

Extraction Oil & Gas

Weld County, CO (NAD83)

Vetting PAD (Sec 15-T5N-R65W)

VT-LDS C4-16-18

Wellbore #1

Design: Wellbore #1

Standard Survey Report

01 August, 2018

Survey Report

Company:	Extraction Oil & Gas	Local Co-ordinate Reference:	Well VT-LDS C4-16-18
Project:	Weld County, CO (NAD83)	TVD Reference:	KB=29 @ 4677.00ft (Patterson #901)
Site:	Vetting PAD (Sec 15-T5N-R65W)	MD Reference:	KB=29 @ 4677.00ft (Patterson #901)
Well:	VT-LDS C4-16-18	North Reference:	True
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	EDM 5000.1

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		Vetting PAD (Sec 15-T5N-R65W)			
Site Position:		Northing:	1,390,162.31 usft	Latitude:	40.40133
From:	Map	Easting:	3,234,926.48 usft	Longitude:	-104.65646
Position Uncertainty:	0.00 ft	Slot Radius:	13-3/16 "	Grid Convergence:	0.55 °

Well		VT-LDS C4-16-18				
Well Position	+N/-S	0.00 ft	Northing:	1,390,135.00 usfi	Latitude:	40.40126
	+E/-W	0.00 ft	Easting:	3,234,737.34 usfi	Longitude:	-104.65714
Position Uncertainty		0.00 ft	Wellhead Elevation:	0.00 ft	Ground Level:	4,648.00 ft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	HDGM	7/30/2018	8.08	66.88	52,238

Design	Wellbore #1				
Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)	
	0.00	0.00	0.00	269.16	

Survey Program	Date	8/1/2018			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
150.00	1,658.00	Surface Surveys (Wellbore #1)	NS-GYRO-MS	North sensing gyrocompassing m/s	
1,674.00	20,365.00	MWD Surveys (Wellbore #1)	MWD	MWD - Standard	

Survey										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
150.00	0.33	150.75	150.00	-0.38	0.21	-0.21	0.22	0.22	0.00	
234.00	0.31	115.60	234.00	-0.69	0.53	-0.52	0.23	-0.02	-41.85	
316.00	2.01	263.33	315.98	-0.95	-0.69	0.71	2.78	2.07	180.16	
399.00	3.88	266.96	398.87	-1.27	-4.94	4.96	2.26	2.25	4.37	
484.00	5.53	268.92	483.58	-1.50	-11.91	11.93	1.95	1.94	2.31	
570.00	7.49	268.43	569.02	-1.73	-21.66	21.68	2.28	2.28	-0.57	
655.00	8.69	268.15	653.17	-2.09	-33.62	33.64	1.41	1.41	-0.33	
739.00	11.34	263.96	735.89	-3.16	-48.17	48.21	3.27	3.15	-4.99	
824.00	12.03	263.51	819.13	-5.04	-65.28	65.35	0.82	0.81	-0.53	

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Well:	VT-LDS C4-16-18	North Reference:	True
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	EDM 5000.1

Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
908.00	13.45	264.88	901.06	-6.90	-83.71	83.81	1.73	1.69	1.63
991.00	15.81	262.60	981.36	-9.22	-104.54	104.67	2.93	2.84	-2.75
1,074.00	17.38	262.99	1,060.90	-12.19	-128.06	128.23	1.90	1.89	0.47
1,159.00	18.12	263.90	1,141.85	-15.14	-153.80	154.01	0.93	0.87	1.07
1,245.00	19.92	265.40	1,223.16	-17.74	-181.71	181.95	2.17	2.09	1.74
1,328.00	23.25	263.64	1,300.32	-20.69	-212.09	212.37	4.09	4.01	-2.12
1,415.00	24.43	263.59	1,379.90	-24.60	-247.04	247.37	1.36	1.36	-0.06
1,499.00	26.09	265.67	1,455.87	-27.94	-282.72	283.10	2.24	1.98	2.48
1,582.00	25.47	267.27	1,530.61	-30.16	-318.75	319.15	1.12	-0.75	1.93
1,608.00	26.92	267.04	1,553.94	-30.73	-330.21	330.62	5.59	5.58	-0.88
1,658.00	28.92	265.00	1,598.11	-32.37	-353.56	353.99	4.43	4.00	-4.08
Tie in to Surface Surveys @ 1658'MD									
1,674.00	29.83	267.88	1,612.06	-32.86	-361.39	361.83	10.50	5.69	18.00
First MWD Survey @ 1674'MD									
1,770.00	29.30	268.05	1,695.56	-34.54	-408.73	409.19	0.56	-0.55	0.18
1,865.00	28.68	267.74	1,778.66	-36.23	-454.74	455.22	0.67	-0.65	-0.33
1,925.62	27.62	268.20	1,832.10	-37.24	-483.32	483.81	1.79	-1.75	0.77
Crossing Sect. 15/16 @ 1925'MD									
1,961.00	27.00	268.49	1,863.54	-37.71	-499.54	500.04	1.79	-1.75	0.81
2,056.00	28.24	261.84	1,947.73	-41.47	-543.36	543.91	3.50	1.31	-7.00
2,152.00	27.31	261.09	2,032.67	-48.11	-587.60	588.24	1.03	-0.97	-0.78
2,247.00	30.45	261.35	2,115.85	-55.10	-632.94	633.68	3.31	3.31	0.27
2,343.00	28.94	261.26	2,199.24	-62.29	-679.95	680.79	1.57	-1.57	-0.09
2,438.00	29.34	264.75	2,282.22	-67.91	-725.85	726.76	1.84	0.42	3.67
2,533.00	28.10	264.13	2,365.53	-72.33	-771.28	772.26	1.34	-1.31	-0.65
2,629.00	27.97	262.72	2,450.27	-77.50	-816.10	817.15	0.70	-0.14	-1.47
2,724.00	29.92	264.92	2,533.40	-82.42	-861.81	862.92	2.34	2.05	2.32
2,820.00	30.27	264.53	2,616.46	-86.85	-909.74	910.91	0.42	0.36	-0.41
2,915.00	30.53	264.70	2,698.40	-91.36	-957.60	958.83	0.29	0.27	0.18
3,011.00	30.76	264.17	2,780.99	-96.10	-1,006.30	1,007.60	0.37	0.24	-0.55
3,106.00	28.37	264.39	2,863.61	-100.78	-1,052.94	1,054.30	2.52	-2.52	0.23
3,202.00	29.70	264.57	2,947.55	-105.26	-1,099.32	1,100.74	1.39	1.39	0.19
3,297.00	28.28	264.79	3,030.64	-109.53	-1,145.16	1,146.64	1.50	-1.49	0.23
3,393.00	25.54	264.61	3,116.24	-113.54	-1,188.42	1,189.95	2.86	-2.85	-0.19
3,488.00	27.57	265.23	3,201.21	-117.29	-1,230.72	1,232.30	2.16	2.14	0.65
3,584.00	26.82	268.23	3,286.60	-119.81	-1,274.51	1,276.12	1.63	-0.78	3.13
3,679.00	27.35	266.02	3,371.19	-121.98	-1,317.70	1,319.34	1.20	0.56	-2.33
3,775.00	27.71	262.06	3,456.32	-126.60	-1,361.81	1,363.51	1.94	0.38	-4.13
3,870.00	27.49	264.66	3,540.52	-131.69	-1,405.52	1,407.29	1.29	-0.23	2.74
3,966.00	28.24	268.49	3,625.39	-134.35	-1,450.29	1,452.09	2.02	0.78	3.99
4,061.00	28.90	268.76	3,708.82	-135.44	-1,495.71	1,497.52	0.71	0.69	0.28
4,156.00	30.36	262.32	3,791.42	-139.15	-1,542.46	1,544.33	3.69	1.54	-6.78
4,252.00	30.67	262.23	3,874.12	-145.70	-1,590.77	1,592.72	0.33	0.32	-0.09

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Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	EDM 5000.1

Survey										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
4,347.00	29.87	261.75	3,956.17	-152.37	-1,638.19	1,640.23	0.88	-0.84	-0.51	
4,443.00	26.73	260.82	4,040.69	-159.25	-1,683.17	1,685.31	3.30	-3.27	-0.97	
4,538.00	28.28	265.94	4,124.96	-164.25	-1,726.72	1,728.93	2.97	1.63	5.39	
4,634.00	28.72	264.22	4,209.33	-168.18	-1,772.35	1,774.61	0.97	0.46	-1.79	
4,730.00	25.98	263.20	4,294.59	-172.99	-1,816.19	1,818.52	2.90	-2.85	-1.06	
4,825.00	29.74	262.54	4,378.56	-178.52	-1,860.23	1,862.63	3.97	3.96	-0.69	
4,921.00	28.99	261.49	4,462.23	-185.05	-1,906.85	1,909.34	0.95	-0.78	-1.09	
5,016.00	26.29	259.72	4,546.38	-192.22	-1,950.32	1,952.92	2.97	-2.84	-1.86	
5,112.00	26.29	263.29	4,632.45	-198.50	-1,992.36	1,995.04	1.65	0.00	3.72	
5,207.00	29.52	264.75	4,716.40	-203.10	-2,036.57	2,039.32	3.48	3.40	1.54	
5,303.00	29.43	261.53	4,799.98	-208.73	-2,083.45	2,086.28	1.65	-0.09	-3.35	
5,398.00	29.78	264.09	4,882.58	-214.60	-2,130.01	2,132.91	1.38	0.37	2.69	
5,494.00	29.08	271.22	4,966.22	-216.56	-2,177.06	2,179.99	3.72	-0.73	7.43	
5,589.00	27.09	271.71	5,050.03	-215.42	-2,221.77	2,224.67	2.11	-2.09	0.52	
5,685.00	26.56	267.92	5,135.70	-215.55	-2,265.07	2,267.97	1.86	-0.55	-3.95	
5,780.00	26.78	268.49	5,220.59	-216.88	-2,307.69	2,310.60	0.36	0.23	0.60	
5,876.00	29.17	266.29	5,305.37	-218.97	-2,352.66	2,355.60	2.71	2.49	-2.29	
5,971.00	28.06	264.88	5,388.77	-222.46	-2,398.02	2,401.01	1.37	-1.17	-1.48	
6,067.00	29.56	264.66	5,472.88	-226.68	-2,444.09	2,447.13	1.57	1.56	-0.23	
6,163.00	27.44	264.39	5,557.24	-231.05	-2,489.69	2,492.79	2.21	-2.21	-0.28	
6,258.00	29.12	265.10	5,640.90	-235.16	-2,534.50	2,537.66	1.80	1.77	0.75	
6,354.00	26.47	264.39	5,725.82	-239.25	-2,579.08	2,582.29	2.78	-2.76	-0.74	
6,449.00	28.41	261.93	5,810.13	-244.49	-2,622.53	2,625.82	2.36	2.04	-2.59	
6,545.00	29.34	262.41	5,894.19	-250.80	-2,668.46	2,671.83	1.00	0.97	0.50	
6,640.00	26.96	260.96	5,977.95	-257.26	-2,712.80	2,716.26	2.61	-2.51	-1.53	
6,736.00	30.23	260.03	6,062.23	-264.87	-2,758.11	2,761.67	3.44	3.41	-0.97	
6,831.00	31.55	267.57	6,143.79	-270.07	-2,806.51	2,810.15	4.30	1.39	7.94	
6,927.00	27.97	267.70	6,227.11	-272.03	-2,854.12	2,857.78	3.73	-3.73	0.14	
7,022.00	28.10	267.13	6,310.96	-274.05	-2,898.72	2,902.41	0.31	0.14	-0.60	
7,117.00	29.43	264.57	6,394.24	-277.38	-2,944.30	2,948.03	1.91	1.40	-2.69	
7,213.00	25.50	264.70	6,479.41	-281.52	-2,988.38	2,992.16	4.09	-4.09	0.14	
7,308.00	26.51	264.61	6,564.79	-285.40	-3,029.85	3,033.69	1.06	1.06	-0.09	
7,404.00	28.15	265.89	6,650.07	-289.04	-3,073.77	3,077.66	1.81	1.71	1.33	
7,499.00	28.90	266.29	6,733.54	-292.13	-3,119.03	3,122.96	0.81	0.79	0.42	
7,531.69	30.00	265.47	6,762.00	-293.28	-3,135.06	3,139.00	3.57	3.35	-2.49	
30°Inclination @ 7531'MD										
7,595.00	32.13	264.04	6,816.23	-296.28	-3,167.58	3,171.57	3.57	3.37	-2.27	
7,690.00	38.05	263.38	6,893.93	-302.28	-3,221.84	3,225.90	6.24	6.23	-0.69	
7,785.00	45.65	268.89	6,964.67	-306.32	-3,284.99	3,289.11	8.88	8.00	5.80	
7,880.00	61.33	272.19	7,021.02	-305.38	-3,361.09	3,365.18	16.74	16.51	3.47	
7,918.27	70.00	271.55	7,036.78	-304.25	-3,395.91	3,399.98	22.70	22.65	-1.67	
70°Inclination @ 7918'MD										
7,976.00	83.08	270.70	7,050.19	-303.17	-3,451.92	3,455.97	22.70	22.66	-1.47	
8,071.00	89.66	268.71	7,056.20	-303.66	-3,546.67	3,550.72	7.23	6.93	-2.09	

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8,205.00	90.90	268.10	7,055.54	-307.39	-3,680.61	3,684.70	1.03	0.93	-0.46	
8,300.00	90.15	268.45	7,054.67	-310.25	-3,775.57	3,779.69	0.87	-0.79	0.37	
8,396.00	89.97	270.25	7,054.57	-311.34	-3,871.55	3,875.68	1.88	-0.19	1.88	
8,492.00	89.70	270.56	7,054.85	-310.66	-3,967.55	3,971.66	0.43	-0.28	0.32	
8,587.00	90.19	271.05	7,054.94	-309.32	-4,062.54	4,066.62	0.73	0.52	0.52	
8,683.00	89.93	270.92	7,054.84	-307.67	-4,158.53	4,162.57	0.30	-0.27	-0.14	
8,778.00	90.10	271.22	7,054.82	-305.90	-4,253.51	4,257.52	0.36	0.18	0.32	
8,873.00	90.15	271.62	7,054.61	-303.55	-4,348.48	4,352.44	0.42	0.05	0.42	
8,969.00	89.70	270.48	7,054.73	-301.79	-4,444.46	4,448.39	1.28	-0.47	-1.19	
9,064.00	89.66	270.39	7,055.26	-301.07	-4,539.46	4,543.37	0.10	-0.04	-0.09	
9,160.00	89.70	270.12	7,055.80	-300.64	-4,635.46	4,639.35	0.28	0.04	-0.28	
9,256.00	89.88	269.73	7,056.15	-300.76	-4,731.46	4,735.34	0.45	0.19	-0.41	
9,351.00	89.75	269.46	7,056.46	-301.44	-4,826.45	4,830.33	0.32	-0.14	-0.28	
9,447.00	90.28	271.93	7,056.43	-300.27	-4,922.44	4,926.29	2.63	0.55	2.57	
9,542.00	89.97	271.44	7,056.23	-297.48	-5,017.40	5,021.20	0.61	-0.33	-0.52	
9,637.00	89.93	270.61	7,056.31	-295.78	-5,112.38	5,116.15	0.87	-0.04	-0.87	
9,733.00	89.97	271.09	7,056.39	-294.35	-5,208.37	5,212.11	0.50	0.04	0.50	
9,829.00	89.97	270.96	7,056.44	-292.64	-5,304.35	5,308.06	0.14	0.00	-0.14	
9,924.00	89.88	270.25	7,056.57	-291.63	-5,399.35	5,403.03	0.75	-0.09	-0.75	
10,020.00	90.01	271.22	7,056.66	-290.40	-5,495.34	5,498.99	1.02	0.14	1.01	
10,116.00	89.84	270.52	7,056.79	-288.94	-5,591.33	5,594.95	0.75	-0.18	-0.73	
10,211.00	89.88	271.05	7,057.02	-287.64	-5,686.32	5,689.91	0.56	0.04	0.56	
10,306.00	89.44	270.25	7,057.58	-286.57	-5,781.31	5,784.87	0.96	-0.46	-0.84	
10,310.00	89.46	270.24	7,057.62	-286.55	-5,785.31	5,788.87	0.57	0.52	-0.23	
Crossing Sect. 16/17 @ 10310'MD										
10,401.00	89.93	270.03	7,058.10	-286.33	-5,876.31	5,879.86	0.57	0.52	-0.23	
10,496.00	89.75	269.02	7,058.37	-287.12	-5,971.30	5,974.85	1.08	-0.19	-1.06	
10,592.00	89.84	268.71	7,058.71	-289.02	-6,067.28	6,070.85	0.34	0.09	-0.32	
10,687.00	90.37	268.49	7,058.54	-291.34	-6,162.25	6,165.85	0.60	0.56	-0.23	
10,783.00	90.63	269.42	7,057.70	-293.09	-6,258.23	6,261.84	1.01	0.27	0.97	
10,878.00	89.88	268.84	7,057.28	-294.54	-6,353.22	6,356.84	1.00	-0.79	-0.61	
10,973.00	90.68	268.71	7,056.81	-296.57	-6,448.20	6,451.83	0.85	0.84	-0.14	
11,164.00	90.50	268.67	7,054.85	-300.93	-6,639.14	6,642.82	0.10	-0.09	-0.02	
11,260.00	90.72	268.89	7,053.83	-302.98	-6,735.11	6,738.81	0.32	0.23	0.23	
11,355.00	91.21	268.93	7,052.23	-304.79	-6,830.08	6,833.79	0.52	0.52	0.04	
11,450.00	90.06	269.33	7,051.17	-306.23	-6,925.06	6,928.79	1.28	-1.21	0.42	
11,641.00	90.94	269.99	7,049.51	-307.36	-7,116.05	7,119.77	0.58	0.46	0.35	
11,927.00	90.15	271.62	7,046.79	-303.34	-7,401.99	7,405.63	0.63	-0.28	0.57	
12,023.00	89.79	270.78	7,046.84	-301.33	-7,497.97	7,501.57	0.95	-0.38	-0.88	
12,118.00	89.84	271.66	7,047.14	-299.31	-7,592.95	7,596.50	0.93	0.05	0.93	
12,214.00	89.48	271.00	7,047.71	-297.08	-7,688.92	7,692.43	0.78	-0.38	-0.69	
12,309.00	89.97	272.24	7,048.17	-294.40	-7,783.88	7,787.34	1.40	0.52	1.31	
12,405.00	89.66	272.90	7,048.48	-290.09	-7,879.78	7,883.17	0.76	-0.32	0.69	
12,500.00	89.62	273.38	7,049.07	-284.89	-7,974.63	7,977.94	0.51	-0.04	0.51	

Survey Report

Company:	Extraction Oil & Gas	Local Co-ordinate Reference:	Well VT-LDS C4-16-18
Project:	Weld County, CO (NAD83)	TVD Reference:	KB=29 @ 4677.00ft (Patterson #901)
Site:	Vetting PAD (Sec 15-T5N-R65W)	MD Reference:	KB=29 @ 4677.00ft (Patterson #901)
Well:	VT-LDS C4-16-18	North Reference:	True
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	EDM 5000.1

Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
12,596.00	89.57	272.24	7,049.75	-280.18	-8,070.52	8,073.74	1.19	-0.05	-1.19
12,691.00	89.53	271.44	7,050.50	-277.13	-8,165.46	8,168.64	0.84	-0.04	-0.84
12,787.00	89.48	271.75	7,051.33	-274.46	-8,261.42	8,264.55	0.33	-0.05	0.32
12,882.00	88.38	271.40	7,053.10	-271.85	-8,356.37	8,359.44	1.22	-1.16	-0.37
12,978.00	89.09	271.14	7,055.22	-269.72	-8,452.32	8,455.35	0.79	0.74	-0.27
13,074.00	89.84	271.49	7,056.12	-267.52	-8,548.29	8,551.28	0.86	0.78	0.36
13,169.00	89.57	271.09	7,056.61	-265.38	-8,643.26	8,646.21	0.51	-0.28	-0.42
13,264.00	90.10	271.84	7,056.88	-262.95	-8,738.23	8,741.14	0.97	0.56	0.79
13,360.00	90.23	272.11	7,056.60	-259.64	-8,834.17	8,837.02	0.31	0.14	0.28
13,456.00	90.19	271.89	7,056.25	-256.29	-8,930.12	8,932.90	0.23	-0.04	-0.23
13,551.00	89.93	271.00	7,056.15	-253.90	-9,025.08	9,027.83	0.98	-0.27	-0.94
13,647.00	90.01	270.78	7,056.20	-252.41	-9,121.07	9,123.78	0.24	0.08	-0.23
13,743.00	90.37	271.75	7,055.89	-250.29	-9,217.05	9,219.72	1.08	0.38	1.01
13,839.00	90.32	271.66	7,055.31	-247.43	-9,313.00	9,315.62	0.11	-0.05	-0.09
13,934.00	90.01	270.08	7,055.03	-245.99	-9,407.99	9,410.57	1.69	-0.33	-1.66
14,030.00	90.37	269.11	7,054.72	-246.67	-9,503.98	9,506.57	1.08	0.38	-1.01
14,125.00	89.40	267.61	7,054.91	-249.38	-9,598.94	9,601.56	1.88	-1.02	-1.58
14,220.00	90.01	268.45	7,055.40	-252.65	-9,693.88	9,696.54	1.09	0.64	0.88
14,315.00	90.50	269.77	7,054.97	-254.13	-9,788.87	9,791.53	1.48	0.52	1.39
14,411.00	90.68	269.15	7,053.98	-255.03	-9,884.86	9,887.53	0.67	0.19	-0.65
14,507.00	90.99	269.55	7,052.58	-256.12	-9,980.84	9,983.51	0.53	0.32	0.42
14,602.00	90.99	269.86	7,050.94	-256.61	-10,075.83	10,078.50	0.33	0.00	0.33
14,697.00	90.68	269.46	7,049.56	-257.17	-10,170.81	10,173.48	0.53	-0.33	-0.42
14,793.00	90.59	269.42	7,048.50	-258.11	-10,266.80	10,269.47	0.10	-0.09	-0.04
14,888.00	90.68	269.24	7,047.44	-259.22	-10,361.79	10,364.47	0.21	0.09	-0.19
14,984.00	90.15	268.67	7,046.75	-260.97	-10,457.77	10,460.46	0.81	-0.55	-0.59
15,080.00	90.15	268.71	7,046.50	-263.17	-10,553.75	10,556.46	0.04	0.00	0.04
15,175.00	90.41	269.90	7,046.03	-264.32	-10,648.74	10,651.46	1.28	0.27	1.25
15,271.00	90.10	269.02	7,045.60	-265.22	-10,744.73	10,747.45	0.97	-0.32	-0.92
15,366.00	90.46	269.33	7,045.14	-266.59	-10,839.72	10,842.45	0.50	0.38	0.33
15,462.00	90.81	270.30	7,044.08	-266.90	-10,935.71	10,938.44	1.07	0.36	1.01
15,557.00	90.50	269.29	7,042.99	-267.24	-11,030.70	11,033.43	1.11	-0.33	-1.06
15,609.71	90.28	269.38	7,042.63	-267.85	-11,083.41	11,086.13	0.46	-0.42	0.18
Crossing Sect. 17/18 @ 15609'MD									
15,652.00	90.10	269.46	7,042.49	-268.28	-11,125.70	11,128.42	0.46	-0.42	0.18
15,747.00	89.17	267.74	7,043.10	-270.60	-11,220.66	11,223.41	2.06	-0.98	-1.81
15,843.00	90.06	268.54	7,043.74	-273.71	-11,316.61	11,319.39	1.25	0.93	0.83
15,938.00	90.10	269.29	7,043.61	-275.51	-11,411.59	11,414.39	0.79	0.04	0.79
16,034.00	90.32	269.51	7,043.26	-276.52	-11,507.58	11,510.39	0.32	0.23	0.23
16,129.00	90.06	268.80	7,042.94	-277.92	-11,602.57	11,605.39	0.80	-0.27	-0.75
16,224.00	90.41	269.73	7,042.55	-279.14	-11,697.56	11,700.39	1.05	0.37	0.98
16,320.00	90.37	269.64	7,041.90	-279.67	-11,793.56	11,796.38	0.10	-0.04	-0.09
16,415.00	90.28	269.24	7,041.36	-280.59	-11,888.55	11,891.38	0.43	-0.09	-0.42

Survey Report

Company:	Extraction Oil & Gas	Local Co-ordinate Reference:	Well VT-LDS C4-16-18
Project:	Weld County, CO (NAD83)	TVD Reference:	KB=29 @ 4677.00ft (Patterson #901)
Site:	Vetting PAD (Sec 15-T5N-R65W)	MD Reference:	KB=29 @ 4677.00ft (Patterson #901)
Well:	VT-LDS C4-16-18	North Reference:	True
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	EDM 5000.1

Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
16,511.00	90.37	269.24	7,040.82	-281.87	-11,984.54	11,987.38	0.09	0.09	0.00
16,606.00	90.28	269.64	7,040.28	-282.80	-12,079.53	12,082.37	0.43	-0.09	0.42
16,702.00	90.37	270.08	7,039.73	-283.03	-12,175.53	12,178.36	0.47	0.09	0.46
16,798.00	89.84	270.43	7,039.56	-282.60	-12,271.53	12,274.35	0.66	-0.55	0.36
16,893.00	90.28	271.00	7,039.46	-281.42	-12,366.52	12,369.31	0.76	0.46	0.60
17,084.00	90.54	271.97	7,038.09	-276.47	-12,557.45	12,560.15	0.53	0.14	0.51
17,180.00	90.77	271.71	7,036.99	-273.39	-12,653.40	12,656.04	0.36	0.24	-0.27
17,275.00	90.37	271.22	7,036.05	-270.96	-12,748.36	12,750.95	0.67	-0.42	-0.52
17,371.00	90.28	271.44	7,035.50	-268.73	-12,844.33	12,846.88	0.25	-0.09	0.23
17,467.00	89.88	271.27	7,035.37	-266.46	-12,940.30	12,942.81	0.45	-0.42	-0.18
17,562.00	89.66	270.65	7,035.75	-264.87	-13,035.29	13,037.77	0.69	-0.23	-0.65
17,657.00	89.97	271.62	7,036.06	-262.99	-13,130.27	13,132.71	1.07	0.33	1.02
17,753.00	90.01	271.75	7,036.07	-260.16	-13,226.23	13,228.62	0.14	0.04	0.14
17,848.00	89.31	269.37	7,036.64	-259.23	-13,321.21	13,323.58	2.61	-0.74	-2.51
17,944.00	89.57	270.39	7,037.58	-259.44	-13,417.21	13,419.56	1.10	0.27	1.06
18,040.00	88.86	269.29	7,038.89	-259.70	-13,513.20	13,515.55	1.36	-0.74	-1.15
18,135.00	88.91	269.15	7,040.74	-261.00	-13,608.17	13,610.53	0.16	0.05	-0.15
18,231.00	88.64	267.70	7,042.79	-263.63	-13,704.11	13,706.50	1.54	-0.28	-1.51
18,326.00	88.91	268.58	7,044.82	-266.72	-13,799.04	13,801.46	0.97	0.28	0.93
18,422.00	89.88	269.99	7,045.84	-267.91	-13,895.02	13,897.45	1.78	1.01	1.47
18,518.00	89.70	269.64	7,046.19	-268.22	-13,991.02	13,993.44	0.41	-0.19	-0.36
18,614.00	89.75	269.90	7,046.65	-268.61	-14,087.02	14,089.44	0.28	0.05	0.27
18,709.00	89.88	271.09	7,046.96	-267.79	-14,182.01	14,184.41	1.26	0.14	1.25
18,805.00	90.10	272.06	7,046.97	-265.15	-14,277.97	14,280.32	1.04	0.23	1.01
18,900.00	89.57	270.96	7,047.25	-262.65	-14,372.94	14,375.24	1.29	-0.56	-1.16
18,995.00	89.84	271.49	7,047.74	-260.62	-14,467.91	14,470.18	0.63	0.28	0.56
19,090.00	89.66	270.74	7,048.15	-258.77	-14,562.90	14,565.12	0.81	-0.19	-0.79
19,186.00	89.04	270.12	7,049.24	-258.05	-14,658.89	14,661.09	0.91	-0.65	-0.65
19,281.00	88.82	269.99	7,051.01	-257.96	-14,753.87	14,756.06	0.27	-0.23	-0.14
19,377.00	89.53	270.30	7,052.40	-257.71	-14,849.86	14,852.04	0.81	0.74	0.32
19,472.00	89.57	271.36	7,053.14	-256.34	-14,944.84	14,946.99	1.12	0.04	1.12
19,568.00	89.79	270.70	7,053.68	-254.61	-15,040.83	15,042.94	0.72	0.23	-0.69
19,663.00	90.37	271.97	7,053.55	-252.40	-15,135.80	15,137.87	1.47	0.61	1.34
19,759.00	90.37	271.14	7,052.93	-249.79	-15,231.76	15,233.78	0.86	0.00	-0.86
19,854.00	90.99	271.40	7,051.80	-247.69	-15,326.73	15,328.71	0.71	0.65	0.27
19,950.00	91.65	270.96	7,049.59	-245.71	-15,422.68	15,424.63	0.83	0.69	-0.46
20,045.00	91.43	269.99	7,047.03	-244.92	-15,517.64	15,519.57	1.05	-0.23	-1.02
20,140.00	90.54	270.39	7,045.40	-244.61	-15,612.63	15,614.53	1.03	-0.94	0.42
20,235.00	90.23	271.71	7,044.76	-242.87	-15,707.61	15,709.48	1.43	-0.33	1.39
20,331.00	90.46	271.84	7,044.18	-239.90	-15,803.56	15,805.38	0.28	0.24	0.14
Last MWD Survey @ 20331'MD									
20,365.00	90.46	271.84	7,043.91	-238.80	-15,837.54	15,839.34	0.00	0.00	0.00
PTB @ TD @ 20365'MD (509'FWL & 2174'FNL)									

Survey Report

Company:	Extraction Oil & Gas	Local Co-ordinate Reference:	Well VT-LDS C4-16-18
Project:	Weld County, CO (NAD83)	TVD Reference:	KB=29 @ 4677.00ft (Patterson #901)
Site:	Vetting PAD (Sec 15-T5N-R65W)	MD Reference:	KB=29 @ 4677.00ft (Patterson #901)
Well:	VT-LDS C4-16-18	North Reference:	True
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	EDM 5000.1

Design Targets

Target Name

- hit/miss target	Dip Angle	Dip Dir.	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
- Shape	(°)	(°)	(ft)	(ft)	(ft)	(usft)	(usft)		
VT-LDS C4-16-18 BH	0.00	0.00	0.00	-231.67	-15,888.90	1,389,752.32	3,218,851.39	40.40061	-104.71419
- actual wellpath misses target center by 7044.10ft at 20365.00ft MD (7043.91 TVD, -238.80 N, -15837.54 E)									
- Point									

Design Annotations

Measured Depth	Vertical Depth	Local Coordinates		Comment
(ft)	(ft)	+N/-S (ft)	+E/-W (ft)	
1,658.00	1,598.11	-32.37	-353.56	Tie in to Surface Surveys @ 1658'MD
1,674.00	1,612.06	-32.86	-361.39	First MWD Survey @ 1674'MD
1,925.62	1,832.10	-37.24	-483.32	Crossing Sect. 15/16 @ 1925'MD
7,531.69	6,762.00	-293.28	-3,135.06	30°Inclination @ 7531'MD
7,918.27	7,036.78	-304.25	-3,395.91	70°Inclination @ 7918'MD
10,310.00	7,057.62	-286.55	-5,785.31	Crossing Sect. 16/17 @ 10310'MD
15,609.71	7,042.63	-267.85	-11,083.41	Crossing Sect. 17/18 @ 15609'MD
20,331.00	7,044.18	-239.90	-15,803.56	Last MWD Survey @ 20331'MD
20,365.00	7,043.91	-238.80	-15,837.54	PTB @ TD @ 20365'MD (509'FWL & 2174'FNL)

Checked By: _____ Approved By: _____ Date: _____