

# **EXTRACTION OIL & GAS**

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

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

**BERTHOUD FARMS 8E-10-3N**

**JOB #2017-523-88**

**13 December, 2017**

**Survey: FINAL SURVEYS - SURFACE**



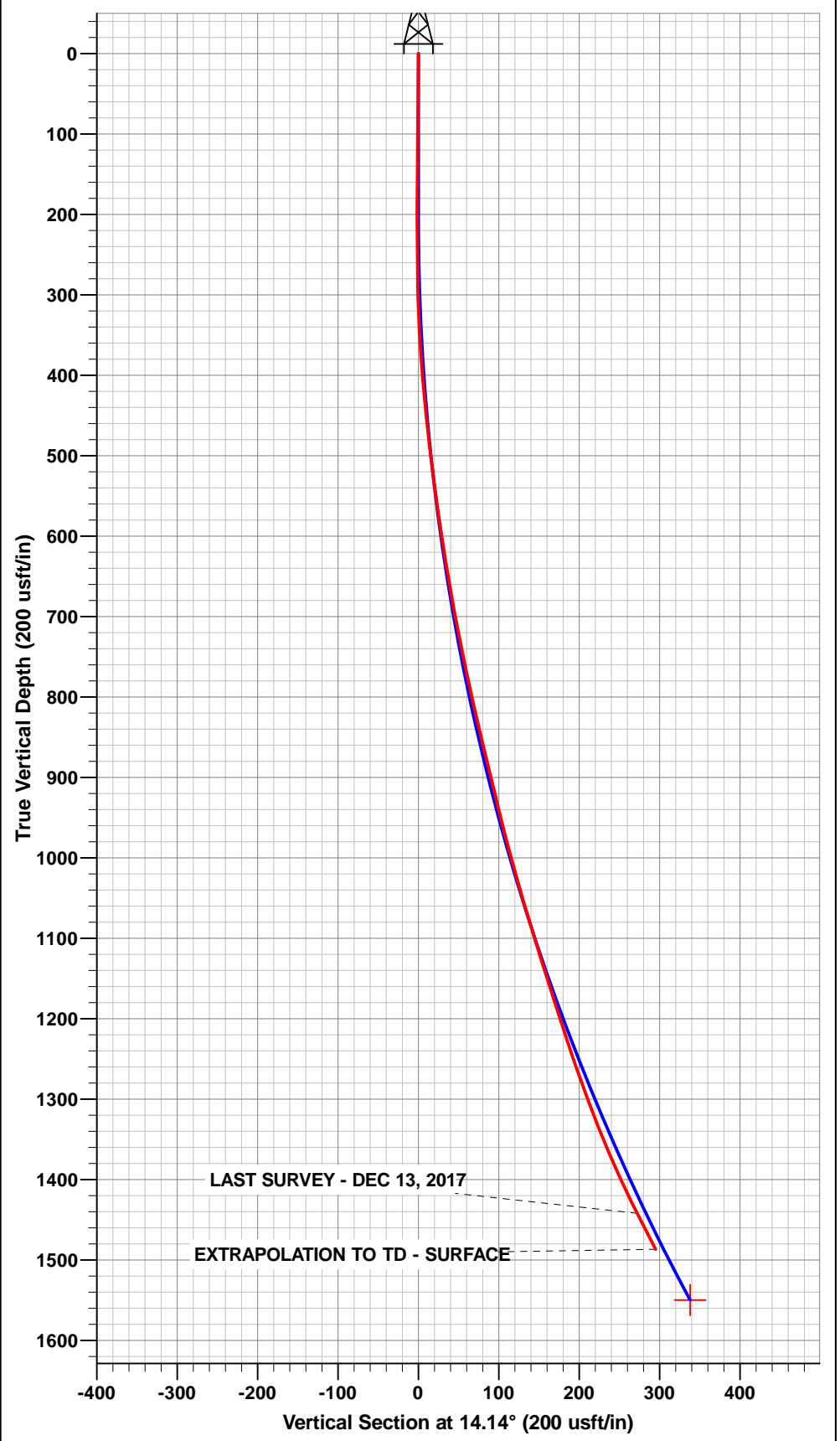
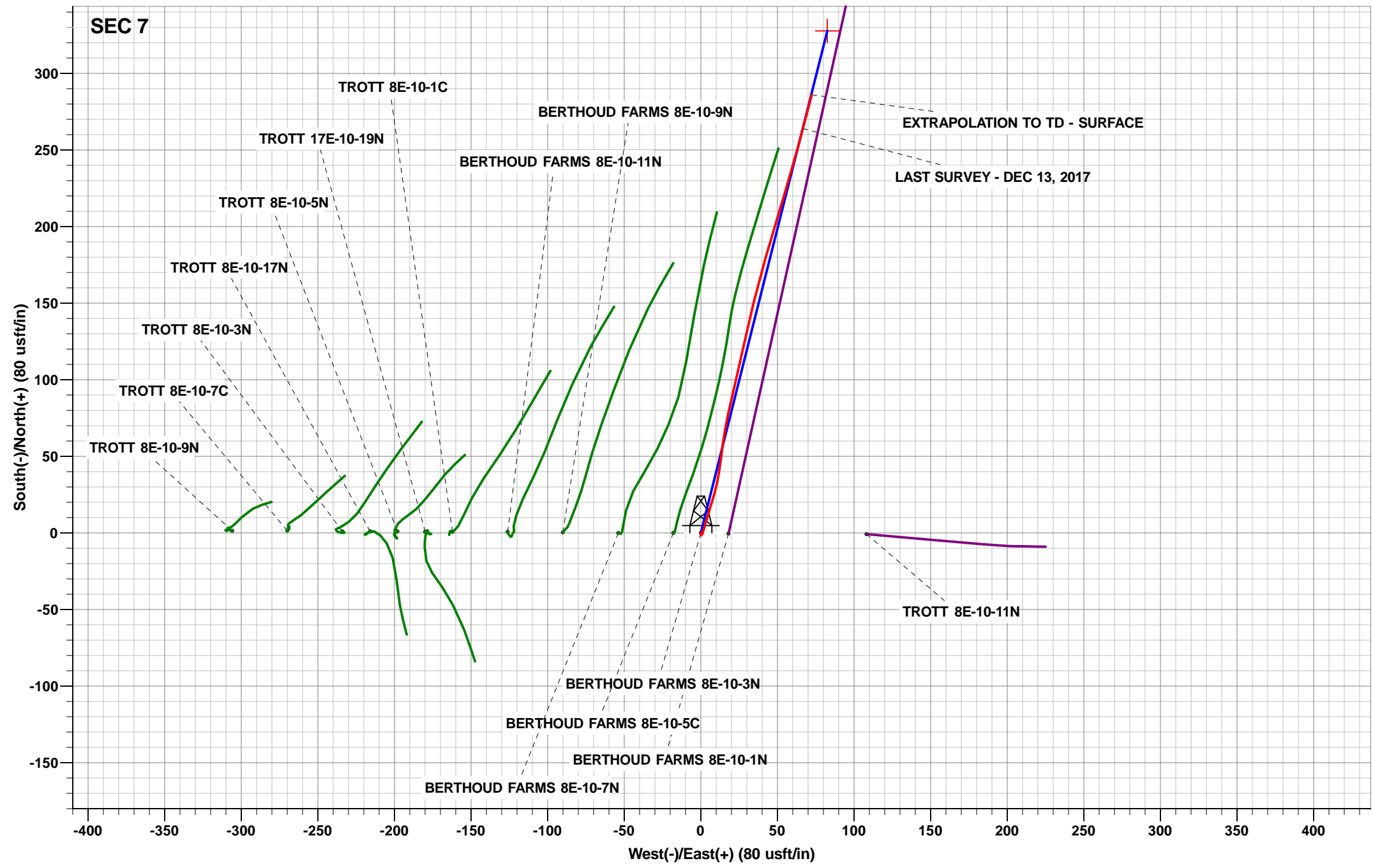


Project: WELD COUNTY, COLORADO (NAD 83)  
Site: NE SE SEC. 7 T4N R68W 6th P.M.  
Well: BERTHOUD FARMS 8E-10-3N  
Wellbore: JOB #2017-523-88  
Design: SURFACE



ANNOTATIONS								
TVD	MD	Inc	Azi	+N/-S	+E/-W	VSect	Departure	Annotation
1442.17	1481.00	27.07	14.72	264.02	66.67	272.31	276.28	LAST SURVEY - DEC 13, 2017
1486.70	1531.00	27.07	14.72	286.03	72.45	295.06	299.04	EXTRAPOLATION TO TD - SURFACE

WELL DETAILS: BERTHOUD FARMS 8E-10-3N						
+N/-S	+E/-W	Northing	Ground Level:	Easting	Latitude	Longitude
0.00	0.00	1361363.29	5033.00	3128245.85	40.324430	-105.040040
DESIGN TARGET DETAILS						
Name	TVD	+N/-S	+E/-W	Northing	Easting	
TD - SURFACE - BERTHOUD FARMS 8E-10-3N	1550.00	327.79	82.58	1361691.50	3128326.72	



# Survey Report



<b>Company:</b>	EXTRACTION OIL & GAS	<b>Local Co-ordinate Reference:</b>	Well BERTHOUD FARMS 8E-10-3N
<b>Project:</b>	WELD COUNTY, COLORADO (NAD 83)	<b>TVD Reference:</b>	KB-EST @ 5041.00usft (CARTEL 88)
<b>Site:</b>	NE SE SEC. 7 T4N R68W 6th P.M.	<b>MD Reference:</b>	KB-EST @ 5041.00usft (CARTEL 88)
<b>Well:</b>	BERTHOUD FARMS 8E-10-3N	<b>North Reference:</b>	True
<b>Wellbore:</b>	JOB #2017-523-88	<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:	1.10000ft	Grid Convergence:	0.30 °

Well	BERTHOUD FARMS 8E-10-3N					
Well Position	+N-S	0.00 usft	Northing:	1,361,363.29 usft	Latitude:	40.324430
	+E-W	0.00 usft	Easting:	3,128,245.85 usft	Longitude:	-105.040040
Position Uncertainty		0.00 usft	Wellhead Elevation:	usft	Ground Level:	5,033.00 usft

<b>Wellbore</b>	JOB #2017-523-88				
<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	14.14	

<b>Survey Program</b>	<b>Date</b>	13/12/2017			
<b>From (usft)</b>	<b>To (usft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>	
105.00	1,531.00	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	0.79	162.81	105.00	4,936.00	-0.69	0.21	-0.62	0.75	0.75	0.00
200.00	0.31	186.10	199.99	4,841.01	-1.57	0.38	-1.43	0.55	-0.51	24.52
296.00	1.49	26.93	295.98	4,745.02	-0.72	0.92	-0.47	1.86	1.23	-165.80
391.00	4.48	15.24	390.84	4,650.16	3.96	2.45	4.44	3.20	3.15	-12.31
485.00	6.68	17.09	484.39	4,556.61	12.73	5.02	13.57	2.35	2.34	1.97
581.00	8.22	16.47	579.58	4,461.42	24.65	8.61	26.01	1.61	1.60	-0.65
676.00	10.24	9.09	673.35	4,367.65	39.50	11.87	41.21	2.46	2.13	-7.77
770.00	11.95	6.98	765.59	4,275.41	57.42	14.37	59.19	1.87	1.82	-2.24
865.00	13.49	12.52	858.26	4,182.74	78.00	17.97	80.02	2.07	1.62	5.83
960.00	14.11	13.13	950.51	4,090.49	100.09	23.00	102.68	0.67	0.65	0.64
1,056.00	16.08	12.52	1,043.20	3,997.80	124.47	28.55	127.67	2.06	2.05	-0.64
1,151.00	17.58	13.66	1,134.13	3,906.87	151.26	34.79	155.17	1.62	1.58	1.20

## Survey Report



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<b>Site:</b>	NE SE SEC. 7 T4N R68W 6th P.M.	<b>MD Reference:</b>	KB-EST @ 5041.00usft (CARTEL 88)
<b>Well:</b>	BERTHOUD FARMS 8E-10-3N	<b>North Reference:</b>	True
<b>Wellbore:</b>	JOB #2017-523-88	<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	18.19	16.03	1,225.49	3,815.51	179.74	42.35	184.64	0.99	0.64	2.47
1,342.00	20.79	16.83	1,315.04	3,725.96	210.14	51.33	216.31	2.75	2.74	0.84
1,436.00	24.74	15.77	1,401.70	3,639.30	245.05	61.51	252.65	4.22	4.20	-1.13
<b>LAST SURVEY - DEC 13, 2017</b>										
<b>1,481.00</b>	<b>27.07</b>	<b>14.72</b>	<b>1,442.17</b>	<b>3,598.83</b>	<b>264.02</b>	<b>66.67</b>	<b>272.31</b>	<b>5.28</b>	<b>5.18</b>	<b>-2.33</b>
<b>EXTRAPOLATION TO TD - SURFACE</b>										
<b>1,531.00</b>	<b>27.07</b>	<b>14.72</b>	<b>1,486.70</b>	<b>3,554.30</b>	<b>286.03</b>	<b>72.45</b>	<b>295.06</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>

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 - BEF	0.00	0.00	1,550.00	327.79	82.58	1,361,691.50	3,128,326.72	40.325330	-105.039744
- survey misses target center by 76.52usft at 1531.00usft MD (1486.70 TVD, 286.03 N, 72.45 E)									
- Point									

Survey Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment	
		+N-S (usft)	+E-W (usft)		
1,481.00	1,442.17	264.02	66.67	LAST SURVEY - DEC 13, 2017	
1,531.00	1,486.70	286.03	72.45	EXTRAPOLATION TO TD - SURFACE	

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