



Marathon Oil

Marathon Oil

Eddy County, NM

Whistle Pig 1

WXY Fee #9H

OH

Design: Gyro/MWD 506'-14446' PTB 14503'

Survey Report

04 March, 2019

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DISTRICT/ARTESIA/O.C.D.



PRODIRECTIONAL

Company:	Marathon Oil	Local Co-ordinate Reference:	Well WXY Fee #9H
Project:	Eddy County, NM	TVD Reference:	Well @ 2937.00usft (GL: 2912' + KB: 25' (PD594))
Site:	Whistle Pig 1	MD Reference:	Well @ 2937.00usft (GL: 2912' + KB: 25' (PD594))
Well:	WXY Fee #9H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	Gyro/MWD 506'-14446' PTB 14503'	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		Whistle Pig 1			
Site Position:		Northing:		424,067.27 usft	
From:		Easting:		592,517.05 usft	
Position Uncertainty:		Slot Radius:		13-3/16 "	
Map				Latitude:	
0.00 usft				32.165525	
				Longitude:	
				-104.034348	
				Grid Convergence:	
				0.16 °	

Well	WXY Fee #9H					
Well Position	+N/-S	0.00 usft	Northing:	424,067.27 usft	Latitude:	32.165524
	+E/-W	0.00 usft	Easting:	592,577.05 usft	Longitude:	-104.034154
Position Uncertainty		0.00 usft	Wellhead Elevation:	usft	Ground Level:	2,912.00 usft

Wellbore	OH				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	HDGM	2/1/2019	7.05	59.90	47,920.40

Design		Gyro/MWD 506'-14446' PTB 14503'			
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	179.94	



Professional Directional Survey Report



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Project:	Eddy County, NM	TVD Reference:	Well @ 2937.00usft (GL: 2912' + KB: 25' (PD594))
Site:	Whistle Pig 1	MD Reference:	Well @ 2937.00usft (GL: 2912' + KB: 25' (PD594))
Well:	WXY Fee #9H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
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Survey Program		Date 3/4/2019		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
55.00	414.00	Survey #1 (OH)	GYRO-NS-CT	OWSG XYZ Accel with XY Static and Continuous Gyro
506.00	14,503.00	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	424,067.27	592,577.05
5.20	0.14	108.83	5.20	0.00	0.00	0.01	0.01	108.83	424,067.27	592,577.06
[WhistleWXY#9H]FTP										
55.00	1.50	108.83	54.99	0.23	-0.23	0.68	0.72	108.83	424,067.04	592,577.73
145.00	1.70	334.83	144.98	-0.59	0.60	1.23	1.37	64.13	424,067.87	592,578.28
239.00	1.30	303.83	238.95	-2.45	2.45	-0.25	2.46	354.17	424,069.72	592,576.80
271.00	0.70	324.83	270.94	-2.81	2.81	-0.66	2.89	346.71	424,070.08	592,576.39
334.00	0.80	355.83	333.94	-3.57	3.57	-0.92	3.68	345.57	424,070.84	592,576.13
414.00	0.30	327.83	413.93	-4.30	4.30	-1.07	4.43	346.03	424,071.57	592,575.98
506.00	1.40	255.70	505.92	-4.23	4.23	-2.29	4.81	331.58	424,071.50	592,574.76
597.00	1.50	249.50	596.89	-3.54	3.54	-4.48	5.71	308.28	424,070.81	592,572.57
688.00	1.30	249.30	687.87	-2.76	2.75	-6.56	7.12	292.76	424,070.02	592,570.49
781.00	0.20	240.40	780.86	-2.31	2.30	-7.69	8.03	286.65	424,069.57	592,569.36
871.00	0.70	45.60	870.86	-2.62	2.61	-7.43	7.88	289.33	424,069.88	592,569.62
962.00	0.60	355.50	961.85	-3.48	3.47	-7.07	7.88	296.14	424,070.74	592,569.98
1,054.00	0.30	53.10	1,053.85	-4.10	4.10	-6.92	8.04	300.63	424,071.37	592,570.13
1,156.00	1.40	80.50	1,155.84	-4.47	4.46	-5.48	7.06	309.17	424,071.73	592,571.57
1,246.00	2.00	65.60	1,245.80	-5.30	5.29	-2.96	6.06	330.77	424,072.56	592,574.09
1,335.00	2.70	64.70	1,334.72	-6.83	6.83	0.35	6.84	2.92	424,074.10	592,577.40
1,424.00	3.30	68.90	1,423.60	-8.64	8.65	4.63	9.81	28.18	424,075.92	592,581.68
1,514.00	3.00	71.00	1,513.46	-10.34	10.35	9.28	13.90	41.88	424,077.62	592,586.33

Company: Marathon Oil
Project: Eddy County, NM
Site: Whistle Pig 1
Well: WXY Fee #9H
Wellbore: OH
Design: Gyro/MWD 506'-14446' PTB 14503'

Local Co-ordinate Reference:
TVD Reference:
MD Reference:
North Reference:
Survey Calculation Method:
Database:

Well WXY Fee #9H
 Well @ 2937.00usft (GL: 2912' + KB: 25' (PD594))
 Well @ 2937.00usft (GL: 2912' + KB: 25' (PD594))
 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)	
1,603.00	2.70	67.70	1,602.35	-11.89	11.90	13.42	17.94	48.43	424,079.17	592,590.47	
1,692.00	2.20	64.60	1,691.27	-13.41	13.43	16.90	21.59	51.53	424,080.70	592,593.95	
1,782.00	1.90	59.10	1,781.21	-14.92	14.94	19.74	24.76	52.89	424,082.21	592,596.79	
1,871.00	2.30	61.60	1,870.15	-16.52	16.54	22.58	27.99	53.77	424,083.81	592,599.63	
1,960.00	3.00	68.40	1,959.06	-18.22	18.25	26.31	32.02	55.26	424,085.52	592,603.36	
2,050.00	3.40	80.10	2,048.92	-19.54	19.58	31.13	36.78	57.84	424,086.85	592,608.18	
2,139.00	3.80	86.80	2,137.74	-20.16	20.19	36.68	41.87	61.16	424,087.46	592,613.73	
2,228.00	3.30	91.60	2,226.57	-20.24	20.29	42.18	46.81	64.32	424,087.56	592,619.23	
2,318.00	3.70	87.90	2,316.40	-20.27	20.32	47.67	51.83	66.91	424,087.59	592,624.72	
2,407.00	4.50	89.10	2,405.18	-20.42	20.48	54.04	57.79	69.24	424,087.75	592,631.09	
2,496.00	4.70	87.70	2,493.89	-20.62	20.68	61.17	64.57	71.32	424,087.95	592,638.22	
2,585.00	3.90	75.20	2,582.64	-21.53	21.60	67.74	71.10	72.31	424,088.87	592,644.79	
2,602.00	3.80	73.20	2,599.60	-21.84	21.91	68.84	72.24	72.34	424,089.18	592,645.89	
2,664.00	3.30	77.50	2,661.48	-22.82	22.89	72.55	76.07	72.49	424,090.16	592,649.60	
2,754.00	4.30	74.10	2,751.28	-24.30	24.38	78.32	82.03	72.71	424,091.65	592,655.37	
2,843.00	6.60	64.60	2,839.88	-27.40	27.49	86.15	90.43	72.30	424,094.76	592,663.20	
2,932.00	8.90	57.70	2,928.06	-33.26	33.36	96.59	102.19	70.95	424,100.63	592,673.64	
3,022.00	10.50	56.90	3,016.77	-41.44	41.56	109.35	116.98	69.19	424,108.83	592,686.40	
3,111.00	11.20	57.80	3,104.18	-50.46	50.59	123.46	133.42	67.72	424,117.86	592,700.51	
3,201.00	11.10	56.80	3,192.48	-59.85	59.99	138.10	150.57	66.52	424,127.26	592,715.15	
3,290.00	10.90	56.80	3,279.84	-69.13	69.29	152.31	167.33	65.54	424,136.56	592,729.36	
3,380.00	10.60	56.00	3,368.26	-78.41	78.58	166.29	183.93	64.71	424,145.85	592,743.34	
3,469.00	10.60	55.40	3,455.75	-87.62	87.81	179.82	200.11	63.97	424,155.08	592,756.87	
3,558.00	9.90	55.60	3,543.33	-96.58	96.78	192.87	215.79	63.35	424,164.05	592,769.92	
3,648.00	9.00	54.20	3,632.10	-105.05	105.27	204.96	230.42	62.82	424,172.54	592,782.01	
3,737.00	10.30	57.10	3,719.84	-113.43	113.66	217.29	245.22	62.39	424,180.93	592,794.34	
3,826.00	11.30	56.70	3,807.26	-122.53	122.77	231.26	261.83	62.04	424,190.04	592,808.31	



Professional Directional Survey Report



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Project:	Eddy County, NM	TVD Reference:	Well @ 2937.00usft (GL: 2912' + KB: 25' (PD594))
Site:	Whistle Pig 1	MD Reference:	Well @ 2937.00usft (GL: 2912' + KB: 25' (PD594))
Well:	WXY Fee #9H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	Gyro/MWD 506'-14446' PTB 14503'	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)	
3,915.00	11.50	57.00	3,894.51	-132.13	132.39	245.99	279.35	61.71	424,199.66	592,823.04	
4,005.00	11.50	55.70	3,982.70	-142.06	142.33	260.92	297.22	61.39	424,209.60	592,837.97	
4,094.00	11.20	54.30	4,069.96	-152.09	152.38	275.27	314.63	61.03	424,219.65	592,852.32	
4,184.00	10.40	58.50	4,158.37	-161.42	161.72	289.30	331.43	60.79	424,228.99	592,866.35	
4,273.00	10.10	58.10	4,245.95	-169.73	170.04	302.77	347.25	60.68	424,237.31	592,879.82	
4,363.00	8.70	63.20	4,334.74	-176.95	177.28	315.55	361.94	60.67	424,244.55	592,892.60	
4,452.00	7.90	66.40	4,422.81	-182.42	182.77	327.16	374.75	60.81	424,250.04	592,904.21	
4,542.00	8.00	66.20	4,511.94	-187.41	187.77	338.56	387.14	60.99	424,255.04	592,915.61	
4,631.00	8.00	65.00	4,600.08	-192.52	192.89	349.84	399.49	61.13	424,260.16	592,926.89	
4,720.00	7.80	65.20	4,688.23	-197.66	198.04	360.93	411.69	61.25	424,265.31	592,937.98	
4,810.00	7.30	68.70	4,777.45	-202.29	202.68	371.80	423.46	61.40	424,269.95	592,948.85	
4,899.00	6.60	73.30	4,865.80	-205.80	206.20	381.97	434.07	61.64	424,273.47	592,959.02	
4,988.00	6.30	75.00	4,954.23	-208.52	208.93	391.59	443.84	61.92	424,276.20	592,968.64	
5,077.00	4.50	84.60	5,042.84	-210.11	210.53	399.78	451.82	62.23	424,277.80	592,976.83	
5,167.00	3.60	84.70	5,132.61	-210.69	211.12	406.11	457.71	62.53	424,278.39	592,983.16	
5,256.00	2.70	109.40	5,221.48	-210.25	210.68	410.87	461.74	62.85	424,277.95	592,987.92	
5,345.00	2.10	121.00	5,310.40	-208.71	209.14	414.24	464.05	63.21	424,276.41	592,991.29	
5,434.00	1.10	149.60	5,399.37	-207.13	207.57	416.07	464.98	63.49	424,274.84	592,993.12	
5,524.00	1.10	168.20	5,489.35	-205.54	205.98	416.69	464.82	63.70	424,273.25	592,993.74	
5,613.00	1.00	174.50	5,578.34	-203.93	204.37	416.94	464.33	63.89	424,271.64	592,993.99	
5,702.00	1.10	184.30	5,667.32	-202.31	202.74	416.95	463.63	64.07	424,270.01	592,994.00	
5,792.00	1.10	190.70	5,757.30	-200.60	201.03	416.72	462.68	64.25	424,268.30	592,993.77	
5,881.00	1.00	183.80	5,846.29	-198.98	199.42	416.51	461.79	64.42	424,266.69	592,993.56	
5,970.00	1.20	190.90	5,935.27	-197.29	197.73	416.28	460.86	64.59	424,265.00	592,993.33	
6,059.00	1.20	195.60	6,024.25	-195.48	195.91	415.86	459.70	64.77	424,263.18	592,992.91	
6,148.00	1.10	188.50	6,113.24	-193.74	194.17	415.48	458.61	64.95	424,261.44	592,992.53	
6,238.00	1.00	189.80	6,203.22	-192.11	192.54	415.22	457.69	65.12	424,259.81	592,992.27	

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Site:	Whistle Pig 1	MD Reference:	Well @ 2937.00usft (GL: 2912' + KB: 25' (PD594))
Well:	WXY Fee #9H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	Gyro/MWD 506'-14446' PTB 14503'	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)	
6,327.00	1.10	197.90	6,292.21	-190.53	190.97	414.83	456.67	65.28	424,258.24	592,991.88	
6,416.00	0.80	215.60	6,381.19	-189.21	189.65	414.20	455.55	65.40	424,256.92	592,991.25	
6,505.00	1.00	228.30	6,470.18	-188.19	188.63	413.26	454.27	65.47	424,255.90	592,990.31	
6,594.00	1.00	252.50	6,559.17	-187.44	187.88	411.94	452.76	65.48	424,255.15	592,988.99	
6,684.00	1.20	267.20	6,649.15	-187.16	187.59	410.25	451.10	65.43	424,254.86	592,987.30	
6,773.00	1.50	283.80	6,738.13	-187.40	187.83	408.19	449.33	65.29	424,255.10	592,985.24	
6,862.00	1.70	311.00	6,827.09	-188.54	188.97	406.06	447.88	65.04	424,256.24	592,983.11	
6,952.00	1.70	324.30	6,917.06	-190.51	190.93	404.27	447.09	64.72	424,258.20	592,981.32	
7,041.00	1.30	353.50	7,006.03	-192.58	193.00	403.39	447.18	64.43	424,260.27	592,980.44	
7,131.00	1.40	346.10	7,096.00	-194.66	195.09	403.01	447.74	64.17	424,262.36	592,980.06	
7,220.00	1.30	320.80	7,184.98	-196.50	196.92	402.11	447.74	63.91	424,264.19	592,979.16	
7,310.00	1.50	328.90	7,274.95	-198.30	198.72	400.85	447.41	63.63	424,265.99	592,977.90	
7,399.00	1.30	345.00	7,363.92	-200.28	200.70	399.99	447.52	63.35	424,267.97	592,977.04	
7,488.00	1.20	346.00	7,452.90	-202.16	202.58	399.50	447.93	63.11	424,269.85	592,976.55	
7,578.00	1.10	343.90	7,542.89	-203.90	204.32	399.04	448.31	62.89	424,271.59	592,976.09	
7,668.00	1.20	349.30	7,632.87	-205.66	206.08	398.62	448.74	62.66	424,273.35	592,975.67	
7,757.00	1.20	308.40	7,721.85	-207.15	207.57	397.72	448.63	62.44	424,274.84	592,974.77	
7,846.00	2.30	303.50	7,810.81	-208.72	209.14	395.50	447.39	62.13	424,276.41	592,972.55	
7,935.00	0.40	222.80	7,899.78	-209.48	209.89	393.80	446.24	61.94	424,277.16	592,970.85	
8,024.00	1.60	163.90	7,988.77	-208.06	208.47	393.93	445.69	62.11	424,275.74	592,970.98	
8,113.00	2.30	165.90	8,077.71	-205.13	205.55	394.71	445.02	62.49	424,272.82	592,971.76	
8,203.00	3.00	160.40	8,167.62	-201.16	201.58	395.94	444.30	63.02	424,268.85	592,972.99	
8,292.00	3.30	172.60	8,256.48	-196.43	196.84	397.05	443.17	63.63	424,264.11	592,974.10	
8,382.00	2.00	190.90	8,346.39	-192.31	192.73	397.09	441.39	64.11	424,260.00	592,974.14	
8,471.00	1.40	201.00	8,435.35	-189.78	190.19	396.41	439.67	64.37	424,257.46	592,973.46	
8,561.00	1.20	176.80	8,525.33	-187.81	188.22	396.07	438.52	64.58	424,255.49	592,973.12	
8,650.00	1.00	223.70	8,614.31	-186.32	186.73	395.58	437.44	64.73	424,254.00	592,972.63	



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Site:	Whistle Pig 1	MD Reference:	Well @ 2937.00usft (GL: 2912' + KB: 25' (PD594))
Well:	WXY Fee #9H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	Gyro/MWD 506'-14446' PTB 14503'	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)	
8,739.00	1.30	192.20	8,703.29	-184.77	185.18	394.83	436.10	64.87	424,252.45	592,971.88	
8,829.00	1.20	191.90	8,793.27	-182.85	183.26	394.42	434.92	65.08	424,250.53	592,971.47	
8,918.00	1.40	204.00	8,882.25	-180.94	181.36	393.79	433.54	65.27	424,248.63	592,970.84	
9,007.00	1.10	226.10	8,971.23	-179.36	179.77	392.73	431.92	65.40	424,247.04	592,969.78	
9,097.00	1.30	225.10	9,061.21	-178.04	178.45	391.38	430.15	65.49	424,245.72	592,968.43	
9,181.00	1.30	229.30	9,145.19	-176.75	177.16	389.99	428.34	65.57	424,244.43	592,967.04	
9,270.00	1.20	234.00	9,234.17	-175.55	175.95	388.47	426.46	65.63	424,243.22	592,965.52	
9,312.88	3.76	167.55	9,277.01	-173.91	174.32	388.41	425.73	65.83	424,241.59	592,965.46	
[WhistleWXY#9H]KOP											
9,358.00	7.30	158.40	9,321.91	-169.80	170.20	389.78	425.32	66.41	424,237.47	592,966.83	
9,448.00	15.70	164.90	9,410.03	-152.69	153.10	395.07	423.70	68.82	424,220.37	592,972.12	
9,537.00	24.80	167.50	9,493.44	-122.77	123.19	402.26	420.70	72.97	424,190.46	592,979.31	
9,627.00	33.90	171.10	9,571.81	-79.44	79.87	410.25	417.95	78.98	424,147.14	592,987.30	
9,717.00	45.00	176.40	9,641.22	-22.89	23.12	416.15	416.79	86.82	424,090.39	592,993.20	
9,806.00	57.90	177.80	9,696.57	46.69	-46.25	419.58	422.13	96.29	424,021.02	592,996.63	
9,896.00	70.80	177.40	9,735.45	127.58	-127.13	422.99	441.68	106.73	423,940.14	593,000.04	
9,985.00	84.40	180.60	9,754.52	214.27	-213.83	424.44	475.26	116.74	423,853.44	593,001.49	
10,070.00	90.00	182.00	9,758.67	299.11	-298.67	422.51	517.42	125.26	423,768.60	592,999.56	
10,163.00	89.00	181.50	9,759.48	392.06	-391.62	419.67	574.01	133.02	423,675.65	592,996.72	
10,257.00	88.70	181.10	9,761.37	486.02	-485.58	417.54	640.41	139.31	423,581.69	592,994.59	
10,351.00	89.10	181.30	9,763.17	579.98	-579.54	415.57	713.14	144.36	423,487.73	592,992.62	
10,445.00	90.70	178.80	9,763.34	673.96	-673.53	415.49	791.37	148.33	423,393.74	592,992.54	
10,539.00	89.40	177.60	9,763.25	767.92	-767.48	418.44	874.14	151.40	423,299.79	592,995.49	
10,632.00	92.90	178.20	9,761.39	860.82	-860.38	421.85	958.24	153.88	423,206.89	592,998.90	
10,726.00	92.70	178.20	9,756.80	954.67	-954.23	424.80	1,044.51	156.00	423,113.04	593,001.85	
10,821.00	92.20	177.80	9,752.74	1,049.53	-1,049.08	428.11	1,133.07	157.80	423,018.19	593,005.16	
10,915.00	88.90	176.80	9,751.83	1,143.41	-1,142.96	432.54	1,222.06	159.27	422,924.31	593,009.59	

Company: Marathon Oil
Project: Eddy County, NM
Site: Whistle Pig 1
Well: WXY Fee #9H
Wellbore: OH
Design: Gyro/MWD 506'-14446' PTB 14503'

Local Co-ordinate Reference:
TVD Reference:
MD Reference:
North Reference:
Survey Calculation Method:
Database:

Well WXY Fee #9H
 Well @ 2937.00usft (GL: 2912' + KB: 25' (PD594))
 Well @ 2937.00usft (GL: 2912' + KB: 25' (PD594))
 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)	
11,009.00	90.20	179.50	9,752.57	1,237.35	-1,236.89	435.57	1,311.35	160.60	422,830.38	593,012.62	
11,103.00	90.90	180.50	9,751.67	1,331.34	-1,330.89	435.57	1,400.35	161.88	422,736.38	593,012.62	
11,196.00	92.10	183.60	9,749.23	1,424.24	-1,423.78	432.25	1,487.95	163.11	422,643.49	593,009.30	
11,290.00	91.60	184.00	9,746.20	1,517.97	-1,517.53	426.02	1,576.19	164.32	422,549.74	593,003.07	
11,384.00	88.30	183.60	9,746.28	1,611.75	-1,611.31	419.79	1,665.09	165.40	422,455.96	592,996.84	
11,479.00	89.10	184.60	9,748.44	1,706.47	-1,706.04	413.00	1,755.32	166.39	422,361.23	592,990.05	
11,573.00	88.00	180.70	9,750.82	1,800.32	-1,799.89	408.66	1,845.70	167.21	422,267.38	592,985.71	
11,667.00	87.60	180.60	9,754.42	1,894.24	-1,893.81	407.59	1,937.18	167.85	422,173.46	592,984.64	
11,761.00	86.60	180.10	9,759.18	1,988.11	-1,987.69	407.02	2,028.93	168.43	422,079.58	592,984.07	
11,855.00	89.10	179.50	9,762.71	2,082.04	-2,081.61	407.35	2,121.10	168.93	421,985.66	592,984.40	
11,949.00	92.90	179.20	9,761.07	2,176.00	-2,175.58	408.41	2,213.58	169.37	421,891.69	592,985.46	
12,043.00	92.90	179.70	9,756.31	2,269.88	-2,269.45	409.31	2,306.07	169.78	421,797.82	592,986.36	
12,137.00	92.60	179.50	9,751.80	2,363.77	-2,363.34	409.97	2,398.64	170.16	421,703.93	592,987.02	
12,231.00	89.40	178.30	9,750.16	2,457.73	-2,457.30	411.77	2,491.56	170.49	421,609.97	592,988.82	
12,325.00	87.10	177.80	9,753.03	2,551.62	-2,551.19	414.97	2,584.72	170.76	421,516.08	592,992.02	
12,419.00	89.90	178.90	9,755.49	2,645.54	-2,645.11	417.67	2,677.88	171.03	421,422.16	592,994.72	
12,513.00	89.80	179.80	9,755.74	2,739.54	-2,739.10	418.74	2,770.92	171.31	421,328.17	592,995.79	
12,608.00	88.40	179.50	9,757.23	2,834.52	-2,834.09	419.32	2,864.94	171.58	421,233.18	592,996.37	
12,702.00	88.40	179.90	9,759.85	2,928.49	-2,928.05	419.81	2,957.99	171.84	421,139.22	592,996.86	
12,795.00	88.30	179.80	9,762.53	3,021.45	-3,021.01	420.06	3,050.07	172.08	421,046.26	592,997.11	
12,889.00	91.90	182.00	9,762.37	3,115.41	-3,114.98	418.58	3,142.97	172.35	420,952.29	592,995.63	
12,983.00	89.10	180.60	9,761.55	3,209.37	-3,208.94	416.45	3,235.85	172.61	420,858.33	592,993.50	
13,077.00	89.60	181.40	9,762.61	3,303.35	-3,302.91	414.81	3,328.86	172.84	420,764.36	592,991.86	
13,171.00	92.20	182.40	9,761.14	3,397.27	-3,396.84	411.69	3,421.70	173.09	420,670.43	592,988.74	
13,265.00	88.00	180.60	9,760.97	3,491.21	-3,490.78	409.23	3,514.69	173.31	420,576.49	592,986.28	
13,359.00	87.40	180.80	9,764.75	3,585.13	-3,584.70	408.08	3,607.86	173.51	420,482.57	592,985.13	
13,454.00	90.80	180.30	9,766.24	3,680.10	-3,679.67	407.17	3,702.13	173.69	420,387.60	592,984.22	

Company: Marathon Oil
Project: Eddy County, NM
Site: Whistle Pig 1
Well: WXY Fee #9H
Wellbore: OH
Design: Gyro/MWD 506'-14446' PTB 14503'

Local Co-ordinate Reference: Well WXY Fee #9H
TVD Reference: Well @ 2937.00usft (GL: 2912' + KB: 25' (PD594))
MD Reference: Well @ 2937.00usft (GL: 2912' + KB: 25' (PD594))
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)	
13,548.00	92.30	179.20	9,763.70	3,774.06	-3,773.63	407.58	3,795.58	173.84	420,293.64	592,984.63	
13,642.00	92.00	179.00	9,760.17	3,867.98	-3,867.55	409.06	3,889.13	173.96	420,199.72	592,986.11	
13,736.00	91.30	178.40	9,757.46	3,961.92	-3,961.49	411.19	3,982.77	174.07	420,105.78	592,988.24	
13,831.00	90.70	178.50	9,755.80	4,056.87	-4,056.44	413.76	4,077.49	174.18	420,010.83	592,990.81	
13,925.00	88.70	177.60	9,756.30	4,150.81	-4,150.38	416.96	4,171.27	174.26	419,916.89	592,994.01	
14,020.00	88.90	177.60	9,758.29	4,245.71	-4,245.27	420.94	4,266.09	174.34	419,822.00	592,997.99	
14,115.00	89.10	176.70	9,759.94	4,340.58	-4,340.14	425.66	4,360.96	174.40	419,727.13	593,002.71	
14,208.00	90.40	178.40	9,760.35	4,433.50	-4,433.05	429.63	4,453.82	174.46	419,634.22	593,006.68	
14,302.00	90.20	178.10	9,759.86	4,527.46	-4,527.00	432.50	4,547.62	174.54	419,540.27	593,009.55	
14,396.00	89.20	177.00	9,760.35	4,621.37	-4,620.92	436.52	4,641.49	174.60	419,446.35	593,013.57	
14,446.00	88.80	176.30	9,761.22	4,671.28	-4,670.82	439.44	4,691.45	174.63	419,396.45	593,016.49	
Last Survey: 14446'MD, 9761'TVD - [WhistleWXY#9H]LTP/BHL											
14,503.00	88.80	176.30	9,762.42	4,728.15	-4,727.69	443.12	4,748.41	174.65	419,339.58	593,020.17	
PTB: 14503'MD, 9762'TVD											

Design Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
14,446.00	9,761.22	-4,670.82	439.44	Last Survey: 14446'MD, 9761'TVD
14,503.00	9,762.42	-4,727.69	443.12	PTB: 14503'MD, 9762'TVD

Marathon Oil Corporation

Marathon Oil
Eddy County, NM
Whistle Pig 1
WXY Fee #9H
Plan #3
GL: 2912' + KB: 25' (PD594)

US State Plane 1927 (Exact solution)
NAD 1927 (NADCON CONUS)
Clarke 1866
New Mexico East 3001
Mean Sea Level

RKB Elevation: Well @ 2937.00usft (GL: 2912' + KB: 25' (PD594))

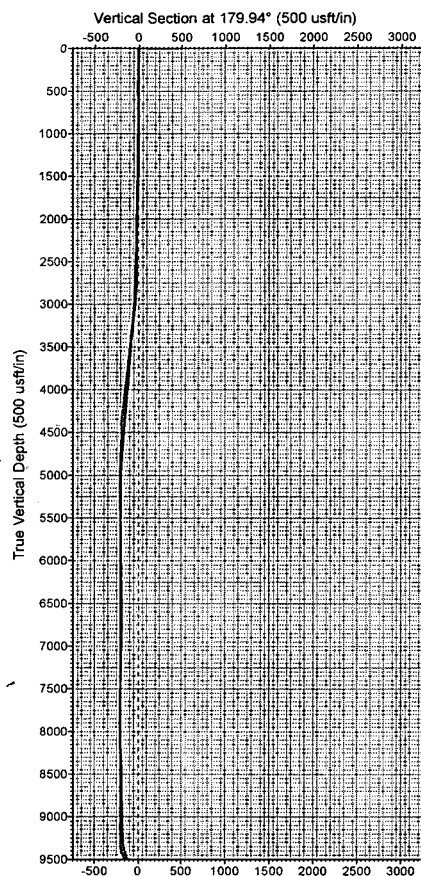
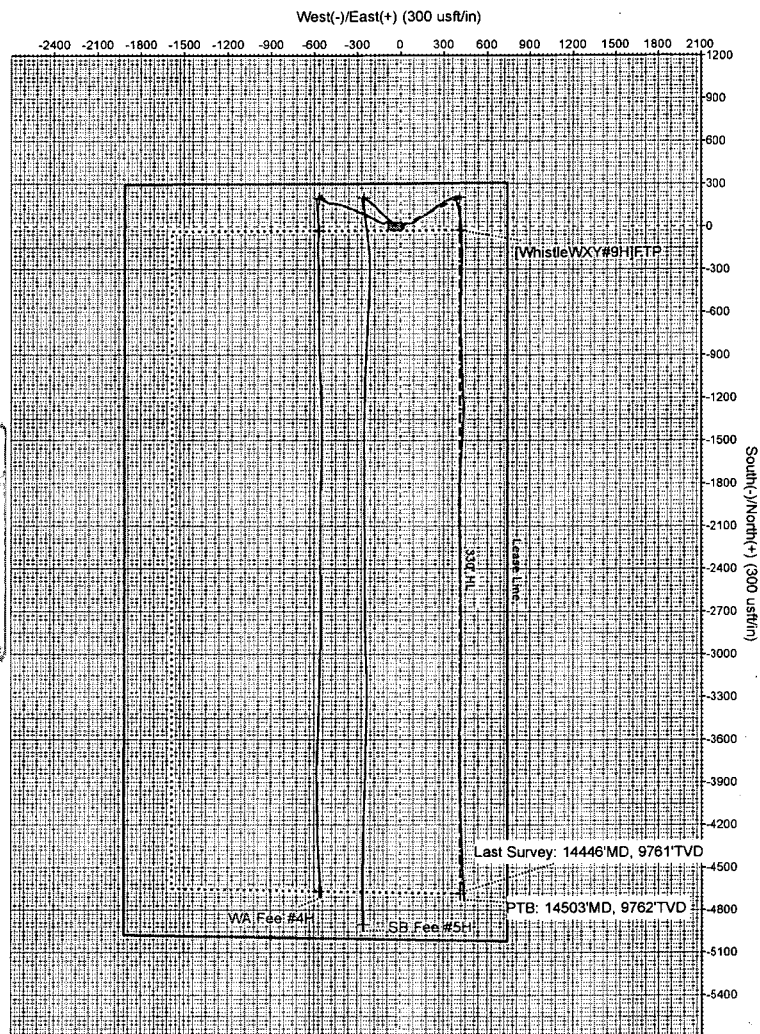
+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.00	0.00	424067.27	592577.05	32.165524	-104.034154	

SECTION DETAILS

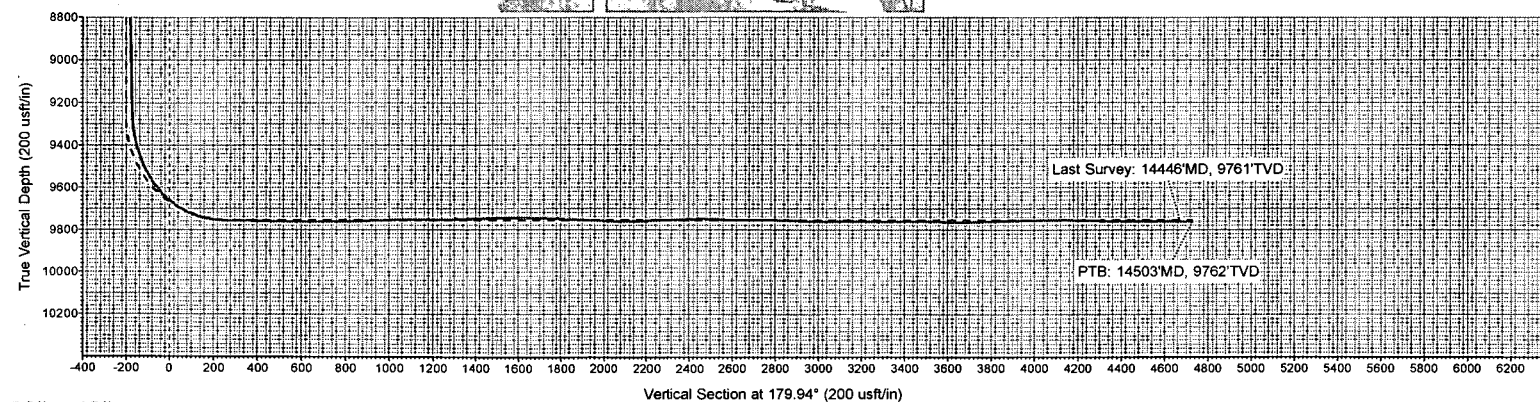
Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	VSect
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	1200.00	0.00	0.00	1200.00	0.00	0.00	0.00	0.00
3	1350.00	3.00	63.77	1349.93	1.74	3.52	2.00	-1.73
4	2701.92	3.00	63.77	2700.00	33.01	66.99	0.00	-32.94
5	3051.83	10.00	63.77	3047.45	50.50	102.50	2.00	-50.39
6	4775.69	10.00	63.77	4745.12	182.77	370.97	0.00	-182.38
7	5275.60	0.00	0.00	5242.50	202.00	410.00	2.00	-201.57
8	9311.60	0.00	0.00	9278.50	202.00	410.00	0.00	-201.57
9	10061.60	90.00	179.94	9755.96	-275.46	410.50	12.00	275.89
10	14470.32	90.00	179.94	9756.00	-4684.18	415.11	0.00	4684.61
11	14515.32	90.00	179.94	9756.00	-4729.18	415.16	0.00	4729.61

WELLBORE TARGET DETAILS (MAP CO-ORDINATES)

Name	TVD	+N/-S	+E/-W	Northing	Easting
WhistleWXY#9HJFTP	0.00	-28.27	410.02	424039.00	592987.07
WhistleWXY#9HJKOP	9278.50	202.00	410.00	424288.27	592987.05
WhistleWXY#9HJLTP/BHL	9756.00	-4684.18	415.11	419383.09	592992.16



Target Line: 9756' TVD @ 0' VS: 90° INC



Azimuths to Grid North
True North: -0.15°
Magnetic North: 6.89°

Magnetic Field
Strength: 47920.4nT
Dip Angle: 59.90°
Date: 2/1/2019
Model: HDGM

Azimuth Corrections

Total Magnetic Corr. (M to G): 6.89°

Declination (M to T): 7.05° East