



# **Extraction Oil & Gas**

**Weld County, CO (NAD83)**

**TROTT Pad**

**TROTT 8E-10-17N**

**Wellbore #1**

**Design: Wellbore #1**

## **Standard Survey Report**

**12 January, 2018**



<b>Company:</b>	Extraction Oil & Gas	<b>Local Co-ordinate Reference:</b>	Well TROTT 8E-10-17N
<b>Project:</b>	Weld County, CO (NAD83)	<b>TVD Reference:</b>	KB=25' @ 5060.00ft (P 346)
<b>Site:</b>	TROTT Pad	<b>MD Reference:</b>	KB=25' @ 5060.00ft (P 346)
<b>Well:</b>	TROTT 8E-10-17N	<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 Pad				
Site Position:		Northing:	1,361,363.2700 usft	Latitude:	40.324433	
From:	Map	Easting:	3,128,030.0400 usft	Longitude:	-105.040814	
Position Uncertainty:		0.00 ft	Slot Radius:	13-3/16 "	Grid Convergence:	0.30 °

Well	TROTT 8E-10-17N					
Well Position	+N-S	0.00 ft	Northing:	1,361,363.2700 usft	Latitude:	40.324433
	+E-W	0.00 ft	Easting:	3,128,030.0400 usft	Longitude:	-105.040814
Position Uncertainty		0.00 ft	Wellhead Elevation:	0.00 ft	Ground Level:	5,035.00 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	12/19/2017	8.53	66.65	52,162

<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	102.31	

<b>Survey Program</b>	<b>Date</b>	1/12/2018			
<b>From (ft)</b>	<b>To (ft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>	
113.00	1,539.00	Surface Surveys (Wellbore #1)	MWD	MWD - Standard	
1,651.00	10,965.00	MWD Surveys (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	
113.00	0.57	239.01	113.00	-0.29	-0.48	-0.41	0.50	0.50	0.00	
207.00	0.66	248.07	206.99	-0.73	-1.38	-1.20	0.14	0.10	9.64	
302.00	0.53	241.91	301.99	-1.14	-2.28	-1.98	0.15	-0.14	-6.48	
397.00	0.62	221.40	396.98	-1.74	-3.01	-2.57	0.23	0.09	-21.59	
492.00	0.18	257.18	491.98	-2.15	-3.49	-2.95	0.51	-0.46	37.66	
588.00	0.22	43.02	587.98	-2.05	-3.51	-3.00	0.40	0.04	151.92	
683.00	0.22	117.90	682.98	-2.01	-3.23	-2.73	0.28	0.00	78.82	
777.00	0.48	93.03	776.98	-2.11	-2.68	-2.16	0.31	0.28	-26.46	
871.00	2.20	40.64	870.95	-0.76	-1.11	-0.92	2.07	1.83	-55.73	

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<b>Well:</b>	TROTT 8E-10-17N	<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)
966.00	2.72	104.10	965.88	0.07	2.27	2.20	2.76	0.55	66.80
1,059.00	3.52	134.77	1,058.75	-2.48	6.43	6.81	1.96	0.86	32.98
1,155.00	4.75	146.02	1,154.50	-7.85	10.75	12.17	1.53	1.28	11.72
1,250.00	7.73	164.92	1,248.93	-17.28	14.61	17.96	3.77	3.14	19.89
1,346.00	9.49	173.80	1,343.85	-31.38	17.14	23.44	2.29	1.83	9.25
1,440.00	10.90	171.25	1,436.36	-47.87	19.33	29.10	1.57	1.50	-2.71
1,488.00	11.95	165.89	1,483.41	-57.18	21.24	32.94	3.11	2.19	-11.17
1,539.00	11.95	165.89	1,533.31	-67.42	23.81	37.64	0.00	0.00	0.00
1,651.00	14.72	162.33	1,642.28	-92.23	30.96	49.92	2.58	2.47	-3.18
<b>First MWD Survey @ 1651'MD</b>									
1,745.00	17.59	156.73	1,732.56	-116.66	40.20	64.15	3.47	3.05	-5.96
1,840.00	21.39	158.32	1,822.11	-145.96	52.27	82.20	4.04	4.00	1.67
1,934.00	24.88	156.51	1,908.53	-180.03	66.49	103.36	3.79	3.71	-1.93
2,028.00	28.10	152.85	1,992.66	-217.88	84.48	129.01	3.84	3.43	-3.89
2,123.00	30.31	151.93	2,075.58	-258.95	105.97	158.76	2.37	2.33	-0.97
2,218.00	32.39	153.51	2,156.71	-302.88	128.60	190.24	2.35	2.19	1.66
2,312.00	34.51	155.72	2,235.14	-349.69	150.79	221.90	2.60	2.26	2.35
2,407.00	35.09	155.45	2,313.14	-399.06	173.20	254.33	0.63	0.61	-0.28
2,502.00	35.71	155.14	2,390.58	-449.05	196.20	287.46	0.68	0.65	-0.33
2,596.00	35.62	154.92	2,466.95	-498.74	219.34	320.66	0.17	-0.10	-0.23
2,691.00	34.91	153.25	2,544.52	-548.07	243.30	354.59	1.26	-0.75	-1.76
2,785.00	35.09	153.42	2,621.52	-596.25	267.49	388.51	0.22	0.19	0.18
2,880.00	35.22	154.04	2,699.19	-645.30	291.70	422.62	0.40	0.14	0.65
2,974.00	35.79	153.03	2,775.71	-694.17	316.04	456.82	0.87	0.61	-1.07
3,068.00	35.31	153.73	2,852.19	-743.03	340.52	491.16	0.67	-0.51	0.74
3,162.00	33.72	152.85	2,929.64	-790.61	364.46	524.69	1.77	-1.69	-0.94
3,257.00	31.82	151.62	3,009.52	-836.11	388.40	557.79	2.12	-2.00	-1.29
3,351.00	31.11	151.75	3,089.70	-879.31	411.67	589.74	0.76	-0.76	0.14
3,445.00	31.29	152.94	3,170.10	-922.44	434.27	621.02	0.68	0.19	1.27
3,539.00	32.39	154.13	3,249.96	-966.83	456.36	652.07	1.35	1.17	1.27
3,633.00	33.50	154.75	3,328.84	-1,012.95	478.41	683.45	1.23	1.18	0.66
3,728.00	32.79	153.73	3,408.39	-1,059.73	500.98	715.48	0.95	-0.75	-1.07
3,822.00	31.42	154.35	3,488.01	-1,104.64	522.85	746.42	1.50	-1.46	0.66
3,916.00	27.49	151.62	3,569.85	-1,145.83	543.78	775.66	4.42	-4.18	-2.90
4,010.00	24.22	151.13	3,654.43	-1,181.82	563.41	802.50	3.49	-3.48	-0.52
4,105.00	20.81	151.44	3,742.17	-1,213.71	580.89	826.39	3.59	-3.59	0.33
4,198.00	18.91	152.41	3,829.64	-1,241.58	595.77	846.87	2.07	-2.04	1.04
4,293.00	16.22	154.53	3,920.20	-1,267.21	608.61	864.88	2.91	-2.83	2.23
4,387.00	15.29	154.75	4,010.67	-1,290.27	619.54	880.48	0.99	-0.99	0.23
4,482.00	12.42	157.35	4,102.89	-1,311.03	628.82	893.97	3.09	-3.02	2.74
4,576.00	9.81	151.22	4,195.13	-1,327.38	636.57	905.03	3.04	-2.78	-6.52
4,671.00	7.11	155.54	4,289.09	-1,339.83	642.90	913.87	2.92	-2.84	4.55
4,765.00	4.99	147.03	4,382.56	-1,348.56	647.53	920.26	2.44	-2.26	-9.05

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<b>Wellbore:</b>	Wellbore #1	<b>Survey Calculation Method:</b>	Minimum Curvature
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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)
4,859.00	2.39	157.04	4,476.36	-1,353.79	650.52	924.30	2.84	-2.77	10.65
4,954.00	0.31	317.31	4,571.33	-1,355.43	651.12	925.23	2.83	-2.19	168.71
5,048.00	1.99	309.33	4,665.31	-1,354.21	649.69	923.57	1.79	1.79	-8.49
5,143.00	1.10	291.93	4,760.27	-1,352.82	647.57	921.20	1.05	-0.94	-18.32
5,259.00	0.40	248.34	4,876.26	-1,352.55	646.16	919.77	0.74	-0.60	-37.58
5,353.00	5.70	106.62	4,970.12	-1,354.01	650.33	924.15	6.40	5.64	-150.77
5,446.00	14.58	99.44	5,061.58	-1,357.26	666.33	940.48	9.63	9.55	-7.72
5,541.00	21.92	93.84	5,151.74	-1,360.41	695.86	970.00	7.94	7.73	-5.89
5,635.00	31.42	89.53	5,235.65	-1,361.39	737.97	1,011.35	10.31	10.11	-4.59
5,730.00	38.71	87.94	5,313.36	-1,360.12	792.49	1,064.35	7.73	7.67	-1.67
5,824.00	48.30	88.12	5,381.46	-1,357.90	857.09	1,126.99	10.20	10.20	0.19
5,919.00	56.52	88.03	5,439.36	-1,355.37	932.26	1,199.89	8.65	8.65	-0.09
6,014.00	65.40	90.01	5,485.43	-1,354.02	1,015.22	1,280.65	9.52	9.35	2.08
6,083.83	70.23	89.28	5,511.79	-1,353.61	1,079.86	1,343.71	6.98	6.91	-1.04
<b>Enter Section @ 6083.83'MD</b>									
6,108.00	71.90	89.04	5,519.64	-1,353.27	1,102.72	1,365.97	6.98	6.92	-1.00
6,162.03	77.87	89.79	5,533.72	-1,352.75	1,154.85	1,416.79	11.12	11.04	1.39
<b>75' Hardline @ 6162.03'MD (175'FSL &amp; 75'FWL)</b>									
6,202.00	82.28	90.32	5,540.61	-1,352.78	1,194.21	1,455.26	11.12	11.04	1.33
6,296.00	87.89	88.73	5,548.66	-1,352.00	1,287.82	1,546.55	6.20	5.97	-1.69
6,390.00	88.29	86.29	5,551.80	-1,347.92	1,381.67	1,637.37	2.63	0.43	-2.60
6,484.00	87.50	87.85	5,555.25	-1,343.12	1,475.48	1,728.00	1.86	-0.84	1.66
6,579.00	87.10	90.01	5,559.72	-1,341.35	1,570.36	1,820.31	2.31	-0.42	2.27
6,673.00	89.40	90.23	5,562.59	-1,341.54	1,664.30	1,912.14	2.46	2.45	0.23
6,766.00	88.69	89.44	5,564.14	-1,341.28	1,757.29	2,002.93	1.14	-0.76	-0.85
6,861.00	88.20	89.23	5,566.72	-1,340.17	1,852.25	2,095.47	0.56	-0.52	-0.22
6,955.00	86.79	89.04	5,570.83	-1,338.76	1,946.15	2,186.90	1.51	-1.50	-0.20
7,049.00	85.51	89.35	5,577.14	-1,337.44	2,039.92	2,278.24	1.40	-1.36	0.33
7,144.00	86.39	88.42	5,583.85	-1,335.59	2,134.66	2,370.41	1.35	0.93	-0.98
7,238.00	86.08	90.23	5,590.02	-1,334.49	2,228.45	2,461.80	1.95	-0.33	1.93
7,332.00	87.32	89.61	5,595.44	-1,334.36	2,322.29	2,553.45	1.47	1.32	-0.66
7,427.00	84.89	89.13	5,601.89	-1,333.32	2,417.06	2,645.82	2.61	-2.56	-0.51
7,521.00	82.81	90.72	5,611.96	-1,333.19	2,510.51	2,737.09	2.78	-2.21	1.69
7,615.00	80.12	90.01	5,625.91	-1,333.79	2,603.46	2,828.03	2.96	-2.86	-0.76
7,710.00	79.41	89.92	5,642.79	-1,333.73	2,696.95	2,919.35	0.75	-0.75	-0.09
7,804.00	79.19	89.75	5,660.24	-1,333.46	2,789.31	3,009.54	0.29	-0.23	-0.18
7,898.00	78.79	89.13	5,678.19	-1,332.56	2,881.58	3,099.49	0.77	-0.43	-0.66
7,993.00	81.09	90.05	5,694.79	-1,331.90	2,975.11	3,190.72	2.60	2.42	0.97
8,087.00	85.11	91.33	5,706.08	-1,333.02	3,068.40	3,282.11	4.49	4.28	1.36
8,181.00	88.11	89.44	5,711.64	-1,333.65	3,162.22	3,373.90	3.77	3.19	-2.01
8,275.00	87.89	89.75	5,714.92	-1,332.99	3,256.16	3,465.54	0.40	-0.23	0.33
8,369.00	89.00	89.04	5,717.47	-1,331.99	3,350.11	3,557.12	1.40	1.18	-0.76
8,463.00	85.99	89.22	5,721.58	-1,330.57	3,444.00	3,648.55	3.21	-3.20	0.19
8,557.00	83.78	89.22	5,729.96	-1,329.29	3,537.61	3,739.73	2.35	-2.35	0.00

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Survey									
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8,651.00	81.62	88.51	5,741.90	-1,327.45	3,630.83	3,830.41	2.42	-2.30	-0.76
8,746.00	82.10	88.12	5,755.35	-1,324.68	3,724.83	3,921.66	0.65	0.51	-0.41
8,840.00	79.41	88.73	5,770.45	-1,322.13	3,817.56	4,011.71	2.93	-2.86	0.65
8,935.00	79.32	88.34	5,787.98	-1,319.74	3,910.90	4,102.39	0.41	-0.09	-0.41
9,029.00	79.41	87.54	5,805.33	-1,316.42	4,003.23	4,191.89	0.84	0.10	-0.85
9,123.00	80.69	89.13	5,821.57	-1,313.74	4,095.77	4,281.72	2.15	1.36	1.69
9,217.00	80.91	88.64	5,836.60	-1,311.93	4,188.54	4,371.98	0.57	0.23	-0.52
9,311.00	81.09	88.03	5,851.31	-1,309.23	4,281.34	4,462.07	0.67	0.19	-0.65
9,405.00	81.62	90.63	5,865.44	-1,308.15	4,374.26	4,552.62	2.79	0.56	2.77
9,499.00	84.58	91.11	5,876.73	-1,309.57	4,467.56	4,644.07	3.19	3.15	0.51
9,593.00	83.61	90.85	5,886.40	-1,311.17	4,561.05	4,735.75	1.07	-1.03	-0.28
9,687.00	81.71	90.85	5,898.41	-1,312.55	4,654.26	4,827.11	2.02	-2.02	0.00
9,780.00	81.71	90.23	5,911.82	-1,313.42	4,746.28	4,917.20	0.66	0.00	-0.67
9,875.00	80.12	90.45	5,926.82	-1,313.97	4,840.09	5,008.97	1.69	-1.67	0.23
9,969.00	81.49	90.32	5,941.84	-1,314.59	4,932.88	5,099.75	1.46	1.46	-0.14
10,064.00	79.72	87.41	5,957.35	-1,312.74	5,026.57	5,190.90	3.55	-1.86	-3.06
10,158.00	78.79	84.02	5,974.88	-1,305.85	5,118.65	5,279.39	3.68	-0.99	-3.61
10,252.00	79.98	85.43	5,992.20	-1,297.36	5,210.64	5,367.45	1.94	1.27	1.50
10,346.00	80.69	87.63	6,007.98	-1,291.75	5,303.13	5,456.62	2.43	0.76	2.34
10,440.00	82.02	90.45	6,022.11	-1,290.20	5,396.04	5,547.06	3.29	1.41	3.00
10,534.00	81.22	90.32	6,035.81	-1,290.82	5,489.03	5,638.04	0.86	-0.85	-0.14
10,628.00	82.19	89.61	6,049.37	-1,290.77	5,582.05	5,728.91	1.27	1.03	-0.76
10,722.00	80.60	88.82	6,063.44	-1,289.49	5,674.98	5,819.43	1.88	-1.69	-0.84
10,816.00	80.69	85.91	6,078.72	-1,285.23	5,767.62	5,909.03	3.06	0.10	-3.10
<b>Final MWD Survey @ 10816'MD</b>									
10,965.00	80.69	85.91	6,102.82	-1,274.74	5,914.28	6,050.08	0.00	0.00	0.00
<b>PTD @ 10965'MD (148'FSL &amp; 492'FEL)</b>									

Design Annotations				
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
1,651.00	1,642.28	-92.23	30.96	First MWD Survey @ 1651'MD
6,083.83	5,511.79	-1,353.61	1,079.86	Enter Section @ 6083.83'MD
6,162.03	5,533.72	-1,352.75	1,154.85	75' Hardline @ 6162.03'MD (175'FSL & 75'FWL)
10,816.00	6,078.72	-1,285.23	5,767.62	Final MWD Survey @ 10816'MD
10,965.00	6,102.82	-1,274.74	5,914.28	PTD @ 10965'MD (148'FSL & 492'FEL)

Checked By: _____	Approved By: _____	Date: _____
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