

# **Extraction Oil & Gas**

**Weld County, CO (NAD83)**

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

**Rinn Valley East N17-20-15C**

**Wellbore #1**

**Design: Wellbore #1**

## **Standard Survey Report**

**21 August, 2018**

## Survey Report

<b>Company:</b>	Extraction Oil & Gas	<b>Local Co-ordinate Reference:</b>	Well Rinn Valley East N17-20-15C
<b>Project:</b>	Weld County, CO (NAD83)	<b>TVD Reference:</b>	KB=25 @ 4964.20ft (Patterson #346)
<b>Site:</b>	Rinn Valley East Pad (Sec.18-T2N-R68W)	<b>MD Reference:</b>	KB=25 @ 4964.20ft (Patterson #346)
<b>Well:</b>	Rinn Valley East N17-20-15C	<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 N17-20-15C				
Well Position	+N/-S	0.00 ft	Northing:	1,291,282.73 usfi	Latitude:	40.13204
	+E/-W	0.00 ft	Easting:	3,128,963.07 usfi	Longitude:	-105.03878
Position Uncertainty		0.00 ft	Wellhead Elevation:	0.00 ft	Ground Level:	4,939.20 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	6/26/2018	8.48	66.52	52,021

<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	6.15	

<b>Survey Program</b>	<b>Date</b>	8/21/2018			
<b>From (ft)</b>	<b>To (ft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>	
88.00	1,564.00	Surface (Wellbore #1)	MWD	MWD - Standard	
1,645.00	17,565.00	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	0.58	208.79	88.00	-0.39	-0.21	-0.41	0.66	0.66	0.00
150.00	0.52	211.54	150.00	-0.91	-0.51	-0.95	0.11	-0.10	4.44
232.00	1.23	236.02	231.99	-1.71	-1.44	-1.86	0.96	0.87	29.85
316.00	0.36	58.74	315.98	-2.08	-1.96	-2.28	1.89	-1.04	-211.05
401.00	0.60	88.37	400.98	-1.93	-1.29	-2.06	0.40	0.28	34.86
485.00	0.87	81.02	484.97	-1.82	-0.22	-1.83	0.34	0.32	-8.75
569.00	1.51	82.44	568.95	-1.57	1.51	-1.40	0.76	0.76	1.69
654.00	0.94	339.24	653.94	-0.77	2.37	-0.51	2.30	-0.67	-121.41
738.00	1.06	109.65	737.93	-0.39	2.86	-0.08	2.16	0.14	155.25

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<b>Well:</b>	Rinn Valley East N17-20-15C	<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)
822.00	3.34	111.33	821.87	-1.54	5.87	-0.90	2.72	2.71	2.00
907.00	3.96	112.59	906.69	-3.57	10.89	-2.38	0.74	0.73	1.48
990.00	5.84	107.45	989.39	-5.94	17.56	-4.02	2.32	2.27	-6.19
1,074.00	7.66	105.60	1,072.80	-8.72	27.03	-5.78	2.18	2.17	-2.20
1,159.00	9.25	103.72	1,156.88	-11.87	39.13	-7.61	1.90	1.87	-2.21
1,244.00	10.46	105.98	1,240.62	-15.61	53.18	-9.82	1.49	1.42	2.66
1,330.00	10.88	106.70	1,325.13	-20.09	68.46	-12.64	0.51	0.49	0.84
1,414.00	10.76	105.07	1,407.64	-24.41	83.63	-15.31	0.39	-0.14	-1.94
1,497.00	10.76	106.36	1,489.18	-28.61	98.54	-17.88	0.29	0.00	1.55
1,564.00	10.50	105.19	1,555.03	-31.97	110.43	-19.95	0.50	-0.39	-1.75
<b>Tie in to Surface Surveys @ 1564'MD</b>									
1,645.00	10.47	102.43	1,634.68	-35.49	124.74	-21.92	0.62	-0.04	-3.41
<b>First MWD Survey @ 1645'MD</b>									
1,739.00	10.12	100.32	1,727.17	-38.81	141.21	-23.45	0.55	-0.37	-2.24
1,833.00	11.18	96.48	1,819.55	-41.31	158.39	-24.10	1.36	1.13	-4.09
1,926.00	11.67	103.00	1,910.71	-44.45	176.51	-25.28	1.48	0.53	7.01
2,020.00	13.12	107.24	2,002.52	-49.75	195.97	-28.46	1.82	1.54	4.51
2,114.00	12.42	105.96	2,094.19	-55.69	215.88	-32.24	0.80	-0.74	-1.36
2,208.00	10.96	101.42	2,186.24	-60.24	234.36	-34.78	1.83	-1.55	-4.83
2,302.00	10.69	105.60	2,278.57	-64.35	251.51	-37.03	0.88	-0.29	4.45
2,396.00	11.40	109.79	2,370.83	-69.84	268.65	-40.65	1.14	0.76	4.46
2,490.00	12.68	112.39	2,462.76	-76.92	286.93	-45.73	1.48	1.36	2.77
2,585.00	13.21	107.81	2,555.35	-84.21	306.91	-50.84	1.22	0.56	-4.82
2,679.00	13.88	105.96	2,646.73	-90.59	327.97	-54.93	0.85	0.71	-1.97
2,773.00	12.42	104.72	2,738.26	-96.26	348.59	-58.36	1.58	-1.55	-1.32
2,866.00	12.77	108.12	2,829.03	-102.00	368.03	-61.98	0.88	0.38	3.66
2,960.00	14.05	109.92	2,920.46	-109.12	388.64	-66.85	1.43	1.36	1.91
3,054.00	12.46	108.51	3,011.96	-116.23	408.98	-71.74	1.73	-1.69	-1.50
3,149.00	13.30	104.06	3,104.57	-122.14	429.30	-75.43	1.37	0.88	-4.68
3,242.00	13.43	105.69	3,195.05	-127.66	450.07	-78.70	0.43	0.14	1.75
3,336.00	11.75	103.75	3,286.79	-132.88	469.88	-81.77	1.84	-1.79	-2.06
3,430.00	12.15	105.30	3,378.75	-137.77	488.72	-84.61	0.55	0.43	1.65
3,525.00	13.21	102.08	3,471.43	-142.68	508.98	-87.32	1.34	1.12	-3.39
3,619.00	13.74	109.57	3,562.85	-148.67	530.00	-91.02	1.94	0.56	7.97
3,713.00	11.84	110.23	3,654.51	-155.74	549.57	-95.96	2.03	-2.02	0.70
3,807.00	12.24	107.94	3,746.45	-162.14	568.10	-100.34	0.66	0.43	-2.44
3,901.00	13.12	106.35	3,838.15	-168.22	587.82	-104.26	1.01	0.94	-1.69
3,996.00	13.35	108.42	3,930.63	-174.72	608.57	-108.50	0.55	0.24	2.18
4,090.00	11.98	107.76	4,022.34	-181.12	628.16	-112.77	1.47	-1.46	-0.70
4,185.00	12.77	104.28	4,115.14	-186.72	647.72	-116.24	1.14	0.83	-3.66
4,279.00	12.42	99.08	4,206.88	-190.88	667.77	-118.23	1.26	-0.37	-5.53
4,373.00	12.86	106.88	4,298.60	-195.51	687.77	-120.69	1.87	0.47	8.30
4,467.00	13.26	108.56	4,390.17	-201.98	708.00	-124.96	0.59	0.43	1.79

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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)
4,561.00	11.67	108.95	4,481.95	-208.50	727.21	-129.38	1.69	-1.69	0.41
4,655.00	11.40	111.11	4,574.06	-214.93	744.87	-133.88	0.54	-0.29	2.30
4,749.00	12.59	106.79	4,666.00	-221.24	763.34	-138.17	1.59	1.27	-4.60
4,844.00	13.92	105.96	4,758.47	-227.37	784.24	-142.03	1.41	1.40	-0.87
4,938.00	13.26	103.84	4,849.84	-233.06	805.58	-145.40	0.88	-0.70	-2.26
5,031.00	11.14	101.55	4,940.73	-237.41	824.74	-147.67	2.34	-2.28	-2.46
5,125.00	11.27	100.49	5,032.94	-240.90	842.67	-149.22	0.26	0.14	-1.13
5,220.00	13.17	105.47	5,125.79	-245.48	862.23	-151.68	2.29	2.00	5.24
5,314.00	13.26	106.66	5,217.30	-251.42	882.88	-155.38	0.30	0.10	1.27
5,408.00	12.46	109.04	5,308.94	-257.82	902.79	-159.61	1.02	-0.85	2.53
5,502.00	12.46	107.37	5,400.73	-264.16	922.06	-163.84	0.38	0.00	-1.78
5,596.00	12.11	103.93	5,492.58	-269.56	941.31	-167.15	0.86	-0.37	-3.66
5,690.00	11.75	104.86	5,584.55	-274.39	960.13	-169.93	0.43	-0.38	0.99
5,784.00	11.09	106.75	5,676.69	-279.45	978.04	-173.04	0.81	-0.70	2.01
5,878.00	11.67	109.79	5,768.84	-285.27	995.64	-176.95	0.89	0.62	3.23
5,972.00	9.85	104.68	5,861.18	-290.53	1,012.36	-180.38	2.18	-1.94	-5.44
6,066.00	8.31	99.21	5,954.00	-293.66	1,026.85	-181.94	1.88	-1.64	-5.82
6,160.00	6.19	95.29	6,047.25	-295.21	1,038.60	-182.23	2.31	-2.26	-4.17
6,254.00	6.27	103.93	6,140.70	-296.91	1,048.63	-182.84	1.00	0.09	9.19
6,348.00	4.86	100.54	6,234.25	-298.88	1,057.53	-183.84	1.54	-1.50	-3.61
6,442.00	4.02	99.04	6,327.97	-300.12	1,064.69	-184.31	0.90	-0.89	-1.60
6,536.00	1.94	103.05	6,421.83	-301.00	1,069.50	-184.67	2.22	-2.21	4.27
6,630.00	0.40	296.81	6,515.82	-301.21	1,070.76	-184.75	2.48	-1.64	-176.85
6,724.00	0.31	252.39	6,609.82	-301.14	1,070.22	-184.73	0.30	-0.10	-47.26
6,818.00	0.57	225.86	6,703.82	-301.54	1,069.64	-185.20	0.34	0.28	-28.22
6,912.00	0.75	200.13	6,797.81	-302.45	1,069.10	-186.15	0.36	0.19	-27.37
7,006.00	0.35	259.84	6,891.81	-303.07	1,068.60	-186.83	0.69	-0.43	63.52
7,100.00	12.28	359.04	6,985.09	-293.09	1,068.15	-176.95	13.13	12.69	105.53
7,194.00	20.50	1.50	7,075.19	-266.60	1,068.41	-150.58	8.77	8.74	2.62
7,289.00	28.81	7.76	7,161.47	-227.21	1,071.95	-111.04	9.16	8.75	6.59
7,299.61	30.00	7.41	7,170.72	-222.05	1,072.63	-105.84	11.31	11.19	-3.31
<b>30°Inclination @ 7299'MD</b>									
7,368.04	37.67	5.63	7,227.52	-184.22	1,076.90	-67.77	11.31	11.22	-2.60
<b>Crossing Sect. 17 @ 7368'MD</b>									
7,382.00	39.24	5.34	7,238.45	-175.58	1,077.73	-59.09	11.31	11.23	-2.06
7,476.00	46.71	359.43	7,307.20	-111.65	1,080.16	4.73	9.02	7.95	-6.29
7,570.00	52.85	2.47	7,367.88	-39.93	1,081.43	76.17	6.98	6.53	3.23
7,664.00	59.92	1.81	7,419.89	38.24	1,084.34	154.21	7.54	7.52	-0.70
7,758.00	64.96	1.99	7,463.36	121.50	1,087.10	237.29	5.36	5.36	0.19
7,814.36	69.99	3.30	7,484.95	173.49	1,089.51	289.23	9.19	8.93	2.32
<b>70°Inclination @ 7814'MD</b>									
7,880.00	75.87	4.72	7,504.20	236.06	1,093.91	351.91	9.19	8.95	2.17
7,973.00	83.92	2.03	7,520.51	327.37	1,099.27	443.27	9.11	8.66	-2.89
8,067.00	88.07	1.02	7,527.07	421.09	1,101.76	536.72	4.54	4.41	-1.07

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8,162.00	89.09	359.34	7,529.43	516.05	1,102.06	631.17	2.07	1.07	-1.77
8,255.00	88.95	358.82	7,531.02	609.03	1,100.57	723.45	0.58	-0.15	-0.56
8,349.00	89.04	358.60	7,532.67	702.99	1,098.45	816.64	0.25	0.10	-0.23
8,442.00	88.82	357.27	7,534.40	795.91	1,095.10	908.67	1.45	-0.24	-1.43
8,536.00	91.03	357.89	7,534.53	889.82	1,091.13	1,001.61	2.44	2.35	0.66
8,630.00	90.68	356.83	7,533.13	983.71	1,086.80	1,094.50	1.19	-0.37	-1.13
8,724.00	91.74	359.34	7,531.14	1,077.63	1,083.66	1,187.54	2.90	1.13	2.67
8,819.00	91.87	358.90	7,528.15	1,172.57	1,082.20	1,281.78	0.48	0.14	-0.46
8,914.00	91.47	359.43	7,525.38	1,267.52	1,080.82	1,376.03	0.70	-0.42	0.56
9,008.00	91.43	359.39	7,523.00	1,361.48	1,079.85	1,469.35	0.06	-0.04	-0.04
9,102.00	91.60	359.61	7,520.52	1,455.45	1,079.03	1,562.68	0.30	0.18	0.23
9,196.00	90.06	359.39	7,519.15	1,549.43	1,078.21	1,656.04	1.65	-1.64	-0.23
9,290.00	90.01	358.11	7,519.10	1,643.41	1,076.16	1,749.25	1.36	-0.05	-1.36
9,385.00	89.48	358.33	7,519.52	1,738.36	1,073.21	1,843.34	0.60	-0.56	0.23
9,479.00	90.32	0.18	7,519.68	1,832.35	1,071.99	1,936.66	2.16	0.89	1.97
9,574.00	90.54	0.40	7,518.97	1,927.34	1,072.47	2,031.16	0.33	0.23	0.23
9,668.00	90.54	359.70	7,518.08	2,021.34	1,072.55	2,124.62	0.74	0.00	-0.74
9,761.00	90.77	358.11	7,517.02	2,114.31	1,070.77	2,216.87	1.73	0.25	-1.71
9,856.00	91.03	359.83	7,515.53	2,209.28	1,069.07	2,311.11	1.83	0.27	1.81
9,950.00	91.25	0.05	7,513.66	2,303.26	1,068.97	2,404.54	0.33	0.23	0.23
10,045.00	91.56	359.56	7,511.33	2,398.23	1,068.64	2,498.93	0.61	0.33	-0.52
10,138.00	91.96	359.26	7,508.47	2,491.18	1,067.69	2,591.24	0.54	0.43	-0.32
10,232.00	90.72	0.05	7,506.27	2,585.15	1,067.12	2,684.61	1.56	-1.32	0.84
10,326.00	90.94	359.83	7,504.91	2,679.14	1,067.02	2,778.05	0.33	0.23	-0.23
10,420.00	91.43	359.26	7,502.97	2,773.12	1,066.28	2,871.40	0.80	0.52	-0.61
10,514.00	91.21	359.08	7,500.80	2,867.08	1,064.91	2,964.68	0.30	-0.23	-0.19
10,608.00	91.03	358.33	7,498.97	2,961.04	1,062.79	3,057.87	0.82	-0.19	-0.80
10,702.00	89.40	359.96	7,498.61	3,055.02	1,061.39	3,151.16	2.45	-1.73	1.73
10,796.00	89.53	1.59	7,499.49	3,149.01	1,062.66	3,244.74	1.74	0.14	1.73
10,890.00	89.44	1.33	7,500.34	3,242.97	1,065.05	3,338.42	0.29	-0.10	-0.28
10,985.00	89.22	0.84	7,501.45	3,337.95	1,066.85	3,433.04	0.57	-0.23	-0.52
11,079.00	91.07	2.56	7,501.21	3,431.90	1,069.64	3,526.75	2.69	1.97	1.83
11,173.00	91.21	2.47	7,499.34	3,525.79	1,073.77	3,620.55	0.18	0.15	-0.10
11,267.00	91.16	1.81	7,497.39	3,619.70	1,077.27	3,714.29	0.70	-0.05	-0.70
11,361.00	91.47	1.72	7,495.24	3,713.64	1,080.17	3,807.99	0.34	0.33	-0.10
11,456.00	91.65	1.37	7,492.65	3,808.57	1,082.73	3,902.65	0.41	0.19	-0.37
11,550.00	89.40	0.23	7,491.79	3,902.54	1,084.04	3,996.23	2.68	-2.39	-1.21
11,644.00	89.40	359.87	7,492.77	3,996.54	1,084.12	4,089.69	0.38	0.00	-0.38
11,738.00	91.87	0.27	7,491.73	4,090.53	1,084.24	4,183.15	2.66	2.63	0.43
11,833.00	92.27	0.01	7,488.30	4,185.46	1,084.47	4,277.57	0.50	0.42	-0.27
11,926.00	91.12	359.43	7,485.55	4,278.42	1,084.02	4,369.94	1.38	-1.24	-0.62
12,021.00	90.81	359.04	7,483.95	4,373.40	1,082.75	4,464.24	0.52	-0.33	-0.41
12,114.00	90.94	357.93	7,482.53	4,466.35	1,080.29	4,556.39	1.20	0.14	-1.19

## Survey Report

<b>Company:</b>	Extraction Oil & Gas	<b>Local Co-ordinate Reference:</b>	Well Rinn Valley East N17-20-15C
<b>Project:</b>	Weld County, CO (NAD83)	<b>TVD Reference:</b>	KB=25 @ 4964.20ft (Patterson #346)
<b>Site:</b>	Rinn Valley East Pad (Sec.18-T2N-R68W)	<b>MD Reference:</b>	KB=25 @ 4964.20ft (Patterson #346)
<b>Well:</b>	Rinn Valley East N17-20-15C	<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)
12,208.00	90.50	356.13	7,481.35	4,560.21	1,075.42	4,649.19	1.97	-0.47	-1.91
12,302.00	91.34	358.24	7,479.84	4,654.08	1,070.80	4,742.03	2.42	0.89	2.24
12,396.00	91.30	358.15	7,477.67	4,748.01	1,067.84	4,835.10	0.10	-0.04	-0.10
12,490.00	91.52	0.40	7,475.36	4,841.97	1,066.65	4,928.39	2.40	0.23	2.39
12,584.00	92.00	0.45	7,472.47	4,935.92	1,067.35	5,021.87	0.51	0.51	0.05
12,678.00	90.68	1.55	7,470.28	5,029.88	1,068.99	5,115.46	1.83	-1.40	1.17
12,681.70	90.71	1.57	7,470.23	5,033.58	1,069.09	5,119.15	0.98	0.84	0.51
<b>Crossing Sect. 17/8 @ 12681'MD</b>									
12,772.00	91.47	2.03	7,468.51	5,123.82	1,071.93	5,209.17	0.98	0.84	0.51
12,867.00	92.27	2.78	7,465.41	5,218.68	1,075.91	5,303.92	1.15	0.84	0.79
12,961.00	90.77	1.94	7,462.92	5,312.56	1,079.78	5,397.68	1.83	-1.60	-0.89
13,054.00	90.85	1.86	7,461.60	5,405.50	1,082.86	5,490.41	0.12	0.09	-0.09
13,149.00	91.21	1.86	7,459.90	5,500.44	1,085.95	5,585.13	0.38	0.38	0.00
13,242.00	91.16	1.20	7,457.97	5,593.38	1,088.43	5,677.81	0.71	-0.05	-0.71
13,337.00	91.65	0.31	7,455.64	5,688.35	1,089.68	5,772.36	1.07	0.52	-0.94
13,431.00	91.52	359.74	7,453.04	5,782.31	1,089.72	5,865.78	0.62	-0.14	-0.61
13,525.00	89.75	358.95	7,452.00	5,876.29	1,088.65	5,959.11	2.06	-1.88	-0.84
13,619.00	89.93	358.68	7,452.26	5,970.27	1,086.70	6,052.34	0.35	0.19	-0.29
13,714.00	89.97	358.77	7,452.35	6,065.25	1,084.59	6,146.54	0.10	0.04	0.09
13,808.00	89.48	358.77	7,452.80	6,159.23	1,082.57	6,239.76	0.52	-0.52	0.00
13,901.00	91.38	359.74	7,452.10	6,252.21	1,081.36	6,332.08	2.29	2.04	1.04
13,995.00	91.87	359.52	7,449.43	6,346.17	1,080.76	6,425.44	0.57	0.52	-0.23
14,089.00	92.75	359.83	7,445.65	6,440.09	1,080.22	6,518.76	0.99	0.94	0.33
14,183.00	91.52	359.61	7,442.14	6,534.02	1,079.76	6,612.10	1.33	-1.31	-0.23
14,276.00	90.32	0.14	7,440.65	6,627.01	1,079.56	6,704.53	1.41	-1.29	0.57
14,370.00	90.28	359.87	7,440.16	6,721.01	1,079.57	6,797.99	0.29	-0.04	-0.29
14,464.00	90.41	359.30	7,439.59	6,815.00	1,078.89	6,891.37	0.62	0.14	-0.61
14,558.00	90.32	358.29	7,438.99	6,908.98	1,076.91	6,984.59	1.08	-0.10	-1.07
14,652.00	90.68	357.45	7,438.17	7,002.91	1,073.42	7,077.61	0.97	0.38	-0.89
14,746.00	90.81	356.52	7,436.95	7,096.77	1,068.47	7,170.40	1.00	0.14	-0.99
14,841.00	91.43	358.42	7,435.09	7,191.65	1,064.28	7,264.29	2.10	0.65	2.00
14,935.00	89.75	0.36	7,434.13	7,285.64	1,063.28	7,357.62	2.73	-1.79	2.06
15,029.00	89.57	0.05	7,434.68	7,379.63	1,063.62	7,451.11	0.38	-0.19	-0.33
15,123.00	89.93	359.87	7,435.09	7,473.63	1,063.55	7,544.57	0.43	0.38	-0.19
15,217.00	90.50	359.39	7,434.74	7,567.63	1,062.95	7,637.96	0.79	0.61	-0.51
15,311.00	90.94	359.52	7,433.56	7,661.62	1,062.05	7,731.31	0.49	0.47	0.14
15,404.00	91.91	359.65	7,431.25	7,754.58	1,061.38	7,823.67	1.05	1.04	0.14
15,498.00	91.38	1.37	7,428.55	7,848.54	1,062.21	7,917.17	1.91	-0.56	1.83
15,592.00	90.37	2.16	7,427.11	7,942.48	1,065.11	8,010.88	1.36	-1.07	0.84
15,687.00	90.54	1.33	7,426.36	8,037.43	1,068.00	8,105.60	0.89	0.18	-0.87
15,781.00	90.01	0.05	7,425.91	8,131.42	1,069.13	8,199.17	1.47	-0.56	-1.36
15,875.00	90.63	359.79	7,425.38	8,225.42	1,069.00	8,292.61	0.72	0.66	-0.28
15,970.00	90.32	357.98	7,424.59	8,320.40	1,067.15	8,386.84	1.93	-0.33	-1.91
16,064.00	91.12	359.96	7,423.41	8,414.37	1,065.46	8,480.09	2.27	0.85	2.11

## Survey Report

<b>Company:</b>	Extraction Oil & Gas	<b>Local Co-ordinate Reference:</b>	Well Rinn Valley East N17-20-15C
<b>Project:</b>	Weld County, CO (NAD83)	<b>TVD Reference:</b>	KB=25 @ 4964.20ft (Patterson #346)
<b>Site:</b>	Rinn Valley East Pad (Sec.18-T2N-R68W)	<b>MD Reference:</b>	KB=25 @ 4964.20ft (Patterson #346)
<b>Well:</b>	Rinn Valley East N17-20-15C	<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)
16,157.00	90.77	0.75	7,421.88	8,507.35	1,066.04	8,572.60	0.93	-0.38	0.85
16,251.00	91.07	0.49	7,420.37	8,601.33	1,067.06	8,666.15	0.42	0.32	-0.28
16,344.00	90.50	1.06	7,419.10	8,694.32	1,068.32	8,758.73	0.87	-0.61	0.61
16,439.00	91.07	1.33	7,417.79	8,789.29	1,070.30	8,853.37	0.66	0.60	0.28
16,533.00	91.43	1.46	7,415.74	8,883.24	1,072.58	8,947.02	0.41	0.38	0.14
16,627.00	90.10	0.45	7,414.49	8,977.21	1,074.15	9,040.62	1.78	-1.41	-1.07
16,721.00	90.99	0.49	7,413.60	9,071.20	1,074.92	9,134.16	0.95	0.95	0.04
16,816.00	90.50	1.90	7,412.36	9,166.17	1,076.90	9,228.79	1.57	-0.52	1.48
16,911.00	91.38	2.21	7,410.80	9,261.10	1,080.31	9,323.53	0.98	0.93	0.33
17,005.00	90.46	1.72	7,409.29	9,355.03	1,083.53	9,417.27	1.11	-0.98	-0.52
17,098.00	90.28	1.99	7,408.69	9,447.98	1,086.54	9,510.01	0.35	-0.19	0.29
17,193.00	90.68	1.59	7,407.90	9,542.93	1,089.51	9,604.73	0.60	0.42	-0.42
17,287.00	91.60	1.77	7,406.03	9,636.87	1,092.26	9,698.42	1.00	0.98	0.19
17,381.00	91.91	1.20	7,403.15	9,730.79	1,094.70	9,792.07	0.69	0.33	-0.61
17,475.00	91.96	0.14	7,399.97	9,824.73	1,095.80	9,885.58	1.13	0.05	-1.13
<b>Last MWD Survey @ 17475'MD</b>									
17,565.00	91.96	0.14	7,396.89	9,914.68	1,096.02	9,975.03	0.00	0.00	0.00
<b>PTB @ TD @ 17565'MD (511'FNL &amp; 500'FWL)</b>									

### Design Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
1,564.00	1,555.03	-31.97	110.43	Tie in to Surface Surveys @ 1564'MD
1,645.00	1,634.68	-35.49	124.74	First MWD Survey @ 1645'MD
7,299.61	7,170.72	-222.05	1,072.63	30°Inclination @ 7299'MD
7,368.04	7,227.52	-184.22	1,076.90	Crossing Sect. 17 @ 7368'MD
7,814.36	7,484.95	173.49	1,089.51	70°Inclination @ 7814'MD
12,681.70	7,470.23	5,033.58	1,069.09	Crossing Sect. 17/8 @ 12681'MD
17,475.00	7,399.97	9,824.73	1,095.80	Last MWD Survey @ 17475'MD
17,565.00	7,396.89	9,914.68	1,096.02	PTB @ TD @ 17565'MD (511'FNL & 500'FWL)

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