



Extraction Oil & Gas

Weld County, CO (NAD83)

Sec 32-T6N-R65W

WS-SUNRISE 1-5-5

Wellbore #1

Design: Wellbore #1

Standard Survey Report

19 March, 2018

Company:	Extraction Oil & Gas	Local Co-ordinate Reference:	Well WS-SUNRISE 1-5-5
Project:	Weld County, CO (NAD83)	TVD Reference:	KB=25' @ 4666.00ft (P 346)
Site:	Sec 32-T6N-R65W	MD Reference:	KB=25' @ 4666.00ft (P 346)
Well:	WS-SUNRISE 1-5-5	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		Sec 32-T6N-R65W			
Site Position:		Northing:	1,403,150.90 usft	Latitude:	40.437180
From:	Map	Easting:	3,227,225.68 usft	Longitude:	-104.683680
Position Uncertainty:	0.00 ft	Slot Radius:	13-3/16 "	Grid Convergence:	0.53 °

Well		WS-SUNRISE 1-5-5				
Well Position	+N/-S	0.00 ft	Northing:	1,403,154.06 usft	Latitude:	40.437190
	+E/-W	0.00 ft	Easting:	3,227,172.76 usft	Longitude:	-104.683870
Position Uncertainty		0.00 ft	Wellhead Elevation:	0.00 ft	Ground Level:	4,641.00 ft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	HDGM	3/12/2018	8.13	66.92	52,298

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	182.79	

Survey Program	Date	3/19/2018			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
104.00	1,530.00	Surface (Wellbore #1)	MWD	MWD - Standard	
1,658.00	11,830.00	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	
104.00	0.52	204.14	104.00	-0.43	-0.19	0.44	0.50	0.50	0.00	
200.00	0.48	122.93	200.00	-1.05	-0.03	1.05	0.68	-0.04	-84.59	
295.00	0.65	194.91	294.99	-1.78	0.16	1.77	0.71	0.18	75.77	
390.00	0.08	320.05	389.99	-2.25	-0.02	2.25	0.74	-0.60	131.73	
485.00	0.61	223.57	484.99	-2.57	-0.41	2.59	0.66	0.56	-101.56	
581.00	0.39	24.49	580.99	-2.64	-0.63	2.67	1.03	-0.23	167.63	
676.00	1.45	36.89	675.97	-1.39	0.23	1.37	1.13	1.12	13.05	
771.00	0.61	338.70	770.96	0.05	0.77	-0.08	1.31	-0.88	-61.25	
866.00	0.87	332.29	865.95	1.16	0.25	-1.17	0.29	0.27	-6.75	

Company:	Extraction Oil & Gas	Local Co-ordinate Reference:	Well WS-SUNRISE 1-5-5
Project:	Weld County, CO (NAD83)	TVD Reference:	KB=25' @ 4666.00ft (P 346)
Site:	Sec 32-T6N-R65W	MD Reference:	KB=25' @ 4666.00ft (P 346)
Well:	WS-SUNRISE 1-5-5	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)
961.00	0.92	332.73	960.94	2.47	-0.44	-2.45	0.05	0.05	0.46
1,055.00	1.14	124.69	1,054.93	2.61	-0.01	-2.61	2.13	0.23	161.66
1,150.00	1.49	131.63	1,149.91	1.25	1.69	-1.33	0.40	0.37	7.31
1,244.00	0.43	217.41	1,243.90	0.16	2.38	-0.28	1.62	-1.13	91.26
1,339.00	0.79	259.60	1,338.89	-0.24	1.52	0.17	0.58	0.38	44.41
1,434.00	1.49	250.64	1,433.87	-0.77	-0.29	0.78	0.76	0.74	-9.43
1,530.00	2.90	234.38	1,529.80	-2.60	-3.44	2.76	1.59	1.47	-16.94
1,658.00	3.14	234.59	1,657.62	-6.51	-8.93	6.94	0.19	0.19	0.16
First MWD Survey @ 1658'MD									
1,752.00	2.47	231.46	1,751.51	-9.27	-12.61	9.87	0.73	-0.71	-3.33
1,846.00	2.08	233.01	1,845.44	-11.56	-15.56	12.30	0.42	-0.41	1.65
1,941.00	1.81	231.68	1,940.38	-13.52	-18.11	14.39	0.29	-0.28	-1.40
2,035.00	1.86	233.58	2,034.33	-15.35	-20.50	16.33	0.08	0.05	2.02
2,129.00	1.77	234.68	2,128.29	-17.10	-22.91	18.19	0.10	-0.10	1.17
2,223.00	1.77	238.60	2,222.24	-18.69	-25.34	19.90	0.13	0.00	4.17
2,318.00	4.20	237.50	2,317.10	-21.32	-29.53	22.74	2.56	2.56	-1.16
2,412.00	3.98	231.82	2,410.87	-25.19	-34.99	26.87	0.49	-0.23	-6.04
2,506.00	3.71	230.41	2,504.65	-29.15	-39.90	31.06	0.30	-0.29	-1.50
2,600.00	3.49	228.20	2,598.47	-32.99	-44.38	35.11	0.28	-0.23	-2.35
2,694.00	3.45	229.00	2,692.30	-36.75	-48.64	39.08	0.07	-0.04	0.85
2,789.00	3.67	231.73	2,787.11	-40.51	-53.19	43.06	0.29	0.23	2.87
2,883.00	3.49	232.65	2,880.93	-44.11	-57.83	46.88	0.20	-0.19	0.98
2,977.00	3.27	232.12	2,974.77	-47.49	-62.22	50.47	0.24	-0.23	-0.56
3,072.00	3.14	231.20	3,069.62	-50.79	-66.38	53.96	0.15	-0.14	-0.97
3,166.00	3.23	231.16	3,163.47	-54.06	-70.45	57.43	0.10	0.10	-0.04
3,260.00	2.70	227.98	3,257.35	-57.20	-74.16	60.75	0.59	-0.56	-3.38
3,449.00	1.68	229.52	3,446.21	-61.98	-79.57	65.79	0.54	-0.54	0.81
3,543.00	3.76	247.94	3,540.10	-64.03	-83.48	68.03	2.37	2.21	19.60
3,637.00	3.80	243.36	3,633.89	-66.59	-89.12	70.85	0.32	0.04	-4.87
3,732.00	3.98	245.34	3,728.67	-69.38	-94.93	73.92	0.24	0.19	2.08
3,825.00	3.62	242.30	3,821.47	-72.09	-100.46	76.90	0.44	-0.39	-3.27
3,920.00	3.62	241.33	3,916.28	-74.92	-105.75	79.99	0.06	0.00	-1.02
4,014.00	2.78	232.92	4,010.13	-77.72	-110.17	83.00	1.02	-0.89	-8.95
4,109.00	2.34	228.38	4,105.04	-80.40	-113.46	85.83	0.51	-0.46	-4.78
4,203.00	1.94	226.00	4,198.97	-82.78	-116.04	88.33	0.44	-0.43	-2.53
4,297.00	1.90	223.88	4,292.92	-85.00	-118.26	90.67	0.09	-0.04	-2.26
4,391.00	1.90	224.19	4,386.87	-87.24	-120.43	93.01	0.01	0.00	0.33
4,486.00	1.94	227.01	4,481.81	-89.47	-122.70	95.34	0.11	0.04	2.97
4,580.00	1.99	230.23	4,575.76	-91.60	-125.12	97.59	0.13	0.05	3.43
4,674.00	3.93	242.52	4,669.63	-94.13	-129.23	100.32	2.16	2.06	13.07
4,769.00	3.18	244.55	4,764.45	-96.76	-134.50	103.21	0.80	-0.79	2.14
4,863.00	2.56	240.63	4,858.33	-98.91	-138.68	105.56	0.69	-0.66	-4.17
4,957.00	2.17	241.11	4,952.25	-100.80	-142.07	107.61	0.42	-0.41	0.51

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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)
5,052.00	4.37	232.34	5,047.09	-103.88	-146.51	110.90	2.37	2.32	-9.23
5,146.00	3.45	233.84	5,140.87	-107.74	-151.63	115.00	0.98	-0.98	1.60
5,240.00	2.34	238.82	5,234.75	-110.40	-155.56	117.86	1.21	-1.18	5.30
5,335.00	1.68	245.61	5,329.69	-111.98	-158.48	119.58	0.74	-0.69	7.15
5,428.00	3.27	212.29	5,422.60	-114.79	-161.14	122.51	2.24	1.71	-35.83
5,522.00	2.78	207.67	5,516.47	-119.07	-163.63	126.91	0.58	-0.52	-4.91
5,617.00	2.65	206.48	5,611.36	-123.08	-165.68	131.01	0.15	-0.14	-1.25
5,711.00	2.08	202.11	5,705.28	-126.60	-167.29	134.61	0.64	-0.61	-4.65
5,805.00	0.13	11.39	5,799.26	-128.08	-167.92	136.11	2.35	-2.07	180.09
5,899.00	0.35	176.73	5,893.26	-128.26	-167.88	136.29	0.51	0.23	175.89
5,994.00	0.31	0.93	5,988.26	-128.30	-167.86	136.33	0.69	-0.04	-185.05
6,088.00	0.22	30.47	6,082.26	-127.89	-167.76	135.91	0.17	-0.10	31.43
6,182.00	0.35	303.91	6,176.26	-127.57	-167.91	135.60	0.43	0.14	-92.09
6,297.00	0.35	242.79	6,291.26	-127.54	-168.51	135.60	0.31	0.00	-53.15
6,392.00	13.12	188.15	6,385.42	-138.39	-170.31	146.52	13.60	13.44	-57.52
6,486.00	23.77	180.79	6,474.47	-167.98	-172.09	176.17	11.58	11.33	-7.83
6,580.00	28.99	180.08	6,558.65	-209.73	-172.38	217.88	5.56	5.55	-0.76
6,643.82	36.68	182.97	6,612.24	-244.29	-173.39	252.45	12.30	12.05	4.53
Enter Section @ 6643.82'MD									
6,674.00	40.34	184.00	6,635.85	-263.04	-174.54	271.23	12.30	12.12	3.40
6,769.00	44.72	185.32	6,705.84	-327.02	-179.79	335.40	4.71	4.61	1.39
6,863.00	54.00	180.74	6,767.02	-398.15	-183.35	406.61	10.54	9.87	-4.87
6,957.00	59.52	178.45	6,818.53	-476.73	-182.75	485.07	6.22	5.87	-2.44
7,052.00	65.14	176.20	6,862.63	-560.73	-178.78	568.78	6.28	5.92	-2.37
7,146.00	66.02	174.04	6,901.50	-646.00	-171.49	653.59	2.29	0.94	-2.30
7,180.42	69.98	176.18	6,914.39	-677.79	-168.78	685.21	12.86	11.51	6.21
70°INC @ 7180.42'MD / 6914.38'TVD									
7,210.28	73.44	177.94	6,923.76	-706.10	-167.33	713.42	12.86	11.57	5.92
Hardline Crossing @ 7210.28'MD (460'FNL & 1907'FEL)									
7,240.00	76.89	179.64	6,931.37	-734.82	-166.73	742.07	12.86	11.62	5.71
7,334.00	83.61	180.21	6,947.28	-827.41	-166.61	834.54	7.17	7.15	0.61
7,429.00	85.51	179.95	6,956.29	-921.97	-166.75	929.01	2.02	2.00	-0.27
7,523.00	90.19	181.05	6,959.81	-1,015.88	-167.57	1,022.84	5.11	4.98	1.17
7,617.00	89.35	180.21	6,960.19	-1,109.87	-168.60	1,116.77	1.26	-0.89	-0.89
7,712.00	90.81	179.95	6,960.06	-1,204.86	-168.73	1,211.66	1.56	1.54	-0.27
7,806.00	89.93	180.35	6,959.45	-1,298.86	-168.98	1,305.55	1.03	-0.94	0.43
7,900.00	90.10	181.36	6,959.42	-1,392.85	-170.38	1,399.50	1.09	0.18	1.07
7,994.00	89.62	180.08	6,959.65	-1,486.84	-171.56	1,493.44	1.45	-0.51	-1.36
8,088.00	90.41	181.76	6,959.63	-1,580.82	-173.07	1,587.38	1.97	0.84	1.79
8,182.00	90.90	180.30	6,958.56	-1,674.80	-174.76	1,681.33	1.64	0.52	-1.55
8,276.00	90.41	182.02	6,957.48	-1,768.77	-176.66	1,775.28	1.90	-0.52	1.83
8,370.00	90.46	180.92	6,956.77	-1,862.74	-179.08	1,869.25	1.17	0.05	-1.17
8,464.00	89.17	181.14	6,957.07	-1,956.72	-180.77	1,963.20	1.39	-1.37	0.23
8,558.00	89.48	179.82	6,958.18	-2,050.71	-181.55	2,057.12	1.44	0.33	-1.40

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Site:	Sec 32-T6N-R65W	MD Reference:	KB=25' @ 4666.00ft (P 346)
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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)
8,651.00	90.15	182.20	6,958.48	-2,143.68	-183.19	2,150.06	2.66	0.72	2.56
8,746.00	90.50	181.89	6,957.94	-2,238.62	-186.58	2,245.05	0.49	0.37	-0.33
8,840.00	91.21	180.96	6,956.54	-2,332.58	-188.92	2,339.02	1.24	0.76	-0.99
8,934.00	90.63	183.12	6,955.03	-2,426.50	-192.26	2,432.99	2.38	-0.62	2.30
9,028.00	91.07	182.68	6,953.63	-2,520.37	-197.02	2,526.98	0.66	0.47	-0.47
9,123.00	89.00	182.37	6,953.57	-2,615.27	-201.20	2,621.97	2.20	-2.18	-0.33
9,217.00	89.09	181.58	6,955.14	-2,709.20	-204.44	2,715.95	0.85	0.10	-0.84
9,311.00	89.31	181.23	6,956.45	-2,803.17	-206.75	2,809.91	0.44	0.23	-0.37
9,405.00	89.26	180.92	6,957.63	-2,897.14	-208.51	2,903.86	0.33	-0.05	-0.33
9,499.00	89.09	180.39	6,958.98	-2,991.13	-209.59	2,997.79	0.59	-0.18	-0.56
9,592.00	88.56	179.82	6,960.89	-3,084.11	-209.76	3,090.66	0.84	-0.57	-0.61
9,686.00	89.13	181.89	6,962.78	-3,178.07	-211.16	3,184.59	2.28	0.61	2.20
9,780.00	89.00	182.95	6,964.32	-3,271.97	-215.13	3,278.57	1.14	-0.14	1.13
9,875.00	88.73	182.90	6,966.20	-3,366.83	-219.97	3,373.55	0.29	-0.28	-0.05
9,968.00	90.54	183.30	6,966.79	-3,459.69	-225.00	3,466.54	1.99	1.95	0.43
10,062.00	90.28	183.03	6,966.12	-3,553.54	-230.19	3,560.54	0.40	-0.28	-0.29
10,156.00	90.32	182.81	6,965.63	-3,647.42	-234.98	3,654.54	0.24	0.04	-0.23
10,250.00	90.46	182.02	6,964.99	-3,741.33	-238.94	3,748.53	0.85	0.15	-0.84
10,344.00	90.06	180.65	6,964.56	-3,835.30	-241.13	3,842.50	1.52	-0.43	-1.46
10,439.00	90.01	179.33	6,964.50	-3,930.30	-241.12	3,937.38	1.39	-0.05	-1.39
10,533.00	89.26	178.14	6,965.10	-4,024.27	-239.04	4,031.14	1.50	-0.80	-1.27
10,627.00	91.78	179.16	6,964.25	-4,118.24	-236.83	4,124.88	2.89	2.68	1.09
10,721.00	90.15	181.27	6,962.66	-4,212.21	-237.18	4,218.77	2.84	-1.73	2.24
10,815.00	88.11	181.58	6,964.09	-4,306.17	-239.52	4,312.72	2.20	-2.17	0.33
10,910.00	89.13	184.31	6,966.38	-4,401.00	-244.40	4,407.69	3.07	1.07	2.87
11,004.00	88.86	182.42	6,968.03	-4,494.82	-249.91	4,501.66	2.03	-0.29	-2.01
11,099.00	88.73	180.74	6,970.03	-4,589.76	-252.53	4,596.62	1.77	-0.14	-1.77
11,193.00	89.17	181.98	6,971.75	-4,683.72	-254.76	4,690.57	1.40	0.47	1.32
11,287.00	90.41	181.54	6,972.09	-4,777.67	-257.65	4,784.55	1.40	1.32	-0.47
11,382.00	90.63	180.87	6,971.23	-4,872.65	-259.65	4,879.51	0.74	0.23	-0.71
11,476.00	90.63	179.51	6,970.20	-4,966.64	-259.96	4,973.41	1.45	0.00	-1.45
11,571.00	90.41	178.19	6,969.34	-5,061.61	-258.05	5,068.17	1.41	-0.23	-1.39
11,665.00	90.10	177.53	6,968.92	-5,155.55	-254.54	5,161.82	0.78	-0.33	-0.70
11,760.00	89.97	176.69	6,968.86	-5,250.42	-249.75	5,256.36	0.89	-0.14	-0.88
Final MWD Survey @ 11760'MD									
11,830.00	89.97	176.69	6,968.90	-5,320.31	-245.71	5,325.96	0.00	0.00	0.00
PTD @ 11830'MD (492'FSL & 1919'FEL)									



Survey Report

Company:	Extraction Oil & Gas	Local Co-ordinate Reference:	Well WS-SUNRISE 1-5-5
Project:	Weld County, CO (NAD83)	TVD Reference:	KB=25' @ 4666.00ft (P 346)
Site:	Sec 32-T6N-R65W	MD Reference:	KB=25' @ 4666.00ft (P 346)
Well:	WS-SUNRISE 1-5-5	North Reference:	True
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	EDM 5000.1

Design Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
1,658.00	1,657.62	-6.51	-8.93	First MWD Survey @ 1658'MD
6,643.82	6,612.24	-244.29	-173.39	Enter Section @ 6643.82'MD
7,180.42	6,914.39	-677.79	-168.78	70°INC @ 7180.42'MD / 6914.38'TVD
7,210.28	6,923.76	-706.10	-167.33	Hardline Crossing @ 7210.28'MD (460'FNL & 1907'FEL)
11,760.00	6,968.86	-5,250.42	-249.75	Final MWD Survey @ 11760'MD
11,830.00	6,968.90	-5,320.31	-245.71	PTD @ 11830'MD (492'FSL & 1919'FEL)

Checked By: _____	Approved By: _____	Date: _____
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