



Departure

Energy Services (US) LP

Foundation Energy

**Rio Blanco County, Colorado
SWSW Sec 18-T1S-R103W
Banta Ridge Federal #5-18-1-103
Wellbore #1**

Design: Wellbore #1

Final Survey Report

30 August, 2012





FOUNDATION
ENERGY MANAGEMENT

Company Name: Foundation Energy

Banta Ridge Federal #5-18-1-103
North American Datum 1983
GRS 1980
Colorado Northern Zone
North Ref: True
WELL @ 6074.00ft (RKB @ 10')
39.957422°N
109.005472°W

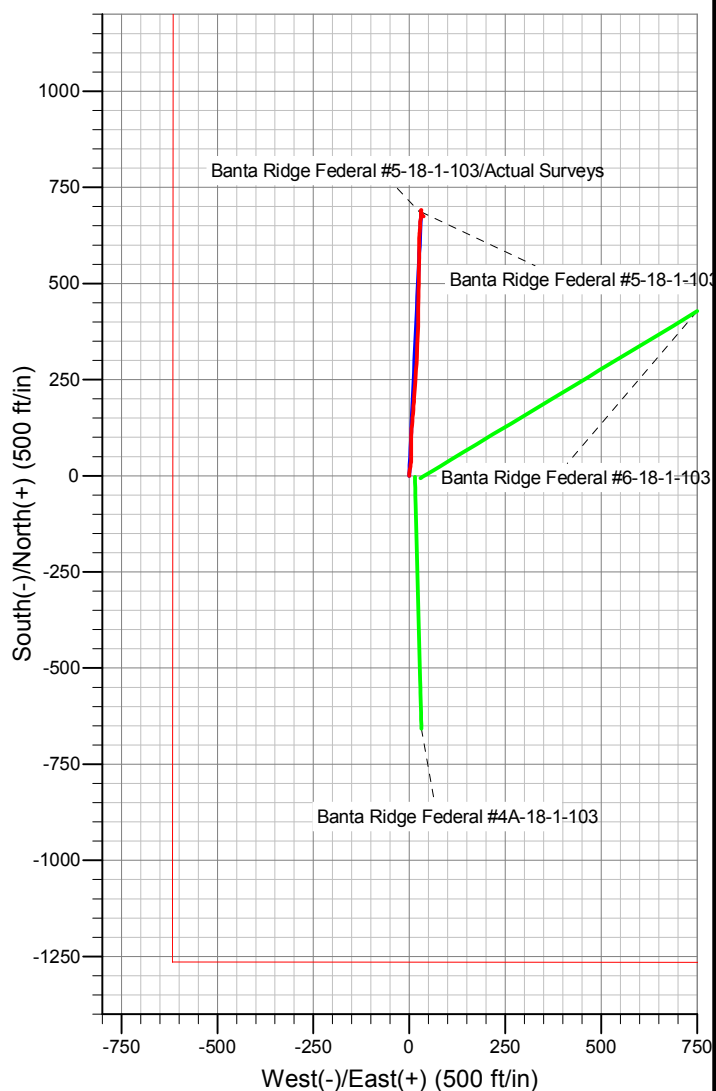
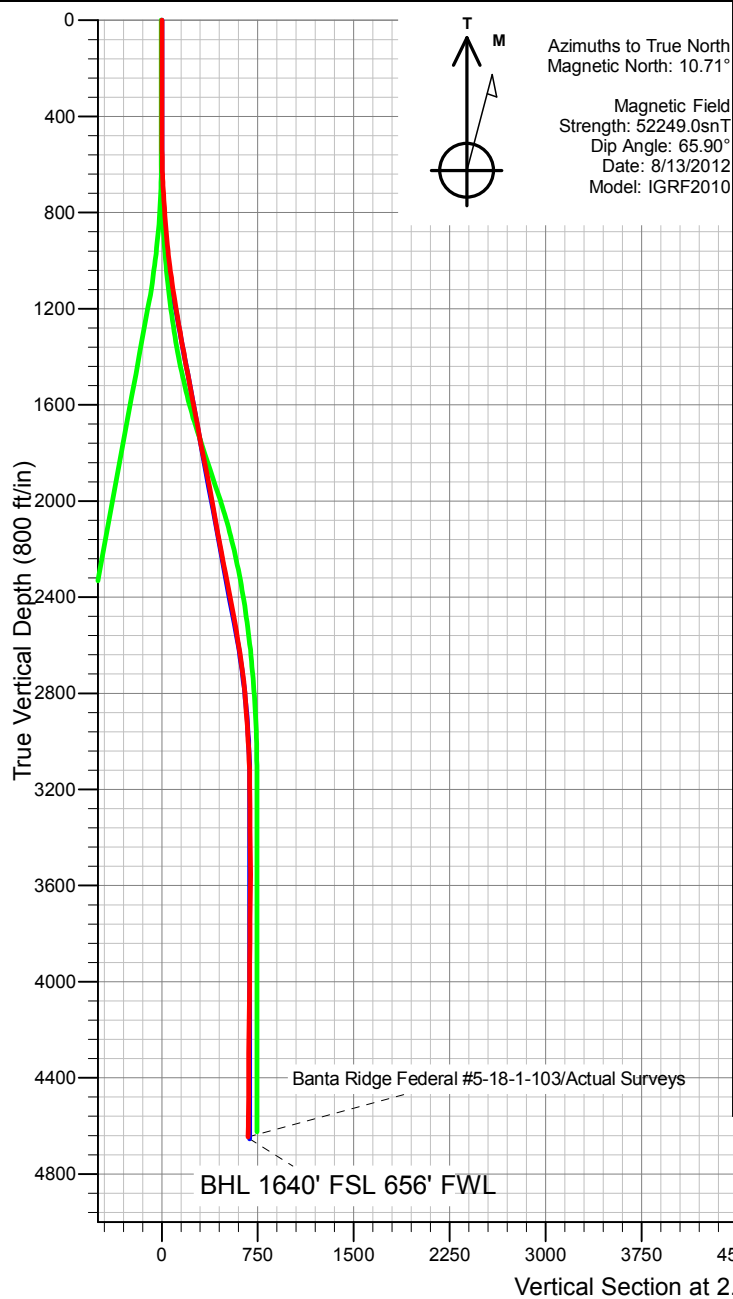


Departure
Energy Services (US) LP

Project: Rio Blanco County, Colorado
Site: SWSW Sec 18-T1S-R103W
Well: Banta Ridge Federal #5-18-1-103
Wellbore: Wellbore #1
Design: Wellbore #1

ANNOTATIONS

TVD	MD	Inc	Azi	+N/-S	+E/-W	VSect	Departure	Annotation
4601.97	4705.00	1.20	138.20	675.21	36.40	676.17	713.06	4705.00 MD- Last Survey
4646.96	4750.00	1.20	138.20	674.51	37.03	675.49	714.00	4750.00 - Straight Line Projection to TD





Company:	Foundation Energy	Local Co-ordinate Reference:	Well Banta Ridge Federal #5-18-1-103
Project:	Rio Blanco County, Colorado	TVD Reference:	WELL @ 6074.00ft (RKB @ 10')
Site:	SWSW Sec 18-T1S-R103W	MD Reference:	WELL @ 6074.00ft (RKB @ 10')
Well:	Banta Ridge Federal #5-18-1-103	North Reference:	True
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	EDM 5000.1 Single User Db

Project	Rio Blanco County, Colorado		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		Using Well Reference Point
Map Zone:	Colorado Northern Zone		

Site		SWSW Sec 18-T1S-R103W			
Site Position:		Northing:	1,246,760.38 ft	Latitude:	39.957422°N
From:	Lat/Long	Easting:	2,017,576.26 ft	Longitude:	109.005472°W
Position Uncertainty:	0.00 ft	Slot Radius:	13.200 in	Grid Convergence:	-2.27 °

Well	Banta Ridge Federal #5-18-1-103					
Well Position	+N/-S	0.00 ft	Northing:	1,246,760.37 ft	Latitude:	39.957422°N
	+E/-W	0.00 ft	Easting:	2,017,576.26 ft	Longitude:	109.005472°W
Position Uncertainty		0.00 ft	Wellhead Elevation:	6,074.00 ft	Ground Level:	6,064.00 ft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	8/13/2012	10.71	65.90	52,249

Design	Wellbore #1				
Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD)	+N/-S	+E/-W	Direction	
	(ft)	(ft)	(ft)	(°)	
	0.00	0.00	0.00	2.60	

Survey Program	Date	8/30/2012			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
537.00	4,750.00	Survey #1 (Wellbore #1)			

Survey								
MD (ft)	Inc (°)	Azi (°)	TVD (ft)	N/S (ft)	E/W (ft)	V. Sec (ft)	DLeg (°/100ft)	
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
537.00	0.50	356.00	536.99	2.34	-0.16	2.33	0.09	
568.00	0.60	338.80	567.99	2.62	-0.23	2.61	0.62	
598.00	1.90	350.30	597.98	3.26	-0.37	3.24	4.39	
628.00	3.20	8.60	627.95	4.58	-0.33	4.56	5.06	
658.00	5.10	11.60	657.87	6.71	0.06	6.71	6.37	
688.00	6.40	8.80	687.72	9.67	0.59	9.69	4.43	
720.00	6.90	10.20	719.51	13.33	1.20	13.37	1.64	
751.00	7.30	8.40	750.27	17.11	1.82	17.17	1.48	
781.00	7.20	11.10	780.03	20.84	2.46	20.93	1.18	
813.00	7.30	11.20	811.77	24.80	3.24	24.92	0.31	
845.00	7.80	6.80	843.50	28.95	3.89	29.10	2.39	



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Well:	Banta Ridge Federal #5-18-1-103	North Reference:	True
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	EDM 5000.1 Single User Db

Survey								
MD (ft)	Inc (°)	Azi (°)	TVD (ft)	N/S (ft)	E/W (ft)	V. Sec (ft)	DLeg (°/100ft)	
877.00	8.40	6.10	875.18	33.43	4.40	33.60	1.90	
909.00	9.60	3.40	906.78	38.42	4.80	38.60	3.97	
939.00	10.20	2.60	936.34	43.57	5.07	43.75	2.05	
1,001.00	12.80	359.80	997.09	55.92	5.30	56.11	4.29	
1,032.00	13.70	359.50	1,027.26	63.03	5.25	63.20	2.91	
1,062.00	14.90	358.30	1,056.33	70.44	5.11	70.60	4.12	
1,094.00	15.90	359.90	1,087.18	78.93	4.98	79.08	3.40	
1,124.00	15.70	358.20	1,116.05	87.10	4.84	87.23	1.68	
1,156.00	16.30	1.00	1,146.81	95.92	4.79	96.03	3.05	
1,219.00	17.00	3.80	1,207.17	113.95	5.55	114.08	1.69	
1,250.00	17.50	4.80	1,236.77	123.11	6.24	123.27	1.88	
1,281.00	17.90	5.90	1,266.31	132.50	7.12	132.68	1.68	
1,313.00	18.50	5.20	1,296.71	142.44	8.09	142.66	2.00	
1,343.00	18.70	5.40	1,325.14	151.97	8.97	152.22	0.70	
1,374.00	18.70	5.10	1,354.50	161.87	9.88	162.15	0.31	
1,406.00	19.10	4.20	1,384.78	172.20	10.72	172.51	1.55	
1,436.00	19.40	4.20	1,413.10	182.06	11.44	182.40	1.00	
1,467.00	19.30	4.30	1,442.35	192.31	12.20	192.66	0.34	
1,499.00	18.80	3.70	1,472.60	202.73	12.93	203.10	1.68	
1,530.00	19.20	4.20	1,501.91	212.79	13.63	213.19	1.39	
1,561.00	19.60	4.10	1,531.15	223.06	14.37	223.49	1.29	
1,591.00	20.30	4.10	1,559.35	233.27	15.11	233.72	2.33	
1,623.00	20.00	3.70	1,589.39	244.27	15.86	244.74	1.03	
1,716.00	19.40	4.10	1,676.94	275.55	17.99	276.08	0.66	
1,811.00	20.40	2.50	1,766.27	307.83	19.84	308.41	1.20	
1,907.00	20.00	2.50	1,856.37	340.95	21.28	341.56	0.42	
2,000.00	19.70	2.10	1,943.84	372.50	22.55	373.14	0.35	
2,095.00	18.60	0.30	2,033.58	403.65	23.22	404.29	1.31	
2,191.00	19.50	1.80	2,124.32	434.98	23.80	435.61	1.07	
2,286.00	18.80	0.10	2,214.07	466.13	24.33	466.76	0.94	
2,381.00	20.10	1.40	2,303.65	497.76	24.75	498.37	1.44	
2,476.00	20.00	0.50	2,392.89	530.33	25.29	530.93	0.34	
2,573.00	19.30	0.80	2,484.24	562.94	25.66	563.53	0.73	
2,667.00	17.30	0.50	2,573.48	592.45	26.00	593.02	2.13	
2,730.00	15.60	0.30	2,633.90	610.29	26.12	610.85	2.70	
2,792.00	14.00	3.50	2,693.84	626.12	26.63	626.68	2.90	
2,853.00	11.70	6.10	2,753.31	639.63	27.73	640.23	3.89	
2,915.00	9.30	1.40	2,814.27	650.89	28.52	651.52	4.11	
2,977.00	7.80	4.00	2,875.58	660.10	28.94	660.73	2.50	
3,039.00	7.10	8.60	2,937.05	668.09	29.81	668.75	1.48	
3,100.00	6.40	6.20	2,997.63	675.19	30.74	675.89	1.24	
3,161.00	4.70	355.80	3,058.34	681.07	30.92	681.77	3.23	
3,221.00	2.40	355.20	3,118.23	684.77	30.64	685.45	3.83	
3,283.00	0.90	24.40	3,180.20	686.51	30.73	687.19	2.70	



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Survey								
MD (ft)	Inc (°)	Azi (°)	TVD (ft)	N/S (ft)	E/W (ft)	V. Sec (ft)	DLeg (°/100ft)	
3,379.00	1.00	356.20	3,276.19	688.03	30.99	688.73	0.49	
3,472.00	0.90	20.80	3,369.17	689.52	31.19	690.23	0.45	
3,564.00	1.00	9.10	3,461.16	690.99	31.57	691.71	0.24	
3,658.00	0.20	347.20	3,555.16	691.96	31.67	692.68	0.87	
3,751.00	0.80	213.20	3,648.15	691.57	31.28	692.28	1.02	
3,843.00	1.00	192.00	3,740.14	690.25	30.76	690.94	0.42	
3,934.00	1.20	168.30	3,831.13	688.54	30.79	689.23	0.54	
4,028.00	1.10	152.90	3,925.11	686.78	31.40	687.49	0.34	
4,124.00	1.10	183.90	4,021.09	685.04	31.75	685.77	0.61	
4,216.00	1.20	183.30	4,113.07	683.19	31.64	683.92	0.11	
4,309.00	1.60	158.50	4,206.04	681.01	32.06	681.77	0.77	
4,400.00	0.80	169.40	4,297.02	679.21	32.64	679.99	0.91	
4,493.00	1.10	126.00	4,390.01	678.04	33.48	678.86	0.81	
4,585.00	1.00	146.80	4,482.00	676.85	34.64	677.73	0.43	
4,678.00	1.30	123.50	4,574.98	675.59	35.96	676.53	0.59	
4,705.00	1.20	138.20	4,601.97	675.21	36.40	676.17	1.24	
4705.00 MD- Last Survey								
4,750.00	1.20	138.20	4,646.96	674.51	37.03	675.49	0.00	
4750.00 - Straight Line Projection to TD								

Design Annotations					
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment	
		+N/-S (ft)	+E/-W (ft)		
4,705.00	4,601.97	675.21	36.40	4705.00 MD- Last Survey	
4,750.00	4,646.96	674.51	37.03	4750.00 - Straight Line Projection to TD	

Checked By: _____ Approved By: _____ Date: _____