

Provide Signature Page for
Directional Survey



Marathon Oil

Marathon Oil

Eddy County, NM

Fiddle Fee 24-28-23 (3-4-7-8)

WD #8H 30.015-45038

OH

Design: MWD 167'-15391' PTB 15460'

Survey Report

03 October, 2018

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DEC 13 2018

DISTRICT II-ARTESIA O.C.D.



PRODIRECTIONAL

Company: Marathon Oil
Project: Eddy County, NM
Site: Fiddle Fee 24-28-23 (3-4-7-8)
Well: WD #8H
Wellbore: OH
Design: MWD 167'-15391' PTB 15460'

Local Co-ordinate Reference: Well WD #8H
TVD Reference: Well @ 3023.00usft (GL: 2996' KB: 27' (Precision582))
MD Reference: Well @ 3023.00usft (GL: 2996' KB: 27' (Precision582))
North Reference: Grid
Survey Calculation Method: Minimum Curvature
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	Fiddle Fee 24-28-23 (3-4-7-8)		
Site Position:		Northing: 438,692.25 usft	Latitude: 32.205799
From: Map		Easting: 582,820.53 usft	Longitude: -104.065566
Position Uncertainty: 0.00 usft		Slot Radius: 13-3/16 "	Grid Convergence: 0.14 °

Well	WD #8H		
Well Position	+N/-S 0.00 usft	Northing: 438,722.25 usft	Latitude: 32.205881
	+E/-W 0.00 usft	Easting: 582,820.53 usft	Longitude: -104.065566
Position Uncertainty 0.00 usft		Wellhead Elevation: usft	Ground Level: 2,996.00 usft

Wellbore	OH		
Magnetics	Model Name	Sample Date	Declination
	HDGM	7/4/2018	(°) 7.18
			Dip Angle (°) 59.98
			Field Strength (nT) 47,983.40

Design	MWD 167'-15391' PTB 15460'		
Audit Notes:			
Version: 1.0	Phase: ACTUAL	Tie On Depth: 0.00	
Vertical Section:	Depth From (TVD)	+N/-S	+E/-W
	(usft)	(usft)	(usft)
	0.00	0.00	0.00
			Direction (°) 90.61

Survey Program	Date 10/3/2018			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
167.00	15,460.00	Survey #1 (OH)	MWD+IFR1	OWSG MWD + IFR1



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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)		
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	438,722.25	582,820.53		
167.00	0.50	4.70	167.00	0.05	0.73	0.06	0.73	4.70	438,722.98	582,820.59		
229.00	0.50	287.90	229.00	-0.19	1.08	-0.18	1.09	350.76	438,723.33	582,820.35		
323.00	1.50	280.20	322.98	-1.79	1.42	-1.78	2.28	308.69	438,723.67	582,818.75		
416.00	2.10	292.20	415.93	-4.58	2.28	-4.55	5.09	296.63	438,724.53	582,815.98		
501.00	2.40	290.50	500.87	-7.70	3.49	-7.66	8.42	294.52	438,725.74	582,812.87		
608.00	2.20	282.80	607.78	-11.81	4.73	-11.76	12.68	291.92	438,726.98	582,808.77		
701.00	1.50	308.40	700.74	-14.52	5.89	-14.46	15.61	292.15	438,728.14	582,806.07		
794.00	1.90	312.90	793.69	-16.62	7.69	-16.54	18.24	294.94	438,729.94	582,803.99		
887.00	1.90	306.70	886.64	-19.01	9.66	-18.91	21.23	297.07	438,731.91	582,801.62		
978.00	2.90	326.40	977.56	-21.52	12.48	-21.39	24.76	300.26	438,734.73	582,799.14		
1,069.00	5.80	330.00	1,068.29	-25.16	18.38	-24.96	31.00	306.37	438,740.63	582,795.57		
1,159.00	7.00	333.30	1,157.73	-29.99	27.22	-29.70	40.29	312.50	438,749.47	582,790.83		
1,248.00	6.70	335.00	1,246.09	-34.72	36.77	-34.33	50.31	316.96	438,759.02	582,786.20		
1,338.00	7.00	338.60	1,335.45	-39.05	46.63	-38.55	60.51	320.42	438,768.88	582,781.98		
1,428.00	8.90	340.40	1,424.58	-43.51	58.30	-42.89	72.38	323.66	438,780.55	582,777.64		
1,518.00	8.60	340.50	1,513.54	-48.23	71.20	-47.47	85.58	326.31	438,793.45	582,773.06		
1,607.00	8.60	342.90	1,601.54	-52.54	83.83	-51.65	98.47	328.36	438,806.08	582,768.88		
1,697.00	10.00	345.30	1,690.35	-56.65	97.83	-55.61	112.53	330.38	438,820.08	582,764.92		
1,786.00	9.70	345.10	1,778.04	-60.69	112.55	-59.50	127.30	332.14	438,834.80	582,761.03		
1,876.00	9.00	350.30	1,866.84	-63.98	126.81	-62.63	141.44	333.71	438,849.06	582,757.90		
1,965.00	7.90	358.40	1,954.88	-65.46	139.79	-63.98	153.73	335.41	438,862.04	582,756.55		
2,055.00	7.50	357.00	2,044.07	-66.07	151.84	-64.46	164.95	337.00	438,874.09	582,756.07		
2,144.00	8.70	346.50	2,132.18	-68.08	164.18	-66.33	177.08	338.00	438,886.43	582,754.20		
2,234.00	9.40	340.50	2,221.06	-72.26	177.73	-70.38	191.16	338.40	438,899.98	582,750.15		
2,323.00	8.30	343.10	2,309.00	-76.70	190.73	-74.67	204.82	338.62	438,912.98	582,745.86		
2,413.00	7.40	351.10	2,398.16	-79.61	202.67	-77.46	216.97	339.08	438,924.92	582,743.07		

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MD Reference:
North Reference:
Survey Calculation Method:
Database:

Well WD #8H
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 Well @ 3023.00usft (GL: 2996' KB: 27' (Precision582))
 Grid
 Minimum Curvature
 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)
2,503.00	8.90	344.20	2,487.25	-82.53	215.10	-80.25	229.58	339.54	438,937.35	582,740.28
2,533.00	9.10	342.60	2,516.88	-83.92	219.59	-81.59	234.26	339.62	438,941.84	582,738.94
2,677.00	8.40	340.70	2,659.21	-91.03	240.39	-88.47	256.15	339.79	438,962.64	582,732.06
2,766.00	8.20	340.70	2,747.27	-95.40	252.51	-92.72	269.00	339.84	438,974.76	582,727.81
2,856.00	8.90	340.90	2,836.27	-99.93	265.15	-97.12	282.37	339.88	438,987.40	582,723.41
2,945.00	11.20	340.40	2,923.90	-105.24	279.80	-102.27	297.90	339.92	439,002.05	582,718.26
3,034.00	11.80	339.80	3,011.12	-111.46	296.48	-108.31	315.65	339.93	439,018.73	582,712.22
3,124.00	12.10	338.80	3,099.17	-118.24	313.91	-114.90	334.28	339.90	439,036.16	582,705.63
3,213.00	12.80	337.90	3,186.07	-125.51	331.74	-121.98	353.46	339.81	439,053.99	582,698.55
3,303.00	13.30	336.60	3,273.75	-133.57	350.48	-129.85	373.76	339.67	439,072.73	582,690.68
3,392.00	12.90	338.60	3,360.43	-141.46	369.13	-137.54	393.92	339.56	439,091.38	582,682.99
3,482.00	9.90	340.10	3,448.65	-147.94	385.76	-143.84	411.70	339.55	439,108.01	582,676.69
3,572.00	8.50	340.10	3,537.49	-152.98	399.29	-148.73	426.09	339.57	439,121.54	582,671.80
3,661.00	8.70	339.80	3,625.49	-157.67	411.79	-153.30	439.40	339.58	439,134.04	582,667.23
3,751.00	8.70	338.80	3,714.45	-162.62	424.53	-158.11	453.01	339.57	439,146.78	582,662.42
3,841.00	9.20	338.30	3,803.35	-167.88	437.56	-163.23	467.01	339.54	439,159.81	582,657.30
3,930.00	9.40	338.00	3,891.18	-173.37	450.91	-168.58	481.39	339.50	439,173.16	582,651.95
4,020.00	9.20	337.10	3,980.00	-179.07	464.35	-174.14	495.93	339.44	439,186.60	582,646.39
4,109.00	9.10	337.20	4,067.87	-184.70	477.39	-179.63	510.07	339.38	439,199.64	582,640.90
4,199.00	8.70	335.40	4,156.78	-190.43	490.14	-185.22	523.97	339.30	439,212.39	582,635.31
4,288.00	8.60	334.30	4,244.77	-196.25	502.26	-190.91	537.32	339.19	439,224.51	582,629.62
4,378.00	8.90	338.90	4,333.73	-201.81	514.82	-196.34	550.98	339.12	439,237.07	582,624.19
4,467.00	9.40	346.60	4,421.60	-206.11	528.31	-200.50	565.08	339.22	439,250.56	582,620.03
4,557.00	9.50	346.80	4,510.38	-209.66	542.69	-203.90	579.73	339.41	439,264.94	582,616.63
4,647.00	9.50	346.00	4,599.14	-213.31	557.13	-207.39	594.48	339.58	439,279.38	582,613.14
4,736.00	9.40	344.80	4,686.93	-217.14	571.27	-211.07	609.01	339.72	439,293.52	582,609.46
4,826.00	8.50	344.40	4,775.84	-221.00	584.77	-214.79	622.97	339.83	439,307.02	582,605.74



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4,915.00	8.40	342.20	4,863.87	-224.89	597.29	-218.55	636.02	339.90	439,319.54	582,601.98	
5,005.00	7.60	340.60	4,952.99	-229.01	609.16	-222.53	648.54	339.93	439,331.41	582,598.00	
5,094.00	6.50	334.70	5,041.32	-233.22	619.27	-226.64	659.44	339.90	439,341.52	582,593.89	
5,184.00	5.50	335.20	5,130.83	-237.30	627.79	-230.63	668.81	339.83	439,350.04	582,589.90	
5,274.00	4.80	346.50	5,220.47	-240.07	635.37	-233.31	676.85	339.84	439,357.62	582,587.22	
5,364.00	4.40	344.50	5,310.18	-241.94	642.36	-235.12	684.03	339.90	439,364.61	582,585.41	
5,453.00	4.30	340.30	5,398.92	-244.05	648.79	-237.15	690.77	339.92	439,371.04	582,583.38	
5,543.00	4.00	340.30	5,488.68	-246.31	654.92	-239.35	697.29	339.92	439,377.17	582,581.18	
5,633.00	3.30	2.60	5,578.50	-247.31	660.46	-240.29	702.82	340.01	439,382.71	582,580.24	
5,723.00	2.80	12.30	5,668.38	-246.77	665.20	-239.70	707.07	340.18	439,387.45	582,580.83	
5,812.00	2.20	12.10	5,757.29	-245.99	668.99	-238.88	710.36	340.35	439,391.24	582,581.65	
5,902.00	1.90	10.20	5,847.23	-245.40	672.15	-238.26	713.13	340.48	439,394.40	582,582.27	
5,991.00	1.60	7.30	5,936.19	-245.01	674.83	-237.84	715.52	340.59	439,397.08	582,582.69	
6,081.00	1.30	1.10	6,026.16	-244.85	677.10	-237.66	717.60	340.66	439,399.35	582,582.87	
6,171.00	1.00	357.40	6,116.15	-244.89	678.91	-237.67	719.31	340.71	439,401.16	582,582.86	
6,261.00	0.60	327.60	6,206.14	-245.19	680.09	-237.96	720.52	340.72	439,402.34	582,582.57	
6,351.00	0.50	301.00	6,296.13	-245.78	680.69	-238.55	721.28	340.69	439,402.94	582,581.98	
6,440.00	1.60	316.90	6,385.12	-246.98	681.80	-239.73	722.72	340.63	439,404.05	582,580.80	
6,530.00	2.50	319.00	6,475.06	-249.15	684.20	-241.88	725.69	340.53	439,406.45	582,578.65	
6,619.00	3.00	316.30	6,563.96	-252.07	687.34	-244.76	729.62	340.40	439,409.59	582,575.77	
6,709.00	3.60	309.60	6,653.81	-255.91	690.85	-248.57	734.20	340.21	439,413.10	582,571.96	
6,799.00	3.30	309.60	6,743.64	-260.12	694.30	-252.74	738.87	340.00	439,416.55	582,567.79	
6,888.00	2.80	321.70	6,832.52	-263.47	697.64	-256.06	743.15	339.84	439,419.89	582,564.47	
6,978.00	2.70	302.10	6,922.42	-266.66	700.49	-259.22	746.92	339.69	439,422.74	582,561.31	
7,068.00	3.90	283.20	7,012.27	-271.46	702.32	-263.99	750.29	339.40	439,424.57	582,556.54	
7,157.00	4.00	286.40	7,101.06	-277.40	703.88	-269.92	753.86	339.02	439,426.13	582,550.61	
7,247.00	2.60	302.70	7,190.91	-282.15	705.87	-274.65	757.42	338.74	439,428.12	582,545.88	



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7,337.00	0.80	5.90	7,280.87	-283.82	707.60	-276.30	759.63	338.67	439,429.85	582,544.23
7,425.00	0.10	143.10	7,368.87	-283.72	708.15	-276.19	760.11	338.69	439,430.40	582,544.34
7,515.00	0.30	222.10	7,458.87	-283.82	707.91	-276.30	759.92	338.68	439,430.16	582,544.23
7,605.00	1.50	104.40	7,548.86	-282.84	707.45	-275.32	759.13	338.74	439,429.70	582,545.21
7,695.00	1.90	134.40	7,638.82	-280.62	706.11	-273.11	757.09	338.85	439,428.36	582,547.42
7,784.00	2.70	152.30	7,727.75	-278.56	703.22	-271.08	753.66	338.92	439,425.47	582,549.45
7,874.00	1.80	124.40	7,817.68	-276.38	700.54	-268.93	750.39	339.00	439,422.79	582,551.60
7,963.00	3.10	59.30	7,906.61	-273.16	700.98	-265.71	749.65	339.24	439,423.23	582,554.82
8,053.00	3.70	57.80	7,996.45	-268.64	703.77	-261.16	750.67	339.64	439,426.02	582,559.37
8,142.00	3.30	64.20	8,085.29	-263.93	706.42	-256.42	751.52	340.05	439,428.67	582,564.11
8,232.00	2.40	62.70	8,175.17	-259.94	708.41	-252.42	752.04	340.39	439,430.66	582,568.11
8,322.00	1.90	64.70	8,265.11	-256.94	709.91	-249.39	752.44	340.64	439,432.16	582,571.14
8,411.00	1.20	41.80	8,354.08	-255.00	711.24	-247.44	753.05	340.82	439,433.49	582,573.09
8,501.00	0.90	4.10	8,444.06	-254.33	712.65	-246.76	754.16	340.90	439,434.90	582,573.77
8,590.00	0.50	275.90	8,533.06	-254.68	713.38	-247.10	754.96	340.90	439,435.63	582,573.43
8,680.00	1.50	235.60	8,623.04	-256.03	712.76	-248.46	754.82	340.78	439,435.01	582,572.07
8,770.00	1.50	247.20	8,713.01	-258.08	711.64	-250.52	754.44	340.61	439,433.89	582,570.01
8,859.00	1.30	277.60	8,801.99	-260.15	711.32	-252.59	754.83	340.45	439,433.57	582,567.94
8,949.00	1.30	295.90	8,891.97	-262.09	711.90	-254.52	756.03	340.33	439,434.15	582,566.01
9,038.00	1.40	301.90	8,980.94	-263.93	712.91	-256.35	757.60	340.22	439,435.16	582,564.18
9,128.00	1.60	309.80	9,070.91	-265.84	714.30	-258.25	759.55	340.12	439,436.55	582,562.28
9,217.00	1.50	305.10	9,159.88	-267.76	715.76	-260.16	761.58	340.03	439,438.01	582,560.37
9,307.00	1.20	303.50	9,249.85	-269.53	716.96	-261.91	763.30	339.93	439,439.21	582,558.62
9,397.00	1.10	302.60	9,339.83	-271.05	717.95	-263.42	764.75	339.85	439,440.20	582,557.11
9,487.00	1.00	291.20	9,429.82	-272.52	718.70	-264.88	765.96	339.77	439,440.95	582,555.65
9,528.00	0.90	263.90	9,470.81	-273.17	718.79	-265.54	766.27	339.72	439,441.04	582,554.99
9,593.00	1.10	267.80	9,535.80	-274.30	718.71	-266.67	766.59	339.64	439,440.96	582,553.86



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Wellbore: OH
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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)
9,688.00	0.90	263.90	9,630.79	-275.96	718.60	-268.32	767.06	339.52	439,440.85	582,552.21
9,783.00	1.20	269.60	9,725.77	-277.69	718.51	-270.06	767.59	339.40	439,440.76	582,550.47
9,877.00	1.20	260.50	9,819.75	-279.64	718.34	-272.01	768.12	339.26	439,440.59	582,548.52
9,972.00	1.00	253.30	9,914.74	-281.42	717.94	-273.79	768.37	339.13	439,440.19	582,546.74
10,066.00	13.90	96.80	10,007.87	-270.91	716.36	-263.30	763.22	339.82	439,438.61	582,557.23
10,160.00	21.40	87.00	10,097.40	-242.53	715.92	-234.92	753.48	341.83	439,438.17	582,585.61
10,254.00	32.50	91.70	10,181.07	-200.03	716.07	-192.41	741.47	344.96	439,438.32	582,628.12
10,349.00	41.40	93.20	10,256.92	-143.01	713.55	-135.42	726.29	349.25	439,435.80	582,685.11
10,443.00	53.50	89.90	10,320.38	-73.92	711.88	-66.34	714.96	354.68	439,434.13	582,754.19
10,538.00	62.30	88.70	10,370.81	6.46	712.90	14.05	713.04	1.13	439,435.15	582,834.58
10,633.00	67.60	93.80	10,411.04	92.44	710.94	100.02	717.94	8.01	439,433.19	582,920.55
10,727.00	71.10	92.40	10,444.19	180.31	706.20	187.83	730.75	14.89	439,428.45	583,008.36
10,822.00	78.70	99.50	10,468.95	271.48	696.60	278.92	750.37	21.82	439,418.85	583,099.45
10,916.00	89.90	91.00	10,478.28	364.48	688.13	371.83	782.17	28.38	439,410.38	583,192.36
11,011.00	92.30	87.60	10,476.46	459.42	689.29	466.79	832.47	34.11	439,411.54	583,287.32
11,106.00	89.80	87.90	10,474.72	554.28	693.02	561.69	892.06	39.02	439,415.27	583,382.22
11,200.00	88.30	87.00	10,476.28	648.12	697.20	655.58	957.01	43.24	439,419.45	583,476.11
11,295.00	89.20	87.00	10,478.35	742.91	702.17	750.43	1,027.71	46.90	439,424.42	583,570.96
11,389.00	87.10	84.10	10,481.39	836.48	709.46	844.08	1,102.63	49.95	439,431.71	583,664.61
11,483.00	87.50	86.30	10,485.81	929.95	717.32	937.64	1,180.55	52.58	439,439.57	583,758.17
11,578.00	86.90	85.10	10,490.46	1,024.48	724.43	1,032.26	1,261.09	54.94	439,446.68	583,852.79
11,672.00	90.90	91.10	10,492.26	1,118.32	727.54	1,126.12	1,340.70	57.14	439,449.79	583,946.65
11,767.00	91.00	90.20	10,490.69	1,213.30	726.46	1,221.10	1,420.86	59.25	439,448.71	584,041.63
11,862.00	90.50	92.20	10,489.44	1,308.28	724.47	1,316.07	1,502.30	61.17	439,446.72	584,136.60
11,956.00	86.60	89.80	10,491.82	1,402.23	722.83	1,410.00	1,584.48	62.86	439,445.08	584,230.53
12,050.00	91.00	92.40	10,493.79	1,496.17	721.03	1,503.93	1,667.84	64.39	439,443.28	584,324.46
12,145.00	94.70	93.10	10,489.07	1,590.97	716.48	1,598.69	1,751.90	65.86	439,438.73	584,419.22



Professional Directional Survey Report



Company: Marathon Oil
Project: Eddy County, NM
Site: Fiddle Fee 24-28-23 (3-4-7-8)
Well: WD #8H
Wellbore: OH
Design: MWD 167'-15391' PTB 15460'

Local Co-ordinate Reference: Well WD #8H
TVD Reference: Well @ 3023.00usft (GL: 2996' KB: 27' (Precision582))
MD Reference: Well @ 3023.00usft (GL: 2996' KB: 27' (Precision582))
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)
12,239.00	94.10	95.20	10,481.85	1,684.51	709.69	1,692.16	1,834.96	67.25	439,431.94	584,512.69
12,335.00	91.30	95.60	10,477.33	1,780.06	700.67	1,787.62	1,920.03	68.60	439,422.92	584,608.15
12,429.00	84.80	92.60	10,480.53	1,873.77	693.95	1,881.26	2,005.17	69.75	439,416.20	584,701.79
12,524.00	84.80	92.70	10,489.14	1,968.32	689.58	1,975.77	2,092.65	70.76	439,411.83	584,796.30
12,619.00	84.20	92.30	10,498.25	2,062.83	685.45	2,070.24	2,180.77	71.68	439,407.70	584,890.77
12,713.00	93.10	95.20	10,500.46	2,156.55	679.31	2,163.91	2,268.03	72.57	439,401.56	584,984.44
12,808.00	88.40	95.10	10,499.22	2,251.22	670.79	2,258.49	2,356.00	73.46	439,393.04	585,079.02
12,903.00	83.50	94.70	10,505.92	2,345.69	662.69	2,352.88	2,444.42	74.27	439,384.94	585,173.41
12,997.00	87.10	88.30	10,513.63	2,439.30	660.26	2,446.47	2,534.00	74.90	439,382.51	585,267.00
13,092.00	85.50	88.10	10,519.76	2,534.01	663.23	2,541.22	2,626.34	75.37	439,385.48	585,361.75
13,187.00	86.30	84.60	10,526.56	2,628.49	669.27	2,635.77	2,719.41	75.75	439,391.52	585,456.30
13,281.00	87.00	82.30	10,532.05	2,721.59	679.97	2,728.99	2,812.42	76.01	439,402.22	585,549.52
13,376.00	90.80	91.80	10,533.88	2,816.27	684.85	2,823.72	2,905.58	76.37	439,407.10	585,644.25
13,471.00	90.80	92.80	10,532.55	2,911.22	681.04	2,918.63	2,997.03	76.87	439,403.29	585,739.16
13,566.00	94.40	91.30	10,528.24	3,006.07	677.64	3,013.45	3,088.71	77.33	439,399.89	585,833.98
13,661.00	88.10	92.00	10,526.17	3,100.98	674.91	3,108.34	3,180.77	77.75	439,397.16	585,928.87
13,755.00	87.70	91.00	10,529.62	3,194.91	672.45	3,202.25	3,272.09	78.14	439,394.70	586,022.78
13,850.00	86.50	89.80	10,534.42	3,289.78	671.78	3,297.12	3,364.86	78.48	439,394.03	586,117.65
13,945.00	84.80	88.00	10,541.63	3,384.46	673.60	3,391.82	3,458.06	78.77	439,395.85	586,212.35
14,039.00	87.30	89.70	10,548.10	3,478.18	675.48	3,485.57	3,550.42	79.03	439,397.73	586,306.10
14,134.00	91.90	88.90	10,548.77	3,573.13	676.64	3,580.53	3,643.91	79.30	439,398.89	586,401.06
14,228.00	87.20	89.50	10,549.50	3,667.07	677.95	3,674.49	3,736.51	79.55	439,400.20	586,495.02
14,323.00	86.10	92.40	10,555.06	3,761.89	676.38	3,769.31	3,829.51	79.83	439,398.63	586,589.84
14,418.00	89.10	90.50	10,559.03	3,856.78	673.98	3,864.18	3,922.51	80.11	439,396.23	586,684.71
14,512.00	87.00	87.70	10,562.23	3,950.68	675.46	3,958.10	4,015.32	80.32	439,397.71	586,778.63
14,607.00	88.60	88.50	10,565.88	4,045.52	678.60	4,052.97	4,109.39	80.49	439,400.85	586,873.50
14,702.00	90.70	85.70	10,566.46	4,140.32	683.41	4,147.83	4,203.76	80.64	439,405.66	586,968.36



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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)
14,796.00	89.10	84.50	10,566.62	4,233.88	691.44	4,241.48	4,297.47	80.74	439,413.69	587,062.01
14,891.00	90.90	90.90	10,566.62	4,328.71	695.25	4,336.35	4,391.74	80.89	439,417.50	587,156.88
14,986.00	86.10	91.80	10,569.11	4,423.64	693.01	4,431.27	4,485.13	81.11	439,415.26	587,251.80
15,081.00	89.90	96.50	10,572.43	4,518.35	686.14	4,525.92	4,577.63	81.38	439,408.39	587,346.45
15,175.00	86.20	96.00	10,575.63	4,611.83	675.91	4,619.29	4,668.48	81.68	439,398.16	587,439.82
15,270.00	85.50	96.30	10,582.50	4,706.14	665.76	4,713.49	4,760.28	81.96	439,388.01	587,534.02
15,364.00	84.30	95.50	10,590.86	4,799.36	656.14	4,806.62	4,851.20	82.23	439,378.39	587,627.15
15,391.00	83.80	95.10	10,593.66	4,826.13	653.66	4,833.36	4,877.36	82.30	439,375.91	587,653.89
Last Survey: 15391' MD, 10594' TVD										
15,460.00	83.80	95.10	10,601.11	4,894.51	647.56	4,901.69	4,944.27	82.47	439,369.81	587,722.22
PTB: 15460' MD, 10601' TVD										

Design Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
15,391.00	10,593.66	653.66	4,833.36	Last Survey: 15391' MD, 10594' TVD
15,460.00	10,601.11	647.56	4,901.69	PTB: 15460' MD, 10601' TVD

