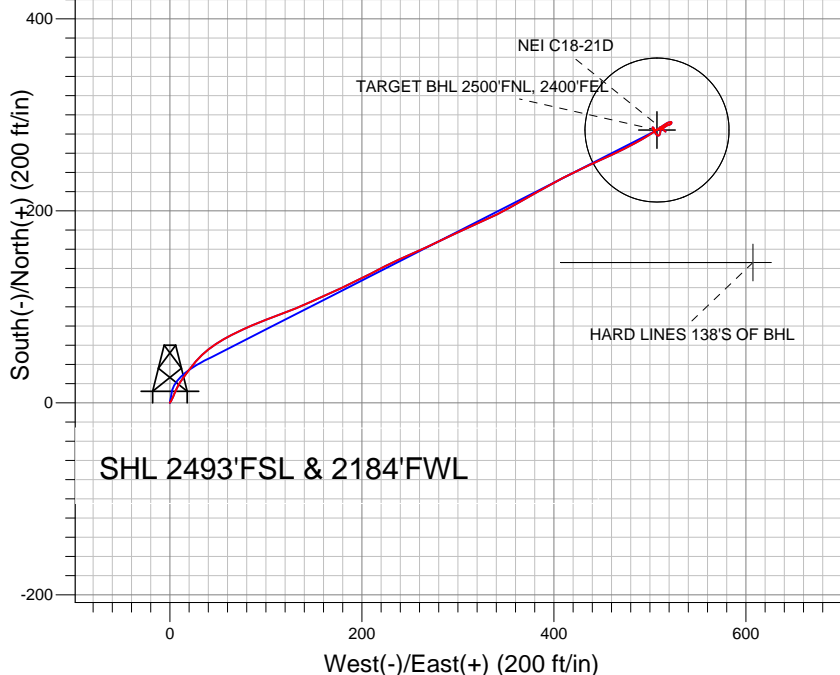


## NOBLE ENERGY INC WELD COUNTY CO

Projected BHL 283'N & 517'E of  
surface 2502'FNL & 2391'FEL



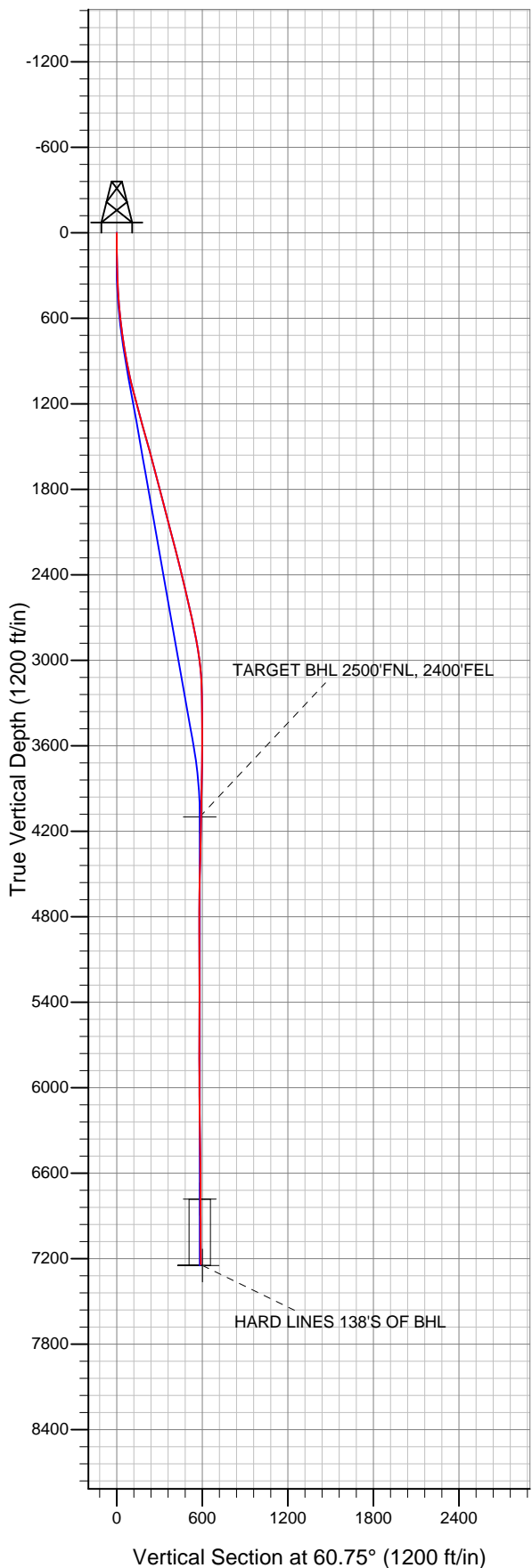
### LEGEND

- △ NEI C18-21D, Wellbore #1, Noble NEI C18-21D Plan #2 (12-6-11) R V0
- Wellbore #1
- Survey #1

## Final Survey Plot

Projected Final Survey -  
7310'MD & 7241'TVD @ 589'VS  
0.6 deg Inc 109.8 deg AZ

Project: SEC.18-T4N-R64W  
Site: NEI C18-32D Pad Sec.18-T4N-R64W  
Well: NEI C18-21D  
Plan: Wellbore #1





## **Directional**

# **NOBLE ENERGY INC WELD COUNTY CO**

**SEC.18-T4N-R64W**

**NEI C18-32D Pad Sec.18-T4N-R64W**

**NEI C18-21D**

**Wellbore #1**

**Survey: Survey #1**

## **Standard Survey Report**

**14 December, 2011**



<b>Company:</b>	NOBLE ENERGY INC WELD COUNTY CO	<b>Local Co-ordinate Reference:</b>	Well NEI C18-21D
<b>Project:</b>	SEC.18-T4N-R64W	<b>TVD Reference:</b>	WELL @ 4848.0ft (Original Well Elev)
<b>Site:</b>	NEI C18-32D Pad Sec.18-T4N-R64W	<b>MD Reference:</b>	WELL @ 4848.0ft (Original Well Elev)
<b>Well:</b>	NEI C18-21D	<b>North Reference:</b>	True
<b>Wellbore:</b>	Wellbore #1	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Wellbore #1	<b>Database:</b>	Landmark

<b>Project</b>	SEC.18-T4N-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		Using Well Reference Point
<b>Map Zone:</b>	Colorado Northern Zone		Using geodetic scale factor

<b>Site</b>	NEI C18-32D Pad Sec.18-T4N-R64W		
<b>Site Position:</b>		<b>Northing:</b>	1,357,747.19ft
<b>From:</b>	Lat/Long	<b>Easting:</b>	3,252,422.52ft
<b>Position Uncertainty:</b>	0.0 ft	<b>Slot Radius:</b>	"
		<b>Latitude:</b>	40.311880
		<b>Longitude:</b>	-104.594830
		<b>Grid Convergence:</b>	0.58 °

<b>Well</b>	NEI C18-21D		
<b>Well Position</b>	<b>+N/-S</b>	0.0 ft	<b>Northing:</b>
	<b>+E/-W</b>	0.0 ft	<b>Easting:</b>
<b>Position Uncertainty</b>	0.0 ft	<b>Wellhead Elevation:</b>	ft
		<b>Latitude:</b>	40.311880
		<b>Longitude:</b>	-104.594270
		<b>Ground Level:</b>	4,835.0 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>
	IGRF2010	6/21/2011	8.76	67.01	53,102

<b>Design</b>	Wellbore #1				
<b>Audit Notes:</b>					
<b>Version:</b>	1.0	<b>Phase:</b>	ACTUAL	<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	60.75	

<b>Survey Program</b>	<b>Date</b>	12/14/2011			
<b>From (ft)</b>	<b>To (ft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>	
128.0	7,310.0	Survey #1 (Wellbore #1)	MWD	MWD - Standard	

<b>Survey</b>										
<b>Measured Depth (ft)</b>	<b>Inclination (°)</b>	<b>Azimuth (°)</b>	<b>Vertical Depth (ft)</b>	<b>+N/-S (ft)</b>	<b>+E/-W (ft)</b>	<b>Vertical Section (ft)</b>	<b>Dogleg Rate (°/100ft)</b>	<b>Build Rate (°/100ft)</b>	<b>Turn Rate (°/100ft)</b>	
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	0.00	
128.0	0.50	7.00	128.0	0.6	0.1	0.3	0.39	0.39	0.00	
167.0	0.60	83.90	167.0	0.7	0.3	0.6	1.77	0.26	197.18	
258.0	1.40	30.20	258.0	1.8	1.3	2.0	1.27	0.88	-59.01	
349.0	4.00	22.40	348.9	5.7	3.1	5.5	2.88	2.86	-8.57	
477.0	5.00	24.00	476.5	14.9	7.1	13.4	0.79	0.78	1.25	
605.0	6.70	36.80	603.8	26.0	13.8	24.7	1.67	1.33	10.00	
647.0	7.60	37.90	645.5	30.1	17.0	29.5	2.17	2.14	2.62	
728.0	8.90	36.70	725.6	39.4	24.0	40.2	1.62	1.60	-1.48	
856.0	9.80	50.50	852.0	54.2	38.3	59.9	1.88	0.70	10.78	
985.0	12.30	61.40	978.6	67.8	58.9	84.5	2.52	1.94	8.45	
1,113.0	14.20	66.70	1,103.2	80.5	85.3	113.7	1.76	1.48	4.14	
1,242.0	15.00	70.10	1,228.0	92.5	115.5	146.0	0.91	0.62	2.64	

<b>Company:</b>	NOBLE ENERGY INC WELD COUNTY CO	<b>Local Co-ordinate Reference:</b>	Well NEI C18-21D
<b>Project:</b>	SEC.18-T4N-R64W	<b>TVD Reference:</b>	WELL @ 4848.0ft (Original Well Elev)
<b>Site:</b>	NEI C18-32D Pad Sec.18-T4N-R64W	<b>MD Reference:</b>	WELL @ 4848.0ft (Original Well Elev)
<b>Well:</b>	NEI C18-21D	<b>North Reference:</b>	True
<b>Wellbore:</b>	Wellbore #1	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Wellbore #1	<b>Database:</b>	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)
1,370.0	15.40	65.80	1,351.5	105.1	146.6	179.2	0.93	0.31	-3.36
1,498.0	15.70	65.50	1,474.8	119.2	177.8	213.4	0.24	0.23	-0.23
1,627.0	15.80	62.10	1,599.0	134.7	209.2	248.4	0.72	0.08	-2.64
1,755.0	14.20	65.50	1,722.6	149.3	238.9	281.4	1.43	-1.25	2.66
1,884.0	14.70	65.80	1,847.6	162.6	268.3	313.5	0.39	0.39	0.23
2,012.0	14.60	63.70	1,971.4	176.4	297.5	345.8	0.42	-0.08	-1.64
2,140.0	14.20	66.70	2,095.4	189.8	326.4	377.5	0.66	-0.31	2.34
2,269.0	14.70	60.70	2,220.3	204.0	355.2	409.6	1.22	0.39	-4.65
2,397.0	13.80	60.20	2,344.4	219.6	382.6	441.1	0.71	-0.70	-0.39
2,526.0	13.50	62.30	2,469.7	234.2	409.3	471.6	0.45	-0.23	1.63
2,654.0	13.00	65.80	2,594.3	247.1	435.7	500.9	0.74	-0.39	2.73
2,782.0	12.30	64.80	2,719.2	258.8	461.2	528.8	0.57	-0.55	-0.78
2,911.0	10.80	61.80	2,845.6	270.3	484.2	554.6	1.25	-1.16	-2.33
3,039.0	8.50	56.30	2,971.8	281.3	502.7	576.0	1.93	-1.80	-4.30
3,168.0	4.20	55.60	3,100.0	289.2	514.5	590.2	3.33	-3.33	-0.54
3,296.0	0.90	84.50	3,227.8	292.0	519.4	595.8	2.69	-2.58	22.58
3,424.0	0.80	63.00	3,355.8	292.5	521.2	597.6	0.26	-0.08	-16.80
3,553.0	0.20	113.30	3,484.8	292.8	522.2	598.7	0.53	-0.47	38.99
3,681.0	0.60	158.30	3,612.8	292.1	522.6	598.7	0.37	0.31	35.16
3,810.0	1.20	225.10	3,741.8	290.5	521.9	597.3	0.86	0.47	51.78
3,938.0	0.60	278.40	3,869.8	289.7	520.3	595.5	0.76	-0.47	41.64
4,066.0	1.50	240.90	3,997.7	288.9	518.2	593.3	0.85	0.70	-29.30
4,168.5	1.50	234.94	4,100.2	287.5	515.9	590.6	0.15	0.00	-5.82
<b>TARGET BHL 2500'FNL, 2400'FEL</b>									
4,195.0	1.50	233.40	4,126.7	287.1	515.4	589.9	0.15	0.01	-5.81
4,323.0	0.40	272.20	4,254.7	286.1	513.6	587.9	0.95	-0.86	30.31
4,452.0	1.90	260.10	4,383.6	285.8	511.0	585.5	1.17	1.16	-9.38
4,580.0	1.90	246.50	4,511.6	284.6	507.0	581.4	0.35	0.00	-10.63
4,708.0	1.20	325.50	4,639.5	284.8	504.3	579.1	1.60	-0.55	61.72
4,837.0	0.60	214.00	4,768.5	285.4	503.1	578.4	1.18	-0.47	-86.43
4,965.0	1.20	2.20	4,896.5	286.2	502.8	578.5	1.36	0.47	115.78
5,094.0	0.50	148.60	5,025.5	287.0	503.2	579.2	1.27	-0.54	113.49
5,222.0	0.40	121.60	5,153.5	286.3	503.8	579.5	0.18	-0.08	-21.09
5,350.0	0.60	178.30	5,281.5	285.4	504.2	579.4	0.40	0.16	44.30
5,479.0	0.50	131.40	5,410.5	284.4	504.7	579.3	0.35	-0.08	-36.36
5,607.0	0.50	188.20	5,538.5	283.4	505.0	579.1	0.37	0.00	44.38
5,736.0	0.80	161.80	5,667.5	282.0	505.2	578.6	0.32	0.23	-20.47
5,864.0	1.10	138.30	5,795.5	280.3	506.3	578.7	0.38	0.23	-18.36
5,992.0	0.40	166.00	5,923.5	278.9	507.2	578.8	0.60	-0.55	21.64
6,121.0	0.60	117.20	6,052.5	278.2	507.9	579.1	0.35	0.16	-37.83
6,249.0	1.10	54.10	6,180.4	278.6	509.5	580.7	0.77	0.39	-49.30
6,378.0	1.30	5.40	6,309.4	280.8	510.7	582.7	0.78	0.16	-37.75
6,506.0	1.40	18.20	6,437.4	283.7	511.3	584.7	0.25	0.08	10.00
6,634.0	0.40	351.80	6,565.4	285.6	511.7	586.0	0.83	-0.78	-20.63
6,763.0	0.40	95.40	6,694.4	286.0	512.1	586.6	0.49	0.00	80.31
6,851.6	0.36	135.77	6,783.0	285.8	512.6	586.9	0.30	-0.05	45.56
<b>TARGET CIRCLE 2500'FNL &amp; 2400'FEL</b>									
6,891.0	0.40	152.50	6,822.4	285.6	512.8	586.9	0.30	0.10	42.48
7,020.0	0.50	118.60	6,951.4	284.9	513.5	587.2	0.22	0.08	-26.28
7,148.0	1.10	136.20	7,079.3	283.8	514.8	587.8	0.50	0.47	13.75
7,259.0	0.60	109.80	7,190.3	282.8	516.1	588.5	0.56	-0.45	-23.78
7,310.0	0.60	109.80	7,241.3	282.6	516.6	588.8	0.00	0.00	0.00
<b>HARD LINES 138'S OF BHL</b>									

**Company:** NOBLE ENERGY INC WELD COUNTY CO  
**Project:** SEC.18-T4N-R64W  
**Site:** NEI C18-32D Pad Sec.18-T4N-R64W  
**Well:** NEI C18-21D  
**Wellbore:** Wellbore #1  
**Design:** Wellbore #1

**Local Co-ordinate Reference:** Well NEI C18-21D  
**TVD Reference:** WELL @ 4848.0ft (Original Well Elev)  
**MD Reference:** WELL @ 4848.0ft (Original Well Elev)  
**North Reference:** True  
**Survey Calculation Method:** Minimum Curvature  
**Database:** Landmark

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