

Extraction Oil & Gas

Weld County, CO (NAD83)

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

Rinn Valley East N17-20-6N

Wellbore #1

Survey: Survey #1

Standard Survey Report

13 September, 2018

Survey Report

Company:	Extraction Oil & Gas	Local Co-ordinate Reference:	Well Rinn Valley East N17-20-6N
Project:	Weld County, CO (NAD83)	TVD Reference:	KB=29 @ 4950.00usft (Patterson #901)
Site:	Rinn Valley East Pad (Sec. 17-T2N, R68W)	MD Reference:	KB=29 @ 4950.00usft (Patterson #901)
Well:	Rinn Valley East N17-20-6N	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 N17-20-6N				
Well Position	+N/-S	0.00 usft	Northing:	1,291,915.84 usft	Latitude:	40.13372
	+E/-W	0.00 usft	Easting:	3,133,093.51 usft	Longitude:	-105.02399
Position Uncertainty		0.00 usft	Wellhead Elevation:	0.00 usft	Ground Level:	4,921.10 usft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	HDGM	9/13/2018	8.47	66.52	52,004

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	1.11	

Survey Program	Date	9/13/2018			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
15.00	17,363.00	Survey #1 (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	
15.00	0.00	0.00	15.00	0.00	0.00	0.00	0.00	0.00	0.00	
87.00	0.92	30.52	87.00	0.50	0.29	0.50	1.28	1.28	0.00	
118.00	0.56	25.58	117.99	0.85	0.49	0.86	1.18	-1.16	-15.94	
148.00	0.31	288.39	147.99	1.01	0.47	1.02	2.24	-0.83	-323.97	
179.00	0.59	253.05	178.99	0.99	0.24	0.99	1.23	0.90	-114.00	
209.00	0.74	250.38	208.99	0.88	-0.09	0.87	0.51	0.50	-8.90	
240.00	0.67	235.65	239.99	0.71	-0.43	0.70	0.62	-0.23	-47.52	
270.00	0.91	234.31	269.99	0.47	-0.77	0.45	0.80	0.80	-4.47	
301.00	0.74	217.01	300.98	0.17	-1.09	0.14	0.97	-0.55	-55.81	

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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)
331.00	0.49	233.08	330.98	-0.07	-1.31	-0.09	1.00	-0.83	53.57
362.00	0.16	247.63	361.98	-0.16	-1.45	-0.19	1.09	-1.06	46.94
392.00	0.04	310.90	391.98	-0.17	-1.50	-0.20	0.49	-0.40	210.90
423.00	0.09	167.49	422.98	-0.19	-1.50	-0.22	0.40	0.16	-462.61
453.00	0.45	77.98	452.98	-0.19	-1.38	-0.21	1.53	1.20	-298.37
484.00	0.51	76.74	483.98	-0.13	-1.13	-0.15	0.20	0.19	-4.00
515.00	0.36	97.32	514.98	-0.11	-0.90	-0.13	0.69	-0.48	66.39
545.00	0.44	94.80	544.98	-0.13	-0.69	-0.15	0.27	0.27	-8.40
588.00	1.20	135.58	587.97	-0.47	-0.21	-0.47	2.12	1.77	94.84
629.00	2.06	151.02	628.96	-1.42	0.45	-1.41	2.34	2.10	37.66
671.00	2.32	151.26	670.93	-2.82	1.22	-2.80	0.62	0.62	0.57
714.00	2.57	148.06	713.89	-4.41	2.15	-4.36	0.66	0.58	-7.44
757.00	2.87	159.49	756.84	-6.23	3.04	-6.17	1.44	0.70	26.58
800.00	3.44	173.08	799.77	-8.52	3.57	-8.45	2.18	1.33	31.60
842.00	3.98	176.75	841.68	-11.23	3.80	-11.15	1.40	1.29	8.74
883.00	4.50	177.89	882.57	-14.25	3.94	-14.18	1.28	1.27	2.78
Tie in to Surface Surveys @ 883'MD									
926.00	5.79	177.24	925.40	-18.11	4.11	-18.02	3.00	3.00	-1.51
First MWD Survey @ 926'MD									
969.00	6.57	171.94	968.15	-22.71	4.56	-22.62	2.25	1.81	-12.33
1,001.00	7.19	171.69	999.92	-26.50	5.11	-26.40	1.94	1.94	-0.78
1,032.00	7.46	173.53	1,030.66	-30.42	5.61	-30.31	1.15	0.87	5.94
1,095.00	8.64	167.26	1,093.04	-39.10	7.12	-38.96	2.33	1.87	-9.95
1,127.00	9.07	169.29	1,124.66	-43.93	8.12	-43.76	1.66	1.34	6.34
1,159.00	9.77	169.70	1,156.23	-49.08	9.07	-48.89	2.20	2.19	1.28
1,191.00	10.12	166.96	1,187.75	-54.49	10.19	-54.28	1.84	1.09	-8.56
1,222.00	10.44	168.60	1,218.25	-59.89	11.36	-59.66	1.40	1.03	5.29
1,254.00	10.91	168.44	1,249.70	-65.70	12.54	-65.45	1.47	1.47	-0.50
1,286.00	10.24	169.90	1,281.16	-71.47	13.65	-71.19	2.25	-2.09	4.56
1,317.00	10.30	168.48	1,311.66	-76.90	14.68	-76.60	0.84	0.19	-4.58
1,349.00	10.47	168.55	1,343.13	-82.55	15.83	-82.23	0.53	0.53	0.22
1,381.00	9.57	169.24	1,374.65	-88.01	16.91	-87.67	2.84	-2.81	2.16
1,412.00	9.23	170.57	1,405.23	-93.00	17.79	-92.63	1.30	-1.10	4.29
1,443.00	9.24	170.39	1,435.83	-97.90	18.62	-97.52	0.10	0.03	-0.58
1,475.00	9.43	170.83	1,467.40	-103.02	19.46	-102.63	0.63	0.59	1.38
1,507.00	10.12	170.74	1,498.94	-108.39	20.33	-107.97	2.16	2.16	-0.28
1,538.00	10.30	173.54	1,529.45	-113.83	21.08	-113.40	1.70	0.58	9.03
1,570.00	9.95	170.90	1,560.95	-119.40	21.84	-118.96	1.82	-1.09	-8.25
1,576.00	9.68	172.27	1,566.86	-120.41	21.99	-119.97	5.95	-4.50	22.83
1,688.00	9.37	167.55	1,677.32	-138.65	25.22	-138.13	0.75	-0.28	-4.21
1,783.00	10.56	171.87	1,770.89	-154.82	28.12	-154.24	1.48	1.25	4.55
1,879.00	9.81	168.56	1,865.37	-171.54	30.99	-170.91	0.99	-0.78	-3.45
1,974.00	11.40	172.17	1,958.75	-188.78	33.87	-188.09	1.81	1.67	3.80
2,070.00	10.47	168.61	2,053.01	-206.73	36.89	-205.97	1.20	-0.97	-3.71

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2,165.00	9.24	165.83	2,146.60	-222.58	40.46	-221.76	1.39	-1.29	-2.93
2,260.00	10.78	168.96	2,240.16	-238.70	44.03	-237.80	1.72	1.62	3.29
2,356.00	9.81	165.65	2,334.61	-255.44	47.78	-254.46	1.18	-1.01	-3.45
2,451.00	11.22	170.28	2,428.01	-272.39	51.34	-271.34	1.73	1.48	4.87
2,546.00	10.25	169.75	2,521.35	-289.81	54.41	-288.71	1.03	-1.02	-0.56
2,642.00	9.32	170.41	2,615.95	-305.88	57.22	-304.72	0.98	-0.97	0.69
2,738.00	11.45	170.81	2,710.37	-322.96	60.04	-321.74	2.22	2.22	0.42
2,833.00	10.30	170.98	2,803.67	-340.66	62.88	-339.37	1.21	-1.21	0.18
2,929.00	8.79	169.71	2,898.33	-356.35	65.53	-355.01	1.59	-1.57	-1.32
3,024.00	12.20	167.37	2,991.73	-373.29	69.03	-371.89	3.62	3.59	-2.46
3,120.00	10.47	165.12	3,085.86	-391.62	73.48	-390.13	1.86	-1.80	-2.34
3,215.00	9.15	162.88	3,179.47	-407.18	77.92	-405.60	1.45	-1.39	-2.36
3,311.00	12.46	178.43	3,273.77	-424.84	80.46	-423.20	4.57	3.45	16.20
3,406.00	10.74	178.56	3,366.83	-443.93	80.96	-442.28	1.81	-1.81	0.14
3,502.00	9.37	178.52	3,461.35	-460.69	81.39	-459.03	1.43	-1.43	-0.04
3,597.00	10.52	172.40	3,554.92	-477.02	82.73	-475.33	1.64	1.21	-6.44
3,693.00	8.97	169.62	3,649.54	-493.07	85.24	-491.33	1.69	-1.61	-2.90
3,788.00	11.80	166.71	3,742.97	-509.81	88.81	-507.99	3.03	2.98	-3.06
3,884.00	10.83	166.05	3,837.10	-528.11	93.24	-526.21	1.02	-1.01	-0.69
3,979.00	9.54	166.75	3,930.60	-544.44	97.20	-542.46	1.36	-1.36	0.74
4,074.00	8.75	167.06	4,024.40	-559.15	100.62	-557.09	0.83	-0.83	0.33
4,170.00	11.67	168.83	4,118.87	-575.79	104.13	-573.67	3.06	3.04	1.84
4,265.00	9.28	167.24	4,212.28	-592.69	107.69	-590.50	2.53	-2.52	-1.67
4,361.00	11.62	164.37	4,306.68	-609.55	112.00	-607.27	2.50	2.44	-2.99
4,456.00	10.74	165.04	4,399.87	-627.32	116.87	-624.94	0.94	-0.93	0.71
4,552.00	9.72	165.87	4,494.35	-643.82	121.15	-641.35	1.07	-1.06	0.86
4,648.00	7.78	164.86	4,589.23	-657.95	124.83	-655.41	2.03	-2.02	-1.05
4,743.00	10.52	163.85	4,683.01	-672.49	128.92	-669.87	2.89	2.88	-1.06
4,839.00	9.68	162.88	4,777.52	-688.62	133.74	-685.91	0.89	-0.88	-1.01
4,957.00	8.57	162.70	4,894.02	-706.50	139.27	-703.67	0.94	-0.94	-0.15
5,052.00	9.99	167.37	4,987.78	-721.30	143.18	-718.39	1.69	1.49	4.92
5,148.00	8.53	162.48	5,082.53	-736.21	147.14	-733.23	1.73	-1.52	-5.09
5,244.00	8.26	164.77	5,177.50	-749.66	151.10	-746.59	0.45	-0.28	2.39
5,339.00	12.11	166.80	5,270.98	-765.95	155.17	-762.80	4.07	4.05	2.14
5,435.00	9.37	162.92	5,365.30	-783.23	159.76	-779.99	2.95	-2.85	-4.04
5,531.00	9.77	174.55	5,459.97	-798.81	162.83	-795.51	2.05	0.42	12.11
5,626.00	11.80	176.49	5,553.29	-816.53	164.19	-813.20	2.17	2.14	2.04
5,722.00	9.94	165.83	5,647.57	-834.36	166.82	-830.98	2.85	-1.94	-11.10
5,817.00	9.81	181.69	5,741.18	-850.41	168.59	-846.98	2.86	-0.14	16.69
5,913.00	11.93	182.66	5,835.45	-868.49	167.89	-865.08	2.22	2.21	1.01
6,008.00	10.25	180.90	5,928.67	-886.76	167.30	-883.35	1.80	-1.77	-1.85
6,104.00	8.48	179.71	6,023.39	-902.38	167.20	-898.97	1.85	-1.84	-1.24
6,199.00	6.63	176.63	6,117.56	-914.86	167.56	-911.44	1.99	-1.95	-3.24

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6,295.00	4.86	175.70	6,213.08	-924.44	168.19	-921.02	1.85	-1.84	-0.97
6,391.00	3.49	169.80	6,308.82	-931.38	169.01	-927.93	1.49	-1.43	-6.15
6,486.00	2.30	154.20	6,403.70	-935.94	170.35	-932.47	1.49	-1.25	-16.42
6,581.00	0.62	161.73	6,498.66	-938.14	171.35	-934.65	1.78	-1.77	7.93
6,676.00	0.93	146.57	6,593.66	-939.27	171.93	-935.77	0.39	0.33	-15.96
6,772.00	1.02	110.88	6,689.64	-940.23	173.16	-936.70	0.63	0.09	-37.18
6,867.00	1.10	97.52	6,784.63	-940.65	174.85	-937.09	0.27	0.08	-14.06
6,963.00	12.42	16.79	6,879.86	-930.85	178.76	-927.22	12.80	11.79	-84.09
7,058.00	20.86	8.05	6,970.81	-904.27	184.09	-900.54	9.24	8.88	-9.20
7,131.00	30.00	7.21	7,036.67	-873.23	188.21	-869.42	12.53	12.52	-1.15
30°Inclination @ 7131'MD									
7,154.00	32.88	7.04	7,056.29	-861.32	189.70	-857.49	12.53	12.52	-0.75
7,232.31	40.81	4.56	7,118.91	-814.64	194.35	-810.73	10.31	10.13	-3.17
EL Sect.17 @ 7232'MD									
7,249.00	42.51	4.13	7,131.38	-803.58	195.19	-799.65	10.31	10.17	-2.56
7,345.00	52.67	359.64	7,196.06	-732.86	197.29	-728.90	11.13	10.58	-4.68
7,440.00	54.04	358.58	7,252.76	-656.65	196.10	-652.73	1.70	1.44	-1.12
7,535.00	63.06	358.67	7,302.27	-575.71	194.16	-571.84	9.50	9.49	0.09
7,606.79	69.99	1.15	7,330.86	-509.91	194.09	-506.06	10.16	9.66	3.45
70°Inclination @ 7606'MD									
7,631.00	72.34	1.93	7,338.67	-487.00	194.71	-483.14	10.16	9.69	3.23
7,726.00	78.39	4.53	7,362.67	-395.28	199.91	-391.34	6.90	6.37	2.74
7,822.00	86.30	0.25	7,375.45	-300.32	203.84	-296.32	9.35	8.24	-4.46
7,917.00	88.16	356.64	7,380.04	-205.49	201.27	-201.55	4.27	1.96	-3.80
8,013.00	91.16	359.28	7,380.61	-109.57	197.85	-105.72	4.16	3.13	2.75
8,108.00	88.91	359.02	7,380.55	-14.58	196.44	-10.78	2.38	-2.37	-0.27
8,204.00	88.95	358.23	7,382.35	81.37	194.14	85.11	0.82	0.04	-0.82
8,299.00	88.91	357.74	7,384.12	176.29	190.80	179.95	0.52	-0.04	-0.52
8,395.00	88.03	359.81	7,386.68	272.23	188.75	275.83	2.34	-0.92	2.16
8,491.00	90.19	0.12	7,388.18	368.22	188.69	371.80	2.27	2.25	0.32
8,586.00	89.40	359.55	7,388.52	463.21	188.41	466.77	1.03	-0.83	-0.60
8,682.00	89.04	358.80	7,389.82	559.19	187.03	562.71	0.87	-0.38	-0.78
8,777.00	91.38	1.00	7,389.47	654.18	186.87	657.67	3.38	2.46	2.32
8,873.00	90.59	0.43	7,387.82	750.16	188.06	753.66	1.01	-0.82	-0.59
8,968.00	89.75	359.95	7,387.54	845.16	188.38	848.64	1.02	-0.88	-0.51
9,064.00	89.31	359.59	7,388.33	941.15	187.99	944.61	0.59	-0.46	-0.38
9,159.00	90.90	0.12	7,388.16	1,036.15	187.75	1,039.59	1.76	1.67	0.56
9,255.00	90.59	359.37	7,386.91	1,132.14	187.33	1,135.55	0.85	-0.32	-0.78
9,350.00	89.97	359.28	7,386.44	1,227.13	186.21	1,230.50	0.66	-0.65	-0.09
9,445.00	92.05	1.00	7,384.77	1,322.11	186.44	1,325.46	2.84	2.19	1.81
9,541.00	92.05	2.50	7,381.33	1,418.00	189.37	1,421.39	1.56	0.00	1.56
9,636.00	89.70	1.80	7,379.88	1,512.91	192.93	1,516.36	2.58	-2.47	-0.74
9,732.00	89.26	2.02	7,380.75	1,608.85	196.13	1,612.35	0.51	-0.46	0.23
9,827.00	88.56	2.28	7,382.56	1,703.77	199.69	1,707.31	0.79	-0.74	0.27

Survey Report

Company:	Extraction Oil & Gas	Local Co-ordinate Reference:	Well Rinn Valley East N17-20-6N
Project:	Weld County, CO (NAD83)	TVD Reference:	KB=29 @ 4950.00usft (Patterson #901)
Site:	Rinn Valley East Pad (Sec. 17-T2N, R68W)	MD Reference:	KB=29 @ 4950.00usft (Patterson #901)
Well:	Rinn Valley East N17-20-6N	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)
9,923.00	91.52	0.74	7,382.49	1,799.72	202.22	1,803.30	3.48	3.08	-1.60
10,019.00	91.56	0.52	7,379.91	1,895.68	203.28	1,899.26	0.23	0.04	-0.23
10,114.00	91.07	0.12	7,377.73	1,990.65	203.81	1,994.22	0.67	-0.52	-0.42
10,210.00	89.66	0.12	7,377.12	2,086.65	204.01	2,090.21	1.47	-1.47	0.00
10,305.00	88.86	0.12	7,378.35	2,181.64	204.21	2,185.18	0.84	-0.84	0.00
10,401.00	91.47	358.89	7,378.07	2,277.63	203.38	2,281.14	3.01	2.72	-1.28
10,496.00	90.81	358.45	7,376.18	2,372.58	201.18	2,376.03	0.83	-0.69	-0.46
10,592.00	90.01	358.54	7,375.50	2,468.55	198.65	2,471.93	0.84	-0.83	0.09
10,688.00	91.25	358.23	7,374.44	2,564.50	195.95	2,567.81	1.33	1.29	-0.32
10,784.00	90.68	357.57	7,372.82	2,660.42	192.43	2,663.65	0.91	-0.59	-0.69
10,879.00	90.37	357.61	7,371.95	2,755.33	188.44	2,758.46	0.33	-0.33	0.04
10,974.00	89.79	356.64	7,371.82	2,850.21	183.67	2,853.23	1.19	-0.61	-1.02
11,070.00	90.90	359.20	7,371.24	2,946.14	180.19	2,949.07	2.91	1.16	2.67
11,166.00	93.59	358.98	7,367.48	3,042.04	178.66	3,044.93	2.81	2.80	-0.23
11,261.00	92.93	358.36	7,362.08	3,136.86	176.46	3,139.69	0.95	-0.69	-0.65
11,357.00	93.06	357.96	7,357.06	3,232.68	173.38	3,235.43	0.44	0.14	-0.42
11,452.00	89.75	0.47	7,354.73	3,327.62	172.09	3,330.33	4.37	-3.48	2.64
11,548.00	88.78	359.64	7,355.97	3,423.61	172.18	3,426.30	1.33	-1.01	-0.86
11,644.00	89.31	2.46	7,357.57	3,519.57	173.94	3,522.28	2.99	0.55	2.94
11,739.00	92.05	2.90	7,356.44	3,614.45	178.38	3,617.23	2.92	2.88	0.46
11,834.00	91.83	1.58	7,353.22	3,709.32	182.09	3,712.15	1.41	-0.23	-1.39
11,930.00	92.00	0.70	7,350.02	3,805.25	184.00	3,808.10	0.93	0.18	-0.92
12,025.00	92.49	0.08	7,346.29	3,900.17	184.64	3,903.02	0.83	0.52	-0.65
12,121.00	89.93	359.77	7,344.27	3,996.14	184.52	3,998.97	2.69	-2.67	-0.32
12,216.00	89.93	359.28	7,344.38	4,091.14	183.73	4,093.93	0.52	0.00	-0.52
12,312.00	91.07	358.93	7,343.55	4,187.12	182.23	4,189.87	1.24	1.19	-0.36
12,407.00	89.31	358.62	7,343.23	4,282.10	180.20	4,284.78	1.88	-1.85	-0.33
12,503.00	90.19	358.36	7,343.65	4,378.06	177.67	4,380.68	0.96	0.92	-0.27
12,569.81	90.32	357.96	7,343.35	4,444.84	175.52	4,447.40	0.63	0.19	-0.60
Crossing Sect. 17/8 @ 12569'MD									
12,598.00	90.37	357.79	7,343.18	4,473.01	174.48	4,475.55	0.63	0.19	-0.60
12,693.00	90.15	357.52	7,342.75	4,567.93	170.59	4,570.37	0.37	-0.23	-0.28
12,789.00	88.78	1.49	7,343.65	4,663.90	169.76	4,666.31	4.37	-1.43	4.14
12,884.00	88.91	1.49	7,345.57	4,758.85	172.23	4,761.29	0.14	0.14	0.00
12,979.00	87.94	1.49	7,348.18	4,853.78	174.70	4,856.25	1.02	-1.02	0.00
13,075.00	88.33	2.02	7,351.30	4,949.68	177.64	4,952.19	0.69	0.41	0.55
13,170.00	91.47	2.94	7,351.47	5,044.58	181.75	5,047.15	3.44	3.31	0.97
13,266.00	91.07	2.02	7,349.34	5,140.46	185.90	5,143.10	1.04	-0.42	-0.96
13,361.00	90.90	0.87	7,347.71	5,235.42	188.30	5,238.08	1.22	-0.18	-1.21
13,457.00	91.34	0.03	7,345.83	5,331.40	189.05	5,334.06	0.99	0.46	-0.88
13,552.00	90.63	359.42	7,344.20	5,426.38	188.60	5,429.01	0.99	-0.75	-0.64
13,648.00	89.40	0.47	7,344.17	5,522.38	188.50	5,524.99	1.68	-1.28	1.09
13,743.00	89.48	0.12	7,345.10	5,617.37	188.99	5,619.98	0.38	0.08	-0.37
13,839.00	90.68	2.81	7,344.97	5,713.33	191.45	5,715.96	3.07	1.25	2.80

Survey Report

Company:	Extraction Oil & Gas	Local Co-ordinate Reference:	Well Rinn Valley East N17-20-6N
Project:	Weld County, CO (NAD83)	TVD Reference:	KB=29 @ 4950.00usft (Patterson #901)
Site:	Rinn Valley East Pad (Sec. 17-T2N, R68W)	MD Reference:	KB=29 @ 4950.00usft (Patterson #901)
Well:	Rinn Valley East N17-20-6N	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)
13,934.00	90.46	2.11	7,344.02	5,808.24	195.52	5,810.93	0.77	-0.23	-0.74
14,030.00	90.77	1.40	7,342.99	5,904.18	198.46	5,906.92	0.81	0.32	-0.74
14,125.00	90.99	0.47	7,341.53	5,999.16	200.01	6,001.91	1.01	0.23	-0.98
14,221.00	89.44	3.12	7,341.17	6,095.10	203.02	6,097.89	3.20	-1.61	2.76
14,316.00	89.66	2.55	7,341.92	6,189.98	207.72	6,192.84	0.64	0.23	-0.60
14,411.00	90.06	1.44	7,342.15	6,284.92	211.03	6,287.83	1.24	0.42	-1.17
14,507.00	90.50	0.83	7,341.68	6,380.90	212.93	6,383.83	0.78	0.46	-0.64
14,602.00	90.46	359.77	7,340.88	6,475.89	213.43	6,478.81	1.12	-0.04	-1.12
14,698.00	91.38	358.84	7,339.34	6,571.87	212.26	6,574.75	1.36	0.96	-0.97
14,793.00	89.79	0.17	7,338.37	6,666.86	211.44	6,669.70	2.18	-1.67	1.40
14,889.00	91.03	359.37	7,337.69	6,762.85	211.06	6,765.67	1.54	1.29	-0.83
14,984.00	91.56	359.28	7,335.54	6,857.82	209.94	6,860.60	0.57	0.56	-0.09
15,080.00	88.16	0.34	7,335.77	6,953.81	209.62	6,956.56	3.71	-3.54	1.10
15,175.00	88.16	0.03	7,338.82	7,048.76	209.93	7,051.50	0.33	0.00	-0.33
15,271.00	89.97	0.08	7,340.39	7,144.74	210.02	7,147.47	1.89	1.89	0.05
15,366.00	90.23	359.90	7,340.22	7,239.74	210.00	7,242.45	0.33	0.27	-0.19
15,461.00	91.47	359.46	7,338.81	7,334.72	209.47	7,337.40	1.38	1.31	-0.46
15,557.00	92.22	358.89	7,335.72	7,430.66	208.09	7,433.30	0.98	0.78	-0.59
15,652.00	90.10	359.73	7,333.80	7,525.63	206.95	7,528.23	2.40	-2.23	0.88
15,748.00	90.46	359.64	7,333.33	7,621.63	206.42	7,624.20	0.39	0.38	-0.09
15,843.00	91.60	359.42	7,331.62	7,716.61	205.64	7,719.14	1.22	1.20	-0.23
15,938.00	88.78	358.40	7,331.31	7,811.58	203.83	7,814.06	3.16	-2.97	-1.07
16,033.00	88.42	357.96	7,333.63	7,906.50	200.82	7,908.91	0.60	-0.38	-0.46
16,129.00	89.22	357.96	7,335.61	8,002.42	197.40	8,004.74	0.83	0.83	0.00
16,224.00	88.51	357.70	7,337.49	8,097.33	193.80	8,099.57	0.80	-0.75	-0.27
16,320.00	90.32	358.10	7,338.47	8,193.26	190.29	8,195.41	1.93	1.89	0.42
16,416.00	90.81	356.99	7,337.52	8,289.17	186.17	8,291.22	1.26	0.51	-1.16
16,511.00	91.07	356.51	7,335.96	8,384.00	180.79	8,385.93	0.57	0.27	-0.51
16,607.00	92.09	356.29	7,333.32	8,479.77	174.76	8,481.57	1.09	1.06	-0.23
16,702.00	90.63	0.96	7,331.06	8,574.69	172.49	8,576.42	5.15	-1.54	4.92
16,798.00	90.90	1.18	7,329.78	8,670.66	174.28	8,672.41	0.36	0.28	0.23
16,894.00	91.12	1.09	7,328.09	8,766.63	176.18	8,768.40	0.25	0.23	-0.09
16,989.00	91.16	1.31	7,326.20	8,861.59	178.17	8,863.38	0.24	0.04	0.23
17,085.00	90.41	0.83	7,324.88	8,957.56	179.96	8,959.37	0.93	-0.78	-0.50
17,181.00	90.77	0.92	7,323.89	9,053.55	181.43	9,055.36	0.39	0.38	0.09
17,276.00	90.59	1.84	7,322.77	9,148.51	183.71	9,150.35	0.99	-0.19	0.97
Last MWD Survey @ 17276'MD									
17,363.00	90.59	1.84	7,321.87	9,235.46	186.51	9,237.34	0.00	0.00	0.00
PTB @ TD @ 17363'MD (512'FNL & 1594'FEL)									

Survey Report

Company:	Extraction Oil & Gas	Local Co-ordinate Reference:	Well Rinn Valley East N17-20-6N
Project:	Weld County, CO (NAD83)	TVD Reference:	KB=29 @ 4950.00usft (Patterson #901)
Site:	Rinn Valley East Pad (Sec. 17-T2N, R68W)	MD Reference:	KB=29 @ 4950.00usft (Patterson #901)
Well:	Rinn Valley East N17-20-6N	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 6N E	0.00	0.00	0.00	9,287.33	179.72	1,301,204.00	3,133,223.37	40.15922	-105.02335
- survey misses target center by 7322.06usft at 17363.00usft MD (7321.87 TVD, 9235.46 N, 186.51 E)									
- Point									

Survey Annotations

Measured Depth	Vertical Depth	Local Coordinates		Comment
(usft)	(usft)	+N/-S (usft)	+E/-W (usft)	
883.00	882.57	-14.25	3.94	Tie in to Surface Surveys @ 883'MD
926.00	925.40	-18.11	4.11	First MWD Survey @ 926'MD
7,131.00	7,036.67	-873.23	188.21	30°Inclination @ 7131'MD
7,232.31	7,118.91	-814.64	194.35	EL Sect.17 @ 7232'MD
7,606.79	7,330.86	-509.91	194.09	70°Inclination @ 7606'MD
12,569.81	7,343.35	4,444.84	175.52	Crossing Sect. 17/8 @ 12569'MD
17,276.00	7,322.77	9,148.51	183.71	Last MWD Survey @ 17276'MD
17,363.00	7,321.87	9,235.46	186.51	PTB @ TD @ 17363'MD (512'FNL & 1594'FEL)

Checked By: _____ Approved By: _____ Date: _____