

**Marathon Oil****Wellbore Schematic****Well Name: FLOWMASTER 24 34 15 SB 4H**

State/Province: NEW MEXICO	Prospect Area RED HILLS	Field Name	Well Subtype	Lat/Long Datum NAD27	Latitude (°) 32.223821	Longitude (°) -103.461942
Well Configuration Type HORIZONTAL	Well Objective EXPLOITATION	Well Status DRILLING	Ground Elevation (ft) 3,521.00	KB- Ground Distance (ft) 26.50		

HORIZONTAL - FLOWMASTER 24 34 15 SB 4H, 4/30/2018 9:46:03 AM

MD (ftKB)	TVD (ftKB)	Incl (°)	Vertical schematic (actual)	
-6.2	-6.2	0.5		
26.6	26.6	0.5		
27.6	27.6	0.5		
27.9	27.9	0.5		
28.5	28.5	0.5		
69.2	69.2	0.5		
147.0	147.0	0.5		
200.1	200.1	0.5		
1,107.0	1,106.9	0.4		
1,108.3	1,108.2	0.4		
1,149.9	1,149.9	0.5		
1,151.2	1,151.2	0.5		
5,374.7	5,373.7	1.4		
5,376.0	5,375.0	1.4		
5,417.7	5,416.7	1.2		
5,419.3	5,418.3	1.2		
10,491.8	10,435.0	1.6		
10,512.1	10,455.3	1.7		
15,877.8	11,128.8	89.5		
15,879.1	11,128.8	89.5		
15,756.6	11,129.5	89.4		
15,759.2	11,129.5	89.4		

Des: Conductor Cement, Depth MD 26.5-147.0 ftKB, Date 2/1/2018

Des: Surface Casing Cement, Depth MD:26.5-1,151.4 ftKB, Date:3/10/2018

Des: Intermediate Casing Cement, Depth MD:26.5-5,419.3 ftKB, Date:3/29/2018

Des: Production Casing Cement, Depth MD:200.0-15,759.2 ftKB, Date:4/7/2018

No. 1; Des: Conductor 1; OD:20.000 in; ID:19.000 in; Depth MD:26.5-147.0 ftKB; Length:120.50 ft

No. 2; Des: Surface; OD:13.375 in; ID:12.615 in; Depth MD:26.5-1,151.4 ftKB; Length:1,124.87 ft

No. 3; Des: Intermediate 1; OD:9.625 in; ID:8.835 in; Depth MD:-6.1-5,419.3 ftKB; Length:5,425.42 ft

No. 4; Des: Production 1; OD:5.500 in; ID:4.778 in; Depth MD:26.5-15,759.2 ftKB; Length:15,732.74 ft

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

Marathon Oil

Lea County, NM

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

SB No. 4H

OH

Design: OH 194'-15709' PTB 15771'

Survey Report

06 April, 2018



Company:	Marathon Oil	Local Co-ordinate Reference:	Well SB No. 4H
Project:	Lea County, NM	TVD Reference:	Well @ 3547.50usft (GL: 3521' + KB: 26.5' (H&P480))
Site:	Flowmaster 24-34-15 (4-5-8)	MD Reference:	Well @ 3547.50usft (GL: 3521' + KB: 26.5' (H&P480))
Well:	SB No. 4H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH 194'-15709' PTB 15771'	Database:	WellPlanner1

Project	Lea 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	Flowmaster 24-34-15 (4-5-8)		
Site Position:		Northing:	446,206.72 usft
From:	Map	Easting:	769,481.32 usft
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "
		Latitude:	32° 13' 25.4471 N
		Longitude:	103° 27' 42.8969 W
		Grid Convergence:	0.46 °

Well	SB No. 4H					
Well Position	+N/-S	0.00 usft	Northing:	446,206.72 usft	Latitude:	32° 13' 25.4471 N
	+E/-W	0.00 usft	Easting:	769,481.32 usft	Longitude:	103° 27' 42.8969 W
Position Uncertainty		0.00 usft	Wellhead Elevation:	usft	Ground Level:	3,521.00 usft

Wellbore	OH				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	User Defined	3/5/2018	6.79	59.98	48,035.00

Design					OH 194'-15709' PTB 15771'						
Audit Notes:											
Version:		1.0		Phase:		ACTUAL		Tie On Depth:		0.00	
Vertical Section:		Depth From (TVD)		+N/-S		+E/-W		Direction			
		(usft)		(usft)		(usft)		(°)			
		0.00		0.00		0.00		179.55			

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North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: WellPlanner1

Survey Program		Date 4/6/2018		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
194.00	1,091.00	Survey #1 (OH)	MWD+IFR1	OWSG MWD + IFR1
1,228.00	5,362.00	Survey #2 (OH)	MWD+IFR1	OWSG MWD + IFR1
5,469.00	15,771.00	Survey #3 (OH)	MWD+IFR1	OWSG MWD + IFR1

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	446,206.72	769,481.32	
[Flowmaster#4H]FTP											
194.00	0.50	170.30	194.00	0.84	-0.83	0.14	0.85	170.30	446,205.89	769,481.46	
225.00	0.60	168.70	225.00	1.13	-1.13	0.20	1.14	170.07	446,205.59	769,481.52	
315.00	0.50	174.60	314.99	1.98	-1.98	0.33	2.01	170.64	446,204.74	769,481.65	
406.00	0.50	186.30	405.99	2.77	-2.77	0.32	2.79	173.40	446,203.95	769,481.64	
497.00	0.40	199.90	496.99	3.46	-3.46	0.17	3.47	177.21	446,203.26	769,481.49	
589.00	0.40	209.80	588.98	4.04	-4.04	-0.10	4.05	181.42	446,202.68	769,481.22	
680.00	0.40	197.00	679.98	4.62	-4.62	-0.35	4.64	184.34	446,202.10	769,480.97	
770.00	0.40	194.30	769.98	5.22	-5.23	-0.52	5.25	185.69	446,201.49	769,480.80	
862.00	0.20	178.40	861.98	5.69	-5.70	-0.60	5.73	185.96	446,201.02	769,480.72	
954.00	0.20	101.00	953.98	5.89	-5.89	-0.43	5.91	184.21	446,200.83	769,480.89	
1,046.00	0.30	68.90	1,045.98	5.83	-5.83	-0.05	5.84	180.50	446,200.89	769,481.27	
1,091.00	0.40	59.60	1,090.98	5.71	-5.71	0.19	5.72	178.05	446,201.01	769,481.51	
1,228.00	0.60	99.90	1,227.97	5.60	-5.59	1.31	5.75	166.79	446,201.13	769,482.63	
1,319.00	0.60	74.50	1,318.97	5.57	-5.55	2.24	5.98	158.00	446,201.17	769,483.56	
1,410.00	1.00	198.10	1,409.96	6.20	-6.18	2.45	6.65	158.33	446,200.54	769,483.77	
1,502.00	1.80	195.50	1,501.93	8.35	-8.33	1.82	8.53	167.68	446,198.39	769,483.14	
1,597.00	1.80	201.10	1,596.89	11.17	-11.16	0.88	11.20	175.48	446,195.56	769,482.20	
1,691.00	1.50	192.70	1,690.85	13.74	-13.74	0.08	13.74	179.66	446,192.98	769,481.40	
1,785.00	1.00	177.80	1,784.82	15.76	-15.76	-0.16	15.76	180.57	446,190.96	769,481.16	

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Well: SB No. 4H
Wellbore: OH
Design: OH 194'-15709' PTB 15771'

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

Well SB No. 4H
 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 (usft)	Closure Azimuth (°)	Northing (usft)	Easting (usft)	
1,880.00	1.00	177.30	1,879.81	17.41	-17.42	-0.09	17.42	180.29	446,189.30	769,481.23	
1,974.00	1.00	164.50	1,973.80	19.03	-19.03	0.17	19.03	179.49	446,187.69	769,481.49	
2,069.00	0.60	142.40	2,068.79	20.22	-20.22	0.70	20.23	178.03	446,186.50	769,482.02	
2,163.00	0.70	134.90	2,162.78	21.02	-21.01	1.40	21.06	176.18	446,185.71	769,482.72	
2,258.00	0.50	117.30	2,257.78	21.63	-21.61	2.18	21.72	174.23	446,185.11	769,483.50	
2,352.00	0.10	156.40	2,351.77	21.90	-21.88	2.58	22.03	173.27	446,184.84	769,483.90	
2,447.00	0.20	131.40	2,446.77	22.08	-22.06	2.74	22.23	172.93	446,184.66	769,484.06	
2,541.00	0.20	8.30	2,540.77	22.03	-22.01	2.88	22.20	172.53	446,184.71	769,484.20	
2,636.00	0.10	39.10	2,635.77	21.80	-21.78	2.96	21.98	172.26	446,184.94	769,484.28	
2,730.00	0.30	338.50	2,729.77	21.51	-21.49	2.92	21.68	172.26	446,185.23	769,484.24	
2,824.00	0.50	27.20	2,823.77	20.92	-20.89	3.02	21.11	171.78	446,185.83	769,484.34	
2,919.00	0.60	30.50	2,918.77	20.12	-20.10	3.46	20.39	170.23	446,186.62	769,484.78	
3,013.00	0.20	148.80	3,012.76	19.84	-19.81	3.80	20.17	169.15	446,186.91	769,485.12	
3,108.00	0.60	210.80	3,107.76	20.41	-20.38	3.63	20.70	169.91	446,186.34	769,484.95	
3,202.00	0.40	182.40	3,201.76	21.16	-21.13	3.36	21.40	170.96	446,185.59	769,484.68	
3,297.00	0.10	343.50	3,296.76	21.41	-21.38	3.32	21.64	171.16	446,185.34	769,484.64	
3,391.00	0.60	16.30	3,390.76	20.86	-20.83	3.44	21.11	170.63	446,185.89	769,484.76	
3,486.00	0.40	29.00	3,485.75	20.09	-20.07	3.74	20.41	169.44	446,186.65	769,485.06	
3,581.00	1.00	24.70	3,580.75	19.06	-19.02	4.25	19.49	167.42	446,187.70	769,485.57	
3,675.00	1.00	13.50	3,674.73	17.52	-17.48	4.78	18.12	164.70	446,189.24	769,486.10	
3,769.00	1.20	10.10	3,768.71	15.75	-15.71	5.14	16.53	161.87	446,191.01	769,486.46	
3,864.00	0.30	43.50	3,863.70	14.60	-14.55	5.49	15.55	159.33	446,192.17	769,486.81	
3,958.00	0.50	51.40	3,957.70	14.17	-14.12	5.98	15.33	157.04	446,192.60	769,487.30	
4,052.00	0.90	50.10	4,051.70	13.44	-13.39	6.87	15.05	152.85	446,193.33	769,488.19	
4,147.00	0.30	28.20	4,146.69	12.75	-12.69	7.56	14.77	149.23	446,194.03	769,488.88	
4,241.00	0.20	21.80	4,240.69	12.38	-12.32	7.73	14.55	147.89	446,194.40	769,489.05	
4,335.00	0.40	27.90	4,334.69	11.94	-11.88	7.95	14.29	146.21	446,194.84	769,489.27	

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Wellbore: OH
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Local Co-ordinate Reference: Well SB No. 4H
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MD Reference: Well @ 3547.50usft (GL: 3521' + KB: 26.5' (H&P480))
North Reference: Grid
Survey Calculation Method: 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 (usft)	Closure Azimuth (°)	Northing (usft)	Easting (usft)	
4,430.00	0.30	0.70	4,429.69	11.40	-11.34	8.11	13.94	144.44	446,195.38	769,489.43	
4,524.00	1.00	192.50	4,523.68	11.95	-11.89	7.93	14.30	146.30	446,194.83	769,489.25	
4,619.00	2.20	170.90	4,618.64	14.57	-14.50	8.04	16.58	150.99	446,192.22	769,489.36	
4,713.00	2.30	142.90	4,712.57	17.86	-17.79	9.46	20.15	151.99	446,188.93	769,490.78	
4,808.00	2.50	145.60	4,807.49	21.11	-21.02	11.78	24.10	150.72	446,185.70	769,493.10	
4,902.00	2.20	162.00	4,901.41	24.53	-24.43	13.50	27.91	151.07	446,182.29	769,494.82	
4,997.00	2.30	150.30	4,996.34	27.93	-27.82	15.01	31.61	151.65	446,178.90	769,496.33	
5,091.00	2.60	131.60	5,090.26	31.01	-30.87	17.54	35.50	150.40	446,175.85	769,498.86	
5,186.00	2.50	131.60	5,185.16	33.84	-33.68	20.70	39.53	148.42	446,173.04	769,502.02	
5,280.00	1.70	128.30	5,279.10	36.08	-35.90	23.33	42.81	146.99	446,170.82	769,504.65	
5,362.00	1.50	129.30	5,361.07	37.53	-37.34	25.11	44.99	146.08	446,169.38	769,506.43	
5,469.00	1.00	129.60	5,468.04	39.03	-38.82	26.91	47.24	145.26	446,167.90	769,508.23	
5,564.00	0.60	31.60	5,563.03	39.14	-38.92	27.81	47.84	144.45	446,167.80	769,509.13	
5,658.00	1.90	301.20	5,657.01	37.90	-37.70	26.74	46.22	144.65	446,169.02	769,508.06	
5,753.00	2.60	293.10	5,751.94	36.22	-36.03	23.41	42.97	146.99	446,170.69	769,504.73	
5,847.00	3.90	300.50	5,845.79	33.72	-33.58	18.69	38.43	150.89	446,173.14	769,500.01	
5,941.00	6.30	303.00	5,939.41	29.23	-29.14	11.61	31.37	158.27	446,177.58	769,492.93	
6,035.00	7.60	304.30	6,032.72	22.85	-22.83	2.15	22.93	174.62	446,183.89	769,483.47	
6,130.00	10.20	304.50	6,126.56	14.45	-14.53	-9.97	17.62	214.47	446,192.19	769,471.35	
6,224.00	10.90	302.90	6,218.98	4.79	-4.98	-24.29	24.80	258.41	446,201.74	769,457.03	
6,318.00	12.20	297.40	6,311.07	-4.73	4.42	-40.58	40.81	276.21	446,211.14	769,440.74	
6,413.00	12.40	293.00	6,403.89	-13.48	13.02	-58.88	60.30	282.47	446,219.74	769,422.44	
6,507.00	13.10	293.40	6,495.58	-21.81	21.19	-77.94	80.77	285.21	446,227.91	769,403.38	
6,602.00	13.40	290.10	6,588.05	-30.02	29.25	-98.16	102.43	286.59	446,235.97	769,383.16	
6,696.00	13.10	287.20	6,679.55	-37.08	36.15	-118.57	123.95	286.95	446,242.87	769,362.75	
6,790.00	14.40	286.30	6,770.85	-43.68	42.58	-139.96	146.30	286.92	446,249.30	769,341.36	
6,885.00	13.40	282.80	6,863.07	-49.60	48.33	-162.04	169.09	286.61	446,255.05	769,319.28	

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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)	
6,979.00	11.90	274.00	6,954.79	-52.85	51.42	-182.33	189.44	285.75	446,258.14	769,298.99	
7,074.00	10.70	274.90	7,047.95	-54.43	52.86	-200.89	207.73	284.74	446,259.58	769,280.43	
7,168.00	9.90	293.10	7,140.46	-58.48	56.78	-217.02	224.32	284.66	446,263.50	769,264.30	
7,262.00	10.20	300.00	7,233.02	-65.92	64.11	-231.66	240.37	285.47	446,270.83	769,249.66	
7,357.00	8.70	295.20	7,326.73	-73.30	71.37	-245.45	255.61	286.21	446,278.09	769,235.87	
7,451.00	8.50	292.70	7,419.67	-79.11	77.08	-258.29	269.55	286.62	446,283.80	769,223.03	
7,545.00	9.30	293.00	7,512.54	-84.86	82.73	-271.69	284.01	286.94	446,289.45	769,209.63	
7,640.00	9.00	289.70	7,606.33	-90.48	88.23	-285.75	299.06	287.16	446,294.95	769,195.57	
7,734.00	9.40	288.50	7,699.12	-95.50	93.15	-299.95	314.08	287.25	446,299.87	769,181.37	
7,829.00	9.20	286.90	7,792.87	-100.28	97.82	-314.58	329.43	287.27	446,304.54	769,166.74	
7,923.00	7.70	297.30	7,885.86	-105.46	102.89	-327.36	343.15	287.45	446,309.61	769,153.96	
8,018.00	7.50	296.30	7,980.02	-111.21	108.56	-338.58	355.55	287.78	446,315.28	769,142.74	
8,112.00	7.00	295.00	8,073.27	-116.44	113.70	-349.27	367.31	288.03	446,320.42	769,132.05	
8,207.00	6.70	295.20	8,167.59	-121.32	118.50	-359.53	378.56	288.24	446,325.22	769,121.79	
8,301.00	6.40	294.30	8,260.98	-125.89	122.99	-369.27	389.21	288.42	446,329.71	769,112.05	
8,395.00	7.10	297.50	8,354.33	-130.80	127.83	-379.19	400.16	288.63	446,334.55	769,102.13	
8,490.00	7.30	298.50	8,448.58	-136.48	133.42	-389.71	411.91	288.90	446,340.14	769,091.61	
8,584.00	8.80	300.80	8,541.65	-143.10	139.95	-401.13	424.84	289.23	446,346.67	769,080.19	
8,679.00	9.10	297.40	8,635.49	-150.38	147.13	-414.04	439.41	289.56	446,353.85	769,067.28	
8,773.00	8.90	297.10	8,728.34	-157.21	153.86	-427.12	453.98	289.81	446,360.58	769,054.20	
8,867.00	9.50	299.80	8,821.13	-164.49	161.03	-440.32	468.84	290.09	446,367.75	769,041.00	
8,962.00	9.90	298.80	8,914.77	-172.43	168.86	-454.28	484.65	290.39	446,375.58	769,027.04	
9,056.00	9.20	296.20	9,007.47	-179.74	176.07	-468.10	500.12	290.61	446,382.79	769,013.22	
9,150.00	8.40	295.80	9,100.36	-186.15	182.38	-481.03	514.44	290.76	446,389.10	769,000.29	
9,245.00	8.30	293.10	9,194.35	-191.96	188.09	-493.58	528.21	290.86	446,394.81	768,987.74	
9,339.00	7.70	293.90	9,287.44	-197.27	193.30	-505.58	541.27	290.92	446,400.02	768,975.74	
9,434.00	7.10	295.80	9,381.64	-202.49	198.44	-516.68	553.48	291.01	446,405.16	768,964.64	

Company: Marathon Oil
Project: Lea County, NM
Site: Flowmaster 24-34-15 (4-5-8)
Well: SB No. 4H
Wellbore: OH
Design: OH 194'-15709' PTB 15771'

Local Co-ordinate Reference: Well SB No. 4H
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 (usft)	Closure Azimuth (°)	Northing (usft)	Easting (usft)	
9,528.00	7.00	299.40	9,474.93	-207.91	203.78	-526.91	564.94	291.14	446,410.50	768,954.41	
9,623.00	7.30	301.70	9,569.20	-214.00	209.79	-537.08	576.60	291.34	446,416.51	768,944.24	
9,717.00	8.00	307.00	9,662.36	-221.16	216.87	-547.39	588.78	291.61	446,423.59	768,933.93	
9,812.00	7.90	305.70	9,756.45	-229.03	224.65	-557.97	601.50	291.93	446,431.37	768,923.35	
9,906.00	5.70	300.20	9,849.78	-235.22	230.77	-567.25	612.40	292.14	446,437.49	768,914.07	
10,004.00	3.30	299.50	9,947.47	-239.11	234.61	-573.91	620.02	292.23	446,441.33	768,907.41	
10,099.00	3.10	299.10	10,042.32	-241.74	237.21	-578.54	625.28	292.29	446,443.93	768,902.78	
10,193.00	1.80	339.70	10,136.24	-244.38	239.83	-581.27	628.80	292.42	446,446.55	768,900.05	
10,287.00	0.90	74.70	10,230.22	-245.96	241.41	-581.07	629.22	292.56	446,448.13	768,900.25	
10,382.00	1.00	55.40	10,325.21	-246.62	242.07	-579.67	628.19	292.67	446,448.79	768,901.65	
10,477.00	1.50	56.10	10,420.19	-247.77	243.24	-577.96	627.05	292.82	446,449.96	768,903.36	
10,571.00	2.00	138.10	10,514.16	-247.22	242.70	-575.84	624.90	292.85	446,449.42	768,905.48	
10,614.20	6.17	166.19	10,557.24	-244.39	239.89	-574.78	622.83	292.65	446,446.61	768,906.54	
[Flowmaster#4H]KOP											
10,665.00	11.40	171.80	10,607.43	-236.76	232.26	-573.41	618.67	292.05	446,438.98	768,907.91	
10,760.00	22.10	172.90	10,698.26	-209.63	205.16	-569.85	605.66	289.80	446,411.88	768,911.47	
10,854.00	32.70	175.90	10,781.60	-166.60	162.16	-565.84	588.62	285.99	446,368.88	768,915.48	
10,949.00	42.70	175.90	10,856.68	-108.69	104.29	-561.69	571.29	280.52	446,311.01	768,919.63	
11,043.00	55.00	179.40	10,918.42	-38.10	33.71	-559.00	560.02	273.45	446,240.43	768,922.32	
11,138.00	64.00	181.90	10,966.59	43.64	-48.04	-560.01	562.07	265.10	446,158.68	768,921.31	
11,232.00	71.00	180.30	11,002.55	130.40	-134.81	-561.65	577.60	256.50	446,071.91	768,919.67	
11,327.00	74.50	179.80	11,030.71	221.11	-225.53	-561.72	605.30	248.12	445,981.19	768,919.60	
11,421.00	80.10	178.10	11,051.37	312.76	-317.17	-560.03	643.60	240.47	445,889.55	768,921.29	
11,516.00	85.40	177.30	11,063.36	406.92	-411.30	-556.24	691.79	233.52	445,795.42	768,925.08	
11,631.00	88.50	180.10	11,069.48	521.72	-526.08	-553.64	763.73	226.46	445,680.64	768,927.68	
11,725.00	89.40	181.00	11,071.20	615.69	-620.06	-554.54	831.86	221.81	445,586.66	768,926.78	
11,819.00	88.50	182.10	11,072.92	709.61	-714.01	-557.09	905.62	217.96	445,492.71	768,924.23	

Company: Marathon Oil
Project: Lea County, NM
Site: Flowmaster 24-34-15 (4-5-8)
Well: SB No. 4H
Wellbore: OH
Design: OH 194'-15709' PTB 15771'

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

Well SB No. 4H
 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 (usft)	Closure Azimuth (°)	Northing (usft)	Easting (usft)	
11,914.00	88.80	182.70	11,075.16	804.47	-808.90	-561.06	984.43	214.75	445,397.82	768,920.26	
12,008.00	88.30	181.10	11,077.54	898.35	-902.81	-564.18	1,064.60	212.00	445,303.91	768,917.14	
12,103.00	88.10	180.90	11,080.52	993.28	-997.75	-565.84	1,147.03	209.56	445,208.97	768,915.48	
12,197.00	89.10	181.00	11,082.82	1,087.22	-1,091.71	-567.39	1,230.35	207.46	445,115.01	768,913.93	
12,292.00	89.00	182.20	11,084.39	1,182.14	-1,186.66	-570.05	1,316.48	205.66	445,020.06	768,911.27	
12,386.00	88.70	180.60	11,086.28	1,276.07	-1,280.61	-572.34	1,402.69	204.08	444,926.11	768,908.98	
12,480.00	89.80	181.10	11,087.51	1,370.04	-1,374.59	-573.74	1,489.52	202.66	444,832.13	768,907.58	
12,575.00	89.60	180.20	11,088.01	1,465.02	-1,469.58	-574.81	1,578.00	201.36	444,737.14	768,906.51	
12,669.00	88.00	180.10	11,089.98	1,558.99	-1,563.55	-575.06	1,665.95	200.19	444,643.17	768,906.26	
12,764.00	88.90	180.30	11,092.55	1,653.95	-1,658.52	-575.39	1,755.49	199.13	444,548.20	768,905.93	
12,858.00	87.60	181.00	11,095.42	1,747.88	-1,752.47	-576.46	1,844.84	198.21	444,454.25	768,904.86	
12,953.00	88.50	180.90	11,098.65	1,842.80	-1,847.40	-578.03	1,935.72	197.37	444,359.32	768,903.29	
13,047.00	87.10	180.10	11,102.26	1,936.71	-1,941.32	-578.85	2,025.78	196.60	444,265.40	768,902.47	
13,142.00	87.80	180.40	11,106.49	2,031.61	-2,036.23	-579.27	2,117.02	195.88	444,170.49	768,902.05	
13,236.00	87.50	179.00	11,110.34	2,125.53	-2,130.14	-578.77	2,207.37	195.20	444,076.58	768,902.55	
13,331.00	88.50	180.00	11,113.66	2,220.47	-2,225.08	-577.95	2,298.91	194.56	443,981.64	768,903.37	
13,425.00	87.00	178.80	11,117.35	2,314.39	-2,319.00	-576.96	2,389.69	193.97	443,887.72	768,904.36	
13,520.00	86.50	179.50	11,122.73	2,409.24	-2,413.83	-575.56	2,481.50	193.41	443,792.89	768,905.76	
13,614.00	87.10	177.80	11,127.98	2,503.08	-2,507.66	-573.34	2,572.36	192.88	443,699.06	768,907.98	
13,708.00	87.70	178.00	11,132.24	2,596.94	-2,601.50	-569.90	2,663.19	192.36	443,605.22	768,911.42	
13,803.00	88.50	179.10	11,135.39	2,691.87	-2,696.41	-567.50	2,755.48	191.89	443,510.31	768,913.82	
13,897.00	87.00	178.90	11,139.08	2,785.79	-2,790.32	-565.86	2,847.12	191.46	443,416.40	768,915.46	
13,992.00	87.70	178.70	11,143.48	2,880.68	-2,885.20	-563.87	2,939.78	191.06	443,321.52	768,917.45	
14,086.00	87.30	178.50	11,147.58	2,974.58	-2,979.08	-561.58	3,031.55	190.68	443,227.64	768,919.74	
14,181.00	88.60	176.40	11,150.97	3,069.45	-3,073.92	-557.36	3,124.04	190.28	443,132.80	768,923.96	
14,275.00	90.00	174.80	11,152.12	3,163.21	-3,167.63	-550.14	3,215.05	189.85	443,039.09	768,931.18	
14,370.00	93.70	173.00	11,149.06	3,257.68	-3,262.02	-540.06	3,306.43	189.40	442,944.70	768,941.26	

Company: Marathon Oil
Project: Lea County, NM
Site: Flowmaster 24-34-15 (4-5-8)
Well: SB No. 4H
Wellbore: OH
Design: OH 194'-15709' PTB 15771'

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

Well SB No. 4H
 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 (usft)	Closure Azimuth (°)	Northing (usft)	Easting (usft)	
14,464.00	94.20	171.60	11,142.58	3,350.70	-3,354.95	-527.49	3,396.17	188.94	442,851.77	768,953.83	
14,553.00	94.50	172.40	11,135.83	3,438.68	-3,442.83	-515.14	3,481.16	188.51	442,763.89	768,966.18	
14,648.00	91.30	177.70	11,131.02	3,533.22	-3,537.31	-506.97	3,573.45	188.16	442,669.41	768,974.35	
14,742.00	90.50	180.70	11,129.54	3,627.19	-3,631.28	-505.65	3,666.31	187.93	442,575.44	768,975.67	
14,837.00	90.20	181.20	11,128.96	3,722.16	-3,726.26	-507.23	3,760.62	187.75	442,480.46	768,974.09	
14,931.00	90.00	181.40	11,128.80	3,816.12	-3,820.24	-509.36	3,854.04	187.59	442,386.48	768,971.96	
15,026.00	90.30	181.60	11,128.55	3,911.06	-3,915.20	-511.85	3,948.52	187.45	442,291.52	768,969.47	
15,120.00	90.70	181.90	11,127.73	4,004.99	-4,009.16	-514.72	4,042.06	187.32	442,197.56	768,966.60	
15,214.00	90.40	181.90	11,126.83	4,098.91	-4,103.10	-517.84	4,135.65	187.19	442,103.62	768,963.48	
15,309.00	90.50	181.90	11,126.08	4,193.82	-4,198.04	-520.99	4,230.25	187.07	442,008.68	768,960.33	
15,403.00	90.20	181.90	11,125.51	4,287.74	-4,291.99	-524.10	4,323.87	186.96	441,914.73	768,957.22	
15,498.00	90.00	182.30	11,125.34	4,382.65	-4,386.93	-527.58	4,418.54	186.86	441,819.79	768,953.74	
15,592.00	89.80	182.20	11,125.51	4,476.54	-4,480.85	-531.27	4,512.24	186.76	441,725.87	768,950.05	
15,687.00	89.50	182.30	11,126.09	4,571.44	-4,575.78	-535.00	4,606.95	186.67	441,630.94	768,946.32	
15,709.00	89.40	181.90	11,126.30	4,593.41	-4,597.76	-535.81	4,628.88	186.65	441,608.96	768,945.51	
Last Survey: 15709' MD, 11126' TVD - [Flowmaster#4H]LTP/BHL											
15,771.00	89.40	181.90	11,126.95	4,655.36	-4,659.73	-537.87	4,690.66	186.58	441,546.99	768,943.45	
PTB: 15771' MD, 11127' TVD											

Design Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
15,709.00	11,126.30	-4,597.76	-535.81	Last Survey: 15709' MD, 11126' TVD
15,771.00	11,126.95	-4,659.73	-537.87	PTB: 15771' MD, 11127' TVD