

Extraction Oil & Gas

Weld County, CO (NAD83)

Rinn Valley East Pad (Sec. 17-T2N, R68W)

Rinn Valley East N17-20-5N

Wellbore #1

Design: Wellbore #1

Standard Survey Report

10 September, 2018

Survey Report

Company: Extraction Oil & Gas	Local Co-ordinate Reference: Well Rinn Valley East N17-20-5N
Project: Weld County, CO (NAD83)	TVD Reference: KB=29 @ 4948.40usft (Patterson #901)
Site: Rinn Valley East Pad (Sec. 17-T2N, R68W)	MD Reference: KB=29 @ 4948.40usft (Patterson #901)
Well: Rinn Valley East N17-20-5N	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 Rinn Valley East Pad (Sec. 17-T2N, R68W)		
Site Position:	Northing: 1,292,056.11 usft	Latitude: 40.13411
From: Lat/Long	Easting: 3,133,096.11 usft	Longitude: -105.02398
Position Uncertainty: 0.00 usft	Slot Radius: 13-3/16 "	Grid Convergence: 0.31 °

Well Rinn Valley East N17-20-5N		
Well Position +N/-S 0.00 usft	Northing: 1,291,943.89 usft	Latitude: 40.13380
+E/-W 0.00 usft	Easting: 3,133,094.19 usft	Longitude: -105.02399
Position Uncertainty 0.00 usft	Wellhead Elevation: 0.00 usft	Ground Level: 4,919.40 usft

Wellbore Wellbore #1					
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	HDGM	9/10/2018	8.47	66.52	52,005

Design Wellbore #1					
Audit Notes:					
Version: 1.0	Phase: ACTUAL	Tie On Depth: 0.00			
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)	
	0.00	0.00	0.00	3.09	

Survey Program		Date 9/10/2018		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
72.00	868.00	Surface Surveys (Wellbore #1)	MWD	MWD - Standard
954.00	17,358.00	MWD Surveys (Wellbore #1)	MWD	MWD - Standard

Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
72.00	0.40	152.22	72.00	-0.22	0.12	-0.22	0.56	0.56	0.00
103.00	0.59	190.71	103.00	-0.47	0.14	-0.47	1.20	0.61	124.16
133.00	0.73	181.63	133.00	-0.82	0.10	-0.81	0.58	0.47	-30.27
164.00	0.88	188.13	163.99	-1.25	0.06	-1.25	0.57	0.48	20.97
194.00	0.58	178.37	193.99	-1.63	0.04	-1.63	1.08	-1.00	-32.53
225.00	0.45	152.16	224.99	-1.90	0.10	-1.89	0.86	-0.42	-84.55
255.00	0.13	172.11	254.99	-2.03	0.16	-2.02	1.10	-1.07	66.50
286.00	0.16	23.85	285.99	-2.03	0.18	-2.02	0.90	0.10	-478.26
316.00	0.19	155.01	315.99	-2.04	0.22	-2.02	1.06	0.10	437.20

Survey Report

Company:	Extraction Oil & Gas	Local Co-ordinate Reference:	Well Rinn Valley East N17-20-5N
Project:	Weld County, CO (NAD83)	TVD Reference:	KB=29 @ 4948.40usft (Patterson #901)
Site:	Rinn Valley East Pad (Sec. 17-T2N, R68W)	MD Reference:	KB=29 @ 4948.40usft (Patterson #901)
Well:	Rinn Valley East N17-20-5N	North Reference:	True
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	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)
347.00	0.14	114.06	346.99	-2.10	0.27	-2.08	0.40	-0.16	-132.10
377.00	0.39	59.08	376.99	-2.06	0.39	-2.04	1.10	0.83	-183.27
408.00	0.31	54.49	407.99	-1.96	0.55	-1.92	0.27	-0.26	-14.81
438.00	0.62	127.82	437.99	-2.01	0.75	-1.97	2.03	1.03	244.43
469.00	0.89	138.27	468.98	-2.29	1.04	-2.23	0.97	0.87	33.71
500.00	1.77	141.89	499.98	-2.85	1.50	-2.76	2.85	2.84	11.68
530.00	1.97	147.45	529.96	-3.65	2.06	-3.53	0.90	0.67	18.53
573.00	2.44	147.66	572.93	-5.04	2.95	-4.88	1.09	1.09	0.49
614.00	2.97	154.51	613.88	-6.74	3.87	-6.52	1.51	1.29	16.71
656.00	3.33	155.90	655.82	-8.84	4.84	-8.56	0.88	0.86	3.31
699.00	3.40	154.91	698.74	-11.13	5.89	-10.80	0.21	0.16	-2.30
742.00	4.73	153.11	741.64	-13.87	7.23	-13.46	3.11	3.09	-4.19
785.00	6.03	156.24	784.45	-17.51	8.94	-17.01	3.10	3.02	7.28
827.00	6.94	156.52	826.18	-21.86	10.84	-21.25	2.17	2.17	0.67
868.00	7.56	152.62	866.85	-26.53	13.07	-25.79	1.93	1.51	-9.51
Tie in to Surface Surveys @ 868'MD									
954.00	8.95	153.44	951.96	-37.54	18.66	-36.48	1.62	1.62	0.95
First MWD Survey @ 954'MD									
986.00	9.59	153.17	983.54	-42.14	20.98	-40.95	2.00	2.00	-0.84
1,017.00	10.23	153.65	1,014.07	-46.91	23.37	-45.59	2.08	2.06	1.55
1,049.00	10.65	154.29	1,045.54	-52.12	25.91	-50.65	1.36	1.31	2.00
1,080.00	11.19	155.21	1,075.98	-57.43	28.41	-55.82	1.83	1.74	2.97
1,112.00	10.62	153.18	1,107.41	-62.88	31.05	-61.12	2.15	-1.78	-6.34
1,144.00	10.72	152.45	1,138.85	-68.16	33.75	-66.24	0.53	0.31	-2.28
1,176.00	10.80	153.65	1,170.29	-73.48	36.46	-71.41	0.74	0.25	3.75
1,207.00	10.16	153.61	1,200.77	-78.53	38.97	-76.32	2.06	-2.06	-0.13
1,239.00	9.65	152.16	1,232.30	-83.43	41.47	-81.08	1.77	-1.59	-4.53
1,271.00	10.11	154.15	1,263.82	-88.33	43.95	-85.84	1.79	1.44	6.22
1,302.00	10.08	152.71	1,294.34	-93.19	46.38	-90.56	0.82	-0.10	-4.65
1,334.00	10.45	154.22	1,325.83	-98.29	48.93	-95.52	1.43	1.16	4.72
1,366.00	10.78	150.70	1,357.28	-103.52	51.65	-100.58	2.27	1.03	-11.00
1,397.00	11.16	149.86	1,387.71	-108.64	54.58	-105.54	1.33	1.23	-2.71
1,428.00	11.49	152.48	1,418.11	-113.97	57.51	-110.71	1.97	1.06	8.45
1,460.00	10.71	151.55	1,449.51	-119.41	60.40	-115.99	2.50	-2.44	-2.91
1,492.00	10.42	151.00	1,480.97	-124.56	63.22	-120.97	0.96	-0.91	-1.72
1,523.00	10.22	152.26	1,511.47	-129.44	65.86	-125.71	0.97	-0.65	4.06
1,549.00	10.79	153.68	1,537.03	-133.67	68.01	-129.81	2.41	2.19	5.46
1,687.00	10.38	149.35	1,672.69	-155.94	80.08	-151.40	0.65	-0.30	-3.14
1,783.00	11.53	158.64	1,766.94	-172.32	87.98	-167.33	2.19	1.20	9.68
1,878.00	10.43	155.69	1,860.20	-189.00	94.98	-183.61	1.30	-1.16	-3.11
1,974.00	12.64	157.54	1,954.26	-206.63	102.57	-200.80	2.33	2.30	1.93
2,069.00	11.27	156.44	2,047.20	-224.74	110.25	-218.48	1.46	-1.44	-1.16
2,165.00	9.59	153.40	2,141.61	-240.49	117.58	-233.81	1.84	-1.75	-3.17

Survey Report

Company:	Extraction Oil & Gas	Local Co-ordinate Reference:	Well Rinn Valley East N17-20-5N
Project:	Weld County, CO (NAD83)	TVD Reference:	KB=29 @ 4948.40usft (Patterson #901)
Site:	Rinn Valley East Pad (Sec. 17-T2N, R68W)	MD Reference:	KB=29 @ 4948.40usft (Patterson #901)
Well:	Rinn Valley East N17-20-5N	North Reference:	True
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	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)
2,260.00	12.11	157.59	2,234.90	-256.78	124.93	-249.68	2.78	2.65	4.41
2,355.00	10.78	155.78	2,328.01	-274.10	132.37	-266.57	1.45	-1.40	-1.91
2,450.00	9.41	157.41	2,421.54	-289.37	139.00	-281.47	1.47	-1.44	1.72
2,546.00	12.02	154.63	2,515.86	-305.65	146.30	-297.33	2.77	2.72	-2.90
2,641.00	10.69	154.68	2,609.00	-322.56	154.30	-313.78	1.40	-1.40	0.05
2,737.00	8.97	153.18	2,703.58	-337.28	161.49	-328.10	1.81	-1.79	-1.56
2,833.00	7.91	152.65	2,798.54	-349.83	167.90	-340.28	1.11	-1.10	-0.55
2,928.00	11.80	146.00	2,892.13	-363.70	176.34	-353.67	4.26	4.09	-7.00
3,023.00	9.81	142.38	2,985.44	-378.16	186.71	-367.56	2.21	-2.09	-3.81
3,119.00	10.78	151.37	3,079.90	-392.52	196.01	-381.40	1.95	1.01	9.36
3,214.00	9.28	146.92	3,173.44	-406.74	204.45	-395.14	1.78	-1.58	-4.68
3,310.00	12.06	159.00	3,267.79	-422.59	212.27	-410.55	3.70	2.90	12.58
3,405.00	10.69	157.06	3,360.92	-439.97	219.26	-427.53	1.50	-1.44	-2.04
3,501.00	8.97	155.96	3,455.51	-455.01	225.78	-442.19	1.80	-1.79	-1.15
3,596.00	11.67	152.61	3,548.96	-470.30	233.22	-457.06	2.91	2.84	-3.53
3,692.00	9.99	151.81	3,643.25	-486.27	241.62	-472.55	1.76	-1.75	-0.83
3,787.00	13.26	148.64	3,736.29	-502.84	251.18	-488.58	3.51	3.44	-3.34
3,883.00	11.98	148.11	3,829.97	-520.70	262.18	-505.82	1.34	-1.33	-0.55
3,979.00	10.47	149.52	3,924.13	-536.68	271.87	-521.26	1.60	-1.57	1.47
4,074.00	14.32	150.32	4,016.90	-554.33	282.07	-538.33	4.06	4.05	0.84
4,169.00	12.33	149.65	4,109.33	-573.29	293.01	-556.68	2.10	-2.09	-0.71
4,264.00	10.21	147.14	4,202.50	-589.12	302.70	-571.96	2.29	-2.23	-2.64
4,360.00	12.86	151.37	4,296.55	-605.65	312.44	-587.94	2.90	2.76	4.41
4,456.00	11.58	151.28	4,390.37	-623.47	322.19	-605.22	1.33	-1.33	-0.09
4,551.00	10.74	151.37	4,483.58	-639.61	331.01	-620.85	0.88	-0.88	0.09
4,647.00	9.32	150.01	4,578.11	-654.19	339.19	-634.98	1.50	-1.48	-1.42
4,742.00	11.89	155.74	4,671.48	-669.78	347.05	-650.12	2.92	2.71	6.03
4,838.00	10.47	154.15	4,765.66	-686.64	354.92	-666.54	1.51	-1.48	-1.66
4,933.00	13.61	159.79	4,858.56	-704.91	362.55	-684.36	3.53	3.31	5.94
5,028.00	12.06	158.25	4,951.18	-724.62	370.09	-703.63	1.67	-1.63	-1.62
5,124.00	10.65	155.69	5,045.30	-742.02	377.46	-720.61	1.56	-1.47	-2.67
5,219.00	13.17	148.07	5,138.25	-759.20	386.80	-737.27	3.12	2.65	-8.02
5,315.00	10.78	146.08	5,232.16	-775.94	397.59	-753.40	2.53	-2.49	-2.07
5,411.00	13.30	154.06	5,326.04	-793.32	407.43	-770.23	3.14	2.63	8.31
5,506.00	10.96	142.07	5,418.93	-810.28	417.77	-786.60	3.61	-2.46	-12.62
5,602.00	12.81	150.67	5,512.88	-826.76	428.59	-802.48	2.66	1.93	8.96
5,697.00	11.84	146.66	5,605.69	-844.08	439.11	-819.21	1.36	-1.02	-4.22
5,793.00	11.49	159.61	5,699.72	-861.27	447.85	-835.91	2.75	-0.36	13.49
5,888.00	9.81	159.30	5,793.08	-877.71	454.01	-851.99	1.77	-1.77	-0.33
6,007.00	12.42	160.63	5,909.84	-899.27	461.84	-873.10	2.20	2.19	1.12
6,103.00	10.78	158.91	6,003.88	-917.39	468.50	-890.83	1.75	-1.71	-1.79
6,198.00	8.62	156.44	6,097.51	-932.21	474.54	-905.30	2.31	-2.27	-2.60
6,294.00	7.20	155.38	6,192.60	-944.27	479.92	-917.06	1.49	-1.48	-1.10
6,390.00	5.79	154.28	6,287.98	-954.11	484.53	-926.63	1.47	-1.47	-1.15

Survey Report

Company:	Extraction Oil & Gas	Local Co-ordinate Reference:	Well Rinn Valley East N17-20-5N
Project:	Weld County, CO (NAD83)	TVD Reference:	KB=29 @ 4948.40usft (Patterson #901)
Site:	Rinn Valley East Pad (Sec. 17-T2N, R68W)	MD Reference:	KB=29 @ 4948.40usft (Patterson #901)
Well:	Rinn Valley East N17-20-5N	North Reference:	True
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	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)
6,485.00	4.60	153.88	6,382.59	-961.84	488.29	-934.15	1.25	-1.25	-0.42
6,580.00	0.49	125.24	6,477.47	-965.50	490.30	-937.70	4.40	-4.33	-30.15
6,676.00	0.09	203.20	6,573.47	-965.81	490.60	-937.99	0.50	-0.42	81.21
6,771.00	0.09	19.57	6,668.47	-965.80	490.60	-937.98	0.19	0.00	185.65
6,867.00	6.27	356.99	6,764.28	-960.49	490.35	-932.69	6.44	6.44	-23.52
6,962.00	14.27	1.71	6,857.68	-943.58	490.42	-915.80	8.46	8.42	4.97
7,058.00	21.96	1.31	6,948.86	-913.76	491.19	-885.99	8.01	8.01	-0.42
7,145.69	30.00	0.81	7,027.62	-875.39	491.87	-847.63	9.17	9.17	-0.57
30° Inclination @ 7145'MD									
7,153.00	30.67	0.78	7,033.93	-871.70	491.93	-843.94	9.17	9.17	-0.42
7,203.38	34.84	1.52	7,076.29	-844.45	492.48	-816.71	8.32	8.28	1.46
Enter Sect. 17 @ 7203'MD									
7,249.00	38.62	2.06	7,112.85	-817.19	493.34	-789.44	8.32	8.28	1.19
7,344.00	49.54	359.99	7,180.99	-751.22	494.40	-723.50	11.59	11.49	-2.18
7,440.00	59.57	0.47	7,236.59	-673.11	494.73	-645.49	10.46	10.45	0.50
7,512.11	70.00	2.05	7,267.27	-607.98	496.20	-580.38	14.59	14.46	2.19
70°Inclination @ 7512'MD									
7,535.00	73.31	2.50	7,274.48	-586.27	497.07	-558.65	14.59	14.47	1.98
7,630.00	75.56	2.72	7,299.97	-494.86	501.23	-467.15	2.38	2.37	0.23
7,726.00	85.51	1.84	7,315.73	-400.36	504.99	-372.58	10.40	10.36	-0.92
7,822.00	89.66	1.31	7,319.78	-304.50	507.62	-276.72	4.36	4.32	-0.55
7,917.00	89.57	1.22	7,320.42	-209.53	509.72	-181.77	0.13	-0.09	-0.09
8,012.00	89.62	0.78	7,321.09	-114.54	511.38	-86.84	0.47	0.05	-0.46
8,108.00	89.84	359.81	7,321.54	-18.55	511.87	9.04	1.04	0.23	-1.01
8,203.00	90.06	359.41	7,321.62	76.45	511.22	103.87	0.48	0.23	-0.42
8,299.00	89.62	358.58	7,321.89	172.43	509.54	199.62	0.98	-0.46	-0.86
8,394.00	89.75	358.00	7,322.41	267.39	506.71	294.29	0.63	0.14	-0.61
8,490.00	89.66	357.34	7,322.91	363.31	502.80	389.86	0.69	-0.09	-0.69
8,586.00	89.97	356.90	7,323.22	459.19	497.98	485.34	0.56	0.32	-0.46
8,681.00	90.10	359.90	7,323.16	554.14	495.33	580.01	3.16	0.14	3.16
8,777.00	90.01	358.53	7,323.07	650.13	494.01	675.79	1.43	-0.09	-1.43
8,872.00	90.19	357.52	7,322.90	745.07	490.74	770.41	1.08	0.19	-1.06
8,968.00	90.85	1.00	7,322.03	841.04	489.50	866.18	3.69	0.69	3.63
9,063.00	91.34	0.30	7,320.21	936.02	490.58	961.08	0.90	0.52	-0.74
9,159.00	91.78	0.69	7,317.60	1,031.98	491.40	1,056.94	0.61	0.46	0.41
9,254.00	89.70	2.10	7,316.37	1,126.93	493.72	1,151.89	2.65	-2.19	1.48
9,350.00	89.93	1.40	7,316.68	1,222.89	496.65	1,247.86	0.77	0.24	-0.73
9,445.00	90.06	1.53	7,316.69	1,317.86	499.08	1,342.82	0.19	0.14	0.14
9,540.00	89.84	1.44	7,316.78	1,412.83	501.54	1,437.78	0.25	-0.23	-0.09
9,636.00	89.17	1.09	7,317.61	1,508.80	503.66	1,533.73	0.79	-0.70	-0.36
9,731.00	89.00	0.56	7,319.12	1,603.78	505.03	1,628.64	0.59	-0.18	-0.56
9,827.00	88.95	0.25	7,320.84	1,699.76	505.71	1,724.52	0.33	-0.05	-0.32
9,923.00	89.17	1.35	7,322.41	1,795.73	507.05	1,820.43	1.17	0.23	1.15

Survey Report

Company:	Extraction Oil & Gas	Local Co-ordinate Reference:	Well Rinn Valley East N17-20-5N
Project:	Weld County, CO (NAD83)	TVD Reference:	KB=29 @ 4948.40usft (Patterson #901)
Site:	Rinn Valley East Pad (Sec. 17-T2N, R68W)	MD Reference:	KB=29 @ 4948.40usft (Patterson #901)
Well:	Rinn Valley East N17-20-5N	North Reference:	True
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	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)	
10,018.00	92.00	2.06	7,321.44	1,890.68	509.87	1,915.39	3.07	2.98	0.75	
10,114.00	91.91	1.05	7,318.17	1,986.58	512.48	2,011.30	1.06	-0.09	-1.05	
10,209.00	92.00	359.77	7,314.93	2,081.52	513.15	2,106.14	1.35	0.09	-1.35	
10,305.00	92.27	358.67	7,311.35	2,177.45	511.85	2,201.85	1.18	0.28	-1.15	
10,400.00	88.82	359.94	7,310.45	2,272.42	510.70	2,296.62	3.87	-3.63	1.34	
10,496.00	89.31	359.19	7,312.02	2,368.40	509.97	2,392.43	0.93	0.51	-0.78	
10,592.00	89.70	358.89	7,312.84	2,464.39	508.36	2,488.19	0.51	0.41	-0.31	
10,688.00	90.68	0.74	7,312.53	2,560.38	508.05	2,584.02	2.18	1.02	1.93	
10,783.00	90.41	359.99	7,311.62	2,655.37	508.65	2,678.91	0.84	-0.28	-0.79	
10,878.00	90.41	358.97	7,310.94	2,750.36	507.79	2,773.72	1.07	0.00	-1.07	
10,974.00	91.96	2.50	7,308.96	2,846.32	509.02	2,869.60	4.02	1.61	3.68	
11,070.00	91.87	1.66	7,305.75	2,942.20	512.51	2,965.53	0.88	-0.09	-0.88	
11,165.00	91.78	0.69	7,302.72	3,037.13	514.45	3,060.43	1.02	-0.09	-1.02	
11,261.00	92.18	0.30	7,299.41	3,133.07	515.28	3,156.27	0.58	0.42	-0.41	
11,357.00	92.27	359.50	7,295.68	3,229.00	515.11	3,252.05	0.84	0.09	-0.83	
11,452.00	90.37	1.97	7,293.49	3,323.95	516.33	3,346.93	3.28	-2.00	2.60	
11,548.00	90.63	3.65	7,292.65	3,419.83	521.04	3,442.93	1.77	0.27	1.75	
11,643.00	89.57	6.91	7,292.49	3,514.41	529.78	3,537.84	3.61	-1.12	3.43	
11,739.00	89.75	6.16	7,293.06	3,609.79	540.71	3,633.67	0.80	0.19	-0.78	
11,834.00	89.31	9.70	7,293.84	3,703.86	553.81	3,728.31	3.75	-0.46	3.73	
11,929.00	89.44	8.64	7,294.87	3,797.64	568.95	3,822.77	1.12	0.14	-1.12	
12,025.00	89.31	7.08	7,295.92	3,892.73	582.07	3,918.42	1.63	-0.14	-1.63	
12,120.00	89.97	10.49	7,296.52	3,986.60	596.58	4,012.94	3.66	0.69	3.59	
12,216.00	90.15	9.52	7,296.42	4,081.14	613.26	4,108.24	1.03	0.19	-1.01	
12,311.00	90.72	9.08	7,295.69	4,174.88	628.61	4,202.68	0.76	0.60	-0.46	
12,407.00	91.03	8.33	7,294.23	4,269.77	643.14	4,298.20	0.85	0.32	-0.78	
12,502.00	91.60	7.83	7,292.05	4,363.80	656.49	4,392.82	0.80	0.60	-0.53	
12,559.79	92.14	7.67	7,290.16	4,421.03	664.28	4,450.39	0.98	0.94	-0.27	
Crossing Sect. 17/8 @ 12559'MD										
12,597.00	92.49	7.57	7,288.66	4,457.88	669.21	4,487.45	0.98	0.94	-0.27	
12,693.00	90.01	6.91	7,286.56	4,553.08	681.30	4,583.17	2.67	-2.58	-0.69	
12,788.00	90.10	6.51	7,286.47	4,647.43	692.40	4,677.98	0.43	0.09	-0.42	
12,884.00	90.72	3.87	7,285.79	4,743.03	701.09	4,773.90	2.82	0.65	-2.75	
12,979.00	90.06	0.25	7,285.14	4,837.95	704.50	4,868.87	3.87	-0.69	-3.81	
13,074.00	89.62	359.94	7,285.40	4,932.95	704.66	4,963.74	0.57	-0.46	-0.33	
13,170.00	89.44	359.50	7,286.19	5,028.94	704.19	5,059.57	0.50	-0.19	-0.46	
13,265.00	91.12	357.43	7,285.73	5,123.90	701.64	5,154.25	2.81	1.77	-2.18	
13,361.00	90.81	355.76	7,284.11	5,219.71	695.94	5,249.61	1.77	-0.32	-1.74	
13,456.00	90.85	354.57	7,282.73	5,314.36	687.94	5,343.70	1.25	0.04	-1.25	
13,552.00	90.50	353.42	7,281.60	5,409.83	677.89	5,438.48	1.25	-0.36	-1.20	
13,647.00	91.43	358.58	7,280.00	5,504.55	671.27	5,532.71	5.52	0.98	5.43	
13,743.00	91.56	357.12	7,277.50	5,600.45	667.67	5,628.27	1.53	0.14	-1.52	
13,838.00	91.69	356.42	7,274.80	5,695.26	662.32	5,722.66	0.75	0.14	-0.74	
13,934.00	92.05	355.27	7,271.67	5,790.95	655.37	5,817.84	1.25	0.38	-1.20	

Survey Report

Company:	Extraction Oil & Gas	Local Co-ordinate Reference:	Well Rinn Valley East N17-20-5N
Project:	Weld County, CO (NAD83)	TVD Reference:	KB=29 @ 4948.40usft (Patterson #901)
Site:	Rinn Valley East Pad (Sec. 17-T2N, R68W)	MD Reference:	KB=29 @ 4948.40usft (Patterson #901)
Well:	Rinn Valley East N17-20-5N	North Reference:	True
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	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)
14,029.00	89.93	357.21	7,270.03	5,885.72	649.14	5,912.14	3.02	-2.23	2.04
14,125.00	89.88	355.85	7,270.19	5,981.54	643.33	6,007.51	1.42	-0.05	-1.42
14,220.00	90.23	354.92	7,270.10	6,076.24	635.69	6,101.65	1.05	0.37	-0.98
14,316.00	90.06	354.17	7,269.85	6,171.80	626.56	6,196.58	0.80	-0.18	-0.78
14,411.00	90.94	357.78	7,269.03	6,266.55	619.89	6,290.83	3.91	0.93	3.80
14,506.00	91.12	356.77	7,267.32	6,361.42	615.38	6,385.33	1.08	0.19	-1.06
14,602.00	91.56	355.67	7,265.07	6,457.18	609.05	6,480.61	1.23	0.46	-1.15
14,697.00	90.28	357.04	7,263.55	6,551.98	603.01	6,574.94	1.97	-1.35	1.44
14,793.00	91.12	356.07	7,262.37	6,647.79	597.24	6,670.31	1.34	0.88	-1.01
14,889.00	89.79	357.83	7,261.61	6,743.65	592.14	6,765.75	2.30	-1.39	1.83
14,984.00	89.97	357.26	7,261.81	6,838.56	588.07	6,860.31	0.63	0.19	-0.60
15,079.00	90.46	357.04	7,261.45	6,933.44	583.34	6,954.79	0.57	0.52	-0.23
15,175.00	90.59	356.24	7,260.57	7,029.27	577.72	7,050.18	0.84	0.14	-0.83
15,270.00	90.28	359.11	7,259.85	7,124.18	573.86	7,144.75	3.04	-0.33	3.02
15,366.00	90.59	359.02	7,259.12	7,220.17	572.30	7,240.51	0.34	0.32	-0.09
15,461.00	91.03	358.49	7,257.78	7,315.13	570.23	7,335.23	0.73	0.46	-0.56
15,557.00	91.21	357.65	7,255.91	7,411.06	567.00	7,430.84	0.89	0.19	-0.88
15,652.00	91.52	357.08	7,253.64	7,505.93	562.64	7,525.34	0.68	0.33	-0.60
15,747.00	92.05	356.24	7,250.68	7,600.72	557.10	7,619.69	1.05	0.56	-0.88
15,842.00	89.66	357.96	7,249.27	7,695.58	552.30	7,714.16	3.10	-2.52	1.81
15,937.00	89.84	357.87	7,249.68	7,790.52	548.84	7,808.77	0.21	0.19	-0.09
16,033.00	90.10	357.30	7,249.73	7,886.43	544.80	7,904.32	0.65	0.27	-0.59
16,129.00	89.70	355.80	7,249.90	7,982.25	539.02	7,999.70	1.62	-0.42	-1.56
16,224.00	89.62	359.68	7,250.46	8,077.16	535.28	8,094.26	4.09	-0.08	4.08
16,320.00	89.62	359.64	7,251.10	8,173.16	534.71	8,190.09	0.04	0.00	-0.04
16,415.00	89.97	359.37	7,251.44	8,268.15	533.89	8,284.90	0.47	0.37	-0.28
16,511.00	90.59	359.46	7,250.97	8,364.14	532.90	8,380.71	0.65	0.65	0.09
16,606.00	90.90	0.43	7,249.73	8,459.14	532.81	8,475.55	1.07	0.33	1.02
16,702.00	90.77	359.94	7,248.33	8,555.12	533.12	8,571.42	0.53	-0.14	-0.51
16,797.00	90.23	359.15	7,247.51	8,650.12	532.37	8,666.23	1.01	-0.57	-0.83
16,893.00	90.37	358.84	7,247.00	8,746.10	530.69	8,761.99	0.35	0.15	-0.32
16,989.00	90.28	357.78	7,246.46	8,842.06	527.85	8,857.65	1.11	-0.09	-1.10
17,084.00	89.88	356.68	7,246.33	8,936.94	523.26	8,952.15	1.23	-0.42	-1.16
17,180.00	89.97	355.71	7,246.45	9,032.73	516.89	9,047.46	1.01	0.09	-1.01
17,275.00	89.66	354.61	7,246.76	9,127.39	508.88	9,141.55	1.20	-0.33	-1.16
Last MWD Survey @ 17275'MD									
17,358.00	89.66	354.61	7,247.25	9,210.02	501.08	9,223.64	0.00	0.00	0.00
PTB @ TD @ 17358'MD (501'FNL & 1279'FEL)									

Survey Report

Company: Extraction Oil & Gas	Local Co-ordinate Reference: Well Rinn Valley East N17-20-5N
Project: Weld County, CO (NAD83)	TVD Reference: KB=29 @ 4948.40usft (Patterson #901)
Site: Rinn Valley East Pad (Sec. 17-T2N, R68W)	MD Reference: KB=29 @ 4948.40usft (Patterson #901)
Well: Rinn Valley East N17-20-5N	North Reference: True
Wellbore: Wellbore #1	Survey Calculation Method: Minimum Curvature
Design: Wellbore #1	Database: EDM 5000.1

Design Targets									
Target Name	Dip Angle	Dip Dir.	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
- hit/miss target	(°)	(°)	(usft)	(usft)	(usft)	(usft)	(usft)		
Rinn Valley East 5N E	0.00	0.00	0.00	9,251.27	498.91	1,301,197.71	3,133,543.43	40.15920	-105.02221
- actual wellpath misses target center by 7247.37usft at 17356.27usft MD (7247.24 TVD, 9208.30 N, 501.24 E)									
- Point									

Design Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment	
		+N/-S (usft)	+E/-W (usft)		
868.00	866.85	-26.53	13.07	Tie in to Surface Surveys @ 868'MD	
954.00	951.96	-37.54	18.66	First MWD Survey @ 954'MD	
7,145.69	7,027.62	-875.39	491.87	30° Inclination @ 7145'MD	
7,203.38	7,076.29	-844.45	492.48	Enter Sect. 17 @ 7203'MD	
7,512.11	7,267.27	-607.98	496.20	70° Inclination @ 7512'MD	
12,559.79	7,290.16	4,421.03	664.28	Crossing Sect. 17/8 @ 12559'MD	
17,275.00	7,246.76	9,127.39	508.88	Last MWD Survey @ 17275'MD	
17,358.00	7,247.25	9,210.02	501.08	PTB @ TD @ 17358'MD (501'FNL & 1279'FEL)	

Checked By: _____	Approved By: _____	Date: _____
-------------------	--------------------	-------------