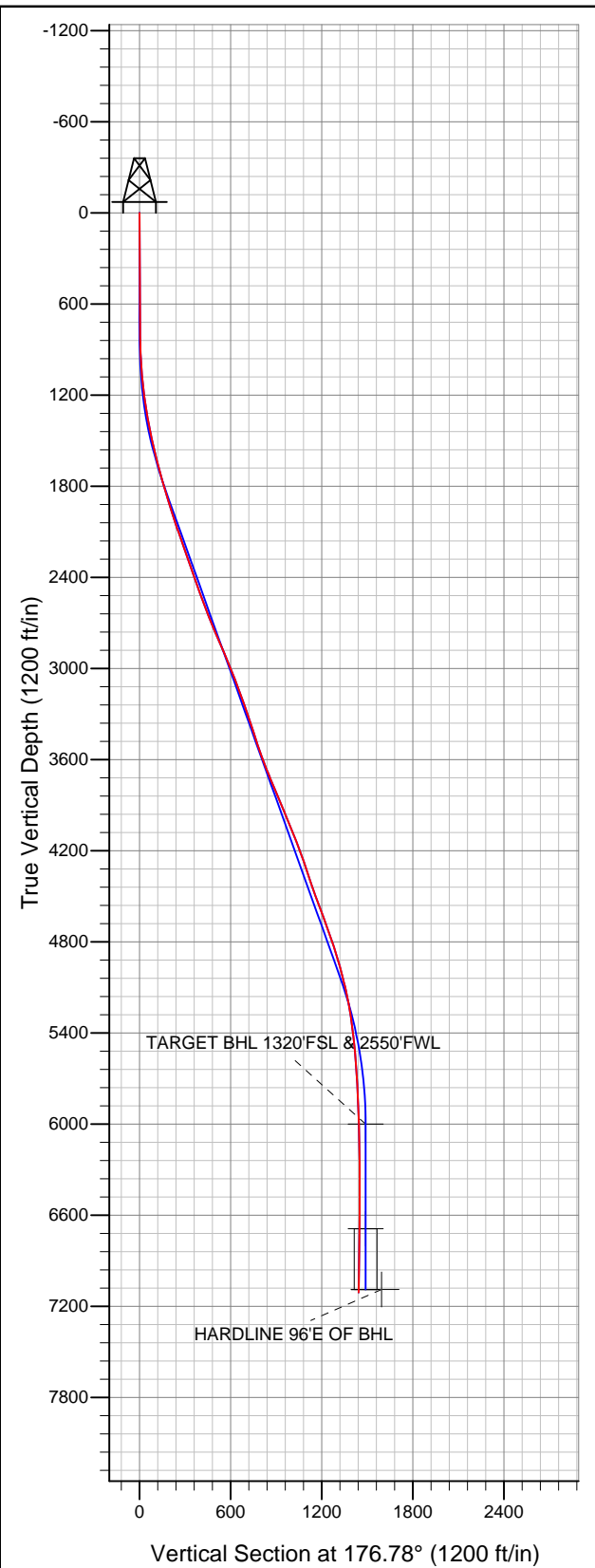
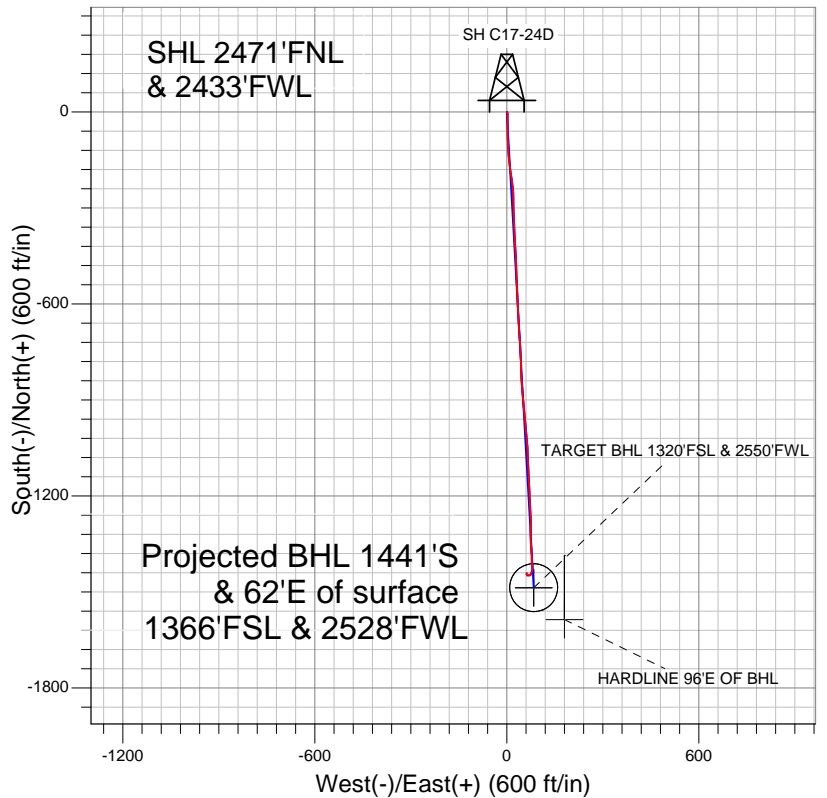




Well Name: **SH C17-24D**  
Surface Location: SH C17-24D Pad Sec.17-T4N-R64W  
North American Datum 1983 US State Plane 1983Colorado Northern Zone  
Ground Elevation: 4726.0  
+N/-S +E/-W Northing Easting Latitude Longitude Slot  
0.0 0.0 1358164.49 3257912.25 40.312870 -104.575130  
Original Well EleWELL @ 4739.0ft (Original Well Elev)



## NOBLE ENERGY INC WELD COUNTY CO



### LEGEND

- ✕ SH C17-24D, Wellbore #1, Noble SH C17-24D Plan #1 8-12-11 V0
- Wellbore #1
- Survey #1

## Final Survey Plot

Projected Final Survey -  
7343'MD & 7109'TVD @ 1442'VS  
1.3 deg Inc 1.8 deg AZ

Project: SEC.17-T4N-R64W  
Site: SH C17-24D Pad Sec.17-T4N-R64W  
Well: SH C17-24D  
Plan: Wellbore #1



# **NOBLE ENERGY INC WELD COUNTY CO**

**SEC.17-T4N-R64W**

**SH C17-24D Pad Sec.17-T4N-R64W**

**SH C17-24D**

**Wellbore #1**

**Survey: Survey #1**

## **Standard Survey Report**

**25 October, 2011**



<b>Company:</b>	NOBLE ENERGY INC WELD COUNTY CO	<b>Local Co-ordinate Reference:</b>	Well SH C17-24D
<b>Project:</b>	SEC.17-T4N-R64W	<b>TVD Reference:</b>	WELL @ 4739.0ft (Original Well Elev)
<b>Site:</b>	SH C17-24D Pad Sec.17-T4N-R64W	<b>MD Reference:</b>	WELL @ 4739.0ft (Original Well Elev)
<b>Well:</b>	SH C17-24D	<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.17-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>	SH C17-24D Pad Sec.17-T4N-R64W		
<b>Site Position:</b>		<b>Northing:</b>	1,358,164.51 ft
<b>From:</b>	Lat/Long	<b>Easting:</b>	3,257,912.25 ft
<b>Position Uncertainty:</b>	0.0 ft	<b>Slot Radius:</b>	"
		<b>Latitude:</b>	40.312870
		<b>Longitude:</b>	-104.575130
		<b>Grid Convergence:</b>	0.60 °

<b>Well</b>	SH C17-24D		
<b>Well Position</b>	<b>+N/-S</b>	0.0 ft	<b>Northing:</b> 1,358,164.49 ft
	<b>+E/-W</b>	0.0 ft	<b>Easting:</b> 3,257,912.25 ft
<b>Position Uncertainty</b>	0.0 ft	<b>Wellhead Elevation:</b>	ft
		<b>Latitude:</b>	40.312870
		<b>Longitude:</b>	-104.575130
		<b>Ground Level:</b>	4,726.0 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	8/12/2011	8.73	67.01	53,090

<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>	
	6,000.0	0.0	0.0	176.78	

<b>Survey Program</b>	<b>Date</b>	10/25/2011			
<b>From (ft)</b>	<b>To (ft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>	
767.0	7,343.0	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	
767.0	0.50	148.00	767.0	-2.8	1.8	2.9	0.07	0.07	0.00	
849.0	1.50	168.70	849.0	-4.2	2.2	4.3	1.28	1.22	25.24	
931.0	2.80	180.90	930.9	-7.2	2.4	7.4	1.67	1.59	14.88	
1,012.0	3.90	174.10	1,011.8	-12.0	2.6	12.1	1.44	1.36	-8.40	
1,094.0	5.10	180.20	1,093.5	-18.4	2.9	18.5	1.57	1.46	7.44	
1,176.0	6.60	179.40	1,175.1	-26.7	2.9	26.9	1.83	1.83	-0.98	
1,257.0	8.10	181.80	1,255.4	-37.1	2.8	37.2	1.89	1.85	2.96	
1,339.0	9.70	182.80	1,336.4	-49.8	2.3	49.8	1.96	1.95	1.22	
1,421.0	11.60	180.10	1,417.0	-64.9	1.9	64.9	2.40	2.32	-3.29	
1,503.0	12.70	178.90	1,497.2	-82.2	2.1	82.2	1.38	1.34	-1.46	
1,585.0	13.60	176.30	1,577.0	-100.8	2.9	100.8	1.31	1.10	-3.17	
1,667.0	15.00	174.40	1,656.5	-121.0	4.5	121.1	1.80	1.71	-2.32	

<b>Company:</b>	NOBLE ENERGY INC WELD COUNTY CO	<b>Local Co-ordinate Reference:</b>	Well SH C17-24D
<b>Project:</b>	SEC.17-T4N-R64W	<b>TVD Reference:</b>	WELL @ 4739.0ft (Original Well Elev)
<b>Site:</b>	SH C17-24D Pad Sec.17-T4N-R64W	<b>MD Reference:</b>	WELL @ 4739.0ft (Original Well Elev)
<b>Well:</b>	SH C17-24D	<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)
1,748.0	15.70	175.40	1,734.6	-142.4	6.4	142.5	0.92	0.86	1.23
1,830.0	16.40	171.90	1,813.4	-164.9	8.9	165.1	1.46	0.85	-4.27
1,912.0	16.70	171.90	1,892.0	-188.0	12.2	188.4	0.37	0.37	0.00
1,994.0	17.90	172.60	1,970.3	-212.2	15.5	212.7	1.49	1.46	0.85
2,075.0	18.00	174.10	2,047.4	-237.0	18.4	237.6	0.58	0.12	1.85
2,157.0	19.50	178.40	2,125.0	-263.2	20.1	264.0	2.49	1.83	5.24
2,239.0	20.20	179.50	2,202.1	-291.1	20.6	291.8	0.97	0.85	1.34
2,321.0	19.20	179.10	2,279.3	-318.7	20.9	319.4	1.23	-1.22	-0.49
2,402.0	18.80	175.70	2,355.9	-345.0	22.1	345.7	1.45	-0.49	-4.20
2,484.0	19.10	177.70	2,433.5	-371.6	23.7	372.4	0.87	0.37	2.44
2,566.0	19.90	177.60	2,510.8	-399.0	24.8	399.7	0.98	0.98	-0.12
2,647.0	20.70	175.60	2,586.7	-427.0	26.5	427.8	1.31	0.99	-2.47
2,729.0	21.90	177.70	2,663.1	-456.8	28.2	457.6	1.73	1.46	2.56
2,811.0	22.70	177.70	2,739.0	-487.8	29.4	488.7	0.98	0.98	0.00
2,893.0	23.70	178.30	2,814.4	-520.1	30.6	521.0	1.25	1.22	0.73
2,975.0	22.90	177.90	2,889.7	-552.5	31.6	553.5	0.99	-0.98	-0.49
3,056.0	22.10	177.00	2,964.5	-583.5	33.0	584.4	1.08	-0.99	-1.11
3,138.0	22.00	177.90	3,040.5	-614.3	34.4	615.2	0.43	-0.12	1.10
3,220.0	21.40	175.50	3,116.7	-644.5	36.1	645.5	1.31	-0.73	-2.93
3,302.0	19.70	177.30	3,193.5	-673.3	37.9	674.3	2.21	-2.07	2.20
3,384.0	17.90	176.90	3,271.1	-699.6	39.3	700.7	2.20	-2.20	-0.49
3,465.0	18.30	174.90	3,348.1	-724.7	41.1	725.9	0.91	0.49	-2.47
3,547.0	18.40	178.00	3,425.9	-750.5	42.7	751.7	1.20	0.12	3.78
3,629.0	19.00	178.40	3,503.6	-776.8	43.5	778.0	0.75	0.73	0.49
3,711.0	19.90	178.20	3,580.9	-804.1	44.3	805.3	1.10	1.10	-0.24
3,793.0	21.30	176.20	3,657.7	-832.9	45.7	834.1	1.91	1.71	-2.44
3,874.0	22.60	175.30	3,732.8	-863.1	48.0	864.4	1.66	1.60	-1.11
3,956.0	22.60	176.00	3,808.5	-894.5	50.4	895.9	0.33	0.00	0.85
4,038.0	23.30	173.50	3,884.0	-926.3	53.3	927.9	1.46	0.85	-3.05
4,120.0	23.10	175.50	3,959.4	-958.5	56.4	960.1	0.99	-0.24	2.44
4,201.0	21.80	174.70	4,034.3	-989.3	59.0	991.0	1.65	-1.60	-0.99
4,283.0	21.50	174.30	4,110.5	-1,019.4	61.9	1,021.3	0.41	-0.37	-0.49
4,365.0	20.60	178.00	4,187.0	-1,048.8	63.9	1,050.7	1.96	-1.10	4.51
4,447.0	19.20	177.50	4,264.1	-1,076.7	65.0	1,078.6	1.72	-1.71	-0.61
4,528.0	18.20	174.90	4,340.8	-1,102.6	66.7	1,104.6	1.61	-1.23	-3.21
4,610.0	19.10	180.00	4,418.5	-1,128.7	67.9	1,130.8	2.27	1.10	6.22
4,692.0	19.90	176.10	4,495.8	-1,156.1	68.8	1,158.1	1.86	0.98	-4.76
4,774.0	20.00	177.70	4,572.9	-1,184.0	70.3	1,186.1	0.68	0.12	1.95
4,856.0	20.70	177.20	4,649.8	-1,212.5	71.6	1,214.6	0.88	0.85	-0.61
4,937.0	20.30	177.20	4,725.7	-1,240.8	73.0	1,243.0	0.49	-0.49	0.00
5,019.0	18.30	177.20	4,803.1	-1,267.9	74.3	1,270.1	2.44	-2.44	0.00
5,101.0	16.80	181.50	4,881.2	-1,292.6	74.6	1,294.8	2.42	-1.83	5.24
5,183.0	15.80	179.70	4,959.9	-1,315.6	74.4	1,317.7	1.37	-1.22	-2.20
5,264.0	14.40	177.90	5,038.1	-1,336.7	74.8	1,338.8	1.82	-1.73	-2.22
5,346.0	12.40	176.20	5,117.9	-1,355.7	75.8	1,357.8	2.49	-2.44	-2.07
5,428.0	11.30	177.00	5,198.2	-1,372.5	76.8	1,374.6	1.36	-1.34	0.98
5,510.0	8.90	176.00	5,278.9	-1,386.9	77.6	1,389.0	2.93	-2.93	-1.22
5,591.0	7.30	182.10	5,359.1	-1,398.2	77.9	1,400.4	2.24	-1.98	7.53
5,673.0	6.20	175.50	5,440.5	-1,407.9	78.0	1,410.0	1.64	-1.34	-8.05
5,755.0	5.20	172.00	5,522.1	-1,416.0	78.9	1,418.2	1.29	-1.22	-4.27
5,837.0	4.00	178.80	5,603.8	-1,422.5	79.5	1,424.7	1.60	-1.46	8.29
5,918.0	3.60	184.60	5,684.7	-1,427.9	79.3	1,430.1	0.68	-0.49	7.16
6,000.0	3.30	188.80	5,766.5	-1,432.8	78.8	1,434.9	0.48	-0.37	5.12
6,082.0	2.70	198.10	5,848.4	-1,436.9	77.8	1,439.0	0.94	-0.73	11.34

<b>Company:</b>	NOBLE ENERGY INC WELD COUNTY CO	<b>Local Co-ordinate Reference:</b>	Well SH C17-24D
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<b>Site:</b>	SH C17-24D Pad Sec.17-T4N-R64W	<b>MD Reference:</b>	WELL @ 4739.0ft (Original Well Elev)
<b>Well:</b>	SH C17-24D	<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)	
6,164.0	2.20	204.80	5,930.3	-1,440.2	76.5	1,442.2	0.70	-0.61	8.17	
6,235.1	2.11	203.94	6,001.4	-1,442.6	75.4	1,444.6	0.13	-0.12	-1.21	
TARGET BHL 1320'FSL & 2550'FWL										
6,246.0	2.10	203.80	6,012.3	-1,443.0	75.3	1,444.9	0.13	-0.12	-1.27	
6,409.0	1.10	225.10	6,175.2	-1,446.8	73.0	1,448.6	0.70	-0.61	13.07	
6,572.0	1.40	273.60	6,338.2	-1,447.8	69.9	1,449.5	0.65	0.18	29.75	
6,736.0	1.50	272.70	6,502.1	-1,447.6	65.7	1,449.0	0.06	0.06	-0.55	
6,899.0	0.30	284.40	6,665.1	-1,447.4	63.2	1,448.6	0.74	-0.74	7.18	
6,922.5	0.35	301.05	6,688.6	-1,447.3	63.1	1,448.6	0.46	0.22	70.89	
TARGET CIRCLE 1320'FSL & 2550'FWL										
7,063.0	0.90	335.90	6,829.1	-1,446.1	62.2	1,447.3	0.46	0.39	24.80	
7,226.0	1.10	357.40	6,992.1	-1,443.4	61.6	1,444.5	0.26	0.12	13.19	
7,297.0	1.30	1.80	7,063.0	-1,441.9	61.6	1,443.1	0.31	0.28	6.20	
HARDLINE 96'E OF BHL										
7,343.0	1.30	1.80	7,109.0	-1,440.8	61.7	1,442.0	0.00	0.00	0.00	

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