

Extraction Oil & Gas

Weld County, CO (NAD83)

Sec 09-T05N-R65W Ash Pad

MT Fed Maplewood 8W-20-4

Wellbore #1

Design: Wellbore #1

Standard Survey Report

02 April, 2019

Survey Report

Company:	Extraction Oil & Gas	Local Co-ordinate Reference:	Well MT Fed Maplewood 8W-20-4
Project:	Weld County, CO (NAD83)	TVD Reference:	KB=29 @ 4665.0usft (Patterson 901)
Site:	Sec 09-T05N-R65W Ash Pad	MD Reference:	KB=29 @ 4665.0usft (Patterson 901)
Well:	MT Fed Maplewood 8W-20-4	North Reference:	True
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	EDM 5000.15 Single User Db

Project	Weld County, CO (NAD83),		
Map System:	US State Plane 1983	System Datum:	Ground Level
Geo Datum:	North American Datum 1983		
Map Zone:	Colorado Northern Zone		

Site	Sec 09-T05N-R65W Ash Pad				
Site Position:		Northing:	1,396,398.96 usft	Latitude:	40° 25' 6.816 N
From:	Lat/Long	Easting:	3,230,631.97 usft	Longitude:	104° 40' 18.012 W
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "	Grid Convergence:	0.54 °

Well	MT Fed Maplewood 8W-20-4					
Well Position	+N/-S	0.0 usft	Northing:	1,396,347.94 usft	Latitude:	40° 25' 6.312 N
	+E/-W	0.0 usft	Easting:	3,230,632.45 usft	Longitude:	104° 40' 18.012 W
Position Uncertainty		0.0 usft	Wellhead Elevation:	0.0 usft	Ground Level:	4,636.0 usft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2000	12/31/2018	8.07	66.87	52,193.30000000

Design	Wellbore #1				
Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	0.0
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)	
	0.0	0.0	0.0	274.51	

Survey Program	Date	4/2/2019			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
125.0	1,550.0	Surface Surveys (Wellbore #1)	MWD	MWD - Standard	
1,592.0	17,152.0	Atlas MWD Surveys (Wellbore #1)	MWD	MWD - Standard	

Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	0.00	
125.0	1.14	236.89	125.0	-0.7	-1.0	1.0	0.91	0.91	0.00	
219.0	0.40	306.85	219.0	-1.0	-2.1	2.0	1.14	-0.79	74.43	
315.0	0.40	306.23	315.0	-0.6	-2.6	2.6	0.00	0.00	-0.65	
410.0	0.75	340.69	410.0	0.2	-3.1	3.1	0.50	0.37	36.27	
505.0	1.67	279.69	505.0	1.0	-4.7	4.7	1.54	0.97	-64.21	
599.0	3.69	285.40	598.9	2.0	-8.9	9.1	2.16	2.15	6.07	
694.0	5.41	285.05	693.5	4.0	-16.2	16.5	1.81	1.81	-0.37	
789.0	8.53	282.15	787.8	6.7	-27.4	27.9	3.30	3.28	-3.05	
884.0	9.58	276.17	881.7	9.0	-42.2	42.7	1.48	1.11	-6.29	

Survey Report

Company:	Extraction Oil & Gas	Local Co-ordinate Reference:	Well MT Fed Maplewood 8W-20-4
Project:	Weld County, CO (NAD83)	TVD Reference:	KB=29 @ 4665.0usft (Patterson 901)
Site:	Sec 09-T05N-R65W Ash Pad	MD Reference:	KB=29 @ 4665.0usft (Patterson 901)
Well:	MT Fed Maplewood 8W-20-4	North Reference:	True
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	EDM 5000.15 Single User Db

Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
979.0	9.49	280.04	975.3	11.2	-57.7	58.4	0.68	-0.09	4.07
1,075.0	11.51	280.57	1,069.7	14.3	-75.0	75.8	2.11	2.10	0.55
1,170.0	14.33	280.39	1,162.3	18.2	-95.8	97.0	2.97	2.97	-0.19
1,265.0	16.35	285.49	1,253.9	23.9	-120.3	121.8	2.56	2.13	5.37
1,360.0	18.06	286.46	1,344.7	31.6	-147.3	149.3	1.83	1.80	1.02
1,455.0	17.67	282.42	1,435.1	38.9	-175.5	178.0	1.37	-0.41	-4.25
1,550.0	19.47	280.92	1,525.1	45.0	-205.1	208.0	1.96	1.89	-1.58
Tie into Surface Surveys									
1,592.0	18.24	281.89	1,564.9	47.7	-218.4	221.5	3.02	-2.93	2.31
First MWD Survey @ 1592' MD									
1,667.0	17.94	278.16	1,636.2	51.8	-241.4	244.7	1.59	-0.40	-4.97
1,762.0	20.24	280.41	1,726.0	56.8	-272.0	275.6	2.54	2.42	2.37
1,857.0	19.09	279.13	1,815.4	62.2	-303.5	307.5	1.29	-1.21	-1.35
1,952.0	20.15	286.40	1,904.9	69.3	-334.6	339.0	2.80	1.12	7.65
2,048.0	18.78	284.37	1,995.4	77.8	-365.4	370.4	1.59	-1.43	-2.11
2,144.0	21.39	286.14	2,085.6	86.5	-397.2	402.8	2.79	2.72	1.84
2,239.0	20.11	284.06	2,174.4	95.3	-429.7	435.8	1.55	-1.35	-2.19
2,334.0	17.68	282.74	2,264.3	102.5	-459.6	466.2	2.60	-2.56	-1.39
2,430.0	20.99	283.40	2,354.9	109.7	-490.5	497.6	3.46	3.45	0.69
2,525.0	19.93	283.18	2,443.9	117.3	-522.9	530.5	1.12	-1.12	-0.23
2,621.0	18.16	282.52	2,534.6	124.3	-553.4	561.4	1.86	-1.84	-0.69
2,717.0	21.26	286.53	2,625.0	132.5	-584.7	593.3	3.52	3.23	4.18
2,812.0	22.71	286.00	2,713.1	142.4	-618.8	628.1	1.54	1.53	-0.56
2,908.0	23.07	285.65	2,801.5	152.6	-654.8	664.7	0.40	0.38	-0.36
3,004.0	21.08	284.95	2,890.5	162.1	-689.5	700.2	2.09	-2.07	-0.73
3,099.0	19.93	284.20	2,979.4	170.5	-721.8	732.9	1.24	-1.21	-0.79
3,194.0	17.54	283.18	3,069.4	177.8	-751.4	763.0	2.54	-2.52	-1.07
3,290.0	19.84	277.19	3,160.3	183.1	-781.6	793.6	3.12	2.40	-6.24
3,386.0	18.29	276.22	3,251.1	186.8	-812.8	825.0	1.65	-1.61	-1.01
3,481.0	19.53	279.39	3,341.0	191.0	-843.3	855.7	1.69	1.31	3.34
3,576.0	17.41	279.13	3,431.1	195.8	-873.0	885.7	2.23	-2.23	-0.27
3,672.0	19.00	279.57	3,522.2	200.7	-902.6	915.6	1.66	1.66	0.46
3,768.0	18.65	282.43	3,613.1	206.6	-933.0	946.3	1.03	-0.36	2.98
3,863.0	19.18	281.73	3,703.0	213.0	-963.1	976.8	0.61	0.56	-0.74
3,959.0	19.27	281.90	3,793.6	219.5	-994.0	1,008.2	0.11	0.09	0.18
4,054.0	19.75	280.85	3,883.2	225.8	-1,025.1	1,039.7	0.63	0.51	-1.11
4,150.0	18.34	280.54	3,973.9	231.6	-1,055.9	1,070.8	1.47	-1.47	-0.32
4,246.0	21.65	283.27	4,064.1	238.4	-1,088.0	1,103.4	3.58	3.45	2.84
4,342.0	21.79	284.37	4,153.3	246.9	-1,122.5	1,138.4	0.45	0.15	1.15
4,437.0	18.07	282.96	4,242.6	254.6	-1,153.9	1,170.4	3.95	-3.92	-1.48
4,533.0	20.42	286.05	4,333.2	262.6	-1,184.6	1,201.5	2.67	2.45	3.22
4,629.0	20.59	286.58	4,423.1	272.0	-1,216.8	1,234.4	0.26	0.18	0.55
4,724.0	17.99	285.25	4,512.8	280.6	-1,247.0	1,265.2	2.78	-2.74	-1.40

Survey Report

Company:	Extraction Oil & Gas	Local Co-ordinate Reference:	Well MT Fed Maplewood 8W-20-4
Project:	Weld County, CO (NAD83)	TVD Reference:	KB=29 @ 4665.0usft (Patterson 901)
Site:	Sec 09-T05N-R65W Ash Pad	MD Reference:	KB=29 @ 4665.0usft (Patterson 901)
Well:	MT Fed Maplewood 8W-20-4	North Reference:	True
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	EDM 5000.15 Single User Db

Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
4,820.0	19.31	280.23	4,603.8	287.3	-1,276.9	1,295.6	2.16	1.38	-5.23
4,915.0	20.24	277.50	4,693.2	292.3	-1,308.7	1,327.6	1.38	0.98	-2.87
5,035.0	18.34	275.51	4,806.4	296.8	-1,348.1	1,367.2	1.68	-1.58	-1.66
5,130.0	22.23	280.14	4,895.5	301.4	-1,380.6	1,400.1	4.43	4.09	4.87
5,226.0	22.67	281.42	4,984.3	308.3	-1,416.6	1,436.5	0.69	0.46	1.33
5,322.0	20.72	279.22	5,073.4	314.7	-1,451.5	1,471.8	2.20	-2.03	-2.29
5,417.0	20.15	287.15	5,162.5	322.2	-1,483.8	1,504.5	2.97	-0.60	8.35
5,513.0	17.90	286.49	5,253.2	331.2	-1,513.7	1,535.1	2.35	-2.34	-0.69
5,608.0	15.51	284.46	5,344.2	338.6	-1,540.0	1,561.9	2.59	-2.52	-2.14
5,703.0	13.12	283.27	5,436.3	344.2	-1,562.8	1,585.0	2.53	-2.52	-1.25
5,799.0	11.53	279.39	5,530.1	348.3	-1,582.9	1,605.4	1.87	-1.66	-4.04
5,895.0	9.63	276.62	5,624.4	350.8	-1,600.3	1,623.0	2.05	-1.98	-2.89
5,990.0	7.87	276.84	5,718.3	352.4	-1,614.7	1,637.4	1.85	-1.85	0.23
6,086.0	6.23	276.31	5,813.6	353.8	-1,626.4	1,649.2	1.71	-1.71	-0.55
6,181.0	5.17	271.64	5,908.1	354.5	-1,635.8	1,658.6	1.22	-1.12	-4.92
6,277.0	1.77	228.27	6,003.9	353.6	-1,641.2	1,664.0	4.24	-3.54	-45.18
6,372.0	1.15	211.13	6,098.9	351.8	-1,642.8	1,665.4	0.79	-0.65	-18.04
6,468.0	1.24	201.09	6,194.9	350.0	-1,643.7	1,666.1	0.24	0.09	-10.46
6,563.0	1.59	174.51	6,289.8	347.8	-1,643.9	1,666.2	0.77	0.37	-27.98
6,658.0	1.94	308.87	6,384.8	347.5	-1,645.1	1,667.3	3.43	0.37	141.43
6,754.0	14.76	277.10	6,479.6	350.0	-1,658.5	1,680.9	13.70	13.35	-33.09
6,849.0	20.59	288.25	6,570.1	356.7	-1,686.4	1,709.3	7.07	6.14	11.74
6,940.1	30.00	286.28	6,652.4	368.2	-1,723.6	1,747.2	10.37	10.33	-2.16
30° Inclination @ 6940.1' MD									
6,944.0	30.40	286.22	6,655.8	368.7	-1,725.5	1,749.1	10.37	10.34	-1.51
6,990.5	34.62	285.86	6,695.0	375.6	-1,749.5	1,773.6	9.08	9.07	-0.77
Cross @ 6990.5' MD									
7,040.0	39.11	285.56	6,734.6	383.7	-1,778.1	1,802.7	9.08	9.07	-0.61
7,136.0	46.09	274.77	6,805.3	394.7	-1,841.9	1,867.2	10.50	7.27	-11.24
7,231.0	58.42	271.73	6,863.3	398.8	-1,916.7	1,942.1	13.22	12.98	-3.20
7,326.0	69.69	274.06	6,904.8	403.2	-2,001.9	2,027.4	12.07	11.86	2.45
7,328.1	69.99	273.99	6,905.6	403.3	-2,003.8	2,029.3	14.75	14.44	-3.21
70° Inclination @ 7328.1' MD									
7,421.0	83.43	271.20	6,926.9	407.3	-2,093.9	2,119.5	14.75	14.46	-3.01
7,517.0	82.06	270.09	6,939.0	408.4	-2,189.2	2,214.5	1.83	-1.43	-1.16
7,612.0	86.74	269.48	6,948.3	408.0	-2,283.7	2,308.7	4.97	4.93	-0.64
7,708.0	89.31	268.46	6,951.6	406.3	-2,379.6	2,404.2	2.88	2.68	-1.06
7,803.0	88.95	271.50	6,953.0	406.3	-2,474.6	2,498.9	3.22	-0.38	3.20
7,899.0	88.56	271.99	6,955.1	409.2	-2,570.5	2,594.7	0.65	-0.41	0.51
7,994.0	87.54	271.24	6,958.3	411.9	-2,665.4	2,689.5	1.33	-1.07	-0.79
8,090.0	88.78	273.58	6,961.4	415.9	-2,761.3	2,785.4	2.76	1.29	2.44
8,185.0	89.48	274.72	6,962.9	422.8	-2,856.0	2,880.4	1.41	0.74	1.20
8,281.0	89.53	274.68	6,963.7	430.7	-2,951.7	2,976.4	0.07	0.05	-0.04
8,377.0	89.88	274.68	6,964.2	438.5	-3,047.4	3,072.4	0.36	0.36	0.00

Survey Report

Company:	Extraction Oil & Gas	Local Co-ordinate Reference:	Well MT Fed Maplewood 8W-20-4
Project:	Weld County, CO (NAD83)	TVD Reference:	KB=29 @ 4665.0usft (Patterson 901)
Site:	Sec 09-T05N-R65W Ash Pad	MD Reference:	KB=29 @ 4665.0usft (Patterson 901)
Well:	MT Fed Maplewood 8W-20-4	North Reference:	True
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	EDM 5000.15 Single User Db

Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
8,473.0	89.97	274.46	6,964.3	446.1	-3,143.1	3,168.4	0.25	0.09	-0.23	
8,568.0	91.03	274.90	6,963.5	453.9	-3,237.7	3,263.4	1.21	1.12	0.46	
8,663.0	90.94	274.81	6,961.9	461.9	-3,332.4	3,358.4	0.13	-0.09	-0.09	
8,759.0	91.87	274.28	6,959.5	469.5	-3,428.0	3,454.4	1.11	0.97	-0.55	
8,855.0	90.06	274.99	6,957.9	477.3	-3,523.7	3,550.3	2.03	-1.89	0.74	
8,950.0	89.75	274.24	6,958.0	484.9	-3,618.4	3,645.3	0.85	-0.33	-0.79	
9,046.0	89.31	273.05	6,958.8	491.0	-3,714.2	3,741.3	1.32	-0.46	-1.24	
9,141.0	88.82	272.52	6,960.4	495.6	-3,809.1	3,836.3	0.76	-0.52	-0.56	
9,236.0	88.73	272.03	6,962.4	499.4	-3,904.0	3,931.2	0.52	-0.09	-0.52	
9,332.0	87.67	272.12	6,965.4	502.9	-3,999.9	4,027.0	1.11	-1.10	0.09	
9,427.0	91.74	273.66	6,965.9	507.7	-4,094.7	4,122.0	4.58	4.28	1.62	
9,522.0	91.83	273.49	6,963.0	513.6	-4,189.5	4,216.9	0.20	0.09	-0.18	
9,618.0	91.60	272.96	6,960.1	519.0	-4,285.3	4,312.8	0.60	-0.24	-0.55	
9,713.0	89.48	273.14	6,959.2	524.1	-4,380.2	4,407.8	2.24	-2.23	0.19	
9,808.0	89.62	272.52	6,959.9	528.7	-4,475.0	4,502.8	0.67	0.15	-0.65	
9,904.0	92.05	273.22	6,958.5	533.5	-4,570.9	4,598.7	2.63	2.53	0.73	
9,999.0	87.89	272.30	6,958.6	538.1	-4,665.8	4,693.6	4.48	-4.38	-0.97	
10,095.0	87.76	272.12	6,962.2	541.8	-4,761.6	4,789.5	0.23	-0.14	-0.19	
10,190.0	87.05	271.33	6,966.5	544.7	-4,856.5	4,884.3	1.12	-0.75	-0.83	
10,286.0	90.06	273.00	6,968.9	548.3	-4,952.4	4,980.2	3.59	3.14	1.74	
10,381.0	90.90	273.05	6,968.2	553.3	-5,047.2	5,075.1	0.89	0.88	0.05	
10,476.0	90.77	273.18	6,966.8	558.5	-5,142.1	5,170.1	0.19	-0.14	0.14	
10,571.0	91.21	272.56	6,965.1	563.2	-5,237.0	5,265.0	0.80	0.46	-0.65	
10,667.0	89.22	271.64	6,964.8	566.8	-5,332.9	5,360.9	2.28	-2.07	-0.96	
10,763.0	89.35	271.15	6,966.0	569.1	-5,428.8	5,456.8	0.53	0.14	-0.51	
10,858.0	90.99	271.64	6,965.7	571.4	-5,523.8	5,551.6	1.80	1.73	0.52	
10,954.0	89.31	271.77	6,965.4	574.3	-5,619.8	5,647.5	1.76	-1.75	0.14	
11,049.0	88.95	271.90	6,966.9	577.3	-5,714.7	5,742.4	0.40	-0.38	0.14	
11,145.0	89.00	272.12	6,968.6	580.7	-5,810.6	5,838.3	0.23	0.05	0.23	
11,240.0	88.60	270.80	6,970.6	583.1	-5,905.6	5,933.1	1.45	-0.42	-1.39	
11,336.0	90.10	274.02	6,971.7	587.1	-6,001.5	6,029.1	3.70	1.56	3.35	
11,431.0	90.77	273.62	6,970.9	593.4	-6,096.3	6,124.0	0.82	0.71	-0.42	
11,526.0	90.10	273.05	6,970.2	599.0	-6,191.1	6,219.0	0.93	-0.71	-0.60	
11,622.0	89.53	273.18	6,970.5	604.2	-6,286.9	6,315.0	0.61	-0.59	0.14	
11,718.0	88.56	272.43	6,972.1	608.9	-6,382.8	6,410.9	1.28	-1.01	-0.78	
11,813.0	88.78	273.84	6,974.3	614.1	-6,477.6	6,505.9	1.50	0.23	1.48	
11,908.0	87.01	272.17	6,977.8	619.1	-6,572.4	6,600.8	2.56	-1.86	-1.76	
12,004.0	90.15	274.50	6,980.2	624.6	-6,668.2	6,696.7	4.07	3.27	2.43	
12,099.0	89.62	273.53	6,980.4	631.3	-6,763.0	6,791.7	1.16	-0.56	-1.02	
12,195.0	90.72	275.47	6,980.1	638.8	-6,858.7	6,887.7	2.32	1.15	2.02	
12,290.0	90.63	274.55	6,979.0	647.1	-6,953.3	6,982.7	0.97	-0.09	-0.97	
12,334.8	90.61	274.51	6,978.5	650.7	-6,998.0	7,027.5	0.10	-0.04	-0.09	
Cross @ 12334.8' MD										
12,385.0	90.59	274.46	6,978.0	654.6	-7,048.0	7,077.7	0.10	-0.04	-0.09	

Survey Report

Company:	Extraction Oil & Gas	Local Co-ordinate Reference:	Well MT Fed Maplewood 8W-20-4
Project:	Weld County, CO (NAD83)	TVD Reference:	KB=29 @ 4665.0usft (Patterson 901)
Site:	Sec 09-T05N-R65W Ash Pad	MD Reference:	KB=29 @ 4665.0usft (Patterson 901)
Well:	MT Fed Maplewood 8W-20-4	North Reference:	True
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	EDM 5000.15 Single User Db

Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
12,481.0	91.12	274.15	6,976.6	661.8	-7,143.7	7,173.7	0.64	0.55	-0.32
12,576.0	91.56	272.74	6,974.3	667.5	-7,238.5	7,268.6	1.55	0.46	-1.48
12,672.0	88.86	273.49	6,974.0	672.7	-7,334.4	7,364.6	2.92	-2.81	0.78
12,767.0	88.51	273.22	6,976.2	678.3	-7,429.2	7,459.5	0.47	-0.37	-0.28
12,863.0	90.59	274.24	6,976.9	684.5	-7,525.0	7,555.5	2.41	2.17	1.06
12,958.0	91.74	274.10	6,975.0	691.4	-7,619.7	7,650.5	1.22	1.21	-0.15
13,053.0	92.58	274.63	6,971.4	698.6	-7,714.4	7,745.4	1.05	0.88	0.56
13,149.0	90.99	273.00	6,968.4	705.0	-7,810.1	7,841.4	2.37	-1.66	-1.70
13,244.0	91.47	272.17	6,966.4	709.3	-7,905.0	7,936.3	1.01	0.51	-0.87
13,340.0	90.54	274.15	6,964.7	714.6	-8,000.8	8,032.2	2.28	-0.97	2.06
13,435.0	90.77	273.62	6,963.6	721.0	-8,095.6	8,127.2	0.61	0.24	-0.56
13,531.0	90.10	271.81	6,962.9	725.6	-8,191.5	8,223.2	2.01	-0.70	-1.89
13,626.0	89.93	270.84	6,962.8	727.8	-8,286.5	8,318.0	1.04	-0.18	-1.02
13,722.0	90.10	270.14	6,962.8	728.6	-8,382.5	8,413.8	0.75	0.18	-0.73
13,818.0	89.53	268.16	6,963.1	727.2	-8,478.4	8,509.4	2.15	-0.59	-2.06
13,913.0	89.26	272.34	6,964.1	727.6	-8,573.4	8,604.1	4.41	-0.28	4.40
14,008.0	90.50	274.90	6,964.3	733.6	-8,668.2	8,699.1	2.99	1.31	2.69
14,104.0	90.06	275.03	6,963.9	741.9	-8,763.9	8,795.1	0.48	-0.46	0.14
14,200.0	89.66	273.97	6,964.1	749.4	-8,859.6	8,891.1	1.18	-0.42	-1.10
14,295.0	89.17	272.34	6,965.1	754.7	-8,954.4	8,986.0	1.79	-0.52	-1.72
14,391.0	90.10	271.33	6,965.7	757.7	-9,050.3	9,081.9	1.43	0.97	-1.05
14,487.0	91.38	276.00	6,964.4	763.9	-9,146.1	9,177.9	5.04	1.33	4.86
14,582.0	92.71	276.26	6,961.1	774.0	-9,240.5	9,272.8	1.43	1.40	0.27
14,678.0	91.07	274.15	6,957.9	782.7	-9,336.1	9,368.7	2.78	-1.71	-2.20
14,773.0	90.59	274.81	6,956.5	790.1	-9,430.8	9,463.7	0.86	-0.51	0.69
14,869.0	90.10	273.40	6,955.9	797.0	-9,526.5	9,559.7	1.55	-0.51	-1.47
14,965.0	89.74	272.83	6,956.1	802.2	-9,622.4	9,655.6	0.70	-0.38	-0.59
15,060.0	91.43	272.83	6,955.1	806.9	-9,717.2	9,750.6	1.78	1.78	0.00
15,156.0	89.93	274.37	6,954.0	812.9	-9,813.0	9,846.6	2.24	-1.56	1.60
15,251.0	90.59	273.66	6,953.5	819.6	-9,907.8	9,941.6	1.02	0.69	-0.75
15,347.0	88.64	274.24	6,954.2	826.2	-10,003.6	10,037.6	2.12	-2.03	0.60
15,442.0	91.34	273.31	6,954.2	832.5	-10,098.3	10,132.5	3.01	2.84	-0.98
15,538.0	88.64	272.39	6,954.2	837.2	-10,194.2	10,228.5	2.97	-2.81	-0.96
15,633.0	89.26	271.95	6,955.9	840.8	-10,289.1	10,323.4	0.80	0.65	-0.46
15,729.0	91.43	271.06	6,955.4	843.3	-10,385.1	10,419.2	2.44	2.26	-0.93
15,824.0	87.98	274.37	6,955.9	847.8	-10,480.0	10,514.2	5.03	-3.63	3.48
15,920.0	87.89	274.02	6,959.3	854.9	-10,575.6	10,610.1	0.38	-0.09	-0.36
16,015.0	88.69	273.84	6,962.2	861.4	-10,670.4	10,705.1	0.86	0.84	-0.19
16,111.0	87.23	274.02	6,965.6	867.9	-10,766.1	10,801.0	1.53	-1.52	0.19
16,206.0	90.72	276.40	6,967.3	876.6	-10,860.7	10,895.9	4.45	3.67	2.51
16,302.0	90.41	276.44	6,966.3	887.3	-10,956.0	10,991.9	0.33	-0.32	0.04
16,397.0	89.53	275.16	6,966.4	896.9	-11,050.6	11,086.9	1.64	-0.93	-1.35
16,492.0	90.41	274.94	6,966.4	905.3	-11,145.2	11,181.9	0.95	0.93	-0.23

Survey Report

Company:	Extraction Oil & Gas	Local Co-ordinate Reference:	Well MT Fed Maplewood 8W-20-4
Project:	Weld County, CO (NAD83)	TVD Reference:	KB=29 @ 4665.0usft (Patterson 901)
Site:	Sec 09-T05N-R65W Ash Pad	MD Reference:	KB=29 @ 4665.0usft (Patterson 901)
Well:	MT Fed Maplewood 8W-20-4	North Reference:	True
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	EDM 5000.15 Single User Db

Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
16,588.0	90.54	275.69	6,965.6	914.2	-11,240.8	11,277.8	0.79	0.14	0.78	
16,684.0	89.62	274.46	6,965.5	922.6	-11,336.4	11,373.8	1.60	-0.96	-1.28	
16,779.0	90.10	275.82	6,965.7	931.2	-11,431.0	11,468.8	1.52	0.51	1.43	
16,874.0	89.93	276.00	6,965.7	940.9	-11,525.5	11,563.8	0.26	-0.18	0.19	
16,970.0	92.40	274.77	6,963.7	949.9	-11,621.0	11,659.8	2.87	2.57	-1.28	
17,065.0	92.58	273.93	6,959.6	957.1	-11,715.7	11,754.7	0.90	0.19	-0.88	
Last MWD Survey @ 17065' MD										
17,152.0	92.58	273.93	6,955.7	963.1	-11,802.4	11,841.6	0.00	0.00	0.00	
Projection to TD @ 17152' MD 648' FNL/ 510' FWL										

Design Targets										
Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude	
30° Inclination @ 6940.1 - actual wellpath hits target center - Point	0.00	0.00	6,652.4	368.2	-1,723.6	1,396,700.01	3,228,905.50	40° 25' 9.950 N	104° 40' 40.297 W	
Cross @ 6990.5' MD - actual wellpath hits target center - Point	0.00	0.00	6,695.0	375.6	-1,749.5	1,396,707.21	3,228,879.52	40° 25' 10.023 N	104° 40' 40.632 W	
70° Inclination @ 7328.1 - actual wellpath hits target center - Point	0.00	0.00	6,905.6	403.3	-2,003.9	1,396,732.50	3,228,624.90	40° 25' 10.296 N	104° 40' 43.921 W	
PBHL MT Fed Maplewood - actual wellpath misses target center by 55.9usft at 17152.0usft MD (6955.7 TVD, 963.1 N, -11802.4 E) - Point	0.00	0.00	6,951.0	934.5	-11,850.2	1,397,171.71	3,218,774.02	40° 25' 15.518 N	104° 42' 51.234 W	
Cross @ 12334.8' MD - actual wellpath hits target center - Point	0.00	0.00	6,978.5	650.7	-6,998.0	1,396,933.21	3,223,628.68	40° 25' 12.732 N	104° 41' 48.494 W	
WSC 12-9 Offset - actual wellpath misses target center by 1713.3usft at 6934.9usft MD (6647.9 TVD, 367.4 N, -1721.1 E) - Circle (radius 25.0)	0.00	0.00	7,068.0	-1,234.9	-1,283.7	1,395,101.08	3,229,360.39	40° 24' 54.108 N	104° 40' 34.608 W	
WSC 11-9 Offset - actual wellpath misses target center by 763.3usft at 6990.5usft MD (6695.0 TVD, 375.6 N, -1749.5 E) - Circle (radius 25.0)	0.00	0.00	7,111.0	302.4	-1,113.7	1,396,639.93	3,229,515.95	40° 25' 9.300 N	104° 40' 32.412 W	

Survey Report

Company:	Extraction Oil & Gas	Local Co-ordinate Reference:	Well MT Fed Maplewood 8W-20-4
Project:	Weld County, CO (NAD83)	TVD Reference:	KB=29 @ 4665.0usft (Patterson 901)
Site:	Sec 09-T05N-R65W Ash Pad	MD Reference:	KB=29 @ 4665.0usft (Patterson 901)
Well:	MT Fed Maplewood 8W-20-4	North Reference:	True
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	EDM 5000.15 Single User Db

Design Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
1,550.0	1,525.1	45.0	-205.1	Tie into Surface Surveys
1,592.0	1,564.9	47.7	-218.4	First MWD Survey @ 1592' MD
6,940.1	6,652.4	368.2	-1,723.6	30° Inclination @ 6940.1' MD
6,990.5	6,695.0	375.6	-1,749.5	Cross @ 6990.5' MD
7,328.1	6,905.6	403.3	-2,003.8	70° Inclination @ 7328.1' MD
12,334.8	6,978.5	650.7	-6,998.0	Cross @ 12334.8' MD
17,065.0	6,959.6	957.1	-11,715.7	Last MWD Survey @ 17065' MD
17,152.0	6,955.7	963.1	-11,802.4	Projection to TD @ 17152' MD 648' FNL/ 510' FWL

Checked By: _____ Approved By: _____ Date: _____