

# **Extraction Oil & Gas**

**Weld County, CO (NAD83)**

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

**Rinn Valley East N17-20-10C**

**Wellbore #1**

**Design: Wellbore #1**

## **Standard Survey Report**

**09 August, 2018**

## Survey Report

<b>Company:</b>	Extraction Oil & Gas	<b>Local Co-ordinate Reference:</b>	Well Rinn Valley East N17-20-10C
<b>Project:</b>	Weld County, CO (NAD83)	<b>TVD Reference:</b>	KB=25 @ 4961.70ft (Patterson #346)
<b>Site:</b>	Rinn Valley East Pad (Sec.18-T2N-R68W)	<b>MD Reference:</b>	KB=25 @ 4961.70ft (Patterson #346)
<b>Well:</b>	Rinn Valley East N17-20-10C	<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 N17-20-10C				
Well Position	+N/-S	0.00 ft	Northing:	1,291,283.11 usft	Latitude:	40.13204
	+E/-W	0.00 ft	Easting:	3,129,103.16 usft	Longitude:	-105.03828
Position Uncertainty		0.00 ft	Wellhead Elevation:	0.00 ft	Ground Level:	4,936.70 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	6/29/2018	8.48	66.52	52,020

<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	16.04	

<b>Survey Program</b>	<b>Date</b>	8/9/2018			
<b>From (ft)</b>	<b>To (ft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>	
87.00	1,603.00	Surface (Wellbore #1)	NS-GYRO-MS	North sensing gyrocompassing m/s	
1,740.00	18,145.00	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
87.00	0.91	210.69	87.00	-0.59	-0.35	-0.67	1.05	1.05	0.00
149.00	0.90	184.62	148.99	-1.50	-0.64	-1.62	0.66	-0.02	-42.05
230.00	0.60	118.35	229.98	-2.34	-0.32	-2.34	1.06	-0.37	-81.81
315.00	2.79	99.59	314.94	-2.89	2.11	-2.20	2.62	2.58	-22.07
399.00	4.60	90.90	398.76	-3.29	7.49	-1.09	2.25	2.15	-10.35
484.00	5.83	89.23	483.41	-3.28	15.22	1.05	1.46	1.45	-1.96
567.00	7.17	85.70	565.88	-2.84	24.60	4.07	1.68	1.61	-4.25
653.00	9.01	95.14	651.02	-3.04	36.66	7.21	2.63	2.14	10.98
736.00	10.58	94.22	732.81	-4.18	50.73	10.00	1.90	1.89	-1.11

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<b>Well:</b>	Rinn Valley East N17-20-10C	<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)
821.00	12.48	98.38	816.09	-6.10	67.60	12.82	2.44	2.24	4.89
906.00	14.25	98.85	898.78	-9.04	87.03	15.36	2.09	2.08	0.55
989.00	15.72	98.55	978.96	-12.29	108.24	18.10	1.77	1.77	-0.36
1,073.00	16.95	98.43	1,059.57	-15.77	131.61	21.21	1.46	1.46	-0.14
1,157.00	18.20	98.96	1,139.64	-19.61	156.68	24.45	1.50	1.49	0.63
1,243.00	20.05	98.32	1,220.89	-23.84	184.54	28.08	2.16	2.15	-0.74
1,328.00	21.57	96.72	1,300.35	-27.77	214.47	32.57	1.91	1.79	-1.88
1,413.00	23.43	97.78	1,378.87	-31.89	246.74	37.53	2.24	2.19	1.25
1,495.00	26.23	93.91	1,453.29	-35.33	280.98	43.68	3.95	3.41	-4.72
1,582.00	27.74	94.83	1,530.82	-38.35	320.34	51.66	1.80	1.74	1.06
1,603.00	27.94	95.20	1,549.39	-39.21	330.11	53.54	1.26	0.95	1.76
<b>Tie in to Surface Surveys @ 1603'MD</b>									
1,740.00	27.09	93.66	1,670.89	-44.11	393.20	66.26	0.81	-0.62	-1.12
<b>First MWD Survey @ 1740'MD</b>									
1,833.00	27.75	95.69	1,753.44	-47.61	435.88	74.69	1.23	0.71	2.18
1,927.00	29.70	96.26	1,835.87	-52.32	480.81	82.58	2.09	2.07	0.61
2,021.00	32.48	98.02	1,916.36	-58.38	528.96	90.06	3.11	2.96	1.87
2,115.00	34.42	96.35	1,994.79	-64.84	580.36	98.06	2.28	2.06	-1.78
2,208.00	32.97	95.73	2,072.17	-70.27	631.67	107.01	1.60	-1.56	-0.67
2,303.00	33.41	97.14	2,151.67	-76.10	683.34	115.69	0.94	0.46	1.48
2,397.00	31.95	97.06	2,230.79	-82.38	733.70	123.57	1.55	-1.55	-0.09
2,491.00	33.14	95.38	2,310.03	-87.84	783.97	132.21	1.59	1.27	-1.79
2,585.00	31.33	95.91	2,389.54	-92.77	833.86	141.26	1.95	-1.93	0.56
2,679.00	32.21	96.00	2,469.45	-97.91	883.09	149.93	0.94	0.94	0.10
2,773.00	33.27	96.97	2,548.52	-103.65	933.60	158.36	1.26	1.13	1.03
2,867.00	31.20	96.53	2,628.02	-109.55	983.39	166.45	2.22	-2.20	-0.47
2,961.00	31.99	96.53	2,708.09	-115.15	1,032.31	174.59	0.84	0.84	0.00
3,055.00	32.21	95.51	2,787.72	-120.39	1,081.99	183.28	0.62	0.23	-1.09
3,149.00	33.41	96.00	2,866.72	-125.50	1,132.66	192.38	1.31	1.28	0.52
3,243.00	31.20	95.78	2,946.17	-130.66	1,182.63	201.23	2.35	-2.35	-0.23
3,336.00	32.48	96.22	3,025.17	-135.79	1,231.42	209.78	1.40	1.38	0.47
3,430.00	30.05	95.38	3,105.52	-140.73	1,279.95	218.44	2.63	-2.59	-0.89
3,524.00	31.29	97.01	3,186.37	-145.92	1,327.62	226.62	1.59	1.32	1.73
3,619.00	32.92	97.14	3,266.84	-152.14	1,377.72	234.49	1.72	1.72	0.14
3,713.00	33.63	99.39	3,345.43	-159.56	1,428.75	241.46	1.51	0.76	2.39
3,807.00	30.84	99.17	3,424.93	-167.65	1,478.23	247.36	2.97	-2.97	-0.23
3,901.00	32.66	96.88	3,504.86	-174.53	1,527.20	254.28	2.32	1.94	-2.44
3,995.00	33.89	95.87	3,583.45	-180.25	1,578.45	262.95	1.44	1.31	-1.07
4,090.00	33.27	96.04	3,662.60	-185.70	1,630.71	272.15	0.66	-0.65	0.18
4,184.00	32.79	96.57	3,741.40	-191.32	1,681.64	280.82	0.60	-0.51	0.56
4,279.00	33.10	97.54	3,821.13	-197.67	1,732.91	288.88	0.64	0.33	1.02
4,373.00	32.08	98.55	3,900.33	-204.75	1,783.04	295.93	1.23	-1.09	1.07
4,467.00	33.14	97.58	3,979.51	-211.85	1,833.20	302.97	1.26	1.13	-1.03

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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	32.44	96.88	4,058.53	-218.26	1,883.70	310.76	0.85	-0.74	-0.74
4,655.00	31.95	95.38	4,138.08	-223.61	1,933.49	319.38	1.00	-0.52	-1.60
4,750.00	31.29	95.03	4,218.97	-228.13	1,983.09	328.74	0.72	-0.69	-0.37
4,844.00	31.95	94.37	4,299.02	-232.17	2,032.21	338.44	0.79	0.70	-0.70
4,938.00	31.95	93.84	4,378.78	-235.73	2,081.82	348.72	0.30	0.00	-0.56
5,032.00	32.44	95.95	4,458.33	-240.01	2,131.72	358.40	1.30	0.52	2.24
5,126.00	30.67	99.08	4,538.43	-246.40	2,180.47	365.72	2.57	-1.88	3.33
5,220.00	30.45	97.32	4,619.38	-253.22	2,227.77	372.24	0.98	-0.23	-1.87
5,314.00	31.77	95.12	4,699.86	-258.47	2,276.05	380.54	1.85	1.40	-2.34
5,408.00	31.29	94.98	4,779.98	-262.79	2,325.01	389.91	0.52	-0.51	-0.15
5,502.00	33.14	94.28	4,859.51	-266.83	2,374.96	399.83	2.01	1.97	-0.74
5,597.00	31.95	92.60	4,939.59	-269.91	2,425.97	410.97	1.57	-1.25	-1.77
5,690.00	29.43	95.51	5,019.56	-273.22	2,473.30	420.87	3.14	-2.71	3.13
5,784.00	26.07	92.21	5,102.74	-276.23	2,516.94	430.03	3.93	-3.57	-3.51
5,878.00	24.35	96.53	5,187.79	-279.23	2,556.84	438.17	2.68	-1.83	4.60
5,972.00	22.27	93.53	5,274.12	-282.54	2,593.88	445.23	2.55	-2.21	-3.19
6,066.00	22.23	98.42	5,361.13	-286.24	2,629.25	451.45	1.97	-0.04	5.20
6,160.00	19.89	93.93	5,448.85	-289.94	2,662.80	457.16	3.02	-2.49	-4.78
6,254.00	18.87	90.09	5,537.52	-291.06	2,693.95	464.70	1.74	-1.09	-4.09
6,348.00	17.23	91.28	5,626.90	-291.39	2,723.08	472.42	1.79	-1.74	1.27
6,442.00	15.25	88.77	5,717.14	-291.44	2,749.36	479.64	2.23	-2.11	-2.67
6,560.00	12.28	98.51	5,831.76	-292.96	2,777.29	485.90	3.18	-2.52	8.25
6,654.00	10.65	93.53	5,923.88	-294.98	2,795.85	489.09	2.03	-1.73	-5.30
6,748.00	9.06	102.21	6,016.49	-297.08	2,811.76	491.46	2.31	-1.69	9.23
6,842.00	7.42	97.23	6,109.52	-299.41	2,825.01	492.89	1.90	-1.74	-5.30
6,936.00	6.54	105.12	6,202.83	-301.57	2,836.20	493.90	1.38	-0.94	8.39
7,030.00	4.02	100.18	6,296.42	-303.54	2,844.61	494.33	2.72	-2.68	-5.26
7,124.00	1.55	110.50	6,390.30	-304.57	2,849.05	494.56	2.67	-2.63	10.98
7,218.00	1.33	105.38	6,484.27	-305.31	2,851.29	494.48	0.27	-0.23	-5.45
7,313.00	1.10	102.34	6,579.25	-305.79	2,853.24	494.55	0.25	-0.24	-3.20
7,407.00	0.97	88.77	6,673.24	-305.97	2,854.92	494.84	0.29	-0.14	-14.44
7,501.00	0.97	74.10	6,767.22	-305.74	2,856.48	495.50	0.26	0.00	-15.61
7,594.00	0.80	67.27	6,860.21	-305.27	2,857.84	496.32	0.21	-0.18	-7.34
7,688.00	11.67	352.91	6,953.55	-295.55	2,857.27	505.51	12.21	11.56	-79.11
7,782.00	22.40	1.77	7,043.31	-268.13	2,856.65	531.69	11.71	11.41	9.43
7,876.00	29.03	0.14	7,127.95	-227.37	2,857.26	571.03	7.09	7.05	-1.73
7,889.00	29.99	359.48	7,139.26	-220.97	2,857.23	577.17	7.81	7.40	-5.08
<b>30°Inclination @ 7889'MD</b>									
7,938.21	33.66	357.29	7,181.07	-195.04	2,856.48	601.89	7.81	7.45	-4.44
<b>Enter Section 17 @ 7938'MD</b>									
7,969.00	35.97	356.13	7,206.35	-177.49	2,855.46	618.47	7.81	7.51	-3.78
8,063.00	41.54	356.57	7,279.62	-118.79	2,851.73	673.86	5.93	5.93	0.47
8,157.00	46.18	356.44	7,347.38	-53.80	2,847.76	735.22	4.94	4.94	-0.14
8,251.00	55.50	358.73	7,406.68	18.94	2,844.79	804.30	10.09	9.91	2.44

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8,345.00	68.41	359.30	7,450.78	101.71	2,843.39	883.47	13.74	13.73	0.61
8,358.33	70.00	359.40	7,455.52	114.18	2,843.25	895.41	11.94	11.92	0.75
<b>70°Inclination @ 8358.33</b>									
8,438.00	79.50	359.96	7,476.45	190.95	2,842.83	969.08	11.94	11.92	0.70
8,532.00	83.96	359.87	7,489.97	283.95	2,842.69	1,058.41	4.75	4.74	-0.10
8,625.00	83.56	359.17	7,500.07	376.39	2,841.92	1,147.05	0.86	-0.43	-0.75
8,719.00	88.20	0.36	7,506.83	470.12	2,841.54	1,237.02	5.10	4.94	1.27
8,814.00	90.01	359.87	7,508.31	565.11	2,841.73	1,328.36	1.97	1.91	-0.52
8,909.00	89.88	359.52	7,508.40	660.11	2,841.22	1,419.52	0.39	-0.14	-0.37
9,003.00	89.44	358.68	7,508.96	754.09	2,839.74	1,509.44	1.01	-0.47	-0.89
9,098.00	90.59	0.01	7,508.93	849.08	2,838.66	1,600.43	1.85	1.21	1.40
9,191.00	90.19	358.64	7,508.30	942.07	2,837.56	1,689.49	1.53	-0.43	-1.47
9,285.00	89.35	358.55	7,508.68	1,036.04	2,835.26	1,779.17	0.90	-0.89	-0.10
9,380.00	90.41	359.39	7,508.88	1,131.02	2,833.55	1,869.98	1.42	1.12	0.88
9,475.00	90.99	1.15	7,507.72	1,226.01	2,834.00	1,961.39	1.95	0.61	1.85
9,569.00	90.23	0.84	7,506.72	1,319.99	2,835.63	2,052.16	0.87	-0.81	-0.33
9,664.00	90.10	0.93	7,506.44	1,414.98	2,837.10	2,143.86	0.17	-0.14	0.09
9,757.00	90.54	0.58	7,505.92	1,507.97	2,838.32	2,233.57	0.60	0.47	-0.38
9,851.00	90.46	0.23	7,505.10	1,601.96	2,838.99	2,324.08	0.38	-0.09	-0.37
9,946.00	90.28	359.56	7,504.49	1,696.96	2,838.81	2,415.33	0.73	-0.19	-0.71
10,040.00	90.50	359.17	7,503.85	1,790.95	2,837.77	2,505.38	0.48	0.23	-0.41
10,134.00	90.68	1.99	7,502.88	1,884.93	2,838.72	2,595.96	3.01	0.19	3.00
10,228.00	92.89	2.65	7,499.95	1,978.80	2,842.53	2,687.23	2.45	2.35	0.70
10,322.00	90.63	1.64	7,497.07	2,072.69	2,846.04	2,778.43	2.63	-2.40	-1.07
10,415.00	90.41	1.37	7,496.22	2,165.65	2,848.48	2,868.45	0.37	-0.24	-0.29
10,509.00	90.23	1.02	7,495.70	2,259.63	2,850.44	2,959.31	0.42	-0.19	-0.37
10,603.00	91.43	0.49	7,494.34	2,353.61	2,851.68	3,049.97	1.40	1.28	-0.56
10,697.00	92.49	0.53	7,491.12	2,447.55	2,852.52	3,140.48	1.13	1.13	0.04
10,791.00	90.81	359.26	7,488.41	2,541.50	2,852.35	3,230.73	2.24	-1.79	-1.35
10,885.00	90.28	358.60	7,487.52	2,635.48	2,850.59	3,320.57	0.90	-0.56	-0.70
10,980.00	90.99	0.01	7,486.47	2,730.47	2,849.44	3,411.53	1.66	0.75	1.48
11,074.00	90.41	358.90	7,485.32	2,824.45	2,848.54	3,501.62	1.33	-0.62	-1.18
11,169.00	91.96	359.87	7,483.35	2,919.42	2,847.52	3,592.61	1.92	1.63	1.02
11,263.00	92.18	0.09	7,479.96	3,013.36	2,847.49	3,682.88	0.33	0.23	0.23
11,357.00	91.07	0.80	7,477.29	3,107.32	2,848.22	3,773.38	1.40	-1.18	0.76
11,451.00	91.78	0.75	7,474.96	3,201.28	2,849.49	3,864.03	0.76	0.76	-0.05
11,546.00	91.87	359.39	7,471.93	3,296.23	2,849.61	3,955.32	1.43	0.09	-1.43
11,734.00	90.32	358.42	7,468.34	3,484.15	2,846.02	4,134.93	0.97	-0.82	-0.52
11,828.00	89.93	357.85	7,468.13	3,578.10	2,842.96	4,224.38	0.73	-0.41	-0.61
11,923.00	90.15	359.17	7,468.07	3,673.07	2,840.49	4,314.96	1.41	0.23	1.39
12,016.00	90.28	358.99	7,467.72	3,766.06	2,838.99	4,403.92	0.24	0.14	-0.19
12,109.00	90.63	358.64	7,466.98	3,859.03	2,837.07	4,492.74	0.53	0.38	-0.38
12,203.00	89.17	0.27	7,467.14	3,953.02	2,836.18	4,582.82	2.33	-1.55	1.73

## Survey Report

<b>Company:</b>	Extraction Oil & Gas	<b>Local Co-ordinate Reference:</b>	Well Rinn Valley East N17-20-10C
<b>Project:</b>	Weld County, CO (NAD83)	<b>TVD Reference:</b>	KB=25 @ 4961.70ft (Patterson #346)
<b>Site:</b>	Rinn Valley East Pad (Sec.18-T2N-R68W)	<b>MD Reference:</b>	KB=25 @ 4961.70ft (Patterson #346)
<b>Well:</b>	Rinn Valley East N17-20-10C	<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)
12,297.00	88.95	359.65	7,468.68	4,047.01	2,836.11	4,673.13	0.70	-0.23	-0.66
12,391.00	89.97	1.33	7,469.57	4,141.00	2,836.91	4,763.68	2.09	1.09	1.79
12,485.00	90.59	0.58	7,469.11	4,234.98	2,838.48	4,854.44	1.04	0.66	-0.80
12,579.00	91.12	0.36	7,467.71	4,328.97	2,839.25	4,944.98	0.61	0.56	-0.23
12,673.00	90.54	0.05	7,466.35	4,422.96	2,839.59	5,035.40	0.70	-0.62	-0.33
12,767.00	90.54	0.14	7,465.46	4,516.95	2,839.74	5,125.78	0.10	0.00	0.10
12,861.00	92.40	359.87	7,463.05	4,610.92	2,839.75	5,216.09	2.00	1.98	-0.29
12,956.00	92.40	359.74	7,459.07	4,705.83	2,839.43	5,307.22	0.14	0.00	-0.14
13,049.00	91.52	0.89	7,455.89	4,798.78	2,839.94	5,396.69	1.56	-0.95	1.24
13,143.00	92.40	0.71	7,452.68	4,892.71	2,841.25	5,487.33	0.96	0.94	-0.19
13,237.00	92.27	359.52	7,448.85	4,986.63	2,841.44	5,577.64	1.27	-0.14	-1.27
13,296.27	91.94	359.46	7,446.67	5,045.86	2,840.92	5,634.42	0.57	-0.56	-0.10
<b>Crossing Section 17/8 @ 13296'MD</b>									
13,331.00	91.74	359.43	7,445.56	5,080.57	2,840.58	5,667.68	0.57	-0.56	-0.10
13,426.00	90.50	0.49	7,443.70	5,175.55	2,840.51	5,758.95	1.72	-1.31	1.12
13,520.00	89.31	358.29	7,443.86	5,269.53	2,839.51	5,849.00	2.66	-1.27	-2.34
13,614.00	90.28	0.18	7,444.19	5,363.52	2,838.26	5,938.98	2.26	1.03	2.01
13,708.00	90.28	359.74	7,443.73	5,457.52	2,838.19	6,029.30	0.47	0.00	-0.47
13,803.00	89.57	0.45	7,443.86	5,552.52	2,838.35	6,120.64	1.06	-0.75	0.75
13,896.00	90.15	359.92	7,444.08	5,645.52	2,838.65	6,210.10	0.84	0.62	-0.57
13,990.00	89.70	358.20	7,444.21	5,739.50	2,837.11	6,300.00	1.89	-0.48	-1.83
14,083.00	90.41	359.17	7,444.12	5,832.47	2,834.97	6,388.76	1.29	0.76	1.04
14,178.00	90.59	359.08	7,443.29	5,927.46	2,833.52	6,479.65	0.21	0.19	-0.09
14,271.00	90.28	359.17	7,442.58	6,020.44	2,832.10	6,568.62	0.35	-0.33	0.10
14,365.00	89.35	359.87	7,442.89	6,114.44	2,831.32	6,658.74	1.24	-0.99	0.74
14,459.00	88.73	1.90	7,444.46	6,208.41	2,832.77	6,749.45	2.26	-0.66	2.16
14,553.00	89.09	1.33	7,446.25	6,302.35	2,835.42	6,840.47	0.72	0.38	-0.61
14,647.00	89.35	0.58	7,447.53	6,396.33	2,836.98	6,931.22	0.84	0.28	-0.80
14,741.00	89.17	359.79	7,448.74	6,490.32	2,837.29	7,021.64	0.86	-0.19	-0.84
14,836.00	89.75	0.27	7,449.64	6,585.32	2,837.34	7,112.95	0.79	0.61	0.51
14,930.00	89.40	0.09	7,450.34	6,679.31	2,837.63	7,203.36	0.42	-0.37	-0.19
15,024.00	91.21	0.89	7,449.84	6,773.30	2,838.44	7,293.92	2.11	1.93	0.85
15,118.00	91.69	0.89	7,447.46	6,867.26	2,839.90	7,384.62	0.51	0.51	0.00
15,212.00	91.16	359.87	7,445.12	6,961.23	2,840.52	7,475.10	1.22	-0.56	-1.09
15,306.00	92.62	0.93	7,442.02	7,055.17	2,841.17	7,565.57	1.92	1.55	1.13
15,399.00	92.09	1.20	7,438.20	7,148.08	2,842.90	7,655.33	0.64	-0.57	0.29
15,493.00	92.49	0.45	7,434.44	7,241.99	2,844.25	7,745.96	0.90	0.43	-0.80
15,587.00	92.80	0.01	7,430.10	7,335.89	2,844.63	7,836.31	0.57	0.33	-0.47
15,681.00	92.18	0.40	7,426.02	7,429.80	2,844.97	7,926.66	0.78	-0.66	0.41
15,776.00	88.07	0.09	7,425.81	7,524.78	2,845.37	8,018.05	4.34	-4.33	-0.33
15,870.00	87.54	359.30	7,429.41	7,618.71	2,844.87	8,108.18	1.01	-0.56	-0.84
15,964.00	90.06	359.83	7,431.38	7,712.68	2,844.16	8,198.29	2.74	2.68	0.56
16,059.00	91.03	359.61	7,430.48	7,807.67	2,843.70	8,289.46	1.05	1.02	-0.23
16,152.00	91.56	359.12	7,428.38	7,900.64	2,842.66	8,378.53	0.78	0.57	-0.53

## Survey Report

<b>Company:</b>	Extraction Oil & Gas	<b>Local Co-ordinate Reference:</b>	Well Rinn Valley East N17-20-10C
<b>Project:</b>	Weld County, CO (NAD83)	<b>TVD Reference:</b>	KB=25 @ 4961.70ft (Patterson #346)
<b>Site:</b>	Rinn Valley East Pad (Sec.18-T2N-R68W)	<b>MD Reference:</b>	KB=25 @ 4961.70ft (Patterson #346)
<b>Well:</b>	Rinn Valley East N17-20-10C	<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)
16,246.00	90.85	0.45	7,426.40	7,994.62	2,842.31	8,468.74	1.60	-0.76	1.41
16,340.00	91.52	0.23	7,424.45	8,088.59	2,842.87	8,559.22	0.75	0.71	-0.23
16,433.00	89.79	359.74	7,423.39	8,181.58	2,842.85	8,648.58	1.93	-1.86	-0.53
16,528.00	90.06	359.26	7,423.52	8,276.58	2,842.02	8,739.65	0.58	0.28	-0.51
16,622.00	90.68	358.64	7,422.91	8,370.56	2,840.29	8,829.49	0.93	0.66	-0.66
16,716.00	90.99	359.70	7,421.54	8,464.54	2,838.93	8,919.44	1.17	0.33	1.13
16,810.00	89.88	1.33	7,420.83	8,558.53	2,839.78	9,010.00	2.10	-1.18	1.73
16,905.00	90.59	1.20	7,420.44	8,653.50	2,841.87	9,101.86	0.76	0.75	-0.14
16,999.00	89.75	1.06	7,420.16	8,747.48	2,843.73	9,192.69	0.91	-0.89	-0.15
17,093.00	90.63	0.62	7,419.85	8,841.47	2,845.11	9,283.40	1.05	0.94	-0.47
17,187.00	91.30	1.94	7,418.26	8,935.43	2,847.21	9,374.28	1.57	0.71	1.40
17,281.00	89.70	1.86	7,417.44	9,029.38	2,850.32	9,465.43	1.70	-1.70	-0.09
17,376.00	90.85	1.64	7,416.99	9,124.33	2,853.22	9,557.48	1.23	1.21	-0.23
17,470.00	91.87	1.33	7,414.75	9,218.27	2,855.66	9,648.44	1.13	1.09	-0.33
17,564.00	91.38	1.42	7,412.09	9,312.20	2,857.91	9,739.34	0.53	-0.52	0.10
17,658.00	92.40	1.06	7,408.99	9,406.13	2,859.95	9,830.17	1.15	1.09	-0.38
17,752.00	91.16	0.05	7,406.07	9,500.08	2,860.86	9,920.71	1.70	-1.32	-1.07
17,846.00	91.69	358.99	7,403.73	9,594.04	2,860.07	10,010.80	1.26	0.56	-1.13
17,940.00	90.06	357.14	7,402.30	9,687.97	2,856.90	10,100.19	2.62	-1.73	-1.97
18,034.00	90.81	356.17	7,401.58	9,781.81	2,851.41	10,188.86	1.30	0.80	-1.03
<b>Last MWD Survey @ 18034'MD</b>									
18,145.00	90.81	356.17	7,400.01	9,892.55	2,844.00	10,293.24	0.00	0.00	0.00
<b>PTB @ TD @ 18145'MD (499'FNL &amp; 2388"FWL)</b>									

### Design Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
1,603.00	1,549.39	-39.21	330.11	Tie in to Surface Surveys @ 1603'MD
1,740.00	1,670.89	-44.11	393.20	First MWD Survey @ 1740'MD
7,889.00	7,139.26	-220.97	2,857.23	30°Inclination @ 7889'MD
7,938.21	7,181.07	-195.04	2,856.48	Enter Section 17 @ 7938'MD
8,358.33	7,455.52	114.18	2,843.25	70°Inclination @ 8358.33
13,296.27	7,446.67	5,045.86	2,840.92	Crossing Section 17/8 @ 13296'MD
18,034.00	7,401.58	9,781.81	2,851.41	Last MWD Survey @ 18034'MD
18,145.00	7,400.01	9,892.55	2,844.00	PTB @ TD @ 18145'MD (499'FNL & 2388"FWL)

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