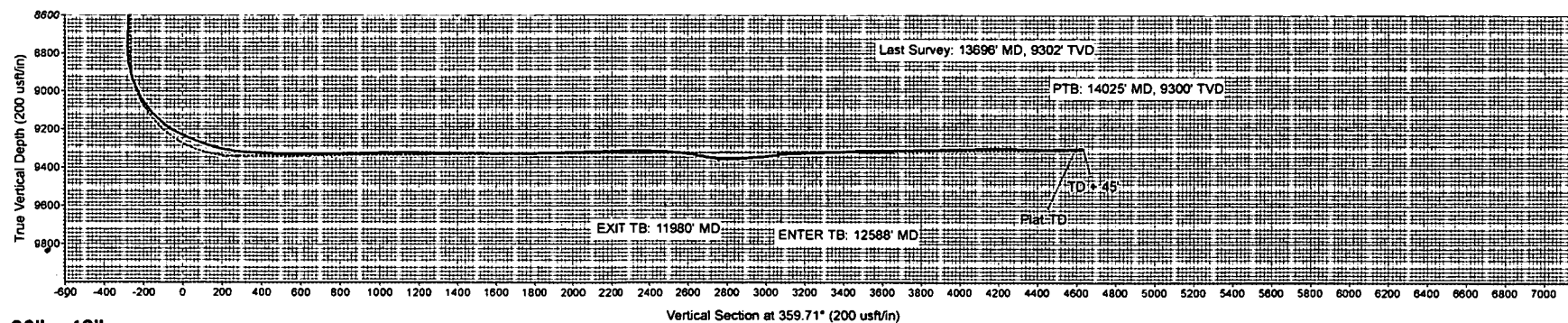
Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	Vsect
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	2600.00	0.00	0.00	2600.00	0.00	0.00	0.00	0.00
3	3933.33	10.00	154.30	3928.57	-104.58	50.34	0.75	-104.83
4	4476.53	10.00	154.30	4481.52	-189.57	91.25	0.00	-190.03
5	5476.53	0.00	0.00	5456.45	-268.00	129.00	1.00	-268.65
6	8837.08	0.00	0.00	8817.00	-268.00	129.00	0.00	-268.65
7	9658.86	90.40	359.71	9337.88	256.46	126.38	11.00	255.81
8	13992.76	90.40	359.71	9307.96	4590.20	104.51	0.00	4589.61
9	14037.76	90.40	359.71	9307.85	4635.20	104.28	0.00	4634.61

WELLBORE TARGET DETAILS (MAP CO-ORDINATES)

Name	TVD	+N/-S	+E/-W	Northing	Easting
[HermesFee#9H]FTP: -39° VS	0.00	-38.55	128.27	461853.30	566026.57
[HermesFee#9H]KOP: -269° VS	8817.00	-268.00	129.00	461823.85	566027.30
[HermesFee#9H]LTP/BHL: 4590° VS	9307.96	4590.20	104.51	466462.05	566002.81



Target Line: 9340' TVD @ 0° VS: 90.4° INC



Azimuth Corrections

Total Magnetic Corr. (M to G): 7.27°

Declination (M to T): 7.38° East

36" x 48"