



# **Extraction Oil & Gas**

**Weld County, CO (NAD83)**

**Winder South**

**10**

**OH**

**Survey: Phoenix MWD Surveys**

## **Standard Survey Report**

**25 July, 2018**



<b>Company:</b>	Extraction Oil & Gas	<b>Local Co-ordinate Reference:</b>	Well 10
<b>Project:</b>	Weld County, CO (NAD83)	<b>TVD Reference:</b>	RKB @ 4882.00usft (Patterson 346)
<b>Site:</b>	Winder South	<b>MD Reference:</b>	RKB @ 4882.00usft (Patterson 346)
<b>Well:</b>	10	<b>North Reference:</b>	True
<b>Wellbore:</b>	OH	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Surveys (Patterson 346)	<b>Database:</b>	USA Compass

<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		Winder South					
Site Position:		Northing:	1,426,546.92	usft	Latitude:	40° 30' 9.61560 N	
From:	Lat/Long	Easting:	3,169,618.22	usft	Longitude:	104° 53' 24.18720 W	
Position Uncertainty:		0.00	usft	Slot Radius:	13-3/16 "	Grid Convergence:	0.39 °

Well	10					
Well Position	+N/-S	0.00 usft	Northing:	1,426,547.13 usft	Latitude:	40° 30' 9.61904 N
	+E/-W	0.00 usft	Easting:	3,169,598.20 usft	Longitude:	104° 53' 24.44640 W
Position Uncertainty		0.00 usft	Wellhead Elevation:	0.00 usft	Ground Level:	4,857.00 usft

<b>Wellbore</b>	OH				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	HDGM	10/23/2016	8.47	66.97	52,536.60000000

<b>Design</b>	Surveys (Patterson 346)				
<b>Audit Notes:</b>					
<b>Version:</b>	1.0	<b>Phase:</b>	ACTUAL	<b>Tie On Depth:</b>	1,530.00
<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	245.18	

<b>Survey Program</b>	<b>Date</b>	10/23/2016			
<b>From (usft)</b>	<b>To (usft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>	
155.00	1,530.00	Gyros (OH (Surface))	NS-GYRO-MS	North sensing gyrocompassing m/s	
1,530.00	13,032.00	Newsco MWD Surveys (OH)	MWD	OWSG Rev.2 MWD - Standard	
13,167.00	17,355.00	Phoenix MWD Surveys (OH)	MWD+HDGM	OWSG Rev.2 MWD + HDGM	

<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>	
13,032.00	93.41	269.67	6,984.35	-2,459.90	-5,317.55	5,858.96	0.00	0.00	0.00	
13,167.00	93.03	273.83	6,976.76	-2,455.78	-5,452.24	5,979.48	3.09	-0.28	3.08	
13,261.00	93.14	272.95	6,971.70	-2,450.23	-5,545.94	6,062.20	0.94	0.12	-0.94	
13,356.00	92.69	271.42	6,966.87	-2,446.62	-5,640.75	6,146.72	1.68	-0.47	-1.61	
13,450.00	92.65	270.98	6,962.49	-2,444.65	-5,734.62	6,231.10	0.47	-0.04	-0.47	
13,544.00	92.89	271.32	6,957.95	-2,442.77	-5,828.50	6,315.51	0.44	0.26	0.36	
13,639.00	92.76	270.31	6,953.27	-2,441.42	-5,923.37	6,401.05	1.07	-0.14	-1.06	
13,733.00	92.11	270.22	6,949.28	-2,440.98	-6,017.28	6,486.10	0.70	-0.69	-0.10	
13,828.00	92.82	269.82	6,945.19	-2,440.95	-6,112.19	6,572.23	0.86	0.75	-0.42	

<b>Company:</b>	Extraction Oil & Gas	<b>Local Co-ordinate Reference:</b>	Well 10
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<b>Site:</b>	Winder South	<b>MD Reference:</b>	RKB @ 4882.00usft (Patterson 346)
<b>Well:</b>	10	<b>North Reference:</b>	True
<b>Wellbore:</b>	OH	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Surveys (Patterson 346)	<b>Database:</b>	USA Compass

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)
13,922.00	90.48	270.26	6,942.48	-2,440.88	-6,206.15	6,657.48	2.53	-2.49	0.47
14,017.00	89.56	269.48	6,942.45	-2,441.10	-6,301.15	6,743.79	1.27	-0.97	-0.82
14,111.00	91.88	268.65	6,941.27	-2,442.63	-6,395.12	6,829.72	2.62	2.47	-0.88
14,206.00	91.91	267.57	6,938.13	-2,445.76	-6,490.01	6,917.16	1.14	0.03	-1.14
14,300.00	93.14	269.98	6,933.99	-2,447.77	-6,583.89	7,003.21	2.88	1.31	2.56
14,394.00	93.02	269.91	6,928.94	-2,447.86	-6,677.76	7,088.44	0.15	-0.13	-0.07
14,489.00	92.92	269.37	6,924.01	-2,448.46	-6,772.63	7,174.80	0.58	-0.11	-0.57
14,583.00	92.75	268.38	6,919.36	-2,450.30	-6,866.49	7,260.76	1.07	-0.18	-1.05
14,677.00	93.40	267.49	6,914.32	-2,453.68	-6,960.30	7,347.32	1.17	0.69	-0.95
14,772.00	93.01	269.51	6,909.01	-2,456.17	-7,055.11	7,434.41	2.16	-0.41	2.13
14,866.00	93.53	270.27	6,903.65	-2,456.35	-7,148.95	7,519.66	0.98	0.55	0.81
14,960.00	90.63	269.12	6,900.24	-2,456.85	-7,242.88	7,605.12	3.32	-3.09	-1.22
15,055.00	89.54	268.74	6,900.10	-2,458.62	-7,337.86	7,692.07	1.22	-1.15	-0.40
15,149.00	89.62	268.62	6,900.78	-2,460.79	-7,431.83	7,778.27	0.15	0.09	-0.13
15,244.00	90.72	268.66	6,900.50	-2,463.04	-7,526.81	7,865.41	1.16	1.16	0.04
15,338.00	91.20	270.62	6,898.93	-2,463.63	-7,620.79	7,950.96	2.15	0.51	2.09
15,433.00	91.62	271.46	6,896.59	-2,461.91	-7,715.74	8,036.42	0.99	0.44	0.88
15,527.00	93.01	270.29	6,892.79	-2,460.47	-7,809.65	8,121.05	1.93	1.48	-1.24
15,622.00	92.62	269.92	6,888.13	-2,460.30	-7,904.53	8,207.09	0.57	-0.41	-0.39
15,716.00	93.72	271.10	6,882.93	-2,459.46	-7,998.38	8,291.92	1.71	1.17	1.26
15,810.00	93.20	271.79	6,877.26	-2,457.10	-8,092.18	8,376.06	0.92	-0.55	0.73
15,905.00	92.62	271.88	6,872.43	-2,454.06	-8,187.01	8,460.85	0.62	-0.61	0.09
16,000.00	92.06	271.61	6,868.55	-2,451.17	-8,281.89	8,545.75	0.65	-0.59	-0.28
16,095.00	91.54	270.85	6,865.57	-2,449.13	-8,376.82	8,631.05	0.97	-0.55	-0.80
16,189.00	91.11	270.70	6,863.40	-2,447.86	-8,470.78	8,715.80	0.48	-0.46	-0.16
16,284.00	92.17	270.10	6,860.68	-2,447.20	-8,565.74	8,801.71	1.28	1.12	-0.63
16,378.00	91.78	270.04	6,857.44	-2,447.08	-8,659.68	8,886.92	0.42	-0.41	-0.06
16,473.00	93.44	268.33	6,853.11	-2,448.43	-8,754.57	8,973.61	2.51	1.75	-1.80
16,567.00	93.87	268.02	6,847.12	-2,451.42	-8,848.33	9,059.96	0.56	0.46	-0.33
16,662.00	93.13	269.63	6,841.32	-2,453.36	-8,943.13	9,146.81	1.86	-0.78	1.69
16,757.00	93.44	269.99	6,835.88	-2,453.68	-9,037.97	9,233.03	0.50	0.33	0.38
16,851.00	93.40	269.89	6,830.27	-2,453.78	-9,131.80	9,318.23	0.11	-0.04	-0.11
16,945.00	92.70	271.93	6,825.27	-2,452.28	-9,225.65	9,402.78	2.29	-0.74	2.17
17,040.00	92.51	271.00	6,820.95	-2,449.86	-9,320.52	9,487.87	1.00	-0.20	-0.98
17,134.00	92.10	271.60	6,817.17	-2,447.73	-9,414.42	9,572.20	0.77	-0.44	0.64
17,229.00	92.09	271.74	6,813.69	-2,444.96	-9,509.32	9,657.16	0.15	-0.01	0.15
17,288.00	92.11	271.88	6,811.53	-2,443.10	-9,568.25	9,709.87	0.24	0.03	0.24
17,355.00	92.11	271.88	6,809.07	-2,440.90	-9,635.17	9,769.68	0.00	0.00	0.00

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<b>Design:</b>	Surveys (Patterson 346)	<b>Database:</b>	USA Compass

Checked By: _____	Approved By: _____	Date: _____
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