



Extraction Oil & Gas

Weld County, CO (NAD83)

Sec 32-T6N-R65W

WS-SUNRISE 5-5-5

Wellbore #1

Design: Wellbore #1

Standard Survey Report

05 March, 2018

Company:	Extraction Oil & Gas	Local Co-ordinate Reference:	Well WS-SUNRISE 5-5-5
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 5-5-5	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 5-5-5					
Well Position	+N/-S	0.00 ft	Northing:	1,403,151.08 usft	Latitude:	40.437180
	+E/-W	0.00 ft	Easting:	3,227,245.16 usft	Longitude:	-104.683610
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	2/15/2018	8.13	66.92	52,306

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	170.33	

Survey Program	Date	3/5/2018			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
110.00	1,519.00	Surface (Wellbore #1)	MWD	MWD - Standard	
1,655.00	11,959.00	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	
110.00	0.52	194.21	110.00	-0.48	-0.12	0.46	0.47	0.47	0.00	
205.00	0.65	179.09	204.99	-1.44	-0.22	1.38	0.21	0.14	-15.92	
300.00	0.52	183.93	299.99	-2.41	-0.24	2.33	0.15	-0.14	5.09	
396.00	0.61	180.67	395.98	-3.36	-0.28	3.26	0.10	0.09	-3.40	
491.00	1.40	177.07	490.97	-5.02	-0.22	4.91	0.83	0.83	-3.79	
586.00	3.70	153.08	585.87	-8.91	1.22	8.99	2.62	2.42	-25.25	
681.00	4.70	127.76	680.62	-14.03	5.69	14.79	2.19	1.05	-26.65	
776.00	5.22	97.71	775.28	-16.99	13.05	18.94	2.76	0.55	-31.63	
872.00	7.42	84.96	870.70	-17.03	23.55	20.75	2.70	2.29	-13.28	

Company:	Extraction Oil & Gas	Local Co-ordinate Reference:	Well WS-SUNRISE 5-5-5
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 5-5-5	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)
967.00	8.08	92.70	964.83	-16.81	36.33	22.67	1.30	0.69	8.15
1,061.00	9.36	100.34	1,057.75	-18.49	50.45	26.71	1.83	1.36	8.13
1,156.00	10.37	102.98	1,151.34	-21.80	66.39	32.64	1.16	1.06	2.78
1,250.00	12.52	102.28	1,243.47	-25.87	84.59	39.71	2.29	2.29	-0.74
1,345.00	13.05	94.10	1,336.12	-28.83	105.35	46.11	1.98	0.56	-8.61
1,439.00	10.80	89.80	1,428.09	-29.55	124.74	50.09	2.57	-2.39	-4.57
1,519.00	10.41	97.27	1,506.72	-30.44	139.41	53.43	1.78	-0.49	9.34
1,655.00	10.52	100.94	1,640.46	-34.35	163.79	61.38	0.50	0.08	2.70
First MWD Survey @ 1655'MD									
1,749.00	11.00	105.21	1,732.81	-38.33	180.87	68.17	0.99	0.51	4.54
1,844.00	13.21	102.74	1,825.69	-43.11	200.20	76.13	2.39	2.33	-2.60
1,938.00	12.68	97.15	1,917.31	-46.76	220.92	83.21	1.45	-0.56	-5.95
2,032.00	12.81	97.63	2,008.99	-49.43	241.48	89.29	0.18	0.14	0.51
2,126.00	12.81	102.13	2,100.65	-53.00	262.00	96.26	1.06	0.00	4.79
2,221.00	12.28	98.03	2,193.39	-56.63	282.30	103.24	1.09	-0.56	-4.32
2,315.00	11.40	105.74	2,285.39	-60.54	301.14	110.27	1.92	-0.94	8.20
2,409.00	11.09	103.05	2,377.59	-65.10	318.89	117.75	0.65	-0.33	-2.86
2,504.00	11.31	107.33	2,470.78	-69.94	336.68	125.51	0.90	0.23	4.51
2,598.00	11.89	105.83	2,562.86	-75.33	354.80	133.86	0.70	0.62	-1.60
2,692.00	13.70	107.24	2,654.52	-81.27	374.75	143.07	1.95	1.93	1.50
2,786.00	13.79	107.63	2,745.83	-87.96	396.06	153.24	0.14	0.10	0.41
2,880.00	12.81	108.03	2,837.31	-94.58	416.64	163.23	1.05	-1.04	0.43
2,974.00	12.81	103.62	2,928.97	-100.26	436.68	172.19	1.04	0.00	-4.69
3,069.00	11.80	103.14	3,021.79	-104.95	456.38	180.12	1.07	-1.06	-0.51
3,163.00	10.30	101.24	3,114.04	-108.77	473.98	186.85	1.64	-1.60	-2.02
3,258.00	11.31	104.42	3,207.36	-112.75	491.33	193.68	1.23	1.06	3.35
3,351.00	11.89	104.81	3,298.46	-117.47	509.43	201.37	0.63	0.62	0.42
3,446.00	12.42	101.02	3,391.33	-121.92	528.92	209.04	1.01	0.56	-3.99
3,541.00	10.52	99.75	3,484.43	-125.34	547.49	215.53	2.02	-2.00	-1.34
3,635.00	12.51	104.24	3,576.53	-129.30	565.82	222.51	2.32	2.12	4.78
3,729.00	14.98	101.33	3,667.84	-134.19	587.60	230.99	2.73	2.63	-3.10
3,823.00	15.20	101.33	3,758.59	-139.00	611.60	239.77	0.23	0.23	0.00
3,917.00	15.51	101.42	3,849.24	-143.91	636.00	248.70	0.33	0.33	0.10
4,012.00	13.52	98.25	3,941.20	-148.02	659.44	256.69	2.25	-2.09	-3.34
4,106.00	11.40	97.15	4,032.98	-150.75	679.54	262.76	2.27	-2.26	-1.17
4,200.00	9.41	95.03	4,125.43	-152.58	696.41	267.40	2.16	-2.12	-2.26
4,294.00	10.61	98.91	4,218.00	-154.60	712.62	272.11	1.46	1.28	4.13
4,388.00	11.49	101.33	4,310.26	-157.78	730.35	278.22	1.06	0.94	2.57
4,483.00	11.89	106.62	4,403.29	-162.43	749.00	285.95	1.20	0.42	5.57
4,577.00	13.08	107.24	4,495.07	-168.36	768.44	295.05	1.27	1.27	0.66
4,671.00	11.00	107.24	4,586.99	-174.17	787.17	303.93	2.21	-2.21	0.00
4,766.00	12.02	104.95	4,680.08	-179.41	805.38	312.15	1.18	1.07	-2.41
4,860.00	13.30	104.02	4,771.80	-184.55	825.33	320.57	1.38	1.36	-0.99

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Survey

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4,955.00	11.71	101.42	4,864.54	-189.11	845.38	328.43	1.78	-1.67	-2.74
5,049.00	12.59	100.85	4,956.43	-192.92	864.79	335.46	0.94	0.94	-0.61
5,144.00	10.91	101.02	5,049.44	-196.59	883.79	342.26	1.77	-1.77	0.18
5,238.00	10.69	101.95	5,141.77	-200.10	901.05	348.62	0.30	-0.23	0.99
5,332.00	11.71	101.11	5,233.98	-203.74	918.94	355.21	1.10	1.09	-0.89
5,426.00	11.31	104.11	5,326.09	-207.83	937.24	362.32	0.77	-0.43	3.19
5,520.00	9.28	102.83	5,418.58	-211.76	953.57	368.93	2.17	-2.16	-1.36
5,614.00	7.20	99.61	5,511.60	-214.42	966.77	373.78	2.27	-2.21	-3.43
5,803.00	3.89	101.73	5,699.69	-217.71	984.73	380.03	1.75	-1.75	1.12
5,897.00	3.18	97.94	5,793.51	-218.71	990.43	381.98	0.79	-0.76	-4.03
5,991.00	1.90	148.04	5,887.43	-220.40	993.84	384.21	2.60	-1.36	53.30
6,085.00	1.50	141.74	5,981.39	-222.68	995.43	386.74	0.47	-0.43	-6.70
6,179.00	1.59	139.54	6,075.35	-224.64	997.04	388.94	0.11	0.10	-2.34
6,274.00	0.80	25.62	6,170.34	-225.05	998.18	389.53	2.16	-0.83	-119.92
6,369.00	1.02	34.92	6,265.33	-223.76	998.95	388.38	0.28	0.23	9.79
6,484.00	0.88	111.73	6,380.31	-223.24	1,000.36	388.12	1.03	-0.12	66.79
6,578.00	10.91	180.83	6,473.73	-232.43	1,000.90	397.27	11.31	10.67	73.51
6,673.00	20.81	181.84	6,565.00	-258.35	1,000.22	422.70	10.42	10.42	1.06
6,768.00	30.18	181.31	6,650.65	-299.18	999.13	462.77	9.87	9.86	-0.56
6,837.70	37.10	180.86	6,708.64	-337.76	998.42	500.68	9.93	9.93	-0.64
Enter Sec @ 6837.70'MD									
6,862.00	39.51	180.74	6,727.71	-352.82	998.21	515.49	9.93	9.93	-0.51
6,956.00	48.21	179.73	6,795.43	-417.89	997.98	579.60	9.28	9.26	-1.07
7,050.00	55.90	180.35	6,853.18	-491.96	997.91	652.61	8.20	8.18	0.66
7,145.00	63.28	184.22	6,901.25	-573.74	994.54	732.66	8.52	7.77	4.07
7,231.18	70.00	185.16	6,935.40	-652.55	988.06	809.25	7.86	7.80	1.09
70°INC @ 7231.18'MD / 6935.40'TVD									
7,239.00	70.61	185.24	6,938.04	-659.88	987.40	816.37	7.86	7.80	1.03
7,333.00	83.61	184.71	6,958.96	-750.97	979.48	904.84	13.84	13.83	-0.56
7,379.80	85.70	184.12	6,963.32	-797.43	975.89	950.03	4.63	4.46	-1.27
Hardline Crossing @ 7379.80'MD (460'FNL & 689'FEL)									
7,427.00	87.80	183.52	6,966.00	-844.44	972.76	995.85	4.63	4.46	-1.26
7,521.00	88.82	182.33	6,968.77	-938.28	967.96	1,087.55	1.67	1.09	-1.27
7,616.00	89.93	182.46	6,969.81	-1,033.19	963.99	1,180.44	1.18	1.17	0.14
7,710.00	90.72	183.30	6,969.28	-1,127.06	959.27	1,272.19	1.23	0.84	0.89
7,804.00	91.21	181.54	6,967.69	-1,220.96	955.30	1,364.09	1.94	0.52	-1.87
7,899.00	90.32	179.02	6,966.43	-1,315.95	954.84	1,457.64	2.81	-0.94	-2.65
7,993.00	90.54	177.75	6,965.72	-1,409.90	957.49	1,550.71	1.37	0.23	-1.35
8,087.00	90.90	176.73	6,964.54	-1,503.79	962.01	1,644.02	1.15	0.38	-1.09
8,181.00	90.99	178.80	6,962.99	-1,597.70	965.68	1,737.21	2.20	0.10	2.20
8,275.00	92.44	177.92	6,960.18	-1,691.61	968.37	1,830.24	1.80	1.54	-0.94
8,369.00	91.78	179.29	6,956.71	-1,785.52	970.65	1,923.20	1.62	-0.70	1.46
8,462.00	91.52	178.63	6,954.04	-1,878.46	972.34	2,015.11	0.76	-0.28	-0.71
8,557.00	89.17	178.54	6,953.46	-1,973.43	974.68	2,109.11	2.48	-2.47	-0.09

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Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
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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)
8,650.00	90.01	177.39	6,954.13	-2,066.36	977.99	2,201.29	1.53	0.90	-1.24
8,745.00	90.37	179.60	6,953.81	-2,161.32	980.48	2,295.32	2.36	0.38	2.33
8,839.00	90.10	181.23	6,953.43	-2,255.32	979.80	2,387.86	1.76	-0.29	1.73
8,933.00	91.03	180.39	6,952.50	-2,349.30	978.47	2,480.28	1.33	0.99	-0.89
9,027.00	89.84	180.61	6,951.79	-2,443.29	977.65	2,572.80	1.29	-1.27	0.23
9,121.00	90.50	179.11	6,951.51	-2,537.29	977.88	2,665.50	1.74	0.70	-1.60
9,216.00	91.25	180.04	6,950.06	-2,632.27	978.59	2,759.26	1.26	0.79	0.98
9,310.00	89.75	179.82	6,949.24	-2,726.27	978.70	2,851.93	1.61	-1.60	-0.23
9,404.00	90.01	182.15	6,949.44	-2,820.25	977.09	2,944.31	2.49	0.28	2.48
9,497.00	90.68	182.20	6,948.88	-2,913.18	973.56	3,035.32	0.72	0.72	0.05
9,591.00	91.69	181.71	6,946.93	-3,007.10	970.35	3,127.37	1.19	1.07	-0.52
9,685.00	90.15	181.80	6,945.42	-3,101.04	967.47	3,219.50	1.64	-1.64	0.10
9,779.00	90.81	181.23	6,944.63	-3,195.00	964.99	3,311.71	0.93	0.70	-0.61
9,873.00	89.53	182.20	6,944.36	-3,288.96	962.17	3,403.85	1.71	-1.36	1.03
9,967.00	91.03	183.17	6,943.90	-3,382.85	957.77	3,495.67	1.90	1.60	1.03
10,061.00	88.78	182.15	6,944.05	-3,476.74	953.41	3,587.49	2.63	-2.39	-1.09
10,155.00	88.82	182.50	6,946.02	-3,570.64	949.60	3,679.42	0.37	0.04	0.37
10,249.00	89.57	181.71	6,947.34	-3,664.57	946.14	3,771.43	1.16	0.80	-0.84
10,343.00	88.91	180.70	6,948.59	-3,758.54	944.17	3,863.73	1.28	-0.70	-1.07
10,437.00	89.84	180.85	6,949.61	-3,852.52	942.90	3,956.17	1.00	0.99	0.16
10,531.00	88.47	180.96	6,951.00	-3,946.50	941.41	4,048.56	1.46	-1.46	0.12
10,625.00	88.51	180.30	6,953.48	-4,040.46	940.38	4,141.01	0.70	0.04	-0.70
10,720.00	89.53	179.51	6,955.10	-4,135.45	940.54	4,234.67	1.36	1.07	-0.83
10,814.00	89.31	181.01	6,956.05	-4,229.44	940.11	4,327.26	1.61	-0.23	1.60
10,908.00	89.53	180.26	6,957.00	-4,323.43	939.07	4,419.74	0.83	0.23	-0.80
11,003.00	90.77	179.60	6,956.76	-4,418.42	939.18	4,513.40	1.48	1.31	-0.69
11,097.00	90.10	180.57	6,956.04	-4,512.42	939.04	4,606.04	1.25	-0.71	1.03
11,192.00	90.19	181.23	6,955.80	-4,607.41	937.55	4,699.43	0.70	0.09	0.69
11,286.00	89.75	181.58	6,955.85	-4,701.38	935.25	4,791.68	0.60	-0.47	0.37
11,380.00	91.43	180.92	6,954.88	-4,795.35	933.20	4,883.96	1.92	1.79	-0.70
11,475.00	90.23	180.74	6,953.51	-4,890.32	931.82	4,977.36	1.28	-1.26	-0.19
11,570.00	88.60	180.26	6,954.48	-4,985.31	930.99	5,070.86	1.79	-1.72	-0.51
11,664.00	90.06	179.64	6,955.58	-5,079.30	931.07	5,163.53	1.69	1.55	-0.66
11,758.00	88.56	180.26	6,956.71	-5,173.29	931.16	5,256.20	1.73	-1.60	0.66
11,853.00	89.44	179.77	6,958.37	-5,268.28	931.13	5,349.83	1.06	0.93	-0.52
Final MWD Survey @ 11853'MD									
11,959.00	89.44	179.77	6,959.40	-5,374.27	931.56	5,454.39	0.00	0.00	0.00
PTD @ 11959'MD (506'FSL & 669'FEL)									



Survey Report

Company:	Extraction Oil & Gas	Local Co-ordinate Reference:	Well WS-SUNRISE 5-5-5
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 5-5-5	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)	
1,655.00	1,640.46	-34.35	163.79	First MWD Survey @ 1655'MD
6,837.70	6,708.64	-337.76	998.42	Enter Sec @ 6837.70'MD
7,231.18	6,935.40	-652.55	988.06	70°INC @ 7231.18'MD / 6935.40'TVD
7,379.80	6,963.32	-797.43	975.89	Hardline Crossing @ 7379.80'MD (460'FNL & 689'FEL)
11,853.00	6,958.37	-5,268.28	931.13	Final MWD Survey @ 11853'MD
11,959.00	6,959.40	-5,374.27	931.56	PTD @ 11959'MD (506'FSL & 669'FEL)

Checked By: _____	Approved By: _____	Date: _____
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