



## **Extraction Oil & Gas**

**Weld County, CO (NAD83)**

**Sec.19-T7N-R65W**

**WAAG 4**

**Wellbore #1 / #1422518**

**Survey: Phoenix MWD Surveys**

## **Standard Survey Report**

**15 February, 2015**



<b>Company:</b>	Extraction Oil & Gas	<b>Local Co-ordinate Reference:</b>	Well WAAG 4
<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 4	<b>North Reference:</b>	True
<b>Wellbore:</b>	Wellbore #1 / #1422518	<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 4					
Well Position	+N/-S	0.00 usft	Northing:	1,450,716.75 usft	Latitude:	40° 34' 4.540 N
	+E/-W	0.00 usft	Easting:	3,219,687.04 usft	Longitude:	104° 42' 33.256 W
Position Uncertainty		0.00 usft	Wellhead Elevation:	0.00 usft	Ground Level:	4,902.00 usft

<b>Wellbore</b>	Wellbore #1 / #1422518				
<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	262.20	

<b>Survey Program</b>	<b>Date</b>	2/15/2015			
<b>From (usft)</b>	<b>To (usft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>	
147.00	12,116.00	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	
147.00	0.60	25.20	147.00	0.70	0.33	-0.42	0.41	0.41	0.00	
<b>First Phoenix MWD Survey</b>										
239.00	0.30	345.40	238.99	1.37	0.47	-0.65	0.45	-0.33	-43.26	
332.00	0.00	8.30	331.99	1.60	0.41	-0.62	0.32	-0.32	0.00	
424.00	0.40	264.40	423.99	1.57	0.09	-0.30	0.43	0.43	0.00	
516.00	0.40	271.40	515.99	1.55	-0.55	0.33	0.05	0.00	7.61	
608.00	0.20	264.60	607.99	1.54	-1.03	0.81	0.22	-0.22	-7.39	
701.00	0.30	264.60	700.99	1.50	-1.43	1.22	0.11	0.11	0.00	
793.00	0.50	216.80	792.99	1.16	-1.91	1.74	0.40	0.22	-51.96	
819.00	0.30	236.20	818.99	1.03	-2.04	1.88	0.92	-0.77	74.62	

<b>Company:</b>	Extraction Oil & Gas	<b>Local Co-ordinate Reference:</b>	Well WAAG 4
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<b>Site:</b>	Sec.19-T7N-R65W	<b>MD Reference:</b>	WELL @ 4919.00usft (Xtreme #7)
<b>Well:</b>	WAAG 4	<b>North Reference:</b>	True
<b>Wellbore:</b>	Wellbore #1 / #1422518	<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	232.30	896.98	0.58	-2.64	2.54	0.64	0.64	-5.00
989.00	2.40	143.30	988.95	-1.36	-2.00	2.16	2.74	1.74	-96.74
1,082.00	5.10	129.00	1,081.75	-5.52	2.38	-1.61	3.05	2.90	-15.38
1,172.00	7.00	128.50	1,171.24	-11.45	9.78	-8.14	2.11	2.11	-0.56
1,263.00	9.90	123.10	1,261.25	-19.18	20.68	-17.88	3.30	3.19	-5.93
1,353.00	12.60	127.30	1,349.51	-29.35	34.97	-30.66	3.13	3.00	4.67
1,444.00	12.00	127.10	1,438.42	-41.07	50.41	-44.37	0.66	-0.66	-0.22
1,534.00	12.10	126.50	1,526.44	-52.33	65.46	-57.75	0.18	0.11	-0.67
1,624.00	11.90	126.30	1,614.47	-63.43	80.52	-71.16	0.23	-0.22	-0.22
1,714.00	11.50	123.40	1,702.60	-73.87	95.49	-84.58	0.79	-0.44	-3.22
1,805.00	10.90	124.60	1,791.87	-83.74	110.14	-97.76	0.71	-0.66	1.32
1,895.00	10.50	122.70	1,880.30	-93.01	124.05	-110.28	0.59	-0.44	-2.11
1,985.00	11.90	126.00	1,968.59	-102.89	138.45	-123.21	1.71	1.56	3.67
2,075.00	11.60	122.40	2,056.70	-113.19	153.60	-136.82	0.88	-0.33	-4.00
2,166.00	11.10	122.50	2,145.92	-122.80	168.71	-150.49	0.55	-0.55	0.11
2,256.00	13.50	127.70	2,233.85	-133.88	184.34	-164.46	2.93	2.67	5.78
2,346.00	12.70	124.40	2,321.51	-145.90	200.81	-179.15	1.22	-0.89	-3.67
2,437.00	12.30	125.30	2,410.35	-157.15	216.98	-193.64	0.49	-0.44	0.99
2,528.00	11.50	123.90	2,499.40	-167.81	232.42	-207.49	0.93	-0.88	-1.54
2,620.00	10.70	123.70	2,589.68	-177.67	247.13	-220.73	0.87	-0.87	-0.22
2,712.00	12.80	131.10	2,679.75	-189.11	261.92	-233.83	2.81	2.28	8.04
2,804.00	12.50	129.20	2,769.52	-202.10	277.32	-247.32	0.56	-0.33	-2.07
2,896.00	11.80	128.90	2,859.45	-214.30	292.35	-260.56	0.76	-0.76	-0.33
2,989.00	11.60	128.40	2,950.52	-226.08	307.08	-273.56	0.24	-0.22	-0.54
3,081.00	11.10	126.90	3,040.72	-237.14	321.41	-286.25	0.63	-0.54	-1.63
3,173.00	10.40	126.30	3,131.11	-247.37	335.19	-298.51	0.77	-0.76	-0.65
3,265.00	12.80	126.60	3,221.22	-258.37	350.06	-311.76	2.61	2.61	0.33
3,357.00	11.70	126.00	3,311.13	-269.93	365.79	-325.77	1.20	-1.20	-0.65
3,449.00	11.30	124.60	3,401.28	-280.53	380.76	-339.16	0.53	-0.43	-1.52
3,541.00	10.40	122.70	3,491.63	-290.13	395.17	-352.13	1.05	-0.98	-2.07
3,633.00	13.00	130.00	3,581.72	-301.27	410.08	-365.40	3.25	2.83	7.93
3,726.00	11.80	129.80	3,672.55	-314.08	425.40	-378.84	1.29	-1.29	-0.22
3,818.00	10.80	126.60	3,762.76	-325.24	439.55	-391.34	1.28	-1.09	-3.48
3,910.00	12.30	132.80	3,852.90	-337.04	453.66	-403.72	2.11	1.63	6.74
4,002.00	11.90	129.70	3,942.86	-349.76	468.15	-416.35	0.83	-0.43	-3.37
4,094.00	11.70	129.60	4,032.91	-361.77	482.64	-429.07	0.22	-0.22	-0.11
4,186.00	11.60	128.50	4,123.02	-373.47	497.06	-441.78	0.26	-0.11	-1.20
4,278.00	11.40	125.70	4,213.17	-384.53	511.68	-454.76	0.64	-0.22	-3.04
4,370.00	10.80	124.70	4,303.45	-394.75	526.15	-467.71	0.68	-0.65	-1.09
4,462.00	13.30	132.30	4,393.42	-406.78	541.07	-480.86	3.21	2.72	8.26
4,555.00	12.30	128.30	4,484.11	-420.12	556.76	-494.59	1.44	-1.08	-4.30
4,647.00	11.40	129.70	4,574.15	-432.00	571.44	-507.53	1.03	-0.98	1.52
4,731.00	11.20	127.90	4,656.52	-442.31	584.27	-518.83	0.48	-0.24	-2.14

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<b>Wellbore:</b>	Wellbore #1 / #1422518	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Surveys (Xtreme 7)	<b>Database:</b>	Compass 5000 RMR

Survey										
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4,816.00	13.40	132.60	4,739.57	-454.05	598.03	-530.88	2.84	2.59	5.53	
4,900.00	13.00	131.10	4,821.35	-466.85	612.32	-543.29	0.63	-0.48	-1.79	
4,985.00	11.80	129.50	4,904.37	-478.66	626.23	-555.47	1.47	-1.41	-1.88	
5,069.00	11.20	129.60	4,986.68	-489.33	639.14	-566.82	0.71	-0.71	0.12	
5,154.00	10.60	128.50	5,070.15	-499.46	651.62	-577.81	0.75	-0.71	-1.29	
5,239.00	12.70	126.40	5,153.39	-509.87	665.26	-589.91	2.52	2.47	-2.47	
5,323.00	12.40	125.30	5,235.38	-520.56	680.06	-603.12	0.46	-0.36	-1.31	
5,408.00	11.10	123.80	5,318.60	-530.39	694.30	-615.90	1.57	-1.53	-1.76	
5,492.00	12.20	127.00	5,400.87	-540.23	708.11	-628.24	1.52	1.31	3.81	
5,577.00	11.10	123.50	5,484.12	-550.15	722.11	-640.76	1.54	-1.29	-4.12	
5,661.00	13.50	125.90	5,566.18	-560.36	736.80	-653.93	2.92	2.86	2.86	
5,746.00	12.10	126.80	5,649.07	-571.52	751.97	-667.45	1.66	-1.65	1.06	
5,831.00	11.40	123.90	5,732.29	-581.54	766.07	-680.06	1.08	-0.82	-3.41	
5,915.00	10.00	121.80	5,814.83	-590.01	779.16	-691.88	1.73	-1.67	-2.50	
6,000.00	8.00	129.50	5,898.78	-597.66	790.00	-701.58	2.74	-2.35	9.06	
6,085.00	7.60	124.60	5,982.99	-604.62	799.19	-709.74	0.91	-0.47	-5.76	
6,169.00	7.30	123.50	6,066.28	-610.72	808.21	-717.85	0.40	-0.36	-1.31	
6,254.00	5.40	116.90	6,150.76	-615.51	816.29	-725.20	2.39	-2.24	-7.76	
6,338.00	5.50	127.90	6,234.38	-619.77	822.99	-731.26	1.25	0.12	13.10	
6,423.00	3.60	126.00	6,319.11	-623.84	828.36	-736.03	2.24	-2.24	-2.24	
6,508.00	2.40	129.70	6,403.99	-626.55	831.89	-739.16	1.43	-1.41	4.35	
6,592.00	1.40	124.30	6,487.95	-628.25	834.09	-741.11	1.21	-1.19	-6.43	
6,677.00	0.40	108.10	6,572.93	-628.93	835.23	-742.15	1.20	-1.18	-19.06	
6,762.00	0.20	39.40	6,657.93	-628.90	835.61	-742.52	0.44	-0.24	-80.82	
6,846.00	0.30	324.00	6,741.93	-628.61	835.57	-742.53	0.38	0.12	-89.76	
6,931.00	0.30	325.30	6,826.93	-628.25	835.31	-742.32	0.01	0.00	1.53	
7,016.00	8.90	281.80	6,911.58	-626.72	828.74	-736.01	10.22	10.12	-51.18	
7,100.00	18.20	274.10	6,993.16	-624.45	809.25	-717.01	11.25	11.07	-9.17	
7,185.00	24.20	275.70	7,072.37	-621.77	778.64	-687.06	7.09	7.06	1.88	
7,269.00	32.80	273.20	7,146.13	-618.78	738.72	-647.91	10.33	10.24	-2.98	
7,354.00	43.20	269.10	7,213.03	-617.95	686.49	-596.27	12.58	12.24	-4.82	
7,438.00	54.90	268.80	7,267.98	-619.12	623.17	-533.38	13.93	13.93	-0.36	
7,523.00	64.30	271.20	7,310.95	-619.05	549.94	-460.84	11.32	11.06	2.82	
7,608.00	73.90	272.60	7,341.24	-616.39	470.68	-382.67	11.40	11.29	1.65	
7,692.00	80.30	274.10	7,359.99	-611.59	388.98	-302.38	7.82	7.62	1.79	
7,741.00	85.70	274.80	7,365.96	-607.82	340.51	-254.87	11.11	11.02	1.43	
7,813.00	90.31	275.99	7,368.46	-601.06	268.90	-184.84	6.61	6.40	1.65	
7,905.00	90.75	274.05	7,367.61	-593.01	177.26	-95.14	2.16	0.48	-2.11	
7,997.00	90.92	273.62	7,366.27	-586.85	85.47	-5.04	0.50	0.18	-0.47	
8,089.00	92.24	272.56	7,363.73	-581.90	-6.35	85.27	1.84	1.43	-1.15	
8,181.00	91.98	269.92	7,360.34	-579.91	-98.26	176.05	2.88	-0.28	-2.87	
8,273.00	88.46	266.76	7,359.99	-582.57	-190.20	267.50	5.14	-3.83	-3.43	
8,370.00	88.72	266.85	7,362.38	-587.98	-287.02	364.16	0.28	0.27	0.09	

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<b>Wellbore:</b>	Wellbore #1 / #1422518	<b>Survey Calculation Method:</b>	Minimum Curvature
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Survey									
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8,462.00	88.90	266.14	7,364.29	-593.60	-378.82	455.88	0.80	0.20	-0.77
8,554.00	89.34	267.11	7,365.70	-599.01	-470.65	547.59	1.16	0.48	1.05
8,646.00	89.60	266.94	7,366.55	-603.79	-562.52	639.26	0.34	0.28	-0.18
8,738.00	90.40	267.38	7,366.55	-608.35	-654.41	730.92	0.99	0.87	0.48
8,830.00	91.19	268.34	7,365.28	-611.78	-746.34	822.46	1.35	0.86	1.04
8,923.00	89.87	267.99	7,364.42	-614.76	-839.28	914.95	1.47	-1.42	-0.38
9,015.00	89.34	267.20	7,365.05	-618.62	-931.20	1,006.54	1.03	-0.58	-0.86
9,107.00	89.87	267.29	7,365.68	-623.04	-1,023.09	1,098.18	0.58	0.58	0.10
9,199.00	89.52	267.55	7,366.17	-627.18	-1,114.99	1,189.80	0.47	-0.38	0.28
9,291.00	89.60	270.54	7,366.88	-628.72	-1,206.97	1,281.13	3.25	0.09	3.25
9,383.00	89.52	270.01	7,367.59	-628.28	-1,298.96	1,372.21	0.58	-0.09	-0.58
9,475.00	89.69	269.22	7,368.22	-628.89	-1,390.96	1,463.44	0.88	0.18	-0.86
9,568.00	90.48	271.16	7,368.08	-628.59	-1,483.95	1,555.53	2.25	0.85	2.09
9,660.00	90.40	271.68	7,367.38	-626.31	-1,575.92	1,646.34	0.57	-0.09	0.57
9,752.00	90.92	272.83	7,366.32	-622.69	-1,667.84	1,736.92	1.37	0.57	1.25
9,844.00	89.08	270.98	7,366.32	-619.63	-1,759.78	1,827.59	2.84	-2.00	-2.01
9,936.00	89.52	271.86	7,367.44	-617.35	-1,851.75	1,918.40	1.07	0.48	0.96
10,027.00	88.90	270.89	7,368.70	-615.16	-1,942.71	2,008.22	1.26	-0.68	-1.07
10,112.00	88.20	270.54	7,370.85	-614.10	-2,027.68	2,092.26	0.92	-0.82	-0.41
10,197.00	88.64	270.80	7,373.19	-613.11	-2,112.64	2,176.30	0.60	0.52	0.31
10,281.00	89.78	271.24	7,374.35	-611.62	-2,196.61	2,259.30	1.45	1.36	0.52
10,366.00	89.52	271.07	7,374.87	-609.90	-2,281.60	2,343.26	0.37	-0.31	-0.20
10,451.00	90.04	271.33	7,375.19	-608.12	-2,366.58	2,427.21	0.68	0.61	0.31
10,535.00	90.48	271.16	7,374.81	-606.30	-2,450.56	2,510.17	0.56	0.52	-0.20
10,620.00	90.66	271.07	7,373.97	-604.64	-2,535.53	2,594.14	0.24	0.21	-0.11
10,704.00	90.13	270.63	7,373.39	-603.40	-2,619.52	2,677.18	0.82	-0.63	-0.52
10,789.00	89.16	270.19	7,373.92	-602.79	-2,704.52	2,761.30	1.25	-1.14	-0.52
10,874.00	90.57	270.89	7,374.12	-601.99	-2,789.51	2,845.40	1.85	1.66	0.82
10,958.00	88.29	269.57	7,374.95	-601.65	-2,873.50	2,928.57	3.14	-2.71	-1.57
11,043.00	89.87	270.10	7,376.32	-601.90	-2,958.48	3,012.80	1.96	1.86	0.62
11,127.00	88.46	269.40	7,377.54	-602.26	-3,042.47	3,096.06	1.87	-1.68	-0.83
11,212.00	90.04	270.19	7,378.65	-602.57	-3,127.46	3,180.30	2.08	1.86	0.93
11,296.00	87.93	269.05	7,380.14	-603.12	-3,211.44	3,263.58	2.85	-2.51	-1.36
11,381.00	89.34	271.86	7,382.17	-602.45	-3,296.40	3,347.67	3.70	1.66	3.31
11,466.00	91.10	272.83	7,381.84	-598.97	-3,381.33	3,431.33	2.36	2.07	1.14
11,550.00	91.01	271.42	7,380.29	-595.86	-3,465.25	3,514.06	1.68	-0.11	-1.68
11,635.00	91.01	271.51	7,378.79	-593.68	-3,550.21	3,597.94	0.11	0.00	0.11
11,719.00	88.29	270.54	7,379.31	-592.18	-3,634.19	3,680.93	3.44	-3.24	-1.15
11,804.00	89.69	270.36	7,380.81	-591.51	-3,719.17	3,765.04	1.66	1.65	-0.21
11,888.00	88.37	270.10	7,382.23	-591.18	-3,803.15	3,848.20	1.60	-1.57	-0.31
11,973.00	88.99	271.07	7,384.19	-590.31	-3,888.13	3,932.27	1.35	0.73	1.14
12,034.00	89.34	271.16	7,385.08	-589.12	-3,949.11	3,992.52	0.59	0.57	0.15
Last Phoenix MWD Survey									
12,116.00	89.34	271.16	7,386.02	-587.46	-4,031.09	4,073.52	0.00	0.00	0.00

<b>Company:</b>	Extraction Oil & Gas	<b>Local Co-ordinate Reference:</b>	Well WAAG 4
<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 4	<b>North Reference:</b>	True
<b>Wellbore:</b>	Wellbore #1 / #1422518	<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)
Projection to TD									

Survey Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
147.00	147.00	0.70	0.33	First Phoenix MWD Survey
12,034.00	7,385.08	-589.12	-3,949.11	Last Phoenix MWD Survey
12,116.00	7,386.02	-587.46	-4,031.09	Projection to TD

Checked By: _____	Approved By: _____	Date: _____
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