



## **Extraction Oil & Gas**

**Weld County, CO (NAD83)**

**Sec.19-T7N-R65W**

**WAAG 5**

**Wellbore #1 / #1422519**

**Survey: Phoenix MWD Surveys**

## **Standard Survey Report**

**24 February, 2015**

<b>Company:</b>	Extraction Oil & Gas	<b>Local Co-ordinate Reference:</b>	Well WAAG 5
<b>Project:</b>	Weld County, CO (NAD83)	<b>TVD Reference:</b>	WELL @ 4919.00usft (Xtreme #7)
<b>Site:</b>	Sec.19-T7N-R65W	<b>MD Reference:</b>	WELL @ 4919.00usft (Xtreme #7)
<b>Well:</b>	WAAG 5	<b>North Reference:</b>	True
<b>Wellbore:</b>	Wellbore #1 / #1422519	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Surveys (Xtreme 7)	<b>Database:</b>	Compass 5000 RMR

<b>Project</b>	Weld County, CO (NAD83)		
<b>Map System:</b>	US State Plane 1983	<b>System Datum:</b>	Mean Sea Level
<b>Geo Datum:</b>	North American Datum 1983		
<b>Map Zone:</b>	Colorado Northern Zone		

Site		Sec.19-T7N-R65W			
Site Position:		Northing:	1,450,756.06 usft	Latitude:	40° 34' 4.935 N
From:	Map	Easting:	3,219,612.83 usft	Longitude:	104° 42' 34.213 W
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "	Grid Convergence:	0.51 °

Well	WAAG 5					
Well Position	+N/-S	0.00 usft	Northing:	1,450,703.69 usft	Latitude:	40° 34' 4.409 N
	+E/-W	0.00 usft	Easting:	3,219,711.80 usft	Longitude:	104° 42' 32.936 W
Position Uncertainty		0.00 usft	Wellhead Elevation:	0.00 usft	Ground Level:	4,902.00 usft

<b>Wellbore</b>	Wellbore #1 / #1422519				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	IGRF2015	1/17/2015	8.45	67.06	52,761

<b>Design</b>	Surveys (Xtreme 7)				
<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) (usft)</b>	<b>+N/-S (usft)</b>	<b>+E/-W (usft)</b>	<b>Direction (°)</b>	
	0.00	0.00	0.00	260.18	

<b>Survey Program</b>	<b>Date</b>	2/24/2015			
<b>From (usft)</b>	<b>To (usft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>	
146.00	11,919.00	Phoenix MWD Surveys (Wellbore #1 / #14	PHX+MWD+IGRF	PHX+MWD+IGRF v3:standard declination	

<b>Survey</b>										
<b>Measured Depth (usft)</b>	<b>Inclination (°)</b>	<b>Azimuth (°)</b>	<b>Vertical Depth (usft)</b>	<b>+N/-S (usft)</b>	<b>+E/-W (usft)</b>	<b>Vertical Section (usft)</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	
146.00	2.00	64.80	145.97	1.08	2.31	-2.46	1.37	1.37	0.00	
<b>First Phoenix MWD Survey</b>										
238.00	2.10	50.50	237.91	2.84	5.06	-5.47	0.56	0.11	-15.54	
330.00	1.50	69.00	329.87	4.34	7.48	-8.11	0.90	-0.65	20.11	
422.00	1.70	73.00	421.83	5.17	9.91	-10.65	0.25	0.22	4.35	
514.00	1.20	79.90	513.80	5.74	12.17	-12.97	0.57	-0.54	7.50	
607.00	1.10	59.00	606.78	6.37	13.89	-14.77	0.46	-0.11	-22.47	
699.00	0.50	31.10	698.77	7.17	14.85	-15.86	0.76	-0.65	-30.33	
791.00	1.00	70.30	790.77	7.79	15.82	-16.91	0.75	0.54	42.61	
841.00	1.00	46.80	840.76	8.23	16.55	-17.71	0.81	0.00	-47.00	

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<b>Site:</b>	Sec.19-T7N-R65W	<b>MD Reference:</b>	WELL @ 4919.00usft (Xtreme #7)
<b>Well:</b>	WAAG 5	<b>North Reference:</b>	True
<b>Wellbore:</b>	Wellbore #1 / #1422519	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Surveys (Xtreme 7)	<b>Database:</b>	Compass 5000 RMR

Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
897.00	0.80	54.90	896.75	8.79	17.22	-18.47	0.42	-0.36	14.46
990.00	2.40	151.00	989.72	7.46	18.70	-19.70	2.81	1.72	103.33
1,082.00	4.50	149.00	1,081.55	2.68	21.49	-21.63	2.29	2.28	-2.17
1,172.00	5.80	141.30	1,171.19	-3.89	26.15	-25.11	1.63	1.44	-8.56
1,263.00	7.30	154.00	1,261.59	-12.68	31.56	-28.94	2.28	1.65	13.96
1,354.00	9.50	157.00	1,351.61	-24.79	37.03	-32.26	2.46	2.42	3.30
1,444.00	12.30	155.00	1,439.98	-40.32	43.99	-36.47	3.14	3.11	-2.22
1,534.00	12.50	144.30	1,527.89	-56.92	53.72	-43.23	2.56	0.22	-11.89
1,625.00	12.90	134.50	1,616.68	-72.04	66.72	-53.45	2.41	0.44	-10.77
1,715.00	12.50	132.90	1,704.48	-85.71	81.02	-65.21	0.59	-0.44	-1.78
1,805.00	12.00	131.80	1,792.43	-98.57	95.13	-76.92	0.61	-0.56	-1.22
1,896.00	11.50	132.00	1,881.52	-110.95	108.92	-88.40	0.55	-0.55	0.22
1,986.00	10.80	133.90	1,969.82	-122.80	121.66	-98.94	0.88	-0.78	2.11
2,076.00	12.80	134.40	2,057.91	-135.62	134.86	-109.76	2.23	2.22	0.56
2,166.00	12.40	134.00	2,145.75	-149.31	148.94	-121.29	0.45	-0.44	-0.44
2,256.00	11.60	133.90	2,233.78	-162.30	162.41	-132.35	0.89	-0.89	-0.11
2,346.00	11.10	134.10	2,322.02	-174.60	175.15	-142.81	0.56	-0.56	0.22
2,437.00	10.80	133.30	2,411.36	-186.55	187.65	-153.08	0.37	-0.33	-0.88
2,529.00	12.90	134.50	2,501.40	-199.66	201.25	-164.24	2.30	2.28	1.30
2,621.00	12.00	135.30	2,591.23	-213.65	215.30	-175.70	1.00	-0.98	0.87
2,713.00	11.60	134.20	2,681.29	-226.90	228.66	-186.61	0.50	-0.43	-1.20
2,805.00	11.20	134.70	2,771.47	-239.63	241.64	-197.23	0.45	-0.43	0.54
2,897.00	10.50	135.70	2,861.83	-251.92	253.84	-207.16	0.79	-0.76	1.09
2,989.00	13.70	136.10	2,951.77	-265.77	267.26	-218.01	3.48	3.48	0.43
3,081.00	13.20	135.30	3,041.25	-281.09	282.20	-230.12	0.58	-0.54	-0.87
3,174.00	12.80	134.30	3,131.86	-295.83	297.04	-242.23	0.49	-0.43	-1.08
3,266.00	12.00	134.10	3,221.72	-309.60	311.20	-253.84	0.87	-0.87	-0.22
3,358.00	11.30	134.60	3,311.82	-322.59	324.49	-264.72	0.77	-0.76	0.54
3,450.00	10.80	135.30	3,402.12	-335.04	336.97	-274.89	0.56	-0.54	0.76
3,542.00	13.20	133.00	3,492.10	-348.34	350.72	-286.17	2.66	2.61	-2.50
3,634.00	12.30	132.70	3,581.83	-362.15	365.60	-298.48	0.98	-0.98	-0.33
3,726.00	11.20	130.40	3,671.90	-374.58	379.61	-310.16	1.30	-1.20	-2.50
3,818.00	10.20	128.80	3,762.30	-385.48	392.76	-321.26	1.13	-1.09	-1.74
3,911.00	13.30	132.60	3,853.34	-397.88	407.06	-333.23	3.43	3.33	4.09
4,003.00	13.00	132.40	3,942.93	-412.02	422.49	-346.03	0.33	-0.33	-0.22
4,095.00	13.70	131.10	4,032.44	-426.16	438.34	-359.23	0.83	0.76	-1.41
4,187.00	13.90	129.50	4,121.79	-440.35	455.08	-373.30	0.47	0.22	-1.74
4,279.00	14.10	129.30	4,211.06	-454.48	472.27	-387.84	0.22	0.22	-0.22
4,371.00	13.70	135.30	4,300.37	-469.32	488.61	-401.41	1.63	-0.43	6.52
4,463.00	12.50	137.60	4,389.97	-484.42	502.99	-413.00	1.42	-1.30	2.50
4,555.00	11.60	137.20	4,479.94	-498.56	515.99	-423.40	0.98	-0.98	-0.43
4,647.00	10.70	138.60	4,570.20	-511.75	527.92	-432.90	1.02	-0.98	1.52
4,732.00	9.70	139.20	4,653.86	-523.09	537.82	-440.72	1.18	-1.18	0.71

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<b>Wellbore:</b>	Wellbore #1 / #1422519	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Surveys (Xtreme 7)	<b>Database:</b>	Compass 5000 RMR

Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
4,816.00	12.70	132.20	4,736.26	-534.65	549.28	-450.05	3.91	3.57	-8.33	
4,901.00	12.70	131.00	4,819.18	-547.06	563.26	-461.70	0.31	0.00	-1.41	
4,985.00	11.30	128.90	4,901.34	-558.29	576.63	-472.96	1.75	-1.67	-2.50	
5,070.00	10.70	124.50	4,984.78	-567.99	589.62	-484.10	1.21	-0.71	-5.18	
5,155.00	12.50	134.00	5,068.05	-578.85	602.74	-495.18	3.08	2.12	11.18	
5,239.00	11.50	133.20	5,150.21	-590.89	615.38	-505.59	1.21	-1.19	-0.95	
5,324.00	11.10	132.10	5,233.56	-602.18	627.63	-515.73	0.53	-0.47	-1.29	
5,408.00	10.30	131.40	5,316.10	-612.57	639.26	-525.42	0.96	-0.95	-0.83	
5,493.00	11.20	128.90	5,399.61	-622.78	651.39	-535.63	1.19	1.06	-2.94	
5,578.00	9.80	128.10	5,483.18	-632.42	663.50	-545.92	1.66	-1.65	-0.94	
5,662.00	12.60	133.20	5,565.58	-643.11	675.81	-556.23	3.53	3.33	6.07	
5,747.00	11.40	132.60	5,648.72	-655.14	688.75	-566.93	1.42	-1.41	-0.71	
5,831.00	10.60	131.80	5,731.17	-665.91	700.62	-576.79	0.97	-0.95	-0.95	
5,916.00	11.40	147.60	5,814.63	-678.22	710.96	-584.87	3.66	0.94	18.59	
6,000.00	10.20	149.50	5,897.14	-691.64	719.18	-590.68	1.49	-1.43	2.26	
6,085.00	10.10	135.50	5,980.82	-703.44	728.22	-597.58	2.90	-0.12	-16.47	
6,170.00	8.90	134.70	6,064.66	-713.38	738.12	-605.64	1.42	-1.41	-0.94	
6,254.00	7.70	133.70	6,147.78	-721.84	746.81	-612.76	1.44	-1.43	-1.19	
6,339.00	7.00	131.40	6,232.08	-729.20	754.81	-619.39	0.89	-0.82	-2.71	
6,423.00	6.00	130.40	6,315.54	-735.43	762.00	-625.40	1.20	-1.19	-1.19	
6,508.00	5.00	129.10	6,400.14	-740.64	768.25	-630.68	1.19	-1.18	-1.53	
6,593.00	4.30	125.10	6,484.86	-744.81	773.73	-635.37	0.91	-0.82	-4.71	
6,677.00	3.60	122.40	6,568.66	-748.04	778.54	-639.55	0.86	-0.83	-3.21	
6,762.00	2.50	137.90	6,653.54	-750.84	782.03	-642.52	1.61	-1.29	18.24	
6,847.00	7.20	273.40	6,738.35	-751.90	777.95	-638.31	10.77	5.53	159.41	
6,931.00	17.10	273.40	6,820.36	-750.86	760.32	-621.12	11.79	11.79	0.00	
7,016.00	27.20	272.60	6,898.99	-749.23	728.36	-589.90	11.89	11.88	-0.94	
7,100.00	36.40	267.70	6,970.32	-749.36	684.18	-546.35	11.37	10.95	-5.83	
7,177.00	41.40	265.80	7,030.22	-752.14	635.92	-498.33	6.68	6.49	-2.47	
7,262.00	51.80	262.40	7,088.55	-758.64	574.61	-436.80	12.57	12.24	-4.00	
7,346.00	63.90	261.00	7,133.17	-768.94	504.38	-365.84	14.47	14.40	-1.67	
7,431.00	74.80	259.40	7,163.11	-782.50	426.13	-286.43	12.94	12.82	-1.88	
7,515.00	84.90	266.20	7,177.91	-792.76	344.24	-203.99	14.42	12.02	8.10	
7,535.00	87.70	268.30	7,179.20	-793.72	324.31	-184.19	17.49	14.00	10.50	
7,647.00	91.80	271.70	7,179.69	-793.72	212.35	-73.87	4.76	3.66	3.04	
7,740.00	90.50	271.90	7,177.82	-790.80	119.42	17.21	1.41	-1.40	0.22	
7,832.00	89.00	271.90	7,178.22	-787.75	27.47	107.29	1.63	-1.63	0.00	
7,924.00	90.00	272.50	7,179.02	-784.22	-64.46	197.26	1.27	1.09	0.65	
8,016.00	88.40	273.30	7,180.31	-779.56	-156.33	286.99	1.94	-1.74	0.87	
8,108.00	88.50	272.80	7,182.80	-774.67	-248.16	376.65	0.55	0.11	-0.54	
8,200.00	88.40	273.00	7,185.29	-770.02	-340.01	466.36	0.24	-0.11	0.22	
8,292.00	90.10	272.00	7,186.49	-766.01	-431.91	556.23	2.14	1.85	-1.09	
8,384.00	90.00	269.70	7,186.41	-764.64	-523.89	646.63	2.50	-0.11	-2.50	

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<b>Wellbore:</b>	Wellbore #1 / #1422519	<b>Survey Calculation Method:</b>	Minimum Curvature
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8,476.00	90.30	271.60	7,186.17	-763.60	-615.88	737.09	2.09	0.33	2.07	
8,569.00	90.40	274.00	7,185.60	-759.06	-708.76	827.84	2.58	0.11	2.58	
8,661.00	90.80	276.30	7,184.64	-750.80	-800.38	916.71	2.54	0.43	2.50	
8,753.00	90.30	273.90	7,183.75	-742.62	-892.01	1,005.59	2.66	-0.54	-2.61	
8,845.00	90.30	272.00	7,183.27	-737.89	-983.88	1,095.31	2.07	0.00	-2.07	
8,937.00	90.50	272.30	7,182.63	-734.44	-1,075.81	1,185.31	0.39	0.22	0.33	
9,029.00	90.80	269.60	7,181.59	-732.91	-1,167.78	1,275.67	2.95	0.33	-2.93	
9,121.00	88.00	267.70	7,182.55	-735.08	-1,259.74	1,366.65	3.68	-3.04	-2.07	
9,214.00	87.80	267.60	7,185.96	-738.89	-1,352.60	1,458.80	0.24	-0.22	-0.11	
9,306.00	89.70	268.10	7,187.96	-742.34	-1,444.51	1,549.95	2.14	2.07	0.54	
9,398.00	90.30	268.30	7,187.96	-745.23	-1,536.46	1,641.05	0.69	0.65	0.22	
9,490.00	91.00	268.60	7,186.92	-747.72	-1,628.42	1,732.09	0.83	0.76	0.33	
9,582.00	89.40	268.60	7,186.60	-749.96	-1,720.39	1,823.09	1.74	-1.74	0.00	
9,674.00	88.90	268.90	7,187.96	-751.97	-1,812.36	1,914.06	0.63	-0.54	0.33	
9,758.00	88.70	269.70	7,189.72	-753.00	-1,896.33	1,996.98	0.98	-0.24	0.95	
9,843.00	88.20	270.40	7,192.02	-752.92	-1,981.30	2,080.69	1.01	-0.59	0.82	
9,928.00	87.40	271.20	7,195.28	-751.74	-2,066.23	2,164.17	1.33	-0.94	0.94	
10,012.00	87.50	272.00	7,199.02	-749.39	-2,150.11	2,246.42	0.96	0.12	0.95	
10,097.00	88.60	273.80	7,201.91	-745.10	-2,234.95	2,329.28	2.48	1.29	2.12	
10,181.00	87.80	275.00	7,204.55	-738.65	-2,318.66	2,410.67	1.72	-0.95	1.43	
10,266.00	88.80	274.20	7,207.07	-731.84	-2,403.35	2,492.95	1.51	1.18	-0.94	
10,351.00	90.50	272.30	7,207.59	-727.02	-2,488.20	2,575.74	3.00	2.00	-2.24	
10,435.00	90.60	272.60	7,206.79	-723.43	-2,572.12	2,657.82	0.38	0.12	0.36	
10,520.00	90.50	273.00	7,205.97	-719.28	-2,657.01	2,740.76	0.49	-0.12	0.47	
10,604.00	90.00	273.50	7,205.61	-714.52	-2,740.88	2,822.58	0.84	-0.60	0.60	
10,689.00	90.10	271.40	7,205.53	-710.88	-2,825.80	2,905.64	2.47	0.12	-2.47	
10,774.00	89.80	271.40	7,205.61	-708.81	-2,910.77	2,989.01	0.35	-0.35	0.00	
10,858.00	89.30	271.70	7,206.26	-706.54	-2,994.74	3,071.36	0.69	-0.60	0.36	
10,943.00	89.10	271.50	7,207.45	-704.16	-3,079.69	3,154.67	0.33	-0.24	-0.24	
11,028.00	90.00	269.90	7,208.12	-703.12	-3,164.68	3,238.23	2.16	1.06	-1.88	
11,112.00	90.90	270.10	7,207.46	-703.12	-3,248.68	3,321.00	1.10	1.07	0.24	
11,197.00	89.80	269.70	7,206.94	-703.27	-3,333.68	3,404.78	1.38	-1.29	-0.47	
11,281.00	89.80	269.60	7,207.23	-703.79	-3,417.67	3,487.63	0.12	0.00	-0.12	
11,366.00	89.20	269.00	7,207.98	-704.82	-3,502.66	3,571.55	1.00	-0.71	-0.71	
11,451.00	89.40	268.90	7,209.01	-706.38	-3,587.64	3,655.55	0.26	0.24	-0.12	
11,535.00	89.30	268.90	7,209.97	-707.99	-3,671.62	3,738.58	0.12	-0.12	0.00	
11,620.00	90.20	269.40	7,210.34	-709.26	-3,756.61	3,822.54	1.21	1.06	0.59	
11,704.00	90.30	269.80	7,209.97	-709.84	-3,840.61	3,905.40	0.49	0.12	0.48	
11,789.00	89.90	270.10	7,209.82	-709.92	-3,925.61	3,989.17	0.59	-0.47	0.35	
11,855.00	90.40	270.50	7,209.65	-709.57	-3,991.60	4,054.14	0.97	0.76	0.61	
Final Phoenix MWD Survey										
11,919.00	90.40	270.50	7,209.20	-709.01	-4,055.60	4,117.10	0.00	0.00	0.00	
Projection to TD										



## Survey Report

<b>Company:</b>	Extraction Oil & Gas	<b>Local Co-ordinate Reference:</b>	Well WAAG 5
<b>Project:</b>	Weld County, CO (NAD83)	<b>TVD Reference:</b>	WELL @ 4919.00usft (Xtreme #7)
<b>Site:</b>	Sec.19-T7N-R65W	<b>MD Reference:</b>	WELL @ 4919.00usft (Xtreme #7)
<b>Well:</b>	WAAG 5	<b>North Reference:</b>	True
<b>Wellbore:</b>	Wellbore #1 / #1422519	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Surveys (Xtreme 7)	<b>Database:</b>	Compass 5000 RMR

Survey Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
146.00	145.97	1.08	2.31	First Phoenix MWD Survey
11,855.00	7,209.65	-709.57	-3,991.60	Final Phoenix MWD Survey
11,919.00	7,209.20	-709.01	-4,055.60	Projection to TD

Checked By: _____	Approved By: _____	Date: _____
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