



Marathon Oil

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Marathon Oil

Eddy County, NM

Rick Deckard State 25-28-4 (12-14-15-18)

WXY #12H

OH

Design: MWD 174'-14243' PTB 14298'

Survey Report

15 November, 2018





Professional Directional
Survey Report



Company: Marathon Oil
Project: Eddy County, NM
Site: Rick Deckard State 25-28-4 (12-14-15-18)
Well: WXY #12H
Wellbore: OH
Design: MWD 174'-14243' PTB 14298'

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

Well WXY #12H
Well @ 2988.00usft (GL: 2963' + KB: 25' (Prec594))
Well @ 2988.00usft (GL: 2963' + KB: 25' (Prec594))
Grid
Minimum Curvature
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: Rick Deckard State 25-28-4 (12-14-15-18)
Site Position: Northing: 419,495.00 usft Latitude: 32.153070
From: Map Easting: 576,032.96 usft Longitude: -104.087653
Position Uncertainty: 0.00 usft Slot Radius: 13-3/16 " Grid Convergence: 0.13 °

Well: WXY #12H
Well Position: +N/-S 0.00 usft Northing: 419,495.00 usft Latitude: 32.153070
+E/-W 0.00 usft Easting: 576,032.96 usft Longitude: -104.087653
Position Uncertainty: 0.00 usft Wellhead Elevation: usft Ground Level: 2,963.00 usft

Wellbore: OH
Magnetics: Model Name Sample Date Declination (°) Dip Angle (°) Field Strength (nT)
User Defined 8/24/2018 7.26 59.93 47,955.20

Design: MWD 174'-14243' PTB 14298'
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 0.00 359.96

Survey Program: Date 11/15/2018
From (usft) To (usft) Survey (Wellbore) Tool Name Description
174.00 14,298.00 Survey #1 (OH) MWD+IFR1 OWSG MWD + IFR1

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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)	
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	419,495.00	576,032.96	
[RickDeckard#12H]FTP											
174.00	0.60	92.70	174.00	-0.04	-0.04	0.91	0.91	92.70	419,494.96	576,033.87	
205.00	0.60	97.70	205.00	-0.07	-0.07	1.23	1.24	93.36	419,494.93	576,034.19	
297.00	0.90	119.80	296.99	-0.50	-0.50	2.34	2.39	101.98	419,494.50	576,035.30	
380.00	1.50	155.10	379.97	-1.81	-1.81	3.36	3.81	118.25	419,493.19	576,036.32	
480.00	3.00	182.80	479.89	-5.61	-5.61	3.78	6.76	145.99	419,489.39	576,036.74	
571.00	3.60	182.20	570.74	-10.84	-10.84	3.56	11.41	161.83	419,484.16	576,036.52	
662.00	3.10	197.50	661.59	-16.04	-16.04	2.71	16.27	170.42	419,478.96	576,035.67	
754.00	2.50	224.00	753.48	-19.86	-19.86	0.57	19.87	178.37	419,475.14	576,033.53	
845.00	1.50	253.70	844.43	-21.62	-21.62	-1.96	21.71	185.17	419,473.38	576,031.00	
936.00	1.60	307.90	935.40	-21.17	-21.17	-4.10	21.57	190.96	419,473.83	576,028.86	
1,027.00	1.90	318.70	1,026.36	-19.26	-19.26	-6.10	20.20	197.57	419,475.74	576,026.86	
1,116.00	1.50	323.90	1,115.32	-17.20	-17.21	-7.76	18.88	204.27	419,477.79	576,025.20	
1,205.00	1.00	320.50	1,204.29	-15.66	-15.67	-8.94	18.04	209.71	419,479.33	576,024.02	
1,295.00	0.80	318.20	1,294.28	-14.59	-14.60	-9.86	17.61	214.04	419,480.40	576,023.10	
1,384.00	1.00	319.40	1,383.27	-13.53	-13.54	-10.78	17.31	218.52	419,481.46	576,022.18	
1,473.00	1.20	350.80	1,472.26	-12.02	-12.03	-11.43	16.60	223.53	419,482.97	576,021.53	
1,563.00	1.80	19.10	1,562.23	-9.76	-9.77	-11.12	14.80	228.71	419,485.23	576,021.84	
1,652.00	3.10	31.60	1,651.14	-6.39	-6.40	-9.40	11.37	235.77	419,488.60	576,023.56	
1,741.00	4.00	44.80	1,739.97	-2.14	-2.14	-5.95	6.33	250.20	419,492.86	576,027.01	
1,830.00	4.30	61.40	1,828.74	1.66	1.66	-0.84	1.86	333.20	419,496.66	576,032.12	
1,920.00	3.10	93.20	1,918.56	3.13	3.14	4.56	5.53	55.46	419,498.14	576,037.52	
2,009.00	2.40	122.00	2,007.46	2.01	2.01	8.54	8.77	76.73	419,497.01	576,041.50	
2,098.00	0.40	185.80	2,096.44	0.71	0.72	10.09	10.11	85.93	419,495.72	576,043.05	
2,187.00	1.70	276.80	2,185.42	0.56	0.56	8.75	8.76	86.31	419,495.56	576,041.71	
2,277.00	1.40	269.70	2,275.39	0.71	0.72	6.32	6.36	83.53	419,495.72	576,039.28	



Professional Directional Survey Report



Company: Marathon Oil
Project: Eddy County, NM
Site: Rick Deckard State 25-28-4 (12-14-15-18)
Well: WXY #12H
Wellbore: OH
Design: MWD 174'-14243' PTB 14298'

Local Co-ordinate Reference: Well WXY #12H
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MD Reference: Well @ 2988.00usft (GL: 2963' + KB: 25' (Prec594))
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)	
2,366.00	2.20	254.90	2,364.35	0.26	0.27	3.58	3.59	85.75	419,495.27	576,036.54	
2,455.00	2.80	256.60	2,453.26	-0.68	-0.68	-0.18	0.71	194.73	419,494.32	576,032.78	
2,494.00	2.70	257.10	2,492.22	-1.11	-1.11	-2.00	2.29	241.02	419,493.89	576,030.96	
2,665.00	4.80	257.20	2,662.84	-3.58	-3.59	-12.91	13.40	254.44	419,491.41	576,020.05	
2,755.00	7.00	244.90	2,752.36	-6.74	-6.75	-21.54	22.58	252.59	419,488.25	576,011.42	
2,844.00	9.70	239.60	2,840.41	-12.83	-12.85	-32.93	35.34	248.68	419,482.15	576,000.03	
2,933.00	12.40	240.90	2,927.75	-21.26	-21.29	-47.74	52.28	245.96	419,473.71	575,985.22	
3,023.00	15.60	244.40	3,015.07	-31.18	-31.22	-67.11	74.02	245.05	419,463.78	575,965.85	
3,112.00	16.90	243.60	3,100.51	-42.08	-42.15	-89.49	98.92	244.78	419,452.85	575,943.47	
3,201.00	15.20	245.60	3,186.04	-52.64	-52.72	-111.70	123.52	244.73	419,442.28	575,921.26	
3,291.00	15.10	246.40	3,272.91	-62.19	-62.29	-133.19	147.03	244.94	419,432.71	575,899.77	
3,380.00	14.20	245.50	3,359.02	-71.35	-71.46	-153.74	169.54	245.07	419,423.54	575,879.22	
3,469.00	13.70	243.40	3,445.39	-80.58	-80.70	-173.10	190.99	245.00	419,414.30	575,859.86	
3,558.00	13.80	243.90	3,531.84	-89.96	-90.09	-192.06	212.14	244.87	419,404.91	575,840.90	
3,647.00	13.90	243.40	3,618.26	-99.40	-99.55	-211.15	233.44	244.76	419,395.45	575,821.81	
3,736.00	13.90	243.10	3,704.65	-109.01	-109.17	-230.24	254.81	244.63	419,385.83	575,802.72	
3,826.00	14.00	249.40	3,792.00	-117.72	-117.89	-250.07	276.47	244.76	419,377.11	575,782.89	
3,915.00	13.90	250.20	3,878.37	-125.11	-125.30	-270.21	297.85	245.12	419,369.70	575,762.75	
4,004.00	13.80	249.60	3,964.79	-132.42	-132.62	-290.22	319.08	245.44	419,362.38	575,742.74	
4,094.00	13.50	248.10	4,052.25	-140.07	-140.28	-310.02	340.28	245.65	419,354.72	575,722.94	
4,183.00	13.50	248.10	4,138.79	-147.80	-148.03	-329.30	361.04	245.79	419,346.97	575,703.66	
4,272.00	13.40	248.90	4,225.35	-155.37	-155.62	-348.56	381.72	245.94	419,339.38	575,684.40	
4,361.00	13.50	248.90	4,311.90	-162.81	-163.07	-367.87	402.40	246.09	419,331.93	575,665.09	
4,451.00	13.40	247.00	4,399.44	-170.66	-170.93	-387.27	423.32	246.19	419,324.07	575,645.69	
4,540.00	13.50	247.30	4,486.00	-178.68	-178.97	-406.35	444.02	246.23	419,316.03	575,626.61	
4,629.00	12.80	246.50	4,572.66	-186.61	-186.91	-424.98	464.26	246.26	419,308.09	575,607.98	
4,718.00	12.60	245.40	4,659.48	-194.57	-194.88	-442.84	483.83	246.25	419,300.12	575,590.12	

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 Well @ 2988.00usft (GL: 2963' + KB: 25' (Prec594))
 Well @ 2988.00usft (GL: 2963' + KB: 25' (Prec594))
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4,807.00	13.40	248.00	4,746.20	-202.46	-202.78	-461.23	503.84	246.27	419,292.22	575,571.73	
4,897.00	13.50	250.60	4,833.74	-209.84	-210.18	-480.81	524.74	246.39	419,284.82	575,552.15	
4,986.00	12.90	249.90	4,920.38	-216.69	-217.04	-499.94	545.02	246.53	419,277.96	575,533.02	
5,075.00	12.30	250.20	5,007.24	-223.31	-223.67	-518.19	564.40	246.65	419,271.33	575,514.77	
5,165.00	11.80	248.40	5,095.26	-229.93	-230.30	-535.76	583.17	246.74	419,264.70	575,497.20	
5,254.00	11.80	248.80	5,182.38	-236.56	-236.94	-552.71	601.36	246.80	419,258.06	575,480.25	
5,343.00	12.00	247.70	5,269.46	-243.35	-243.75	-569.75	619.70	246.84	419,251.25	575,463.21	
5,433.00	11.80	248.70	5,357.53	-250.23	-250.64	-586.98	638.26	246.88	419,244.36	575,445.98	
5,522.00	11.20	246.30	5,444.74	-257.00	-257.42	-603.38	655.99	246.90	419,237.58	575,429.58	
5,611.00	12.40	247.80	5,531.86	-264.07	-264.50	-620.14	674.19	246.90	419,230.50	575,412.82	
5,701.00	14.20	250.70	5,619.44	-271.36	-271.80	-639.51	694.87	246.97	419,223.20	575,393.45	
5,790.00	13.50	250.30	5,705.86	-278.45	-278.91	-659.59	716.14	247.08	419,216.09	575,373.37	
5,879.00	13.20	250.20	5,792.45	-285.38	-285.86	-678.93	736.66	247.17	419,209.14	575,354.03	
5,969.00	12.80	250.30	5,880.14	-292.21	-292.70	-697.99	756.87	247.25	419,202.30	575,334.97	
6,058.00	12.30	250.50	5,967.02	-298.69	-299.19	-716.20	776.18	247.33	419,195.81	575,316.76	
6,147.00	13.10	249.70	6,053.84	-305.34	-305.85	-734.60	795.73	247.40	419,189.15	575,298.36	
6,237.00	13.10	249.10	6,141.50	-312.50	-313.03	-753.69	816.11	247.45	419,181.97	575,279.27	
6,326.00	12.00	246.60	6,228.37	-319.76	-320.30	-771.61	835.45	247.46	419,174.70	575,261.35	
6,415.00	10.60	248.20	6,315.64	-326.47	-327.02	-787.70	852.88	247.45	419,167.98	575,245.26	
6,504.00	9.50	245.60	6,403.28	-332.53	-333.09	-801.99	868.41	247.45	419,161.91	575,230.97	
6,593.00	8.50	248.30	6,491.18	-337.99	-338.56	-814.79	882.33	247.44	419,156.44	575,218.17	
6,683.00	7.30	249.60	6,580.32	-342.43	-343.01	-826.33	894.69	247.46	419,151.99	575,206.63	
6,772.00	6.40	252.70	6,668.69	-345.87	-346.46	-836.37	905.28	247.50	419,148.54	575,196.59	
6,861.00	6.00	248.20	6,757.17	-349.07	-349.66	-845.42	914.88	247.53	419,145.34	575,187.54	
6,951.00	5.10	243.20	6,846.75	-352.61	-353.21	-853.36	923.57	247.52	419,141.79	575,179.60	
7,040.00	6.40	248.80	6,935.30	-356.18	-356.79	-861.51	932.47	247.50	419,138.21	575,171.45	
7,129.00	6.30	249.00	7,023.75	-359.72	-360.33	-870.70	942.31	247.52	419,134.67	575,162.26	

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7,219.00	6.30	243.70	7,113.21	-363.67	-364.29	-879.74	952.18	247.51	419,130.71	575,153.22
7,308.00	6.00	240.70	7,201.70	-368.11	-368.73	-888.17	961.67	247.45	419,126.27	575,144.79
7,397.00	6.30	242.80	7,290.18	-372.61	-373.24	-896.57	971.15	247.40	419,121.76	575,136.39
7,486.00	5.80	243.50	7,378.69	-376.84	-377.47	-904.94	980.51	247.36	419,117.53	575,128.02
7,576.00	5.10	240.70	7,468.28	-380.82	-381.46	-912.50	989.02	247.31	419,113.54	575,120.46
7,665.00	4.80	242.10	7,556.95	-384.50	-385.14	-919.24	996.66	247.27	419,109.86	575,113.72
7,751.00	5.40	245.70	7,642.61	-387.84	-388.49	-926.10	1,004.29	247.24	419,106.51	575,106.86
7,844.00	4.90	249.50	7,735.23	-391.03	-391.68	-933.81	1,012.63	247.24	419,103.32	575,099.15
7,933.00	4.20	253.00	7,823.95	-393.31	-393.96	-940.49	1,019.67	247.27	419,101.04	575,092.47
8,022.00	4.50	251.00	7,912.69	-395.39	-396.05	-946.91	1,026.40	247.30	419,098.95	575,086.05
8,112.00	4.20	253.80	8,002.44	-397.46	-398.12	-953.41	1,033.20	247.34	419,096.88	575,079.55
8,201.00	3.90	247.90	8,091.21	-399.50	-400.17	-959.34	1,039.46	247.36	419,094.83	575,073.62
8,291.00	3.70	243.20	8,181.02	-401.96	-402.63	-964.77	1,045.42	247.35	419,092.37	575,068.19
8,380.00	3.50	238.30	8,269.84	-404.68	-405.35	-969.65	1,050.97	247.31	419,089.65	575,063.31
8,470.00	3.00	230.60	8,359.70	-407.61	-408.29	-973.80	1,055.93	247.25	419,086.71	575,059.16
8,559.00	3.00	205.70	8,448.58	-411.19	-411.87	-976.61	1,059.91	247.13	419,083.13	575,056.35
8,649.00	2.60	201.40	8,538.47	-415.21	-415.89	-978.38	1,063.11	246.97	419,079.11	575,054.58
8,739.00	2.20	204.00	8,628.39	-418.69	-419.37	-979.83	1,065.80	246.83	419,075.63	575,053.13
8,828.00	1.40	257.50	8,717.35	-420.48	-421.17	-981.58	1,068.12	246.78	419,073.83	575,051.38
8,917.00	1.50	283.50	8,806.32	-420.44	-421.13	-983.78	1,070.13	246.83	419,073.87	575,049.18
9,002.00	1.50	290.70	8,891.30	-419.79	-420.48	-985.90	1,071.82	246.90	419,074.52	575,047.06
9,029.92	3.07	331.67	8,919.19	-419.00	-419.69	-986.60	1,072.15	246.96	419,075.31	575,046.36
[RickDeckard#12H]KOP										
9,092.00	7.70	348.20	8,980.99	-413.46	-414.15	-988.24	1,071.51	247.26	419,080.85	575,044.72
9,181.00	17.40	344.10	9,067.76	-394.78	-395.47	-993.12	1,068.96	248.29	419,099.53	575,039.84
9,270.00	26.20	347.70	9,150.31	-362.71	-363.41	-1,000.96	1,064.89	250.05	419,131.59	575,032.00
9,360.00	36.80	354.60	9,226.97	-316.31	-317.02	-1,007.75	1,056.44	252.54	419,177.98	575,025.21

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Project: Eddy County, NM
Site: Rick Deckard State 25-28-4 (12-14-15-18)
Well: WXY #12H
Wellbore: OH
Design: MWD 174'-14243' PTB 14298'

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TVD Reference:
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Survey Calculation Method:
Database:

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 Well @ 2988.00usft (GL: 2963' + KB: 25' (Prec594))
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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)	
9,449.00	48.70	358.90	9,292.22	-256.12	-256.82	-1,010.92	1,043.03	255.75	419,238.18	575,022.04	
9,539.00	56.90	359.00	9,346.59	-184.50	-185.21	-1,012.22	1,029.03	259.63	419,309.79	575,020.74	
9,628.00	67.10	0.20	9,388.32	-106.03	-106.74	-1,012.73	1,018.34	263.98	419,388.26	575,020.23	
9,718.00	76.40	3.40	9,416.48	-20.71	-21.41	-1,009.99	1,010.22	268.79	419,473.59	575,022.97	
9,749.00	80.90	3.00	9,422.58	9.63	8.93	-1,008.29	1,008.33	270.51	419,503.93	575,024.67	
9,831.00	87.40	1.90	9,430.93	91.08	90.38	-1,004.81	1,008.87	275.14	419,585.38	575,028.15	
9,925.00	89.00	1.10	9,433.88	185.00	184.30	-1,002.35	1,019.16	280.42	419,679.30	575,030.61	
10,019.00	87.60	0.00	9,436.67	278.95	278.25	-1,001.45	1,039.39	285.53	419,773.25	575,031.51	
10,114.00	92.00	1.00	9,437.00	373.92	373.22	-1,000.62	1,067.96	290.45	419,868.22	575,032.34	
10,208.00	91.60	0.50	9,434.05	467.86	467.16	-999.39	1,103.19	295.05	419,962.16	575,033.57	
10,302.00	92.10	0.00	9,431.01	561.81	561.11	-998.98	1,145.78	299.32	420,056.11	575,033.98	
10,396.00	90.20	359.60	9,429.13	655.79	655.09	-999.31	1,194.89	303.25	420,150.09	575,033.65	
10,491.00	90.10	359.80	9,428.88	750.78	750.09	-999.81	1,249.90	306.88	420,245.09	575,033.15	
10,585.00	88.80	0.30	9,429.78	844.78	844.08	-999.73	1,308.41	310.17	420,339.08	575,033.23	
10,679.00	90.90	1.40	9,430.03	938.76	938.06	-998.33	1,369.90	313.22	420,433.06	575,034.63	
10,773.00	89.80	1.20	9,429.45	1,032.73	1,032.04	-996.20	1,434.40	316.01	420,527.04	575,036.76	
10,867.00	89.10	0.60	9,430.36	1,126.71	1,126.02	-994.72	1,502.46	318.54	420,621.02	575,038.24	
10,963.00	90.80	1.10	9,430.44	1,222.70	1,222.00	-993.30	1,574.78	320.89	420,717.00	575,039.66	
11,056.00	89.40	359.80	9,430.28	1,315.69	1,315.00	-992.57	1,647.55	322.95	420,810.00	575,040.39	
11,150.00	88.40	1.00	9,432.08	1,409.67	1,408.97	-991.91	1,723.11	324.85	420,903.97	575,041.05	
11,244.00	88.00	0.70	9,435.03	1,503.61	1,502.92	-990.52	1,799.97	326.61	420,997.92	575,042.44	
11,339.00	90.60	1.90	9,436.19	1,598.57	1,597.88	-988.36	1,878.85	328.26	421,092.88	575,044.60	
11,433.00	86.90	0.70	9,438.25	1,692.50	1,691.81	-986.23	1,958.28	329.76	421,186.81	575,046.73	
11,527.00	89.10	1.10	9,441.53	1,786.42	1,785.74	-984.76	2,039.26	331.13	421,280.74	575,048.20	
11,621.00	92.00	1.40	9,440.62	1,880.39	1,879.70	-982.71	2,121.08	332.40	421,374.70	575,050.25	
11,716.00	88.10	359.30	9,440.54	1,975.36	1,974.67	-982.12	2,205.43	333.56	421,469.67	575,050.84	
11,810.00	87.20	358.30	9,444.39	2,069.26	2,068.57	-984.09	2,290.73	334.56	421,563.57	575,048.87	



Professional Directional Survey Report



Company: Marathon Oil
Project: Eddy County, NM
Site: Rick Deckard State 25-28-4 (12-14-15-18)
Well: WXY #12H
Wellbore: OH
Design: MWD 174'-14243' PTB 14298'

Local Co-ordinate Reference: Well WXY #12H
TVD Reference: Well @ 2988.00usft (GL: 2963' + KB: 25' (Prec594))
MD Reference: Well @ 2988.00usft (GL: 2963' + KB: 25' (Prec594))
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)	
11,905.00	88.10	359.00	9,448.29	2,164.15	2,163.46	-986.33	2,377.69	335.49	421,658.46	575,046.63	
11,999.00	87.40	358.60	9,451.98	2,258.06	2,257.37	-988.29	2,464.23	336.36	421,752.37	575,044.67	
12,094.00	87.70	359.40	9,456.04	2,352.96	2,352.27	-989.95	2,552.09	337.18	421,847.27	575,043.01	
12,189.00	89.30	357.60	9,458.53	2,447.89	2,447.20	-992.44	2,640.78	337.93	421,942.20	575,040.52	
12,283.00	92.20	357.40	9,457.30	2,541.78	2,541.09	-996.54	2,729.51	338.59	422,036.09	575,036.42	
12,375.00	92.40	357.30	9,453.61	2,633.61	2,632.92	-1,000.79	2,816.70	339.19	422,127.92	575,032.17	
12,471.00	91.20	356.10	9,450.59	2,729.41	2,728.71	-1,006.31	2,908.35	339.76	422,223.71	575,026.65	
12,565.00	88.50	355.80	9,450.84	2,823.17	2,822.46	-1,012.95	2,998.73	340.26	422,317.46	575,020.01	
12,659.00	90.30	359.80	9,451.82	2,917.07	2,916.37	-1,016.56	3,088.46	340.78	422,411.37	575,016.40	
12,753.00	90.40	0.00	9,451.25	3,011.07	3,010.36	-1,016.72	3,177.42	341.34	422,505.36	575,016.24	
12,848.00	91.50	0.60	9,449.67	3,106.06	3,105.35	-1,016.22	3,267.40	341.88	422,600.35	575,016.74	
12,943.00	91.30	0.80	9,447.35	3,201.02	3,200.31	-1,015.06	3,357.43	342.40	422,695.31	575,017.90	
13,036.00	89.90	1.10	9,446.38	3,294.00	3,293.29	-1,013.52	3,445.72	342.89	422,788.29	575,019.44	
13,130.00	88.70	0.80	9,447.53	3,387.97	3,387.27	-1,011.96	3,535.20	343.37	422,882.27	575,021.00	
13,224.00	87.10	0.20	9,450.97	3,481.90	3,481.20	-1,011.14	3,625.07	343.80	422,976.20	575,021.82	
13,318.00	91.00	2.10	9,452.53	3,575.85	3,575.14	-1,009.26	3,714.87	344.24	423,070.14	575,023.70	
13,412.00	88.90	0.00	9,452.61	3,669.82	3,669.12	-1,007.53	3,804.94	344.65	423,164.12	575,025.43	
13,507.00	92.60	359.60	9,451.37	3,764.80	3,764.09	-1,007.86	3,896.69	345.01	423,259.09	575,025.10	
13,601.00	88.80	358.30	9,450.22	3,858.75	3,858.05	-1,009.59	3,987.96	345.34	423,353.05	575,023.37	
13,695.00	91.30	359.40	9,450.14	3,952.73	3,952.02	-1,011.47	4,079.41	345.64	423,447.02	575,021.49	
13,789.00	90.80	359.40	9,448.41	4,046.71	4,046.00	-1,012.46	4,170.76	345.95	423,541.00	575,020.50	
13,883.00	91.00	359.20	9,446.94	4,140.69	4,139.98	-1,013.61	4,262.26	346.24	423,634.98	575,019.35	
13,979.00	87.90	357.70	9,447.86	4,236.64	4,235.93	-1,016.20	4,356.12	346.51	423,730.93	575,016.76	
14,073.00	90.30	359.40	9,449.34	4,330.59	4,329.88	-1,018.58	4,448.07	346.76	423,824.88	575,014.38	
14,167.00	88.30	359.10	9,450.48	4,424.57	4,423.86	-1,019.81	4,539.88	347.02	423,918.86	575,013.15	
14,243.00	86.90	358.20	9,453.67	4,500.48	4,499.77	-1,021.60	4,614.28	347.21	423,994.77	575,011.36	
Last Survey: 14243'MD, 9454'TVD - [RickDeckard#12H]LTP/BHL											



Professional Directional Survey Report



Company:	Marathon Oil	Local Co-ordinate Reference:	Well WXY #12H
Project:	Eddy County, NM	TVD Reference:	Well @ 2988.00usft (GL: 2963' + KB: 25' (Prec594))
Site:	Rick Deckard State 25-28-4 (12-14-15-18)	MD Reference:	Well @ 2988.00usft (GL: 2963' + KB: 25' (Prec594))
Well:	WXY #12H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	MWD 174'-14243' PTB 14298'	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)
14,298.00	86.90	358.20	9,456.64	4,555.37	4,554.66	-1,023.32	4,668.20	347.34	424,049.66	575,009.64
PTB: 14298'MD, 9457'TVD										

Design Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
14,243.00	9,453.67	4,499.77	-1,021.60	Last Survey: 14243'MD, 9454'TVD
14,298.00	9,456.64	4,554.66	-1,023.32	PTB: 14298'MD, 9457'TVD

Checked By: _____	Approved By: _____	Date: _____
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Marathon Oil Corporation

Marathon Oil
Eddy County, NM
Rick Deckard State 25-28-4 (12-14-15-18)
WXY #12H
Plan #2
GL: 2963' + KB: 25' (Prec594)

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

RKB Elevation: Well @ 2988.00usft (GL: 2963' + KB: 25' (Prec594))

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.00	0.00	419495.00	576032.96	32.153070	-104.087653	

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	2500.00	0.00	0.00	2500.00	0.00	0.00	0.00	0.00
3	3100.00	12.00	247.82	3095.62	-23.63	-57.97	2.00	-23.59
4	7696.91	12.00	247.82	7592.08	-384.37	-943.03	0.00	-383.71
5	8296.91	0.00	0.00	8187.70	-408.00	-1001.00	2.00	-407.30
6	9027.21	0.00	0.00	8918.00	-408.00	-1001.00	0.00	-407.30
7	9845.37	90.00	359.96	9438.87	112.86	-1001.40	11.00	113.55
8	14242.01	90.00	359.96	9439.00	4509.49	-1004.78	0.00	4510.19
9	14287.01	90.00	359.96	9439.00	4554.49	-1004.81	0.00	4555.19

WELLBORE TARGET DETAILS (MAP CO-ORDINATES)

Name	TVD	+N/-S	+E/-W	Northing	Easting
[RickDeckard#12H]FTP	0.00	-178.93	-1001.25	419316.07	575031.71
[RickDeckard#12H]KOP	8918.00	-408.00	-1001.00	419087.00	575031.96
[RickDeckard#12H]LTP/BHL	9439.00	4509.49	-1004.78	424004.49	575028.18



PRODIRECTIONAL



Azimuths to Grid North
True North: 0.13°
Magnetic North: 7.13°

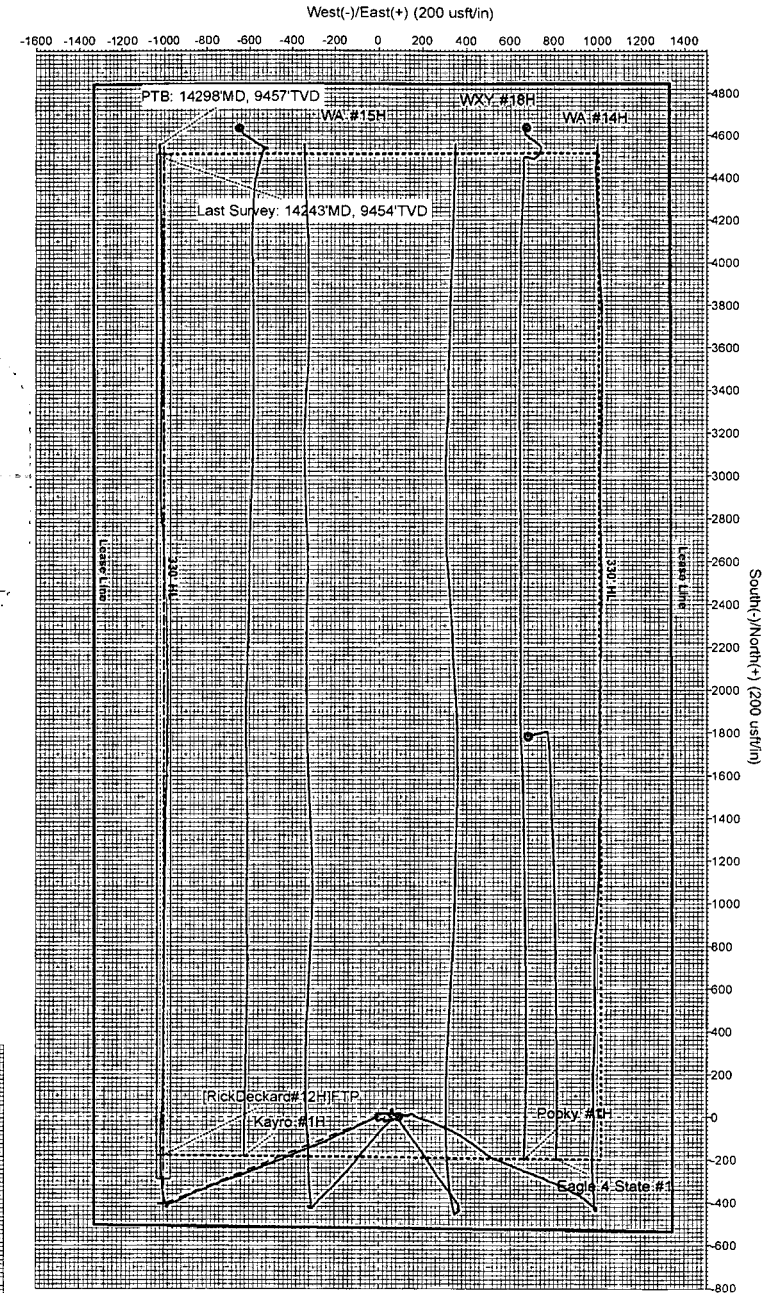
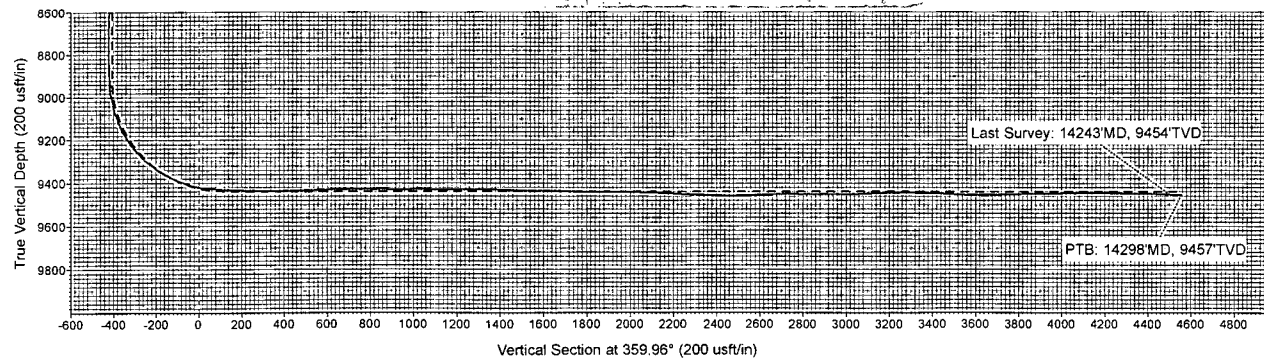
Magnetic Field
Strength: 47955.2nT
Dip Angle: 59.93°
Date: 8/24/2018
Model: USER DEFINED

Azimuth Corrections

Total Magnetic Corr. (M to G): 7.13°

Declination (M to T): 7.26° East

Target Line: 9439' TVD @ 0° VS: 90° INC





Wellbore Schematic

Well Name: RICK DECKARD STATE 25 28 4 WXY 12H

State/Province NEW MEXICO	Prospect Area MALAGA	Field Name	Well Subtype	Lat/Long Datum NAD27	Latitude (°) 32.153085	Longitude (°) -104.087623
Well Configuration Type HORIZONTAL	Well Objective EXPLOITATION	Well Status DRILLING	Ground Elevation (ft) 2,963.00	KB-Ground Distance (ft) 25.00		

HORIZONTAL - RICK DECKARD STATE 25 28 4 WXY 12H, 11/27/2018 1:31:57 PM

MD (ftKB)	TVD (ftKB)	Incl (°)	Vertical schematic (actual)	
24.9	24.9	0.6		Des: Conductor Cement; Depth MD: 25.0-145.0 ftKB; Date: 7/31/2018 Des: Surface Casing Cement; Depth MD: 25.0-460.0 ftKB; Date: 9/20/2018 Des: Intermediate Casing Cement; Depth MD: 25.0-2,575.0 ftKB; Date: 9/23/2018 Des: Intermediate Casing Cement; Depth MD: 25.0-9,800.0 ftKB; Date: 9/29/2018 Des: Liner Cement; Depth MD: 8,893.5-14,298.0 ftKB; Date: 11/16/2018
25.9	25.9	0.6		
26.3	26.3	0.6		
26.6	26.6	0.6		
145.0	145.0	0.6		
399.9	399.9	1.8		
401.2	401.2	1.8		
442.5	442.5	2.4		
444.1	444.1	2.5		
450.0	459.9	2.7		
2,515.4	2,513.6	3.0		
2,516.7	2,514.9	3.0		
2,555.4	2,556.5	3.5		
2,560.0	2,558.1	3.5		
2,573.1	2,573.2	3.7		
8,782.4	8,782.7	1.5		
8,785.7	8,785.0	1.5		
8,786.7	8,786.0	1.5		
8,791.9	8,791.2	1.5		
8,793.9	8,793.2	1.5		
9,421.9	9,421.1	79.8		
9,422.9	9,421.4	80.0		
9,424.4	9,426.2	83.7		
9,426.1	9,426.4	83.8		
9,427.9	9,427.8	84.9		
14,182.1	9,451.2	88.0		
14,182.2	9,451.6	87.8		
14,186.9	9,451.7	87.8		
14,200.1	9,451.9	87.7		
14,241.5	9,453.6	86.9		
14,242.1	9,453.7	86.9		
14,244.4	9,453.7	86.9		
14,259.2	9,456.0	86.9		
14,265.1	9,456.1	86.9		
14,297.9	9,456.6	86.9		

Directions to Well: FROM THE MARATHON OFFICE AT 4111 TIDWELL, CARLSBAD, NM, HEAD SOUTH ON TIDWELL RD TOWARD US HWY 285 N FOR 0.2 MILES. TURN LEFT ONTO US HWY 285 S, HEADING SOUTH, FOR 17.6 MILES TO A CALICHE ROAD. TURN RIGHT ONTO CALICHE ROAD, HEADING WEST, FOR 0.6 MILES TO CALICHE ROAD. TURN LEFT ONTO CALICHE ROAD, HEADING WEST, FOR 0.4 MILES TO THE PROPOSED LEASE ROAD FOR THE RICK DECKARD STATE 25 28 4 WXY #12H, WA #15, TB #14, WXY #18 WELL PAD LOCATION. TURN LEFT ONTO SAID PROPOSED LEASE ROAD, HEADING SOUTH, FOR 0.3 MILES. ENTERING THE NORTHEAST CORNER OF SAID WELL PAD LOCATION.