

# **EXTRACTION OIL & GAS**

**WELD COUNTY, COLORADO (NAD 83)**

**NE SE SEC. 7 T4N R68W 6th P.M.**

**BERTHOUD FARMS 8E-10-1N**

**JOB # 2017-524-88**

**14 December, 2017**

**Survey: FINAL SURVEYS - SURFACE**





Project: WELD COUNTY, COLORADO (NAD 83)  
Site: NE SE SEC. 7 T4N R68W 6th P.M.  
Well: BERTHOUD FARMS 8E-10-1N  
Wellbore: JOB # 2017-524-88  
Design: SURFACE



ANNOTATIONS

TVD	MD	Inc	Azi	+N/-S	+E/-W	VSect	Departure	Annotation
1432.19	1486.00	27.60	12.08	325.51	72.23	333.43	334.86	LAST SURVEY DEC 14, 2017
1476.50	1536.00	27.60	12.08	348.17	77.08	356.59	358.03	EXTRAPOLATION TO TD - SURFACE

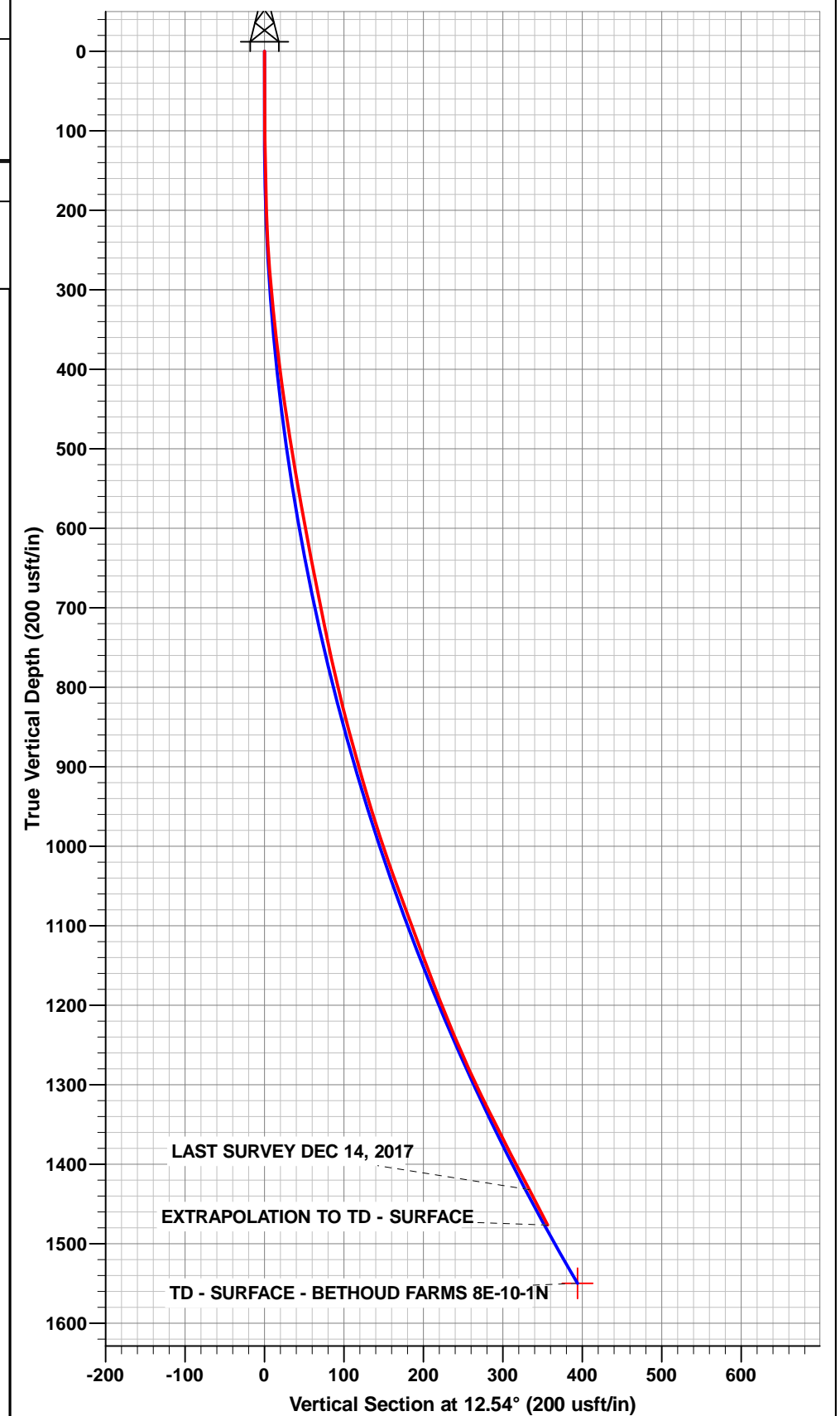
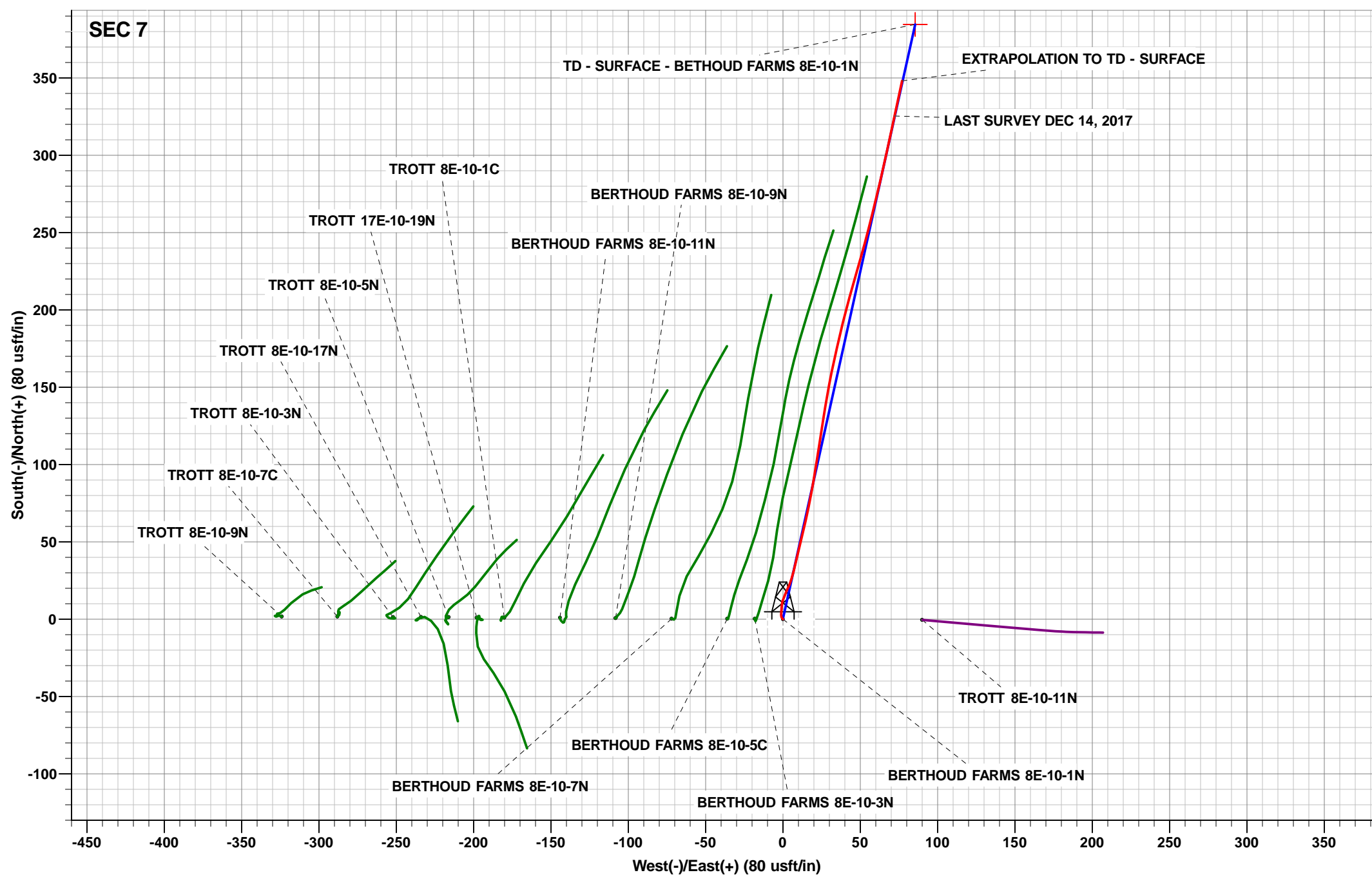
WELL DETAILS: BERTHOUD FARMS 8E-10-1N

+N/-S	+E/-W	Northing	Ground Level:	5033.00	Latitude	Longitude
0.00	0.00	1361363.03	Easting	3128263.97	40.324429	-105.039975

DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting
TD - SURFACE - BERTHOUD FARMS 8E-10-1N	1550.00	384.66	85.56	1361748.12	3128347.53

SEC 7



## Survey Report



<b>Company:</b>	EXTRACTION OIL & GAS	<b>Local Co-ordinate Reference:</b>	Well BERTHOUD FARMS 8E-10-1N
<b>Project:</b>	WELD COUNTY, COLORADO (NAD 83)	<b>TVD Reference:</b>	KB @ 5041.00usft (CARTEL 88)
<b>Site:</b>	NE SE SEC. 7 T4N R68W 6th P.M.	<b>MD Reference:</b>	KB @ 5041.00usft (CARTEL 88)
<b>Well:</b>	BERTHOUD FARMS 8E-10-1N	<b>North Reference:</b>	True
<b>Wellbore:</b>	JOB # 2017-524-88	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	SURFACE	<b>Database:</b>	EDM 5000.1 Single User Db

<b>Project</b>	WELD COUNTY, COLORADO (NAD 83)		
<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		Using geodetic scale factor

Site	NE SE SEC. 7 T4N R68W 6th P.M.				
Site Position:		Northing:	1,361,363.03 usft	Latitude:	40.324429
From:	Lat/Long	Easting:	3,128,263.97 usft	Longitude:	-105.039975
Position Uncertainty:	0.00 usft	Slot Radius:	1.10000 ft	Grid Convergence:	0.30 °

Well	BERTHOUD FARMS 8E-10-1N					
Well Position	+N/-S	0.00 usft	Northing:	1,361,363.03 usft	Latitude:	40.324429
	+E/-W	0.00 usft	Easting:	3,128,263.97 usft	Longitude:	-105.039975
Position Uncertainty		0.00 usft	Wellhead Elevation:	usft	Ground Level:	5,033.00 usft

<b>Wellbore</b>	JOB # 2017-524-88				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	IGRF2015	03/12/2017	8.30	66.74	52,269

<b>Design</b>	SURFACE				
<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	12.54	

<b>Survey Program</b>	<b>Date</b>	14/12/2017			
<b>From (usft)</b>	<b>To (usft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>	
105.00	1,536.00	FINAL SURVEYS - SURFACE (JOB # 201	MWD	MWD - Standard	

<b>Survey</b>										
<b>Measured Depth (usft)</b>	<b>Inclination (°)</b>	<b>Azimuth (°)</b>	<b>Vertical Depth (usft)</b>	<b>Subsea 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	5,041.00	0.00	0.00	0.00	0.00	0.00	0.00
105.00	0.97	321.54	104.99	4,936.01	0.70	-0.55	0.56	0.92	0.92	0.00
200.00	1.85	356.70	199.97	4,841.03	2.86	-1.14	2.54	1.26	0.93	37.01
296.00	5.19	5.75	295.77	4,745.23	8.73	-0.80	8.34	3.52	3.48	9.43
391.00	7.08	27.46	390.24	4,650.76	18.20	2.34	18.27	3.12	1.99	22.85
485.00	9.36	13.93	483.27	4,557.73	30.76	6.85	31.51	3.17	2.43	-14.39
581.00	10.28	13.40	577.87	4,463.13	46.67	10.71	47.88	0.96	0.96	-0.55
676.00	10.77	12.96	671.27	4,369.73	63.57	14.67	65.23	0.52	0.52	-0.46
770.00	12.52	10.23	763.33	4,277.67	82.15	18.45	84.20	1.95	1.86	-2.90
865.00	14.94	9.18	855.61	4,185.39	104.38	22.23	106.72	2.56	2.55	-1.11
960.00	16.74	8.56	947.00	4,094.00	130.00	26.22	132.59	1.90	1.89	-0.65
1,056.00	19.82	11.46	1,038.14	4,002.86	159.63	31.51	162.66	3.34	3.21	3.02
1,151.00	20.57	14.10	1,127.30	3,913.70	191.60	38.78	195.45	1.24	0.79	2.78

# Survey Report



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<b>Project:</b>	WELD COUNTY, COLORADO (NAD 83)	<b>TVD Reference:</b>	KB @ 5041.00usft (CARTEL 88)
<b>Site:</b>	NE SE SEC. 7 T4N R68W 6th P.M.	<b>MD Reference:</b>	KB @ 5041.00usft (CARTEL 88)
<b>Well:</b>	BERTHOUD FARMS 8E-10-1N	<b>North Reference:</b>	True
<b>Wellbore:</b>	JOB # 2017-524-88	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	SURFACE	<b>Database:</b>	EDM 5000.1 Single User Db

Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	Subsea Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
1,247.00	21.88	16.30	1,216.79	3,824.21	225.13	47.91	230.16	1.60	1.36	2.29
1,342.00	25.62	13.93	1,303.73	3,737.27	262.07	57.83	268.37	4.06	3.94	-2.49
1,436.00	27.42	12.34	1,387.84	3,653.16	302.94	67.34	310.34	2.06	1.91	-1.69
LAST SURVEY DEC 14, 2017										
1,486.00	27.60	12.08	1,432.19	3,608.81	325.51	72.23	333.43	0.43	0.36	-0.52
EXTRAPOLATION TO TD - SURFACE										
1,536.00	27.60	12.08	1,476.50	3,564.50	348.17	77.08	356.59	0.00	0.00	0.00

Targets									
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
- hit/miss target									
- Shape									
TD - SURFACE - BETH(	0.00	0.00	1,550.00	384.66	85.56	1,361,748.12	3,128,347.53	40.325485	-105.039668
- survey misses target center by 82.50usft at 1536.00usft MD (1476.50 TVD, 348.17 N, 77.08 E)									
- Point									

Survey Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates			
		+N/-S (usft)	+E/-W (usft)	Comment	
1,486.00	1,432.19	325.51	72.23	LAST SURVEY DEC 14, 2017	
1,536.00	1,476.50	348.17	77.08	EXTRAPOLATION TO TD - SURFACE	

Checked By: _____	Approved By: _____	Date: _____
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