

Extraction Oil & Gas

Weld County, CO (NAD83)

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

Rinn Valley East N17-20-1C

Wellbore #1

Design: Wellbore #1

Standard Survey Report

24 August, 2018

Survey Report

Company: Extraction Oil & Gas	Local Co-ordinate Reference: Well Rinn Valley East N17-20-1C
Project: Weld County, CO (NAD83)	TVD Reference: KB=29 @ 4943.90ft (Patterson #901)
Site: Rinn Valley East Pad (Sec. 17-T2N, R68W)	MD Reference: KB=29 @ 4943.90ft (Patterson #901)
Well: Rinn Valley East N17-20-1C	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 ft	Slot Radius: 13-3/16 "	Grid Convergence: 0.31 °

Well Rinn Valley East N17-20-1C			
Well Position	+N/-S 0.00 ft	Northing: 1,292,056.11 usft	Latitude: 40.13411
	+E/-W 0.00 ft	Easting: 3,133,096.11 usft	Longitude: -105.02398
Position Uncertainty	0.00 ft	Wellhead Elevation: 0.00 ft	Ground Level: 4,914.90 ft

Wellbore Wellbore #1					
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	HDGM	8/23/2018	8.47	66.52	52,011

Design Wellbore #1					
Audit Notes:					
Version: 1.0	Phase: ACTUAL	Tie On Depth: 0.00			
Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)	
	0.00	0.00	0.00	9.82	

Survey Program		Date 8/24/2018		
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
78.00	1,025.00	Surface Surveys (Wellbore #1)	MWD	MWD - Standard
1,067.00	17,608.00	MWD Surveys (Wellbore #1)	MWD	MWD - Standard

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)	
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
78.00	0.59	335.99	78.00	0.37	-0.16	0.33	0.76	0.76	0.00	
109.00	0.44	257.79	109.00	0.49	-0.34	0.42	2.13	-0.48	-252.26	
140.00	0.92	161.21	140.00	0.23	-0.38	0.16	3.43	1.55	-311.55	
182.00	1.46	148.48	181.99	-0.55	0.01	-0.54	1.42	1.29	-30.31	
221.00	1.81	133.19	220.97	-1.39	0.72	-1.25	1.43	0.90	-39.21	
266.00	2.88	132.56	265.93	-2.64	2.07	-2.25	2.38	2.38	-1.40	
307.00	3.92	127.93	306.86	-4.20	3.93	-3.47	2.62	2.54	-11.29	
350.00	5.21	124.45	349.72	-6.21	6.70	-4.98	3.07	3.00	-8.09	
393.00	6.37	128.17	392.50	-8.79	10.19	-6.92	2.83	2.70	8.65	

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Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	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)
435.00	7.28	126.52	434.21	-11.81	14.16	-9.23	2.22	2.17	-3.93
477.00	8.45	121.67	475.81	-15.02	18.92	-11.57	3.20	2.79	-11.55
520.00	8.65	124.56	518.33	-18.51	24.27	-14.10	1.10	0.47	6.72
562.00	9.24	123.88	559.82	-22.18	29.67	-16.80	1.43	1.40	-1.62
604.00	10.38	127.97	601.21	-26.39	35.46	-19.96	3.18	2.71	9.74
647.00	10.60	128.55	643.49	-31.24	41.60	-23.68	0.57	0.51	1.35
687.00	10.94	125.64	682.78	-35.74	47.57	-27.11	1.60	0.85	-7.28
729.00	11.73	126.55	723.96	-40.60	54.24	-30.76	1.93	1.88	2.17
771.00	12.47	123.34	765.03	-45.64	61.45	-34.49	2.38	1.76	-7.64
813.00	13.34	123.50	805.97	-50.81	69.28	-38.25	2.07	2.07	0.38
855.00	14.76	124.31	846.71	-56.50	77.74	-42.41	3.41	3.38	1.93
897.00	15.77	125.95	887.23	-62.86	86.78	-47.14	2.62	2.40	3.90
939.00	16.74	128.27	927.55	-69.96	96.15	-52.54	2.78	2.31	5.52
982.00	17.50	130.27	968.65	-77.97	105.95	-58.77	2.24	1.77	4.65
1,025.00	17.91	129.30	1,009.61	-86.34	116.00	-65.30	1.17	0.95	-2.26
Tie in to Surface Surveys @ 1025'MD									
1,067.00	17.69	129.50	1,049.60	-94.49	125.92	-71.63	0.54	-0.52	0.48
First MWD Survey @ 1067'MD									
1,109.00	17.38	128.36	1,089.65	-102.44	135.76	-77.79	1.10	-0.74	-2.71
1,151.00	16.88	125.79	1,129.78	-109.90	145.63	-83.46	2.16	-1.19	-6.12
1,193.00	16.87	124.77	1,169.98	-116.94	155.58	-88.70	0.71	-0.02	-2.43
1,236.00	16.63	123.25	1,211.15	-123.87	165.85	-93.78	1.16	-0.56	-3.53
1,278.00	16.83	125.12	1,251.37	-130.66	175.85	-98.77	1.37	0.48	4.45
1,318.00	16.92	124.19	1,289.65	-137.27	185.40	-103.64	0.71	0.23	-2.33
1,360.00	17.02	120.85	1,329.82	-143.85	195.74	-108.37	2.33	0.24	-7.95
1,403.00	17.27	122.25	1,370.91	-150.48	206.54	-113.07	1.12	0.58	3.26
1,446.00	18.06	122.17	1,411.89	-157.44	217.58	-118.04	1.84	1.84	-0.19
1,488.00	18.60	123.19	1,451.75	-164.57	228.70	-123.17	1.50	1.29	2.43
1,529.00	18.80	123.04	1,490.59	-171.75	239.71	-128.37	0.50	0.49	-0.37
1,571.00	18.37	125.13	1,530.40	-179.25	250.79	-133.86	1.89	-1.02	4.98
1,593.00	18.13	124.61	1,551.29	-183.19	256.44	-136.78	1.32	-1.09	-2.36
1,680.00	17.85	123.17	1,634.04	-198.17	278.75	-147.74	0.60	-0.32	-1.66
1,776.00	19.09	119.25	1,725.10	-213.89	304.76	-158.80	1.83	1.29	-4.08
1,871.00	17.32	115.11	1,815.34	-227.48	331.13	-167.70	2.31	-1.86	-4.36
1,967.00	17.90	121.81	1,906.85	-241.33	356.61	-176.99	2.19	0.60	6.98
2,062.00	20.06	127.27	1,996.69	-258.89	381.98	-189.97	2.94	2.27	5.75
2,158.00	18.16	124.93	2,087.40	-277.43	407.35	-203.91	2.13	-1.98	-2.44
2,253.00	19.13	128.64	2,177.41	-295.62	431.65	-217.70	1.61	1.02	3.91
2,348.00	17.10	127.18	2,267.70	-313.78	454.94	-231.62	2.19	-2.14	-1.54
2,444.00	18.56	127.00	2,359.09	-331.51	478.39	-245.09	1.52	1.52	-0.19
2,539.00	16.92	125.20	2,449.57	-348.58	501.77	-257.92	1.82	-1.73	-1.89
2,635.00	19.13	123.70	2,540.85	-365.36	526.27	-270.28	2.35	2.30	-1.56
2,730.00	17.10	122.55	2,631.14	-381.51	551.00	-281.98	2.17	-2.14	-1.21

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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)
2,826.00	19.09	117.88	2,722.39	-396.45	576.78	-292.30	2.56	2.07	-4.86
2,921.00	18.91	123.13	2,812.22	-412.12	603.40	-303.21	1.81	-0.19	5.53
3,017.00	17.01	120.79	2,903.54	-427.81	628.49	-314.39	2.12	-1.98	-2.44
3,112.00	20.02	125.11	2,993.62	-444.28	653.74	-326.31	3.48	3.17	4.55
3,208.00	17.50	122.03	3,084.51	-461.39	679.43	-338.79	2.82	-2.63	-3.21
3,303.00	20.24	123.88	3,174.40	-478.13	705.18	-350.90	2.95	2.88	1.95
3,399.00	17.94	124.58	3,265.11	-495.78	731.15	-363.86	2.41	-2.40	0.73
3,494.00	21.12	125.11	3,354.63	-513.93	757.20	-377.30	3.35	3.35	0.56
3,590.00	18.03	123.92	3,445.08	-532.17	783.69	-390.76	3.25	-3.22	-1.24
3,685.00	20.72	125.73	3,534.69	-550.19	809.54	-404.11	2.90	2.83	1.91
3,781.00	17.94	123.22	3,625.27	-568.21	835.70	-417.41	3.02	-2.90	-2.61
3,876.00	21.17	125.20	3,714.78	-586.12	861.96	-430.57	3.47	3.40	2.08
3,972.00	19.05	124.85	3,804.92	-605.07	888.99	-444.63	2.21	-2.21	-0.36
4,067.00	17.23	124.41	3,895.20	-621.88	913.32	-457.05	1.92	-1.92	-0.46
4,162.00	19.58	123.70	3,985.33	-638.66	938.18	-469.35	2.48	2.47	-0.75
4,258.00	17.28	122.82	4,076.40	-655.32	963.55	-481.44	2.41	-2.40	-0.92
4,353.00	18.07	125.37	4,166.92	-671.49	987.42	-493.30	1.16	0.83	2.68
4,449.00	15.60	124.27	4,258.80	-687.38	1,010.23	-505.07	2.59	-2.57	-1.15
4,544.00	18.91	125.82	4,349.51	-703.59	1,033.28	-517.11	3.52	3.48	1.63
4,640.00	18.07	126.78	4,440.55	-721.60	1,057.82	-530.68	0.93	-0.88	1.00
4,736.00	16.26	125.37	4,532.27	-738.30	1,080.70	-543.23	1.93	-1.89	-1.47
4,831.00	19.49	126.52	4,622.67	-755.43	1,104.29	-556.09	3.42	3.40	1.21
4,926.00	17.59	125.90	4,712.74	-773.28	1,128.66	-569.52	2.01	-2.00	-0.65
5,021.00	20.06	121.85	4,802.66	-790.30	1,154.13	-581.95	2.94	2.60	-4.26
5,117.00	18.47	121.72	4,893.28	-806.98	1,181.05	-593.79	1.66	-1.66	-0.14
5,213.00	16.35	120.44	4,984.87	-821.82	1,205.64	-604.23	2.24	-2.21	-1.33
5,308.00	17.85	125.42	5,075.68	-837.04	1,229.04	-615.23	2.21	1.58	5.24
5,404.00	15.29	123.22	5,167.68	-852.50	1,251.62	-626.61	2.75	-2.67	-2.29
5,499.00	18.52	124.67	5,258.57	-867.95	1,274.52	-637.93	3.43	3.40	1.53
5,595.00	15.86	123.83	5,350.27	-883.93	1,297.96	-649.68	2.78	-2.77	-0.88
5,690.00	18.07	127.05	5,441.13	-900.03	1,320.51	-661.71	2.53	2.33	3.39
5,786.00	20.19	123.13	5,531.83	-918.06	1,346.27	-675.08	2.58	2.21	-4.08
5,881.00	16.53	121.01	5,621.98	-933.99	1,371.59	-686.45	3.92	-3.85	-2.23
6,000.00	19.44	123.30	5,735.15	-953.58	1,402.66	-700.46	2.52	2.45	1.92
6,096.00	16.70	120.70	5,826.41	-969.40	1,427.87	-711.75	2.97	-2.85	-2.71
6,191.00	17.72	121.19	5,917.16	-983.85	1,451.98	-721.88	1.08	1.07	0.52
6,287.00	18.16	126.26	6,008.50	-1,000.27	1,476.54	-733.87	1.69	0.46	5.28
6,383.00	15.33	120.88	6,100.42	-1,015.63	1,499.50	-745.09	3.36	-2.95	-5.60
6,478.00	16.35	127.58	6,191.82	-1,030.23	1,520.88	-755.83	2.20	1.07	7.05
6,574.00	12.99	123.44	6,284.68	-1,044.42	1,540.60	-766.45	3.66	-3.50	-4.31
6,669.00	10.61	120.22	6,377.67	-1,054.71	1,557.07	-773.78	2.60	-2.51	-3.39
6,764.00	8.84	116.96	6,471.30	-1,062.42	1,571.14	-778.98	1.95	-1.86	-3.43
6,860.00	4.07	126.12	6,566.66	-1,067.78	1,580.47	-782.67	5.07	-4.97	9.54
6,956.00	1.19	156.49	6,662.56	-1,070.70	1,583.62	-785.01	3.23	-3.00	31.64

Survey Report

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7,051.00	1.24	154.81	6,757.53	-1,072.53	1,584.45	-786.68	0.06	0.05	-1.77
7,147.00	1.86	12.34	6,853.52	-1,071.95	1,585.23	-785.97	3.06	0.65	-148.41
7,242.00	13.30	352.67	6,947.54	-1,059.56	1,584.16	-773.95	12.17	12.04	-20.71
7,337.00	19.44	359.02	7,038.65	-1,032.89	1,582.49	-747.95	6.72	6.46	6.68
7,433.00	28.24	359.95	7,126.38	-994.13	1,582.19	-709.81	9.17	9.17	0.97
7,453.57	30.00	0.00	7,144.34	-984.12	1,582.19	-699.95	8.56	8.56	0.28
30°Inc. @ 7453'MD									
7,493.64	33.43	0.10	7,178.43	-963.06	1,582.21	-679.19	8.56	8.56	0.24
Enter Sect. 17 @ 7493'MD									
7,528.00	36.37	0.17	7,206.60	-943.40	1,582.26	-659.81	8.56	8.56	0.20
7,624.00	46.97	2.41	7,278.22	-879.70	1,583.82	-596.77	11.15	11.04	2.33
7,719.00	52.98	359.81	7,339.29	-807.01	1,585.15	-524.92	6.66	6.33	-2.74
7,815.00	58.15	357.26	7,393.56	-727.89	1,583.07	-447.32	5.81	5.39	-2.66
7,910.00	66.55	0.25	7,437.62	-643.85	1,581.32	-364.80	9.27	8.84	3.15
7,951.65	70.00	0.51	7,453.03	-605.17	1,581.58	-326.64	8.30	8.28	0.63
70°Inc. @ 7951'MD									
8,005.00	74.42	0.83	7,469.33	-554.38	1,582.17	-276.50	8.30	8.28	0.60
8,101.00	83.96	1.97	7,487.31	-460.22	1,584.49	-183.33	10.01	9.94	1.19
8,196.00	89.44	1.36	7,492.78	-365.46	1,587.24	-89.48	5.80	5.77	-0.64
8,292.00	90.77	1.49	7,492.60	-269.49	1,589.62	5.49	1.39	1.39	0.14
8,388.00	90.19	358.62	7,491.80	-173.50	1,589.71	100.08	3.05	-0.60	-2.99
8,483.00	90.41	358.76	7,491.30	-78.53	1,587.53	193.29	0.27	0.23	0.15
8,579.00	89.93	358.45	7,491.02	17.44	1,585.19	287.46	0.60	-0.50	-0.32
8,674.00	90.19	357.83	7,490.92	112.39	1,582.10	380.49	0.71	0.27	-0.65
8,770.00	89.93	358.14	7,490.82	208.33	1,578.72	474.45	0.42	-0.27	0.32
8,866.00	90.41	358.45	7,490.53	304.29	1,575.86	568.52	0.60	0.50	0.32
8,961.00	90.94	358.18	7,489.41	399.24	1,573.06	661.60	0.63	0.56	-0.28
9,056.00	88.64	359.06	7,489.76	494.20	1,570.77	754.78	2.59	-2.42	0.93
9,152.00	91.16	0.61	7,489.93	590.19	1,570.49	849.32	3.08	2.63	1.61
9,247.00	88.95	359.95	7,489.84	685.18	1,570.95	943.00	2.43	-2.33	-0.69
9,343.00	89.00	359.72	7,491.56	781.17	1,570.67	1,037.53	0.25	0.05	-0.24
9,438.00	89.22	359.86	7,493.03	876.16	1,570.32	1,131.07	0.27	0.23	0.15
9,534.00	91.43	359.33	7,492.49	972.14	1,569.64	1,225.54	2.37	2.30	-0.55
9,629.00	91.87	0.08	7,489.75	1,067.10	1,569.14	1,319.02	0.92	0.46	0.79
9,725.00	92.09	359.72	7,486.43	1,163.05	1,568.97	1,413.53	0.44	0.23	-0.38
9,820.00	91.34	1.75	7,483.59	1,257.99	1,570.19	1,507.29	2.28	-0.79	2.14
9,916.00	91.87	0.69	7,480.90	1,353.93	1,572.23	1,602.17	1.23	0.55	-1.10
10,011.00	89.62	1.53	7,479.67	1,448.90	1,574.06	1,696.06	2.53	-2.37	0.88
10,107.00	90.59	2.10	7,479.49	1,544.85	1,577.10	1,791.12	1.17	1.01	0.59
10,202.00	90.50	1.36	7,478.59	1,639.80	1,579.96	1,885.17	0.78	-0.09	-0.78
10,298.00	91.21	0.65	7,477.15	1,735.77	1,581.64	1,980.03	1.05	0.74	-0.74
10,393.00	89.75	0.21	7,476.36	1,830.76	1,582.35	2,073.75	1.61	-1.54	-0.46
10,489.00	90.23	359.95	7,476.38	1,926.76	1,582.48	2,168.36	0.57	0.50	-0.27

Survey Report

Company:	Extraction Oil & Gas	Local Co-ordinate Reference:	Well Rinn Valley East N17-20-1C
Project:	Weld County, CO (NAD83)	TVD Reference:	KB=29 @ 4943.90ft (Patterson #901)
Site:	Rinn Valley East Pad (Sec. 17-T2N, R68W)	MD Reference:	KB=29 @ 4943.90ft (Patterson #901)
Well:	Rinn Valley East N17-20-1C	North Reference:	True
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	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)
10,585.00	90.15	359.86	7,476.06	2,022.76	1,582.32	2,262.93	0.13	-0.08	-0.09
10,681.00	90.63	359.46	7,475.40	2,118.76	1,581.74	2,357.42	0.65	0.50	-0.42
10,776.00	90.90	358.84	7,474.14	2,213.74	1,580.33	2,450.77	0.71	0.28	-0.65
10,872.00	90.19	0.30	7,473.22	2,309.73	1,579.61	2,545.23	1.69	-0.74	1.52
10,967.00	91.12	0.34	7,472.14	2,404.72	1,580.13	2,638.92	0.98	0.98	0.04
11,063.00	88.91	359.46	7,472.11	2,500.71	1,579.96	2,733.48	2.48	-2.30	-0.92
11,158.00	90.10	359.90	7,472.93	2,595.70	1,579.43	2,826.99	1.34	1.25	0.46
11,254.00	91.52	359.64	7,471.57	2,691.69	1,579.04	2,921.51	1.50	1.48	-0.27
11,350.00	91.12	0.87	7,469.36	2,787.66	1,579.46	3,016.14	1.35	-0.42	1.28
11,445.00	88.86	1.49	7,469.38	2,882.64	1,581.41	3,110.06	2.47	-2.38	0.65
11,541.00	88.95	1.31	7,471.21	2,978.59	1,583.75	3,205.01	0.21	0.09	-0.19
11,636.00	89.62	1.27	7,472.40	3,073.56	1,585.89	3,298.95	0.71	0.71	-0.04
11,732.00	90.72	1.36	7,472.11	3,169.53	1,588.09	3,393.89	1.15	1.15	0.09
11,827.00	91.60	1.00	7,470.19	3,264.49	1,590.04	3,487.79	1.00	0.93	-0.38
11,923.00	91.21	1.36	7,467.84	3,360.44	1,592.01	3,582.68	0.55	-0.41	0.38
12,018.00	88.82	1.75	7,467.81	3,455.40	1,594.59	3,676.68	2.55	-2.52	0.41
12,113.00	88.69	2.24	7,469.88	3,550.32	1,597.89	3,770.78	0.53	-0.14	0.52
12,209.00	88.51	1.71	7,472.22	3,646.23	1,601.19	3,865.85	0.58	-0.19	-0.55
12,304.00	89.13	1.31	7,474.18	3,741.18	1,603.69	3,959.83	0.78	0.65	-0.42
12,400.00	90.50	1.93	7,474.49	3,837.14	1,606.40	4,054.85	1.57	1.43	0.65
12,495.00	90.90	1.00	7,473.33	3,932.10	1,608.82	4,148.83	1.07	0.42	-0.98
12,591.00	91.12	0.34	7,471.64	4,028.08	1,609.94	4,243.59	0.72	0.23	-0.69
12,686.00	92.62	0.56	7,468.54	4,123.02	1,610.68	4,337.27	1.60	1.58	0.23
12,782.00	92.80	0.83	7,464.00	4,218.91	1,611.84	4,431.95	0.34	0.19	0.28
12,877.00	90.41	359.99	7,461.34	4,313.86	1,612.52	4,525.63	2.67	-2.52	-0.88
12,880.22	90.41	359.98	7,461.31	4,317.08	1,612.52	4,528.80	0.23	-0.14	-0.19
Crossing Section 17/8 @ 12880'MD									
12,972.00	90.28	359.81	7,460.76	4,408.86	1,612.35	4,619.21	0.23	-0.14	-0.19
13,067.00	91.21	359.68	7,459.53	4,503.85	1,611.92	4,712.73	0.99	0.98	-0.14
13,163.00	89.31	359.33	7,459.09	4,599.84	1,611.09	4,807.18	2.01	-1.98	-0.36
13,258.00	90.46	359.50	7,459.28	4,694.83	1,610.11	4,900.61	1.22	1.21	0.18
13,354.00	91.47	359.86	7,457.67	4,790.81	1,609.57	4,995.10	1.12	1.05	0.38
13,450.00	87.63	0.12	7,458.42	4,886.79	1,609.55	5,089.67	4.01	-4.00	0.27
13,545.00	88.91	359.81	7,461.29	4,981.75	1,609.49	5,183.22	1.39	1.35	-0.33
13,640.00	90.23	359.24	7,462.00	5,076.74	1,608.70	5,276.69	1.51	1.39	-0.60
13,736.00	91.12	359.06	7,460.87	5,172.72	1,607.27	5,371.02	0.95	0.93	-0.19
13,831.00	91.96	359.50	7,458.32	5,267.68	1,606.07	5,464.38	1.00	0.88	0.46
13,927.00	91.38	358.93	7,455.52	5,363.63	1,604.76	5,558.70	0.85	-0.60	-0.59
14,023.00	92.09	358.84	7,452.61	5,459.56	1,602.88	5,652.92	0.75	0.74	-0.09
14,118.00	92.36	358.67	7,448.93	5,554.47	1,600.82	5,746.08	0.34	0.28	-0.18
14,214.00	90.23	357.57	7,446.76	5,650.39	1,597.67	5,840.05	2.50	-2.22	-1.15
14,309.00	91.74	357.61	7,445.12	5,745.29	1,593.67	5,932.88	1.59	1.59	0.04
14,404.00	91.47	358.31	7,442.46	5,840.19	1,590.28	6,025.82	0.79	-0.28	0.74
14,500.00	89.44	359.95	7,441.70	5,936.17	1,588.82	6,120.14	2.72	-2.11	1.71

Survey Report

Company:	Extraction Oil & Gas	Local Co-ordinate Reference:	Well Rinn Valley East N17-20-1C
Project:	Weld County, CO (NAD83)	TVD Reference:	KB=29 @ 4943.90ft (Patterson #901)
Site:	Rinn Valley East Pad (Sec. 17-T2N, R68W)	MD Reference:	KB=29 @ 4943.90ft (Patterson #901)
Well:	Rinn Valley East N17-20-1C	North Reference:	True
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	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)
14,595.00	90.50	359.81	7,441.75	6,031.16	1,588.62	6,213.71	1.13	1.12	-0.15
14,691.00	91.25	359.28	7,440.28	6,127.15	1,587.85	6,308.16	0.96	0.78	-0.55
14,786.00	87.94	0.25	7,440.96	6,222.13	1,587.46	6,401.69	3.63	-3.48	1.02
14,882.00	88.64	0.17	7,443.82	6,318.09	1,587.81	6,496.30	0.73	0.73	-0.08
14,977.00	89.70	359.90	7,445.20	6,413.08	1,587.86	6,589.90	1.15	1.12	-0.28
15,073.00	90.41	358.80	7,445.10	6,509.07	1,586.77	6,684.30	1.36	0.74	-1.15
15,168.00	91.65	358.76	7,443.40	6,604.03	1,584.74	6,777.53	1.31	1.31	-0.04
15,263.00	91.30	0.87	7,440.95	6,698.99	1,584.43	6,871.05	2.25	-0.37	2.22
15,359.00	90.32	2.10	7,439.59	6,794.95	1,586.91	6,966.02	1.64	-1.02	1.28
15,454.00	91.07	1.31	7,438.44	6,889.90	1,589.74	7,060.06	1.15	0.79	-0.83
15,550.00	89.75	2.59	7,437.75	6,985.83	1,593.00	7,155.15	1.92	-1.38	1.33
15,645.00	91.03	2.02	7,437.11	7,080.75	1,596.82	7,249.33	1.47	1.35	-0.60
15,740.00	92.80	2.32	7,433.93	7,175.63	1,600.41	7,343.43	1.89	1.86	0.32
15,835.00	90.10	2.15	7,431.53	7,270.52	1,604.11	7,437.56	2.85	-2.84	-0.18
15,931.00	90.59	1.00	7,430.95	7,366.48	1,606.74	7,532.56	1.30	0.51	-1.20
16,026.00	89.88	359.55	7,430.56	7,461.47	1,607.19	7,626.24	1.70	-0.75	-1.53
16,122.00	88.91	358.84	7,431.58	7,557.45	1,605.84	7,720.59	1.25	-1.01	-0.74
16,217.00	90.06	358.05	7,432.43	7,652.41	1,603.26	7,813.72	1.47	1.21	-0.83
16,313.00	91.03	0.61	7,431.52	7,748.39	1,602.13	7,908.10	2.85	1.01	2.67
16,409.00	91.65	359.95	7,429.27	7,844.36	1,602.60	8,002.75	0.94	0.65	-0.69
16,504.00	90.94	0.08	7,427.12	7,939.34	1,602.62	8,096.34	0.76	-0.75	0.14
16,600.00	91.03	359.42	7,425.47	8,035.32	1,602.19	8,190.84	0.69	0.09	-0.69
16,695.00	90.72	358.40	7,424.02	8,130.29	1,600.38	8,284.11	1.12	-0.33	-1.07
16,791.00	88.38	359.42	7,424.78	8,226.27	1,598.55	8,378.37	2.66	-2.44	1.06
16,886.00	89.93	358.71	7,426.18	8,321.24	1,597.00	8,471.69	1.79	1.63	-0.75
16,982.00	90.01	1.18	7,426.23	8,417.23	1,596.90	8,566.26	2.57	0.08	2.57
17,078.00	90.85	0.61	7,425.51	8,513.22	1,598.40	8,661.09	1.06	0.88	-0.59
17,173.00	91.91	0.83	7,423.22	8,608.18	1,599.59	8,754.87	1.14	1.12	0.23
17,268.00	90.54	1.00	7,421.19	8,703.14	1,601.10	8,848.70	1.45	-1.44	0.18
17,364.00	92.44	1.44	7,418.69	8,799.09	1,603.14	8,943.58	2.03	1.98	0.46
17,459.00	90.59	1.84	7,416.18	8,894.01	1,605.85	9,037.58	1.99	-1.95	0.42
17,555.00	90.06	1.18	7,415.64	8,989.97	1,608.38	9,132.57	0.88	-0.55	-0.69
Last MWD Survey @ 17555'MD									
17,608.00	90.06	1.18	7,415.58	9,042.96	1,609.47	9,184.97	0.00	0.00	0.00
PTB @ TD @ 17608'MD (528'FNL & 168'FEL)									

Survey Report

Company: Extraction Oil & Gas	Local Co-ordinate Reference: Well Rinn Valley East N17-20-1C
Project: Weld County, CO (NAD83)	TVD Reference: KB=29 @ 4943.90ft (Patterson #901)
Site: Rinn Valley East Pad (Sec. 17-T2N, R68W)	MD Reference: KB=29 @ 4943.90ft (Patterson #901)
Well: Rinn Valley East N17-20-1C	North Reference: True
Wellbore: Wellbore #1	Survey Calculation Method: Minimum Curvature
Design: Wellbore #1	Database: EDM 5000.1

Design Targets

Target Name

- hit/miss target	Dip Angle	Dip Dir.	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
- Shape	(°)	(°)	(ft)	(ft)	(ft)	(usft)	(usft)		
Rinn Valley East 1C E	0.00	0.31	0.00	9,111.81	1,576.66	1,301,176.24	3,134,623.83	40.15912	-105.01834
- actual wellpath misses target center by 7415.97ft at 17608.00ft MD (7415.58 TVD, 9042.96 N, 1609.47 E)									
- Point									

Design Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
1,025.00	1,009.61	-86.34	116.00	Tie in to Surface Surveys @ 1025'MD
1,067.00	1,049.60	-94.49	125.92	First MWD Survey @ 1067'MD
7,453.57	7,144.34	-984.12	1,582.19	30°Inc. @ 7453'MD
7,493.64	7,178.43	-963.06	1,582.21	Enter Sect. 17 @ 7493'MD
7,951.65	7,453.03	-605.17	1,581.58	70°Inc. @ 7951'MD
12,880.22	7,461.31	4,317.08	1,612.52	Crossing Section 17/8 @ 12880'MD
17,555.00	7,415.64	8,989.97	1,608.38	Last MWD Survey @ 17555'MD
17,608.00	7,415.58	9,042.96	1,609.47	PTB @ TD @ 17608'MD (528'FNL & 168'FEL)

Checked By: _____	Approved By: _____	Date: _____
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