

Extraction Oil & Gas

Weld County, CO (NAD83)

Vetting PAD (Sec 15-T5N-R65W)

VT-LDS 5-16-18

Wellbore #1

Design: Wellbore #1

Standard Survey Report

26 July, 2018

Survey Report

Company:	Extraction Oil & Gas	Local Co-ordinate Reference:	Well VT-LDS 5-16-18
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 5-16-18	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 5-16-18					
Well Position	+N/-S	0.00 ft	Northing:	1,390,138.86 usft	Latitude:	40.40127
	+E/-W	0.00 ft	Easting:	3,234,759.59 usft	Longitude:	-104.65706
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	7/26/2018	8.08	66.88	52,239

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	269.74	

Survey Program	Date	7/26/2018			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
149.00	1,620.00	Surface Surveys (Wellbore #1)	MWD	MWD - Standard	
1,674.00	20,160.00	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	
149.00	0.31	106.78	149.00	-0.12	0.39	-0.39	0.21	0.21	0.00	
233.00	0.12	101.07	233.00	-0.20	0.69	-0.69	0.23	-0.23	-6.80	
315.00	0.87	358.64	315.00	0.41	0.76	-0.76	1.10	0.91	-124.91	
398.00	2.14	284.68	397.97	1.43	-0.75	0.75	2.50	1.53	-89.11	
483.00	3.89	278.94	482.85	2.28	-5.14	5.13	2.09	2.06	-6.75	
569.00	4.91	264.56	568.60	2.38	-11.68	11.67	1.74	1.19	-16.72	
654.00	6.04	261.57	653.21	1.38	-19.73	19.72	1.37	1.33	-3.52	
738.00	7.80	261.49	736.59	-0.11	-29.74	29.74	2.10	2.10	-0.10	
823.00	9.96	263.16	820.57	-1.84	-42.74	42.75	2.56	2.54	1.96	

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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)
907.00	11.94	267.09	903.04	-3.14	-58.64	58.65	2.52	2.36	4.68
990.00	13.53	269.91	983.99	-3.59	-76.92	76.94	2.06	1.92	3.40
1,073.00	14.87	270.69	1,064.46	-3.48	-97.28	97.30	1.63	1.61	0.94
1,158.00	16.80	268.92	1,146.23	-3.58	-120.47	120.49	2.34	2.27	-2.08
1,244.00	18.75	267.23	1,228.12	-4.48	-146.71	146.72	2.35	2.27	-1.97
1,327.00	21.65	266.74	1,306.01	-6.00	-175.32	175.35	3.50	3.49	-0.59
1,414.00	23.85	265.46	1,386.23	-8.30	-208.88	208.92	2.59	2.53	-1.47
1,498.00	25.19	264.99	1,462.66	-11.21	-243.62	243.67	1.61	1.60	-0.56
1,570.00	25.65	265.75	1,527.68	-13.70	-274.43	274.48	0.78	0.64	1.06
1,620.00	25.90	262.00	1,572.71	-16.03	-296.03	296.10	3.30	0.50	-7.50
Tie in to Surface Surveys @ 1620'MD									
1,674.00	27.88	268.49	1,620.88	-18.00	-320.34	320.42	6.55	3.67	12.02
First MWD Survey @ 1674'MD									
1,769.00	28.99	266.60	1,704.42	-19.95	-365.53	365.61	1.50	1.17	-1.99
1,865.00	30.49	267.39	1,787.78	-22.44	-413.08	413.18	1.61	1.56	0.82
1,960.00	30.05	265.80	1,869.82	-25.28	-460.88	460.99	0.96	-0.46	-1.67
2,048.09	31.59	265.24	1,945.47	-28.81	-505.88	506.00	1.78	1.75	-0.64
Crossing Section 15/16 @ 2048'MD									
2,056.00	31.73	265.19	1,952.20	-29.16	-510.01	510.14	1.78	1.75	-0.61
2,152.00	31.15	263.95	2,034.11	-33.89	-559.86	560.01	0.90	-0.60	-1.29
2,247.00	30.09	262.72	2,115.86	-39.50	-607.92	608.09	1.30	-1.12	-1.29
2,343.00	32.04	268.14	2,198.11	-43.37	-657.26	657.44	3.55	2.03	5.65
2,438.00	29.96	267.83	2,279.53	-45.09	-706.15	706.35	2.20	-2.19	-0.33
2,533.00	30.31	268.58	2,361.70	-46.58	-753.82	754.02	0.54	0.37	0.79
2,628.00	31.82	268.27	2,443.07	-47.93	-802.82	803.03	1.60	1.59	-0.33
2,724.00	30.40	267.52	2,525.26	-49.75	-852.39	852.60	1.53	-1.48	-0.78
2,820.00	32.17	269.59	2,607.30	-50.98	-902.22	902.44	2.16	1.84	2.16
2,915.00	31.95	269.46	2,687.81	-51.40	-952.64	952.86	0.24	-0.23	-0.14
3,011.00	32.26	268.62	2,769.13	-52.26	-1,003.65	1,003.88	0.57	0.32	-0.88
3,106.00	30.45	266.99	2,850.26	-54.13	-1,053.04	1,053.28	2.10	-1.91	-1.72
3,202.00	30.98	264.09	2,932.79	-57.95	-1,101.92	1,102.16	1.64	0.55	-3.02
3,297.00	29.47	263.95	3,014.88	-62.93	-1,149.48	1,149.75	1.59	-1.59	-0.15
3,393.00	28.72	270.21	3,098.78	-65.34	-1,196.04	1,196.32	3.26	-0.78	6.52
3,488.00	28.55	269.11	3,182.16	-65.61	-1,241.56	1,241.84	0.58	-0.18	-1.16
3,584.00	28.72	267.43	3,266.42	-67.00	-1,287.54	1,287.83	0.86	0.18	-1.75
3,679.00	28.41	268.98	3,349.86	-68.42	-1,332.94	1,333.23	0.85	-0.33	1.63
3,774.00	30.00	270.92	3,432.78	-68.45	-1,379.29	1,379.58	1.95	1.67	2.04
3,870.00	28.68	268.93	3,516.47	-68.49	-1,426.32	1,426.61	1.71	-1.38	-2.07
3,965.00	30.45	267.70	3,599.10	-69.88	-1,473.17	1,473.47	1.97	1.86	-1.29
4,061.00	30.71	267.08	3,681.74	-72.11	-1,521.96	1,522.26	0.43	0.27	-0.65
4,156.00	30.84	267.74	3,763.37	-74.30	-1,570.51	1,570.83	0.38	0.14	0.69
4,252.00	30.93	267.79	3,845.75	-76.23	-1,619.76	1,620.08	0.10	0.09	0.05
4,347.00	30.62	267.21	3,927.38	-78.34	-1,668.32	1,668.65	0.45	-0.33	-0.61

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Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
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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)
4,443.00	28.10	267.08	4,011.04	-80.69	-1,715.32	1,715.67	2.63	-2.63	-0.14
4,538.00	29.43	268.54	4,094.32	-82.42	-1,761.00	1,761.35	1.58	1.40	1.54
4,634.00	29.74	265.63	4,177.80	-84.84	-1,808.32	1,808.69	1.53	0.32	-3.03
4,730.00	28.41	265.89	4,261.70	-88.29	-1,854.85	1,855.22	1.39	-1.39	0.27
4,825.00	30.05	268.05	4,344.61	-90.72	-1,901.16	1,901.55	2.05	1.73	2.27
4,921.00	31.51	269.46	4,427.08	-91.77	-1,950.28	1,950.67	1.70	1.52	1.47
5,016.00	30.09	269.02	4,508.68	-92.41	-1,998.91	1,999.31	1.51	-1.49	-0.46
5,112.00	30.89	265.50	4,591.41	-94.76	-2,047.55	2,047.95	2.04	0.83	-3.67
5,207.00	27.75	261.57	4,674.24	-99.92	-2,093.75	2,094.18	3.88	-3.31	-4.14
5,303.00	30.31	263.25	4,758.17	-106.04	-2,139.93	2,140.38	2.80	2.67	1.75
5,398.00	31.07	265.32	4,839.87	-110.86	-2,188.17	2,188.64	1.37	0.80	2.18
5,493.00	30.80	266.95	4,921.36	-114.15	-2,236.89	2,237.38	0.93	-0.28	1.72
5,589.00	28.90	264.70	5,004.62	-117.60	-2,284.53	2,285.04	2.30	-1.98	-2.34
5,685.00	31.24	268.49	5,087.70	-120.40	-2,332.53	2,333.05	3.14	2.44	3.95
5,780.00	28.37	266.73	5,170.13	-122.34	-2,379.70	2,380.22	3.16	-3.02	-1.85
5,876.00	32.39	268.36	5,252.93	-124.38	-2,428.19	2,428.73	4.27	4.19	1.70
5,971.00	30.36	266.55	5,334.04	-126.55	-2,477.60	2,478.14	2.36	-2.14	-1.91
6,067.00	30.14	269.73	5,416.97	-128.12	-2,525.92	2,526.47	1.68	-0.23	3.31
6,163.00	31.73	272.85	5,499.32	-126.98	-2,575.24	2,575.78	2.35	1.66	3.25
6,258.00	29.78	271.05	5,580.96	-125.31	-2,623.78	2,624.32	2.27	-2.05	-1.89
6,354.00	30.98	271.18	5,663.77	-124.36	-2,672.32	2,672.85	1.25	1.25	0.14
6,449.00	28.37	269.55	5,746.31	-124.04	-2,719.35	2,719.88	2.88	-2.75	-1.72
6,545.00	28.59	270.43	5,830.69	-124.04	-2,765.12	2,765.65	0.49	0.23	0.92
6,640.00	31.29	271.14	5,913.01	-123.38	-2,812.53	2,813.05	2.87	2.84	0.75
6,736.00	30.00	269.06	5,995.60	-123.28	-2,861.45	2,861.98	1.74	-1.34	-2.17
6,831.00	32.26	267.70	6,076.91	-124.69	-2,910.54	2,911.07	2.49	2.38	-1.43
6,926.00	29.30	266.42	6,158.52	-127.16	-2,959.08	2,959.63	3.19	-3.12	-1.35
7,022.00	30.36	266.07	6,241.80	-130.29	-3,006.73	3,007.29	1.12	1.10	-0.36
7,117.00	26.82	264.31	6,325.21	-134.06	-3,052.03	3,052.60	3.83	-3.73	-1.85
7,213.00	26.34	267.21	6,411.07	-137.24	-3,094.85	3,095.44	1.44	-0.50	3.02
7,288.75	29.99	270.57	6,477.84	-137.87	-3,130.58	3,131.17	5.25	4.82	4.44
30°Inc. @ 7288'MD									
7,308.00	30.93	271.31	6,494.43	-137.71	-3,140.34	3,140.93	5.25	4.88	3.83
7,404.00	38.58	269.90	6,573.25	-137.20	-3,195.02	3,195.60	8.01	7.97	-1.47
7,499.00	48.52	268.71	6,642.02	-138.05	-3,260.38	3,260.97	10.50	10.46	-1.25
7,594.00	57.09	269.29	6,699.39	-139.35	-3,335.98	3,336.57	9.03	9.02	0.61
7,690.00	61.56	268.67	6,748.36	-140.83	-3,418.51	3,419.11	4.69	4.66	-0.65
7,769.23	70.00	267.78	6,780.83	-143.09	-3,490.66	3,491.27	10.70	10.65	-1.13
70°Inc. @ 7769'MD									
7,785.00	71.68	267.61	6,786.01	-143.69	-3,505.55	3,506.16	10.70	10.66	-1.05
7,880.00	78.26	267.70	6,810.63	-147.44	-3,597.17	3,597.79	6.93	6.93	0.09
7,976.00	87.72	271.09	6,822.34	-148.41	-3,692.32	3,692.95	10.46	9.85	3.53
8,071.00	87.72	271.58	6,826.12	-146.20	-3,787.22	3,787.84	0.52	0.00	0.52
8,167.00	87.94	271.49	6,829.75	-143.63	-3,883.12	3,883.72	0.25	0.23	-0.09

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8,262.00	89.97	270.78	6,831.48	-141.75	-3,978.08	3,978.68	2.26	2.14	-0.75
8,396.00	90.72	270.34	6,830.68	-140.44	-4,112.07	4,112.66	0.65	0.56	-0.33
8,492.00	90.01	269.24	6,830.06	-140.79	-4,208.06	4,208.65	1.36	-0.74	-1.15
8,587.00	90.59	269.42	6,829.57	-141.90	-4,303.06	4,303.65	0.64	0.61	0.19
8,683.00	90.50	269.33	6,828.65	-142.95	-4,399.05	4,399.64	0.13	-0.09	-0.09
8,778.00	90.59	270.03	6,827.75	-143.48	-4,494.04	4,494.64	0.74	0.09	0.74
8,873.00	90.59	270.43	6,826.77	-143.10	-4,589.03	4,589.63	0.42	0.00	0.42
8,969.00	90.50	269.73	6,825.86	-142.97	-4,685.03	4,685.62	0.74	-0.09	-0.73
9,064.00	90.59	269.73	6,824.96	-143.41	-4,780.02	4,780.62	0.09	0.09	0.00
9,160.00	90.59	270.34	6,823.97	-143.36	-4,876.02	4,876.61	0.64	0.00	0.64
9,256.00	90.59	270.03	6,822.98	-143.05	-4,972.01	4,972.60	0.32	0.00	-0.32
9,351.00	90.50	269.24	6,822.07	-143.65	-5,067.01	5,067.60	0.84	-0.09	-0.83
9,447.00	90.50	269.33	6,821.24	-144.85	-5,162.99	5,163.59	0.09	0.00	0.09
9,542.00	90.50	269.42	6,820.41	-145.88	-5,257.99	5,258.59	0.09	0.00	0.09
9,637.00	90.50	269.64	6,819.58	-146.66	-5,352.98	5,353.58	0.23	0.00	0.23
9,733.00	90.50	269.55	6,818.74	-147.34	-5,448.97	5,449.58	0.09	0.00	-0.09
9,829.00	90.41	269.24	6,817.98	-148.36	-5,544.96	5,545.57	0.34	-0.09	-0.32
9,924.00	90.59	270.03	6,817.15	-148.96	-5,639.96	5,640.57	0.85	0.19	0.83
10,020.00	90.50	269.24	6,816.24	-149.57	-5,735.95	5,736.56	0.83	-0.09	-0.82
10,092.65	90.67	269.78	6,815.50	-150.20	-5,808.59	5,809.21	0.77	0.23	0.74
Crossing Section 16/17 @ 10092'MD									
10,116.00	90.72	269.95	6,815.21	-150.25	-5,831.94	5,832.56	0.77	0.23	0.74
10,211.00	90.50	270.21	6,814.20	-150.12	-5,926.94	5,927.55	0.36	-0.23	0.27
10,306.00	90.59	270.12	6,813.30	-149.85	-6,021.93	6,022.54	0.13	0.09	-0.09
10,401.00	90.41	269.55	6,812.47	-150.12	-6,116.93	6,117.54	0.63	-0.19	-0.60
10,496.00	90.41	269.33	6,811.79	-151.05	-6,211.92	6,212.54	0.23	0.00	-0.23
10,592.00	90.50	270.12	6,811.03	-151.51	-6,307.92	6,308.53	0.83	0.09	0.82
10,687.00	90.59	269.55	6,810.12	-151.78	-6,402.91	6,403.53	0.61	0.09	-0.60
10,783.00	90.59	270.43	6,809.14	-151.80	-6,498.90	6,499.52	0.92	0.00	0.92
10,878.00	90.28	269.64	6,808.41	-151.74	-6,593.90	6,594.51	0.89	-0.33	-0.83
10,973.00	90.41	270.34	6,807.84	-151.76	-6,688.90	6,689.51	0.75	0.14	0.74
11,069.00	90.50	269.73	6,807.08	-151.70	-6,784.89	6,785.51	0.64	0.09	-0.64
11,164.00	90.59	270.65	6,806.18	-151.38	-6,879.89	6,880.50	0.97	0.09	0.97
11,260.00	90.50	270.03	6,805.26	-150.81	-6,975.88	6,976.49	0.65	-0.09	-0.65
11,355.00	90.41	269.73	6,804.51	-151.01	-7,070.88	7,071.49	0.33	-0.09	-0.32
11,450.00	90.10	272.33	6,804.09	-149.31	-7,165.85	7,166.45	2.76	-0.33	2.74
11,546.00	89.88	272.02	6,804.10	-145.66	-7,261.79	7,262.37	0.40	-0.23	-0.32
11,641.00	90.01	271.44	6,804.19	-142.79	-7,356.74	7,357.31	0.63	0.14	-0.61
11,737.00	90.10	272.55	6,804.10	-139.45	-7,452.68	7,453.23	1.16	0.09	1.16
11,832.00	90.01	271.71	6,804.01	-135.92	-7,547.62	7,548.15	0.89	-0.09	-0.88
11,927.00	90.10	272.02	6,803.92	-132.83	-7,642.56	7,643.08	0.34	0.09	0.33
12,023.00	90.01	271.93	6,803.83	-129.52	-7,738.51	7,739.01	0.13	-0.09	-0.09
12,118.00	90.10	271.93	6,803.74	-126.32	-7,833.45	7,833.94	0.09	0.09	0.00
12,214.00	90.10	274.22	6,803.57	-121.17	-7,929.31	7,929.77	2.39	0.00	2.39

Survey Report

Company:	Extraction Oil & Gas	Local Co-ordinate Reference:	Well VT-LDS 5-16-18
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 5-16-18	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)
12,309.00	90.10	271.93	6,803.40	-116.08	-8,024.17	8,024.61	2.41	0.00	-2.41
12,405.00	90.01	272.15	6,803.31	-112.66	-8,120.10	8,120.53	0.25	-0.09	0.23
12,500.00	90.10	272.55	6,803.22	-108.76	-8,215.02	8,215.43	0.43	0.09	0.42
12,596.00	90.19	272.72	6,802.98	-104.35	-8,310.92	8,311.31	0.20	0.09	0.18
12,691.00	90.10	272.24	6,802.74	-100.24	-8,405.83	8,406.20	0.51	-0.09	-0.51
12,787.00	90.01	271.71	6,802.64	-96.93	-8,501.78	8,502.12	0.56	-0.09	-0.55
12,882.00	90.01	270.43	6,802.63	-95.16	-8,596.76	8,597.10	1.35	0.00	-1.35
12,978.00	90.01	270.03	6,802.61	-94.77	-8,692.76	8,693.09	0.42	0.00	-0.42
13,074.00	90.19	270.92	6,802.44	-93.98	-8,788.75	8,789.08	0.95	0.19	0.93
13,169.00	90.19	270.83	6,802.13	-92.52	-8,883.74	8,884.07	0.09	0.00	-0.09
13,264.00	90.28	269.95	6,801.74	-91.88	-8,978.74	8,979.06	0.93	0.09	-0.93
13,360.00	90.10	270.21	6,801.42	-91.74	-9,074.74	9,075.06	0.33	-0.19	0.27
13,456.00	90.01	270.03	6,801.33	-91.54	-9,170.74	9,171.05	0.21	-0.09	-0.19
13,551.00	90.01	271.14	6,801.31	-90.57	-9,265.73	9,266.04	1.17	0.00	1.17
13,647.00	89.88	269.95	6,801.40	-89.66	-9,361.72	9,362.03	1.25	-0.14	-1.24
13,743.00	89.62	270.52	6,801.82	-89.27	-9,457.72	9,458.03	0.65	-0.27	0.59
13,839.00	89.48	269.73	6,802.58	-89.06	-9,553.72	9,554.02	0.84	-0.15	-0.82
13,934.00	89.48	271.14	6,803.44	-88.34	-9,648.71	9,649.01	1.48	0.00	1.48
14,030.00	89.62	270.03	6,804.19	-87.36	-9,744.70	9,744.99	1.17	0.15	-1.16
14,125.00	89.48	269.64	6,804.94	-87.63	-9,839.69	9,839.99	0.44	-0.15	-0.41
14,220.00	89.62	271.05	6,805.68	-87.06	-9,934.69	9,934.98	1.49	0.15	1.48
14,315.00	90.01	269.42	6,805.99	-86.67	-10,029.68	10,029.97	1.76	0.41	-1.72
14,411.00	90.10	271.05	6,805.90	-86.27	-10,125.68	10,125.96	1.70	0.09	1.70
14,507.00	90.10	270.12	6,805.73	-85.29	-10,221.67	10,221.95	0.97	0.00	-0.97
14,602.00	90.01	270.03	6,805.64	-85.17	-10,316.67	10,316.95	0.13	-0.09	-0.09
14,697.00	90.10	271.14	6,805.55	-84.20	-10,411.67	10,411.94	1.17	0.09	1.17
14,793.00	90.01	271.14	6,805.46	-82.29	-10,507.65	10,507.91	0.09	-0.09	0.00
14,888.00	90.01	270.43	6,805.44	-80.99	-10,602.64	10,602.89	0.75	0.00	-0.75
14,984.00	90.10	271.31	6,805.35	-79.53	-10,698.62	10,698.87	0.92	0.09	0.92
15,080.00	90.10	270.74	6,805.18	-77.81	-10,794.61	10,794.85	0.59	0.00	-0.59
15,175.00	90.01	268.62	6,805.09	-78.34	-10,889.60	10,889.84	2.23	-0.09	-2.23
15,271.00	90.10	269.11	6,805.00	-80.25	-10,985.58	10,985.83	0.52	0.09	0.51
15,366.00	90.10	269.33	6,804.83	-81.54	-11,080.57	11,080.83	0.23	0.00	0.23
15,391.64	90.10	269.14	6,804.79	-81.88	-11,106.21	11,106.47	0.74	0.00	-0.74
Crossing Section 17/18 @ 15391'MD									
15,462.00	90.10	268.62	6,804.66	-83.26	-11,176.56	11,176.82	0.74	0.00	-0.74
15,557.00	90.01	268.32	6,804.57	-85.79	-11,271.52	11,271.80	0.33	-0.09	-0.32
15,652.00	89.88	267.92	6,804.66	-88.91	-11,366.47	11,366.76	0.44	-0.14	-0.42
15,747.00	90.10	268.14	6,804.68	-92.17	-11,461.42	11,461.71	0.33	0.23	0.23
15,843.00	90.01	268.14	6,804.59	-95.29	-11,557.37	11,557.68	0.09	-0.09	0.00
15,938.00	89.48	267.83	6,805.01	-98.63	-11,652.31	11,652.63	0.65	-0.56	-0.33
16,034.00	88.69	269.73	6,806.54	-100.67	-11,748.27	11,748.60	2.14	-0.82	1.98
16,129.00	88.38	269.95	6,808.97	-100.94	-11,843.23	11,843.57	0.40	-0.33	0.23

Survey Report

Company:	Extraction Oil & Gas	Local Co-ordinate Reference:	Well VT-LDS 5-16-18
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 5-16-18	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)
16,224.00	88.51	270.74	6,811.55	-100.37	-11,938.20	11,938.53	0.84	0.14	0.83
16,320.00	88.69	270.65	6,813.90	-99.20	-12,034.16	12,034.49	0.21	0.19	-0.09
16,415.00	88.60	269.81	6,816.14	-98.82	-12,129.13	12,129.45	0.89	-0.09	-0.88
16,511.00	88.60	269.95	6,818.49	-99.02	-12,225.10	12,225.43	0.15	0.00	0.15
16,606.00	88.69	270.65	6,820.74	-98.53	-12,320.08	12,320.39	0.74	0.09	0.74
16,702.00	88.69	270.43	6,822.93	-97.62	-12,416.05	12,416.36	0.23	0.00	-0.23
16,798.00	88.69	271.14	6,825.13	-96.31	-12,512.01	12,512.32	0.74	0.00	0.74
16,893.00	88.51	269.81	6,827.45	-95.52	-12,606.98	12,607.28	1.41	-0.19	-1.40
16,989.00	89.22	271.31	6,829.35	-94.58	-12,702.95	12,703.25	1.73	0.74	1.56
17,084.00	88.69	269.81	6,831.08	-93.65	-12,797.93	12,798.22	1.67	-0.56	-1.58
17,180.00	88.51	269.64	6,833.43	-94.11	-12,893.90	12,894.19	0.26	-0.19	-0.18
17,275.00	88.60	270.34	6,835.82	-94.13	-12,988.87	12,989.16	0.74	0.09	0.74
17,371.00	88.82	271.22	6,837.98	-92.82	-13,084.83	13,085.12	0.94	0.23	0.92
17,467.00	88.60	270.83	6,840.14	-91.11	-13,180.79	13,181.07	0.47	-0.23	-0.41
17,562.00	89.22	270.65	6,841.95	-89.88	-13,275.77	13,276.04	0.68	0.65	-0.19
17,657.00	90.19	269.95	6,842.44	-89.38	-13,370.76	13,371.03	1.26	1.02	-0.74
17,753.00	89.88	270.03	6,842.38	-89.40	-13,466.76	13,467.03	0.33	-0.32	0.08
17,848.00	90.41	271.22	6,842.14	-88.36	-13,561.75	13,562.01	1.37	0.56	1.25
17,944.00	90.59	271.14	6,841.30	-86.39	-13,657.73	13,657.98	0.21	0.19	-0.08
18,040.00	91.21	271.44	6,839.80	-84.23	-13,753.69	13,753.93	0.72	0.65	0.31
18,135.00	91.60	270.83	6,837.47	-82.34	-13,848.65	13,848.88	0.76	0.41	-0.64
18,231.00	91.78	270.52	6,834.64	-81.21	-13,944.60	13,944.82	0.37	0.19	-0.32
18,326.00	92.00	270.52	6,831.50	-80.35	-14,039.54	14,039.76	0.23	0.23	0.00
18,422.00	92.18	271.53	6,828.00	-78.64	-14,135.46	14,135.67	1.07	0.19	1.05
18,518.00	92.09	270.65	6,824.42	-76.81	-14,231.38	14,231.58	0.92	-0.09	-0.92
18,614.00	91.91	270.12	6,821.07	-76.17	-14,327.32	14,327.51	0.58	-0.19	-0.55
18,709.00	92.00	270.65	6,817.83	-75.53	-14,422.26	14,422.45	0.57	0.09	0.56
18,805.00	92.09	270.21	6,814.41	-74.81	-14,518.19	14,518.38	0.47	0.09	-0.46
18,900.00	92.18	270.34	6,810.87	-74.35	-14,613.13	14,613.31	0.17	0.09	0.14
18,995.00	92.62	270.65	6,806.89	-73.53	-14,708.04	14,708.22	0.57	0.46	0.33
19,090.00	92.62	270.21	6,802.55	-72.82	-14,802.94	14,803.11	0.46	0.00	-0.46
19,186.00	92.62	271.14	6,798.16	-71.69	-14,898.83	14,899.00	0.97	0.00	0.97
19,281.00	92.62	270.43	6,793.82	-70.39	-14,993.72	14,993.89	0.75	0.00	-0.75
19,377.00	92.49	271.31	6,789.54	-68.93	-15,089.61	15,089.77	0.93	-0.14	0.92
19,472.00	92.89	270.21	6,785.08	-67.68	-15,184.50	15,184.65	1.23	0.42	-1.16
19,568.00	93.11	271.14	6,780.05	-66.55	-15,280.36	15,280.50	0.99	0.23	0.97
19,663.00	93.02	270.12	6,774.97	-65.50	-15,375.22	15,375.36	1.08	-0.09	-1.07
19,759.00	93.02	270.83	6,769.92	-64.71	-15,471.08	15,471.21	0.74	0.00	0.74
19,854.00	93.02	270.52	6,764.91	-63.59	-15,565.94	15,566.07	0.33	0.00	-0.33
19,950.00	93.11	270.52	6,759.78	-62.72	-15,661.80	15,661.92	0.09	0.09	0.00
20,045.00	93.11	270.52	6,754.62	-61.86	-15,756.65	15,756.77	0.00	0.00	0.00
Last MWD Survey @ 20045'MD									
20,160.00	93.11	270.52	6,748.39	-60.82	-15,871.48	15,871.59	0.00	0.00	0.00
PTB @ TD @ 20160'MD (499'FWL & 1993'FNL)									

Survey Report

Company:	Extraction Oil & Gas	Local Co-ordinate Reference:	Well VT-LDS 5-16-18
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 5-16-18	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)
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Design Targets

Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (usft)	Easting (usft)	Latitude	Longitude
- hit/miss target									
- Shape									
VT-LDS 5-16-18 BHL	0.00	0.00	0.00	-71.37	-15,911.08	1,389,916.25	3,218,849.94	40.40106	-104.71419
- actual wellpath misses target center by 6748.51ft at 20160.00ft MD (6748.38 TVD, -60.82 N, -15871.48 E)									
- Point									

Design Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
1,620.00	1,572.71	-16.03	-296.03	Tie in to Surface Surveys @ 1620'MD
1,674.00	1,620.88	-18.00	-320.34	First MWD Survey @ 1674'MD
2,048.09	1,945.47	-28.81	-505.88	Crossing Section 15/16 @ 2048'MD
7,288.75	6,477.84	-137.87	-3,130.58	30°Inc. @ 7288'MD
7,769.23	6,780.83	-143.09	-3,490.66	70°Inc. @ 7769'MD
10,092.65	6,815.50	-150.20	-5,808.59	Crossing Section 16/17 @ 10092'MD
15,391.64	6,804.79	-81.88	-11,106.21	Crossing Section 17/18 @ 15391'MD
20,045.00	6,754.62	-61.86	-15,756.65	Last MWD Survey @ 20045'MD
20,160.00	6,748.39	-60.82	-15,871.48	PTB @ TD @ 20160'MD (499'FWL & 1993'FNL)

Checked By: _____ Approved By: _____ Date: _____