

ENSIGN

Directional

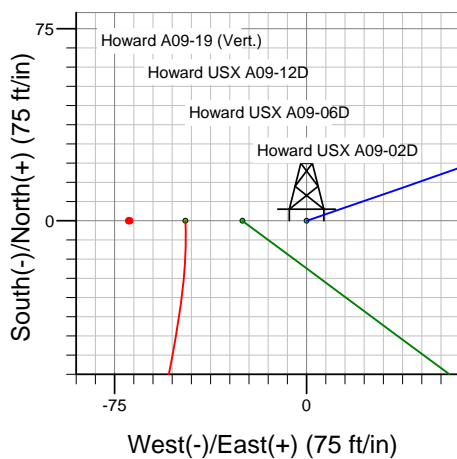
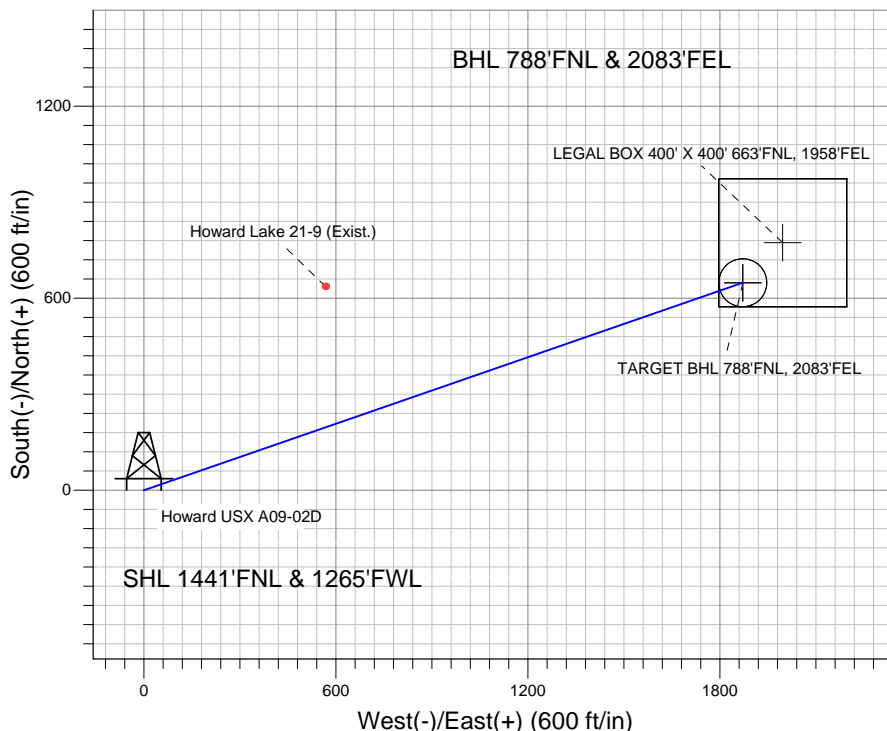
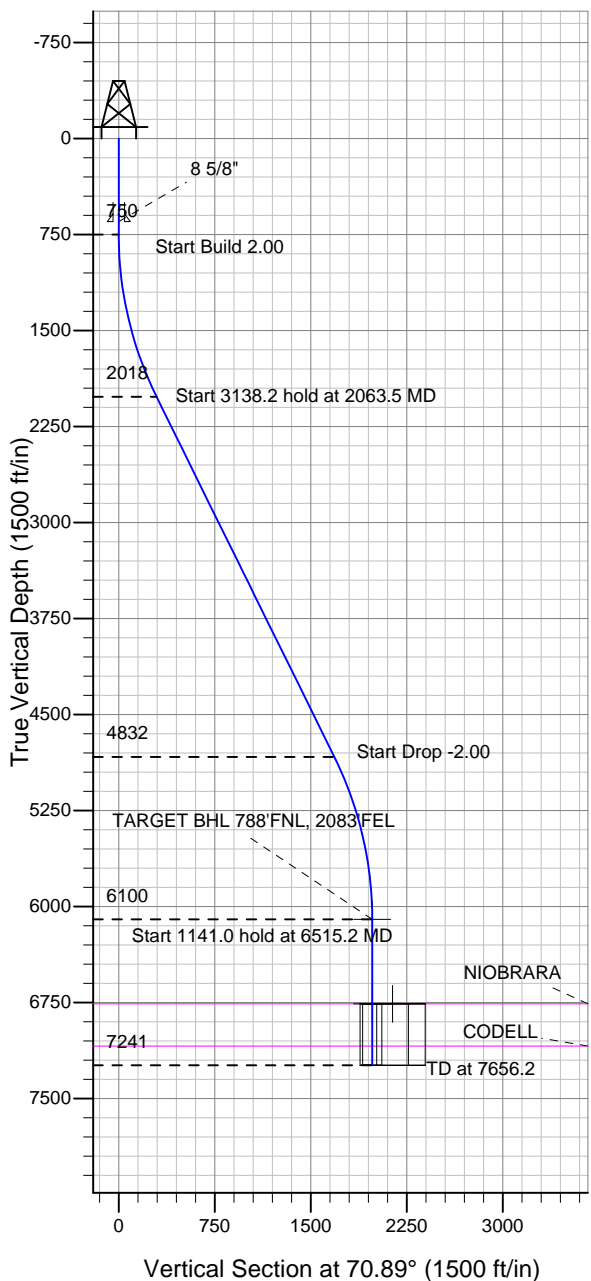
Well Name: Howard USX A09-02D

Surface Location: Howard USX A09-12D Pad Sec.9-T6N-R64W
North American Datum 1983 US State Plane 1983 Colorado Northern Zone

Ground Elevation: 4868.0

+N/-S +E/-W Northing Easting Latitude Longitude Slot
0.0 0.0 1427837.41 3261448.79 40.504010 -104.559800
Original Well Elev WELL @ 4881.0ft (Original Well Elev)

NOBLE ENERGY INC WELD COUNTY CO



Howard USX A09-12D Pad Sec.9-T6N-R64W
Howard USX A09-02D
Noble Howard USX A09-02D Plan #1 (4-11-11)
13:08, April 12 2011



Azimuths to True North
Magnetic North: 8.79°

Magnetic Field
Strength: 53226.4snT
Dip Angle: 67.18°
Date: 4/11/2011
Model: IGRF2010

WELLBORE TARGET DETAILS (LAT/LONG)

Name	TVD	+N/-S	+E/-W	Latitude	Longitude	Shape
TARGET BHL 788'FNL, 2083'FEL	6100.0	648.6	1871.5	40.505790	-104.553070	Point
LEGAL BOX 400' X 400' 663'FNL, 1958'FEL	6761.0	773.6	1996.5	40.506133	-104.552621	Rectangle (Sides: L400.0 W400.0)
TARGET CIRCLE 788'FNL, 2083'FEL	6761.0	648.6	1871.5	40.505790	-104.553070	Circle (Radius: 75.0)

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	750.0	0.00	0.00	750.0	0.0	0.0	0.00	0.00	0.0	
3	2063.5	26.27	70.89	2017.9	96.9	279.6	2.00	70.89	295.9	
4	5201.7	26.27	70.89	4832.1	551.7	1592.0	0.00	0.00	1684.8	
5	6515.2	0.00	0.00	6100.0	648.6	1871.5	2.00	180.00	1980.7	TARGET BHL 788'FNL, 2083'FEL
6	7656.2	0.00	0.00	7241.0	648.6	1871.5	0.00	0.00	1980.7	



Directional

NOBLE ENERGY INC WELD COUNTY CO

SEC.9-T6N-R64W

Howard USX A09-12D Pad Sec.9-T6N-R64W

Howard USX A09-02D

Wellbore #1

Plan: Noble Howard USX A09-02D Plan #1 (4-11-11)

Standard Planning Report

12 April, 2011



Database:	Landmark	Local Co-ordinate Reference:	Well Howard USX A09-02D
Company:	NOBLE ENERGY INC WELD COUNTY CO	TVD Reference:	WELL @ 4881.0ft (Original Well Elev)
Project:	SEC.9-T6N-R64W	MD Reference:	WELL @ 4881.0ft (Original Well Elev)
Site:	Howard USX A09-12D Pad Sec.9-T6N-R64W	North Reference:	True
Well:	Howard USX A09-02D	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Noble Howard USX A09-02D Plan #1 (4-11-11)		

Project	SEC.9-T6N-R64W, 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						Howard USX A09-12D Pad Sec.9-T6N-R64W											
Site Position:						Northing:			1,427,836.92 ft			Latitude:			40.504010		
From:			Lat/Long			Easting:			3,261,401.52 ft			Longitude:			-104.559970		
Position Uncertainty:			0.0 ft			Slot Radius:			"			Grid Convergence:			0.61 °		

Well	Howard USX A09-02D					
Well Position	+N/-S	0.0 ft	Northing:	1,427,837.41 ft	Latitude:	40.504010
	+E/-W	47.3 ft	Easting:	3,261,448.79 ft	Longitude:	-104.559800
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	4,868.0 ft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	4/11/2011	8.79	67.18	53,226

Design	Noble Howard USX A09-02D Plan #1 (4-11-11)			
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	70.89

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	
750.0	0.00	0.00	750.0	0.0	0.0	0.00	0.00	0.00	0.00	
2,063.5	26.27	70.89	2,017.9	96.9	279.6	2.00	2.00	0.00	70.89	
5,201.7	26.27	70.89	4,832.1	551.7	1,592.0	0.00	0.00	0.00	0.00	
6,515.2	0.00	0.00	6,100.0	648.6	1,871.5	2.00	-2.00	0.00	180.00	TARGET BHL 788'I
7,656.2	0.00	0.00	7,241.0	648.6	1,871.5	0.00	0.00	0.00	0.00	

Database:	Landmark	Local Co-ordinate Reference:	Well Howard USX A09-02D
Company:	NOBLE ENERGY INC WELD COUNTY CO	TVD Reference:	WELL @ 4881.0ft (Original Well Elev)
Project:	SEC.9-T6N-R64W	MD Reference:	WELL @ 4881.0ft (Original Well Elev)
Site:	Howard USX A09-12D Pad Sec.9-T6N-R64W	North Reference:	True
Well:	Howard USX A09-02D	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Noble Howard USX A09-02D Plan #1 (4-11-11)		

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
750.0	0.00	0.00	750.0	0.0	0.0	0.0	0.00	0.00	0.00
760.0	0.20	70.89	760.0	0.0	0.0	0.0	2.00	2.00	0.00
800.0	1.00	70.89	800.0	0.1	0.4	0.4	2.00	2.00	0.00
840.0	1.80	70.89	840.0	0.5	1.3	1.4	2.00	2.00	0.00
880.0	2.60	70.89	880.0	1.0	2.8	2.9	2.00	2.00	0.00
920.0	3.40	70.89	919.9	1.7	4.8	5.0	2.00	2.00	0.00
960.0	4.20	70.89	959.8	2.5	7.3	7.7	2.00	2.00	0.00
1,000.0	5.00	70.89	999.7	3.6	10.3	10.9	2.00	2.00	0.00
1,040.0	5.80	70.89	1,039.5	4.8	13.9	14.7	2.00	2.00	0.00
1,080.0	6.60	70.89	1,079.3	6.2	17.9	19.0	2.00	2.00	0.00
1,120.0	7.40	70.89	1,119.0	7.8	22.5	23.9	2.00	2.00	0.00
1,160.0	8.20	70.89	1,158.6	9.6	27.7	29.3	2.00	2.00	0.00
1,200.0	9.00	70.89	1,198.2	11.5	33.3	35.3	2.00	2.00	0.00
1,240.0	9.80	70.89	1,237.6	13.7	39.5	41.8	2.00	2.00	0.00
1,280.0	10.60	70.89	1,277.0	16.0	46.2	48.9	2.00	2.00	0.00
1,320.0	11.40	70.89	1,316.2	18.5	53.4	56.5	2.00	2.00	0.00
1,360.0	12.20	70.89	1,355.4	21.2	61.1	64.7	2.00	2.00	0.00
1,400.0	13.00	70.89	1,394.4	24.0	69.4	73.4	2.00	2.00	0.00
1,440.0	13.80	70.89	1,433.3	27.1	78.1	82.7	2.00	2.00	0.00
1,480.0	14.60	70.89	1,472.1	30.3	87.4	92.5	2.00	2.00	0.00
1,520.0	15.40	70.89	1,510.8	33.7	97.2	102.9	2.00	2.00	0.00
1,560.0	16.20	70.89	1,549.3	37.2	107.5	113.7	2.00	2.00	0.00
1,600.0	17.00	70.89	1,587.6	41.0	118.3	125.2	2.00	2.00	0.00
1,640.0	17.80	70.89	1,625.8	44.9	129.6	137.1	2.00	2.00	0.00
1,680.0	18.60	70.89	1,663.8	49.0	141.4	149.6	2.00	2.00	0.00
1,720.0	19.40	70.89	1,701.6	53.3	153.7	162.7	2.00	2.00	0.00
1,760.0	20.20	70.89	1,739.2	57.7	166.5	176.2	2.00	2.00	0.00
1,800.0	21.00	70.89	1,776.6	62.3	179.8	190.3	2.00	2.00	0.00
1,840.0	21.80	70.89	1,813.9	67.1	193.6	204.9	2.00	2.00	0.00
1,880.0	22.60	70.89	1,850.9	72.0	207.9	220.0	2.00	2.00	0.00
1,920.0	23.40	70.89	1,887.7	77.2	222.6	235.6	2.00	2.00	0.00
1,960.0	24.20	70.89	1,924.3	82.4	237.9	251.8	2.00	2.00	0.00
2,000.0	25.00	70.89	1,960.7	87.9	253.6	268.4	2.00	2.00	0.00

Database:	Landmark	Local Co-ordinate Reference:	Well Howard USX A09-02D
Company:	NOBLE ENERGY INC WELD COUNTY CO	TVD Reference:	WELL @ 4881.0ft (Original Well Elev)
Project:	SEC.9-T6N-R64W	MD Reference:	WELL @ 4881.0ft (Original Well Elev)
Site:	Howard USX A09-12D Pad Sec.9-T6N-R64W	North Reference:	True
Well:	Howard USX A09-02D	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Noble Howard USX A09-02D Plan #1 (4-11-11)		

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)
2,040.0	25.80	70.89	1,996.8	93.5	269.8	285.6	2.00	2.00	0.00
2,063.5	26.27	70.89	2,017.9	96.9	279.6	295.9	2.00	2.00	0.00
2,080.0	26.27	70.89	2,032.8	99.3	286.5	303.2	0.00	0.00	0.00
2,120.0	26.27	70.89	2,068.6	105.1	303.2	320.9	0.00	0.00	0.00
2,160.0	26.27	70.89	2,104.5	110.9	319.9	338.6	0.00	0.00	0.00
2,200.0	26.27	70.89	2,140.4	116.7	336.7	356.3	0.00	0.00	0.00
2,240.0	26.27	70.89	2,176.2	122.5	353.4	374.0	0.00	0.00	0.00
2,280.0	26.27	70.89	2,212.1	128.3	370.1	391.7	0.00	0.00	0.00
2,320.0	26.27	70.89	2,248.0	134.1	386.8	409.4	0.00	0.00	0.00
2,360.0	26.27	70.89	2,283.8	139.9	403.6	427.1	0.00	0.00	0.00
2,400.0	26.27	70.89	2,319.7	145.7	420.3	444.8	0.00	0.00	0.00
2,440.0	26.27	70.89	2,355.6	151.4	437.0	462.5	0.00	0.00	0.00
2,480.0	26.27	70.89	2,391.4	157.2	453.7	480.2	0.00	0.00	0.00
2,520.0	26.27	70.89	2,427.3	163.0	470.5	497.9	0.00	0.00	0.00
2,560.0	26.27	70.89	2,463.2	168.8	487.2	515.6	0.00	0.00	0.00
2,600.0	26.27	70.89	2,499.1	174.6	503.9	533.3	0.00	0.00	0.00
2,640.0	26.27	70.89	2,534.9	180.4	520.7	551.0	0.00	0.00	0.00
2,680.0	26.27	70.89	2,570.8	186.2	537.4	568.7	0.00	0.00	0.00
2,720.0	26.27	70.89	2,606.7	192.0	554.1	586.4	0.00	0.00	0.00
2,760.0	26.27	70.89	2,642.5	197.8	570.8	604.1	0.00	0.00	0.00
2,800.0	26.27	70.89	2,678.4	203.6	587.6	621.9	0.00	0.00	0.00
2,840.0	26.27	70.89	2,714.3	209.4	604.3	639.6	0.00	0.00	0.00
2,880.0	26.27	70.89	2,750.1	215.2	621.0	657.3	0.00	0.00	0.00
2,920.0	26.27	70.89	2,786.0	221.0	637.8	675.0	0.00	0.00	0.00
2,960.0	26.27	70.89	2,821.9	226.8	654.5	692.7	0.00	0.00	0.00
3,000.0	26.27	70.89	2,857.7	232.6	671.2	710.4	0.00	0.00	0.00
3,040.0	26.27	70.89	2,893.6	238.4	687.9	728.1	0.00	0.00	0.00
3,080.0	26.27	70.89	2,929.5	244.2	704.7	745.8	0.00	0.00	0.00
3,120.0	26.27	70.89	2,965.3	250.0	721.4	763.5	0.00	0.00	0.00
3,160.0	26.27	70.89	3,001.2	255.8	738.1	781.2	0.00	0.00	0.00
3,200.0	26.27	70.89	3,037.1	261.6	754.8	798.9	0.00	0.00	0.00
3,240.0	26.27	70.89	3,073.0	267.4	771.6	816.6	0.00	0.00	0.00
3,280.0	26.27	70.89	3,108.8	273.2	788.3	834.3	0.00	0.00	0.00
3,320.0	26.27	70.89	3,144.7	279.0	805.0	852.0	0.00	0.00	0.00
3,360.0	26.27	70.89	3,180.6	284.8	821.8	869.7	0.00	0.00	0.00
3,400.0	26.27	70.89	3,216.4	290.6	838.5	887.4	0.00	0.00	0.00
3,440.0	26.27	70.89	3,252.3	296.4	855.2	905.1	0.00	0.00	0.00
3,480.0	26.27	70.89	3,288.2	302.2	871.9	922.8	0.00	0.00	0.00
3,520.0	26.27	70.89	3,324.0	308.0	888.7	940.5	0.00	0.00	0.00
3,560.0	26.27	70.89	3,359.9	313.8	905.4	958.2	0.00	0.00	0.00
3,600.0	26.27	70.89	3,395.8	319.6	922.1	975.9	0.00	0.00	0.00
3,640.0	26.27	70.89	3,431.6	325.4	938.9	993.6	0.00	0.00	0.00
3,680.0	26.27	70.89	3,467.5	331.2	955.6	1,011.3	0.00	0.00	0.00
3,720.0	26.27	70.89	3,503.4	337.0	972.3	1,029.0	0.00	0.00	0.00
3,760.0	26.27	70.89	3,539.2	342.7	989.0	1,046.7	0.00	0.00	0.00
3,800.0	26.27	70.89	3,575.1	348.5	1,005.8	1,064.4	0.00	0.00	0.00
3,840.0	26.27	70.89	3,611.0	354.3	1,022.5	1,082.2	0.00	0.00	0.00
3,880.0	26.27	70.89	3,646.9	360.1	1,039.2	1,099.9	0.00	0.00	0.00
3,920.0	26.27	70.89	3,682.7	365.9	1,056.0	1,117.6	0.00	0.00	0.00
3,960.0	26.27	70.89	3,718.6	371.7	1,072.7	1,135.3	0.00	0.00	0.00
4,000.0	26.27	70.89	3,754.5	377.5	1,089.4	1,153.0	0.00	0.00	0.00
4,040.0	26.27	70.89	3,790.3	383.3	1,106.1	1,170.7	0.00	0.00	0.00
4,080.0	26.27	70.89	3,826.2	389.1	1,122.9	1,188.4	0.00	0.00	0.00
4,120.0	26.27	70.89	3,862.1	394.9	1,139.6	1,206.1	0.00	0.00	0.00

Database:	Landmark	Local Co-ordinate Reference:	Well Howard USX A09-02D
Company:	NOBLE ENERGY INC WELD COUNTY CO	TVD Reference:	WELL @ 4881.0ft (Original Well Elev)
Project:	SEC.9-T6N-R64W	MD Reference:	WELL @ 4881.0ft (Original Well Elev)
Site:	Howard USX A09-12D Pad Sec.9-T6N-R64W	North Reference:	True
Well:	Howard USX A09-02D	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Noble Howard USX A09-02D Plan #1 (4-11-11)		

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	26.27	70.89	3,897.9	400.7	1,156.3	1,223.8	0.00	0.00	0.00
4,200.0	26.27	70.89	3,933.8	406.5	1,173.0	1,241.5	0.00	0.00	0.00
4,240.0	26.27	70.89	3,969.7	412.3	1,189.8	1,259.2	0.00	0.00	0.00
4,280.0	26.27	70.89	4,005.5	418.1	1,206.5	1,276.9	0.00	0.00	0.00
4,320.0	26.27	70.89	4,041.4	423.9	1,223.2	1,294.6	0.00	0.00	0.00
4,360.0	26.27	70.89	4,077.3	429.7	1,240.0	1,312.3	0.00	0.00	0.00
4,400.0	26.27	70.89	4,113.1	435.5	1,256.7	1,330.0	0.00	0.00	0.00
4,440.0	26.27	70.89	4,149.0	441.3	1,273.4	1,347.7	0.00	0.00	0.00
4,480.0	26.27	70.89	4,184.9	447.1	1,290.1	1,365.4	0.00	0.00	0.00
4,520.0	26.27	70.89	4,220.8	452.9	1,306.9	1,383.1	0.00	0.00	0.00
4,560.0	26.27	70.89	4,256.6	458.7	1,323.6	1,400.8	0.00	0.00	0.00
4,600.0	26.27	70.89	4,292.5	464.5	1,340.3	1,418.5	0.00	0.00	0.00
4,640.0	26.27	70.89	4,328.4	470.3	1,357.1	1,436.2	0.00	0.00	0.00
4,680.0	26.27	70.89	4,364.2	476.1	1,373.8	1,453.9	0.00	0.00	0.00
4,720.0	26.27	70.89	4,400.1	481.9	1,390.5	1,471.6	0.00	0.00	0.00
4,760.0	26.27	70.89	4,436.0	487.7	1,407.2	1,489.3	0.00	0.00	0.00
4,800.0	26.27	70.89	4,471.8	493.5	1,424.0	1,507.0	0.00	0.00	0.00
4,840.0	26.27	70.89	4,507.7	499.3	1,440.7	1,524.7	0.00	0.00	0.00
4,880.0	26.27	70.89	4,543.6	505.1	1,457.4	1,542.5	0.00	0.00	0.00
4,920.0	26.27	70.89	4,579.4	510.9	1,474.1	1,560.2	0.00	0.00	0.00
4,960.0	26.27	70.89	4,615.3	516.7	1,490.9	1,577.9	0.00	0.00	0.00
5,000.0	26.27	70.89	4,651.2	522.5	1,507.6	1,595.6	0.00	0.00	0.00
5,040.0	26.27	70.89	4,687.1	528.3	1,524.3	1,613.3	0.00	0.00	0.00
5,080.0	26.27	70.89	4,722.9	534.0	1,541.1	1,631.0	0.00	0.00	0.00
5,120.0	26.27	70.89	4,758.8	539.8	1,557.8	1,648.7	0.00	0.00	0.00
5,160.0	26.27	70.89	4,794.7	545.6	1,574.5	1,666.4	0.00	0.00	0.00
5,200.0	26.27	70.89	4,830.5	551.4	1,591.2	1,684.1	0.00	0.00	0.00
5,201.7	26.27	70.89	4,832.1	551.7	1,592.0	1,684.8	0.00	0.00	0.00
5,240.0	25.50	70.89	4,866.5	557.2	1,607.8	1,701.6	2.00	-2.00	0.00
5,280.0	24.70	70.89	4,902.7	562.7	1,623.8	1,718.5	2.00	-2.00	0.00
5,320.0	23.90	70.89	4,939.2	568.1	1,639.3	1,735.0	2.00	-2.00	0.00
5,360.0	23.10	70.89	4,975.9	573.3	1,654.4	1,750.9	2.00	-2.00	0.00
5,400.0	22.30	70.89	5,012.8	578.4	1,669.0	1,766.4	2.00	-2.00	0.00
5,440.0	21.50	70.89	5,049.9	583.3	1,683.1	1,781.3	2.00	-2.00	0.00
5,480.0	20.70	70.89	5,087.2	588.0	1,696.7	1,795.7	2.00	-2.00	0.00
5,520.0	19.90	70.89	5,124.7	592.5	1,709.8	1,809.6	2.00	-2.00	0.00
5,560.0	19.10	70.89	5,162.4	596.9	1,722.4	1,822.9	2.00	-2.00	0.00
5,600.0	18.30	70.89	5,200.3	601.1	1,734.6	1,835.8	2.00	-2.00	0.00
5,640.0	17.50	70.89	5,238.4	605.1	1,746.2	1,848.1	2.00	-2.00	0.00
5,680.0	16.70	70.89	5,276.6	609.0	1,757.3	1,859.8	2.00	-2.00	0.00
5,720.0	15.90	70.89	5,315.0	612.7	1,767.9	1,871.1	2.00	-2.00	0.00
5,760.0	15.10	70.89	5,353.5	616.2	1,778.0	1,881.7	2.00	-2.00	0.00
5,800.0	14.30	70.89	5,392.2	619.5	1,787.6	1,891.9	2.00	-2.00	0.00
5,840.0	13.50	70.89	5,431.0	622.6	1,796.7	1,901.5	2.00	-2.00	0.00
5,880.0	12.70	70.89	5,470.0	625.6	1,805.3	1,910.6	2.00	-2.00	0.00
5,920.0	11.90	70.89	5,509.1	628.4	1,813.3	1,919.1	2.00	-2.00	0.00
5,960.0	11.10	70.89	5,548.3	631.0	1,820.8	1,927.1	2.00	-2.00	0.00
6,000.0	10.30	70.89	5,587.6	633.4	1,827.9	1,934.5	2.00	-2.00	0.00
6,040.0	9.50	70.89	5,627.0	635.7	1,834.4	1,941.4	2.00	-2.00	0.00
6,080.0	8.70	70.89	5,666.5	637.8	1,840.3	1,947.7	2.00	-2.00	0.00
6,120.0	7.90	70.89	5,706.1	639.7	1,845.8	1,953.5	2.00	-2.00	0.00
6,160.0	7.10	70.89	5,745.7	641.4	1,850.7	1,958.7	2.00	-2.00	0.00
6,200.0	6.30	70.89	5,785.4	642.9	1,855.1	1,963.4	2.00	-2.00	0.00
6,240.0	5.50	70.89	5,825.2	644.2	1,859.0	1,967.5	2.00	-2.00	0.00

Database:	Landmark	Local Co-ordinate Reference:	Well Howard USX A09-02D
Company:	NOBLE ENERGY INC WELD COUNTY CO	TVD Reference:	WELL @ 4881.0ft (Original Well Elev)
Project:	SEC.9-T6N-R64W	MD Reference:	WELL @ 4881.0ft (Original Well Elev)
Site:	Howard USX A09-12D Pad Sec.9-T6N-R64W	North Reference:	True
Well:	Howard USX A09-02D	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Noble Howard USX A09-02D Plan #1 (4-11-11)		

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)
6,280.0	4.70	70.89	5,865.1	645.4	1,862.4	1,971.1	2.00	-2.00	0.00
6,320.0	3.90	70.89	5,905.0	646.4	1,865.2	1,974.1	2.00	-2.00	0.00
6,360.0	3.10	70.89	5,944.9	647.2	1,867.5	1,976.5	2.00	-2.00	0.00
6,400.0	2.30	70.89	5,984.8	647.8	1,869.3	1,978.4	2.00	-2.00	0.00
6,440.0	1.50	70.89	6,024.8	648.2	1,870.6	1,979.7	2.00	-2.00	0.00
6,480.0	0.70	70.89	6,064.8	648.5	1,871.3	1,980.5	2.00	-2.00	0.00
6,515.2	0.00	0.00	6,100.0	648.6	1,871.5	1,980.7	2.00	-2.00	-201.45
TARGET BHL 788'FNL, 2083'FEL									
6,520.0	0.00	0.00	6,104.8	648.6	1,871.5	1,980.7	0.00	0.00	0.00
6,560.0	0.00	0.00	6,144.8	648.6	1,871.5	1,980.7	0.00	0.00	0.00
6,600.0	0.00	0.00	6,184.8	648.6	1,871.5	1,980.7	0.00	0.00	0.00
6,640.0	0.00	0.00	6,224.8	648.6	1,871.5	1,980.7	0.00	0.00	0.00
6,680.0	0.00	0.00	6,264.8	648.6	1,871.5	1,980.7	0.00	0.00	0.00
6,720.0	0.00	0.00	6,304.8	648.6	1,871.5	1,980.7	0.00	0.00	0.00
6,760.0	0.00	0.00	6,344.8	648.6	1,871.5	1,980.7	0.00	0.00	0.00
6,800.0	0.00	0.00	6,384.8	648.6	1,871.5	1,980.7	0.00	0.00	0.00
6,840.0	0.00	0.00	6,424.8	648.6	1,871.5	1,980.7	0.00	0.00	0.00
6,880.0	0.00	0.00	6,464.8	648.6	1,871.5	1,980.7	0.00	0.00	0.00
6,920.0	0.00	0.00	6,504.8	648.6	1,871.5	1,980.7	0.00	0.00	0.00
6,960.0	0.00	0.00	6,544.8	648.6	1,871.5	1,980.7	0.00	0.00	0.00
7,000.0	0.00	0.00	6,584.8	648.6	1,871.5	1,980.7	0.00	0.00	0.00
7,040.0	0.00	0.00	6,624.8	648.6	1,871.5	1,980.7	0.00	0.00	0.00
7,080.0	0.00	0.00	6,664.8	648.6	1,871.5	1,980.7	0.00	0.00	0.00
7,120.0	0.00	0.00	6,704.8	648.6	1,871.5	1,980.7	0.00	0.00	0.00
7,160.0	0.00	0.00	6,744.8	648.6	1,871.5	1,980.7	0.00	0.00	0.00
7,176.2	0.00	0.00	6,761.0	648.6	1,871.5	1,980.7	0.00	0.00	0.00
NIOBRARA - TARGET CIRCLE 788'FNL, 2083'FEL - LEGAL BOX 400' X 400' 663'FNL, 1958'FEL									
7,200.0	0.00	0.00	6,784.8	648.6	1,871.5	1,980.7	0.00	0.00	0.00
7,240.0	0.00	0.00	6,824.8	648.6	1,871.5	1,980.7	0.00	0.00	0.00
7,280.0	0.00	0.00	6,864.8	648.6	1,871.5	1,980.7	0.00	0.00	0.00
7,320.0	0.00	0.00	6,904.8	648.6	1,871.5	1,980.7	0.00	0.00	0.00
7,360.0	0.00	0.00	6,944.8	648.6	1,871.5	1,980.7	0.00	0.00	0.00
7,400.0	0.00	0.00	6,984.8	648.6	1,871.5	1,980.7	0.00	0.00	0.00
7,440.0	0.00	0.00	7,024.8	648.6	1,871.5	1,980.7	0.00	0.00	0.00
7,480.0	0.00	0.00	7,064.8	648.6	1,871.5	1,980.7	0.00	0.00	0.00
7,506.2	0.00	0.00	7,091.0	648.6	1,871.5	1,980.7	0.00	0.00	0.00
CODELL									
7,520.0	0.00	0.00	7,104.8	648.6	1,871.5	1,980.7	0.00	0.00	0.00
7,560.0	0.00	0.00	7,144.8	648.6	1,871.5	1,980.7	0.00	0.00	0.00
7,600.0	0.00	0.00	7,184.8	648.6	1,871.5	1,980.7	0.00	0.00	0.00
7,640.0	0.00	0.00	7,224.8	648.6	1,871.5	1,980.7	0.00	0.00	0.00
7,656.2	0.00	0.00	7,241.0	648.6	1,871.5	1,980.7	0.00	0.00	0.00

Database:	Landmark	Local Co-ordinate Reference:	Well Howard USX A09-02D
Company:	NOBLE ENERGY INC WELD COUNTY CO	TVD Reference:	WELL @ 4881.0ft (Original Well Elev)
Project:	SEC.9-T6N-R64W	MD Reference:	WELL @ 4881.0ft (Original Well Elev)
Site:	Howard USX A09-12D Pad Sec.9-T6N-R64W	North Reference:	True
Well:	Howard USX A09-02D	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Noble Howard USX A09-02D Plan #1 (4-11-11)		

Targets									
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
- hit/miss target									
- Shape									
TARGET BHL 788'FN	0.00	0.00	6,100.0	648.6	1,871.5	1,428,505.76	3,263,313.26	40.505790	-104.553070
- plan hits target center									
- Point									
TARGET CIRCLE 788'	0.00	0.00	6,761.0	648.6	1,871.5	1,428,505.76	3,263,313.26	40.505790	-104.553070
- plan hits target center									
- Circle (radius 75.0)									
LEGAL BOX 400' X 400'	0.00	0.00	6,761.0	773.6	1,996.5	1,428,632.11	3,263,436.90	40.506133	-104.552621
- plan misses target center by 176.8ft at 7176.2ft MD (6761.0 TVD, 648.6 N, 1871.5 E)									
- Rectangle (sides W400.0 H400.0 D480.0)									

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 (°)
7,176.2	6,761.0	NIOBRARA		0.00	
7,506.2	7,091.0	CODELL		0.00	