



Extraction Oil & Gas

Weld County, CO (NAD83)

Sec 32-T6N-R65W

WS-SUNRISE 4-5-5

Wellbore #1

Design: Wellbore #1

Standard Survey Report

07 March, 2018

Company:	Extraction Oil & Gas	Local Co-ordinate Reference:	Well WS-SUNRISE 4-5-5
Project:	Weld County, CO (NAD83)	TVD Reference:	KB=25' @ 4667.00ft (P346)
Site:	Sec 32-T6N-R65W	MD Reference:	KB=25' @ 4667.00ft (P346)
Well:	WS-SUNRISE 4-5-5	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 4-5-5					
Well Position	+N/-S	0.00 ft	Northing:	1,403,150.90 usft	Latitude:	40.437180
	+E/-W	0.00 ft	Easting:	3,227,225.68 usft	Longitude:	-104.683680
Position Uncertainty		0.00 ft	Wellhead Elevation:	0.00 ft	Ground Level:	4,642.00 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	173.54	

Survey Program	Date	3/7/2018			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
102.00	1,529.00	Surface (Wellbore #1)	MWD	MWD - Standard	
1,662.00	11,819.00	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	
102.00	0.57	212.05	102.00	-0.43	-0.27	0.40	0.56	0.56	0.00	
197.00	0.70	228.58	196.99	-1.21	-0.96	1.10	0.24	0.14	17.40	
292.00	0.43	204.23	291.99	-1.92	-1.54	1.74	0.37	-0.28	-25.63	
388.00	0.39	221.54	387.99	-2.50	-1.90	2.27	0.13	-0.04	18.03	
483.00	0.87	215.04	482.98	-3.33	-2.53	3.02	0.51	0.51	-6.84	
578.00	1.36	159.85	577.96	-4.98	-2.56	4.66	1.18	0.52	-58.09	
673.00	4.13	116.43	672.85	-7.56	0.90	7.61	3.45	2.92	-45.71	
768.00	3.38	101.84	767.65	-9.66	6.70	10.35	1.27	-0.79	-15.36	
864.00	2.85	84.70	863.51	-10.02	11.85	11.29	1.11	-0.55	-17.85	

Company:	Extraction Oil & Gas	Local Co-ordinate Reference:	Well WS-SUNRISE 4-5-5
Project:	Weld County, CO (NAD83)	TVD Reference:	KB=25' @ 4667.00ft (P346)
Site:	Sec 32-T6N-R65W	MD Reference:	KB=25' @ 4667.00ft (P346)
Well:	WS-SUNRISE 4-5-5	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)
959.00	3.55	115.81	958.37	-11.08	16.85	12.91	1.94	0.74	32.75
1,053.00	6.10	105.44	1,052.03	-13.68	24.28	16.32	2.86	2.71	-11.03
1,148.00	7.91	102.72	1,146.32	-16.46	35.53	20.36	1.94	1.91	-2.86
1,242.00	7.73	98.50	1,239.44	-18.82	48.09	24.11	0.64	-0.19	-4.49
1,337.00	7.91	103.33	1,333.56	-21.27	60.77	27.98	0.72	0.19	5.08
1,431.00	7.60	114.14	1,426.71	-25.30	72.73	33.33	1.58	-0.33	11.50
1,521.00	7.51	105.62	1,515.93	-29.32	83.83	38.57	1.25	-0.10	-9.47
1,662.00	6.98	100.01	1,655.80	-33.29	101.14	44.47	0.63	-0.38	-3.98
First MWD Survey @ 1662'MD									
1,756.00	9.19	106.44	1,748.86	-36.41	113.97	49.01	2.54	2.35	6.84
1,850.00	9.99	105.61	1,841.55	-40.73	129.02	54.99	0.86	0.85	-0.88
1,944.00	8.71	102.35	1,934.30	-44.44	143.83	60.35	1.47	-1.36	-3.47
2,038.00	9.99	107.19	2,027.05	-48.38	158.57	65.92	1.60	1.36	5.15
2,132.00	8.66	105.08	2,119.81	-52.63	173.19	71.79	1.46	-1.41	-2.24
2,227.00	10.25	107.19	2,213.51	-56.99	188.17	77.81	1.71	1.67	2.22
2,321.00	8.75	102.61	2,306.22	-61.02	203.14	83.50	1.79	-1.60	-4.87
2,415.00	7.69	97.76	2,399.26	-63.43	216.35	87.38	1.35	-1.13	-5.16
2,510.00	9.77	106.22	2,493.16	-66.54	230.39	92.05	2.57	2.19	8.91
2,698.00	9.01	105.52	2,678.64	-74.93	259.89	103.72	0.41	-0.40	-0.37
2,792.00	8.93	102.04	2,771.49	-78.43	274.12	108.79	0.58	-0.09	-3.70
2,886.00	7.38	103.32	2,864.53	-81.34	287.13	113.15	1.66	-1.65	1.36
2,980.00	10.03	102.30	2,957.44	-84.47	301.00	117.82	2.82	2.82	-1.09
3,075.00	8.62	101.07	3,051.18	-87.60	316.07	122.63	1.50	-1.48	-1.29
3,169.00	8.00	105.08	3,144.20	-90.66	329.30	127.15	0.90	-0.66	4.27
3,264.00	8.71	106.44	3,238.19	-94.41	342.59	132.38	0.78	0.75	1.43
3,357.00	9.32	106.93	3,330.04	-98.60	356.54	138.11	0.66	0.66	0.53
3,452.00	8.04	106.14	3,423.95	-102.69	370.29	143.72	1.35	-1.35	-0.83
3,547.00	9.24	109.53	3,517.87	-107.08	383.86	149.62	1.37	1.26	3.57
3,641.00	8.93	108.12	3,610.69	-111.88	397.90	155.96	0.41	-0.33	-1.50
3,735.00	8.84	108.78	3,703.56	-116.47	411.68	162.08	0.14	-0.10	0.70
3,829.00	8.93	107.63	3,796.44	-121.00	425.47	168.13	0.21	0.10	-1.22
3,923.00	8.75	107.37	3,889.32	-125.35	439.24	174.00	0.20	-0.19	-0.28
4,018.00	7.16	107.72	3,983.40	-129.31	451.78	179.35	1.67	-1.67	0.37
4,112.00	8.44	103.05	4,076.53	-132.65	464.08	184.05	1.52	1.36	-4.97
4,206.00	10.08	104.06	4,169.30	-136.21	478.78	189.24	1.75	1.74	1.07
4,300.00	8.40	103.67	4,262.08	-139.83	493.43	194.49	1.79	-1.79	-0.41
4,394.00	9.72	106.84	4,354.91	-143.75	507.70	199.99	1.50	1.40	3.37
4,489.00	8.31	105.56	4,448.73	-147.91	521.99	205.74	1.50	-1.48	-1.35
4,583.00	10.38	103.32	4,541.48	-151.69	536.78	211.15	2.24	2.20	-2.38
4,677.00	8.40	106.97	4,634.21	-155.64	551.59	216.75	2.20	-2.11	3.88
4,772.00	10.52	103.54	4,727.92	-159.70	566.66	222.48	2.31	2.23	-3.61
4,866.00	8.62	105.25	4,820.61	-163.56	581.80	228.02	2.04	-2.02	1.82
4,961.00	10.69	102.43	4,914.26	-167.33	597.27	233.51	2.23	2.18	-2.97

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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)
5,055.00	9.46	102.04	5,006.80	-170.82	613.34	238.78	1.31	-1.31	-0.41
5,150.00	6.98	102.30	5,100.82	-173.68	626.62	243.12	2.61	-2.61	0.27
5,244.00	8.13	106.71	5,194.00	-176.81	638.57	247.57	1.37	1.22	4.69
5,338.00	7.87	95.16	5,287.10	-179.30	651.34	251.48	1.73	-0.28	-12.29
5,432.00	6.01	95.21	5,380.40	-180.32	662.65	253.78	1.98	-1.98	0.05
5,526.00	4.51	96.09	5,474.00	-181.16	671.23	255.57	1.60	-1.60	0.94
5,620.00	3.76	97.72	5,567.76	-181.97	677.96	257.13	0.81	-0.80	1.73
5,715.00	1.50	91.55	5,662.65	-182.42	682.29	258.07	2.39	-2.38	-6.49
5,809.00	0.18	297.43	5,756.64	-182.38	683.39	258.16	1.77	-1.40	-163.96
5,925.00	0.13	187.40	5,872.64	-182.43	683.21	258.19	0.22	-0.04	-94.85
6,019.00	0.35	113.89	5,966.64	-182.65	683.46	258.43	0.36	0.23	-78.20
6,113.00	0.71	115.96	6,060.64	-183.02	684.24	258.89	0.38	0.38	2.20
6,207.00	0.66	112.48	6,154.63	-183.49	685.27	259.47	0.07	-0.05	-3.70
6,302.00	1.02	124.64	6,249.62	-184.18	686.47	260.29	0.42	0.38	12.80
6,397.00	11.09	173.16	6,343.99	-193.75	688.26	270.01	10.99	10.60	51.07
6,490.00	18.78	176.69	6,433.78	-217.62	690.19	293.93	8.32	8.27	3.80
6,584.00	26.43	180.87	6,520.50	-253.69	690.75	329.85	8.31	8.14	4.45
6,679.00	35.17	183.12	6,602.02	-302.25	688.93	377.89	9.28	9.20	2.37
6,695.88	36.71	183.17	6,615.69	-312.14	688.39	387.66	9.13	9.13	0.27
Enter Section @ 6695.88'MD									
6,774.00	43.84	183.34	6,675.25	-362.53	685.52	437.40	9.13	9.13	0.22
6,868.00	53.78	184.58	6,737.08	-433.00	680.58	506.87	10.62	10.57	1.32
6,962.00	64.69	182.86	6,785.09	-513.48	675.42	586.26	11.71	11.61	-1.83
7,033.41	70.00	181.98	6,812.59	-579.30	672.65	651.34	7.52	7.44	-1.24
70°INC @ 7033.41'MD / 6812.65'TVD									
7,056.00	71.68	181.71	6,820.01	-600.63	671.96	672.46	7.52	7.44	-1.18
7,151.00	78.08	182.02	6,844.77	-692.24	668.98	763.15	6.74	6.74	0.33
7,231.94	81.32	182.40	6,859.24	-771.81	665.91	841.87	4.03	4.00	0.47
Hardline Crossing @ 7231.94'MD (460'FNL & 1020'FEL)									
7,245.00	81.84	182.46	6,861.16	-784.72	665.36	854.63	4.03	4.00	0.46
7,339.00	89.57	184.93	6,868.19	-878.18	659.31	946.82	8.63	8.22	2.63
7,433.00	89.79	183.12	6,868.72	-971.94	652.71	1,039.24	1.94	0.23	-1.93
7,527.00	89.62	182.90	6,869.20	-1,065.81	647.78	1,131.96	0.30	-0.18	-0.23
7,622.00	89.97	179.86	6,869.54	-1,160.77	645.49	1,226.06	3.22	0.37	-3.20
7,716.00	89.93	179.55	6,869.62	-1,254.77	645.97	1,319.51	0.33	-0.04	-0.33
7,810.00	89.84	178.80	6,869.81	-1,348.76	647.33	1,413.06	0.80	-0.10	-0.80
7,905.00	90.15	177.53	6,869.82	-1,443.71	650.37	1,507.75	1.38	0.33	-1.34
7,999.00	89.40	178.71	6,870.19	-1,537.65	653.45	1,601.44	1.49	-0.80	1.26
8,093.00	89.66	177.61	6,870.96	-1,631.60	656.47	1,695.13	1.20	0.28	-1.17
8,187.00	89.09	179.29	6,871.99	-1,725.56	659.01	1,788.78	1.89	-0.61	1.79
8,281.00	89.26	178.67	6,873.34	-1,819.53	660.69	1,882.34	0.68	0.18	-0.66
8,375.00	89.53	180.65	6,874.33	-1,913.52	661.25	1,975.80	2.13	0.29	2.11
8,468.00	90.01	180.26	6,874.71	-2,006.52	660.51	2,068.12	0.67	0.52	-0.42
8,563.00	90.10	179.90	6,874.61	-2,101.52	660.37	2,162.50	0.39	0.09	-0.38

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Site:	Sec 32-T6N-R65W	MD Reference:	KB=25' @ 4667.00ft (P346)
Well:	WS-SUNRISE 4-5-5	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)
8,656.00	89.62	179.90	6,874.84	-2,194.51	660.54	2,254.93	0.52	-0.52	0.00
8,751.00	89.66	178.76	6,875.44	-2,289.50	661.65	2,349.44	1.20	0.04	-1.20
8,845.00	90.28	181.09	6,875.49	-2,383.50	661.77	2,442.85	2.56	0.66	2.48
8,939.00	90.72	180.48	6,874.67	-2,477.48	660.48	2,536.09	0.80	0.47	-0.65
9,033.00	91.52	182.37	6,872.83	-2,571.43	658.15	2,629.18	2.18	0.85	2.01
9,127.00	91.83	181.98	6,870.08	-2,665.32	654.58	2,722.07	0.53	0.33	-0.41
9,222.00	92.14	181.80	6,866.79	-2,760.22	651.45	2,816.01	0.38	0.33	-0.19
9,316.00	92.18	181.45	6,863.25	-2,854.11	648.78	2,909.01	0.37	0.04	-0.37
9,410.00	92.09	181.09	6,859.75	-2,948.02	646.70	3,002.09	0.39	-0.10	-0.38
9,503.00	92.14	180.43	6,856.31	-3,040.95	645.47	3,094.28	0.71	0.05	-0.71
9,597.00	92.05	179.99	6,852.88	-3,134.89	645.13	3,187.59	0.48	-0.10	-0.47
9,691.00	93.42	180.92	6,848.39	-3,228.77	644.38	3,280.79	1.76	1.46	0.99
9,785.00	92.84	180.79	6,843.26	-3,322.62	642.98	3,373.89	0.63	-0.62	-0.14
9,879.00	93.02	179.90	6,838.46	-3,416.50	642.41	3,467.10	0.96	0.19	-0.95
9,973.00	92.97	178.89	6,833.54	-3,510.36	643.41	3,560.48	1.07	-0.05	-1.07
10,067.00	92.09	181.23	6,829.39	-3,604.26	643.31	3,653.77	2.66	-0.94	2.49
10,161.00	91.69	180.65	6,826.29	-3,698.20	641.77	3,746.94	0.75	-0.43	-0.62
10,255.00	93.15	181.40	6,822.33	-3,792.10	640.09	3,840.05	1.75	1.55	0.80
10,349.00	92.67	180.96	6,817.55	-3,885.95	638.15	3,933.09	0.69	-0.51	-0.47
10,443.00	92.40	180.21	6,813.40	-3,979.86	637.19	4,026.29	0.85	-0.29	-0.80
10,537.00	91.83	180.52	6,809.93	-4,073.79	636.60	4,119.56	0.69	-0.61	0.33
10,632.00	91.83	181.58	6,806.89	-4,168.72	634.86	4,213.69	1.12	0.00	1.12
10,726.00	93.64	181.14	6,802.41	-4,262.59	632.63	4,306.71	1.98	1.93	-0.47
10,820.00	90.99	181.80	6,798.61	-4,356.47	630.22	4,399.72	2.91	-2.82	0.70
10,914.00	91.03	181.23	6,796.95	-4,450.42	627.73	4,492.80	0.61	0.04	-0.61
11,009.00	90.46	180.61	6,795.72	-4,545.40	626.21	4,587.00	0.89	-0.60	-0.65
11,103.00	90.23	180.57	6,795.15	-4,639.39	625.24	4,680.29	0.25	-0.24	-0.04
11,198.00	90.10	180.04	6,794.88	-4,734.39	624.73	4,774.63	0.57	-0.14	-0.56
11,292.00	89.97	181.18	6,794.82	-4,828.39	623.73	4,867.91	1.22	-0.14	1.21
11,387.00	89.70	180.92	6,795.09	-4,923.37	621.99	4,962.09	0.39	-0.28	-0.27
11,481.00	90.54	181.67	6,794.90	-5,017.34	619.87	5,055.23	1.20	0.89	0.80
11,576.00	90.37	181.71	6,794.14	-5,112.30	617.07	5,149.27	0.18	-0.18	0.04
11,670.00	90.77	181.67	6,793.21	-5,206.25	614.29	5,242.31	0.43	0.43	-0.04
11,765.00	90.37	181.64	6,792.26	-5,301.21	611.55	5,336.36	0.42	-0.42	-0.03
Final MWD Survey @ 11765'MD									
11,819.00	90.37	181.64	6,791.91	-5,355.19	610.01	5,389.82	0.00	0.00	0.00
PTD @ 11819'MD (505'FSL & 1011'FEL)									



Survey Report

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Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
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Design Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
1,662.00	1,655.80	-33.29	101.14	First MWD Survey @ 1662'MD
6,695.88	6,615.69	-312.14	688.39	Enter Section @ 6695.88'MD
7,033.41	6,812.59	-579.30	672.65	70°INC @ 7033.41'MD / 6812.65'TVD
7,231.94	6,859.24	-771.81	665.91	Hardline Crossing @ 7231.94'MD (460'FNL & 1020'FEL)
11,765.00	6,792.26	-5,301.21	611.55	Final MWD Survey @ 11765'MD
11,819.00	6,791.91	-5,355.19	610.01	PTD @ 11819'MD (505'FSL & 1011'FEL)

Checked By: _____	Approved By: _____	Date: _____
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