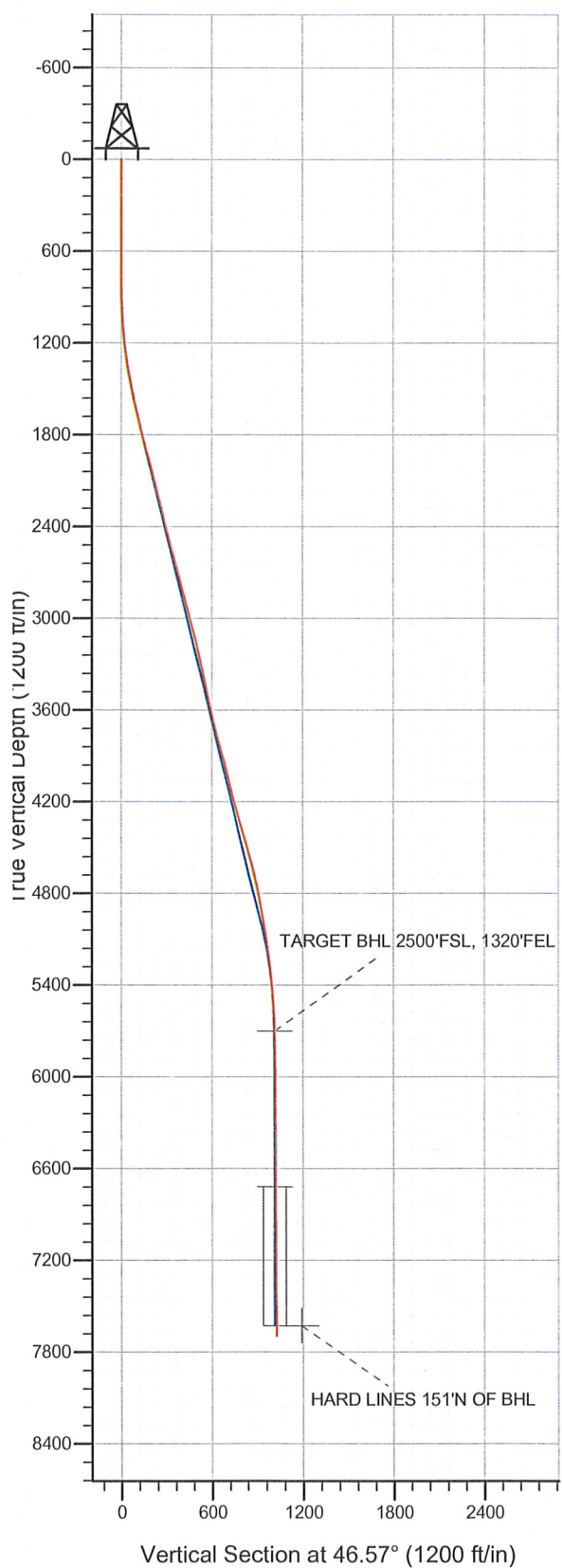
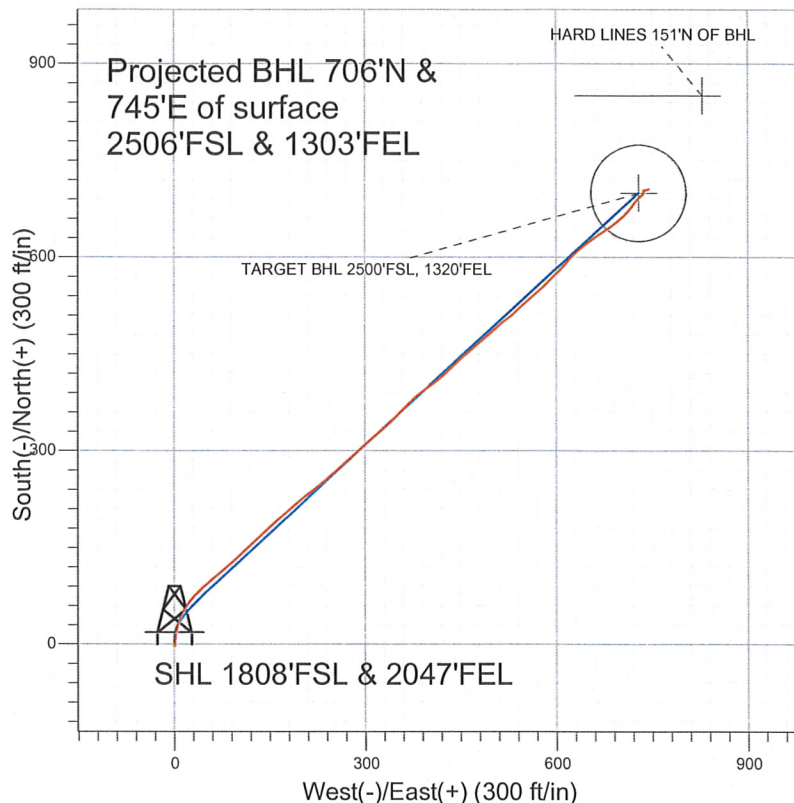


Well Name: Horton D18-22D  
Surface Location: Horton D18-22D Pad Sec.18-T3N-R64W  
North American Datum 1983 US State Plane 1983 Colorado Northern Zone  
Ground Elevation: 4774.0  
+N/-S +E/-W Northing Easting Latitude Longitude Slot  
0.0 0.0 1325368.90 3253615.93 40.222970 -104.591740  
Original Well Elev @ 4787.0ft (Original Well Elev)



## NOBLE ENERGY INC WELD COUNTY CO



### LEGEND

- △ Horton D18-22D, Wellbore #1, Noble Horton D18-22D Plan #1 (4-04-11) V0
- Wellbore #1
- Survey #1

## Final Survey Plot

Projected Final Survey -  
7815'MD & 7696'TVD @ 1026' VS  
0.5 deg Inc 76.7 deg AZ

Project: SEC.18-T3N-R64W  
Site: Horton D18-22D Pad Sec.18-T3N-R64W  
Well: Horton D18-22D  
Plan: Wellbore #1



**Directional**

**NOBLE ENERGY INC WELD  
COUNTY CO**

**SEC.18-T3N-R64W**

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

**Horton D18-22D**

**Wellbore #1**

**Survey: Survey #1**

**Standard Survey Report**

**12 August, 2011**



Company: NOBLE ENERGY INC WELD COUNTY CO  
Project: SEC.18-T3N-R64W  
Site: Horton D18-22D Pad Sec.18-T3N-R64W  
Well: Horton D18-22D  
Wellbore: Wellbore #1  
Design: Wellbore #1

Local Co-ordinate Reference: Well Horton D18-22D  
TVD Reference: WELL @ 4787.0ft (Original Well Elev)  
MD Reference: WELL @ 4787.0ft (Original Well Elev)  
North Reference: True  
Survey Calculation Method: Minimum Curvature  
Database: Landmark

Project	SEC.18-T3N-R64W, Weld County, Colorado		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	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: 3,253,615.93 ft 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
	+E/-W	0.0 ft	Easting: 3,253,615.93 ft
Position Uncertainty	0.0 ft	Wellhead Elevation:	ft
			Latitude: 40.222970
			Longitude: -104.591740
			Ground Level: 4,774.0 ft

Wellbore Wellbore #1

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF200510	8/1/2011	8.70	66.94	53,066

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	46.57

Survey Program Date 8/12/2011

From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
775.0	7,815.0	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
775.0	0.40	152.70	775.0	-2.4	1.2	-0.8	0.05	0.05	0.00
860.0	1.00	21.90	860.0	-2.0	1.7	-0.2	1.53	0.71	-153.88
946.0	2.90	358.50	945.9	0.9	1.9	2.0	2.35	2.21	-27.21
1,031.0	4.90	2.30	1,030.7	6.7	2.0	6.0	2.37	2.35	4.47
1,117.0	6.50	9.90	1,116.3	15.1	3.0	12.5	2.05	1.86	8.84
1,202.0	8.10	11.70	1,200.6	25.7	5.0	21.3	1.90	1.88	2.12
1,288.0	8.70	21.40	1,285.7	37.7	8.6	32.2	1.79	0.70	11.28
1,373.0	9.90	27.40	1,369.6	50.2	14.3	44.9	1.81	1.41	7.06
1,459.0	11.20	36.40	1,454.1	63.5	22.7	60.1	2.44	1.51	10.47
1,544.0	12.00	43.70	1,537.4	76.5	33.7	77.1	1.96	0.94	8.59
1,630.0	12.40	49.80	1,621.5	88.9	46.9	95.2	1.57	0.47	7.09
1,715.0	13.80	50.10	1,704.2	101.3	61.6	114.4	1.65	1.65	0.35



Company: NOBLE ENERGY INC WELD COUNTY CO  
Project: SEC.18-T3N-R64W  
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Wellbore: Wellbore #1  
Design: Wellbore #1

Local Co-ordinate Reference: Well Horton D18-22D  
TVD Reference: WELL @ 4787.0ft (Original Well Elev)  
MD Reference: WELL @ 4787.0ft (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)
1,801.0	14.80	49.80	1,787.6	115.0	77.9	135.6	1.17	1.16	-0.35
1,886.0	15.10	47.10	1,869.7	129.6	94.3	157.6	0.89	0.35	-3.18
1,972.0	15.20	47.60	1,952.7	144.8	110.8	180.0	0.19	0.12	0.58
2,057.0	14.90	46.80	2,034.8	159.8	127.0	202.1	0.43	-0.35	-0.94
2,143.0	14.90	47.70	2,117.9	174.8	143.3	224.2	0.27	0.00	1.05
2,228.0	14.50	48.50	2,200.1	189.2	159.3	245.8	0.53	-0.47	0.94
2,314.0	13.60	48.20	2,283.6	203.1	174.9	266.6	1.05	-1.05	-0.35
2,399.0	13.80	50.30	2,366.1	216.2	190.2	286.7	0.63	0.24	2.47
2,485.0	14.00	50.60	2,449.6	229.4	206.1	307.4	0.25	0.23	0.35
2,570.0	14.20	53.60	2,532.1	242.1	222.4	328.0	0.89	0.24	3.53
2,656.0	15.30	50.60	2,615.2	255.5	239.7	349.7	1.56	1.28	-3.49
2,741.0	15.00	49.00	2,697.3	269.9	256.7	371.9	0.61	-0.35	-1.88
2,827.0	14.90	47.10	2,780.4	284.7	273.2	394.1	0.58	-0.12	-2.21
2,913.0	15.70	48.70	2,863.3	299.9	290.0	416.8	1.05	0.93	1.86
2,998.0	15.70	47.80	2,945.1	315.2	307.2	439.8	0.29	0.00	-1.06
3,084.0	14.30	49.10	3,028.2	330.0	323.8	462.0	1.67	-1.63	1.51
3,169.0	14.60	48.10	3,110.5	344.0	339.7	483.2	0.46	0.35	-1.18
3,255.0	13.20	44.30	3,194.0	358.3	354.7	503.9	1.94	-1.63	-4.42
3,340.0	11.80	44.90	3,277.0	371.4	367.6	522.2	1.65	-1.65	0.71
3,426.0	12.30	48.80	3,361.1	383.6	380.7	540.2	1.11	0.58	4.53
3,511.0	12.10	54.60	3,444.2	394.8	394.7	558.1	1.46	-0.24	6.82
3,597.0	12.70	54.10	3,528.2	405.5	409.7	576.4	0.71	0.70	-0.58
3,682.0	13.20	46.80	3,611.0	417.7	424.4	595.3	2.01	0.59	-8.59
3,768.0	13.20	46.60	3,694.7	431.1	438.7	615.0	0.05	0.00	-0.23
3,853.0	15.40	49.60	3,777.1	445.1	454.3	635.9	2.73	2.59	3.53
3,939.0	15.10	49.10	3,860.1	459.8	471.5	658.5	0.38	-0.35	-0.58
4,024.0	14.00	48.70	3,942.3	473.9	487.6	679.9	1.30	-1.29	-0.47
4,110.0	13.60	48.10	4,025.9	487.5	502.9	700.4	0.49	-0.47	-0.70
4,195.0	14.50	52.40	4,108.3	500.7	518.8	721.0	1.62	1.06	5.06
4,281.0	16.20	48.20	4,191.3	515.2	536.3	743.7	2.36	1.98	-4.88
4,366.0	15.90	47.90	4,272.9	530.9	553.7	767.1	0.37	-0.35	-0.35
4,452.0	15.70	49.40	4,355.7	546.4	571.3	790.5	0.53	-0.23	1.74
4,537.0	16.60	45.20	4,437.3	562.5	588.7	814.2	1.73	1.06	-4.94
4,623.0	16.70	43.90	4,519.7	580.0	606.0	838.8	0.45	0.12	-1.51
4,708.0	14.10	41.70	4,601.7	596.6	621.3	861.3	3.13	-3.06	-2.59
4,794.0	13.30	48.40	4,685.2	610.9	635.7	881.6	2.06	-0.93	7.79
4,879.0	10.30	54.00	4,768.4	621.9	649.1	899.0	3.77	-3.53	6.59
4,965.0	9.50	54.50	4,853.1	630.5	661.1	913.6	0.94	-0.93	0.58
5,051.0	10.50	57.50	4,937.8	638.9	673.5	928.3	1.31	1.16	3.49
5,136.0	11.60	53.30	5,021.3	648.1	686.9	944.4	1.60	1.29	-4.94
5,222.0	9.40	50.60	5,105.8	657.8	699.3	960.0	2.62	-2.56	-3.14
5,307.0	6.90	46.00	5,190.0	665.7	708.3	972.1	3.04	-2.94	-5.41
5,393.0	6.40	37.80	5,275.4	673.1	715.0	982.0	1.25	-0.58	-9.53
5,478.0	5.20	38.10	5,359.9	679.9	720.2	990.4	1.41	-1.41	0.35
5,564.0	4.60	37.20	5,445.6	685.7	724.7	997.7	0.70	-0.70	-1.05
5,649.0	3.80	41.50	5,530.4	690.5	728.7	1,003.9	1.01	-0.94	5.06
5,735.0	3.90	51.10	5,616.2	694.5	732.8	1,009.6	0.76	0.12	11.16
5,818.7	1.83	50.42	5,699.8	697.1	736.1	1,013.8	2.47	-2.47	-0.81
TARGET BHL 2500'FSL, 1320'FEL									
5,820.0	1.80	50.40	5,701.1	697.1	736.1	1,013.8	2.47	-2.47	-1.75
5,906.0	0.40	22.40	5,787.1	698.3	737.3	1,015.5	1.70	-1.63	-32.56
5,991.0	0.40	11.70	5,872.1	698.9	737.4	1,016.0	0.09	0.00	-12.59
6,077.0	0.50	11.20	5,958.1	699.5	737.6	1,016.5	0.12	0.12	-0.58
6,162.0	0.60	8.60	6,043.1	700.3	737.7	1,017.2	0.12	0.12	-3.06

**Company:** NOBLE ENERGY INC WELD COUNTY CO  
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**Wellbore:** Wellbore #1  
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**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)
6,248.0	0.60	356.10	6,129.1	701.2	737.7	1,017.8	0.15	0.00	-14.53
6,333.0	0.40	3.10	6,214.1	702.0	737.7	1,018.3	0.25	-0.24	8.24
6,419.0	0.30	5.30	6,300.1	702.5	737.8	1,018.7	0.12	-0.12	2.56
6,504.0	0.50	7.00	6,385.1	703.1	737.8	1,019.2	0.24	0.24	2.00
6,590.0	0.20	330.00	6,471.1	703.6	737.8	1,019.5	0.42	-0.35	-43.02
6,675.0	0.10	36.70	6,556.1	703.8	737.8	1,019.6	0.22	-0.12	78.47
6,761.0	0.10	354.00	6,642.1	703.9	737.8	1,019.7	0.08	0.00	-49.65
6,837.9	0.36	120.80	6,719.0	703.8	738.0	1,019.8	0.55	0.33	164.83
<b>TARGET CIRCLE 2500'FSL &amp; 1320'FEL</b>									
6,846.0	0.40	122.00	6,727.1	703.8	738.1	1,019.8	0.55	0.54	14.91
6,932.0	0.40	106.30	6,813.1	703.6	738.6	1,020.1	0.13	0.00	-18.26
7,017.0	0.40	82.40	6,898.1	703.5	739.2	1,020.5	0.19	0.00	-28.12
7,103.0	0.50	81.40	6,984.0	703.6	739.8	1,021.0	0.12	0.12	-1.16
7,189.0	0.40	82.40	7,070.0	703.7	740.5	1,021.6	0.12	-0.12	1.16
7,274.0	0.40	75.70	7,155.0	703.8	741.1	1,022.1	0.05	0.00	-7.88
7,360.0	0.40	70.60	7,241.0	704.0	741.7	1,022.6	0.04	0.00	-5.93
7,445.0	0.40	29.20	7,326.0	704.4	742.1	1,023.1	0.33	0.00	-48.71
7,531.0	0.40	57.20	7,412.0	704.8	742.5	1,023.7	0.23	0.00	32.56
7,616.0	0.70	70.60	7,497.0	705.1	743.2	1,024.5	0.38	0.35	15.76
7,702.0	0.70	77.60	7,583.0	705.4	744.2	1,025.4	0.10	0.00	8.14
7,748.2	0.57	77.08	7,629.2	705.5	744.7	1,025.9	0.29	-0.29	-1.13
<b>HARD LINES 151'N OF BHL</b>									
7,772.0	0.50	76.70	7,653.0	705.6	745.0	1,026.1	0.29	-0.29	-1.58
7,815.0	0.50	76.70	7,696.0	705.7	745.3	1,026.4	0.00	0.00	0.00

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