

Extraction Oil & Gas

Weld County, CO (NAD83)

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

Rinn Valley East N17-20-4C

Wellbore #1

Survey: MWD Surveys

Standard Survey Report

04 September, 2018

Survey Report

Company:	Extraction Oil & Gas	Local Co-ordinate Reference:	Well Rinn Valley East N17-20-4C
Project:	Weld County, CO (NAD83)	TVD Reference:	KB=29 @ 4947.10usft (Patterson #901)
Site:	Rinn Valley East Pad (Sec. 17-T2N, R68W)	MD Reference:	KB=29 @ 4947.10usft (Patterson #901)
Well:	Rinn Valley East N17-20-4C	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 N17-20-4C					
Well Position	+N/-S	0.00 usft	Northing:	1,291,971.94 usft	Latitude:	40.13388
	+E/-W	0.00 usft	Easting:	3,133,094.60 usft	Longitude:	-105.02399
Position Uncertainty		0.00 usft	Wellhead Elevation:	0.00 usft	Ground Level:	4,918.10 usft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	HDGM	9/4/2018	8.47	66.52	52,007

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	5.07	

Survey Program	Date	9/4/2018			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
72.00	17,508.00	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	0.68	302.30	72.00	0.23	-0.36	0.20	0.94	0.94	0.00	
103.00	0.86	305.93	103.00	0.46	-0.71	0.40	0.60	0.58	11.71	
133.00	0.78	287.92	132.99	0.66	-1.08	0.56	0.90	-0.27	-60.03	
164.00	0.97	300.13	163.99	0.85	-1.51	0.72	0.86	0.61	39.39	
194.00	0.88	253.55	193.99	0.92	-1.95	0.74	2.45	-0.30	-155.27	
225.00	0.57	237.29	224.98	0.77	-2.31	0.56	1.19	-1.00	-52.45	
256.00	0.57	228.58	255.98	0.58	-2.55	0.35	0.28	0.00	-28.10	
286.00	0.61	207.92	285.98	0.34	-2.74	0.10	0.72	0.13	-68.87	
347.00	0.85	205.72	346.97	-0.35	-3.09	-0.63	0.40	0.39	-3.61	

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Survey

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377.00	1.02	192.40	376.97	-0.81	-3.24	-1.10	0.92	0.57	-44.40
408.00	1.38	174.07	407.96	-1.46	-3.26	-1.74	1.68	1.16	-59.13
438.00	1.69	165.52	437.95	-2.24	-3.12	-2.51	1.28	1.03	-28.50
469.00	2.17	150.39	468.94	-3.20	-2.71	-3.42	2.25	1.55	-48.81
500.00	2.57	141.68	499.91	-4.25	-1.99	-4.41	1.73	1.29	-28.10
530.00	3.03	140.69	529.87	-5.39	-1.07	-5.47	1.54	1.53	-3.30
573.00	3.23	142.55	572.81	-7.23	0.39	-7.17	0.52	0.47	4.33
614.00	4.38	140.00	613.72	-9.35	2.09	-9.13	2.83	2.80	-6.22
656.00	5.48	140.04	655.56	-12.12	4.41	-11.68	2.62	2.62	0.10
699.00	5.84	143.06	698.35	-15.44	7.05	-14.75	1.09	0.84	7.02
742.00	7.04	141.06	741.08	-19.24	10.02	-18.27	2.84	2.79	-4.65
785.00	8.41	134.79	783.69	-23.50	13.91	-22.18	3.74	3.19	-14.58
827.00	9.10	135.52	825.20	-28.04	18.41	-26.30	1.66	1.64	1.74
868.00	9.68	132.25	865.65	-32.67	23.24	-30.48	1.92	1.41	-7.98
911.00	10.25	133.63	908.00	-37.74	28.68	-35.05	1.44	1.33	3.21
Tie in to Surface Surveys @ 911'MD									
954.00	11.05	133.61	950.26	-43.22	34.43	-40.00	1.86	1.86	-0.05
First MWD Survey @ 954'MD									
986.00	11.52	134.56	981.64	-47.58	38.93	-43.95	1.58	1.47	2.97
1,017.00	11.90	132.41	1,012.00	-51.90	43.50	-47.85	1.87	1.23	-6.94
1,049.00	12.41	134.52	1,043.28	-56.54	48.39	-52.04	2.11	1.59	6.59
1,080.00	12.31	139.20	1,073.56	-61.38	52.92	-56.46	3.25	-0.32	15.10
1,112.00	12.54	141.51	1,104.81	-66.68	57.31	-61.35	1.71	0.72	7.22
1,144.00	12.70	141.66	1,136.04	-72.16	61.65	-66.42	0.51	0.50	0.47
1,207.00	13.54	143.44	1,197.40	-83.51	70.34	-76.96	1.48	1.33	2.83
1,239.00	12.82	143.69	1,228.55	-89.38	74.68	-82.43	2.26	-2.25	0.78
1,271.00	12.68	142.09	1,259.76	-95.01	78.94	-87.66	1.19	-0.44	-5.00
1,303.00	12.81	141.20	1,290.97	-100.55	83.32	-92.79	0.74	0.41	-2.78
1,334.00	13.10	143.52	1,321.19	-106.05	87.56	-97.89	1.92	0.94	7.48
1,366.00	11.97	145.01	1,352.42	-111.69	91.62	-103.15	3.67	-3.53	4.66
1,397.00	11.66	142.47	1,382.77	-116.81	95.37	-107.91	1.95	-1.00	-8.19
1,428.00	11.48	141.88	1,413.14	-121.72	99.18	-112.47	0.69	-0.58	-1.90
1,460.00	11.98	141.78	1,444.47	-126.83	103.20	-117.20	1.56	1.56	-0.31
1,492.00	12.08	143.72	1,475.77	-132.14	107.24	-122.14	1.30	0.31	6.06
1,523.00	12.68	142.63	1,506.04	-137.46	111.23	-127.08	2.08	1.94	-3.52
1,542.00	12.91	142.42	1,524.57	-140.80	113.79	-130.18	1.24	1.21	-1.11
1,687.00	12.95	145.78	1,665.90	-167.07	132.80	-154.67	0.52	0.03	2.32
1,783.00	11.93	140.40	1,759.65	-183.61	145.18	-170.05	1.61	-1.06	-5.60
1,878.00	10.87	136.04	1,852.77	-197.63	157.65	-182.90	1.44	-1.12	-4.59
1,974.00	12.42	145.16	1,946.80	-212.62	169.84	-196.76	2.50	1.61	9.50
2,069.00	11.40	142.16	2,039.76	-228.42	181.43	-211.47	1.26	-1.07	-3.16
2,165.00	10.25	138.11	2,134.05	-242.27	192.96	-224.25	1.44	-1.20	-4.22
2,260.00	13.48	145.51	2,227.01	-257.69	204.87	-238.56	3.75	3.40	7.79
2,355.00	12.20	143.13	2,319.63	-274.85	217.17	-254.56	1.46	-1.35	-2.51

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Survey

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2,450.00	10.96	141.37	2,412.70	-289.93	228.83	-268.56	1.36	-1.31	-1.85
2,546.00	14.14	140.49	2,506.39	-306.11	241.99	-283.51	3.32	3.31	-0.92
2,641.00	12.68	138.99	2,598.80	-322.94	256.21	-299.01	1.58	-1.54	-1.58
2,737.00	11.05	136.87	2,692.75	-337.60	269.42	-312.45	1.76	-1.70	-2.21
2,833.00	14.10	138.77	2,786.43	-353.11	283.42	-326.66	3.21	3.18	1.98
2,928.00	12.33	138.51	2,878.91	-369.42	297.77	-341.63	1.86	-1.86	-0.27
3,023.00	10.38	136.26	2,972.05	-383.20	310.40	-354.24	2.10	-2.05	-2.37
3,119.00	14.67	143.84	3,065.75	-399.27	323.56	-369.08	4.78	4.47	7.90
3,214.00	12.28	143.09	3,158.13	-417.06	336.73	-385.64	2.52	-2.52	-0.79
3,310.00	10.25	144.32	3,252.27	-432.17	347.85	-399.70	2.13	-2.11	1.28
3,405.00	15.20	140.14	3,344.91	-448.60	360.77	-414.93	5.30	5.21	-4.40
3,501.00	12.86	137.18	3,438.04	-466.10	376.09	-431.01	2.55	-2.44	-3.08
3,596.00	10.83	133.53	3,531.02	-480.00	389.75	-443.65	2.28	-2.14	-3.84
3,692.00	12.51	138.77	3,625.03	-494.04	403.15	-456.44	2.07	1.75	5.46
3,787.00	10.96	136.52	3,718.05	-508.33	416.14	-469.52	1.70	-1.63	-2.37
3,883.00	13.35	146.17	3,811.90	-524.16	428.60	-484.19	3.26	2.49	10.05
3,979.00	11.98	145.56	3,905.56	-541.59	440.40	-500.51	1.43	-1.43	-0.64
4,074.00	15.86	147.58	3,997.75	-560.68	452.94	-518.42	4.12	4.08	2.13
4,169.00	14.18	143.53	4,089.50	-581.00	466.82	-537.43	2.08	-1.77	-4.26
4,264.00	11.93	142.12	4,182.04	-598.11	479.77	-553.33	2.39	-2.37	-1.48
4,360.00	10.03	139.78	4,276.28	-612.33	491.26	-566.47	2.03	-1.98	-2.44
4,455.00	11.84	142.65	4,369.55	-626.39	502.51	-579.48	1.99	1.91	3.02
4,551.00	14.01	141.24	4,463.12	-643.28	515.76	-595.14	2.28	2.26	-1.47
4,647.00	12.37	141.72	4,556.58	-660.42	529.41	-611.00	1.71	-1.71	0.50
4,742.00	10.34	142.07	4,649.72	-675.13	540.96	-624.63	2.14	-2.14	0.37
4,838.00	13.43	140.49	4,743.65	-690.53	553.35	-638.88	3.24	3.22	-1.65
4,933.00	12.46	139.87	4,836.23	-706.88	566.97	-653.96	1.03	-1.02	-0.65
5,028.00	14.45	139.87	4,928.62	-723.78	581.22	-669.53	2.09	2.09	0.00
5,124.00	12.55	136.83	5,021.96	-740.55	596.08	-684.92	2.11	-1.98	-3.17
5,219.00	14.58	141.72	5,114.31	-757.46	610.55	-700.49	2.45	2.14	5.15
5,315.00	12.20	138.95	5,207.70	-774.60	624.70	-716.30	2.57	-2.48	-2.89
5,411.00	14.49	144.45	5,301.10	-792.03	638.34	-732.45	2.72	2.39	5.73
5,506.00	11.14	138.73	5,393.73	-808.60	651.31	-747.81	3.77	-3.53	-6.02
5,602.00	13.08	134.67	5,487.59	-823.21	665.16	-761.14	2.21	2.02	-4.23
5,697.00	10.16	130.04	5,580.63	-836.16	679.22	-772.80	3.22	-3.07	-4.87
5,793.00	12.99	128.33	5,674.67	-848.30	694.17	-783.57	2.97	2.95	-1.78
5,888.00	12.73	140.09	5,767.30	-862.95	709.26	-796.83	2.76	-0.27	12.38
5,984.00	12.42	147.94	5,861.01	-879.82	721.53	-812.54	1.81	-0.32	8.18
6,079.00	15.78	142.96	5,953.14	-898.79	734.74	-830.27	3.76	3.54	-5.24
6,175.00	14.27	139.78	6,045.85	-918.25	750.24	-848.28	1.79	-1.57	-3.31
6,294.00	11.31	132.12	6,161.90	-937.28	768.37	-865.63	2.86	-2.49	-6.44
6,390.00	10.87	138.06	6,256.11	-950.32	781.40	-877.48	1.27	-0.46	6.19
6,485.00	8.93	136.57	6,349.69	-962.34	792.46	-888.47	2.06	-2.04	-1.57

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6,581.00	6.89	132.60	6,444.77	-971.65	801.82	-896.92	2.20	-2.13	-4.14
6,676.00	3.80	141.72	6,539.35	-977.98	807.97	-902.68	3.36	-3.25	9.60
6,772.00	1.10	76.59	6,635.26	-980.27	810.84	-904.70	3.63	-2.81	-67.84
6,867.00	1.33	69.05	6,730.24	-979.66	812.75	-903.93	0.29	0.24	-7.94
6,963.00	1.33	58.65	6,826.21	-978.68	814.75	-902.77	0.25	0.00	-10.83
7,058.00	3.76	5.89	6,921.12	-975.01	816.01	-899.00	3.30	2.56	-55.54
7,154.00	15.25	2.06	7,015.65	-959.21	816.79	-883.20	11.98	11.97	-3.99
7,249.00	24.17	2.06	7,104.99	-927.22	817.94	-851.23	9.39	9.39	0.00
7,332.91	30.00	2.62	7,179.67	-889.07	819.51	-813.09	6.95	6.95	0.66
30°Inclination @ 7332'MD									
7,345.00	30.84	2.68	7,190.09	-882.95	819.80	-806.97	6.95	6.95	0.53
7,361.34	32.17	1.31	7,204.02	-874.42	820.09	-798.45	9.25	8.15	-8.37
Enter Sect. 17 @ 7361'MD									
7,440.00	38.75	355.93	7,268.07	-828.86	818.82	-753.18	9.25	8.36	-6.84
7,535.00	49.18	356.20	7,336.36	-763.16	814.32	-688.13	10.98	10.98	0.28
7,631.00	56.47	358.71	7,394.33	-686.80	811.01	-612.37	7.87	7.59	2.61
7,726.00	67.12	0.52	7,439.17	-603.21	810.51	-529.15	11.33	11.21	1.91
7,786.63	70.00	1.08	7,461.33	-546.79	811.30	-472.88	4.83	4.75	0.93
70°Inclination @ 7786'MD									
7,822.00	71.68	1.40	7,472.94	-513.38	812.03	-439.54	4.83	4.75	0.90
7,917.00	85.15	2.41	7,491.97	-420.59	815.13	-346.83	14.22	14.18	1.06
8,012.00	89.09	2.98	7,496.74	-325.83	819.59	-252.05	4.19	4.15	0.60
8,108.00	89.13	1.84	7,498.24	-229.93	823.63	-156.17	1.19	0.04	-1.19
8,203.00	91.87	1.31	7,497.41	-134.98	826.24	-61.36	2.94	2.88	-0.56
8,299.00	89.62	359.46	7,496.16	-39.00	826.88	34.30	3.03	-2.34	-1.93
8,395.00	90.06	358.58	7,496.43	56.99	825.24	129.76	1.02	0.46	-0.92
8,490.00	91.12	358.53	7,495.45	151.95	822.85	224.14	1.12	1.12	-0.05
8,586.00	91.52	357.43	7,493.24	247.86	819.46	319.38	1.22	0.42	-1.15
8,682.00	89.79	357.08	7,492.14	343.74	814.87	414.48	1.84	-1.80	-0.36
8,777.00	90.32	356.15	7,492.05	438.58	809.26	508.44	1.13	0.56	-0.98
8,873.00	90.77	355.49	7,491.14	534.31	802.26	603.19	0.83	0.47	-0.69
8,968.00	90.19	358.00	7,490.34	629.15	796.87	697.17	2.71	-0.61	2.64
9,063.00	90.37	0.60	7,489.88	724.13	795.71	791.68	2.74	0.19	2.74
9,159.00	90.54	359.41	7,489.11	820.13	795.72	887.30	1.25	0.18	-1.24
9,254.00	88.95	0.78	7,489.54	915.12	795.87	981.94	2.21	-1.67	1.44
9,350.00	89.13	0.91	7,491.14	1,011.10	797.29	1,077.66	0.23	0.19	0.14
9,445.00	90.32	0.74	7,491.60	1,106.09	798.66	1,172.40	1.27	1.25	-0.18
9,541.00	90.46	1.00	7,490.95	1,202.07	800.11	1,268.14	0.31	0.15	0.27
9,636.00	90.81	0.96	7,489.89	1,297.05	801.74	1,362.89	0.37	0.37	-0.04
9,732.00	90.77	0.21	7,488.57	1,393.04	802.72	1,458.58	0.78	-0.04	-0.78
9,827.00	90.59	359.15	7,487.44	1,488.03	802.19	1,553.16	1.13	-0.19	-1.12
9,923.00	90.32	358.18	7,486.68	1,584.00	799.95	1,648.55	1.05	-0.28	-1.01
10,019.00	90.37	357.48	7,486.10	1,679.93	796.32	1,743.78	0.73	0.05	-0.73
10,114.00	91.30	1.53	7,484.72	1,774.89	795.50	1,838.30	4.37	0.98	4.26

Survey Report

Company:	Extraction Oil & Gas	Local Co-ordinate Reference:	Well Rinn Valley East N17-20-4C
Project:	Weld County, CO (NAD83)	TVD Reference:	KB=29 @ 4947.10usft (Patterson #901)
Site:	Rinn Valley East Pad (Sec. 17-T2N, R68W)	MD Reference:	KB=29 @ 4947.10usft (Patterson #901)
Well:	Rinn Valley East N17-20-4C	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)
10,209.00	90.54	0.87	7,483.19	1,869.86	797.48	1,933.07	1.06	-0.80	-0.69
10,305.00	90.77	359.86	7,482.09	1,965.85	798.10	2,028.74	1.08	0.24	-1.05
10,401.00	90.46	359.02	7,481.06	2,061.84	797.16	2,124.27	0.93	-0.32	-0.88
10,496.00	88.11	0.65	7,482.25	2,156.82	796.88	2,218.86	3.01	-2.47	1.72
10,592.00	88.16	359.02	7,485.37	2,252.77	796.61	2,314.40	1.70	0.05	-1.70
10,688.00	89.35	0.56	7,487.46	2,348.74	796.26	2,409.97	2.03	1.24	1.60
10,783.00	90.63	2.28	7,487.48	2,443.70	798.61	2,504.77	2.26	1.35	1.81
10,879.00	90.63	1.13	7,486.42	2,539.65	801.47	2,600.59	1.20	0.00	-1.20
10,974.00	91.69	0.69	7,484.50	2,634.62	802.98	2,695.32	1.21	1.12	-0.46
11,070.00	91.12	2.10	7,482.14	2,730.56	805.31	2,791.09	1.58	-0.59	1.47
11,165.00	91.47	1.13	7,480.00	2,825.50	807.99	2,885.89	1.09	0.37	-1.02
11,261.00	89.26	0.30	7,479.38	2,921.48	809.19	2,981.61	2.46	-2.30	-0.86
11,357.00	89.66	359.24	7,480.29	3,017.47	808.80	3,077.19	1.18	0.42	-1.10
11,452.00	89.88	358.80	7,480.67	3,112.46	807.18	3,171.66	0.52	0.23	-0.46
11,548.00	90.54	358.31	7,480.32	3,208.43	804.76	3,267.04	0.86	0.69	-0.51
11,643.00	91.47	357.92	7,478.65	3,303.36	801.63	3,361.32	1.06	0.98	-0.41
11,739.00	92.18	357.12	7,475.60	3,399.22	797.48	3,456.44	1.11	0.74	-0.83
11,834.00	89.09	359.37	7,474.54	3,494.15	794.57	3,550.74	4.02	-3.25	2.37
11,930.00	88.03	357.34	7,476.96	3,590.08	791.82	3,646.04	2.38	-1.10	-2.11
12,025.00	88.69	1.13	7,479.68	3,685.01	790.55	3,740.50	4.05	0.69	3.99
12,121.00	91.03	2.63	7,479.91	3,780.95	793.70	3,836.34	2.90	2.44	1.56
12,216.00	91.91	1.57	7,477.47	3,875.85	797.18	3,931.17	1.45	0.93	-1.12
12,312.00	89.53	0.52	7,476.27	3,971.82	798.93	4,026.92	2.71	-2.48	-1.09
12,407.00	90.77	0.25	7,476.02	4,066.82	799.57	4,121.60	1.34	1.31	-0.28
12,502.00	92.05	358.84	7,473.68	4,161.78	798.81	4,216.13	2.00	1.35	-1.48
12,598.00	89.44	1.44	7,472.43	4,257.75	799.05	4,311.75	3.84	-2.72	2.71
12,693.00	90.41	0.56	7,472.56	4,352.74	800.71	4,406.50	1.38	1.02	-0.93
12,734.44	90.60	0.18	7,472.19	4,394.17	800.97	4,447.80	1.02	0.46	-0.92
Crossing Sect. 17/8 @ 12734'MD									
12,789.00	90.85	359.68	7,471.50	4,448.73	800.91	4,502.14	1.02	0.46	-0.92
12,884.00	92.44	359.33	7,468.77	4,543.68	800.09	4,596.65	1.71	1.67	-0.37
12,979.00	90.90	2.90	7,466.00	4,638.61	801.94	4,691.36	4.09	-1.62	3.76
13,074.00	92.00	1.79	7,463.60	4,733.49	805.82	4,786.22	1.64	1.16	-1.17
13,170.00	91.07	2.10	7,461.03	4,829.40	809.08	4,882.04	1.02	-0.97	0.32
13,266.00	90.59	2.54	7,459.64	4,925.31	812.96	4,977.92	0.68	-0.50	0.46
13,361.00	91.43	1.44	7,457.96	5,020.24	816.26	5,072.77	1.46	0.88	-1.16
13,457.00	89.13	0.52	7,457.49	5,116.22	817.91	5,168.51	2.58	-2.40	-0.96
13,552.00	89.75	359.41	7,458.42	5,211.21	817.85	5,263.13	1.34	0.65	-1.17
13,647.00	90.59	358.53	7,458.14	5,306.19	816.14	5,357.59	1.28	0.88	-0.93
13,743.00	91.60	358.23	7,456.31	5,402.14	813.43	5,452.91	1.10	1.05	-0.31
13,838.00	90.23	1.62	7,454.79	5,497.11	813.30	5,547.50	3.85	-1.44	3.57
13,934.00	91.87	1.00	7,453.03	5,593.06	815.50	5,643.28	1.83	1.71	-0.65
14,030.00	88.78	1.75	7,452.49	5,689.02	817.80	5,739.06	3.31	-3.22	0.78
14,125.00	89.44	0.82	7,453.96	5,783.98	819.93	5,833.84	1.20	0.69	-0.98

Survey Report

Company:	Extraction Oil & Gas	Local Co-ordinate Reference:	Well Rinn Valley East N17-20-4C
Project:	Weld County, CO (NAD83)	TVD Reference:	KB=29 @ 4947.10usft (Patterson #901)
Site:	Rinn Valley East Pad (Sec. 17-T2N, R68W)	MD Reference:	KB=29 @ 4947.10usft (Patterson #901)
Well:	Rinn Valley East N17-20-4C	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)
14,221.00	90.63	359.72	7,453.90	5,879.98	820.38	5,929.50	1.69	1.24	-1.15
14,316.00	91.38	358.67	7,452.24	5,974.95	819.05	6,023.98	1.36	0.79	-1.11
14,411.00	92.49	357.52	7,449.03	6,069.84	815.89	6,118.22	1.68	1.17	-1.21
14,507.00	86.74	357.87	7,449.67	6,165.72	812.03	6,213.39	6.00	-5.99	0.36
14,602.00	89.40	359.68	7,452.87	6,260.64	810.00	6,307.75	3.39	2.80	1.91
14,698.00	90.63	359.19	7,452.85	6,356.63	809.06	6,403.28	1.38	1.28	-0.51
14,793.00	90.81	358.40	7,451.65	6,451.60	807.06	6,497.70	0.85	0.19	-0.83
14,889.00	88.47	357.17	7,452.26	6,547.52	803.35	6,592.91	2.75	-2.44	-1.28
14,984.00	89.53	1.13	7,453.92	6,642.47	801.94	6,687.37	4.31	1.12	4.17
15,080.00	91.34	1.13	7,453.19	6,738.45	803.84	6,783.14	1.89	1.89	0.00
15,175.00	92.75	0.30	7,449.80	6,833.38	805.02	6,877.80	1.72	1.48	-0.87
15,270.00	88.95	1.75	7,448.39	6,928.33	806.72	6,972.53	4.28	-4.00	1.53
15,366.00	89.97	1.13	7,449.29	7,024.29	809.13	7,068.33	1.24	1.06	-0.65
15,461.00	92.58	0.96	7,447.18	7,119.25	810.86	7,163.07	2.75	2.75	-0.18
15,557.00	90.41	2.10	7,444.67	7,215.17	813.43	7,258.84	2.55	-2.26	1.19
15,652.00	90.06	1.27	7,444.28	7,310.13	816.22	7,353.67	0.95	-0.37	-0.87
15,747.00	89.70	2.76	7,444.48	7,405.07	819.56	7,448.54	1.61	-0.38	1.57
15,843.00	89.22	1.40	7,445.39	7,501.00	823.04	7,544.40	1.50	-0.50	-1.42
15,938.00	90.06	0.65	7,445.98	7,595.98	824.74	7,639.16	1.19	0.88	-0.79
16,033.00	91.07	0.08	7,445.05	7,690.97	825.35	7,733.83	1.22	1.06	-0.60
16,129.00	89.31	359.81	7,444.73	7,786.97	825.26	7,829.44	1.85	-1.83	-0.28
16,224.00	90.46	358.89	7,444.92	7,881.96	824.18	7,923.97	1.55	1.21	-0.97
16,320.00	92.49	357.92	7,442.45	7,977.88	821.51	8,019.28	2.34	2.11	-1.01
16,416.00	91.07	1.13	7,439.47	8,073.82	820.71	8,114.77	3.65	-1.48	3.34
16,511.00	89.44	2.72	7,439.04	8,168.76	823.91	8,209.62	2.40	-1.72	1.67
16,607.00	88.42	2.85	7,440.84	8,264.63	828.57	8,305.52	1.07	-1.06	0.14
16,702.00	91.21	2.54	7,441.14	8,359.51	833.03	8,400.43	2.95	2.94	-0.33
16,798.00	89.48	2.10	7,440.57	8,455.43	836.92	8,496.31	1.86	-1.80	-0.46
16,894.00	92.14	1.75	7,439.21	8,551.35	840.15	8,592.15	2.79	2.77	-0.36
16,989.00	89.09	1.66	7,438.19	8,646.30	842.97	8,686.97	3.21	-3.21	-0.09
17,085.00	90.72	1.31	7,438.35	8,742.26	845.46	8,782.78	1.74	1.70	-0.36
17,180.00	88.82	0.21	7,438.73	8,837.24	846.72	8,877.50	2.31	-2.00	-1.16
17,275.00	90.32	359.77	7,439.44	8,932.24	846.70	8,972.12	1.65	1.58	-0.46
17,371.00	90.50	358.40	7,438.76	9,028.22	845.17	9,067.59	1.44	0.19	-1.43
Last MWD Survey @ 17371'MD									
17,508.00	90.50	358.40	7,437.56	9,165.16	841.34	9,203.66	0.00	0.00	0.00
PTB @ TD @ 17508'MD (510'FNL & 937'FEL)									

Survey Report

Company:	Extraction Oil & Gas	Local Co-ordinate Reference:	Well Rinn Valley East N17-20-4C
Project:	Weld County, CO (NAD83)	TVD Reference:	KB=29 @ 4947.10usft (Patterson #901)
Site:	Rinn Valley East Pad (Sec. 17-T2N, R68W)	MD Reference:	KB=29 @ 4947.10usft (Patterson #901)
Well:	Rinn Valley East N17-20-4C	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)		
- Shape									
Rinn Valley East 4C E	0.00	0.00	0.00	9,215.22	818.38	1,301,191.42	3,133,863.50	40.15917	-105.02106
- survey misses target center by 7437.76usft at 17508.00usft MD (7437.56 TVD, 9165.16 N, 841.34 E)									
- Point									

Survey Annotations

Measured Depth	Vertical Depth	Local Coordinates		Comment
(usft)	(usft)	+N/-S (usft)	+E/-W (usft)	
911.00	908.00	-37.74	28.68	Tie in to Surface Surveys @ 911'MD
954.00	950.26	-43.22	34.43	First MWD Survey @ 954'MD
7,332.91	7,179.67	-889.07	819.51	30°Inclination @ 7332'MD
7,361.34	7,204.02	-874.42	820.09	Enter Sect. 17 @ 7361'MD
7,786.63	7,461.33	-546.79	811.30	70°Inclination @ 7786'MD
12,734.44	7,472.19	4,394.17	800.97	Crossing Sect. 17/8 @ 12734'MD
17,371.00	7,438.76	9,028.22	845.17	Last MWD Survey @ 17371'MD
17,508.00	7,437.56	9,165.16	841.34	PTB @ TD @ 17508'MD (510'FNL & 937'FEL)

Checked By: _____ Approved By: _____ Date: _____