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Directional Survey



MARATHON OIL CORP. NM OIL CONSERVATION
ARTESIA DISTRICT

Eddy County, NM (NAD27)
Southern Comfort State 24-28-25
WD #10H

DEC 03 2018

RECEIVED

OH 30-015-44834

Design: OH (Actual)

Standard Survey Report

06 September, 2018



Company: MARATHON OIL CORP.
Project: Eddy County, NM (NAD27)
Site: Southern Comfort State 24-28-25
Well: WD #10H
Wellbore: OH
Design: OH (Actual)

Local Co-ordinate Reference: Well WD #10H
TVD Reference: GE 2917' + KB 26.5' @ 2943.50usft (H&P 498)
MD Reference: GE 2917' + KB 26.5' @ 2943.50usft (H&P 498)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: EDM 5000.1 Single User Db

Project	Eddy County, NM (NAD27)		
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		Using geodetic scale factor

Site Southern Comfort State 24-28-25

Site Position:
From: Map
Position Uncertainty: 0.00 usft
Northing: 432,128.89 usft
Easting: 591,559.01 usft
Slot Radius: 13-3/16 "
Latitude: 32° 11' 15.6951 N
Longitude: 104° 2' 14.5418 W
Grid Convergence: 0.16 °

Well WD #10H
Well Position +N/-S 0.00 usft Northing: 432,128.89 usft Latitude: 32° 11' 15.6959 N
 +E/-W 0.00 usft Easting: 591,529.01 usft Longitude: 104° 2' 14.8909 W
Position Uncertainty 0.00 usft **Wellhead Elevation:** 0.00 usft **Ground Level:** 2,917.00 usft

Wellbore OH

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	User Defined	9/4/2018	7.18	59.99	47,937

Design OH (Actual)

Audit Notes:

Version: Actual **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	180.00

Survey Program Date 9/6/2018

From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
206.00	9,728.00	SDI Gyro Surveys - 206' MD- 9728' MD (C	MWD+IFR+MS	MWD + IFR + Multi Station
9,852.00	17,647.00	LEAM MWD Surveys (9728' MD) 9852' MI	MWD+IFR1+MS	MWD + IFR1 + Multi-Station Correction
17,695.00	17,695.00	Projected to T.D.- 17,695' MD- 10,613.29'	Project	Projection

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
206.00	0.29	128.63	206.00	-0.33	0.41	0.33	0.14	0.14	0.00
298.00	0.72	105.90	298.00	-0.63	1.15	0.63	0.51	0.47	-24.71
385.00	0.98	128.72	384.99	-1.24	2.25	1.24	0.49	0.30	26.23
520.00	0.87	159.21	519.97	-2.92	3.52	2.92	0.37	-0.08	22.59
613.00	0.62	329.89	612.97	-3.15	3.51	3.15	1.60	-0.27	183.53
705.00	1.36	331.54	704.95	-1.76	2.74	1.76	0.80	0.80	1.79
797.00	2.56	342.54	796.90	1.16	1.61	-1.16	1.36	1.30	11.96
889.00	2.74	345.70	888.80	5.25	0.45	-5.25	0.25	0.20	3.43

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Survey

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980.00	2.81	343.29	979.69	9.50	-0.73	-9.50	0.15	0.08	-2.65
1,073.00	2.76	337.50	1,072.58	13.75	-2.24	-13.75	0.31	-0.05	-6.23
1,167.00	2.69	339.75	1,166.48	17.91	-3.87	-17.91	0.14	-0.07	2.39
1,261.00	2.58	335.77	1,260.38	21.91	-5.50	-21.91	0.23	-0.12	-4.23
1,356.00	2.68	332.47	1,355.28	25.83	-7.41	-25.83	0.19	0.11	-3.47
1,450.00	1.67	331.57	1,449.21	28.98	-9.08	-28.98	1.08	-1.07	-0.96
1,545.00	1.26	319.98	1,544.18	31.00	-10.41	-31.00	0.53	-0.43	-12.20
1,640.00	0.60	338.25	1,639.16	32.26	-11.26	-32.26	0.75	-0.69	19.23
1,734.00	0.30	317.27	1,733.16	32.90	-11.61	-32.90	0.36	-0.32	-22.32
1,829.00	0.24	327.81	1,828.16	33.25	-11.89	-33.25	0.08	-0.06	11.09
1,924.00	0.39	106.69	1,923.16	33.32	-11.68	-33.32	0.62	0.16	146.19
2,018.00	1.48	133.67	2,017.15	32.39	-10.50	-32.39	1.22	1.16	28.70
2,113.00	1.55	131.89	2,112.11	30.69	-8.66	-30.69	0.09	0.07	-1.87
2,207.00	1.85	117.93	2,206.07	29.13	-6.37	-29.13	0.54	0.32	-14.85
2,301.00	2.31	121.37	2,300.01	27.43	-3.41	-27.43	0.51	0.49	3.66
2,395.00	2.21	129.57	2,393.94	25.29	-0.40	-25.29	0.36	-0.11	8.72
2,490.00	1.47	153.54	2,488.89	23.03	1.56	-23.03	1.11	-0.78	25.23
2,585.00	0.81	198.50	2,583.87	21.31	1.89	-21.31	1.12	-0.69	47.33
2,592.00	0.80	196.08	2,590.87	21.21	1.86	-21.21	0.51	-0.14	-34.57
2,679.00	1.09	210.97	2,677.86	19.92	1.27	-19.92	0.43	0.33	17.11
2,773.00	1.02	209.25	2,771.84	18.42	0.40	-18.42	0.08	-0.07	-1.83
2,868.00	2.44	264.67	2,866.80	17.50	-2.03	-17.50	2.15	1.49	58.34
2,962.00	4.10	273.62	2,960.65	17.52	-7.38	-17.52	1.84	1.77	9.52
3,057.00	6.80	267.89	3,055.21	17.53	-16.39	-17.53	2.90	2.84	-6.03
3,151.00	9.27	274.02	3,148.28	17.86	-29.50	-17.86	2.78	2.63	6.52
3,246.00	9.88	278.74	3,241.96	19.63	-45.19	-19.63	1.05	0.64	4.97
3,341.00	7.79	273.57	3,335.83	21.27	-59.68	-21.27	2.35	-2.20	-5.44
3,436.00	7.04	272.02	3,430.03	21.88	-71.92	-21.88	0.82	-0.79	-1.63
3,530.00	6.33	270.53	3,523.39	22.13	-82.86	-22.13	0.78	-0.76	-1.59
3,625.00	6.55	276.75	3,617.79	22.81	-93.48	-22.81	0.77	0.23	6.55
3,719.00	7.16	282.55	3,711.12	24.72	-104.52	-24.72	0.98	0.65	6.17
3,814.00	7.00	279.29	3,805.40	26.94	-116.01	-26.94	0.46	-0.17	-3.43
3,908.00	7.08	278.35	3,898.69	28.70	-127.40	-28.70	0.15	0.09	-1.00
4,003.00	7.15	278.66	3,992.96	30.44	-139.03	-30.44	0.08	0.07	0.33
4,097.00	6.65	276.01	4,086.28	31.89	-150.23	-31.89	0.63	-0.53	-2.82
4,192.00	7.18	274.82	4,180.59	32.97	-161.62	-32.97	0.58	0.56	-1.25
4,287.00	7.39	273.14	4,274.82	33.80	-173.63	-33.80	0.31	0.22	-1.77
4,381.00	7.00	273.44	4,368.08	34.48	-185.39	-34.48	0.42	-0.41	0.32
4,475.00	8.89	277.53	4,461.17	35.77	-198.30	-35.77	2.10	2.01	4.35
4,570.00	9.68	278.29	4,554.93	37.89	-213.49	-37.89	0.84	0.83	0.80
4,664.00	9.50	275.44	4,647.61	39.76	-229.03	-39.76	0.54	-0.19	-3.03
4,758.00	9.49	275.52	4,740.33	41.24	-244.46	-41.24	0.02	-0.01	0.09
4,853.00	8.38	272.40	4,834.17	42.29	-259.18	-42.29	1.27	-1.17	-3.28

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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)
4,948.00	8.28	271.97	4,928.17	42.81	-272.93	-42.81	0.12	-0.11	-0.45
5,042.00	8.47	278.71	5,021.17	44.09	-286.54	-44.09	1.06	0.20	7.17
5,137.00	8.30	280.53	5,115.15	46.40	-300.19	-46.40	0.33	-0.18	1.92
5,231.00	7.30	279.07	5,208.28	48.59	-312.76	-48.59	1.08	-1.06	-1.55
5,326.00	6.85	275.87	5,302.56	50.12	-324.36	-50.12	0.63	-0.47	-3.37
5,420.00	7.29	287.22	5,395.85	52.46	-335.63	-52.46	1.56	0.47	12.07
5,514.00	7.19	288.16	5,489.10	56.05	-346.92	-56.05	0.16	-0.11	1.00
5,609.00	6.83	287.60	5,583.39	59.61	-357.95	-59.61	0.39	-0.38	-0.59
5,703.00	6.60	285.15	5,676.75	62.72	-368.49	-62.72	0.39	-0.24	-2.61
5,798.00	6.35	282.98	5,771.14	65.32	-378.88	-65.32	0.37	-0.26	-2.28
5,892.00	6.22	281.98	5,864.58	67.55	-388.93	-67.55	0.18	-0.14	-1.06
5,987.00	5.51	279.52	5,959.08	69.37	-398.46	-69.37	0.79	-0.75	-2.59
6,082.00	5.49	277.25	6,053.64	70.70	-407.47	-70.70	0.23	-0.02	-2.39
6,176.00	4.07	276.76	6,147.31	71.66	-415.24	-71.66	1.51	-1.51	-0.52
6,270.00	3.00	278.40	6,241.13	72.41	-420.99	-72.41	1.14	-1.14	1.74
6,365.00	2.99	281.03	6,336.00	73.25	-425.88	-73.25	0.15	-0.01	2.77
6,459.00	3.40	284.06	6,429.85	74.39	-430.99	-74.39	0.47	0.44	3.22
6,554.00	2.06	255.59	6,524.75	74.65	-435.38	-74.65	1.97	-1.41	-29.97
6,649.00	0.39	207.07	6,619.72	73.94	-437.18	-73.94	1.92	-1.76	-51.07
6,743.00	0.51	242.64	6,713.72	73.46	-437.69	-73.46	0.32	0.13	37.84
6,838.00	0.70	215.54	6,808.72	72.80	-438.41	-72.80	0.36	0.20	-28.53
6,932.00	1.47	167.86	6,902.70	71.15	-438.49	-71.15	1.20	0.82	-50.72
7,027.00	1.03	174.11	6,997.68	69.11	-438.14	-69.11	0.48	-0.46	6.58
7,121.00	1.81	316.57	7,091.66	69.35	-439.08	-69.35	2.87	0.83	151.55
7,216.00	2.05	327.06	7,186.61	71.86	-441.03	-71.86	0.45	0.25	11.04
7,310.00	1.43	340.45	7,280.57	74.38	-442.34	-74.38	0.78	-0.66	14.24
7,404.00	1.08	345.61	7,374.54	76.34	-442.95	-76.34	0.39	-0.37	5.49
7,499.00	0.78	305.53	7,469.53	77.59	-443.70	-77.59	0.73	-0.32	-42.19
7,594.00	1.00	281.39	7,564.52	78.13	-445.04	-78.13	0.45	0.23	-25.41
7,688.00	0.66	167.90	7,658.52	77.76	-445.73	-77.76	1.49	-0.36	-120.73
7,782.00	1.38	217.36	7,752.50	76.33	-446.30	-76.33	1.14	0.77	52.62
7,877.00	2.12	187.46	7,847.46	73.68	-447.23	-73.68	1.21	0.78	-31.47
7,971.00	1.56	173.53	7,941.41	70.68	-447.31	-70.68	0.76	-0.60	-14.82
8,066.00	0.59	77.16	8,036.40	69.51	-446.69	-69.51	1.82	-1.02	-101.44
8,161.00	0.61	110.77	8,131.39	69.44	-445.74	-69.44	0.37	0.02	35.38
8,255.00	0.34	133.56	8,225.39	69.07	-445.07	-69.07	0.35	-0.29	24.24
8,350.00	0.07	168.74	8,320.39	68.81	-444.85	-68.81	0.30	-0.28	37.03
8,445.00	0.42	198.57	8,415.39	68.43	-444.95	-68.43	0.38	0.37	31.40
8,539.00	1.06	133.57	8,509.38	67.50	-444.43	-67.50	1.02	0.68	-69.15
8,634.00	1.14	134.14	8,604.36	66.24	-443.11	-66.24	0.08	0.08	0.60
8,729.00	1.88	39.56	8,699.34	66.78	-441.44	-66.78	2.39	0.78	-99.56
8,823.00	2.17	39.93	8,793.28	69.34	-439.32	-69.34	0.31	0.31	0.39
8,918.00	1.23	38.52	8,888.24	71.51	-437.53	-71.51	0.99	-0.99	-1.48

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9,012.00	0.53	3.08	8,982.23	72.74	-436.88	-72.74	0.91	-0.74	-37.70
9,107.00	0.43	329.26	9,077.23	73.48	-437.04	-73.48	0.31	-0.11	-35.60
9,201.00	0.50	301.67	9,171.22	74.00	-437.57	-74.00	0.25	0.07	-29.35
9,296.00	0.65	266.63	9,266.22	74.19	-438.46	-74.19	0.39	0.16	-36.88
9,390.00	0.86	255.15	9,360.21	73.97	-439.67	-73.97	0.27	0.22	-12.21
9,485.00	1.04	237.91	9,455.20	73.33	-441.09	-73.33	0.35	0.19	-18.15
9,579.00	1.00	215.38	9,549.18	72.21	-442.29	-72.21	0.43	-0.04	-23.97
9,673.00	1.38	228.04	9,643.16	70.78	-443.60	-70.78	0.49	0.40	13.47
9,728.00	1.19	223.75	9,698.15	69.93	-444.49	-69.93	0.39	-0.35	-7.80
MWD Survey (9728.00' MD)									
9,852.00	2.18	239.89	9,822.09	67.82	-447.42	-67.82	0.88	0.80	13.02
9,946.00	2.73	240.05	9,916.01	65.80	-450.91	-65.80	0.59	0.59	0.17
10,040.00	7.21	192.58	10,009.66	58.92	-454.14	-58.92	6.09	4.77	-50.50
10,134.00	18.37	187.03	10,101.19	38.40	-457.24	-38.40	11.93	11.87	-5.90
10,229.00	27.62	189.95	10,188.54	1.77	-462.89	-1.77	9.81	9.74	3.07
10,324.00	38.40	190.39	10,268.09	-49.09	-472.05	49.09	11.35	11.35	0.46
10,418.00	48.42	188.95	10,336.29	-112.70	-482.81	112.70	10.71	10.66	-1.53
10,513.00	53.24	186.46	10,396.29	-185.66	-492.62	185.66	5.46	5.07	-2.62
10,608.00	60.55	185.42	10,448.14	-264.76	-500.82	264.76	7.75	7.69	-1.09
10,703.00	67.63	185.86	10,489.62	-349.74	-509.23	349.74	7.46	7.45	0.46
10,803.00	70.74	185.76	10,525.15	-442.72	-518.69	442.72	3.11	3.11	-0.10
10,897.00	73.54	183.58	10,553.98	-531.88	-525.96	531.88	3.71	2.98	-2.32
10,991.00	83.93	180.80	10,572.32	-623.87	-529.43	623.87	11.43	11.05	-2.96
11,086.00	90.22	179.33	10,577.17	-718.70	-529.54	718.70	6.80	6.62	-1.55
11,181.00	89.69	179.79	10,577.24	-813.69	-528.81	813.69	0.74	-0.56	0.48
11,275.00	89.90	180.00	10,577.58	-907.69	-528.64	907.69	0.32	0.22	0.22
11,370.00	91.73	181.78	10,576.23	-1,002.66	-530.11	1,002.66	2.69	1.93	1.87
11,464.00	90.35	182.36	10,574.52	-1,096.58	-533.51	1,096.58	1.59	-1.47	0.62
11,559.00	88.08	180.47	10,575.82	-1,191.54	-535.85	1,191.54	3.11	-2.39	-1.99
11,652.00	92.37	179.92	10,575.46	-1,284.51	-536.17	1,284.51	4.65	4.61	-0.59
11,747.00	92.30	179.69	10,571.59	-1,379.43	-535.85	1,379.43	0.25	-0.07	-0.24
11,841.00	91.78	179.36	10,568.24	-1,473.37	-535.07	1,473.37	0.66	-0.55	-0.35
11,935.00	89.98	179.90	10,566.80	-1,567.35	-534.46	1,567.35	2.00	-1.91	0.57
12,029.00	87.04	177.75	10,569.24	-1,661.28	-532.53	1,661.28	3.87	-3.13	-2.29
12,124.00	86.96	178.27	10,574.22	-1,756.10	-529.24	1,756.10	0.55	-0.08	0.55
12,219.00	91.96	179.63	10,575.11	-1,851.04	-527.50	1,851.04	5.45	5.26	1.43
12,313.00	91.27	180.66	10,572.46	-1,945.00	-527.74	1,945.00	1.32	-0.73	1.10
12,408.00	90.81	182.54	10,570.74	-2,039.95	-530.39	2,039.95	2.04	-0.48	1.98
12,502.00	87.35	182.75	10,572.25	-2,133.82	-534.73	2,133.82	3.69	-3.68	0.22
12,597.00	85.71	182.01	10,578.00	-2,228.56	-538.66	2,228.56	1.89	-1.73	-0.78
12,692.00	84.45	182.06	10,586.14	-2,323.15	-542.03	2,323.15	1.33	-1.33	0.05
12,787.00	84.29	178.89	10,595.47	-2,417.68	-542.81	2,417.68	3.33	-0.17	-3.34
12,882.00	89.47	177.37	10,600.63	-2,512.45	-539.71	2,512.45	5.68	5.45	-1.60
12,976.00	94.89	177.26	10,597.06	-2,606.24	-535.31	2,606.24	5.77	5.77	-0.12

Company: MARATHON OIL CORP.
Project: Eddy County, NM (NAD27)
Site: Southern Comfort State 24-28-25
Well: WD #10H
Wellbore: OH
Design: OH (Actual)

Local Co-ordinate Reference: Well WD #10H
TVD Reference: GE 2917' + KB 26.5' @ 2943.50usft (H&P 498)
MD Reference: GE 2917' + KB 26.5' @ 2943.50usft (H&P 498)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: EDM 5000.1 Single User Db

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)
13,071.00	88.84	178.56	10,593.97	-2,701.08	-531.85	2,701.08	6.51	-6.37	1.37
13,165.00	86.25	177.79	10,598.00	-2,794.94	-528.86	2,794.94	2.87	-2.76	-0.82
13,259.00	86.89	176.97	10,603.62	-2,888.67	-524.58	2,888.67	1.11	0.68	-0.87
13,353.00	89.65	178.07	10,606.46	-2,982.53	-520.51	2,982.53	3.16	2.94	1.17
13,448.00	90.90	177.94	10,606.00	-3,077.47	-517.20	3,077.47	1.32	1.32	-0.14
13,543.00	91.85	177.68	10,603.72	-3,172.37	-513.57	3,172.37	1.04	1.00	-0.27
13,638.00	88.40	178.11	10,603.51	-3,267.29	-510.09	3,267.29	3.66	-3.63	0.45
13,732.00	96.30	181.57	10,599.66	-3,361.13	-509.82	3,361.13	9.17	8.40	3.68
13,826.00	86.78	184.58	10,597.14	-3,454.84	-514.86	3,454.84	10.62	-10.13	3.20
13,921.00	87.46	182.98	10,601.91	-3,549.51	-521.11	3,549.51	1.83	0.72	-1.68
14,016.00	91.85	181.95	10,602.48	-3,644.39	-525.19	3,644.39	4.75	4.62	-1.08
14,111.00	88.90	182.13	10,601.86	-3,739.32	-528.58	3,739.32	3.11	-3.11	0.19
14,205.00	90.11	183.92	10,602.67	-3,833.18	-533.54	3,833.18	2.30	1.29	1.90
14,299.00	92.50	183.38	10,600.53	-3,926.96	-539.52	3,926.96	2.61	2.54	-0.57
14,393.00	84.85	180.77	10,602.71	-4,020.79	-542.92	4,020.79	8.60	-8.14	-2.78
14,488.00	85.46	180.24	10,610.73	-4,115.45	-543.76	4,115.45	0.85	0.64	-0.56
14,583.00	88.13	178.98	10,616.04	-4,210.29	-543.11	4,210.29	3.11	2.81	-1.33
14,677.00	89.66	178.88	10,617.85	-4,304.25	-541.35	4,304.25	1.63	1.63	-0.11
14,771.00	91.43	179.07	10,616.96	-4,398.23	-539.67	4,398.23	1.89	1.88	0.20
14,865.00	91.25	178.91	10,614.76	-4,492.19	-538.02	4,492.19	0.26	-0.19	-0.17
14,959.00	88.91	178.41	10,614.63	-4,586.16	-535.82	4,586.16	2.55	-2.49	-0.53
15,053.00	91.28	179.14	10,614.47	-4,680.13	-533.81	4,680.13	2.64	2.52	0.78
15,147.00	90.94	178.73	10,612.65	-4,774.09	-532.06	4,774.09	0.57	-0.36	-0.44
15,241.00	89.09	177.97	10,612.63	-4,868.05	-529.35	4,868.05	2.13	-1.97	-0.81
15,336.00	90.24	178.02	10,613.18	-4,962.99	-526.03	4,962.99	1.21	1.21	0.05
15,431.00	90.78	178.31	10,612.34	-5,057.94	-522.99	5,057.94	0.65	0.57	0.31
15,525.00	90.66	177.96	10,611.16	-5,151.88	-519.93	5,151.88	0.39	-0.13	-0.37
15,620.00	90.62	178.65	10,610.10	-5,246.83	-517.12	5,246.83	0.73	-0.04	0.73
15,714.00	86.29	176.68	10,612.63	-5,340.69	-513.30	5,340.69	5.06	-4.61	-2.10
15,808.00	91.44	177.16	10,614.49	-5,434.50	-508.25	5,434.50	5.50	5.48	0.51
15,902.00	89.03	177.09	10,614.11	-5,528.38	-503.53	5,528.38	2.56	-2.56	-0.07
15,997.00	90.08	179.47	10,614.84	-5,623.32	-500.68	5,623.32	2.74	1.11	2.51
16,091.00	87.51	179.73	10,616.82	-5,717.29	-500.03	5,717.29	2.75	-2.73	0.28
16,186.00	91.06	180.22	10,618.01	-5,812.27	-499.98	5,812.27	3.77	3.74	0.52
16,279.00	89.92	180.92	10,617.21	-5,905.26	-500.91	5,905.26	1.44	-1.23	0.75
16,374.00	89.23	181.00	10,617.92	-6,000.24	-502.50	6,000.24	0.73	-0.73	0.08
16,468.00	90.46	180.38	10,618.17	-6,094.23	-503.63	6,094.23	1.47	1.31	-0.66
16,563.00	90.52	180.22	10,617.36	-6,189.23	-504.13	6,189.23	0.18	0.06	-0.17
16,657.00	90.55	179.84	10,616.48	-6,283.23	-504.18	6,283.23	0.41	0.03	-0.40
16,751.00	90.10	179.75	10,615.95	-6,377.22	-503.84	6,377.22	0.49	-0.48	-0.10
16,845.00	89.24	180.42	10,616.49	-6,471.22	-503.98	6,471.22	1.16	-0.91	0.71
16,939.00	89.59	180.90	10,617.45	-6,565.21	-505.07	6,565.21	0.63	0.37	0.51
17,033.00	89.53	180.02	10,618.17	-6,659.20	-505.82	6,659.20	0.94	-0.06	-0.94

Company: MARATHON OIL CORP.
Project: Eddy County, NM (NAD27)
Site: Southern Comfort State 24-28-25
Well: WD #10H
Wellbore: OH
Design: OH (Actual)

Local Co-ordinate Reference: Well WD #10H
TVD Reference: GE 2917' + KB 26.5' @ 2943.50usft (H&P 498)
MD Reference: GE 2917' + KB 26.5' @ 2943.50usft (H&P 498)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: EDM 5000.1 Single User Db

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)
17,128.00	89.48	179.07	10,618.99	-6,754.19	-505.07	6,754.19	1.00	-0.05	-1.00
17,222.00	91.60	179.74	10,618.10	-6,848.18	-504.09	6,848.18	2.37	2.26	0.71
17,315.00	91.20	179.91	10,615.83	-6,941.15	-503.81	6,941.15	0.47	-0.43	0.18
17,409.00	92.07	179.82	10,613.15	-7,035.11	-503.58	7,035.11	0.93	0.93	-0.10
17,503.00	86.95	179.99	10,613.95	-7,129.08	-503.43	7,129.08	5.45	-5.45	0.18
17,598.00	91.28	180.05	10,615.42	-7,224.04	-503.46	7,224.04	4.56	4.56	0.06
17,647.00	91.25	180.35	10,614.34	-7,273.03	-503.63	7,273.03	0.62	-0.06	0.61
LEAM MWD Surveys - (9,728' MD) 9,852' MD- 17,647' MD									
17,695.00	91.25	180.35	10,613.29	-7,321.02	-503.93	7,321.02	0.00	0.00	0.00
Projected to T.D.- 17,695' MD- 10,613.29' TVD									

Design Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
9,728.00	9,698.15	69.93	-444.49	MWD Survey (9728.00' MD)
17,647.00	10,614.34	-7,273.03	-503.63	LEAM MWD Surveys - (9,728' MD) 9,852' MD- 17,647' MD
17,695.00	10,613.29	-7,321.02	-503.93	Projected to T.D.- 17,695' MD- 10,613.29' TVD

Checked By: _____	Approved By: _____	Date: _____
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MARATHON OIL CORP.

Project: Eddy County, NM (NAD27)
Site: Southern Comfort State 24-28-25
Well: WD #10H
Wellbore: OH
Design: Plan #5



SECTION DETAILS										
Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	Vsect	Target
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2	3000.00	0.00	0.00	3000.00	0.00	0.00	0.00	0.00	0.00	
3	3400.00	8.00	280.00	3398.70	4.84	-27.46	2.00	280.00	-4.84	
4	6882.62	8.00	280.00	6847.43	89.01	-504.78	0.00	0.00	-89.01	
5	7282.62	0.00	0.00	7246.13	93.85	-532.24	2.00	180.00	-93.85	
6	10075.53	0.00	0.00	10039.04	93.85	-532.24	0.00	0.00	-93.85	
7	10975.53	90.00	180.00	10612.00	-479.11	-532.24	10.00	180.00	479.11	
8	17929.19	90.00	180.00	10612.00	-7432.77	-532.24	0.00	0.00	7432.77	
9	17973.42	90.00	180.00	10612.00	-7477.00	-532.24	0.00	0.00	7477.00	



Azimuths to Grid North
True North: -0.16°
Magnetic North: 7.02°

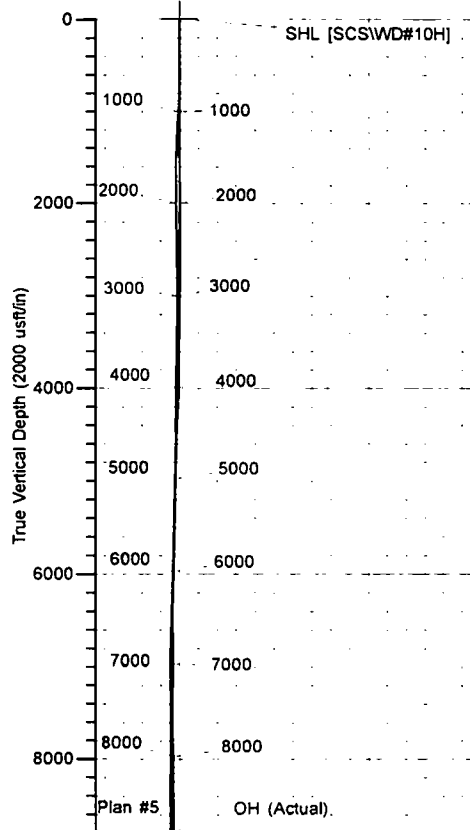
Magnetic Field
Strength: 47937.0nT
Dip Angle: 59.99°
Date: 9/4/2018
Model: USER DEFINED

PBHL/LTP [SCSIWD#10H p#5]

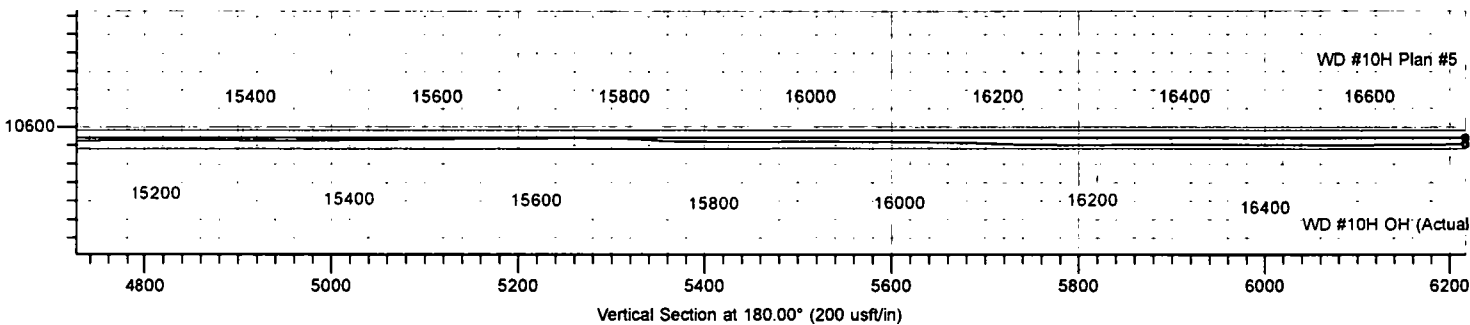
DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
FTP[SCSIWD#10H]	10569.00	-91.50	-551.62	432037.40	590977.4332° 11'	14.8054 N 104° 2'	21.3124 W
PBHL/LTP [SCSIWD#10H p#5]	10614.00-7432.77	-532.24	424696.72	590996.81 32° 10'	2.1592 N 104° 2'	21.3204 W	
SHL [SCSIWD#10H]	2.00	0.00	0.00	432128.89	591529.0132° 11'	15.6959 N 104° 2'	14.8909 W

PROJECT DETAILS: Eddy County, NM (NAD27)
Geodetic System: US State Plane 1927 (Exact solution)
Datum: NAD 1927 (NADCON CONUS)
Ellipsoid: Clarke 1866
Zone: New Mexico East 3001
Datum: GE 2919' + KB 26.5' @ 2945.50usft (H&P 498)

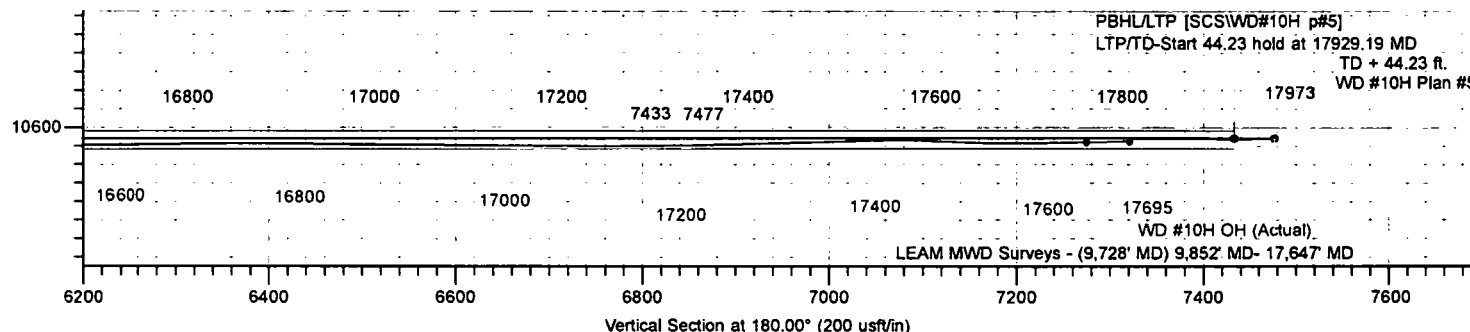


True Vertical Depth (200 usf/in)

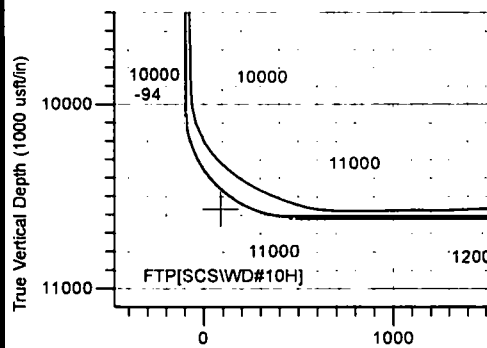


Vertical Section at 180.00° (200 usf/in)

True Vertical Depth (200 usf/in)

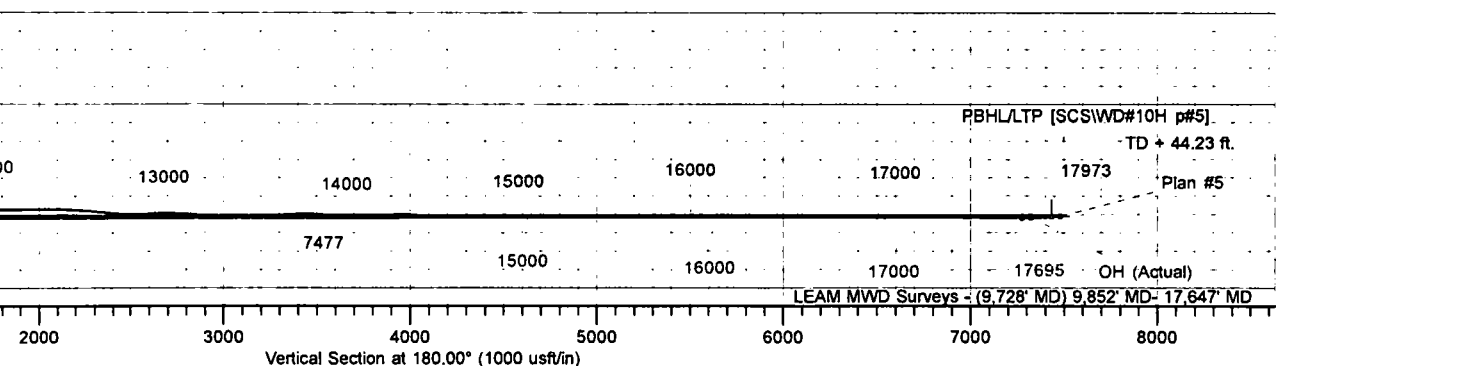


Vertical Section at 180.00° (200 usf/in)



True Vertical Depth (1000 usf/in)

True Vertical Depth (1000 usf/in)



Vertical Section at 180.00° (1000 usf/in)



LEAM DRILLING SERVICES
2010 East Davis, Conroe, Texas 77301
Phone: 936/756-7577, Fax: 936/756-7595

Plan: Plan #5 (WD #10H/OH)
Southern Comfort State 24-28-25
Created By: Nora Tucker
Date: 17:38, September 08 2018
Approved: _____
Date: _____

MARATHON OIL CORP.

Project: Eddy County, NM (NAD27)
Site: Southern Comfort State 24-28-25
Well: WD #10H
Wellbore: OH
Design: Plan #5



Azimuths to Grid North
True North: -0.16°
Magnetic North: 7.02°

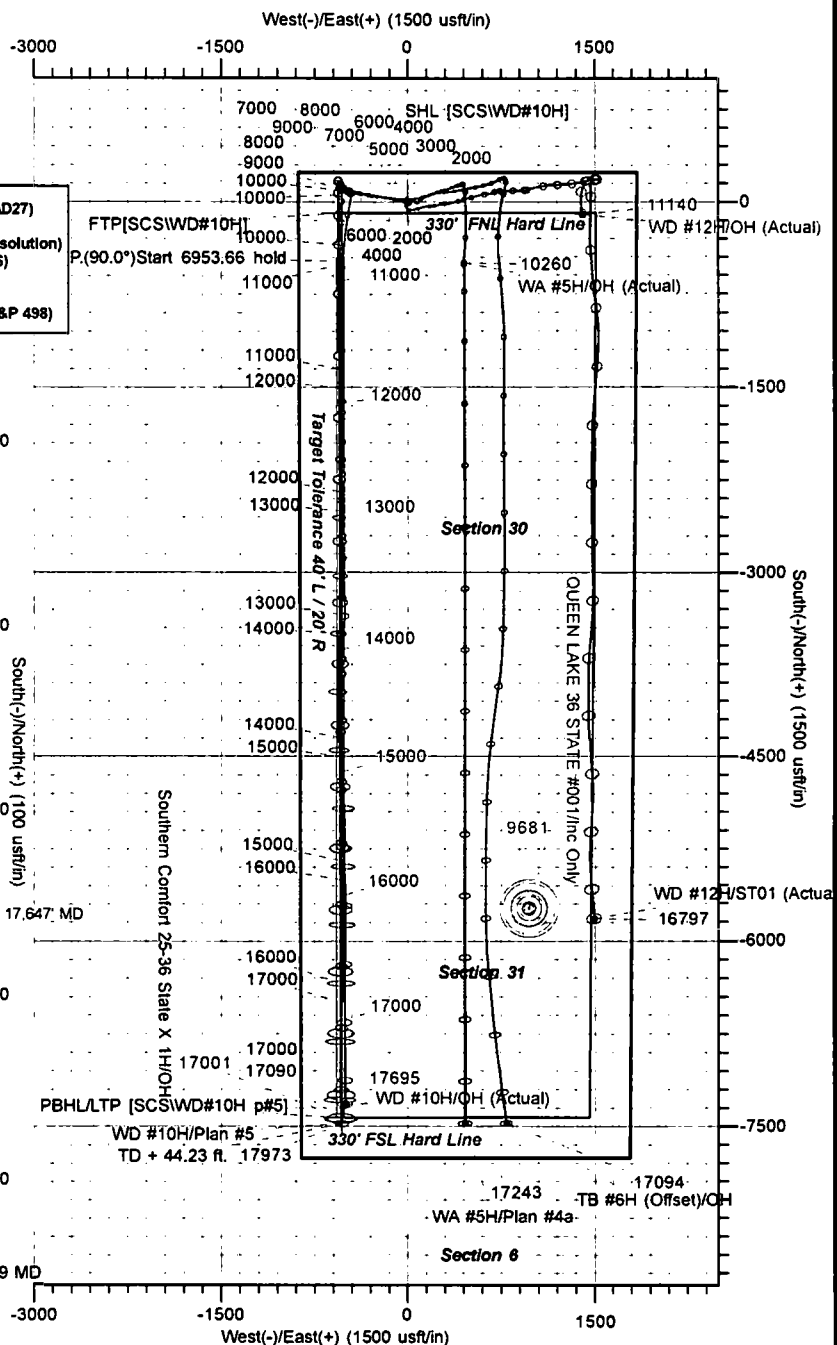
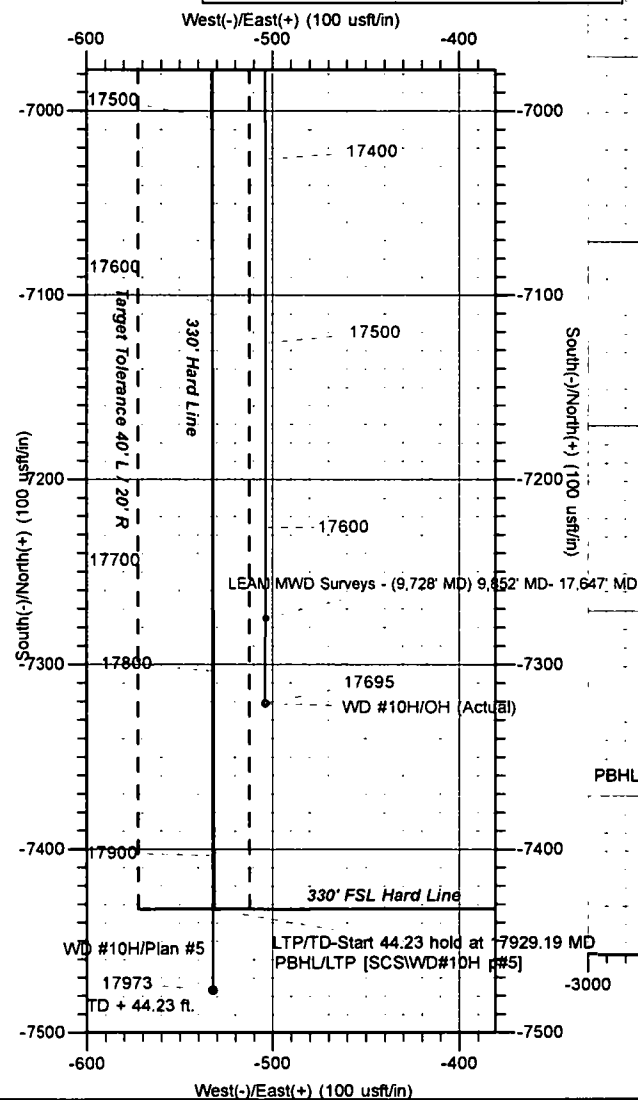
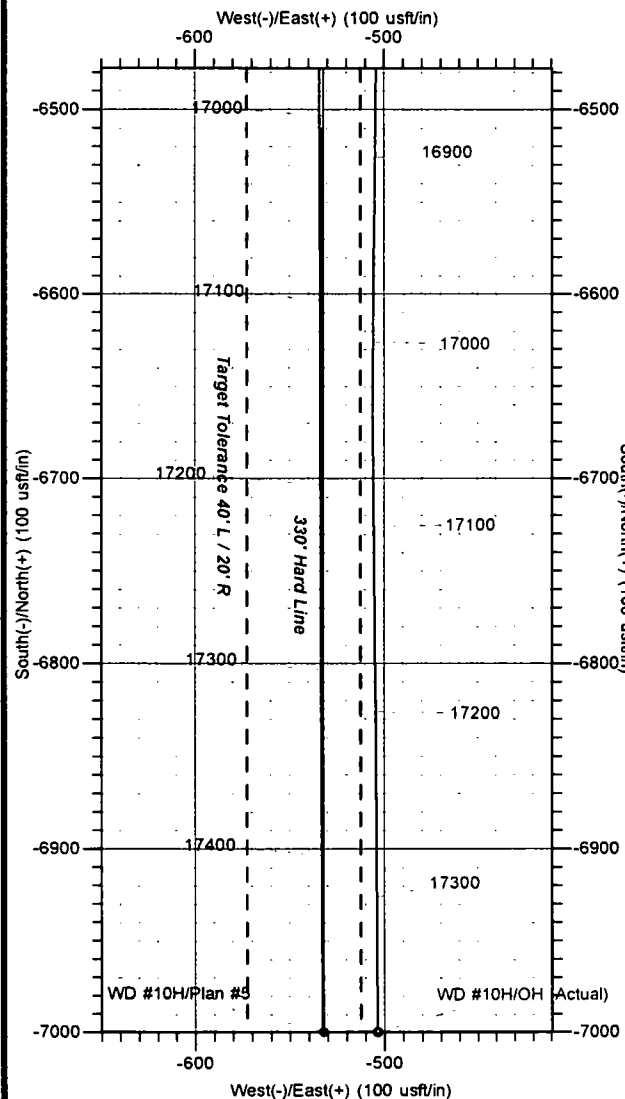
Magnetic Field
Strength: 47937.0snT
Dip Angle: 59.99°
Date: 9/4/2018
Model: USER DEFINED

DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
SHL [SCSWD#10H]	2.00	0.00	0.00	432128.89	591529.03	2° 11' 15.6959	N104° 2' 14.8909 W
FTP[SCSWD#10H]	10569.00	-91.50	-551.62	432037.40	590977.43	2° 11' 14.8054	N104° 2' 21.3124 W
PBHL/LTP [SCSWD#10H #p5]	10614.00	-7432.77	-532.24	424696.72	590996.81	2° 10' 2.1592	N104° 2' 21.3204 W

PROJECT DETAILS: Eddy County, NM (NAD27)

Geodetic System: US State Plane 1927 (Exact solution)
Datum: NAD 1927 (NADCON CONUS)
Ellipsoid: Clarke 1866
Zone: New Mexico East 3001
Datum: GE 2919' + KB 26.6' @ 2945.60usft (H&P 498)



LEAM DRILLING SERVICES
2010 East Davis, Conroe, Texas 77301
Phone: 936/756-7618, Fax: 936/756-7595

Plan: Plan #5 (WD #10H/OH)
Southern Comfort State 24-28-25
Created By: Lynn Hulin Date: 17:52, September 06 2018
Date: _____
Approved: _____ Date: _____