

# **Extraction Oil & Gas**

**Weld County, CO (NAD83)**

**Vetting PAD (Sec 15-T5N-R65W)**

**VT-ALLES 1-16-18**

**Wellbore #1**

**Design: Wellbore #1**

## **Standard Survey Report**

**06 August, 2018**

## Survey Report

<b>Company:</b>	Extraction Oil & Gas	<b>Local Co-ordinate Reference:</b>	Well VT-ALLES 1-16-18
<b>Project:</b>	Weld County, CO (NAD83)	<b>TVD Reference:</b>	KB=29 @ 4776.00ft (Patterson #901)
<b>Site:</b>	Vetting PAD (Sec 15-T5N-R65W)	<b>MD Reference:</b>	KB=29 @ 4776.00ft (Patterson #901)
<b>Well:</b>	VT-ALLES 1-16-18	<b>North Reference:</b>	True
<b>Wellbore:</b>	Wellbore #1	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Wellbore #1	<b>Database:</b>	EDM 5000.1

<b>Project</b>	Weld County, CO (NAD83),		
<b>Map System:</b>	US State Plane 1983	<b>System Datum:</b>	Ground Level
<b>Geo Datum:</b>	North American Datum 1983		
<b>Map Zone:</b>	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-ALLES 1-16-18				
Well Position	+N/-S	0.00 ft	Northing:	1,390,131.12 usfi	Latitude:	40.40125
	+E/-W	0.00 ft	Easting:	3,234,712.31 usfi	Longitude:	-104.65723
Position Uncertainty		0.00 ft	Wellhead Elevation:	0.00 ft	Ground Level:	4,647.00 ft

<b>Wellbore</b>	Wellbore #1				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	HDGM	8/2/2018	8.08	66.88	52,236

<b>Design</b>	Wellbore #1				
<b>Audit Notes:</b>					
<b>Version:</b>	1.0	<b>Phase:</b>	ACTUAL	<b>Tie On Depth:</b>	0.00
<b>Vertical Section:</b>	<b>Depth From (TVD) (ft)</b>	<b>+N/-S (ft)</b>	<b>+E/-W (ft)</b>	<b>Direction (°)</b>	
	0.00	0.00	0.00	268.57	

<b>Survey Program</b>	<b>Date</b>	8/6/2018			
<b>From (ft)</b>	<b>To (ft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>	
150.00	1,605.00	Surface Surveys (Wellbore #1)	MWD	MWD - Standard	
1,674.00	20,150.00	MWD Surveys (Wellbore #1)	MWD	MWD - Standard	

<b>Survey</b>										
<b>Measured Depth (ft)</b>	<b>Inclination (°)</b>	<b>Azimuth (°)</b>	<b>Vertical Depth (ft)</b>	<b>+N/-S (ft)</b>	<b>+E/-W (ft)</b>	<b>Vertical Section (ft)</b>	<b>Dogleg Rate (°/100usft)</b>	<b>Build Rate (°/100usft)</b>	<b>Turn Rate (°/100usft)</b>	
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
150.00	0.12	170.00	150.00	-0.15	0.03	-0.02	0.08	0.08	0.00	
234.00	2.14	259.39	233.98	-0.53	-1.50	1.51	2.55	2.40	106.42	
316.00	3.34	264.16	315.89	-1.06	-5.38	5.41	1.49	1.46	5.82	
399.00	5.51	261.63	398.63	-1.88	-11.73	11.77	2.62	2.61	-3.05	
484.00	7.90	263.28	483.05	-3.16	-21.57	21.64	2.82	2.81	1.94	
570.00	10.83	263.14	567.89	-4.82	-35.46	35.57	3.41	3.41	-0.16	
655.00	12.06	261.40	651.20	-7.10	-52.17	52.33	1.50	1.45	-2.05	
739.00	13.87	261.36	733.05	-9.92	-70.80	71.03	2.15	2.15	-0.05	
824.00	14.74	261.38	815.42	-13.07	-91.57	91.87	1.02	1.02	0.02	

## Survey Report

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<b>Project:</b>	Weld County, CO (NAD83)	<b>TVD Reference:</b>	KB=29 @ 4776.00ft (Patterson #901)
<b>Site:</b>	Vetting PAD (Sec 15-T5N-R65W)	<b>MD Reference:</b>	KB=29 @ 4776.00ft (Patterson #901)
<b>Well:</b>	VT-ALLES 1-16-18	<b>North Reference:</b>	True
<b>Wellbore:</b>	Wellbore #1	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Wellbore #1	<b>Database:</b>	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	15.94	261.72	896.42	-16.34	-113.55	113.92	1.43	1.43	0.40
991.00	16.64	261.35	976.09	-19.77	-136.58	137.03	0.85	0.84	-0.45
1,074.00	17.39	261.63	1,055.46	-23.36	-160.60	161.13	0.91	0.90	0.34
1,159.00	18.73	261.68	1,136.27	-27.18	-186.67	187.29	1.58	1.58	0.06
1,245.00	21.05	261.90	1,217.13	-31.36	-215.63	216.34	2.70	2.70	0.26
1,328.00	23.11	261.23	1,294.04	-35.94	-246.48	247.30	2.50	2.48	-0.81
1,415.00	25.49	262.03	1,373.33	-41.14	-281.90	282.84	2.76	2.74	0.92
1,499.00	27.84	261.47	1,448.39	-46.56	-319.21	320.27	2.81	2.80	-0.67
1,582.00	29.51	260.43	1,521.21	-52.83	-358.53	359.74	2.10	2.01	-1.25
1,605.00	29.17	260.56	1,541.26	-54.69	-369.65	370.90	1.50	-1.48	0.57
<b>Tie in to Surface Surveys @ 1605'MD</b>									
1,674.00	28.63	261.75	1,601.66	-59.82	-402.60	403.96	1.14	-0.78	1.72
<b>First MWD Survey @ 1674'MD</b>									
1,770.00	26.29	256.37	1,686.86	-68.13	-446.03	447.59	3.55	-2.44	-5.60
1,797.38	27.12	258.23	1,711.32	-70.84	-458.03	459.66	4.30	3.02	6.81
<b>Crossing Section 15/16 @ 1797'MD</b>									
1,865.00	29.25	262.41	1,770.92	-76.16	-489.50	491.25	4.30	3.16	6.17
1,961.00	28.55	261.18	1,854.97	-82.78	-535.42	537.32	0.96	-0.73	-1.28
2,056.00	30.40	264.97	1,937.67	-88.37	-581.80	583.83	2.76	1.95	3.99
2,152.00	29.17	265.67	2,020.99	-92.26	-629.33	631.44	1.33	-1.28	0.73
2,247.00	32.04	265.32	2,102.75	-96.07	-677.54	679.73	3.03	3.02	-0.37
2,343.00	30.36	265.01	2,184.86	-100.26	-727.09	729.37	1.76	-1.75	-0.32
2,438.00	28.15	264.31	2,267.74	-104.57	-773.32	775.69	2.35	-2.33	-0.74
2,533.00	29.74	263.47	2,350.87	-109.47	-819.03	821.51	1.73	1.67	-0.88
2,629.00	28.02	263.34	2,434.93	-114.79	-865.09	867.68	1.79	-1.79	-0.14
2,724.00	30.31	261.35	2,517.88	-120.99	-910.96	913.69	2.62	2.41	-2.09
2,820.00	30.18	260.12	2,600.81	-128.77	-958.68	961.59	0.66	-0.14	-1.28
2,915.00	30.09	259.99	2,682.97	-137.01	-1,005.66	1,008.76	0.12	-0.09	-0.14
3,011.00	30.45	258.66	2,765.88	-145.97	-1,053.21	1,056.52	0.79	0.38	-1.39
3,106.00	28.50	258.97	2,848.59	-155.04	-1,099.06	1,102.59	2.06	-2.05	0.33
3,202.00	27.71	258.09	2,933.26	-164.03	-1,143.38	1,147.12	0.93	-0.82	-0.92
3,297.00	29.74	260.78	3,016.57	-172.37	-1,188.26	1,192.19	2.53	2.14	2.83
3,393.00	27.44	260.03	3,100.86	-180.01	-1,233.55	1,237.66	2.42	-2.40	-0.78
3,488.00	28.63	262.76	3,184.72	-186.67	-1,277.69	1,281.95	1.84	1.25	2.87
3,584.00	26.29	262.94	3,269.89	-192.18	-1,321.61	1,326.00	2.44	-2.44	0.19
3,679.00	28.94	263.64	3,354.07	-197.32	-1,365.34	1,369.84	2.81	2.79	0.74
3,775.00	26.07	263.38	3,439.21	-202.32	-1,409.39	1,414.00	2.99	-2.99	-0.27
3,870.00	28.46	261.71	3,523.65	-207.99	-1,452.53	1,457.27	2.64	2.52	-1.76
3,966.00	31.51	264.66	3,606.79	-213.63	-1,500.16	1,505.03	3.53	3.18	3.07
4,061.00	31.86	264.17	3,687.63	-218.48	-1,549.82	1,554.79	0.46	0.37	-0.52
4,156.00	32.35	263.82	3,768.10	-223.77	-1,600.03	1,605.12	0.55	0.52	-0.37
4,252.00	32.66	263.64	3,849.07	-229.40	-1,651.31	1,656.52	0.34	0.32	-0.19
4,347.00	31.90	263.64	3,929.38	-235.02	-1,701.74	1,707.07	0.80	-0.80	0.00

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<b>Wellbore:</b>	Wellbore #1	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Wellbore #1	<b>Database:</b>	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)
4,443.00	28.81	262.45	4,012.21	-240.87	-1,749.89	1,755.35	3.28	-3.22	-1.24
4,538.00	25.85	261.04	4,096.60	-247.11	-1,793.05	1,798.66	3.19	-3.12	-1.48
4,634.00	27.84	261.75	4,182.25	-253.58	-1,835.91	1,841.67	2.10	2.07	0.74
4,730.00	29.12	262.76	4,266.63	-259.75	-1,881.27	1,887.17	1.42	1.33	1.05
4,825.00	27.22	262.23	4,350.37	-265.60	-1,925.73	1,931.76	2.02	-2.00	-0.56
4,921.00	29.74	261.04	4,434.75	-272.27	-1,971.01	1,977.20	2.69	2.63	-1.24
5,016.00	28.72	260.38	4,517.65	-279.76	-2,016.79	2,023.15	1.13	-1.07	-0.69
5,112.00	27.80	259.15	4,602.21	-287.83	-2,061.52	2,068.07	1.13	-0.96	-1.28
5,207.00	30.76	262.37	4,685.07	-295.23	-2,107.37	2,114.09	3.53	3.12	3.39
5,303.00	28.72	261.13	4,768.42	-302.04	-2,154.50	2,161.37	2.22	-2.13	-1.29
5,398.00	28.90	262.41	4,851.66	-308.59	-2,199.81	2,206.82	0.68	0.19	1.35
5,494.00	27.18	261.40	4,936.39	-314.94	-2,244.48	2,251.65	1.86	-1.79	-1.05
5,589.00	31.77	263.51	5,019.08	-321.01	-2,290.81	2,298.11	4.95	4.83	2.22
5,685.00	29.43	262.81	5,101.70	-326.82	-2,339.33	2,346.76	2.47	-2.44	-0.73
5,780.00	26.65	262.15	5,185.54	-332.65	-2,383.60	2,391.16	2.94	-2.93	-0.69
5,876.00	28.99	260.25	5,270.44	-339.53	-2,427.86	2,435.58	2.61	2.44	-1.98
5,971.00	26.51	258.89	5,354.51	-347.52	-2,471.36	2,479.27	2.69	-2.61	-1.43
6,067.00	25.63	257.52	5,440.74	-356.14	-2,512.66	2,520.77	1.11	-0.92	-1.43
6,163.00	26.29	258.58	5,527.06	-364.83	-2,553.77	2,562.08	0.84	0.69	1.10
6,258.00	28.33	260.52	5,611.47	-372.71	-2,596.63	2,605.13	2.34	2.15	2.04
6,354.00	30.98	263.07	5,694.89	-379.45	-2,643.64	2,652.29	3.06	2.76	2.66
6,473.00	30.93	262.15	5,796.94	-387.32	-2,704.34	2,713.16	0.40	-0.04	-0.77
6,568.00	31.15	259.24	5,878.34	-395.24	-2,752.66	2,761.67	1.60	0.23	-3.06
6,664.00	28.94	256.95	5,961.44	-405.12	-2,799.69	2,808.93	2.59	-2.30	-2.39
6,759.00	30.36	262.37	6,044.01	-413.50	-2,845.89	2,855.32	3.19	1.49	5.71
6,855.00	25.90	260.38	6,128.65	-420.23	-2,890.63	2,900.22	4.75	-4.65	-2.07
6,950.00	28.68	262.15	6,213.07	-426.81	-2,933.68	2,943.42	3.05	2.93	1.86
7,045.00	29.39	261.31	6,296.13	-433.45	-2,979.30	2,989.20	0.86	0.75	-0.88
7,141.00	28.94	261.22	6,379.96	-440.55	-3,025.54	3,035.60	0.47	-0.47	-0.09
7,236.00	28.77	261.40	6,463.17	-447.48	-3,070.86	3,081.08	0.20	-0.18	0.19
7,283.81	29.99	263.43	6,504.83	-450.57	-3,094.11	3,104.39	3.28	2.54	4.24
<b>30°Inc. @ 7283'MD</b>									
7,332.00	31.24	265.32	6,546.30	-452.97	-3,118.53	3,128.87	3.28	2.60	3.93
7,427.00	41.76	272.06	6,622.59	-453.84	-3,174.88	3,185.22	11.84	11.07	7.09
7,523.00	48.34	271.66	6,690.38	-451.65	-3,242.75	3,253.01	6.86	6.85	-0.42
7,618.00	55.28	267.96	6,749.09	-452.01	-3,317.34	3,327.59	7.92	7.31	-3.89
7,713.00	63.68	267.48	6,797.29	-455.28	-3,399.04	3,409.35	8.85	8.84	-0.51
7,809.00	69.11	266.69	6,835.72	-459.77	-3,486.86	3,497.25	5.71	5.66	-0.82
7,823.38	70.00	267.00	6,840.74	-460.51	-3,500.32	3,510.72	6.50	6.18	2.15
<b>70°Inc. @ 7823'MD</b>									
7,904.00	74.99	268.67	6,864.99	-463.40	-3,577.12	3,587.57	6.50	6.19	2.07
7,999.00	85.90	272.94	6,880.74	-462.03	-3,670.63	3,681.02	12.31	11.48	4.49
8,095.00	90.46	271.49	6,883.79	-458.32	-3,766.48	3,776.75	4.98	4.75	-1.51
8,190.00	89.79	271.36	6,883.58	-455.96	-3,861.45	3,871.63	0.72	-0.71	-0.14

## Survey Report

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<b>Well:</b>	VT-ALLES 1-16-18	<b>North Reference:</b>	True
<b>Wellbore:</b>	Wellbore #1	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Wellbore #1	<b>Database:</b>	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)
8,302.00	91.16	270.78	6,882.65	-453.87	-3,973.42	3,983.52	1.33	1.22	-0.52
8,397.00	92.18	271.05	6,879.88	-452.35	-4,068.37	4,078.39	1.11	1.07	0.28
8,493.00	92.14	270.74	6,876.27	-450.85	-4,164.29	4,174.25	0.33	-0.04	-0.32
8,588.00	91.25	270.56	6,873.46	-449.77	-4,259.24	4,269.14	0.96	-0.94	-0.19
8,684.00	90.01	270.70	6,872.40	-448.72	-4,355.23	4,365.07	1.30	-1.29	0.15
8,779.00	89.93	270.83	6,872.45	-447.45	-4,450.22	4,460.00	0.16	-0.08	0.14
8,874.00	90.06	270.65	6,872.46	-446.22	-4,545.21	4,554.93	0.23	0.14	-0.19
8,970.00	89.97	270.03	6,872.43	-445.65	-4,641.21	4,650.89	0.65	-0.09	-0.65
9,066.00	89.75	269.02	6,872.67	-446.45	-4,737.20	4,746.87	1.08	-0.23	-1.05
9,161.00	89.88	269.29	6,872.98	-447.85	-4,832.19	4,841.87	0.32	0.14	0.28
9,257.00	89.93	269.24	6,873.13	-449.08	-4,928.19	4,937.86	0.07	0.05	-0.05
9,352.00	89.75	269.42	6,873.40	-450.19	-5,023.18	5,032.85	0.27	-0.19	0.19
9,448.00	89.88	268.93	6,873.71	-451.58	-5,119.17	5,128.85	0.53	0.14	-0.51
9,543.00	89.70	269.20	6,874.06	-453.13	-5,214.15	5,223.84	0.34	-0.19	0.28
9,639.00	89.62	269.37	6,874.63	-454.32	-5,310.15	5,319.83	0.20	-0.08	0.18
9,734.00	89.97	269.90	6,874.97	-454.93	-5,405.14	5,414.81	0.67	0.37	0.56
9,830.00	89.97	270.12	6,875.02	-454.91	-5,501.14	5,510.78	0.23	0.00	0.23
9,925.00	89.93	269.99	6,875.10	-454.82	-5,596.14	5,605.75	0.14	-0.04	-0.14
10,021.00	89.79	269.46	6,875.34	-455.28	-5,692.14	5,701.73	0.57	-0.15	-0.55
10,087.87	89.89	269.95	6,875.52	-455.62	-5,759.01	5,768.59	0.75	0.15	0.74
<b>Crossing Section 16/17 @ 10087'MD</b>									
10,117.00	89.93	270.17	6,875.57	-455.59	-5,788.14	5,797.71	0.75	0.15	0.74
10,212.00	89.70	269.46	6,875.88	-455.90	-5,883.14	5,892.68	0.79	-0.24	-0.75
10,307.00	89.88	270.39	6,876.22	-456.02	-5,978.14	5,987.66	1.00	0.19	0.98
10,402.00	89.84	269.51	6,876.46	-456.11	-6,073.13	6,082.63	0.93	-0.04	-0.93
10,497.00	89.97	269.95	6,876.61	-456.55	-6,168.13	6,177.61	0.48	0.14	0.46
10,593.00	89.66	269.06	6,876.92	-457.38	-6,264.13	6,273.59	0.98	-0.32	-0.93
10,689.00	89.84	268.89	6,877.34	-459.10	-6,360.11	6,369.59	0.26	0.19	-0.18
10,784.00	89.93	269.64	6,877.53	-460.32	-6,455.10	6,464.58	0.80	0.09	0.79
10,879.00	89.97	269.42	6,877.62	-461.10	-6,550.10	6,559.57	0.24	0.04	-0.23
10,974.00	90.37	269.42	6,877.34	-462.06	-6,645.09	6,654.56	0.42	0.42	0.00
11,070.00	90.54	269.95	6,876.57	-462.59	-6,741.09	6,750.54	0.58	0.18	0.55
11,165.00	90.41	269.24	6,875.79	-463.26	-6,836.08	6,845.52	0.76	-0.14	-0.75
11,261.00	90.59	270.03	6,874.95	-463.87	-6,932.08	6,941.50	0.84	0.19	0.82
11,356.00	90.41	269.73	6,874.12	-464.07	-7,027.07	7,036.47	0.37	-0.19	-0.32
11,452.00	90.23	270.17	6,873.58	-464.15	-7,123.07	7,132.44	0.50	-0.19	0.46
11,547.00	89.88	269.20	6,873.49	-464.68	-7,218.07	7,227.42	1.09	-0.37	-1.02
11,643.00	89.97	269.95	6,873.62	-465.39	-7,314.06	7,323.40	0.79	0.09	0.78
11,738.00	89.93	269.99	6,873.70	-465.44	-7,409.06	7,418.37	0.06	-0.04	0.04
11,833.00	89.70	268.98	6,874.01	-466.29	-7,504.06	7,513.36	1.09	-0.24	-1.06
11,928.00	89.75	268.93	6,874.46	-468.02	-7,599.04	7,608.36	0.07	0.05	-0.05
12,024.00	89.75	269.86	6,874.88	-469.04	-7,695.03	7,704.35	0.97	0.00	0.97
12,119.00	89.75	269.33	6,875.30	-469.71	-7,790.03	7,799.33	0.56	0.00	-0.56
12,215.00	89.88	270.48	6,875.61	-469.87	-7,886.03	7,895.30	1.21	0.14	1.20

## Survey Report

<b>Company:</b>	Extraction Oil & Gas	<b>Local Co-ordinate Reference:</b>	Well VT-ALLES 1-16-18
<b>Project:</b>	Weld County, CO (NAD83)	<b>TVD Reference:</b>	KB=29 @ 4776.00ft (Patterson #901)
<b>Site:</b>	Vetting PAD (Sec 15-T5N-R65W)	<b>MD Reference:</b>	KB=29 @ 4776.00ft (Patterson #901)
<b>Well:</b>	VT-ALLES 1-16-18	<b>North Reference:</b>	True
<b>Wellbore:</b>	Wellbore #1	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Wellbore #1	<b>Database:</b>	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)
12,310.00	89.75	271.14	6,875.91	-468.53	-7,981.02	7,990.23	0.71	-0.14	0.69
12,406.00	89.57	271.27	6,876.48	-466.51	-8,076.99	8,086.12	0.23	-0.19	0.14
12,501.00	89.40	270.48	6,877.34	-465.06	-8,171.98	8,181.04	0.85	-0.18	-0.83
12,597.00	89.79	270.78	6,878.01	-464.00	-8,267.97	8,276.98	0.51	0.41	0.31
12,692.00	90.19	271.49	6,878.03	-462.12	-8,362.95	8,371.88	0.86	0.42	0.75
12,788.00	90.23	270.65	6,877.68	-460.33	-8,458.93	8,467.79	0.88	0.04	-0.88
12,884.00	90.28	271.09	6,877.25	-458.87	-8,554.92	8,563.71	0.46	0.05	0.46
12,979.00	90.28	271.05	6,876.79	-457.09	-8,649.90	8,658.62	0.04	0.00	-0.04
13,075.00	90.37	271.93	6,876.24	-454.60	-8,745.87	8,754.49	0.92	0.09	0.92
13,170.00	90.41	272.11	6,875.60	-451.25	-8,840.81	8,849.32	0.19	0.04	0.19
13,265.00	90.32	271.09	6,874.99	-448.60	-8,935.77	8,944.18	1.08	-0.09	-1.07
13,361.00	90.50	271.93	6,874.30	-446.07	-9,031.73	9,040.05	0.89	0.19	0.88
13,457.00	90.23	270.92	6,873.69	-443.68	-9,127.70	9,135.93	1.09	-0.28	-1.05
13,553.00	90.23	270.87	6,873.31	-442.18	-9,223.68	9,231.85	0.05	0.00	-0.05
13,648.00	90.50	271.75	6,872.70	-440.01	-9,318.66	9,326.74	0.97	0.28	0.93
13,744.00	90.15	270.74	6,872.16	-437.92	-9,414.63	9,422.63	1.11	-0.36	-1.05
13,840.00	90.28	271.49	6,871.80	-436.05	-9,510.61	9,518.53	0.79	0.14	0.78
13,935.00	90.15	270.87	6,871.44	-434.10	-9,605.59	9,613.43	0.67	-0.14	-0.65
14,031.00	90.28	271.05	6,871.08	-432.49	-9,701.58	9,709.35	0.23	0.14	0.19
14,126.00	90.15	271.00	6,870.72	-430.79	-9,796.56	9,804.26	0.15	-0.14	-0.05
14,221.00	90.19	270.96	6,870.44	-429.17	-9,891.55	9,899.18	0.06	0.04	-0.04
14,317.00	90.46	271.89	6,869.90	-426.78	-9,987.51	9,995.05	1.01	0.28	0.97
14,412.00	90.41	271.89	6,869.18	-423.65	-10,082.46	10,089.89	0.05	-0.05	0.00
14,508.00	90.41	271.40	6,868.49	-420.89	-10,178.42	10,185.75	0.51	0.00	-0.51
14,603.00	90.32	271.53	6,867.88	-418.46	-10,273.38	10,280.63	0.17	-0.09	0.14
14,698.00	90.28	271.58	6,867.39	-415.88	-10,368.35	10,375.50	0.07	-0.04	0.05
14,794.00	90.23	270.92	6,866.96	-413.79	-10,464.32	10,471.39	0.69	-0.05	-0.69
14,889.00	90.15	270.92	6,866.64	-412.26	-10,559.31	10,566.31	0.08	-0.08	0.00
14,985.00	90.23	271.14	6,866.33	-410.54	-10,655.29	10,662.22	0.24	0.08	0.23
15,081.00	90.41	271.58	6,865.79	-408.26	-10,751.27	10,758.11	0.50	0.19	0.46
15,176.00	90.41	271.49	6,865.11	-405.71	-10,846.23	10,852.98	0.09	0.00	-0.09
15,272.00	90.28	271.40	6,864.53	-403.29	-10,942.20	10,948.85	0.16	-0.14	-0.09
15,367.00	90.19	270.74	6,864.14	-401.52	-11,037.18	11,043.76	0.70	-0.09	-0.69
15,387.80	90.20	270.78	6,864.07	-401.24	-11,057.98	11,064.55	0.19	0.04	0.19
<b>Crossing Section 17/18 @ 15387'MD</b>									
15,463.00	90.23	270.92	6,863.79	-400.13	-11,133.17	11,139.69	0.19	0.04	0.19
15,558.00	90.28	271.09	6,863.37	-398.46	-11,228.15	11,234.60	0.19	0.05	0.18
15,653.00	90.28	271.40	6,862.90	-396.40	-11,323.13	11,329.50	0.33	0.00	0.33
15,748.00	90.19	270.78	6,862.51	-394.59	-11,418.11	11,424.40	0.66	-0.09	-0.65
15,844.00	90.15	270.96	6,862.23	-393.13	-11,514.10	11,520.32	0.19	-0.04	0.19
15,939.00	90.10	269.81	6,862.02	-392.50	-11,609.09	11,615.27	1.21	-0.05	-1.21
16,035.00	89.88	269.20	6,862.04	-393.32	-11,705.09	11,711.26	0.68	-0.23	-0.64
16,130.00	89.79	269.20	6,862.31	-394.65	-11,800.08	11,806.26	0.09	-0.09	0.00

## Survey Report

<b>Company:</b>	Extraction Oil & Gas	<b>Local Co-ordinate Reference:</b>	Well VT-ALLES 1-16-18
<b>Project:</b>	Weld County, CO (NAD83)	<b>TVD Reference:</b>	KB=29 @ 4776.00ft (Patterson #901)
<b>Site:</b>	Vetting PAD (Sec 15-T5N-R65W)	<b>MD Reference:</b>	KB=29 @ 4776.00ft (Patterson #901)
<b>Well:</b>	VT-ALLES 1-16-18	<b>North Reference:</b>	True
<b>Wellbore:</b>	Wellbore #1	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Wellbore #1	<b>Database:</b>	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)
16,225.00	89.88	269.24	6,862.59	-395.94	-11,895.07	11,901.25	0.10	0.09	0.04
16,321.00	90.06	269.90	6,862.64	-396.67	-11,991.07	11,997.23	0.71	0.19	0.69
16,417.00	90.01	270.03	6,862.58	-396.72	-12,087.07	12,093.21	0.15	-0.05	0.14
16,512.00	90.46	270.17	6,862.19	-396.56	-12,182.07	12,188.17	0.50	0.47	0.15
16,607.00	89.88	269.11	6,861.91	-397.15	-12,277.06	12,283.15	1.27	-0.61	-1.12
16,703.00	89.79	269.46	6,862.18	-398.35	-12,373.06	12,379.14	0.38	-0.09	0.36
16,799.00	89.66	268.98	6,862.64	-399.66	-12,469.04	12,475.14	0.52	-0.14	-0.50
16,894.00	89.79	268.93	6,863.10	-401.39	-12,564.03	12,570.13	0.15	0.14	-0.05
16,990.00	89.70	268.93	6,863.53	-403.18	-12,660.01	12,666.13	0.09	-0.09	0.00
17,086.00	90.06	269.90	6,863.73	-404.16	-12,756.00	12,762.12	1.08	0.38	1.01
17,181.00	89.97	269.55	6,863.70	-404.62	-12,851.00	12,857.10	0.38	-0.09	-0.37
17,277.00	89.75	268.89	6,863.94	-405.93	-12,946.99	12,953.09	0.72	-0.23	-0.69
17,372.00	89.93	269.59	6,864.20	-407.19	-13,041.98	13,048.08	0.76	0.19	0.74
17,468.00	89.53	269.06	6,864.65	-408.32	-13,137.98	13,144.07	0.69	-0.42	-0.55
17,563.00	89.88	269.64	6,865.14	-409.40	-13,232.97	13,239.06	0.71	0.37	0.61
17,658.00	89.93	269.51	6,865.30	-410.10	-13,327.96	13,334.05	0.15	0.05	-0.14
17,754.00	89.79	268.98	6,865.54	-411.37	-13,423.96	13,430.04	0.57	-0.15	-0.55
17,849.00	89.97	269.55	6,865.74	-412.58	-13,518.95	13,525.03	0.63	0.19	0.60
17,945.00	90.01	269.95	6,865.75	-413.00	-13,614.95	13,621.01	0.42	0.04	0.42
18,041.00	89.84	269.15	6,865.88	-413.76	-13,710.94	13,717.00	0.85	-0.18	-0.83
18,137.00	90.19	269.73	6,865.85	-414.70	-13,806.94	13,812.99	0.71	0.36	0.60
18,232.00	89.75	269.02	6,865.90	-415.73	-13,901.93	13,907.98	0.88	-0.46	-0.75
18,327.00	89.70	269.20	6,866.36	-417.21	-13,996.92	14,002.97	0.20	-0.05	0.19
18,423.00	89.66	268.98	6,866.89	-418.73	-14,092.90	14,098.97	0.23	-0.04	-0.23
18,519.00	89.79	269.20	6,867.36	-420.26	-14,188.89	14,194.96	0.27	0.14	0.23
18,615.00	89.93	269.24	6,867.59	-421.56	-14,284.88	14,290.95	0.15	0.15	0.04
18,710.00	90.19	269.64	6,867.49	-422.49	-14,379.88	14,385.94	0.50	0.27	0.42
18,806.00	89.97	269.33	6,867.36	-423.36	-14,475.87	14,481.93	0.40	-0.23	-0.32
18,901.00	90.32	270.30	6,867.12	-423.66	-14,570.87	14,576.91	1.09	0.37	1.02
18,997.00	90.23	270.12	6,866.65	-423.31	-14,666.87	14,672.87	0.21	-0.09	-0.19
19,091.00	90.10	270.39	6,866.38	-422.89	-14,760.87	14,766.82	0.32	-0.14	0.29
19,187.00	90.32	271.36	6,866.03	-421.43	-14,856.85	14,862.74	1.04	0.23	1.01
19,282.00	90.28	271.31	6,865.53	-419.21	-14,951.83	14,957.63	0.07	-0.04	-0.05
19,378.00	90.46	271.75	6,864.91	-416.65	-15,047.79	15,053.50	0.50	0.19	0.46
19,473.00	90.23	270.92	6,864.34	-414.44	-15,142.76	15,148.39	0.91	-0.24	-0.87
19,569.00	90.28	270.96	6,863.92	-412.86	-15,238.75	15,244.31	0.07	0.05	0.04
19,664.00	90.54	271.89	6,863.24	-410.50	-15,333.72	15,339.18	1.02	0.27	0.98
19,760.00	90.54	271.75	6,862.33	-407.45	-15,429.66	15,435.03	0.15	0.00	-0.15
19,855.00	90.77	272.19	6,861.25	-404.18	-15,524.60	15,529.85	0.52	0.24	0.46
19,951.00	90.59	271.84	6,860.11	-400.81	-15,620.53	15,625.67	0.41	-0.19	-0.36
20,046.00	90.50	271.84	6,859.20	-397.76	-15,715.48	15,720.51	0.09	-0.09	0.00
20,122.00	90.19	271.31	6,858.74	-395.67	-15,791.45	15,796.41	0.81	-0.41	-0.70
<b>Last MWD Survey @ 20122'MD</b>									
20,150.00	90.19	271.31	6,858.65	-395.03	-15,819.44	15,824.37	0.00	0.00	0.00

## Survey Report

<b>Company:</b>	Extraction Oil & Gas	<b>Local Co-ordinate Reference:</b>	Well VT-ALLES 1-16-18
<b>Project:</b>	Weld County, CO (NAD83)	<b>TVD Reference:</b>	KB=29 @ 4776.00ft (Patterson #901)
<b>Site:</b>	Vetting PAD (Sec 15-T5N-R65W)	<b>MD Reference:</b>	KB=29 @ 4776.00ft (Patterson #901)
<b>Well:</b>	VT-ALLES 1-16-18	<b>North Reference:</b>	True
<b>Wellbore:</b>	Wellbore #1	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Wellbore #1	<b>Database:</b>	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)
PTB @ TD @ 20150'MD (502'FWL & 2334'FNL)									

### 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-ALLES 1-16-18 BI	0.00	0.00	0.00	-395.63	-15,861.16	1,389,584.77	3,218,855.66	40.40015	-104.71418
- actual wellpath misses target center by 6858.78ft at 20150.00ft MD (6858.65 TVD, -395.03 N, -15819.44 E)									
- Point									

### Design Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
1,605.00	1,541.26	-54.69	-369.65	Tie in to Surface Surveys @ 1605'MD
1,674.00	1,601.66	-59.82	-402.60	First MWD Survey @ 1674'MD
1,797.38	1,711.32	-70.84	-458.03	Crossing Section 15/16 @ 1797'MD
7,283.81	6,504.83	-450.57	-3,094.11	30°Inc. @ 7283'MD
7,823.38	6,840.74	-460.51	-3,500.32	70°Inc. @ 7823'MD
10,087.87	6,875.52	-455.62	-5,759.01	Crossing Section 16/17 @ 10087'MD
15,387.80	6,864.07	-401.24	-11,057.98	Crossing Section 17/18 @ 15387'MD
20,122.00	6,858.74	-395.67	-15,791.45	Last MWD Survey @ 20122'MD
20,150.00	6,858.65	-395.03	-15,819.44	PTB @ TD @ 20150'MD (502'FWL & 2334'FNL)

Checked By: _____	Approved By: _____	Date: _____
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