

# **Extraction Oil & Gas**

**Weld County, CO (NAD83)**

**Trott-Berthound Farms Pad KB 29**

**Trott 8E-10-11N**

**Wellbore #1**

**Survey: Survey #1**

## **Standard Survey Report**

**11 May, 2018**

## Survey Report

<b>Company:</b>	Extraction Oil & Gas	<b>Local Co-ordinate Reference:</b>	Well Trott 8E-10-11N
<b>Project:</b>	Weld County, CO (NAD83)	<b>TVD Reference:</b>	KB=11 @ 5042.00ft
<b>Site:</b>	Trott-Berthound Farms Pad KB 29	<b>MD Reference:</b>	KB=11 @ 5042.00ft
<b>Well:</b>	Trott 8E-10-11N	<b>North Reference:</b>	True
<b>Wellbore:</b>	Wellbore #1	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Wellbore #1	<b>Database:</b>	EDM 5000.1

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

Site		Trott-Berthound Farms Pad KB 29							
Site Position:		Northing:	1,361,363.24	usft	Latitude:	40.324431			
From:	Map	Easting:	3,128,155.77	usft	Longitude:	-105.040363			
Position Uncertainty:		0.00	ft	Slot Radius:	13-3/16	"	Grid Convergence:	0.30	°

Well	Trott 8E-10-11N					
Well Position	+N/-S	0.00 ft	Northing:	1,361,363.16 usft	Latitude:	40.324428
	+E/-W	0.00 ft	Easting:	3,128,354.05 usft	Longitude:	-105.039652
Position Uncertainty		0.00 ft	Wellhead Elevation:	0.00 ft	Ground Level:	5,031.00 ft

<b>Wellbore</b>	Wellbore #1				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	HDGM	5/11/2018	8.52	66.65	52,115

<b>Design</b>	Wellbore #1				
<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) (ft)</b>	<b>+N/-S (ft)</b>	<b>+E/-W (ft)</b>	<b>Direction (°)</b>	
	0.00	0.00	0.00	56.99	

<b>Survey Program</b>	<b>Date</b>	5/11/2018			
<b>From (ft)</b>	<b>To (ft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>	
105.00	10,450.00	Survey #1 (Wellbore #1)	MWD	MWD - Standard	

<b>Survey</b>									
<b>Measured Depth (ft)</b>	<b>Inclination (°)</b>	<b>Azimuth (°)</b>	<b>Vertical Depth (ft)</b>	<b>+N/-S (ft)</b>	<b>+E/-W (ft)</b>	<b>Vertical Section (ft)</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
105.00	0.31	213.79	105.00	-0.24	-0.16	-0.26	0.30	0.30	0.00
<b>1st MWD Survey</b>									
200.00	1.10	132.67	199.99	-1.07	0.37	-0.27	1.15	0.83	-85.39
296.00	3.47	95.84	295.91	-1.99	3.94	2.22	2.78	2.47	-38.36
391.00	5.93	94.87	390.59	-2.70	11.69	8.33	2.59	2.59	-1.02
485.00	8.17	92.24	483.87	-3.37	23.20	17.62	2.41	2.38	-2.80
581.00	10.28	92.24	578.62	-3.97	38.58	30.19	2.20	2.20	0.00
676.00	10.55	94.87	672.06	-5.04	55.72	43.98	0.58	0.28	2.77
770.00	9.45	92.41	764.63	-6.10	72.00	57.06	1.26	-1.17	-2.62
865.00	6.77	101.64	858.67	-7.55	85.28	67.40	3.13	-2.82	9.72

# Survey Report

<b>Company:</b>	Extraction Oil & Gas	<b>Local Co-ordinate Reference:</b>	Well Trott 8E-10-11N
<b>Project:</b>	Weld County, CO (NAD83)	<b>TVD Reference:</b>	KB=11 @ 5042.00ft
<b>Site:</b>	Trott-Berthound Farms Pad KB 29	<b>MD Reference:</b>	KB=11 @ 5042.00ft
<b>Well:</b>	Trott 8E-10-11N	<b>North Reference:</b>	True
<b>Wellbore:</b>	Wellbore #1	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Wellbore #1	<b>Database:</b>	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)
960.00	2.99	92.41	953.31	-8.79	93.24	73.40	4.05	-3.98	-9.72
1,056.00	1.36	62.62	1,049.24	-8.37	96.76	76.58	2.01	-1.70	-31.03
1,151.00	2.15	74.48	1,144.20	-7.38	99.47	79.40	0.91	0.83	12.48
1,247.00	2.50	98.30	1,240.12	-7.20	103.28	82.69	1.06	0.36	24.81
1,341.00	2.50	85.90	1,334.03	-7.35	107.36	86.02	0.57	0.00	-13.19
1,436.00	2.68	104.01	1,428.94	-7.73	111.58	89.35	0.88	0.19	19.06
1,502.00	2.42	101.64	1,494.87	-8.39	114.44	91.39	0.43	-0.39	-3.59
1,672.00	2.30	76.44	1,664.73	-8.31	121.27	97.16	0.61	-0.07	-14.82
1,767.00	4.11	79.65	1,759.58	-7.26	126.47	102.10	1.91	1.91	3.38
1,863.00	5.21	85.03	1,855.26	-6.26	134.20	109.13	1.23	1.15	5.60
1,958.00	4.68	86.53	1,949.91	-5.65	142.37	116.31	0.57	-0.56	1.58
2,054.00	4.99	79.04	2,045.57	-4.62	150.37	123.58	0.73	0.32	-7.80
2,149.00	4.11	69.43	2,140.27	-2.64	157.62	130.74	1.22	-0.93	-10.12
2,245.00	5.08	73.75	2,235.96	-0.24	164.92	138.17	1.07	1.01	4.50
2,340.00	4.42	65.24	2,330.63	2.47	172.28	145.82	1.01	-0.69	-8.96
2,436.00	4.02	61.63	2,426.37	5.62	178.60	152.83	0.50	-0.42	-3.76
2,531.00	3.31	78.15	2,521.18	7.76	184.22	158.71	1.33	-0.75	17.39
2,626.00	5.08	103.36	2,615.93	7.35	190.99	164.17	2.65	1.86	26.54
2,722.00	4.42	95.56	2,711.60	6.01	198.81	169.99	0.96	-0.69	-8.13
2,817.00	4.11	87.23	2,806.34	5.82	205.85	175.80	0.73	-0.33	-8.77
2,912.00	5.08	97.15	2,901.03	5.47	213.43	181.95	1.32	1.02	10.44
3,008.00	3.18	76.52	2,996.79	5.56	220.24	187.71	2.48	-1.98	-21.49
3,103.00	4.68	102.13	3,091.57	5.36	226.59	192.93	2.39	1.58	26.96
3,198.00	4.42	104.86	3,186.27	3.60	233.92	198.12	0.36	-0.27	2.87
3,294.00	5.48	103.45	3,281.91	1.59	241.95	203.76	1.11	1.10	-1.47
3,389.00	3.71	94.33	3,376.60	0.30	249.43	209.33	2.01	-1.86	-9.60
3,485.00	5.21	88.64	3,472.31	0.17	256.88	215.51	1.63	1.56	-5.93
3,580.00	3.31	67.36	3,567.05	1.33	263.73	221.88	2.57	-2.00	-22.40
3,675.00	5.08	84.46	3,661.79	2.79	270.44	228.31	2.26	1.86	18.00
3,771.00	3.31	110.15	3,757.54	2.25	277.28	233.74	2.65	-1.84	26.76
3,866.00	4.02	91.42	3,852.35	1.22	283.18	238.13	1.46	0.75	-19.72
3,962.00	5.92	108.34	3,947.99	-0.42	291.25	244.00	2.48	1.98	17.63
4,083.00	2.61	85.95	4,068.64	-2.19	299.92	250.31	3.01	-2.74	-18.50
4,178.00	5.39	74.54	4,163.40	-0.85	306.38	256.46	3.03	2.93	-12.01
4,273.00	4.91	82.56	4,258.02	0.87	314.71	264.38	0.91	-0.51	8.44
4,369.00	3.80	110.32	4,353.75	0.29	321.77	269.99	2.45	-1.16	28.92
4,464.00	3.89	103.76	4,448.54	-1.57	327.85	274.07	0.47	0.09	-6.91
4,559.00	6.32	86.66	4,543.16	-2.03	336.20	280.83	2.99	2.56	-18.00
4,655.00	7.11	81.15	4,638.50	-0.81	347.35	290.84	1.06	0.82	-5.74
4,750.00	6.81	80.75	4,732.80	1.00	358.72	301.36	0.32	-0.32	-0.42
4,846.00	3.58	57.84	4,828.40	3.51	366.87	309.57	3.93	-3.36	-23.86
4,941.00	12.99	78.64	4,922.32	7.21	379.88	322.49	10.24	9.91	21.89
5,037.00	20.50	92.12	5,014.22	8.71	407.31	346.31	8.76	7.82	14.04

# Survey Report

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<b>Site:</b>	Trott-Berthound Farms Pad KB 29	<b>MD Reference:</b>	KB=11 @ 5042.00ft
<b>Well:</b>	Trott 8E-10-11N	<b>North Reference:</b>	True
<b>Wellbore:</b>	Wellbore #1	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Wellbore #1	<b>Database:</b>	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)
5,132.00	29.12	94.72	5,100.37	6.19	447.05	378.25	9.14	9.07	2.74
5,228.00	40.21	94.94	5,179.21	1.58	501.37	421.30	11.55	11.55	0.23
5,323.00	49.89	90.76	5,246.26	-1.55	568.42	475.82	10.65	10.19	-4.40
5,419.00	60.41	90.63	5,301.04	-2.49	647.09	541.27	10.96	10.96	-0.14
5,493.19	70.00	92.80	5,332.12	-4.56	714.32	596.53	13.19	12.92	2.93
<b>70° Inc. 5493.19 MD/5333.12 TVD -4.53 S 714.32 E N: 1361362.3 E: 3129068.2</b>									
5,514.00	72.69	93.36	5,338.78	-5.62	734.01	612.46	13.19	12.94	2.68
5,609.00	81.40	93.53	5,360.05	-11.18	826.33	686.85	9.17	9.17	0.18
5,625.51	80.78	92.99	5,362.61	-12.11	842.62	700.00	4.94	-3.74	-3.27
<b>Cross 460' FWL 5625.51 MD/5362.61 TVD -12.11 S 842.62 E N: 1361355.4 E: 3129196.7</b>									
5,705.00	77.82	90.36	5,377.37	-14.40	920.68	764.21	4.94	-3.73	-3.31
5,800.00	76.80	89.44	5,398.24	-14.24	1,013.35	842.02	1.43	-1.07	-0.97
5,896.00	75.61	89.44	5,421.13	-13.33	1,106.58	920.69	1.24	-1.24	0.00
5,991.00	77.82	88.03	5,442.96	-11.28	1,199.00	999.31	2.74	2.33	-1.48
6,087.00	79.50	88.03	5,461.84	-8.05	1,293.07	1,079.95	1.75	1.75	0.00
6,182.00	78.39	87.85	5,480.05	-4.69	1,386.25	1,159.91	1.18	-1.17	-0.19
6,278.00	83.61	88.82	5,495.06	-1.95	1,480.99	1,240.86	5.53	5.44	1.01
6,373.00	84.18	89.04	5,505.17	-0.18	1,575.43	1,321.02	0.64	0.60	0.23
6,468.00	84.89	88.95	5,514.22	1.48	1,669.99	1,401.22	0.75	0.75	-0.09
6,564.00	85.29	88.64	5,522.43	3.49	1,765.61	1,482.50	0.53	0.42	-0.32
6,659.00	85.68	87.94	5,529.91	6.31	1,860.28	1,563.42	0.84	0.41	-0.74
6,755.00	86.39	87.94	5,536.55	9.76	1,955.98	1,645.56	0.74	0.74	0.00
6,850.00	86.92	87.14	5,542.09	13.83	2,050.73	1,727.23	1.01	0.56	-0.84
6,946.00	84.40	88.33	5,549.36	17.61	2,146.37	1,809.49	2.90	-2.63	1.24
7,041.00	85.11	87.94	5,558.04	20.69	2,240.93	1,890.46	0.85	0.75	-0.41
7,137.00	81.31	88.25	5,569.39	23.86	2,336.18	1,972.06	3.97	-3.96	0.32
7,233.00	81.22	88.25	5,583.97	26.76	2,431.02	2,053.17	0.09	-0.09	0.00
7,328.00	80.38	88.55	5,599.16	29.38	2,524.76	2,133.21	0.94	-0.88	0.32
7,424.00	79.50	88.03	5,615.93	32.20	2,619.25	2,213.98	1.06	-0.92	-0.54
7,519.00	78.70	89.04	5,633.89	34.58	2,712.50	2,293.48	1.34	-0.84	1.06
7,615.00	82.50	90.23	5,649.57	35.18	2,807.19	2,373.21	4.14	3.96	1.24
7,709.00	81.49	89.44	5,662.66	35.45	2,900.27	2,451.41	1.36	-1.07	-0.84
7,804.00	84.80	89.44	5,673.99	36.37	2,994.57	2,530.99	3.48	3.48	0.00
7,900.00	85.90	89.83	5,681.78	36.98	3,090.25	2,611.56	1.22	1.15	0.41
7,996.00	83.21	86.84	5,690.89	39.75	3,185.76	2,693.16	4.18	-2.80	-3.11
8,091.00	79.41	86.53	5,705.24	45.18	3,279.50	2,774.72	4.01	-4.00	-0.33
8,187.00	79.32	84.85	5,722.96	52.27	3,373.58	2,857.47	1.72	-0.09	-1.75
8,282.00	79.19	88.82	5,740.68	57.42	3,466.75	2,938.41	4.11	-0.14	4.18
8,378.00	78.39	87.94	5,759.34	60.08	3,560.88	3,018.80	1.23	-0.83	-0.92
8,473.00	80.78	91.15	5,776.52	60.81	3,654.29	3,097.53	4.17	2.52	3.38
8,569.00	80.51	90.45	5,792.12	59.49	3,749.00	3,176.23	0.77	-0.28	-0.73
8,664.00	80.78	89.44	5,807.56	59.58	3,842.74	3,254.88	1.09	0.28	-1.06
8,760.00	81.88	89.04	5,822.03	60.84	3,937.63	3,335.15	1.22	1.15	-0.42
8,855.00	79.10	86.75	5,837.73	64.27	4,031.25	3,415.52	3.77	-2.93	-2.41

## Survey Report

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<b>Project:</b>	Weld County, CO (NAD83)	<b>TVD Reference:</b>	KB=11 @ 5042.00ft
<b>Site:</b>	Trott-Berthound Farms Pad KB 29	<b>MD Reference:</b>	KB=11 @ 5042.00ft
<b>Well:</b>	Trott 8E-10-11N	<b>North Reference:</b>	True
<b>Wellbore:</b>	Wellbore #1	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Wellbore #1	<b>Database:</b>	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)
8,951.00	79.72	88.55	5,855.37	68.14	4,125.53	3,496.69	1.95	0.65	1.88
9,046.00	79.89	87.45	5,872.19	71.40	4,218.97	3,576.82	1.15	0.18	-1.16
9,142.00	80.60	86.84	5,888.46	76.12	4,313.46	3,658.63	0.97	0.74	-0.64
9,237.00	80.12	89.26	5,904.37	79.31	4,407.06	3,738.86	2.56	-0.51	2.55
9,333.00	80.60	90.36	5,920.44	79.62	4,501.70	3,818.39	1.24	0.50	1.15
9,428.00	81.09	91.55	5,935.56	78.05	4,595.48	3,896.18	1.34	0.52	1.25
9,524.00	80.29	89.35	5,951.09	77.31	4,690.20	3,975.21	2.41	-0.83	-2.29
9,619.00	81.00	89.66	5,966.53	78.12	4,783.93	4,054.25	0.81	0.75	0.33
9,715.00	77.11	88.64	5,984.76	79.51	4,878.16	4,134.02	4.18	-4.05	-1.06
9,810.00	75.39	88.95	6,007.34	81.45	4,970.41	4,212.44	1.84	-1.81	0.33
9,906.00	74.19	91.02	6,032.52	81.48	5,063.04	4,290.13	2.43	-1.25	2.16
10,001.00	73.88	90.54	6,058.65	80.24	5,154.37	4,366.04	0.59	-0.33	-0.51
10,097.00	74.11	91.15	6,085.12	78.88	5,246.64	4,442.67	0.66	0.24	0.64
10,192.00	73.62	90.36	6,111.53	77.67	5,337.89	4,518.54	0.95	-0.52	-0.83
10,288.00	73.40	90.23	6,138.77	77.20	5,429.94	4,595.47	0.26	-0.23	-0.14
10,383.00	73.22	90.23	6,166.06	76.83	5,520.93	4,671.58	0.19	-0.19	0.00
<b>Last MWD Survey 10383 MD/6166.06 TVD 76.83 N 5520.93 E N: 1361468.6 E: 31338741.4</b>									
10,450.00	73.22	90.23	6,185.40	76.58	5,585.08	4,725.23	0.00	0.00	0.00
<b>492' FEL 10450 MD/6185.4 TVD 76.58 N 5585.08 E N: 1361468.7 E: 3133938.6</b>									

### Survey Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
105.00	105.00	-0.24	-0.16	1st MWD Survey
5,493.19	5,332.12	-4.56	714.32	70° Inc. 5493.19 MD/5333.12 TVD -4.53 S 714.32 E N: 1361362.3 E: 3129068.1
5,625.51	5,362.61	-12.11	842.62	Cross 460' FWL 5625.51 MD/5362.61 TVD -12.11 S 842.62 E N: 1361355.4 E: 3129068.1
10,383.00	6,166.06	76.83	5,520.93	Last MWD Survey 10383 MD/6166.06 TVD 76.83 N 5520.93 E N: 1361468.6 E: 31338741.4
10,450.00	6,185.40	76.58	5,585.08	492' FEL 10450 MD/6185.4 TVD 76.58 N 5585.08 E N: 1361468.7 E: 3133938.6

Checked By: \_\_\_\_\_ Approved By: \_\_\_\_\_ Date: \_\_\_\_\_