

ENSIGN

Directional

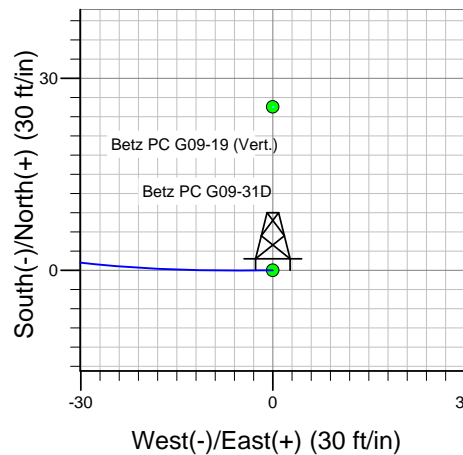
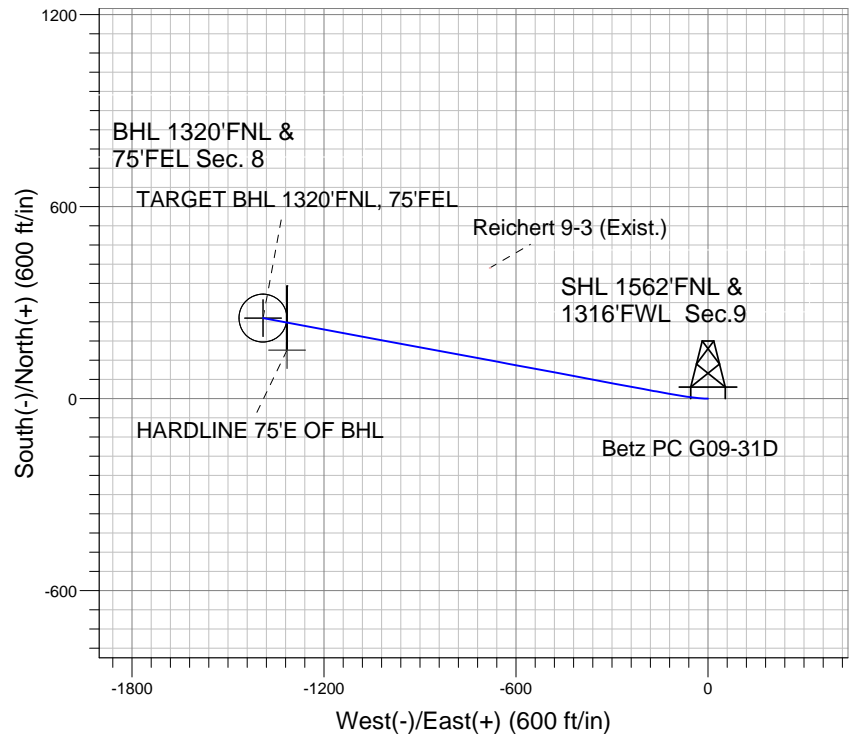
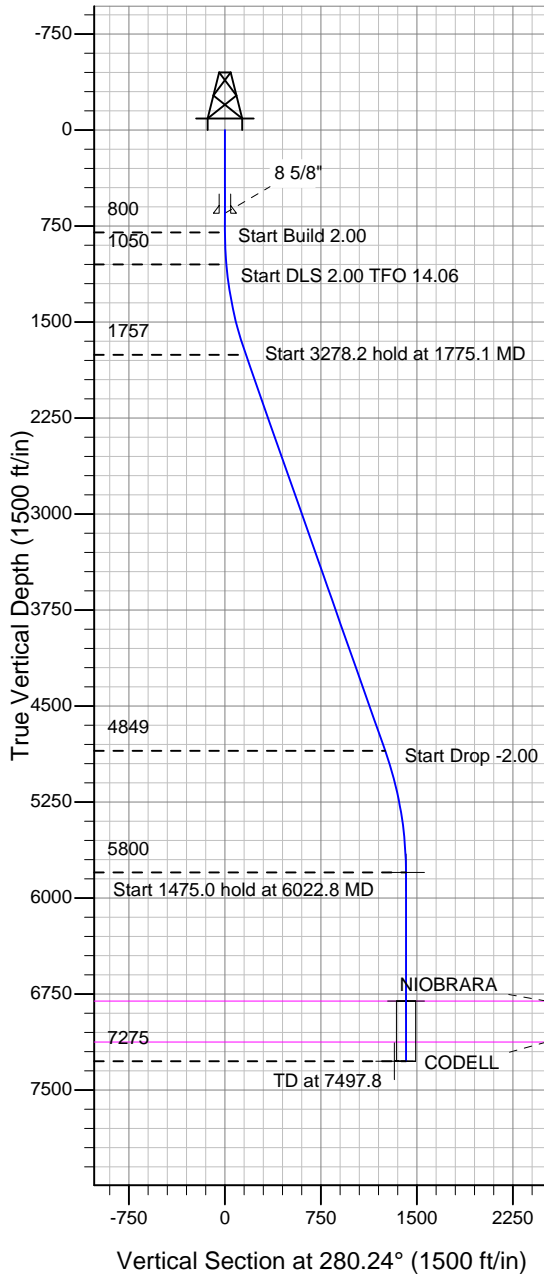
Well Name: **Betz PC G09-31D**

Surface Location: Betz PC G09-31D Pad Sec.9-T4N-R65W
North American Datum 1983 , US State Plane 1983 , Colorado Northern Zone

Ground Elevation: 4712.0

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.0	0.0	1364160.77	3230598.55	40° 19' 48.252 N	104° 40' 22.332 W	
Original Well Elev WELL @ 4725.0ft (Original Well Elev)						

NOBLE ENERGY INC WELD COUNTY CO



Betz PC G09-31D
Noble Betz PC G09-31D Plan #1 (8-10-10)
10:12, August 10 2010



Azimuths to True North
Magnetic North: 8.92°
Magnetic Field
Strength: 53195.0nT
Dip Angle: 67.04°
Date: 8/10/2010
Model: IGRF2010

WELLBORE TARGET DETAILS (LAT/LONG)

Name	TVD	+N/-S	+E/-W	Latitude	Longitude	Shape
TARGET BHL 1320'FNL, 75'FEL	5800.0	251.4	-1391.2	40° 19' 50.736 N	104° 40' 40.296 W	Point
TARGET CIRCLE 1320'FNL, 75'FEL	6805.0	251.4	-1391.2	40° 19' 50.736 N	104° 40' 40.296 W	Circle (Radius: 75.0)
HARDLINE 75'E OF BHL	7275.0	151.4	-1316.2	40° 19' 49.748 N	104° 40' 39.327 W	Polygon

SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	DLeg	TFace	VSec	Target
1	0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.0	
2	800.0	0.00	0.00	800.0	0.0	0.0	0.00	0.00	0.0	
3	1050.0	5.00	270.00	1049.7	0.0	-10.9	2.00	270.00	10.7	
4	1775.1	19.39	280.56	1756.6	22.2	-161.6	2.00	14.06	163.0	
5	5053.3	19.39	280.56	4848.9	221.6	-1231.5	0.00	0.00	1251.3	
6	6022.8	0.00	0.00	5800.0	251.4	-1391.2	2.00	180.00	1413.8	TARGET BHL 1320'FNL, 75'FEL
7	7497.8	0.00	0.00	7275.0	251.4	-1391.2	0.00	0.00	1413.8	



NOBLE ENERGY INC WELD COUNTY CO

SEC.9-T4N-R65W

Betz PC G09-31D Pad Sec.9-T4N-R65W

Betz PC G09-31D

Wellbore #1

Plan: Noble Betz PC G09-31D Plan #1 (8-10-10)

Standard Planning Report

10 August, 2010

Database:	Landmark	Local Co-ordinate Reference:	Well Betz PC G09-31D
Company:	NOBLE ENERGY INC WELD COUNTY CO	TVD Reference:	WELL @ 4725.0ft (Original Well Elev)
Project:	SEC.9-T4N-R65W	MD Reference:	WELL @ 4725.0ft (Original Well Elev)
Site:	Betz PC G09-31D Pad Sec.9-T4N-R65W	North Reference:	True
Well:	Betz PC G09-31D	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Noble Betz PC G09-31D Plan #1 (8-10-10)		

Project	SEC.9-T4N-R65W, Weld 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		Using geodetic scale factor

Site					Betz PC G09-31D Pad Sec.9-T4N-R65W				
Site Position:		Northing:		1,364,160.78 ft		Latitude:		40° 19' 48.252 N	
From:		Easting:		3,230,598.55 ft		Longitude:		104° 40' 22.332 W	
Position Uncertainty:		Slot Radius:		"		Grid Convergence:		0.53 °	

Well	Betz PC G09-31D					
Well Position	+N/-S	0.0 ft	Northing:	1,364,160.77 ft	Latitude:	40° 19' 48.252 N
	+E/-W	0.0 ft	Easting:	3,230,598.55 ft	Longitude:	104° 40' 22.332 W
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	4,712.0 ft

Wellbore	Wellbore #1
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Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	8/10/2010	8.92	67.04	53,195

Design	Noble Betz PC G09-31D Plan #1 (8-10-10)
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Audit Notes:				
Version:	Phase:	PROTOTYPE	Tie On Depth:	0.0

Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)
	0.0	0.0	0.0	280.24

Plan Sections

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	TFO (°)	Target
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.00	0.00	
800.0	0.00	0.00	800.0	0.0	0.0	0.00	0.00	0.00	0.00	
1,050.0	5.00	270.00	1,049.7	0.0	-10.9	2.00	2.00	0.00	270.00	
1,775.1	19.39	280.56	1,756.6	22.2	-161.6	2.00	1.98	1.46	14.06	
5,053.3	19.39	280.56	4,848.9	221.6	-1,231.5	0.00	0.00	0.00	0.00	
6,022.8	0.00	0.00	5,800.0	251.4	-1,391.2	2.00	-2.00	0.00	180.00	TARGET BHL 1320
7,497.8	0.00	0.00	7,275.0	251.4	-1,391.2	0.00	0.00	0.00	0.00	

Database:	Landmark	Local Co-ordinate Reference:	Well Betz PC G09-31D
Company:	NOBLE ENERGY INC WELD COUNTY CO	TVD Reference:	WELL @ 4725.0ft (Original Well Elev)
Project:	SEC.9-T4N-R65W	MD Reference:	WELL @ 4725.0ft (Original Well Elev)
Site:	Betz PC G09-31D Pad Sec.9-T4N-R65W	North Reference:	True
Well:	Betz PC G09-31D	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Noble Betz PC G09-31D Plan #1 (8-10-10)		

Planned 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
40.0	0.00	0.00	40.0	0.0	0.0	0.0	0.00	0.00	0.00
80.0	0.00	0.00	80.0	0.0	0.0	0.0	0.00	0.00	0.00
120.0	0.00	0.00	120.0	0.0	0.0	0.0	0.00	0.00	0.00
160.0	0.00	0.00	160.0	0.0	0.0	0.0	0.00	0.00	0.00
200.0	0.00	0.00	200.0	0.0	0.0	0.0	0.00	0.00	0.00
240.0	0.00	0.00	240.0	0.0	0.0	0.0	0.00	0.00	0.00
280.0	0.00	0.00	280.0	0.0	0.0	0.0	0.00	0.00	0.00
320.0	0.00	0.00	320.0	0.0	0.0	0.0	0.00	0.00	0.00
360.0	0.00	0.00	360.0	0.0	0.0	0.0	0.00	0.00	0.00
400.0	0.00	0.00	400.0	0.0	0.0	0.0	0.00	0.00	0.00
440.0	0.00	0.00	440.0	0.0	0.0	0.0	0.00	0.00	0.00
480.0	0.00	0.00	480.0	0.0	0.0	0.0	0.00	0.00	0.00
520.0	0.00	0.00	520.0	0.0	0.0	0.0	0.00	0.00	0.00
560.0	0.00	0.00	560.0	0.0	0.0	0.0	0.00	0.00	0.00
600.0	0.00	0.00	600.0	0.0	0.0	0.0	0.00	0.00	0.00
640.0	0.00	0.00	640.0	0.0	0.0	0.0	0.00	0.00	0.00
650.0	0.00	0.00	650.0	0.0	0.0	0.0	0.00	0.00	0.00
8 5/8"									
680.0	0.00	0.00	680.0	0.0	0.0	0.0	0.00	0.00	0.00
720.0	0.00	0.00	720.0	0.0	0.0	0.0	0.00	0.00	0.00
760.0	0.00	0.00	760.0	0.0	0.0	0.0	0.00	0.00	0.00
800.0	0.00	0.00	800.0	0.0	0.0	0.0	0.00	0.00	0.00
840.0	0.80	270.00	840.0	0.0	-0.3	0.3	2.00	2.00	0.00
880.0	1.60	270.00	880.0	0.0	-1.1	1.1	2.00	2.00	0.00
920.0	2.40	270.00	920.0	0.0	-2.5	2.5	2.00	2.00	0.00
960.0	3.20	270.00	959.9	0.0	-4.5	4.4	2.00	2.00	0.00
1,000.0	4.00	270.00	999.8	0.0	-7.0	6.9	2.00	2.00	0.00
1,040.0	4.80	270.00	1,039.7	0.0	-10.0	9.9	2.00	2.00	0.00
1,050.0	5.00	270.00	1,049.7	0.0	-10.9	10.7	2.00	2.00	0.00
1,080.0	5.58	271.50	1,079.6	0.0	-13.7	13.5	2.00	1.95	4.99
1,120.0	6.37	273.07	1,119.3	0.2	-17.8	17.6	2.00	1.96	3.93
1,160.0	7.15	274.30	1,159.1	0.5	-22.5	22.3	2.00	1.97	3.07
1,200.0	7.94	275.28	1,198.7	1.0	-27.8	27.5	2.00	1.97	2.46
1,240.0	8.73	276.09	1,238.3	1.5	-33.5	33.3	2.00	1.98	2.02
1,280.0	9.53	276.76	1,277.8	2.2	-39.8	39.6	2.00	1.98	1.68
1,320.0	10.32	277.33	1,317.2	3.1	-46.7	46.5	2.00	1.98	1.43
1,360.0	11.12	277.82	1,356.5	4.1	-54.1	53.9	2.00	1.99	1.23
1,400.0	11.91	278.25	1,395.7	5.2	-62.0	61.9	2.00	1.99	1.06
1,440.0	12.71	278.62	1,434.8	6.4	-70.4	70.4	2.00	1.99	0.93
1,480.0	13.50	278.95	1,473.7	7.8	-79.4	79.5	2.00	1.99	0.82
1,520.0	14.30	279.24	1,512.5	9.3	-88.9	89.1	2.00	1.99	0.73
1,560.0	15.10	279.51	1,551.2	11.0	-98.9	99.2	2.00	1.99	0.66
1,600.0	15.90	279.75	1,589.8	12.8	-109.4	109.9	2.00	1.99	0.59
1,640.0	16.69	279.96	1,628.2	14.7	-120.5	121.2	2.00	1.99	0.54
1,680.0	17.49	280.16	1,666.4	16.8	-132.0	132.9	2.00	1.99	0.49
1,720.0	18.29	280.34	1,704.5	19.0	-144.1	145.2	2.00	2.00	0.45
1,760.0	19.09	280.50	1,742.4	21.3	-156.7	158.0	2.00	2.00	0.41
1,775.1	19.39	280.56	1,756.6	22.2	-161.6	163.0	2.00	2.00	0.39
1,800.0	19.39	280.56	1,780.1	23.7	-169.8	171.3	0.00	0.00	0.00
1,840.0	19.39	280.56	1,817.8	26.1	-182.8	184.5	0.00	0.00	0.00
1,880.0	19.39	280.56	1,855.6	28.6	-195.9	197.8	0.00	0.00	0.00
1,920.0	19.39	280.56	1,893.3	31.0	-208.9	211.1	0.00	0.00	0.00
1,960.0	19.39	280.56	1,931.0	33.4	-222.0	224.4	0.00	0.00	0.00

Database:	Landmark	Local Co-ordinate Reference:	Well Betz PC G09-31D
Company:	NOBLE ENERGY INC WELD COUNTY CO	TVD Reference:	WELL @ 4725.0ft (Original Well Elev)
Project:	SEC.9-T4N-R65W	MD Reference:	WELL @ 4725.0ft (Original Well Elev)
Site:	Betz PC G09-31D Pad Sec.9-T4N-R65W	North Reference:	True
Well:	Betz PC G09-31D	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Noble Betz PC G09-31D Plan #1 (8-10-10)		

Planned 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)
2,000.0	19.39	280.56	1,968.8	35.9	-235.0	237.7	0.00	0.00	0.00
2,040.0	19.39	280.56	2,006.5	38.3	-248.1	250.9	0.00	0.00	0.00
2,080.0	19.39	280.56	2,044.2	40.7	-261.1	264.2	0.00	0.00	0.00
2,120.0	19.39	280.56	2,082.0	43.2	-274.2	277.5	0.00	0.00	0.00
2,160.0	19.39	280.56	2,119.7	45.6	-287.2	290.8	0.00	0.00	0.00
2,200.0	19.39	280.56	2,157.4	48.0	-300.3	304.1	0.00	0.00	0.00
2,240.0	19.39	280.56	2,195.2	50.5	-313.4	317.3	0.00	0.00	0.00
2,280.0	19.39	280.56	2,232.9	52.9	-326.4	330.6	0.00	0.00	0.00
2,320.0	19.39	280.56	2,270.6	55.3	-339.5	343.9	0.00	0.00	0.00
2,360.0	19.39	280.56	2,308.3	57.8	-352.5	357.2	0.00	0.00	0.00
2,400.0	19.39	280.56	2,346.1	60.2	-365.6	370.5	0.00	0.00	0.00
2,440.0	19.39	280.56	2,383.8	62.6	-378.6	383.7	0.00	0.00	0.00
2,480.0	19.39	280.56	2,421.5	65.1	-391.7	397.0	0.00	0.00	0.00
2,520.0	19.39	280.56	2,459.3	67.5	-404.7	410.3	0.00	0.00	0.00
2,560.0	19.39	280.56	2,497.0	69.9	-417.8	423.6	0.00	0.00	0.00
2,600.0	19.39	280.56	2,534.7	72.4	-430.8	436.8	0.00	0.00	0.00
2,640.0	19.39	280.56	2,572.5	74.8	-443.9	450.1	0.00	0.00	0.00
2,680.0	19.39	280.56	2,610.2	77.2	-457.0	463.4	0.00	0.00	0.00
2,720.0	19.39	280.56	2,647.9	79.7	-470.0	476.7	0.00	0.00	0.00
2,760.0	19.39	280.56	2,685.7	82.1	-483.1	490.0	0.00	0.00	0.00
2,800.0	19.39	280.56	2,723.4	84.5	-496.1	503.2	0.00	0.00	0.00
2,840.0	19.39	280.56	2,761.1	87.0	-509.2	516.5	0.00	0.00	0.00
2,880.0	19.39	280.56	2,798.9	89.4	-522.2	529.8	0.00	0.00	0.00
2,920.0	19.39	280.56	2,836.6	91.8	-535.3	543.1	0.00	0.00	0.00
2,960.0	19.39	280.56	2,874.3	94.3	-548.3	556.4	0.00	0.00	0.00
3,000.0	19.39	280.56	2,912.0	96.7	-561.4	569.6	0.00	0.00	0.00
3,040.0	19.39	280.56	2,949.8	99.1	-574.4	582.9	0.00	0.00	0.00
3,080.0	19.39	280.56	2,987.5	101.6	-587.5	596.2	0.00	0.00	0.00
3,120.0	19.39	280.56	3,025.2	104.0	-600.6	609.5	0.00	0.00	0.00
3,160.0	19.39	280.56	3,063.0	106.4	-613.6	622.8	0.00	0.00	0.00
3,200.0	19.39	280.56	3,100.7	108.9	-626.7	636.0	0.00	0.00	0.00
3,240.0	19.39	280.56	3,138.4	111.3	-639.7	649.3	0.00	0.00	0.00
3,280.0	19.39	280.56	3,176.2	113.7	-652.8	662.6	0.00	0.00	0.00
3,320.0	19.39	280.56	3,213.9	116.2	-665.8	675.9	0.00	0.00	0.00
3,360.0	19.39	280.56	3,251.6	118.6	-678.9	689.2	0.00	0.00	0.00
3,400.0	19.39	280.56	3,289.4	121.0	-691.9	702.4	0.00	0.00	0.00
3,440.0	19.39	280.56	3,327.1	123.5	-705.0	715.7	0.00	0.00	0.00
3,480.0	19.39	280.56	3,364.8	125.9	-718.0	729.0	0.00	0.00	0.00
3,520.0	19.39	280.56	3,402.6	128.3	-731.1	742.3	0.00	0.00	0.00
3,560.0	19.39	280.56	3,440.3	130.8	-744.2	755.5	0.00	0.00	0.00
3,600.0	19.39	280.56	3,478.0	133.2	-757.2	768.8	0.00	0.00	0.00
3,640.0	19.39	280.56	3,515.8	135.6	-770.3	782.1	0.00	0.00	0.00
3,680.0	19.39	280.56	3,553.5	138.1	-783.3	795.4	0.00	0.00	0.00
3,720.0	19.39	280.56	3,591.2	140.5	-796.4	808.7	0.00	0.00	0.00
3,760.0	19.39	280.56	3,628.9	142.9	-809.4	821.9	0.00	0.00	0.00
3,800.0	19.39	280.56	3,666.7	145.4	-822.5	835.2	0.00	0.00	0.00
3,840.0	19.39	280.56	3,704.4	147.8	-835.5	848.5	0.00	0.00	0.00
3,880.0	19.39	280.56	3,742.1	150.2	-848.6	861.8	0.00	0.00	0.00
3,920.0	19.39	280.56	3,779.9	152.7	-861.6	875.1	0.00	0.00	0.00
3,960.0	19.39	280.56	3,817.6	155.1	-874.7	888.3	0.00	0.00	0.00
4,000.0	19.39	280.56	3,855.3	157.6	-887.8	901.6	0.00	0.00	0.00
4,040.0	19.39	280.56	3,893.1	160.0	-900.8	914.9	0.00	0.00	0.00
4,080.0	19.39	280.56	3,930.8	162.4	-913.9	928.2	0.00	0.00	0.00
4,120.0	19.39	280.56	3,968.5	164.9	-926.9	941.5	0.00	0.00	0.00

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Project:	SEC.9-T4N-R65W	MD Reference:	WELL @ 4725.0ft (Original Well Elev)
Site:	Betz PC G09-31D Pad Sec.9-T4N-R65W	North Reference:	True
Well:	Betz PC G09-31D	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Noble Betz PC G09-31D Plan #1 (8-10-10)		

Planned 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)
4,160.0	19.39	280.56	4,006.3	167.3	-940.0	954.7	0.00	0.00	0.00
4,200.0	19.39	280.56	4,044.0	169.7	-953.0	968.0	0.00	0.00	0.00
4,240.0	19.39	280.56	4,081.7	172.2	-966.1	981.3	0.00	0.00	0.00
4,280.0	19.39	280.56	4,119.5	174.6	-979.1	994.6	0.00	0.00	0.00
4,320.0	19.39	280.56	4,157.2	177.0	-992.2	1,007.9	0.00	0.00	0.00
4,360.0	19.39	280.56	4,194.9	179.5	-1,005.2	1,021.1	0.00	0.00	0.00
4,400.0	19.39	280.56	4,232.6	181.9	-1,018.3	1,034.4	0.00	0.00	0.00
4,440.0	19.39	280.56	4,270.4	184.3	-1,031.4	1,047.7	0.00	0.00	0.00
4,480.0	19.39	280.56	4,308.1	186.8	-1,044.4	1,061.0	0.00	0.00	0.00
4,520.0	19.39	280.56	4,345.8	189.2	-1,057.5	1,074.2	0.00	0.00	0.00
4,560.0	19.39	280.56	4,383.6	191.6	-1,070.5	1,087.5	0.00	0.00	0.00
4,600.0	19.39	280.56	4,421.3	194.1	-1,083.6	1,100.8	0.00	0.00	0.00
4,640.0	19.39	280.56	4,459.0	196.5	-1,096.6	1,114.1	0.00	0.00	0.00
4,680.0	19.39	280.56	4,496.8	198.9	-1,109.7	1,127.4	0.00	0.00	0.00
4,720.0	19.39	280.56	4,534.5	201.4	-1,122.7	1,140.6	0.00	0.00	0.00
4,760.0	19.39	280.56	4,572.2	203.8	-1,135.8	1,153.9	0.00	0.00	0.00
4,800.0	19.39	280.56	4,610.0	206.2	-1,148.8	1,167.2	0.00	0.00	0.00
4,840.0	19.39	280.56	4,647.7	208.7	-1,161.9	1,180.5	0.00	0.00	0.00
4,880.0	19.39	280.56	4,685.4	211.1	-1,175.0	1,193.8	0.00	0.00	0.00
4,920.0	19.39	280.56	4,723.2	213.5	-1,188.0	1,207.0	0.00	0.00	0.00
4,960.0	19.39	280.56	4,760.9	216.0	-1,201.1	1,220.3	0.00	0.00	0.00
5,000.0	19.39	280.56	4,798.6	218.4	-1,214.1	1,233.6	0.00	0.00	0.00
5,040.0	19.39	280.56	4,836.3	220.8	-1,227.2	1,246.9	0.00	0.00	0.00
5,053.3	19.39	280.56	4,848.9	221.6	-1,231.5	1,251.3	0.00	0.00	0.00
5,080.0	18.86	280.56	4,874.1	223.2	-1,240.1	1,260.0	2.00	-2.00	0.00
5,120.0	18.06	280.56	4,912.1	225.6	-1,252.6	1,272.7	2.00	-2.00	0.00
5,160.0	17.26	280.56	4,950.2	227.8	-1,264.5	1,284.8	2.00	-2.00	0.00
5,200.0	16.46	280.56	4,988.5	229.9	-1,275.9	1,296.4	2.00	-2.00	0.00
5,240.0	15.66	280.56	5,026.9	231.9	-1,286.8	1,307.5	2.00	-2.00	0.00
5,280.0	14.86	280.56	5,065.5	233.9	-1,297.1	1,318.0	2.00	-2.00	0.00
5,320.0	14.06	280.56	5,104.2	235.7	-1,306.9	1,328.0	2.00	-2.00	0.00
5,360.0	13.26	280.56	5,143.1	237.4	-1,316.2	1,337.5	2.00	-2.00	0.00
5,400.0	12.46	280.56	5,182.1	239.1	-1,325.0	1,346.4	2.00	-2.00	0.00
5,440.0	11.66	280.56	5,221.2	240.6	-1,333.2	1,354.7	2.00	-2.00	0.00
5,480.0	10.86	280.56	5,260.4	242.0	-1,340.8	1,362.5	2.00	-2.00	0.00
5,520.0	10.06	280.56	5,299.8	243.4	-1,348.0	1,369.8	2.00	-2.00	0.00
5,560.0	9.26	280.56	5,339.2	244.6	-1,354.6	1,376.5	2.00	-2.00	0.00
5,600.0	8.46	280.56	5,378.7	245.7	-1,360.6	1,382.6	2.00	-2.00	0.00
5,640.0	7.66	280.56	5,418.3	246.7	-1,366.1	1,388.2	2.00	-2.00	0.00
5,680.0	6.86	280.56	5,458.0	247.7	-1,371.1	1,393.3	2.00	-2.00	0.00
5,720.0	6.06	280.56	5,497.8	248.5	-1,375.5	1,397.8	2.00	-2.00	0.00
5,760.0	5.26	280.56	5,537.6	249.2	-1,379.4	1,401.7	2.00	-2.00	0.00
5,800.0	4.46	280.56	5,577.4	249.8	-1,382.7	1,405.1	2.00	-2.00	0.00
5,840.0	3.66	280.56	5,617.3	250.4	-1,385.5	1,408.0	2.00	-2.00	0.00
5,880.0	2.86	280.56	5,657.3	250.8	-1,387.7	1,410.2	2.00	-2.00	0.00
5,920.0	2.06	280.56	5,697.2	251.1	-1,389.4	1,411.9	2.00	-2.00	0.00
5,960.0	1.26	280.56	5,737.2	251.3	-1,390.6	1,413.1	2.00	-2.00	0.00
6,000.0	0.46	280.56	5,777.2	251.4	-1,391.2	1,413.7	2.00	-2.00	0.00
6,022.8	0.00	0.00	5,800.0	251.4	-1,391.2	1,413.8	2.00	-2.00	0.00
TARGET BHL 1320'FNL, 75'FEL									
6,040.0	0.00	0.00	5,817.2	251.4	-1,391.2	1,413.8	0.00	0.00	0.00
6,080.0	0.00	0.00	5,857.2	251.4	-1,391.2	1,413.8	0.00	0.00	0.00
6,120.0	0.00	0.00	5,897.2	251.4	-1,391.2	1,413.8	0.00	0.00	0.00
6,160.0	0.00	0.00	5,937.2	251.4	-1,391.2	1,413.8	0.00	0.00	0.00

Database:	Landmark	Local Co-ordinate Reference:	Well Betz PC G09-31D
Company:	NOBLE ENERGY INC WELD COUNTY CO	TVD Reference:	WELL @ 4725.0ft (Original Well Elev)
Project:	SEC.9-T4N-R65W	MD Reference:	WELL @ 4725.0ft (Original Well Elev)
Site:	Betz PC G09-31D Pad Sec.9-T4N-R65W	North Reference:	True
Well:	Betz PC G09-31D	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Noble Betz PC G09-31D Plan #1 (8-10-10)		

Planned 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)
6,200.0	0.00	0.00	5,977.2	251.4	-1,391.2	1,413.8	0.00	0.00	0.00
6,240.0	0.00	0.00	6,017.2	251.4	-1,391.2	1,413.8	0.00	0.00	0.00
6,280.0	0.00	0.00	6,057.2	251.4	-1,391.2	1,413.8	0.00	0.00	0.00
6,320.0	0.00	0.00	6,097.2	251.4	-1,391.2	1,413.8	0.00	0.00	0.00
6,360.0	0.00	0.00	6,137.2	251.4	-1,391.2	1,413.8	0.00	0.00	0.00
6,400.0	0.00	0.00	6,177.2	251.4	-1,391.2	1,413.8	0.00	0.00	0.00
6,440.0	0.00	0.00	6,217.2	251.4	-1,391.2	1,413.8	0.00	0.00	0.00
6,480.0	0.00	0.00	6,257.2	251.4	-1,391.2	1,413.8	0.00	0.00	0.00
6,520.0	0.00	0.00	6,297.2	251.4	-1,391.2	1,413.8	0.00	0.00	0.00
6,560.0	0.00	0.00	6,337.2	251.4	-1,391.2	1,413.8	0.00	0.00	0.00
6,600.0	0.00	0.00	6,377.2	251.4	-1,391.2	1,413.8	0.00	0.00	0.00
6,640.0	0.00	0.00	6,417.2	251.4	-1,391.2	1,413.8	0.00	0.00	0.00
6,680.0	0.00	0.00	6,457.2	251.4	-1,391.2	1,413.8	0.00	0.00	0.00
6,720.0	0.00	0.00	6,497.2	251.4	-1,391.2	1,413.8	0.00	0.00	0.00
6,760.0	0.00	0.00	6,537.2	251.4	-1,391.2	1,413.8	0.00	0.00	0.00
6,800.0	0.00	0.00	6,577.2	251.4	-1,391.2	1,413.8	0.00	0.00	0.00
6,840.0	0.00	0.00	6,617.2	251.4	-1,391.2	1,413.8	0.00	0.00	0.00
6,880.0	0.00	0.00	6,657.2	251.4	-1,391.2	1,413.8	0.00	0.00	0.00
6,920.0	0.00	0.00	6,697.2	251.4	-1,391.2	1,413.8	0.00	0.00	0.00
6,960.0	0.00	0.00	6,737.2	251.4	-1,391.2	1,413.8	0.00	0.00	0.00
7,000.0	0.00	0.00	6,777.2	251.4	-1,391.2	1,413.8	0.00	0.00	0.00
7,027.8	0.00	0.00	6,805.0	251.4	-1,391.2	1,413.8	0.00	0.00	0.00
NIOBRARA - TARGET CIRCLE 1320'FNL, 75'FEL									
7,040.0	0.00	0.00	6,817.2	251.4	-1,391.2	1,413.8	0.00	0.00	0.00
7,080.0	0.00	0.00	6,857.2	251.4	-1,391.2	1,413.8	0.00	0.00	0.00
7,120.0	0.00	0.00	6,897.2	251.4	-1,391.2	1,413.8	0.00	0.00	0.00
7,160.0	0.00	0.00	6,937.2	251.4	-1,391.2	1,413.8	0.00	0.00	0.00
7,200.0	0.00	0.00	6,977.2	251.4	-1,391.2	1,413.8	0.00	0.00	0.00
7,240.0	0.00	0.00	7,017.2	251.4	-1,391.2	1,413.8	0.00	0.00	0.00
7,280.0	0.00	0.00	7,057.2	251.4	-1,391.2	1,413.8	0.00	0.00	0.00
7,320.0	0.00	0.00	7,097.2	251.4	-1,391.2	1,413.8	0.00	0.00	0.00
7,347.8	0.00	0.00	7,125.0	251.4	-1,391.2	1,413.8	0.00	0.00	0.00
CODELL									
7,360.0	0.00	0.00	7,137.2	251.4	-1,391.2	1,413.8	0.00	0.00	0.00
7,400.0	0.00	0.00	7,177.2	251.4	-1,391.2	1,413.8	0.00	0.00	0.00
7,440.0	0.00	0.00	7,217.2	251.4	-1,391.2	1,413.8	0.00	0.00	0.00
7,480.0	0.00	0.00	7,257.2	251.4	-1,391.2	1,413.8	0.00	0.00	0.00
7,497.8	0.00	0.00	7,275.0	251.4	-1,391.2	1,413.8	0.00	0.00	0.00
HARDLINE 75'E OF BHL									

Database:	Landmark	Local Co-ordinate Reference:	Well Betz PC G09-31D
Company:	NOBLE ENERGY INC WELD COUNTY CO	TVD Reference:	WELL @ 4725.0ft (Original Well Elev)
Project:	SEC.9-T4N-R65W	MD Reference:	WELL @ 4725.0ft (Original Well Elev)
Site:	Betz PC G09-31D Pad Sec.9-T4N-R65W	North Reference:	True
Well:	Betz PC G09-31D	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Noble Betz PC G09-31D Plan #1 (8-10-10)		

Targets

Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
HARDLINE 75'E OF E - plan misses by 125.0ft at 7497.8ft MD (7275.0 TVD, 251.4 N, -1391.2 E) - Polygon	0.00	0.00	7,275.0	151.4	-1,316.2	1,364,299.88	3,229,281.05	40° 19' 49.748 N	104° 40' 39.327 W
Point 1			7,275.0	0.0	0.0	1,364,299.88	3,229,281.05		
Point 2			7,275.0	200.0	0.0	1,364,499.87	3,229,279.19		
TARGET BHL 1320'F - plan hits target - Point	0.00	0.00	5,800.0	251.4	-1,391.2	1,364,399.19	3,229,205.08	40° 19' 50.736 N	104° 40' 40.296 W
TARGET CIRCLE 1320'F - plan hits target - Circle (radius 75.0)	0.00	0.00	6,805.0	251.4	-1,391.2	1,364,399.19	3,229,205.08	40° 19' 50.736 N	104° 40' 40.296 W

Casing Points

Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")
650.0	650.0	8 5/8"	8-5/8	12-1/4

Formations

Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
7,027.8	6,805.0	NIORARA		0.00	
7,347.8	7,125.0	CODELL		0.00	