

# **Extraction Oil & Gas**

**Weld County, CO (NAD83)**

**Rinn Valley East Pad (Sec.18-T2N-R68W)**

**Rinn Valley East N17-20-14N**

**Wellbore #1**

**Design: Wellbore #1**

## **Standard Survey Report**

**17 August, 2018**

## Survey Report

<b>Company:</b>	Extraction Oil & Gas	<b>Local Co-ordinate Reference:</b>	Well Rinn Valley East N17-20-14N
<b>Project:</b>	Weld County, CO (NAD83)	<b>TVD Reference:</b>	KB=25 @ 4963.80ft (Patterson #346)
<b>Site:</b>	Rinn Valley East Pad (Sec.18-T2N-R68W)	<b>MD Reference:</b>	KB=25 @ 4963.80ft (Patterson #346)
<b>Well:</b>	Rinn Valley East N17-20-14N	<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	Rinn Valley East Pad (Sec.18-T2N-R68W)				
Site Position:		Northing:	1,291,282.60 usft	Latitude:	40.13204
From:	Map	Easting:	3,128,935.11 usft	Longitude:	-105.03888
Position Uncertainty:	0.00 ft	Slot Radius:	13-3/16 "	Grid Convergence:	0.30 °

Well		Rinn Valley East N17-20-14N				
Well Position	+N/-S	0.00 ft	Northing:	1,291,282.89 usfi	Latitude:	40.13204
	+E/-W	0.00 ft	Easting:	3,128,991.31 usfi	Longitude:	-105.03868
Position Uncertainty		0.00 ft	Wellhead Elevation:	0.00 ft	Ground Level:	4,938.80 ft

<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	7/10/2018	8.48	66.52	52,016

<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) (ft)</b>	<b>+N/-S (ft)</b>	<b>+E/-W (ft)</b>	<b>Direction (°)</b>	
	0.00	0.00	0.00	8.71	

<b>Survey Program</b>	<b>Date</b>	8/17/2018			
<b>From (ft)</b>	<b>To (ft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>	
88.00	1,554.00	Surface (Wellbore #1)	NS-GYRO-MS	North sensing gyrocompassing m/s	
1,644.00	17,510.00	MWD Surveys (Wellbore #1)	MWD	MWD - Standard	

<b>Survey</b>										
<b>Measured Depth (ft)</b>	<b>Inclination (°)</b>	<b>Azimuth (°)</b>	<b>Vertical Depth (ft)</b>	<b>+N/-S (ft)</b>	<b>+E/-W (ft)</b>	<b>Vertical Section (ft)</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	
88.00	1.08	71.23	87.99	0.27	0.79	0.38	1.23	1.23	0.00	
150.00	1.03	71.37	149.98	0.63	1.87	0.91	0.08	-0.08	0.23	
232.00	0.47	64.45	231.98	1.01	2.87	1.44	0.69	-0.68	-8.44	
316.00	1.53	229.08	315.97	0.43	2.33	0.78	2.37	1.26	195.99	
401.00	0.75	247.07	400.95	-0.53	0.96	-0.38	1.00	-0.92	21.16	
485.00	0.87	232.31	484.94	-1.14	-0.05	-1.13	0.29	0.14	-17.57	
569.00	1.05	264.20	568.93	-1.60	-1.32	-1.79	0.66	0.21	37.96	
654.00	1.39	142.14	653.92	-2.50	-1.46	-2.69	2.52	0.40	-143.60	
738.00	2.96	100.97	737.86	-3.71	1.29	-3.48	2.53	1.87	-49.01	

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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 (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
822.00	4.27	103.72	821.69	-4.87	6.46	-3.83	1.57	1.56	3.27
907.00	6.52	104.96	906.31	-6.87	14.20	-4.63	2.65	2.65	1.46
990.00	7.88	108.81	988.66	-9.92	24.14	-6.14	1.74	1.64	4.64
1,074.00	9.62	109.50	1,071.68	-14.12	36.20	-8.47	2.08	2.07	0.82
1,159.00	10.51	108.15	1,155.37	-18.90	50.27	-11.07	1.08	1.05	-1.59
1,244.00	11.95	109.54	1,238.74	-24.26	65.93	-13.99	1.72	1.69	1.64
1,330.00	13.63	109.31	1,322.60	-30.59	83.88	-17.53	1.95	1.95	-0.27
1,414.00	14.81	102.88	1,404.03	-36.26	103.69	-20.13	2.35	1.40	-7.65
1,497.00	17.24	98.22	1,483.80	-40.38	126.21	-20.79	3.31	2.93	-5.61
1,554.00	17.13	97.22	1,538.26	-42.64	142.90	-20.50	0.55	-0.19	-1.75
<b>Tie in to Surface Surveys @ 1554'MD</b>									
1,644.00	16.26	95.69	1,624.46	-45.56	168.58	-19.49	1.08	-0.97	-1.70
<b>First MWD Survey @ 1644'MD</b>									
1,738.00	16.08	95.82	1,714.75	-48.18	194.63	-18.14	0.20	-0.19	0.14
1,832.00	17.28	97.72	1,804.79	-51.38	221.42	-17.24	1.40	1.28	2.02
1,925.00	19.13	101.24	1,893.13	-56.20	250.05	-17.67	2.31	1.99	3.78
2,019.00	19.05	99.26	1,981.96	-61.68	280.30	-18.49	0.69	-0.09	-2.11
2,113.00	19.27	101.15	2,070.76	-67.14	310.66	-19.30	0.70	0.23	2.01
2,207.00	18.47	99.70	2,159.71	-72.65	340.56	-20.21	0.99	-0.85	-1.54
2,301.00	18.78	103.05	2,248.79	-78.58	369.97	-21.61	1.18	0.33	3.56
2,395.00	18.25	102.34	2,337.92	-85.14	399.09	-23.69	0.61	-0.56	-0.76
2,489.00	19.40	103.09	2,426.89	-91.82	428.68	-25.81	1.25	1.22	0.80
2,584.00	18.25	102.04	2,516.81	-98.50	458.60	-27.88	1.26	-1.21	-1.11
2,678.00	18.78	104.55	2,605.94	-105.37	487.64	-30.27	1.02	0.56	2.67
2,772.00	19.44	104.81	2,694.76	-113.17	517.41	-33.47	0.71	0.70	0.28
2,866.00	18.07	104.68	2,783.77	-120.86	546.63	-36.64	1.46	-1.46	-0.14
2,960.00	18.43	103.58	2,873.04	-128.05	575.18	-39.42	0.53	0.38	-1.17
3,053.00	18.82	100.27	2,961.17	-134.17	604.23	-41.07	1.21	0.42	-3.56
3,147.00	16.97	98.99	3,050.62	-139.02	632.70	-41.55	2.01	-1.97	-1.36
3,336.00	18.91	102.17	3,230.43	-149.79	689.89	-43.53	1.15	1.03	1.68
3,429.00	16.97	101.77	3,318.90	-155.73	717.91	-45.16	2.09	-2.09	-0.43
3,523.00	16.92	99.04	3,408.82	-160.68	744.85	-45.97	0.85	-0.05	-2.90
3,617.00	17.85	100.93	3,498.53	-165.56	772.50	-46.61	1.16	0.99	2.01
3,712.00	19.31	101.02	3,588.57	-171.33	802.22	-47.80	1.54	1.54	0.09
3,806.00	16.97	100.36	3,677.90	-176.76	830.97	-48.82	2.50	-2.49	-0.70
3,900.00	17.99	100.54	3,767.55	-181.89	858.74	-49.68	1.09	1.09	0.19
3,994.00	17.94	102.34	3,856.97	-187.64	887.15	-51.05	0.59	-0.05	1.91
4,089.00	18.65	99.57	3,947.17	-193.29	916.42	-52.21	1.18	0.75	-2.92
4,183.00	16.84	98.51	4,036.70	-197.80	944.71	-52.38	1.96	-1.93	-1.13
4,278.00	17.41	98.29	4,127.48	-201.89	972.39	-52.23	0.60	0.60	-0.23
4,372.00	17.72	101.55	4,217.10	-206.78	1,000.32	-52.83	1.10	0.33	3.47
4,466.00	18.82	102.21	4,306.36	-212.85	1,029.15	-54.46	1.19	1.17	0.70
4,560.00	17.10	101.99	4,395.78	-218.93	1,057.49	-56.18	1.83	-1.83	-0.23

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4,654.00	18.03	101.64	4,485.40	-224.73	1,085.26	-57.71	1.00	0.99	-0.37
4,748.00	18.38	103.14	4,574.69	-231.04	1,113.94	-59.59	0.62	0.37	1.60
4,843.00	17.23	98.42	4,665.14	-236.50	1,142.45	-60.68	1.94	-1.21	-4.97
4,937.00	20.90	98.16	4,753.97	-240.92	1,172.83	-60.44	3.91	3.90	-0.28
5,030.00	20.64	97.06	4,840.93	-245.29	1,205.51	-59.81	0.50	-0.28	-1.18
5,124.00	18.25	94.94	4,929.56	-248.60	1,236.62	-58.36	2.65	-2.54	-2.26
5,218.00	17.72	95.34	5,018.97	-251.20	1,265.53	-56.55	0.58	-0.56	0.43
5,312.00	15.55	100.89	5,109.03	-254.91	1,292.15	-56.19	2.86	-2.31	5.90
5,407.00	17.15	99.08	5,200.19	-259.53	1,318.49	-56.76	1.77	1.68	-1.91
5,501.00	19.09	99.96	5,289.53	-264.37	1,347.32	-57.18	2.08	2.06	0.94
5,595.00	15.82	94.37	5,379.19	-268.01	1,375.24	-56.55	3.91	-3.48	-5.95
5,689.00	15.11	94.90	5,469.79	-270.03	1,400.23	-54.76	0.77	-0.76	0.56
5,783.00	16.88	98.82	5,560.15	-273.17	1,425.92	-53.97	2.20	1.88	4.17
5,877.00	14.67	105.87	5,650.61	-278.52	1,450.86	-55.48	3.11	-2.35	7.50
5,971.00	11.89	103.80	5,742.09	-284.08	1,471.72	-57.82	3.00	-2.96	-2.20
6,064.00	11.22	111.47	5,833.21	-289.68	1,489.44	-60.67	1.80	-0.72	8.25
6,159.00	9.24	107.37	5,926.69	-295.34	1,505.33	-63.85	2.22	-2.08	-4.32
6,252.00	7.69	102.43	6,018.68	-298.91	1,518.53	-65.38	1.84	-1.67	-5.31
6,346.00	6.10	98.95	6,112.00	-301.04	1,529.61	-65.81	1.75	-1.69	-3.70
6,441.00	3.76	113.54	6,206.64	-303.07	1,537.45	-66.63	2.78	-2.46	15.36
6,535.00	1.28	201.32	6,300.57	-305.28	1,539.89	-68.44	4.17	-2.64	93.38
6,629.00	1.41	224.94	6,394.54	-307.08	1,538.70	-70.40	0.60	0.14	25.13
6,723.00	1.15	219.83	6,488.52	-308.62	1,537.27	-72.14	0.30	-0.28	-5.44
6,817.00	1.02	202.42	6,582.50	-310.12	1,536.35	-73.76	0.38	-0.14	-18.52
6,935.00	1.90	325.19	6,700.48	-309.48	1,534.83	-73.36	2.20	0.75	104.04
7,028.00	11.67	1.77	6,792.74	-298.79	1,534.24	-62.88	10.97	10.51	39.33
7,122.00	19.80	0.93	6,883.14	-273.32	1,534.80	-37.63	8.65	8.65	-0.89
7,216.00	26.34	359.56	6,969.57	-236.51	1,534.89	-1.22	6.98	6.96	-1.46
7,253.47	30.00	0.17	7,002.60	-218.83	1,534.86	16.25	9.79	9.76	1.64
<b>30°Inclination @ 7253'MD</b>									
7,311.00	35.62	0.89	7,050.93	-187.67	1,535.16	47.10	9.79	9.77	1.25
7,312.03	35.73	0.89	7,051.77	-187.07	1,535.17	47.69	11.00	11.00	-0.24
<b>Enter Section 17 @ 7312'MD</b>									
7,405.00	45.96	0.71	7,122.01	-126.35	1,536.01	107.84	11.00	11.00	-0.19
7,499.00	55.55	359.56	7,181.41	-53.64	1,536.13	179.73	10.25	10.20	-1.22
7,592.00	64.38	359.79	7,227.91	26.79	1,535.68	259.16	9.50	9.49	0.25
7,682.46	70.00	0.13	7,262.96	110.14	1,535.63	341.54	6.22	6.21	0.37
<b>70°Inclination @ 7682'MD</b>									
7,686.00	70.22	0.14	7,264.17	113.47	1,535.63	344.83	6.22	6.21	0.36
7,780.00	75.08	359.56	7,292.19	203.17	1,535.39	433.46	5.20	5.17	-0.62
7,874.00	82.90	357.93	7,310.13	295.34	1,533.36	524.26	8.49	8.32	-1.73
7,968.00	87.63	357.27	7,317.89	388.91	1,529.43	616.15	5.08	5.03	-0.70
8,061.00	88.91	358.38	7,320.70	481.80	1,525.90	707.43	1.82	1.38	1.19
8,156.00	91.07	359.52	7,320.71	576.78	1,524.16	801.05	2.57	2.27	1.20

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8,249.00	91.07	359.70	7,318.98	669.76	1,523.53	892.86	0.19	0.00	0.19
8,343.00	90.63	359.70	7,317.58	763.74	1,523.04	985.69	0.47	-0.47	0.00
8,437.00	93.06	359.48	7,314.56	857.69	1,522.37	1,078.44	2.60	2.59	-0.23
8,530.00	93.68	359.30	7,309.09	950.52	1,521.38	1,170.06	0.69	0.67	-0.19
8,624.00	91.16	359.34	7,305.12	1,044.42	1,520.26	1,262.71	2.68	-2.68	0.04
8,718.00	90.63	359.34	7,303.65	1,138.40	1,519.18	1,355.44	0.56	-0.56	0.00
8,812.00	90.41	359.30	7,302.80	1,232.39	1,518.07	1,448.17	0.24	-0.23	-0.04
8,907.00	91.16	358.90	7,301.50	1,327.37	1,516.57	1,541.83	0.89	0.79	-0.42
9,002.00	91.12	358.73	7,299.61	1,422.33	1,514.61	1,635.40	0.18	-0.04	-0.18
9,190.00	91.47	358.64	7,295.36	1,610.23	1,510.30	1,820.48	0.19	0.19	-0.05
9,284.00	91.65	359.08	7,292.80	1,704.18	1,508.43	1,913.05	0.51	0.19	0.47
9,378.00	92.05	359.39	7,289.76	1,798.12	1,507.17	2,005.72	0.54	0.43	0.33
9,473.00	91.34	0.14	7,286.95	1,893.08	1,506.78	2,099.52	1.09	-0.75	0.79
9,567.00	90.01	0.09	7,285.85	1,987.07	1,506.97	2,192.46	1.42	-1.41	-0.05
9,662.00	90.41	0.45	7,285.50	2,082.07	1,507.42	2,286.43	0.57	0.42	0.38
9,756.00	90.90	1.11	7,284.42	2,176.05	1,508.70	2,379.52	0.87	0.52	0.70
9,849.00	89.44	2.56	7,284.15	2,269.00	1,511.68	2,471.84	2.21	-1.57	1.56
9,944.00	89.35	2.03	7,285.15	2,363.92	1,515.48	2,566.24	0.57	-0.09	-0.56
10,039.00	89.48	2.08	7,286.12	2,458.85	1,518.89	2,660.60	0.15	0.14	0.05
10,132.00	89.44	1.90	7,287.00	2,551.79	1,522.12	2,752.95	0.20	-0.04	-0.19
10,226.00	89.35	1.99	7,287.99	2,645.73	1,525.31	2,846.29	0.14	-0.10	0.10
10,320.00	88.95	2.16	7,289.38	2,739.66	1,528.71	2,939.65	0.46	-0.43	0.18
10,414.00	91.12	1.55	7,289.33	2,833.61	1,531.75	3,032.97	2.40	2.31	-0.65
10,508.00	92.05	0.89	7,286.73	2,927.55	1,533.75	3,126.13	1.21	0.99	-0.70
10,602.00	91.21	1.06	7,284.05	3,021.49	1,535.35	3,219.24	0.91	-0.89	0.18
10,696.00	91.69	0.53	7,281.67	3,115.45	1,536.66	3,312.31	0.76	0.51	-0.56
10,790.00	91.74	0.05	7,278.86	3,209.41	1,537.13	3,405.25	0.51	0.05	-0.51
10,884.00	91.87	359.79	7,275.90	3,303.36	1,537.00	3,498.10	0.31	0.14	-0.28
10,979.00	89.31	359.92	7,274.92	3,398.35	1,536.76	3,591.96	2.70	-2.69	0.14
11,073.00	89.13	0.05	7,276.20	3,492.34	1,536.74	3,684.86	0.24	-0.19	0.14
11,167.00	88.95	0.23	7,277.78	3,586.33	1,536.96	3,777.80	0.27	-0.19	0.19
11,261.00	89.09	0.36	7,279.38	3,680.31	1,537.45	3,870.77	0.20	0.15	0.14
11,356.00	89.57	359.96	7,280.50	3,775.31	1,537.71	3,964.71	0.66	0.51	-0.42
11,450.00	89.84	359.79	7,280.98	3,869.30	1,537.51	4,057.59	0.34	0.29	-0.18
11,638.00	90.01	359.70	7,281.23	4,057.30	1,536.67	4,243.29	0.10	0.09	-0.05
11,732.00	90.15	359.21	7,281.09	4,151.30	1,535.78	4,336.06	0.54	0.15	-0.52
11,827.00	91.03	358.99	7,280.12	4,246.28	1,534.29	4,429.72	0.95	0.93	-0.23
11,921.00	91.83	358.73	7,277.77	4,340.23	1,532.42	4,522.31	0.89	0.85	-0.28
12,015.00	91.91	358.99	7,274.70	4,434.16	1,530.55	4,614.87	0.29	0.09	0.28
12,109.00	91.07	359.21	7,272.26	4,528.12	1,529.07	4,707.52	0.92	-0.89	0.23
12,202.00	89.35	359.79	7,271.92	4,621.11	1,528.26	4,799.31	1.95	-1.85	0.62
12,296.00	89.53	359.92	7,272.84	4,715.10	1,528.02	4,892.19	0.24	0.19	0.14
12,484.00	90.59	359.79	7,272.64	4,903.10	1,527.55	5,077.94	0.57	0.56	-0.07

## Survey Report

<b>Company:</b>	Extraction Oil & Gas	<b>Local Co-ordinate Reference:</b>	Well Rinn Valley East N17-20-14N
<b>Project:</b>	Weld County, CO (NAD83)	<b>TVD Reference:</b>	KB=25 @ 4963.80ft (Patterson #346)
<b>Site:</b>	Rinn Valley East Pad (Sec.18-T2N-R68W)	<b>MD Reference:</b>	KB=25 @ 4963.80ft (Patterson #346)
<b>Well:</b>	Rinn Valley East N17-20-14N	<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 (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
12,578.00	90.37	359.74	7,271.85	4,997.10	1,527.16	5,170.79	0.24	-0.23	-0.05
12,617.50	90.41	359.70	7,271.58	5,036.60	1,526.97	5,209.81	0.14	0.10	-0.10
<b>Crossing Section 17/8 @ 12617'MD</b>									
12,672.00	90.46	359.65	7,271.17	5,091.09	1,526.66	5,263.63	0.14	0.10	-0.10
12,767.00	90.77	359.65	7,270.15	5,186.09	1,526.08	5,357.44	0.33	0.33	0.00
12,860.00	90.68	359.83	7,268.98	5,279.08	1,525.66	5,449.29	0.22	-0.10	0.19
12,955.00	91.52	359.61	7,267.15	5,374.06	1,525.19	5,543.10	0.91	0.88	-0.23
13,048.00	92.09	359.26	7,264.22	5,467.01	1,524.28	5,634.84	0.72	0.61	-0.38
13,142.00	90.28	358.86	7,262.28	5,560.97	1,522.74	5,727.49	1.97	-1.93	-0.43
13,236.00	90.54	358.82	7,261.61	5,654.95	1,520.83	5,820.09	0.28	0.28	-0.04
13,330.00	91.52	358.73	7,259.92	5,748.91	1,518.82	5,912.66	1.05	1.04	-0.10
13,519.00	90.59	358.77	7,256.44	5,937.83	1,514.70	6,098.78	0.49	-0.49	0.02
13,613.00	90.50	358.60	7,255.54	6,031.80	1,512.54	6,191.34	0.20	-0.10	-0.18
13,707.00	91.16	357.93	7,254.18	6,125.75	1,509.70	6,283.77	1.00	0.70	-0.71
13,802.00	91.47	357.54	7,252.00	6,220.65	1,505.94	6,377.00	0.52	0.33	-0.41
13,895.00	91.69	359.61	7,249.44	6,313.58	1,503.63	6,468.51	2.24	0.24	2.23
13,989.00	90.90	0.71	7,247.31	6,407.55	1,503.90	6,561.44	1.44	-0.84	1.17
14,082.00	89.40	1.94	7,247.07	6,500.52	1,506.05	6,653.66	2.09	-1.61	1.32
14,177.00	89.48	1.06	7,248.00	6,595.49	1,508.53	6,747.91	0.93	0.08	-0.93
14,270.00	89.44	0.80	7,248.87	6,688.47	1,510.04	6,840.04	0.28	-0.04	-0.28
14,364.00	88.95	0.53	7,250.19	6,782.45	1,511.13	6,933.11	0.60	-0.52	-0.29
14,458.00	88.47	0.40	7,252.31	6,876.43	1,511.90	7,026.11	0.53	-0.51	-0.14
14,552.00	87.98	359.83	7,255.22	6,970.38	1,512.08	7,119.01	0.80	-0.52	-0.61
14,646.00	90.72	0.18	7,256.29	7,064.36	1,512.09	7,211.91	2.94	2.91	0.37
14,740.00	92.09	0.45	7,253.98	7,158.33	1,512.61	7,304.87	1.49	1.46	0.29
14,835.00	92.84	0.09	7,249.90	7,253.24	1,513.06	7,398.75	0.88	0.79	-0.38
14,929.00	90.68	0.98	7,247.01	7,347.19	1,513.93	7,491.75	2.49	-2.30	0.95
15,023.00	91.07	0.67	7,245.57	7,441.17	1,515.29	7,584.85	0.53	0.41	-0.33
15,117.00	91.07	0.58	7,243.82	7,535.15	1,516.31	7,677.90	0.10	0.00	-0.10
15,211.00	91.43	0.89	7,241.77	7,629.11	1,517.52	7,770.96	0.51	0.38	0.33
15,305.00	91.91	0.18	7,239.03	7,723.07	1,518.40	7,863.97	0.91	0.51	-0.76
15,398.00	91.56	359.79	7,236.21	7,816.03	1,518.37	7,955.85	0.56	-0.38	-0.42
15,492.00	92.00	359.43	7,233.29	7,909.98	1,517.73	8,048.62	0.60	0.47	-0.38
15,586.00	90.06	0.27	7,231.60	8,003.96	1,517.49	8,141.47	2.25	-2.06	0.89
15,680.00	90.23	359.79	7,231.37	8,097.96	1,517.54	8,234.40	0.54	0.18	-0.51
15,775.00	90.32	359.56	7,230.91	8,192.95	1,517.00	8,328.21	0.26	0.09	-0.24
15,870.00	91.52	1.64	7,229.38	8,287.93	1,517.99	8,422.24	2.53	1.26	2.19
15,963.00	91.78	1.46	7,226.71	8,380.86	1,520.51	8,514.48	0.34	0.28	-0.19
16,058.00	92.00	1.24	7,223.57	8,475.78	1,522.74	8,608.64	0.33	0.23	-0.23
16,151.00	92.58	0.89	7,219.86	8,568.69	1,524.47	8,700.74	0.73	0.62	-0.38
16,245.00	91.16	0.93	7,216.79	8,662.62	1,525.96	8,793.82	1.51	-1.51	0.04
16,339.00	91.60	0.67	7,214.53	8,756.59	1,527.27	8,886.90	0.54	0.47	-0.28
16,432.00	89.04	0.93	7,214.01	8,849.57	1,528.57	8,979.00	2.77	-2.75	0.28
16,527.00	89.09	0.58	7,215.56	8,944.55	1,529.82	9,073.07	0.37	0.05	-0.37

## Survey Report

<b>Company:</b>	Extraction Oil & Gas	<b>Local Co-ordinate Reference:</b>	Well Rinn Valley East N17-20-14N
<b>Project:</b>	Weld County, CO (NAD83)	<b>TVD Reference:</b>	KB=25 @ 4963.80ft (Patterson #346)
<b>Site:</b>	Rinn Valley East Pad (Sec.18-T2N-R68W)	<b>MD Reference:</b>	KB=25 @ 4963.80ft (Patterson #346)
<b>Well:</b>	Rinn Valley East N17-20-14N	<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 (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
16,621.00	88.60	0.67	7,217.45	9,038.52	1,530.85	9,166.12	0.53	-0.52	0.10
16,715.00	91.83	0.45	7,217.10	9,132.51	1,531.77	9,259.16	3.44	3.44	-0.23
16,809.00	92.58	0.23	7,213.48	9,226.43	1,532.32	9,352.08	0.83	0.80	-0.23
16,904.00	90.99	0.49	7,210.52	9,321.38	1,532.92	9,446.03	1.70	-1.67	0.27
16,998.00	90.15	359.56	7,209.59	9,415.38	1,532.96	9,538.94	1.33	-0.89	-0.99
17,093.00	90.99	359.83	7,208.64	9,510.37	1,532.46	9,632.76	0.93	0.88	0.28
17,187.00	91.30	359.61	7,206.76	9,604.35	1,532.00	9,725.59	0.40	0.33	-0.23
17,280.00	91.47	359.48	7,204.52	9,697.32	1,531.26	9,817.37	0.23	0.18	-0.14
17,375.00	91.91	359.65	7,201.72	9,792.27	1,530.54	9,911.12	0.50	0.46	0.18
<b>Last MWD Survey @ 17375'MD</b>									
17,510.00	91.91	359.65	7,197.22	9,927.20	1,529.71	10,044.36	0.00	0.00	0.00
<b>PTB @ TD @ 17510'MD (490'FNL &amp; 963'FWL)</b>									

### Design Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
1,554.00	1,538.26	-42.64	142.90	Tie in to Surface Surveys @ 1554'MD
1,644.00	1,624.46	-45.56	168.58	First MWD Survey @ 1644'MD
7,253.47	7,002.60	-218.83	1,534.86	30°Inclination @ 7253'MD
7,312.03	7,051.77	-187.07	1,535.17	Enter Section 17 @ 7312'MD
7,682.46	7,262.96	110.14	1,535.63	70°Inclination @ 7682'MD
12,617.50	7,271.58	5,036.60	1,526.97	Crossing Section 17/8 @ 12617'MD
17,375.00	7,201.72	9,792.27	1,530.54	Last MWD Survey @ 17375'MD
17,510.00	7,197.22	9,927.20	1,529.71	PTB @ TD @ 17510'MD (490'FNL & 963'FWL)

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