



Well Name: FLOWMASTER 24 34 15 SB 8H

HORIZONTAL - FLOWMASTER 24 34 15 SB 8H, 4/12/2018 3:33:44 PM

Directions to Well: FROM THE INTERSECTION OF STATE HIGHWAY 128 (EAST KANSAS AVENUE) AND STATE HIGHWAY 18 IN THE CITY OF JAL, NEW MEXICO, TRAVEL WEST ON SAID STATE HIGHWAY 128 FOR 18.0 MILES TO CONTY ROAD 2-B ON THE RIGHT. TRAVEL NORTH ON COUNTY ROAD 2-B FOR 0.8 MILES TO A LEASE ROAD ON THE RIGHT. TRAVEL EAST ON LEASE ROAD FOR 0.2 MILES TO PROPOSED WELL 475 FEET ON THE LEFT.



Marathon Oil
Lea County, NM
Flowmaster 24-34-15 (4-5-8)
SB No. 8H
Plan #3 - FINAL PVA
GL: 3521' + KB: 26.5' (H&P480)

US State Plane 1927 (Exact solution)
NAD 1927 (NADCON CONUS)
Clarke 1886
New Mexico East 3001
Mean Sea Level

RKB Elevation: Well @ 3547.50usft (GL: 3521' + KB: 26.5' (H&P480))

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.00	0.00	446208.75	769531.32	32.2237343	-103.4617541	

SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Diag	VSect
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	1250.00	0.00	0.00	1250.00	0.00	0.00	0.00	0.00
3	1650.00	2.00	70.35	1649.92	2.35	6.57	0.50	-2.30
4	2150.00	2.00	70.35	2149.61	8.22	23.01	0.00	-8.04
5	2416.67	0.00	0.00	2416.23	9.78	27.39	0.75	-9.57
6	5500.44	0.00	0.00	5500.00	9.78	27.39	0.00	-9.57
7	6500.13	10.00	70.35	6494.62	39.04	109.31	1.00	-38.20
8	9862.75	10.00	70.35	9806.19	235.37	659.04	0.00	-230.30
9	10362.59	0.00	0.00	10303.50	250.00	700.00	2.00	-244.62
10	10592.59	0.00	0.00	10533.50	250.00	700.00	0.00	-244.62
11	11484.58	89.20	179.56	11106.40	-314.93	704.30	10.00	320.33
12	15772.26	89.20	179.56	11166.34	-4602.07	736.92	0.00	4607.59
13	15817.26	89.20	179.56	11166.97	-4647.06	737.26	0.00	4652.59

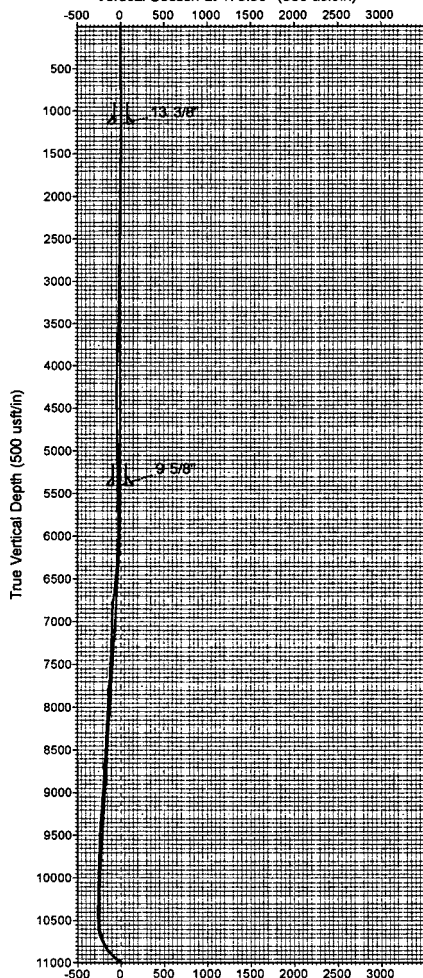
WELLBORE TARGET DETAILS (MAP CO-ORDINATES)

Name	TVD	+N/-S	+E/-W	Northing	Easting
[Flowmaster#8H]FTP	0.00	20.08	701.82	446228.83	770233.14
[Flowmaster#8H]KOP	10533.50	250.00	700.00	446456.75	770231.32
[Flowmaster#8H]LTP/BHL	11166.34	-4602.07	736.92	441604.68	770268.24

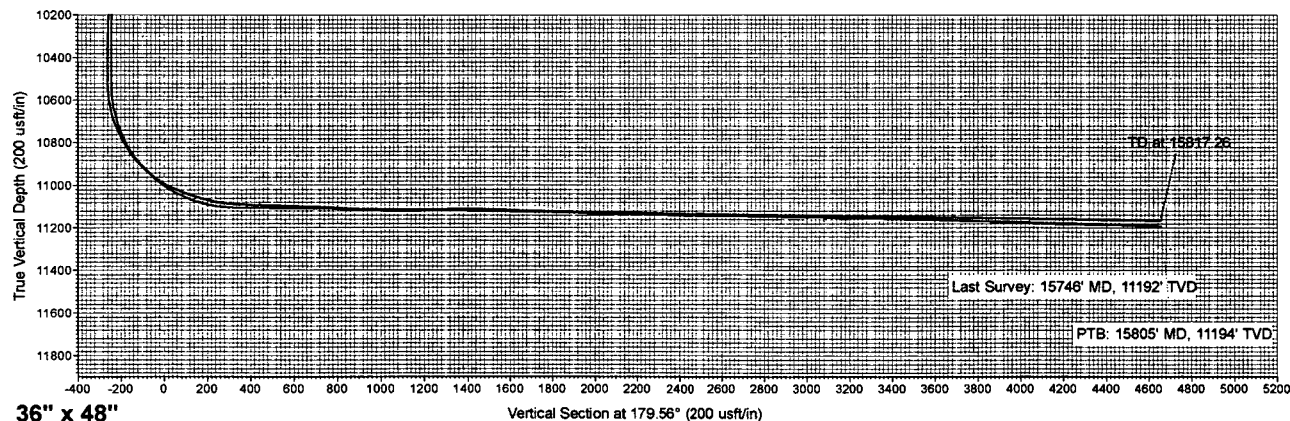


HOBBS OCD
SEP 17 2018
RECEIVED

Vertical Section at 179.56° (500 usf/in)



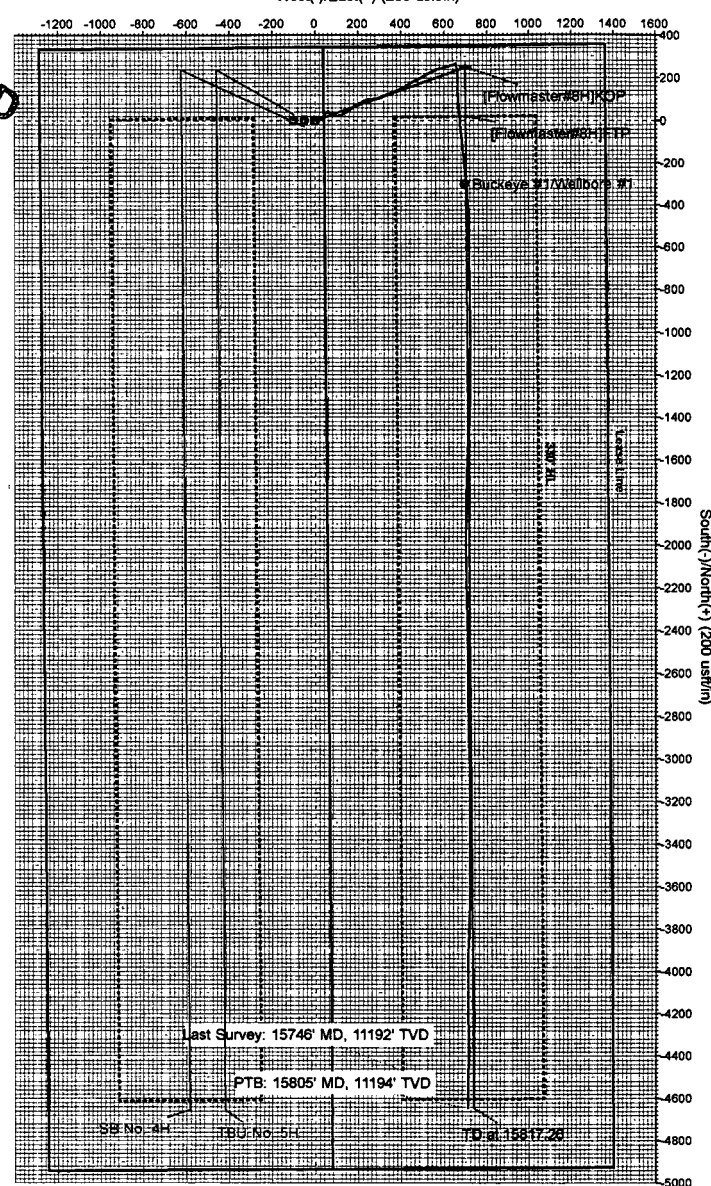
Target Line: 11102' TVD @ 0° VS: 89.2° INC



36" x 48"

Vertical Section at 179.56° (200 usf/in)

West(-)/East(+) (200 usf/in)



Azimuths to Grid North
True North: -0.47°
Magnetic North: 6.33°

Magnetic Field
Strength: 48030.0nT
Dip Angle: 59.96°
Date: 3/5/2018
Model: USER DEFINED

Azimuth Corrections

Total Magnetic Corr. (M to G): 6.33°

Declination (M to T): 6.79° East



Marathon Oil

Marathon Oil

Lea County, NM

Flowmaster 24-34-15 (4-5-8)

SB No. 8H

OH

Design: OH 191'-15746' PTB 15805'

Survey Report

23 March, 2018





Marathon Oil

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Lea County, NM

Flowmaster 24-34-15 (4-5-8)

SB No. 8H

OH

Design: OH 191'-15746' PTB 15805'

Survey Report

23 March, 2018





Professional Directional Survey Report



Company: Marathon Oil
Project: Lea County, NM
Site: Flowmaster 24-34-15 (4-5-8)
Well: SB No. 8H
Wellbore: OH
Design: OH 191'-15746' PTB 15805'

Local Co-ordinate Reference: Well SB No. 8H
TVD Reference: Well @ 3547.50usft (GL: 3521' + KB: 26.5' (H&P480))
MD Reference: Well @ 3547.50usft (GL: 3521' + KB: 26.5' (H&P480))
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: WellPlanner1

Survey Program Date 3/23/2018

From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
191.00	5,368.00	Survey #1 (OH)	MWD+IFR1	OWSG MWD + IFR1
5,470.00	15,805.00	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	Closure Azimuth	Northing (usft)	Easting (usft)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	446,206.75	769,531.32
0.07	0.00	171.60	0.07	0.00	0.00	0.00	0.00	171.60	446,206.75	769,531.32
[Flowmaster#8H]FTP										
191.00	0.10	171.60	191.00	0.17	-0.16	0.02	0.17	171.60	446,206.59	769,531.34
225.00	0.30	176.10	225.00	0.28	-0.28	0.03	0.29	173.00	446,206.47	769,531.35
315.00	0.20	189.10	315.00	0.67	-0.67	0.03	0.67	177.80	446,206.08	769,531.35
406.00	0.30	188.60	406.00	1.07	-1.07	-0.03	1.07	181.87	446,205.68	769,531.29
497.00	0.30	153.40	497.00	1.51	-1.51	0.04	1.51	178.63	446,205.24	769,531.36
589.00	0.40	178.90	589.00	2.05	-2.05	0.15	2.06	175.81	446,204.70	769,531.47
680.00	0.30	162.50	679.99	2.60	-2.60	0.23	2.61	174.98	446,204.15	769,531.55
770.00	0.20	160.80	769.99	2.97	-2.97	0.35	2.99	173.27	446,203.78	769,531.67
862.00	0.30	157.50	861.99	3.35	-3.34	0.50	3.38	171.57	446,203.41	769,531.82
954.00	0.20	152.30	953.99	3.71	-3.71	0.66	3.77	169.87	446,203.04	769,531.98
1,046.00	0.10	310.30	1,045.99	3.80	-3.80	0.68	3.86	169.91	446,202.95	769,532.00
1,091.00	0.20	317.30	1,090.99	3.72	-3.71	0.59	3.76	170.94	446,203.04	769,531.91
1,228.00	0.60	6.00	1,227.99	2.83	-2.83	0.51	2.87	169.86	446,203.92	769,531.83
1,319.00	0.50	0.00	1,318.98	1.96	-1.95	0.56	2.03	164.14	446,204.80	769,531.88
1,410.00	0.60	339.20	1,409.98	1.11	-1.11	0.39	1.18	160.86	446,205.64	769,531.71
1,502.00	1.00	41.80	1,501.97	0.07	-0.06	0.75	0.75	94.81	446,206.69	769,532.07
1,596.00	1.70	64.30	1,595.95	-1.13	1.15	2.55	2.80	65.70	446,207.90	769,533.87
1,691.00	1.70	61.70	1,690.90	-2.39	2.43	5.06	5.62	64.34	446,209.18	769,536.38



Professional Directional Survey Report



Company: Marathon Oil
Project: Lea County, NM
Site: Flowmaster 24-34-15 (4-5-8)
Well: SB No. 8H
Wellbore: OH
Design: OH 191'-15746' PTB 15805'

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

Well SB No. 8H
 Well @ 3547.50usft (GL: 3521' + KB: 26.5' (H&P480))
 Well @ 3547.50usft (GL: 3521' + KB: 26.5' (H&P480))
 Grid
 Minimum Curvature
 WellPlanner1

Survey											
MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	V. Sec (usft)	N/S (usft)	E/W (usft)	Closure Distance	Closure Azimuth	Northing (usft)	Easting (usft)	
4,336.00	0.30	212.30	4,334.59	-42.51	42.99	62.31	75.70	55.40	446,249.74	769,593.63	
4,430.00	1.10	222.70	4,428.59	-41.65	42.12	61.57	74.60	55.62	446,248.87	769,592.89	
4,524.00	0.80	173.00	4,522.57	-40.34	40.81	61.04	73.42	56.23	446,247.56	769,592.36	
4,619.00	1.40	124.90	4,617.56	-39.01	39.48	62.07	73.56	57.54	446,246.23	769,593.39	
4,713.00	2.20	119.20	4,711.51	-37.45	37.95	64.59	74.91	59.56	446,244.70	769,595.91	
4,808.00	1.90	121.70	4,806.45	-35.71	36.23	67.52	76.62	61.78	446,242.98	769,598.84	
4,902.00	2.30	125.10	4,900.39	-33.79	34.33	70.39	78.31	64.00	446,241.08	769,601.71	
4,997.00	2.80	118.20	4,995.29	-31.57	32.13	73.99	80.67	66.52	446,238.88	769,605.31	
5,091.00	3.20	120.10	5,089.16	-29.13	29.73	78.28	83.74	69.20	446,236.48	769,609.60	
5,186.00	2.30	111.30	5,184.05	-27.08	27.71	82.35	86.89	71.40	446,234.46	769,613.67	
5,280.00	1.00	113.60	5,278.01	-26.05	26.70	84.86	88.96	72.54	446,233.45	769,616.18	
5,368.00	1.20	107.80	5,366.00	-25.44	26.11	86.44	90.30	73.19	446,232.86	769,617.76	
5,470.00	1.30	110.40	5,467.97	-24.70	25.38	88.55	92.11	74.01	446,232.13	769,619.87	
5,564.00	1.50	104.70	5,561.94	-24.00	24.69	90.73	94.04	74.77	446,231.44	769,622.05	
5,659.00	1.50	101.70	5,656.91	-23.41	24.13	93.16	96.23	75.48	446,230.88	769,624.48	
5,753.00	2.20	103.10	5,750.86	-22.73	23.47	96.12	98.94	76.28	446,230.22	769,627.44	
5,847.00	3.80	94.90	5,844.73	-22.02	22.79	100.98	103.52	77.28	446,229.54	769,632.30	
5,941.00	4.70	88.80	5,938.47	-21.78	22.61	107.93	110.27	78.17	446,229.36	769,639.25	
6,036.00	5.90	71.30	6,033.07	-23.36	24.26	116.45	118.95	78.23	446,231.01	769,647.77	
6,130.00	6.90	63.60	6,126.49	-27.35	28.32	126.08	129.22	77.34	446,235.07	769,657.40	
6,224.00	6.50	62.30	6,219.84	-32.25	33.30	135.85	139.87	76.23	446,240.05	769,667.17	
6,319.00	8.20	57.40	6,314.06	-38.32	39.45	146.32	151.55	74.91	446,246.20	769,677.64	
6,413.00	8.90	53.80	6,407.02	-46.14	47.36	157.84	164.79	73.30	446,254.11	769,689.16	
6,507.00	9.10	52.10	6,499.86	-54.91	56.22	169.57	178.65	71.66	446,262.97	769,700.89	
6,602.00	10.70	57.00	6,593.44	-64.23	65.64	182.90	194.32	70.26	446,272.39	769,714.22	
6,696.00	12.10	56.50	6,685.59	-74.30	75.83	198.43	212.42	69.09	446,282.58	769,729.75	
6,791.00	13.00	65.00	6,778.32	-84.17	85.84	216.42	232.82	68.37	446,292.59	769,747.74	

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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	Closure Azimuth	Northing (usft)	Easting (usft)	
9,434.00	8.00	63.10	9,393.52	-231.04	235.32	556.70	604.39	67.09	446,442.07	770,088.02	
9,529.00	8.00	71.20	9,487.60	-236.07	240.44	568.85	617.58	67.09	446,447.19	770,100.17	
9,623.00	7.10	78.70	9,580.78	-239.22	243.69	580.74	629.80	67.24	446,450.44	770,112.06	
9,718.00	8.20	74.30	9,674.94	-242.11	246.67	593.02	642.28	67.41	446,453.42	770,124.34	
9,812.00	9.10	73.10	9,767.87	-245.98	250.65	606.59	656.33	67.55	446,457.40	770,137.91	
9,906.00	8.00	74.80	9,860.82	-249.75	254.52	620.02	670.22	67.68	446,461.27	770,151.34	
10,001.00	6.60	75.90	9,955.05	-252.73	257.59	631.69	682.19	67.82	446,464.34	770,163.01	
10,095.00	6.20	77.70	10,048.46	-255.05	259.98	641.89	692.54	67.95	446,466.73	770,173.21	
10,189.00	3.50	78.00	10,142.12	-256.66	261.66	649.66	700.37	68.06	446,468.41	770,180.98	
10,284.00	1.10	36.50	10,237.04	-257.97	263.00	653.04	704.01	68.06	446,469.75	770,184.36	
10,378.00	1.90	344.90	10,331.01	-260.20	265.23	653.17	704.96	67.90	446,471.98	770,184.49	
10,473.00	0.90	107.70	10,425.99	-261.49	266.52	653.47	705.73	67.81	446,473.27	770,184.79	
10,567.00	0.70	142.10	10,519.98	-260.81	265.84	654.52	706.45	67.89	446,472.59	770,185.84	
10,581.83	1.81	157.29	10,534.81	-260.52	265.56	654.67	706.48	67.92	446,472.31	770,185.99	
[Flowmaster#8H]KOP											
10,614.00	4.30	162.60	10,566.93	-258.90	263.93	655.23	706.39	68.06	446,470.68	770,186.55	
10,662.00	10.00	165.40	10,614.54	-253.13	258.18	656.82	705.74	68.54	446,464.93	770,188.14	
10,709.00	14.70	164.50	10,660.44	-243.41	248.48	659.44	704.70	69.35	446,455.23	770,190.76	
10,756.00	20.10	167.10	10,705.27	-229.75	234.85	662.84	703.21	70.49	446,441.60	770,194.16	
10,803.00	25.20	174.50	10,748.64	-211.88	217.00	665.60	700.08	71.94	446,423.75	770,196.92	
10,851.00	28.90	182.90	10,791.40	-190.11	195.23	666.00	694.02	73.66	446,401.98	770,197.32	
10,898.00	33.60	183.60	10,831.57	-165.79	170.90	664.60	686.23	75.58	446,377.65	770,195.92	
10,945.00	37.80	179.30	10,869.73	-138.40	143.50	663.96	679.29	77.80	446,350.25	770,195.28	
10,992.00	42.70	175.80	10,905.60	-108.07	113.18	665.31	674.87	80.35	446,319.93	770,196.63	
11,040.00	47.50	174.90	10,939.47	-74.17	79.30	668.07	672.77	83.23	446,286.05	770,199.39	
11,087.00	54.00	175.40	10,969.19	-37.90	43.06	671.14	672.52	86.33	446,249.81	770,202.46	
11,134.00	60.80	175.50	10,994.50	1.57	3.61	674.28	674.29	89.69	446,210.36	770,205.60	



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Database:

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 Well @ 3547.50usft (GL: 3521' + KB: 26.5' (H&P480))
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 Minimum Curvature
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Survey											
MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	V. Sec (usft)	N/S (usft)	E/W (usft)	Closure Distance	Closure Azimuth	Northing (usft)	Easting (usft)	
13,331.00	88.60	178.80	11,135.76	2,179.83	-2,174.47	705.68	2,286.11	162.02	444,032.28	770,237.00	
13,425.00	88.70	178.80	11,137.97	2,273.79	-2,268.42	707.65	2,376.24	162.67	443,938.33	770,238.97	
13,520.00	89.10	178.90	11,139.80	2,368.77	-2,363.39	709.56	2,467.60	163.29	443,843.36	770,240.88	
13,614.00	89.30	179.40	11,141.11	2,462.75	-2,457.37	710.95	2,558.14	163.86	443,749.38	770,242.27	
13,708.00	89.30	179.80	11,142.26	2,556.75	-2,551.36	711.61	2,648.74	164.42	443,655.39	770,242.93	
13,803.00	89.20	180.40	11,143.50	2,651.73	-2,646.35	711.44	2,740.31	164.95	443,560.40	770,242.76	
13,897.00	88.10	179.10	11,145.71	2,745.70	-2,740.32	711.85	2,831.27	165.44	443,466.43	770,243.17	
13,992.00	89.30	178.80	11,147.87	2,840.67	-2,835.28	713.59	2,923.70	165.87	443,371.47	770,244.91	
14,086.00	88.90	178.80	11,149.35	2,934.65	-2,929.24	715.56	3,015.38	166.27	443,277.51	770,246.88	
14,181.00	88.90	179.20	11,151.17	3,029.63	-3,024.21	717.22	3,108.10	166.66	443,182.54	770,248.54	
14,275.00	88.90	179.50	11,152.97	3,123.61	-3,118.19	718.28	3,199.85	167.03	443,088.56	770,249.60	
14,370.00	89.10	179.80	11,154.63	3,218.60	-3,213.17	718.86	3,292.60	167.39	442,993.58	770,250.18	
14,464.00	88.90	179.70	11,156.27	3,312.58	-3,307.16	719.27	3,384.47	167.73	442,899.59	770,250.59	
14,559.00	89.10	179.90	11,157.93	3,407.57	-3,402.14	719.61	3,477.41	168.06	442,804.61	770,250.93	
14,653.00	88.80	180.00	11,159.65	3,501.55	-3,496.13	719.69	3,569.43	168.37	442,710.62	770,251.01	
14,748.00	88.30	180.30	11,162.06	3,596.51	-3,591.09	719.44	3,662.45	168.67	442,615.66	770,250.76	
14,842.00	87.80	181.30	11,165.26	3,690.44	-3,685.03	718.13	3,754.35	168.97	442,521.72	770,249.45	
14,937.00	88.10	182.20	11,168.65	3,785.30	-3,779.92	715.23	3,846.99	169.29	442,426.83	770,246.55	
15,031.00	88.00	181.30	11,171.85	3,879.18	-3,873.82	712.36	3,938.78	169.58	442,332.93	770,243.68	
15,125.00	87.80	180.90	11,175.30	3,973.08	-3,967.74	710.56	4,030.86	169.85	442,239.01	770,241.88	
15,220.00	88.00	179.80	11,178.78	4,068.01	-4,062.68	709.98	4,124.25	170.09	442,144.07	770,241.30	
15,290.00	88.30	179.50	11,181.04	4,137.97	-4,132.64	710.40	4,193.25	170.25	442,074.11	770,241.72	
15,385.00	89.40	179.40	11,182.94	4,232.95	-4,227.61	711.31	4,287.04	170.45	441,979.14	770,242.63	
15,479.00	88.80	180.00	11,184.42	4,326.94	-4,321.60	711.81	4,379.83	170.65	441,885.15	770,243.13	
15,574.00	88.80	180.50	11,186.41	4,421.91	-4,416.58	711.39	4,473.50	170.85	441,790.17	770,242.71	
15,668.00	88.20	180.80	11,188.87	4,515.86	-4,510.54	710.33	4,566.13	171.05	441,696.21	770,241.65	

Company: Marathon Oil
Project: Lea County, NM
Site: Flowmaster 24-34-15 (4-5-8)
Well: SB No. 8H
Wellbore: OH
Design: OH 191'-15746' PTB 15805'

Local Co-ordinate Reference: Well SB No. 8H
TVD Reference: Well @ 3547.50usft (GL: 3521' + KB: 26.5' (H&P480))
MD Reference: Well @ 3547.50usft (GL: 3521' + KB: 26.5' (H&P480))
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: WellPlanner1

Survey Program Date 3/23/2018

From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
191.00	5,368.00	Survey #1 (OH)	MWD+IFR1	OWSG MWD + IFR1
5,470.00	15,805.00	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	Closure Azimuth	Northing (usft)	Easting (usft)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	446,206.75	769,531.32
0.07	0.00	171.60	0.07	0.00	0.00	0.00	0.00	171.60	446,206.75	769,531.32
[Flowmaster#8H]FTP										
191.00	0.10	171.60	191.00	0.17	-0.16	0.02	0.17	171.60	446,206.59	769,531.34
225.00	0.30	176.10	225.00	0.28	-0.28	0.03	0.29	173.00	446,206.47	769,531.35
315.00	0.20	189.10	315.00	0.67	-0.67	0.03	0.67	177.80	446,206.08	769,531.35
406.00	0.30	188.60	406.00	1.07	-1.07	-0.03	1.07	181.87	446,205.68	769,531.29
497.00	0.30	153.40	497.00	1.51	-1.51	0.04	1.51	178.63	446,205.24	769,531.36
589.00	0.40	178.90	589.00	2.05	-2.05	0.15	2.06	175.81	446,204.70	769,531.47
680.00	0.30	162.50	679.99	2.60	-2.60	0.23	2.61	174.98	446,204.15	769,531.55
770.00	0.20	160.80	769.99	2.97	-2.97	0.35	2.99	173.27	446,203.78	769,531.67
862.00	0.30	157.50	861.99	3.35	-3.34	0.50	3.38	171.57	446,203.41	769,531.82
954.00	0.20	152.30	953.99	3.71	-3.71	0.66	3.77	169.87	446,203.04	769,531.98
1,046.00	0.10	310.30	1,045.99	3.80	-3.80	0.68	3.86	169.91	446,202.95	769,532.00
1,091.00	0.20	317.30	1,090.99	3.72	-3.71	0.59	3.76	170.94	446,203.04	769,531.91
1,228.00	0.60	6.00	1,227.99	2.83	-2.83	0.51	2.87	169.86	446,203.92	769,531.83
1,319.00	0.50	0.00	1,318.98	1.96	-1.95	0.56	2.03	164.14	446,204.80	769,531.88
1,410.00	0.60	339.20	1,409.98	1.11	-1.11	0.39	1.18	160.86	446,205.64	769,531.71
1,502.00	1.00	41.80	1,501.97	0.07	-0.06	0.75	0.75	94.81	446,206.69	769,532.07
1,596.00	1.70	64.30	1,595.95	-1.13	1.15	2.55	2.80	65.70	446,207.90	769,533.87
1,691.00	1.70	61.70	1,690.90	-2.39	2.43	5.06	5.62	64.34	446,209.18	769,536.38

Company: Marathon Oil
Project: Lea County, NM
Site: Flowmaster 24-34-15 (4-5-8)
Well: SB No. 8H
Wellbore: OH
Design: OH 191'-15746' PTB 15805'

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

Well SB No. 8H
 Well @ 3547.50usft (GL: 3521' + KB: 26.5' (H&P480))
 Well @ 3547.50usft (GL: 3521' + KB: 26.5' (H&P480))
 Grid
 Minimum Curvature
 WellPlanner1

Survey											
MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	V. Sec (usft)	N/S (usft)	E/W (usft)	Closure Distance	Closure Azimuth	Northing (usft)	Easting (usft)	
4,336.00	0.30	212.30	4,334.59	-42.51	42.99	62.31	75.70	55.40	446,249.74	769,593.63	
4,430.00	1.10	222.70	4,428.59	-41.65	42.12	61.57	74.60	55.62	446,248.87	769,592.89	
4,524.00	0.80	173.00	4,522.57	-40.34	40.81	61.04	73.42	56.23	446,247.56	769,592.36	
4,619.00	1.40	124.90	4,617.56	-39.01	39.48	62.07	73.56	57.54	446,246.23	769,593.39	
4,713.00	2.20	119.20	4,711.51	-37.45	37.95	64.59	74.91	59.56	446,244.70	769,595.91	
4,808.00	1.90	121.70	4,806.45	-35.71	36.23	67.52	76.62	61.78	446,242.98	769,598.84	
4,902.00	2.30	125.10	4,900.39	-33.79	34.33	70.39	78.31	64.00	446,241.08	769,601.71	
4,997.00	2.80	118.20	4,995.29	-31.57	32.13	73.99	80.67	66.52	446,238.88	769,605.31	
5,091.00	3.20	120.10	5,089.16	-29.13	29.73	78.28	83.74	69.20	446,236.48	769,609.60	
5,186.00	2.30	111.30	5,184.05	-27.08	27.71	82.35	86.89	71.40	446,234.46	769,613.67	
5,280.00	1.00	113.60	5,278.01	-26.05	26.70	84.86	88.96	72.54	446,233.45	769,616.18	
5,368.00	1.20	107.80	5,366.00	-25.44	26.11	86.44	90.30	73.19	446,232.86	769,617.76	
5,470.00	1.30	110.40	5,467.97	-24.70	25.38	88.55	92.11	74.01	446,232.13	769,619.87	
5,564.00	1.50	104.70	5,561.94	-24.00	24.69	90.73	94.04	74.77	446,231.44	769,622.05	
5,659.00	1.50	101.70	5,656.91	-23.41	24.13	93.16	96.23	75.48	446,230.88	769,624.48	
5,753.00	2.20	103.10	5,750.86	-22.73	23.47	96.12	98.94	76.28	446,230.22	769,627.44	
5,847.00	3.80	94.90	5,844.73	-22.02	22.79	100.98	103.52	77.28	446,229.54	769,632.30	
5,941.00	4.70	88.80	5,938.47	-21.78	22.61	107.93	110.27	78.17	446,229.36	769,639.25	
6,036.00	5.90	71.30	6,033.07	-23.36	24.26	116.45	118.95	78.23	446,231.01	769,647.77	
6,130.00	6.90	63.60	6,126.49	-27.35	28.32	126.08	129.22	77.34	446,235.07	769,657.40	
6,224.00	6.50	62.30	6,219.84	-32.25	33.30	135.85	139.87	76.23	446,240.05	769,667.17	
6,319.00	8.20	57.40	6,314.06	-38.32	39.45	146.32	151.55	74.91	446,246.20	769,677.64	
6,413.00	8.90	53.80	6,407.02	-46.14	47.36	157.84	164.79	73.30	446,254.11	769,689.16	
6,507.00	9.10	52.10	6,499.86	-54.91	56.22	169.57	178.65	71.66	446,262.97	769,700.89	
6,602.00	10.70	57.00	6,593.44	-64.23	65.64	182.90	194.32	70.26	446,272.39	769,714.22	
6,696.00	12.10	56.50	6,685.59	-74.30	75.83	198.43	212.42	69.09	446,282.58	769,729.75	
6,791.00	13.00	65.00	6,778.32	-84.17	85.84	216.42	232.82	68.37	446,292.59	769,747.74	

Company: Marathon Oil
Project: Lea County, NM
Site: Flowmaster 24-34-15 (4-5-8)
Well: SB No. 8H
Wellbore: OH
Design: OH 191'-15746' PTB 15805'

Local Co-ordinate Reference: Well SB No. 8H
TVD Reference: Well @ 3547.50usft (GL: 3521' + KB: 26.5' (H&P480))
MD Reference: Well @ 3547.50usft (GL: 3521' + 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	Closure Azimuth	Northing (usft)	Easting (usft)
9,434.00	8.00	63.10		9,393.52	-231.04	235.32	556.70	604.39	67.09	446,442.07	770,088.02
9,529.00	8.00	71.20		9,487.60	-236.07	240.44	568.85	617.58	67.09	446,447.19	770,100.17
9,623.00	7.10	78.70		9,580.78	-239.22	243.69	580.74	629.80	67.24	446,450.44	770,112.06
9,718.00	8.20	74.30		9,674.94	-242.11	246.67	593.02	642.28	67.41	446,453.42	770,124.34
9,812.00	9.10	73.10		9,767.87	-245.98	250.65	606.59	656.33	67.55	446,457.40	770,137.91
9,906.00	8.00	74.80		9,860.82	-249.75	254.52	620.02	670.22	67.68	446,461.27	770,151.34
10,001.00	6.60	75.90		9,955.05	-252.73	257.59	631.69	682.19	67.82	446,464.34	770,163.01
10,095.00	6.20	77.70		10,048.46	-255.05	259.98	641.89	692.54	67.95	446,466.73	770,173.21
10,189.00	3.50	78.00		10,142.12	-256.66	261.66	649.66	700.37	68.06	446,468.41	770,180.98
10,284.00	1.10	36.50		10,237.04	-257.97	263.00	653.04	704.01	68.06	446,469.75	770,184.36
10,378.00	1.90	344.90		10,331.01	-260.20	265.23	653.17	704.96	67.90	446,471.98	770,184.49
10,473.00	0.90	107.70		10,425.99	-261.49	266.52	653.47	705.73	67.81	446,473.27	770,184.79
10,567.00	0.70	142.10		10,519.98	-260.81	265.84	654.52	706.45	67.89	446,472.59	770,185.84
10,581.83	1.81	157.29		10,534.81	-260.52	265.56	654.67	706.48	67.92	446,472.31	770,185.99
[Flowmaster#8H]KOP											
10,614.00	4.30	162.60		10,566.93	-258.90	263.93	655.23	706.39	68.06	446,470.68	770,186.55
10,662.00	10.00	165.40		10,614.54	-253.13	258.18	656.82	705.74	68.54	446,464.93	770,188.14
10,709.00	14.70	164.50		10,660.44	-243.41	248.48	659.44	704.70	69.35	446,455.23	770,190.76
10,756.00	20.10	167.10		10,705.27	-229.75	234.85	662.84	703.21	70.49	446,441.60	770,194.16
10,803.00	25.20	174.50		10,748.64	-211.88	217.00	665.60	700.08	71.94	446,423.75	770,196.92
10,851.00	28.90	182.90		10,791.40	-190.11	195.23	666.00	694.02	73.66	446,401.98	770,197.32
10,898.00	33.60	183.60		10,831.57	-165.79	170.90	664.60	686.23	75.58	446,377.65	770,195.92
10,945.00	37.80	179.30		10,869.73	-138.40	143.50	663.96	679.29	77.80	446,350.25	770,195.28
10,992.00	42.70	175.80		10,905.60	-108.07	113.18	665.31	674.87	80.35	446,319.93	770,196.63
11,040.00	47.50	174.90		10,939.47	-74.17	79.30	668.07	672.77	83.23	446,286.05	770,199.39
11,087.00	54.00	175.40		10,969.19	-37.90	43.06	671.14	672.52	86.33	446,249.81	770,202.46
11,134.00	60.80	175.50		10,994.50	1.57	3.61	674.28	674.29	89.69	446,210.36	770,205.60

Company: Marathon Oil
Project: Lea County, NM
Site: Flowmaster 24-34-15 (4-5-8)
Well: SB No. 8H
Wellbore: OH
Design: OH 191'-15746' PTB 15805'

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

Well SB No. 8H
 Well @ 3547.50usft (GL: 3521' + KB: 26.5' (H&P480))
 Well @ 3547.50usft (GL: 3521' + KB: 26.5' (H&P480))
 Grid
 Minimum Curvature
 WellPlanner1

Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	V. Sec (usft)	N/S (usft)	E/W (usft)	Closure Distance	Closure Azimuth	Northing (usft)	Easting (usft)
13,331.00	88.60	178.80	11,135.76	2,179.83	-2,174.47	705.68	2,286.11	162.02	444,032.28	770,237.00
13,425.00	88.70	178.80	11,137.97	2,273.79	-2,268.42	707.65	2,376.24	162.67	443,938.33	770,238.97
13,520.00	89.10	178.90	11,139.80	2,368.77	-2,363.39	709.56	2,467.60	163.29	443,843.36	770,240.88
13,614.00	89.30	179.40	11,141.11	2,462.75	-2,457.37	710.95	2,558.14	163.86	443,749.38	770,242.27
13,708.00	89.30	179.80	11,142.26	2,556.75	-2,551.36	711.61	2,648.74	164.42	443,655.39	770,242.93
13,803.00	89.20	180.40	11,143.50	2,651.73	-2,646.35	711.44	2,740.31	164.95	443,560.40	770,242.76
13,897.00	88.10	179.10	11,145.71	2,745.70	-2,740.32	711.85	2,831.27	165.44	443,466.43	770,243.17
13,992.00	89.30	178.80	11,147.87	2,840.67	-2,835.28	713.59	2,923.70	165.87	443,371.47	770,244.91
14,086.00	88.90	178.80	11,149.35	2,934.65	-2,929.24	715.56	3,015.38	166.27	443,277.51	770,246.88
14,181.00	88.90	179.20	11,151.17	3,029.63	-3,024.21	717.22	3,108.10	166.66	443,182.54	770,248.54
14,275.00	88.90	179.50	11,152.97	3,123.61	-3,118.19	718.28	3,199.85	167.03	443,088.56	770,249.60
14,370.00	89.10	179.80	11,154.63	3,218.60	-3,213.17	718.86	3,292.60	167.39	442,993.58	770,250.18
14,464.00	88.90	179.70	11,156.27	3,312.58	-3,307.16	719.27	3,384.47	167.73	442,899.59	770,250.59
14,559.00	89.10	179.90	11,157.93	3,407.57	-3,402.14	719.61	3,477.41	168.06	442,804.61	770,250.93
14,653.00	88.80	180.00	11,159.65	3,501.55	-3,496.13	719.69	3,569.43	168.37	442,710.62	770,251.01
14,748.00	88.30	180.30	11,162.06	3,596.51	-3,591.09	719.44	3,662.45	168.67	442,615.66	770,250.76
14,842.00	87.80	181.30	11,165.26	3,690.44	-3,685.03	718.13	3,754.35	168.97	442,521.72	770,249.45
14,937.00	88.10	182.20	11,168.65	3,785.30	-3,779.92	715.23	3,846.99	169.29	442,426.83	770,246.55
15,031.00	88.00	181.30	11,171.85	3,879.18	-3,873.82	712.36	3,938.78	169.58	442,332.93	770,243.68
15,125.00	87.80	180.90	11,175.30	3,973.08	-3,967.74	710.56	4,030.86	169.85	442,239.01	770,241.88
15,220.00	88.00	179.80	11,178.78	4,068.01	-4,062.68	709.98	4,124.25	170.09	442,144.07	770,241.30
15,290.00	88.30	179.50	11,181.04	4,137.97	-4,132.64	710.40	4,193.25	170.25	442,074.11	770,241.72
15,385.00	89.40	179.40	11,182.94	4,232.95	-4,227.61	711.31	4,287.04	170.45	441,979.14	770,242.63
15,479.00	88.80	180.00	11,184.42	4,326.94	-4,321.60	711.81	4,379.83	170.65	441,885.15	770,243.13
15,574.00	88.80	180.50	11,186.41	4,421.91	-4,416.58	711.39	4,473.50	170.85	441,790.17	770,242.71
15,668.00	88.20	180.80	11,188.87	4,515.86	-4,510.54	710.33	4,566.13	171.05	441,696.21	770,241.65