

# ENSIGN

## Directional

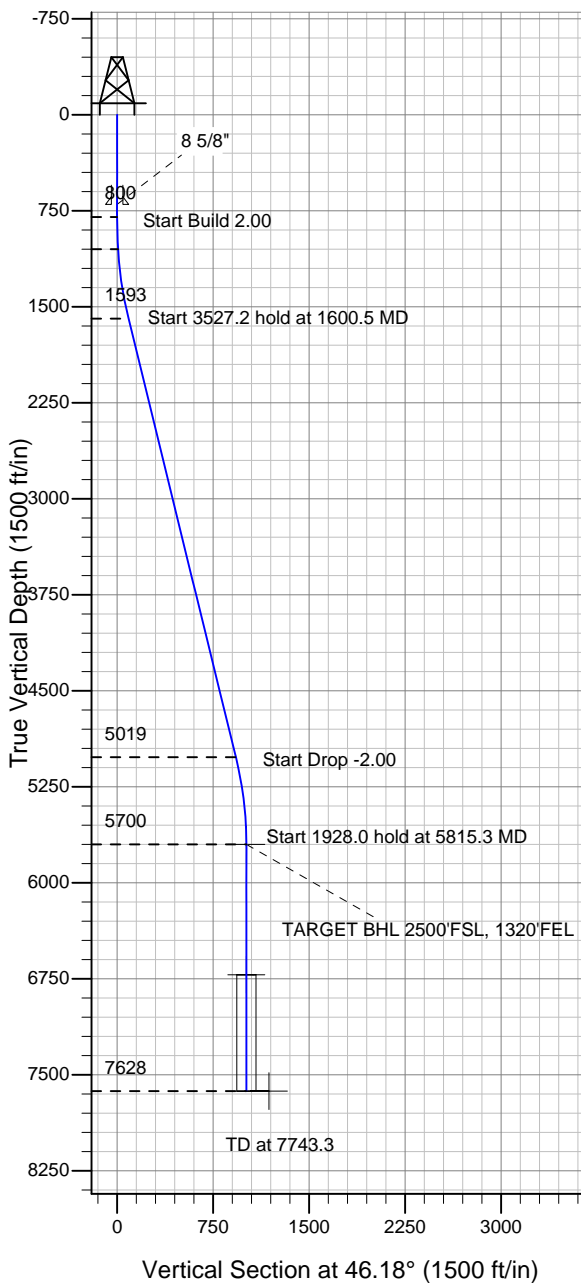
### Well Name: Horton D18-22D

Surface Location: Horton D18-22D Pad Sec.18-T3N-R64W  
North American Datum 1983 , US State Plane 1983 , Colorado Northern Zone

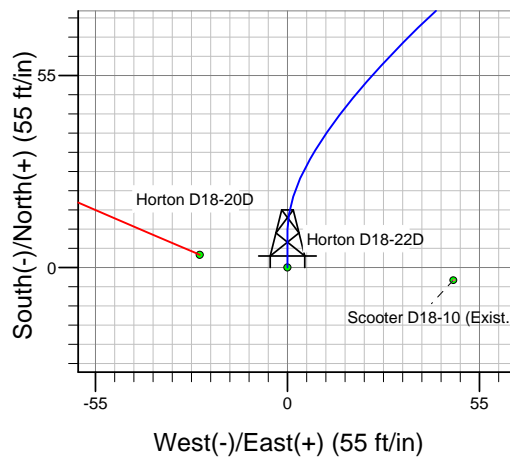
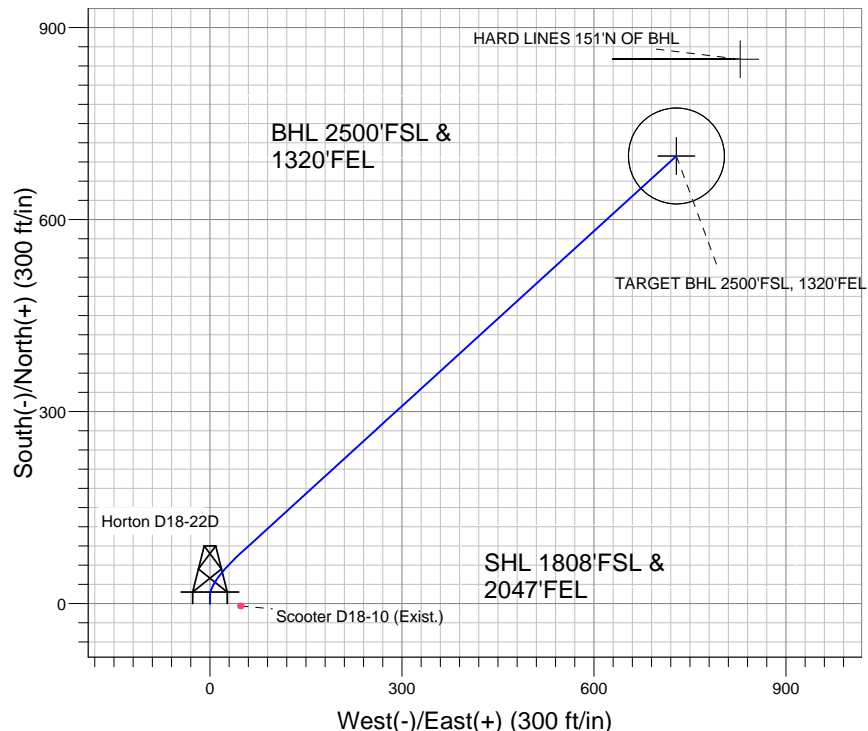
Ground Elevation: 4774.0

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.0	0.0	1325368.90	3253615.93	40.222970	-104.591740	

Original Well Elev WELL @ 4787.0ft (Original Well Elev)



### NOBLE ENERGY INC WELD COUNTY CO



Horton D18-22D Pad Sec.18-T3N-R64W  
Horton D18-22D  
Noble Horton D18-22D Plan #1 (4-04-11)  
16:46, April 12 2011



Azimuths to True North  
Magnetic North: 8.74°

Magnetic Field  
Strength: 53097.6snT  
Dip Angle: 66.95°  
Date: 4/12/2011  
Model: IGRF200510

### WELLBORE TARGET DETAILS (LAT/LONG)

Name	TVD	+N/-S	+E/-W	Latitude	Longitude	Shape
TARGET BHL 2500'FSL, 1320'FEL	5700.0	699.5	728.8	40.224890	-104.589130	Point
TARGET CIRCLE 2500'FSL & 1320'FEL	6719.0	699.5	728.8	40.224890	-104.589130	Circle (Radius: 75.0)
HARD LINES 151'N OF BHL	7628.0	850.5	828.8	40.225305	-104.588772	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	0.00	1049.7	10.9	0.0	2.00	0.00	7.5	
4	1600.5	13.75	47.64	1592.9	79.2	48.5	2.00	66.91	89.8	
5	5127.7	13.75	47.64	5018.9	644.1	668.1	0.00	0.00	928.1	
6	5815.3	0.00	0.00	5700.0	699.5	728.8	2.00	180.00	1010.2	TARGET BHL 2500'FSL, 1320'FEL
7	7743.3	0.00	0.00	7628.0	699.5	728.8	0.00	0.00	1010.2	



**Directional**

# **NOBLE ENERGY INC WELD COUNTY CO**

**SEC.18-T3N-R64W**

**Horton D18-22D Pad Sec.18-T3N-R64W**

**Horton D18-22D**

**Wellbore #1**

**Plan: Noble Horton D18-22D Plan #1 (4-04-11)**

## **Standard Planning Report**

**12 April, 2011**



<b>Database:</b>	Landmark	<b>Local Co-ordinate Reference:</b>	Well Horton D18-22D
<b>Company:</b>	NOBLE ENERGY INC WELD COUNTY CO	<b>TVD Reference:</b>	WELL @ 4787.0ft (Original Well Elev)
<b>Project:</b>	SEC.18-T3N-R64W	<b>MD Reference:</b>	WELL @ 4787.0ft (Original Well Elev)
<b>Site:</b>	Horton D18-22D Pad Sec.18-T3N-R64W	<b>North Reference:</b>	True
<b>Well:</b>	Horton D18-22D	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Noble Horton D18-22D Plan #1 (4-04-11)		

<b>Project</b>	SEC.18-T3N-R64W, 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		
<b>Map Zone:</b>	Colorado Northern Zone		Using geodetic scale factor

Site Horton D18-22D Pad Sec.18-T3N-R64W					
Site Position:		Northing:	1,325,368.91 ft	Latitude:	40.222970
From:	Lat/Long	Easting:	3,253,615.93ft	Longitude:	-104.591740
Position Uncertainty:	0.0 ft	Slot Radius:	"	Grid Convergence:	0.59 °

Well	Horton D18-22D					
Well Position	+N/-S	0.0 ft	Northing:	1,325,368.90 ft	Latitude:	40.222970
	+E/-W	0.0 ft	Easting:	3,253,615.93 ft	Longitude:	-104.591740
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	4,774.0 ft

<b>Wellbore</b>	Wellbore #1				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	IGRF200510	4/12/2011	8.74	66.95	53,098

<b>Design</b>	Noble Horton D18-22D Plan #1 (4-04-11)			
<b>Audit Notes:</b>				
<b>Version:</b>	<b>Phase:</b>	PROTOTYPE	<b>Tie On Depth:</b>	0.0
<b>Vertical Section:</b>	<b>Depth From (TVD) (ft)</b>	<b>+N/-S (ft)</b>	<b>+E/-W (ft)</b>	<b>Direction (°)</b>
	0.0	0.0	0.0	46.18

<b>Plan Sections</b>										
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	0.00	1,049.7	10.9	0.0	2.00	2.00	0.00	0.00	
1,600.5	13.75	47.64	1,592.9	79.2	48.5	2.00	1.59	8.65	66.91	
5,127.7	13.75	47.64	5,018.9	644.1	668.1	0.00	0.00	0.00	0.00	
5,815.3	0.00	0.00	5,700.0	699.5	728.8	2.00	-2.00	0.00	180.00	TARGET BHL 250C
7,743.3	0.00	0.00	7,628.0	699.5	728.8	0.00	0.00	0.00	0.00	

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<b>Project:</b>	SEC.18-T3N-R64W	<b>MD Reference:</b>	WELL @ 4787.0ft (Original Well Elev)
<b>Site:</b>	Horton D18-22D Pad Sec.18-T3N-R64W	<b>North Reference:</b>	True
<b>Well:</b>	Horton D18-22D	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Noble Horton D18-22D Plan #1 (4-04-11)		

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
680.0	0.00	0.00	680.0	0.0	0.0	0.0	0.00	0.00	0.00
700.0	0.00	0.00	700.0	0.0	0.0	0.0	0.00	0.00	0.00
8 5/8"									
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	0.00	840.0	0.3	0.0	0.2	2.00	2.00	0.00
880.0	1.60	0.00	880.0	1.1	0.0	0.8	2.00	2.00	0.00
920.0	2.40	0.00	920.0	2.5	0.0	1.7	2.00	2.00	0.00
960.0	3.20	0.00	959.9	4.5	0.0	3.1	2.00	2.00	0.00
1,000.0	4.00	0.00	999.8	7.0	0.0	4.8	2.00	2.00	0.00
1,040.0	4.80	0.00	1,039.7	10.0	0.0	7.0	2.00	2.00	0.00
1,050.0	5.00	0.00	1,049.7	10.9	0.0	7.5	2.00	2.00	0.00
1,080.0	5.26	6.03	1,079.6	13.6	0.1	9.5	2.00	0.88	20.09
1,120.0	5.70	13.09	1,119.4	17.3	0.8	12.6	2.00	1.08	17.65
1,160.0	6.20	19.08	1,159.2	21.3	1.9	16.2	2.00	1.26	14.98
1,200.0	6.76	24.13	1,198.9	25.5	3.6	20.3	2.00	1.41	12.62
1,240.0	7.37	28.38	1,238.6	29.9	5.8	24.9	2.00	1.52	10.62
1,280.0	8.01	31.97	1,278.2	34.5	8.5	30.0	2.00	1.60	8.98
1,320.0	8.68	35.02	1,317.8	39.4	11.7	35.7	2.00	1.67	7.63
1,360.0	9.36	37.63	1,357.3	44.4	15.4	41.9	2.00	1.72	6.54
1,400.0	10.07	39.89	1,396.8	49.7	19.6	48.6	2.00	1.76	5.64
1,440.0	10.78	41.85	1,436.1	55.1	24.4	55.8	2.00	1.79	4.90
1,480.0	11.51	43.57	1,475.3	60.8	29.6	63.5	2.00	1.82	4.29
1,520.0	12.25	45.08	1,514.5	66.7	35.4	71.7	2.00	1.84	3.79
1,560.0	12.99	46.43	1,553.5	72.8	41.6	80.5	2.00	1.86	3.36
1,600.0	13.74	47.63	1,592.4	79.1	48.4	89.7	2.00	1.88	3.00
1,600.5	13.75	47.64	1,592.9	79.2	48.5	89.8	2.00	1.88	2.84
1,640.0	13.75	47.64	1,631.3	85.5	55.4	99.2	0.00	0.00	0.00
1,680.0	13.75	47.64	1,670.1	91.9	62.5	108.7	0.00	0.00	0.00
1,720.0	13.75	47.64	1,709.0	98.3	69.5	118.2	0.00	0.00	0.00
1,760.0	13.75	47.64	1,747.8	104.7	76.5	127.7	0.00	0.00	0.00
1,800.0	13.75	47.64	1,786.7	111.1	83.6	137.2	0.00	0.00	0.00
1,840.0	13.75	47.64	1,825.6	117.6	90.6	146.7	0.00	0.00	0.00
1,880.0	13.75	47.64	1,864.4	124.0	97.6	156.3	0.00	0.00	0.00
1,920.0	13.75	47.64	1,903.3	130.4	104.6	165.8	0.00	0.00	0.00
1,960.0	13.75	47.64	1,942.1	136.8	111.7	175.3	0.00	0.00	0.00

<b>Database:</b>	Landmark	<b>Local Co-ordinate Reference:</b>	Well Horton D18-22D
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<b>Site:</b>	Horton D18-22D Pad Sec.18-T3N-R64W	<b>North Reference:</b>	True
<b>Well:</b>	Horton D18-22D	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Noble Horton D18-22D Plan #1 (4-04-11)		

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)
2,000.0	13.75	47.64	1,981.0	143.2	118.7	184.8	0.00	0.00	0.00
2,040.0	13.75	47.64	2,019.8	149.6	125.7	194.3	0.00	0.00	0.00
2,080.0	13.75	47.64	2,058.7	156.0	132.7	203.8	0.00	0.00	0.00
2,120.0	13.75	47.64	2,097.5	162.4	139.8	213.3	0.00	0.00	0.00
2,160.0	13.75	47.64	2,136.4	168.8	146.8	222.8	0.00	0.00	0.00
2,200.0	13.75	47.64	2,175.2	175.2	153.8	232.3	0.00	0.00	0.00
2,240.0	13.75	47.64	2,214.1	181.6	160.8	241.8	0.00	0.00	0.00
2,280.0	13.75	47.64	2,252.9	188.0	167.9	251.3	0.00	0.00	0.00
2,320.0	13.75	47.64	2,291.8	194.4	174.9	260.8	0.00	0.00	0.00
2,360.0	13.75	47.64	2,330.6	200.8	181.9	270.3	0.00	0.00	0.00
2,400.0	13.75	47.64	2,369.5	207.2	189.0	279.8	0.00	0.00	0.00
2,440.0	13.75	47.64	2,408.3	213.7	196.0	289.3	0.00	0.00	0.00
2,480.0	13.75	47.64	2,447.2	220.1	203.0	298.8	0.00	0.00	0.00
2,520.0	13.75	47.64	2,486.1	226.5	210.0	308.4	0.00	0.00	0.00
2,560.0	13.75	47.64	2,524.9	232.9	217.1	317.9	0.00	0.00	0.00
2,600.0	13.75	47.64	2,563.8	239.3	224.1	327.4	0.00	0.00	0.00
2,640.0	13.75	47.64	2,602.6	245.7	231.1	336.9	0.00	0.00	0.00
2,680.0	13.75	47.64	2,641.5	252.1	238.1	346.4	0.00	0.00	0.00
2,720.0	13.75	47.64	2,680.3	258.5	245.2	355.9	0.00	0.00	0.00
2,760.0	13.75	47.64	2,719.2	264.9	252.2	365.4	0.00	0.00	0.00
2,800.0	13.75	47.64	2,758.0	271.3	259.2	374.9	0.00	0.00	0.00
2,840.0	13.75	47.64	2,796.9	277.7	266.3	384.4	0.00	0.00	0.00
2,880.0	13.75	47.64	2,835.7	284.1	273.3	393.9	0.00	0.00	0.00
2,920.0	13.75	47.64	2,874.6	290.5	280.3	403.4	0.00	0.00	0.00
2,960.0	13.75	47.64	2,913.4	296.9	287.3	412.9	0.00	0.00	0.00
3,000.0	13.75	47.64	2,952.3	303.4	294.4	422.4	0.00	0.00	0.00
3,040.0	13.75	47.64	2,991.1	309.8	301.4	431.9	0.00	0.00	0.00
3,080.0	13.75	47.64	3,030.0	316.2	308.4	441.4	0.00	0.00	0.00
3,120.0	13.75	47.64	3,068.9	322.6	315.4	450.9	0.00	0.00	0.00
3,160.0	13.75	47.64	3,107.7	329.0	322.5	460.5	0.00	0.00	0.00
3,200.0	13.75	47.64	3,146.6	335.4	329.5	470.0	0.00	0.00	0.00
3,240.0	13.75	47.64	3,185.4	341.8	336.5	479.5	0.00	0.00	0.00
3,280.0	13.75	47.64	3,224.3	348.2	343.5	489.0	0.00	0.00	0.00
3,320.0	13.75	47.64	3,263.1	354.6	350.6	498.5	0.00	0.00	0.00
3,360.0	13.75	47.64	3,302.0	361.0	357.6	508.0	0.00	0.00	0.00
3,400.0	13.75	47.64	3,340.8	367.4	364.6	517.5	0.00	0.00	0.00
3,440.0	13.75	47.64	3,379.7	373.8	371.7	527.0	0.00	0.00	0.00
3,480.0	13.75	47.64	3,418.5	380.2	378.7	536.5	0.00	0.00	0.00
3,520.0	13.75	47.64	3,457.4	386.6	385.7	546.0	0.00	0.00	0.00
3,560.0	13.75	47.64	3,496.2	393.0	392.7	555.5	0.00	0.00	0.00
3,600.0	13.75	47.64	3,535.1	399.5	399.8	565.0	0.00	0.00	0.00
3,640.0	13.75	47.64	3,573.9	405.9	406.8	574.5	0.00	0.00	0.00
3,680.0	13.75	47.64	3,612.8	412.3	413.8	584.0	0.00	0.00	0.00
3,720.0	13.75	47.64	3,651.7	418.7	420.8	593.5	0.00	0.00	0.00
3,760.0	13.75	47.64	3,690.5	425.1	427.9	603.0	0.00	0.00	0.00
3,800.0	13.75	47.64	3,729.4	431.5	434.9	612.5	0.00	0.00	0.00
3,840.0	13.75	47.64	3,768.2	437.9	441.9	622.1	0.00	0.00	0.00
3,880.0	13.75	47.64	3,807.1	444.3	449.0	631.6	0.00	0.00	0.00
3,920.0	13.75	47.64	3,845.9	450.7	456.0	641.1	0.00	0.00	0.00
3,960.0	13.75	47.64	3,884.8	457.1	463.0	650.6	0.00	0.00	0.00
4,000.0	13.75	47.64	3,923.6	463.5	470.0	660.1	0.00	0.00	0.00
4,040.0	13.75	47.64	3,962.5	469.9	477.1	669.6	0.00	0.00	0.00
4,080.0	13.75	47.64	4,001.3	476.3	484.1	679.1	0.00	0.00	0.00
4,120.0	13.75	47.64	4,040.2	482.7	491.1	688.6	0.00	0.00	0.00

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<b>Project:</b>	SEC.18-T3N-R64W	<b>MD Reference:</b>	WELL @ 4787.0ft (Original Well Elev)
<b>Site:</b>	Horton D18-22D Pad Sec.18-T3N-R64W	<b>North Reference:</b>	True
<b>Well:</b>	Horton D18-22D	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Noble Horton D18-22D Plan #1 (4-04-11)		

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	13.75	47.64	4,079.0	489.2	498.1	698.1	0.00	0.00	0.00
4,200.0	13.75	47.64	4,117.9	495.6	505.2	707.6	0.00	0.00	0.00
4,240.0	13.75	47.64	4,156.7	502.0	512.2	717.1	0.00	0.00	0.00
4,280.0	13.75	47.64	4,195.6	508.4	519.2	726.6	0.00	0.00	0.00
4,320.0	13.75	47.64	4,234.5	514.8	526.2	736.1	0.00	0.00	0.00
4,360.0	13.75	47.64	4,273.3	521.2	533.3	745.6	0.00	0.00	0.00
4,400.0	13.75	47.64	4,312.2	527.6	540.3	755.1	0.00	0.00	0.00
4,440.0	13.75	47.64	4,351.0	534.0	547.3	764.6	0.00	0.00	0.00
4,480.0	13.75	47.64	4,389.9	540.4	554.4	774.2	0.00	0.00	0.00
4,520.0	13.75	47.64	4,428.7	546.8	561.4	783.7	0.00	0.00	0.00
4,560.0	13.75	47.64	4,467.6	553.2	568.4	793.2	0.00	0.00	0.00
4,600.0	13.75	47.64	4,506.4	559.6	575.4	802.7	0.00	0.00	0.00
4,640.0	13.75	47.64	4,545.3	566.0	582.5	812.2	0.00	0.00	0.00
4,680.0	13.75	47.64	4,584.1	572.4	589.5	821.7	0.00	0.00	0.00
4,720.0	13.75	47.64	4,623.0	578.8	596.5	831.2	0.00	0.00	0.00
4,760.0	13.75	47.64	4,661.8	585.3	603.5	840.7	0.00	0.00	0.00
4,800.0	13.75	47.64	4,700.7	591.7	610.6	850.2	0.00	0.00	0.00
4,840.0	13.75	47.64	4,739.5	598.1	617.6	859.7	0.00	0.00	0.00
4,880.0	13.75	47.64	4,778.4	604.5	624.6	869.2	0.00	0.00	0.00
4,920.0	13.75	47.64	4,817.2	610.9	631.7	878.7	0.00	0.00	0.00
4,960.0	13.75	47.64	4,856.1	617.3	638.7	888.2	0.00	0.00	0.00
5,000.0	13.75	47.64	4,895.0	623.7	645.7	897.7	0.00	0.00	0.00
5,040.0	13.75	47.64	4,933.8	630.1	652.7	907.2	0.00	0.00	0.00
5,080.0	13.75	47.64	4,972.7	636.5	659.8	916.7	0.00	0.00	0.00
5,120.0	13.75	47.64	5,011.5	642.9	666.8	926.3	0.00	0.00	0.00
5,127.7	13.75	47.64	5,018.9	644.1	668.1	928.1	0.00	0.00	0.00
5,160.0	13.11	47.64	5,050.4	649.2	673.7	935.6	2.00	-2.00	0.00
5,200.0	12.31	47.64	5,089.4	655.1	680.2	944.4	2.00	-2.00	0.00
5,240.0	11.51	47.64	5,128.6	660.7	686.3	952.6	2.00	-2.00	0.00
5,280.0	10.71	47.64	5,167.8	665.9	692.0	960.3	2.00	-2.00	0.00
5,320.0	9.91	47.64	5,207.2	670.7	697.3	967.5	2.00	-2.00	0.00
5,360.0	9.11	47.64	5,246.6	675.2	702.1	974.1	2.00	-2.00	0.00
5,400.0	8.31	47.64	5,286.2	679.2	706.6	980.1	2.00	-2.00	0.00
5,440.0	7.51	47.64	5,325.8	682.9	710.7	985.6	2.00	-2.00	0.00
5,480.0	6.71	47.64	5,365.5	686.3	714.3	990.6	2.00	-2.00	0.00
5,520.0	5.91	47.64	5,405.2	689.2	717.6	995.0	2.00	-2.00	0.00
5,560.0	5.11	47.64	5,445.0	691.8	720.4	998.8	2.00	-2.00	0.00
5,600.0	4.31	47.64	5,484.9	694.0	722.8	1,002.1	2.00	-2.00	0.00
5,640.0	3.51	47.64	5,524.8	695.9	724.9	1,004.8	2.00	-2.00	0.00
5,680.0	2.71	47.64	5,564.8	697.3	726.5	1,007.0	2.00	-2.00	0.00
5,720.0	1.91	47.64	5,604.7	698.4	727.7	1,008.6	2.00	-2.00	0.00
5,760.0	1.11	47.64	5,644.7	699.1	728.4	1,009.6	2.00	-2.00	0.00
5,800.0	0.31	47.64	5,684.7	699.5	728.8	1,010.1	2.00	-2.00	0.00
5,815.3	0.00	0.00	5,700.0	699.5	728.8	1,010.2	2.00	-2.00	0.00
TARGET BHL 2500'FSL, 1320'FEL									
5,840.0	0.00	0.00	5,724.7	699.5	728.8	1,010.2	0.00	0.00	0.00
5,880.0	0.00	0.00	5,764.7	699.5	728.8	1,010.2	0.00	0.00	0.00
5,920.0	0.00	0.00	5,804.7	699.5	728.8	1,010.2	0.00	0.00	0.00
5,960.0	0.00	0.00	5,844.7	699.5	728.8	1,010.2	0.00	0.00	0.00
6,000.0	0.00	0.00	5,884.7	699.5	728.8	1,010.2	0.00	0.00	0.00
6,040.0	0.00	0.00	5,924.7	699.5	728.8	1,010.2	0.00	0.00	0.00
6,080.0	0.00	0.00	5,964.7	699.5	728.8	1,010.2	0.00	0.00	0.00
6,120.0	0.00	0.00	6,004.7	699.5	728.8	1,010.2	0.00	0.00	0.00
6,160.0	0.00	0.00	6,044.7	699.5	728.8	1,010.2	0.00	0.00	0.00

<b>Database:</b>	Landmark	<b>Local Co-ordinate Reference:</b>	Well Horton D18-22D
<b>Company:</b>	NOBLE ENERGY INC WELD COUNTY CO	<b>TVD Reference:</b>	WELL @ 4787.0ft (Original Well Elev)
<b>Project:</b>	SEC.18-T3N-R64W	<b>MD Reference:</b>	WELL @ 4787.0ft (Original Well Elev)
<b>Site:</b>	Horton D18-22D Pad Sec.18-T3N-R64W	<b>North Reference:</b>	True
<b>Well:</b>	Horton D18-22D	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Noble Horton D18-22D Plan #1 (4-04-11)		

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)
6,200.0	0.00	0.00	6,084.7	699.5	728.8	1,010.2	0.00	0.00	0.00
6,240.0	0.00	0.00	6,124.7	699.5	728.8	1,010.2	0.00	0.00	0.00
6,280.0	0.00	0.00	6,164.7	699.5	728.8	1,010.2	0.00	0.00	0.00
6,320.0	0.00	0.00	6,204.7	699.5	728.8	1,010.2	0.00	0.00	0.00
6,360.0	0.00	0.00	6,244.7	699.5	728.8	1,010.2	0.00	0.00	0.00
6,400.0	0.00	0.00	6,284.7	699.5	728.8	1,010.2	0.00	0.00	0.00
6,440.0	0.00	0.00	6,324.7	699.5	728.8	1,010.2	0.00	0.00	0.00
6,480.0	0.00	0.00	6,364.7	699.5	728.8	1,010.2	0.00	0.00	0.00
6,520.0	0.00	0.00	6,404.7	699.5	728.8	1,010.2	0.00	0.00	0.00
6,560.0	0.00	0.00	6,444.7	699.5	728.8	1,010.2	0.00	0.00	0.00
6,600.0	0.00	0.00	6,484.7	699.5	728.8	1,010.2	0.00	0.00	0.00
6,640.0	0.00	0.00	6,524.7	699.5	728.8	1,010.2	0.00	0.00	0.00
6,680.0	0.00	0.00	6,564.7	699.5	728.8	1,010.2	0.00	0.00	0.00
6,720.0	0.00	0.00	6,604.7	699.5	728.8	1,010.2	0.00	0.00	0.00
6,760.0	0.00	0.00	6,644.7	699.5	728.8	1,010.2	0.00	0.00	0.00
6,800.0	0.00	0.00	6,684.7	699.5	728.8	1,010.2	0.00	0.00	0.00
6,834.3	0.00	0.00	6,719.0	699.5	728.8	1,010.2	0.00	0.00	0.00
<b>NIOBRARA - TARGET CIRCLE 2500'FSL &amp; 1320'FEL</b>									
6,840.0	0.00	0.00	6,724.7	699.5	728.8	1,010.2	0.00	0.00	0.00
6,880.0	0.00	0.00	6,764.7	699.5	728.8	1,010.2	0.00	0.00	0.00
6,920.0	0.00	0.00	6,804.7	699.5	728.8	1,010.2	0.00	0.00	0.00
6,960.0	0.00	0.00	6,844.7	699.5	728.8	1,010.2	0.00	0.00	0.00
7,000.0	0.00	0.00	6,884.7	699.5	728.8	1,010.2	0.00	0.00	0.00
7,040.0	0.00	0.00	6,924.7	699.5	728.8	1,010.2	0.00	0.00	0.00
7,080.0	0.00	0.00	6,964.7	699.5	728.8	1,010.2	0.00	0.00	0.00
7,120.0	0.00	0.00	7,004.7	699.5	728.8	1,010.2	0.00	0.00	0.00
7,133.3	0.00	0.00	7,018.0	699.5	728.8	1,010.2	0.00	0.00	0.00
<b>CODELL</b>									
7,160.0	0.00	0.00	7,044.7	699.5	728.8	1,010.2	0.00	0.00	0.00
7,200.0	0.00	0.00	7,084.7	699.5	728.8	1,010.2	0.00	0.00	0.00
7,240.0	0.00	0.00	7,124.7	699.5	728.8	1,010.2	0.00	0.00	0.00
7,280.0	0.00	0.00	7,164.7	699.5	728.8	1,010.2	0.00	0.00	0.00
7,320.0	0.00	0.00	7,204.7	699.5	728.8	1,010.2	0.00	0.00	0.00
7,360.0	0.00	0.00	7,244.7	699.5	728.8	1,010.2	0.00	0.00	0.00
7,400.0	0.00	0.00	7,284.7	699.5	728.8	1,010.2	0.00	0.00	0.00
7,440.0	0.00	0.00	7,324.7	699.5	728.8	1,010.2	0.00	0.00	0.00
7,480.0	0.00	0.00	7,364.7	699.5	728.8	1,010.2	0.00	0.00	0.00
7,520.0	0.00	0.00	7,404.7	699.5	728.8	1,010.2	0.00	0.00	0.00
7,532.3	0.00	0.00	7,417.0	699.5	728.8	1,010.2	0.00	0.00	0.00
<b>D-SAND</b>									
7,560.0	0.00	0.00	7,444.7	699.5	728.8	1,010.2	0.00	0.00	0.00
7,593.3	0.00	0.00	7,478.0	699.5	728.8	1,010.2	0.00	0.00	0.00
<b>J-SAND</b>									
7,600.0	0.00	0.00	7,484.7	699.5	728.8	1,010.2	0.00	0.00	0.00
7,640.0	0.00	0.00	7,524.7	699.5	728.8	1,010.2	0.00	0.00	0.00
7,680.0	0.00	0.00	7,564.7	699.5	728.8	1,010.2	0.00	0.00	0.00
7,720.0	0.00	0.00	7,604.7	699.5	728.8	1,010.2	0.00	0.00	0.00
7,743.3	0.00	0.00	7,628.0	699.5	728.8	1,010.2	0.00	0.00	0.00
<b>HARD LINES 151'N OF BHL</b>									



<b>Database:</b>	Landmark	<b>Local Co-ordinate Reference:</b>	Well Horton D18-22D
<b>Company:</b>	NOBLE ENERGY INC WELD COUNTY CO	<b>TVD Reference:</b>	WELL @ 4787.0ft (Original Well Elev)
<b>Project:</b>	SEC.18-T3N-R64W	<b>MD Reference:</b>	WELL @ 4787.0ft (Original Well Elev)
<b>Site:</b>	Horton D18-22D Pad Sec.18-T3N-R64W	<b>North Reference:</b>	True
<b>Well:</b>	Horton D18-22D	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Noble Horton D18-22D Plan #1 (4-04-11)		

Targets									
Target Name									
- hit/miss target	Dip Angle	Dip Dir.	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
- Shape	(°)	(°)	(ft)	(ft)	(ft)	(ft)	(ft)		
HARD LINES 151'N C	0.00	0.00	7,628.0	850.5	828.8	1,326,227.81	3,254,435.94	40.225305	-104.588772
- plan misses target center by 181.1ft at 7743.3ft MD (7628.0 TVD, 699.5 N, 728.8 E)									
- Polygon									
Point 1			7,628.0	0.0	0.0	1,326,227.81	3,254,435.94		
Point 2			7,628.0	0.0	-200.0	1,326,225.76	3,254,235.96		
TARGET BHL 2500'F:	0.00	0.00	5,700.0	699.5	728.8	1,326,075.78	3,254,337.52	40.224890	-104.589130
- plan hits target center									
- Point									
TARGET CIRCLE 250'	0.00	0.00	6,719.0	699.5	728.8	1,326,075.78	3,254,337.52	40.224890	-104.589130
- plan hits target center									
- Circle (radius 75.0)									

Casing Points					
	Measured Depth	Vertical Depth		Casing Diameter	Hole Diameter
	(ft)	(ft)	Name	(")	(")
	700.0	700.0	8 5/8"	8-5/8	12-1/4

Formations					
	Measured Depth	Vertical Depth			
	(ft)	(ft)	Name	Lithology	Dip
					(°)
					Dip Direction
					(°)
	6,834.3	6,719.0	NIOBRARA		0.00
	7,133.3	7,018.0	CODELL		0.00
	7,532.3	7,417.0	D-SAND		0.00
	7,593.3	7,478.0	J-SAND		0.00