

# **Extraction Oil & Gas**

**Weld County, CO (NAD83)**

**Sec 28-T1N-R68W Coyote Trails**

**Coyote Trails 33S-20-3N**

**Wellbore #1**

**Design: Wellbore #1**

## **Standard Survey Report**

**21 February, 2019**

# Survey Report

<b>Company:</b>	Extraction Oil & Gas	<b>Local Co-ordinate Reference:</b>	Well Coyote Trails 33S-20-3N
<b>Project:</b>	Weld County, CO (NAD83)	<b>TVD Reference:</b>	kb @ 5300.00usft
<b>Site:</b>	Sec 28-T1N-R68W Coyote Trails	<b>MD Reference:</b>	kb @ 5300.00usft
<b>Well:</b>	Coyote Trails 33S-20-3N	<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		Sec 28-T1N-R68W Coyote Trails							
Site Position:		Northing:	1,249,743.73	usft	Latitude:	40.01788			
From:	Map	Easting:	3,138,161.85	usft	Longitude:	-105.00671			
Position Uncertainty:		0.00	usft	Slot Radius:	13-3/16	"	Grid Convergence:	0.32	°

Well	Coyote Trails 33S-20-3N					
Well Position	+N/-S	0.00 usft	Northing:	1,249,778.61 usft	Latitude:	40.01798
	+E/-W	0.00 usft	Easting:	3,138,035.75 usft	Longitude:	-105.00716
Position Uncertainty		0.00 usft	Wellhead Elevation:	0.00 usft	Ground Level:	5,272.00 usft

<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	12/31/2018	8.32	66.35	51,919

<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) (usft)</b>	<b>+N/-S (usft)</b>	<b>+E/-W (usft)</b>	<b>Direction (°)</b>	
	0.00	0.00	0.00	178.58	

<b>Survey Program</b>	<b>Date</b>	2/21/2019			
<b>From (usft)</b>	<b>To (usft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>	
117.00	1,536.00	Surface Surveys (Wellbore #1)	MWD	MWD - Standard	
1,671.00	17,877.00	Atlas MWD Surveys (Wellbore #1)	MWD	MWD - Standard	

<b>Survey</b>										
<b>Measured Depth (usft)</b>	<b>Inclination (°)</b>	<b>Azimuth (°)</b>	<b>Vertical Depth (usft)</b>	<b>+N/-S (usft)</b>	<b>+E/-W (usft)</b>	<b>Vertical Section (usft)</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	
117.00	0.48	282.74	117.00	0.11	-0.48	-0.12	0.41	0.41	0.00	
<b>First MWD Survey @ 117' MD</b>										
207.00	0.47	279.00	207.00	0.25	-1.21	-0.28	0.04	-0.01	-4.16	
298.00	0.37	263.43	297.99	0.27	-1.87	-0.32	0.17	-0.11	-17.11	
<b>ABND VERTICAL BACON LAKE #1</b>										
387.00	0.82	252.70	386.99	0.05	-2.76	-0.12	0.52	0.51	-12.06	
476.00	0.67	253.48	475.98	-0.29	-3.87	0.19	0.17	-0.17	0.88	
566.00	0.27	237.34	565.98	-0.55	-4.55	0.44	0.46	-0.44	-17.93	

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<b>Site:</b>	Sec 28-T1N-R68W Coyote Trails	<b>MD Reference:</b>	kb @ 5300.00usft
<b>Well:</b>	Coyote Trails 33S-20-3N	<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 (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
655.00	0.21	128.85	654.98	-0.77	-4.60	0.65	0.44	-0.07	-121.90	
744.00	0.32	131.70	743.98	-1.03	-4.29	0.93	0.12	0.12	3.20	
834.00	0.18	146.70	833.98	-1.32	-4.03	1.22	0.17	-0.16	16.67	
923.00	0.31	199.57	922.97	-1.66	-4.03	1.56	0.28	0.15	59.40	
1,013.00	0.19	112.90	1,012.97	-1.95	-3.97	1.85	0.39	-0.13	-96.30	
1,102.00	0.16	168.01	1,101.97	-2.13	-3.81	2.03	0.18	-0.03	61.92	
1,192.00	0.20	167.87	1,191.97	-2.41	-3.75	2.31	0.04	0.04	-0.16	
1,281.00	0.12	155.85	1,280.97	-2.64	-3.68	2.55	0.10	-0.09	-13.51	
1,371.00	0.00	239.79	1,370.97	-2.73	-3.64	2.64	0.13	-0.13	0.00	
1,461.00	0.56	186.75	1,460.97	-3.16	-3.70	3.07	0.62	0.62	0.00	
1,536.00	1.65	182.88	1,535.96	-4.61	-3.79	4.51	1.46	1.45	-5.16	
1,671.00	3.36	180.71	1,670.82	-10.50	-3.94	10.40	1.27	1.27	-1.61	
Meikle 28-1 - Meikle #2										
1,760.00	6.14	182.08	1,759.51	-17.87	-4.14	17.76	3.13	3.12	1.54	
1,850.00	9.19	184.68	1,848.69	-29.85	-4.91	29.72	3.41	3.39	2.89	
1,938.00	12.55	179.52	1,935.10	-46.42	-5.40	46.27	3.97	3.82	-5.86	
2,028.00	12.59	167.14	2,022.96	-65.76	-3.13	65.66	2.99	0.04	-13.76	
2,117.00	11.40	167.36	2,110.02	-83.80	0.95	83.80	1.34	-1.34	0.25	
2,206.00	11.71	157.71	2,197.22	-100.74	6.30	100.87	2.20	0.35	-10.84	
2,295.00	10.56	155.55	2,284.55	-116.52	13.10	116.81	1.37	-1.29	-2.43	
2,384.00	12.06	163.97	2,371.82	-132.88	19.05	133.32	2.50	1.69	9.46	
2,473.00	10.87	165.20	2,459.04	-149.93	23.76	150.48	1.36	-1.34	1.38	
2,563.00	12.51	168.64	2,547.18	-167.70	27.85	168.34	1.98	1.82	3.82	
2,653.00	11.62	171.02	2,635.19	-186.21	31.18	186.92	1.13	-0.99	2.64	
2,742.00	10.21	170.66	2,722.57	-202.84	33.86	203.62	1.59	-1.58	-0.40	
2,831.00	11.40	171.46	2,810.00	-219.33	36.45	220.16	1.35	1.34	0.90	
2,920.00	10.38	171.63	2,897.39	-235.96	38.92	236.85	1.15	-1.15	0.19	
3,007.00	11.58	168.77	2,982.80	-252.28	41.76	253.24	1.51	1.38	-3.29	
3,097.00	13.21	166.61	3,070.70	-271.14	45.90	272.20	1.88	1.81	-2.40	
3,186.00	11.62	165.73	3,157.61	-289.72	50.47	290.89	1.80	-1.79	-0.99	
3,275.00	9.72	165.33	3,245.07	-305.68	54.58	306.94	2.14	-2.13	-0.45	
3,365.00	11.45	165.29	3,333.54	-321.67	58.77	323.03	1.92	1.92	-0.04	
3,454.00	10.03	167.01	3,420.97	-337.77	62.76	339.22	1.64	-1.60	1.93	
3,543.00	11.98	168.64	3,508.33	-354.38	66.32	355.91	2.22	2.19	1.83	
3,632.00	10.65	168.90	3,595.60	-371.50	69.72	373.12	1.50	-1.49	0.29	
3,722.00	11.75	166.61	3,683.89	-388.58	73.45	390.28	1.32	1.22	-2.54	
3,812.00	9.77	168.50	3,772.30	-404.98	77.09	406.77	2.23	-2.20	2.10	
3,902.00	11.89	169.17	3,860.69	-421.57	80.35	423.44	2.36	2.36	0.74	
3,991.00	13.08	167.89	3,947.59	-440.42	84.19	442.38	1.37	1.34	-1.44	
4,080.00	11.00	166.92	4,034.62	-458.54	88.23	460.59	2.35	-2.34	-1.09	
4,169.00	12.15	172.87	4,121.82	-476.11	91.31	478.23	1.86	1.29	6.69	
4,259.00	10.30	175.12	4,210.09	-493.52	93.17	495.69	2.11	-2.06	2.50	
4,348.00	11.49	164.72	4,297.49	-510.01	96.18	512.24	2.58	1.34	-11.69	
4,438.00	12.77	165.64	4,385.48	-528.29	101.01	530.63	1.44	1.42	1.02	

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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 (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
4,528.00	10.69	165.24	4,473.60	-546.00	105.61	548.45	2.31	-2.31	-0.44
4,618.00	11.05	170.27	4,561.99	-562.57	109.19	565.11	1.13	0.40	5.59
4,707.00	13.08	176.70	4,649.02	-581.04	111.21	583.62	2.73	2.28	7.22
4,796.00	11.58	176.22	4,735.96	-600.00	112.38	602.61	1.69	-1.69	-0.54
4,886.00	13.12	172.03	4,823.88	-619.14	114.39	621.78	1.98	1.71	-4.66
4,976.00	11.18	171.37	4,911.86	-637.88	117.12	640.59	2.16	-2.16	-0.73
5,060.61	12.57	168.04	4,994.66	-655.00	120.26	657.78	1.83	1.64	-3.93
<b>Dump UU 28-10</b>									
5,065.00	12.64	167.89	4,998.94	-655.93	120.46	658.72	1.83	1.66	-3.48
5,156.00	11.98	168.11	5,087.85	-674.91	124.49	677.79	0.73	-0.73	0.24
5,246.00	12.55	161.89	5,175.80	-693.34	129.46	696.34	1.60	0.63	-6.91
5,336.00	11.49	163.39	5,263.82	-711.23	135.06	714.36	1.23	-1.18	1.67
5,426.00	13.88	163.83	5,351.62	-730.19	140.63	733.45	2.66	2.66	0.49
5,515.00	13.30	164.19	5,438.13	-750.29	146.39	753.69	0.66	-0.65	0.40
5,606.00	11.49	160.44	5,527.01	-768.90	152.28	772.45	2.18	-1.99	-4.12
5,696.00	14.94	169.21	5,614.62	-788.76	157.45	792.42	4.42	3.83	9.74
5,786.00	13.88	170.22	5,701.79	-810.79	161.46	814.55	1.21	-1.18	1.12
5,875.00	12.42	167.84	5,788.45	-830.67	165.29	834.52	1.75	-1.64	-2.67
5,946.80	11.11	167.26	5,858.74	-844.97	168.44	848.89	1.83	-1.82	-0.81
<b>Graeber 42-33</b>									
5,965.00	10.78	167.09	5,876.61	-848.33	169.21	852.27	1.83	-1.82	-0.93
5,993.19	11.36	168.39	5,904.27	-853.62	170.35	857.59	2.23	2.05	4.63
<b>Bickler A Unit 1</b>									
6,055.00	12.64	170.84	5,964.73	-866.26	172.65	870.28	2.23	2.08	3.96
6,145.00	11.49	171.06	6,052.74	-884.84	175.61	888.93	1.28	-1.28	0.24
6,234.00	9.68	173.00	6,140.23	-901.02	177.90	905.16	2.07	-2.03	2.18
6,324.00	11.05	164.45	6,228.76	-916.84	181.14	921.06	2.28	1.52	-9.50
6,413.00	9.50	163.44	6,316.33	-932.10	185.52	936.42	1.75	-1.74	-1.13
6,503.00	12.15	168.99	6,404.72	-948.52	189.45	952.93	3.16	2.94	6.17
6,592.00	10.30	170.66	6,492.02	-965.57	192.53	970.05	2.11	-2.08	1.88
6,682.00	7.91	171.33	6,580.88	-979.63	194.77	984.17	2.66	-2.66	0.74
6,771.00	5.70	172.69	6,669.25	-990.07	196.25	994.64	2.49	-2.48	1.53
6,861.00	4.20	173.22	6,758.91	-997.78	197.21	1,002.37	1.67	-1.67	0.59
6,951.00	3.14	178.82	6,848.72	-1,003.51	197.65	1,008.11	1.24	-1.18	6.22
7,065.00	2.34	184.55	6,962.59	-1,008.96	197.53	1,013.55	0.74	-0.70	5.03
7,155.00	2.21	185.65	7,052.52	-1,012.51	197.21	1,017.10	0.15	-0.14	1.22
7,245.00	1.19	290.79	7,142.49	-1,013.91	196.17	1,018.47	3.08	-1.13	116.82
7,334.00	1.19	287.40	7,231.47	-1,013.31	194.42	1,017.82	0.08	0.00	-3.81
7,424.00	10.43	189.75	7,320.98	-1,021.08	192.14	1,025.53	11.84	10.27	-108.50
7,514.00	20.37	180.14	7,407.65	-1,044.83	190.72	1,049.25	11.37	11.04	-10.68
<b>EXIST VERT CARR 1 30' Radius - EXIST VERT DUMP UU 28-5 30' Radius</b>									
7,604.00	26.34	178.99	7,490.24	-1,080.49	191.04	1,084.90	6.65	6.63	-1.28
7,640.56	29.99	180.80	7,522.47	-1,097.74	191.05	1,102.15	10.24	9.97	4.95
<b>30° Inclination @ 7640.56' MD</b>									

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<b>Site:</b>	Sec 28-T1N-R68W Coyote Trails	<b>MD Reference:</b>	kb @ 5300.00usft
<b>Well:</b>	Coyote Trails 33S-20-3N	<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 (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
7,643.08	30.24	180.91	7,524.65	-1,099.01	191.03	1,103.41	10.24	10.01	4.37
<b>EXIST VERT DUMP UU 28-12 30' Radius</b>									
7,694.00	35.35	182.83	7,567.44	-1,126.56	190.10	1,130.93	10.24	10.04	3.77
7,726.72	37.64	182.03	7,593.74	-1,146.00	189.28	1,150.35	7.14	6.99	-2.43
<b>Cross @ 7726.72' MD</b>									
7,783.00	41.58	180.84	7,637.09	-1,181.86	188.39	1,186.17	7.14	7.01	-2.12
7,873.00	48.56	184.24	7,700.63	-1,245.45	185.46	1,249.67	8.20	7.76	3.78
7,962.00	58.02	179.57	7,753.78	-1,316.65	183.27	1,320.80	11.43	10.63	-5.25
8,052.00	63.90	178.86	7,797.45	-1,395.29	184.36	1,399.44	6.57	6.53	-0.79
8,141.00	68.45	176.83	7,833.40	-1,476.62	187.45	1,480.82	5.52	5.11	-2.28
8,169.94	70.00	176.56	7,843.66	-1,503.64	189.01	1,507.87	5.43	5.35	-0.94
<b>70° Inclination @ 8169.94' MD</b>									
8,231.00	73.27	176.00	7,862.90	-1,561.46	192.77	1,565.76	5.43	5.36	-0.91
8,289.14	75.95	176.20	7,878.33	-1,617.38	196.58	1,621.76	4.63	4.62	0.34
<b>LP Coyote Trails 33S-20-3N</b>									
8,320.00	77.38	176.30	7,885.44	-1,647.34	198.55	1,651.76	4.63	4.62	0.33
8,410.00	79.85	176.92	7,903.21	-1,735.41	203.76	1,739.93	2.83	2.74	0.69
8,499.00	85.24	179.04	7,914.75	-1,823.56	206.86	1,828.14	6.50	6.06	2.38
8,516.14	86.05	179.17	7,916.05	-1,840.65	207.13	1,845.23	4.78	4.72	0.74
<b>ABND VERT NIVEN GAYLE B 130' Radius</b>									
8,588.00	89.44	179.70	7,918.88	-1,912.44	207.84	1,917.01	4.78	4.72	0.74
8,678.00	90.15	178.11	7,919.20	-2,002.42	209.56	2,007.01	1.93	0.79	-1.77
8,767.00	90.72	177.23	7,918.53	-2,091.34	213.18	2,095.99	1.18	0.64	-0.99
8,857.00	90.06	180.14	7,917.91	-2,181.31	215.24	2,185.98	3.32	-0.73	3.23
8,947.00	89.79	179.21	7,918.03	-2,271.31	215.75	2,275.96	1.08	-0.30	-1.03
9,037.00	91.21	181.02	7,917.25	-2,361.30	215.57	2,365.92	2.56	1.58	2.01
9,127.00	91.12	180.49	7,915.42	-2,451.27	214.39	2,455.84	0.60	-0.10	-0.59
9,217.00	90.77	180.49	7,913.93	-2,541.25	213.62	2,545.77	0.39	-0.39	0.00
9,307.00	90.41	179.65	7,913.01	-2,631.25	213.51	2,635.74	1.02	-0.40	-0.93
9,397.00	91.21	180.18	7,911.73	-2,721.24	213.64	2,725.70	1.07	0.89	0.59
9,486.00	90.46	179.92	7,910.44	-2,810.23	213.56	2,814.66	0.89	-0.84	-0.29
9,576.00	92.58	180.18	7,908.05	-2,900.19	213.48	2,904.60	2.37	2.36	0.29
9,666.00	93.06	179.65	7,903.62	-2,990.08	213.62	2,994.46	0.79	0.53	-0.59
9,755.00	91.34	179.30	7,900.20	-3,079.01	214.43	3,083.38	1.97	-1.93	-0.39
9,846.00	91.16	178.86	7,898.22	-3,169.97	215.89	3,174.36	0.52	-0.20	-0.48
9,935.00	90.77	178.16	7,896.72	-3,258.93	218.21	3,263.34	0.90	-0.44	-0.79
10,025.00	90.94	177.85	7,895.38	-3,348.87	221.34	3,353.33	0.39	0.19	-0.34
10,114.00	90.10	180.23	7,894.57	-3,437.84	222.83	3,442.32	2.84	-0.94	2.67
10,204.00	90.19	179.43	7,894.34	-3,527.84	223.10	3,532.29	0.89	0.10	-0.89
10,294.00	90.10	179.52	7,894.11	-3,617.84	223.92	3,622.28	0.14	-0.10	0.10
10,384.00	90.50	178.55	7,893.64	-3,707.82	225.44	3,712.28	1.17	0.44	-1.08
10,474.00	89.88	179.87	7,893.34	-3,797.81	226.68	3,802.27	1.62	-0.69	1.47
10,563.00	90.23	180.01	7,893.26	-3,886.81	226.77	3,891.24	0.42	0.39	0.16
10,652.00	90.85	179.74	7,892.42	-3,975.81	226.97	3,980.22	0.76	0.70	-0.30

# Survey Report

<b>Company:</b>	Extraction Oil & Gas	<b>Local Co-ordinate Reference:</b>	Well Coyote Trails 33S-20-3N
<b>Project:</b>	Weld County, CO (NAD83)	<b>TVD Reference:</b>	kb @ 5300.00usft
<b>Site:</b>	Sec 28-T1N-R68W Coyote Trails	<b>MD Reference:</b>	kb @ 5300.00usft
<b>Well:</b>	Coyote Trails 33S-20-3N	<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 (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
10,742.00	89.57	180.98	7,892.09	-4,065.80	226.40	4,070.17	1.98	-1.42	1.38
10,831.00	89.79	180.67	7,892.59	-4,154.79	225.12	4,159.10	0.43	0.25	-0.35
10,922.00	90.54	180.01	7,892.33	-4,245.79	224.58	4,250.05	1.10	0.82	-0.73
11,011.00	90.94	179.65	7,891.18	-4,334.78	224.84	4,339.02	0.60	0.45	-0.40
11,043.06	90.63	180.36	7,890.74	-4,366.84	224.84	4,371.07	2.42	-0.98	2.21
ABND VERT K & R LIVESTOCK COMM 1 30' Radius									
11,101.00	90.06	181.64	7,890.39	-4,424.76	223.83	4,428.96	2.42	-0.98	2.21
11,191.00	88.25	181.02	7,891.72	-4,514.72	221.74	4,518.84	2.13	-2.01	-0.69
11,281.00	87.98	180.18	7,894.68	-4,604.67	220.80	4,608.73	0.98	-0.30	-0.93
11,370.00	89.88	180.09	7,896.34	-4,693.65	220.59	4,697.68	2.14	2.13	-0.10
11,460.00	89.75	179.65	7,896.63	-4,783.65	220.79	4,787.66	0.51	-0.14	-0.49
11,550.00	89.66	178.95	7,897.09	-4,873.64	221.89	4,877.65	0.78	-0.10	-0.78
11,639.00	89.31	178.24	7,897.89	-4,962.61	224.08	4,966.64	0.89	-0.39	-0.80
11,729.00	89.17	177.98	7,899.09	-5,052.55	227.04	5,056.63	0.33	-0.16	-0.29
11,761.55	89.06	177.89	7,899.59	-5,085.08	228.22	5,089.18	0.45	-0.34	-0.29
ABND VERT BICKLER A UNIT 2 30' Radius									
11,819.00	88.86	177.72	7,900.64	-5,142.48	230.42	5,146.61	0.45	-0.34	-0.29
11,909.00	90.28	179.04	7,901.31	-5,232.43	232.96	5,236.60	2.15	1.58	1.47
11,999.00	91.52	178.82	7,899.90	-5,322.40	234.64	5,326.59	1.40	1.38	-0.24
12,088.00	89.88	180.18	7,898.81	-5,411.39	235.42	5,415.57	2.39	-1.84	1.53
12,099.40	89.94	180.15	7,898.83	-5,422.79	235.39	5,426.96	0.57	0.49	-0.29
ABND VERT KATS B UNIT 1 30' Radius									
12,178.00	90.32	179.92	7,898.65	-5,501.39	235.34	5,505.54	0.57	0.49	-0.29
12,267.00	91.65	179.87	7,897.12	-5,590.37	235.50	5,594.50	1.50	1.49	-0.06
12,357.00	89.57	179.92	7,896.16	-5,680.36	235.67	5,684.46	2.31	-2.31	0.06
12,447.00	89.66	179.52	7,896.77	-5,770.36	236.11	5,774.44	0.46	0.10	-0.44
12,535.00	88.56	179.52	7,898.14	-5,858.35	236.85	5,862.42	1.25	-1.25	0.00
12,624.00	88.78	179.21	7,900.20	-5,947.32	237.83	5,951.39	0.43	0.25	-0.35
12,714.00	88.64	179.08	7,902.23	-6,037.28	239.18	6,041.36	0.21	-0.16	-0.14
12,804.00	88.29	178.07	7,904.64	-6,127.22	241.41	6,131.33	1.19	-0.39	-1.12
12,893.00	88.25	177.54	7,907.33	-6,216.12	244.82	6,220.28	0.60	-0.04	-0.60
12,982.00	88.95	176.79	7,909.50	-6,304.98	249.22	6,309.22	1.15	0.79	-0.84
13,072.00	89.79	179.65	7,910.49	-6,394.92	252.02	6,399.21	3.31	0.93	3.18
13,117.08	90.04	179.65	7,910.56	-6,440.00	252.29	6,444.28	0.54	0.54	0.00
Cross @ 13117.08' MD									
13,162.00	90.28	179.65	7,910.44	-6,484.92	252.56	6,489.19	0.54	0.54	0.00
13,251.00	89.09	180.84	7,910.92	-6,573.91	252.18	6,578.15	1.89	-1.34	1.34
13,340.00	89.00	181.37	7,912.41	-6,662.88	250.47	6,667.05	0.60	-0.10	0.60
13,428.00	88.56	181.77	7,914.28	-6,750.83	248.06	6,754.91	0.68	-0.50	0.45
13,518.00	89.00	181.42	7,916.20	-6,840.77	245.55	6,844.76	0.62	0.49	-0.39
13,607.00	88.95	181.37	7,917.79	-6,929.73	243.39	6,933.64	0.08	-0.06	-0.06
13,696.00	89.48	180.89	7,919.01	-7,018.71	241.63	7,022.54	0.80	0.60	-0.54
13,786.00	90.28	180.18	7,919.20	-7,108.70	240.79	7,112.49	1.19	0.89	-0.79
13,876.00	87.89	179.39	7,920.63	-7,198.68	241.13	7,202.45	2.80	-2.66	-0.88

# Survey Report

<b>Company:</b>	Extraction Oil & Gas	<b>Local Co-ordinate Reference:</b>	Well Coyote Trails 33S-20-3N
<b>Project:</b>	Weld County, CO (NAD83)	<b>TVD Reference:</b>	kb @ 5300.00usft
<b>Site:</b>	Sec 28-T1N-R68W Coyote Trails	<b>MD Reference:</b>	kb @ 5300.00usft
<b>Well:</b>	Coyote Trails 33S-20-3N	<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 (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
13,965.00	87.76	178.73	7,924.01	-7,287.61	242.59	7,291.38	0.76	-0.15	-0.74
14,054.00	87.45	178.29	7,927.73	-7,376.50	244.90	7,380.30	0.60	-0.35	-0.49
14,063.94	87.54	178.29	7,928.17	-7,386.43	245.20	7,390.24	0.93	0.93	0.00
<b>ABND VERT ASHER 1 30' Radius</b>									
14,144.00	88.29	178.29	7,931.08	-7,466.39	247.58	7,470.24	0.93	0.93	0.00
14,234.00	90.99	181.73	7,931.64	-7,556.37	247.57	7,560.19	4.86	3.00	3.82
14,323.00	91.30	181.28	7,929.86	-7,645.32	245.23	7,649.05	0.61	0.35	-0.51
14,414.00	89.57	181.95	7,929.17	-7,736.28	242.67	7,739.92	2.04	-1.90	0.74
14,503.00	89.84	181.15	7,929.63	-7,825.25	240.26	7,828.80	0.95	0.30	-0.90
14,593.00	89.00	180.98	7,930.54	-7,915.22	238.59	7,918.71	0.95	-0.93	-0.19
14,682.00	89.09	180.40	7,932.03	-8,004.20	237.51	8,007.63	0.66	0.10	-0.65
14,771.00	89.35	180.36	7,933.24	-8,093.19	236.92	8,096.58	0.30	0.29	-0.04
14,861.00	88.38	179.17	7,935.02	-8,183.17	237.29	8,186.54	1.71	-1.08	-1.32
14,884.29	88.40	178.83	7,935.67	-8,206.45	237.70	8,209.82	1.47	0.10	-1.47
<b>Memorial 12-3</b>									
14,951.00	88.47	177.85	7,937.49	-8,273.11	239.63	8,276.51	1.47	0.10	-1.47
14,992.32	88.35	177.67	7,938.64	-8,314.38	241.25	8,317.80	0.54	-0.30	-0.44
<b>ABND VERT HULSTROM G UNIT 1 30' Radius</b>									
15,041.00	88.20	177.45	7,940.11	-8,362.99	243.32	8,366.46	0.54	-0.30	-0.44
15,130.00	88.56	179.96	7,942.63	-8,451.93	245.33	8,455.41	2.85	0.40	2.82
15,220.00	89.09	179.83	7,944.47	-8,541.91	245.50	8,545.37	0.61	0.59	-0.14
15,310.00	89.13	179.08	7,945.87	-8,631.89	246.35	8,635.35	0.83	0.04	-0.83
15,399.00	89.75	178.11	7,946.74	-8,720.86	248.53	8,724.34	1.29	0.70	-1.09
15,490.00	89.62	180.14	7,947.24	-8,811.84	249.92	8,815.33	2.24	-0.14	2.23
15,579.00	89.97	179.74	7,947.56	-8,900.84	250.02	8,904.31	0.60	0.39	-0.45
15,669.00	90.19	179.61	7,947.43	-8,990.84	250.53	8,994.29	0.28	0.24	-0.14
15,758.00	90.59	179.13	7,946.83	-9,079.83	251.51	9,083.28	0.70	0.45	-0.54
15,848.00	89.17	179.74	7,947.01	-9,169.83	252.39	9,173.27	1.72	-1.58	0.68
15,938.00	89.17	178.90	7,948.32	-9,259.81	253.46	9,263.25	0.93	0.00	-0.93
16,027.00	89.57	178.46	7,949.30	-9,348.78	255.51	9,352.24	0.67	0.45	-0.49
16,117.00	91.60	179.35	7,948.38	-9,438.75	257.23	9,442.23	2.46	2.26	0.99
16,206.00	92.40	179.17	7,945.27	-9,527.69	258.38	9,531.17	0.92	0.90	-0.20
16,295.00	90.46	179.70	7,943.05	-9,616.65	259.26	9,620.13	2.26	-2.18	0.60
16,384.00	89.35	178.33	7,943.20	-9,705.64	260.79	9,709.12	1.98	-1.25	-1.54
16,428.31	89.76	178.16	7,943.54	-9,749.93	262.15	9,753.43	1.01	0.93	-0.39
<b>EXIST VERT NORDSTROM 5-4 30' Radius</b>									
16,474.00	90.19	177.98	7,943.56	-9,795.59	263.69	9,799.12	1.01	0.93	-0.39
16,564.00	91.60	177.54	7,942.15	-9,885.51	267.20	9,889.09	1.64	1.57	-0.49
16,653.00	91.78	179.04	7,939.53	-9,974.43	269.86	9,978.05	1.70	0.20	1.69
16,743.00	91.47	180.14	7,936.98	-10,064.39	270.50	10,068.00	1.27	-0.34	1.22
16,833.00	89.66	181.46	7,936.09	-10,154.37	269.24	10,157.92	2.49	-2.01	1.47
16,923.00	89.17	181.28	7,937.01	-10,244.34	267.09	10,247.81	0.58	-0.54	-0.20
17,012.00	89.44	181.81	7,938.09	-10,333.30	264.69	10,336.68	0.67	0.30	0.60
17,102.00	90.19	182.43	7,938.38	-10,423.23	261.36	10,426.51	1.08	0.83	0.69

# Survey Report

<b>Company:</b>	Extraction Oil & Gas	<b>Local Co-ordinate Reference:</b>	Well Coyote Trails 33S-20-3N
<b>Project:</b>	Weld County, CO (NAD83)	<b>TVD Reference:</b>	kb @ 5300.00usft
<b>Site:</b>	Sec 28-T1N-R68W Coyote Trails	<b>MD Reference:</b>	kb @ 5300.00usft
<b>Well:</b>	Coyote Trails 33S-20-3N	<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 (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
17,192.00	91.78	181.77	7,936.83	-10,513.16	258.07	10,516.32	1.91	1.77	-0.73	
17,281.00	88.51	181.95	7,936.61	-10,602.10	255.18	10,605.16	3.68	-3.67	0.20	
17,341.77	88.93	181.59	7,937.96	-10,662.82	253.30	10,665.82	0.91	0.69	-0.59	
<b>EXIST VERT WEBBER H UNIT 1 30' Radius</b>										
17,371.00	89.13	181.42	7,938.46	-10,692.04	252.53	10,695.01	0.91	0.69	-0.59	
17,460.00	89.88	180.84	7,939.23	-10,781.02	250.78	10,783.92	1.07	0.84	-0.65	
<b>EXIST VERT NORDSTROM 2-4 30' Radius</b>										
17,549.00	89.66	179.79	7,939.59	-10,870.01	250.29	10,872.88	1.21	-0.25	-1.18	
17,639.00	91.34	179.39	7,938.80	-10,960.00	250.93	10,962.86	1.92	1.87	-0.44	
17,728.00	90.01	178.95	7,937.75	-11,048.99	252.22	11,051.84	1.57	-1.49	-0.49	
17,815.00	90.63	178.82	7,937.27	-11,135.97	253.91	11,138.84	0.73	0.71	-0.15	
<b>Last MWD Survey @ 17815.00' MD</b>										
17,877.00	90.63	178.82	7,936.58	-11,197.95	255.19	11,200.84	0.00	0.00	0.00	
<b>Projection to TD @ 17877' MD 201.6' FSL/ 2526.4' FEL - PBHL Coyote Trails 33S-20-3N</b>										

Design Targets										
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude	
30° Inclination @ 7640.5	0.00	0.00	7,522.46	-1,097.75	191.09	1,248,681.94	3,138,232.94	40.01496	-105.00647	
- actual wellpath misses target center by 0.04usft at 7640.56usft MD (7522.47 TVD, -1097.74 N, 191.05 E)										
- Point										
Cross @ 7726.72' MD	0.00	0.00	7,593.75	-1,146.00	189.28	1,248,633.68	3,138,231.40	40.01483	-105.00648	
- actual wellpath hits target center										
- Point										
70° Inclination @ 8169.9	0.00	0.00	7,843.66	-1,503.64	189.01	1,248,276.04	3,138,233.11	40.01385	-105.00648	
- actual wellpath hits target center										
- Point										
Cross @ 13117.08' MD	0.00	0.00	7,910.56	-6,440.00	252.29	1,243,340.11	3,138,323.83	40.00030	-105.00626	
- actual wellpath hits target center										
- Point										

Design Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates			
		+N/-S (usft)	+E/-W (usft)	Comment	
117.00	117.00	0.11	-0.48	First MWD Survey @ 117' MD	
7,640.56	7,522.47	-1,097.74	191.05	30° Inclination @ 7640.56' MD	
7,726.72	7,593.74	-1,146.00	189.28	Cross @ 7726.72' MD	
8,169.94	7,843.66	-1,503.64	189.01	70° Inclination @ 8169.94' MD	
13,117.08	7,910.56	-6,440.00	252.29	Cross @ 13117.08' MD	
17,815.00	7,937.27	-11,135.97	253.91	Last MWD Survey @ 17815.00' MD	
17,877.00	7,936.58	-11,197.95	255.19	Projection to TD @ 17877' MD 201.6' FSL/ 2526.4' FEL	



## Survey Report

<b>Company:</b>	Extraction Oil & Gas	<b>Local Co-ordinate Reference:</b>	Well Coyote Trails 33S-20-3N
<b>Project:</b>	Weld County, CO (NAD83)	<b>TVD Reference:</b>	kb @ 5300.00usft
<b>Site:</b>	Sec 28-T1N-R68W Coyote Trails	<b>MD Reference:</b>	kb @ 5300.00usft
<b>Well:</b>	Coyote Trails 33S-20-3N	<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

Checked By: \_\_\_\_\_ Approved By: \_\_\_\_\_ Date: \_\_\_\_\_