

Well Name: **Betz PC G10-33D**

Surface Location: Betz PC G10-33D Pad Sec.9-T4N-R65W  
North American Datum 1983 US State Plane 1983 Colorado Northern Zone

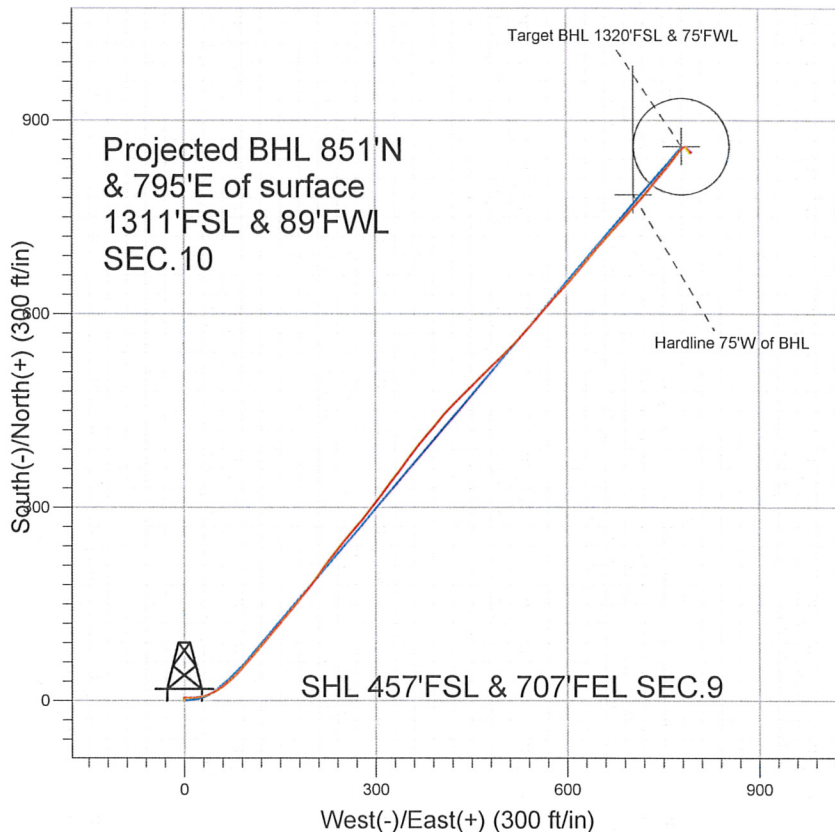
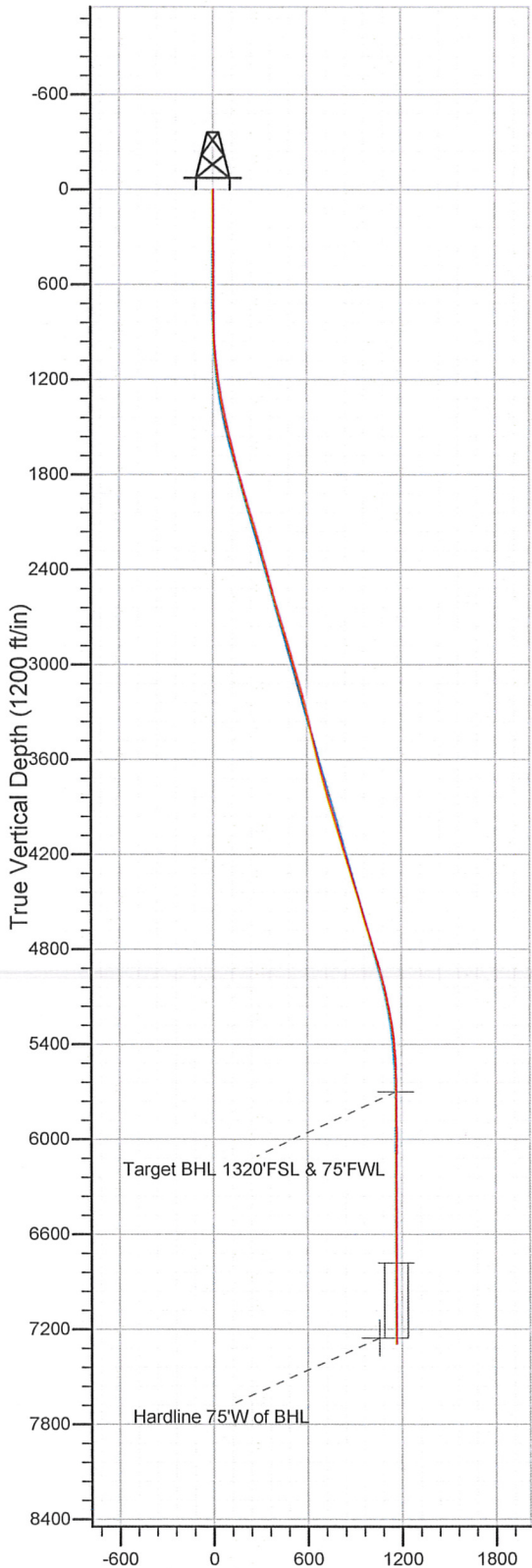
Ground Elevation: 4717.0

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
0.0	0.0	1360876.58	3233900.06	40° 19' 15.492 N	104° 39' 40.104 W

Original Well Elev WELL @ 4730.0ft (Original Well Elev)

Slot

## NOBLE ENERGY INC WELD COUNTY CO



### LEGEND

- Betz PC G10-33D, Wellbore #1, Noble Betz PC G10-33D Plan#2(1-04-11) V0
- Wellbore #1
- Survey #1

## Final Survey Plot

Projected Final Survey -  
7445'MD & 7291'TVD @ 1164' VS  
1.0 deg Inc 121.0 deg AZ

Project: SEC.9-T4N-R65W  
Site: Betz PC G10-33D Pad Sec.9-T4N-R65W  
Well: Betz PC G10-33D  
Plan: Wellbore #1

**Company:** NOBLE ENERGY INC WELD COUNTY CO  
**Project:** SEC.9-T4N-R65W  
**Site:** Betz PC G10-33D Pad Sec.9-T4N-R65W  
**Well:** Betz PC G10-33D  
**Wellbore:** Wellbore #1  
**Design:** Wellbore #1

**Local Co-ordinate Reference:** Well Betz PC G10-33D  
**TVD Reference:** WELL @ 4730.0ft (Original Well Elev)  
**MD Reference:** WELL @ 4730.0ft (Original Well Elev)  
**North Reference:** True  
**Survey Calculation Method:** Minimum Curvature  
**Database:** Landmark

<b>Project</b>	SEC.9-T4N-R65W, Weld County, Colorado		
<b>Map System:</b>	US State Plane 1983	<b>System Datum:</b>	Mean Sea Level
<b>Geo Datum:</b>	North American Datum 1983		Using Well Reference Point
<b>Map Zone:</b>	Colorado Northern Zone		Using geodetic scale factor

**Site** Betz PC G10-33D Pad Sec.9-T4N-R65W

<b>Site Position:</b>		<b>Northing:</b>	1,360,876.60 ft	<b>Latitude:</b>	40° 19' 15.492 N
<b>From:</b>	Lat/Long	<b>Easting:</b>	3,233,900.06 ft	<b>Longitude:</b>	104° 39' 40.104 W
<b>Position Uncertainty:</b>	0.0 ft	<b>Slot Radius:</b>	"	<b>Grid Convergence:</b>	0.54 °

<b>Well</b>	Betz PC G10-33D				
<b>Well Position</b>	+N/-S	0.0 ft	<b>Northing:</b>	1,360,876.58 ft	<b>Latitude:</b> 40° 19' 15.492 N
	+E/-W	0.0 ft	<b>Easting:</b>	3,233,900.06 ft	<b>Longitude:</b> 104° 39' 40.104 W
<b>Position Uncertainty</b>		0.0 ft	<b>Wellhead Elevation:</b>	ft	<b>Ground Level:</b> 4,717.0 ft

**Wellbore** Wellbore #1

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	1/7/2011	8.86	67.02	53,148

**Design** Wellbore #1

**Audit Notes:**

**Version:** 1.0      **Phase:** ACTUAL      **Tie On Depth:** 0.0

Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)
	0.0	0.0	0.0	42.84

**Survey Program** Date 1/17/2011

From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
770.0	7,445.0	Survey #1 (Wellbore #1)	MWD	MWD - Standard

**Survey**

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	0.00
770.0	0.70	347.90	770.0	4.6	-1.0	2.7	0.09	0.09	0.00
856.0	2.30	98.70	856.0	4.9	0.6	4.0	3.06	1.86	128.84
941.0	4.40	91.30	940.8	4.5	5.6	7.1	2.52	2.47	-8.71
1,027.0	5.90	86.30	1,026.5	4.7	13.3	12.5	1.82	1.74	-5.81
1,112.0	8.30	81.90	1,110.8	5.9	23.7	20.4	2.89	2.82	-5.18
1,198.0	9.40	70.80	1,195.8	9.1	36.5	31.5	2.36	1.28	-12.91
1,283.0	10.50	57.70	1,279.5	15.5	49.6	45.1	2.95	1.29	-15.41
1,369.0	12.40	52.90	1,363.8	25.2	63.6	61.7	2.47	2.21	-5.58
1,454.0	11.30	45.00	1,447.0	36.6	76.7	79.0	2.30	-1.29	-9.29
1,540.0	12.30	41.60	1,531.2	49.4	88.8	96.6	1.42	1.16	-3.95
1,625.0	14.10	41.90	1,613.9	63.9	101.7	116.0	2.12	2.12	0.35
1,711.0	15.10	40.10	1,697.1	80.3	115.9	137.7	1.28	1.16	-2.09



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 Wellbore: Wellbore #1  
 Design: Wellbore #1

Local Co-ordinate Reference: Well Betz PC G10-33D  
 TVD Reference: WELL @ 4730.0ft (Original Well Elev)  
 MD Reference: WELL @ 4730.0ft (Original Well Elev)  
 North Reference: True  
 Survey Calculation Method: Minimum Curvature  
 Database: Landmark

Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
1,796.0	15.70	39.80	1,779.1	97.6	130.4	160.2	0.71	0.71	-0.35
1,882.0	16.50	39.90	1,861.7	115.9	145.7	184.1	0.93	0.93	0.12
1,967.0	16.70	41.50	1,943.2	134.3	161.5	208.3	0.59	0.24	1.88
2,052.0	16.10	39.20	2,024.7	152.6	177.1	232.3	1.04	-0.71	-2.71
2,138.0	16.70	37.20	2,107.2	171.7	192.1	256.5	0.96	0.70	-2.33
2,223.0	16.80	37.30	2,188.6	191.2	206.9	280.9	0.12	0.12	0.12
2,309.0	16.20	35.40	2,271.1	210.8	221.4	305.1	0.94	-0.70	-2.21
2,394.0	14.70	39.50	2,353.0	228.8	235.1	327.7	2.18	-1.76	4.82
2,480.0	14.60	38.60	2,436.2	245.7	248.8	349.4	0.29	-0.12	-1.05
2,565.0	15.00	41.50	2,518.4	262.3	262.8	371.0	0.99	0.47	3.41
2,651.0	16.80	39.50	2,601.1	280.3	278.1	394.6	2.19	2.09	-2.33
2,736.0	17.50	38.00	2,682.3	299.8	293.8	419.6	0.97	0.82	-1.76
2,822.0	17.30	37.70	2,764.4	320.1	309.5	445.2	0.25	-0.23	-0.35
2,908.0	16.80	36.90	2,846.6	340.2	324.8	470.3	0.64	-0.58	-0.93
2,993.0	15.60	36.50	2,928.2	359.2	339.0	493.9	1.42	-1.41	-0.47
3,079.0	16.90	37.50	3,010.8	378.4	353.5	517.8	1.55	1.51	1.16
3,164.0	16.20	37.40	3,092.3	397.6	368.2	541.9	0.82	-0.82	-0.12
3,249.0	15.70	41.70	3,174.0	415.6	383.1	565.2	1.51	-0.59	5.06
3,335.0	13.90	39.20	3,257.1	432.3	397.3	587.2	2.22	-2.09	-2.91
3,420.0	12.80	40.90	3,339.8	447.3	409.9	606.8	1.37	-1.29	2.00
3,506.0	13.20	45.90	3,423.6	461.4	423.2	626.1	1.39	0.47	5.81
3,592.0	13.30	44.70	3,507.4	475.2	437.2	645.8	0.34	0.12	-1.40
3,677.0	14.50	45.40	3,589.9	489.7	451.7	666.2	1.43	1.41	0.82
3,763.0	14.60	46.00	3,673.1	504.8	467.2	687.8	0.21	0.12	0.70
3,848.0	15.40	46.20	3,755.2	520.0	483.0	709.7	0.94	0.94	0.24
3,934.0	15.80	47.10	3,838.0	535.9	499.8	732.8	0.54	0.47	1.05
4,019.0	16.50	42.80	3,919.7	552.6	516.5	756.4	1.63	0.82	-5.06
4,105.0	16.40	41.60	4,002.2	570.7	532.9	780.8	0.41	-0.12	-1.40
4,190.0	16.40	42.00	4,083.7	588.5	548.9	804.8	0.13	0.00	0.47
4,276.0	17.60	40.40	4,165.9	607.5	565.4	829.9	1.50	1.40	-1.86
4,361.0	16.10	43.10	4,247.3	625.9	581.8	854.5	1.99	-1.76	3.18
4,447.0	16.80	43.50	4,329.8	643.6	598.5	878.9	0.82	0.81	0.47
4,533.0	17.50	39.80	4,412.0	662.5	615.3	904.2	1.51	0.81	-4.30
4,618.0	17.30	39.90	4,493.1	682.1	631.6	929.6	0.24	-0.24	0.12
4,704.0	16.40	40.60	4,575.4	701.1	647.7	954.5	1.07	-1.05	0.81
4,790.0	16.80	41.30	4,657.8	719.6	663.8	979.1	0.52	0.47	0.81
4,875.0	16.80	43.00	4,739.2	737.8	680.3	1,003.6	0.58	0.00	2.00
4,961.0	17.20	43.00	4,821.4	756.2	697.5	1,028.8	0.47	0.47	0.00
5,047.0	15.80	40.90	4,903.9	774.4	713.8	1,053.2	1.77	-1.63	-2.44
5,132.0	15.30	39.60	4,985.8	791.8	728.5	1,075.9	0.72	-0.59	-1.53
5,217.0	13.60	38.80	5,068.1	808.2	741.9	1,097.1	2.01	-2.00	-0.94
5,303.0	11.00	38.10	5,152.1	822.5	753.3	1,115.4	3.03	-3.02	-0.81
5,388.0	9.50	38.20	5,235.7	834.4	762.7	1,130.4	1.76	-1.76	0.12
5,474.0	8.00	38.80	5,320.7	844.7	770.8	1,143.5	1.75	-1.74	0.70
5,559.0	6.20	39.50	5,405.1	852.8	777.4	1,154.0	2.12	-2.12	0.82
5,645.0	2.90	48.00	5,490.8	857.9	782.0	1,160.8	3.91	-3.84	9.88
5,730.0	1.20	65.50	5,575.7	859.7	784.4	1,163.7	2.11	-2.00	20.59
5,816.0	1.10	118.50	5,661.7	859.7	786.0	1,164.8	1.20	-0.12	61.63
5,854.2	0.70	104.97	5,699.9	859.4	786.5	1,165.0	1.18	-1.05	-35.38
Target BHL 1320'FSL & 75'FWL									
5,902.0	0.40	51.50	5,747.7	859.5	786.9	1,165.3	1.18	-0.63	-111.95
5,987.0	0.30	28.50	5,832.7	859.8	787.3	1,165.8	0.20	-0.12	-27.06
6,073.0	0.40	118.00	5,918.7	859.9	787.6	1,166.1	0.58	0.12	104.07
6,159.0	0.40	157.00	6,004.7	859.5	788.0	1,166.0	0.31	0.00	45.35

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**Survey Calculation Method:** 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 (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
6,244.0	0.30	208.50	6,089.7	859.0	788.0	1,165.7	0.37	-0.12	60.59
6,329.0	0.10	114.90	6,174.7	858.8	788.0	1,165.5	0.38	-0.24	-110.12
6,415.0	0.50	164.60	6,260.7	858.4	788.2	1,165.3	0.51	0.47	57.79
6,500.0	0.20	106.20	6,345.7	858.0	788.4	1,165.2	0.51	-0.35	-68.71
6,586.0	0.30	148.70	6,431.7	857.8	788.7	1,165.2	0.24	0.12	49.42
6,671.0	0.30	133.20	6,516.7	857.4	788.9	1,165.1	0.10	0.00	-18.24
6,756.0	0.50	156.00	6,601.7	856.9	789.3	1,165.0	0.30	0.24	26.82
6,842.0	0.40	126.80	6,687.7	856.4	789.7	1,164.9	0.29	-0.12	-33.95
6,928.0	0.70	133.70	6,773.7	855.9	790.3	1,164.9	0.36	0.35	8.02
6,934.2	0.72	134.94	6,779.9	855.8	790.3	1,164.9	0.41	0.32	20.03
<b>Target Circle 1320'FSL, 75'FWL</b>									
7,014.0	1.00	146.20	6,859.7	854.9	791.1	1,164.7	0.41	0.35	14.11
7,099.0	0.80	150.20	6,944.7	853.7	791.8	1,164.4	0.25	-0.24	4.71
7,185.0	0.70	129.90	7,030.7	852.9	792.5	1,164.2	0.33	-0.12	-23.60
7,270.0	0.70	149.00	7,115.6	852.1	793.1	1,164.1	0.27	0.00	22.47
7,355.0	0.70	131.60	7,200.6	851.3	793.8	1,164.0	0.25	0.00	-20.47
7,400.0	1.00	121.00	7,245.6	850.9	794.3	1,164.1	0.75	0.67	-23.56
<b>Hardline 75'W of BHL</b>									
7,445.0	1.00	121.00	7,290.6	850.5	795.0	1,164.2	0.00	0.00	0.00

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