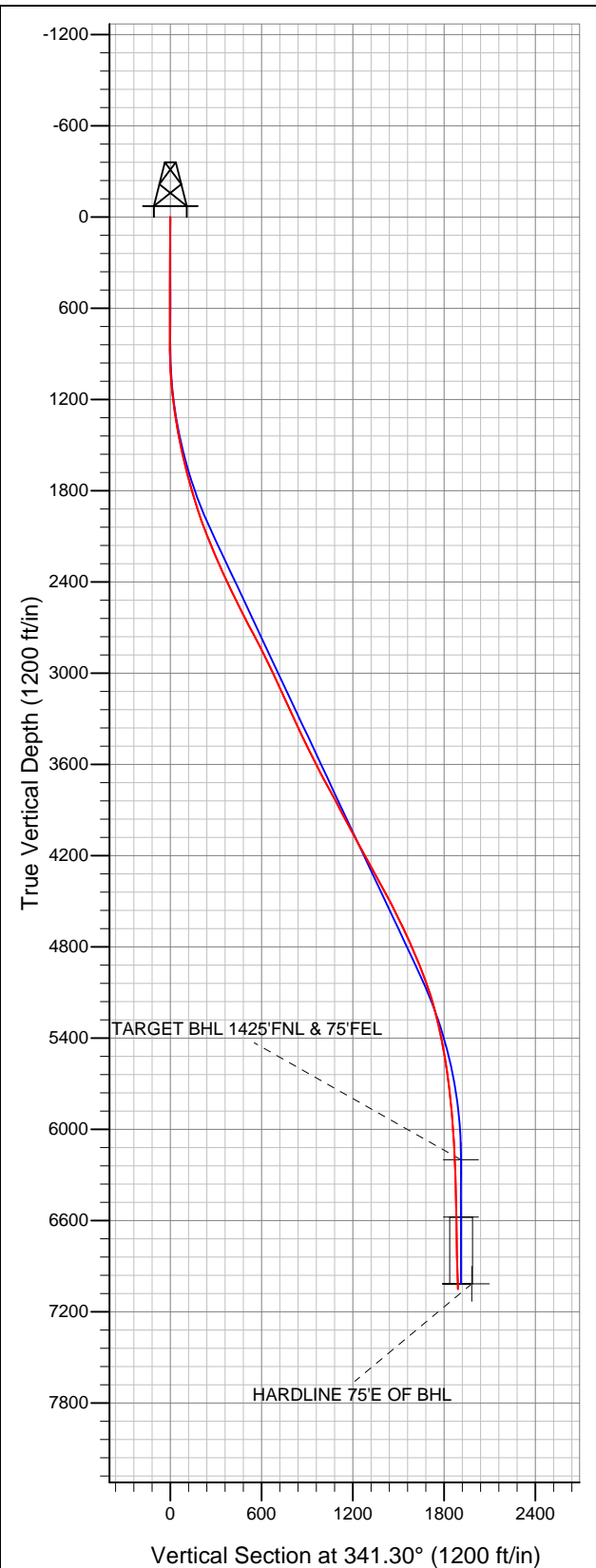


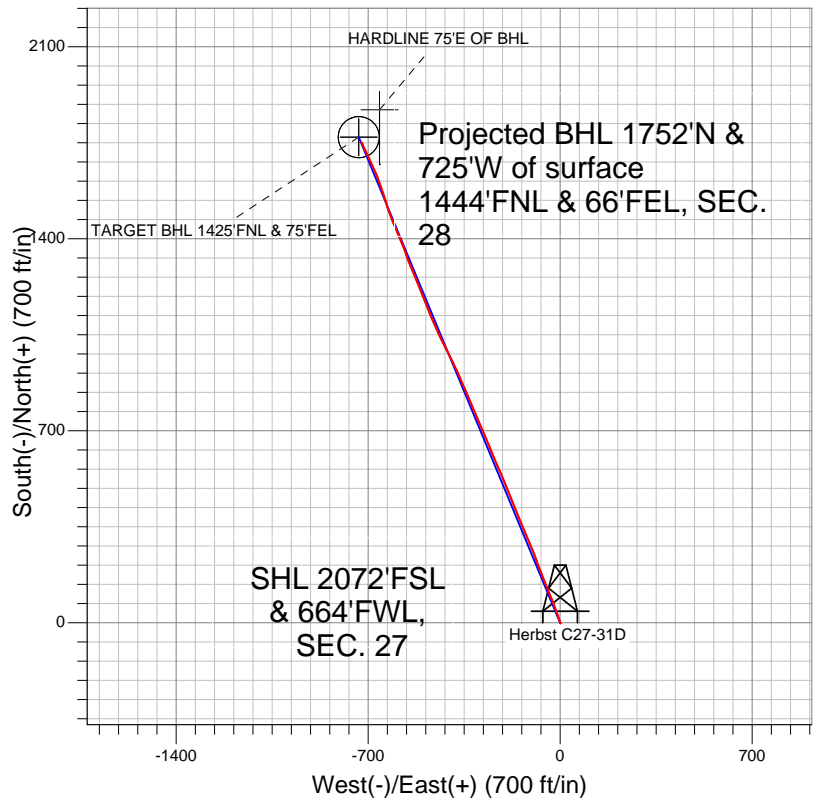
**Well Name: Herbst C27-31D**

Surface Location: Herbst C27-33D Pad Sec.27-T4N-R64W  
North American Datum 1983 US State Plane 1983Colorado Northern Zone  
Ground Elevation: 4704.0

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.0	0.0	1346974.88	3266686.66	40.281900	-104.544100	
Original Well Elev			WELL @ 4717.0ft (Original Well Elev)			



**NOBLE ENERGY INC WELD COUNTY CO**



- LEGEND**
- Wellbore #1
  - Herbst C27-31D, Wellbore #1, Noble Herbst C27-31D Plan #1 (4-30-12) R V0
  - Survey #1

**Final Survey Plot**

Projected Final Survey -  
7440'MD & 7051'TVD @ 1896'VS  
2.10 deg Inc 314.70 deg AZ

Project: SEC.27-T4N-R64W  
Site: Herbst C27-33D Pad Sec.27-T4N-R64W  
Well: Herbst C27-31D  
Plan: Wellbore #1



# **NOBLE ENERGY INC WELD COUNTY CO**

**SEC.27-T4N-R64W**

**Herbst C27-33D Pad Sec.27-T4N-R64W**

**Herbst C27-31D**

**Wellbore #1**

**Survey: Survey #1**

## **Standard Survey Report**

**07 May, 2012**



<b>Company:</b>	NOBLE ENERGY INC WELD COUNTY CO	<b>Local Co-ordinate Reference:</b>	Well Herbst C27-31D
<b>Project:</b>	SEC.27-T4N-R64W	<b>TVD Reference:</b>	WELL @ 4717.0ft (Original Well Elev)
<b>Site:</b>	Herbst C27-33D Pad Sec.27-T4N-R64W	<b>MD Reference:</b>	WELL @ 4717.0ft (Original Well Elev)
<b>Well:</b>	Herbst C27-31D	<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.27-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		
<b>Map Zone:</b>	Colorado Northern Zone		Using geodetic scale factor

<b>Site</b>	Herbst C27-33D Pad Sec.27-T4N-R64W		
<b>Site Position:</b>		<b>Northing:</b>	1,346,931.18 ft
<b>From:</b>	Lat/Long	<b>Easting:</b>	3,266,687.14 ft
<b>Position Uncertainty:</b>	0.0 ft	<b>Slot Radius:</b>	"
		<b>Latitude:</b>	40.281780
		<b>Longitude:</b>	-104.544100
		<b>Grid Convergence:</b>	0.62 °

<b>Well</b>	Herbst C27-31D		
<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>	40.281900
		<b>Longitude:</b>	-104.544100
		<b>Ground Level:</b>	4,704.0 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	4/30/2012	8.62	66.96	53,002

<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	341.30	

<b>Survey Program</b>	<b>Date</b>	5/4/2012			
<b>From (ft)</b>	<b>To (ft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>	
210.0	7,440.0	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	
210.0	0.40	128.50	210.0	-0.5	0.6	-0.6	0.19	0.19	0.00	
460.0	0.20	155.00	460.0	-1.4	1.4	-1.8	0.10	-0.08	10.60	
810.0	0.20	109.20	810.0	-2.1	2.3	-2.8	0.04	0.00	-13.09	
861.0	0.40	267.90	861.0	-2.2	2.2	-2.8	1.16	0.39	311.18	
989.0	3.20	342.10	988.9	1.2	0.6	0.9	2.43	2.19	57.97	
1,117.0	5.00	341.00	1,116.6	9.9	-2.3	10.1	1.41	1.41	-0.86	
1,245.0	7.40	338.20	1,243.8	22.8	-7.2	23.9	1.89	1.88	-2.19	
1,374.0	9.80	342.10	1,371.4	41.0	-13.6	43.2	1.91	1.86	3.02	
1,502.0	11.80	339.60	1,497.1	63.6	-21.5	67.1	1.60	1.56	-1.95	
1,630.0	13.40	337.50	1,622.0	89.6	-31.8	95.0	1.30	1.25	-1.64	
1,758.0	15.60	338.40	1,745.9	119.3	-43.8	127.0	1.73	1.72	0.70	
1,887.0	17.40	337.30	1,869.6	153.2	-57.6	163.6	1.42	1.40	-0.85	

<b>Company:</b>	NOBLE ENERGY INC WELD COUNTY CO	<b>Local Co-ordinate Reference:</b>	Well Herbst C27-31D
<b>Project:</b>	SEC.27-T4N-R64W	<b>TVD Reference:</b>	WELL @ 4717.0ft (Original Well Elev)
<b>Site:</b>	Herbst C27-33D Pad Sec.27-T4N-R64W	<b>MD Reference:</b>	WELL @ 4717.0ft (Original Well Elev)
<b>Well:</b>	Herbst C27-31D	<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)
2,015.0	19.10	338.40	1,991.2	190.3	-72.7	203.6	1.36	1.33	0.86
2,143.0	22.00	341.00	2,111.0	232.5	-88.2	248.5	2.37	2.27	2.03
2,271.0	22.80	337.50	2,229.4	278.1	-105.5	297.2	1.21	0.63	-2.73
2,400.0	25.40	335.90	2,347.1	326.4	-126.4	349.7	2.08	2.02	-1.24
2,528.0	25.30	338.40	2,462.8	376.9	-147.7	404.4	0.84	-0.08	1.95
2,656.0	27.00	338.00	2,577.7	429.3	-168.6	460.7	1.34	1.33	-0.31
2,784.0	27.50	337.70	2,691.5	483.6	-190.7	519.2	0.41	0.39	-0.23
2,913.0	28.10	336.50	2,805.6	539.0	-214.1	579.2	0.64	0.47	-0.93
3,041.0	25.80	336.60	2,919.7	592.2	-237.2	637.0	1.80	-1.80	0.08
3,169.0	25.10	338.60	3,035.3	643.0	-258.2	691.9	0.87	-0.55	1.56
3,297.0	24.10	337.00	3,151.6	692.4	-278.3	745.1	0.94	-0.78	-1.25
3,426.0	25.50	335.90	3,268.7	742.0	-299.9	799.0	1.14	1.09	-0.85
3,554.0	25.50	336.50	3,384.3	792.4	-322.2	853.9	0.20	0.00	0.47
3,682.0	25.80	337.90	3,499.7	843.5	-343.6	909.1	0.53	0.23	1.09
3,810.0	26.90	336.30	3,614.4	895.8	-365.8	965.8	1.02	0.86	-1.25
3,939.0	28.80	334.00	3,728.4	950.5	-391.1	1,025.7	1.69	1.47	-1.78
4,067.0	29.00	333.10	3,840.5	1,005.8	-418.7	1,087.0	0.37	0.16	-0.70
4,195.0	27.10	334.20	3,953.4	1,059.8	-445.4	1,146.6	1.54	-1.48	0.86
4,323.0	28.10	337.50	4,066.9	1,113.9	-469.6	1,205.6	1.43	0.78	2.58
4,452.0	28.90	338.70	4,180.2	1,171.0	-492.6	1,267.1	0.76	0.62	0.93
4,580.0	29.30	338.60	4,292.1	1,229.0	-515.2	1,329.3	0.31	0.31	-0.08
4,708.0	29.30	336.80	4,403.7	1,286.9	-539.0	1,391.8	0.69	0.00	-1.41
4,836.0	27.00	339.80	4,516.6	1,343.0	-561.4	1,452.1	2.11	-1.80	2.34
4,965.0	26.50	338.00	4,631.8	1,397.1	-582.3	1,510.1	0.74	-0.39	-1.40
5,093.0	24.10	336.10	4,747.5	1,447.5	-603.6	1,564.6	1.98	-1.88	-1.48
5,221.0	22.50	342.10	4,865.1	1,494.7	-621.7	1,615.1	2.23	-1.25	4.69
5,349.0	21.40	341.40	4,983.8	1,540.2	-636.7	1,663.0	0.88	-0.86	-0.55
5,478.0	18.20	341.50	5,105.1	1,581.6	-650.6	1,706.7	2.48	-2.48	0.08
5,606.0	14.90	340.00	5,227.8	1,616.0	-662.5	1,743.1	2.60	-2.58	-1.17
5,734.0	11.80	335.00	5,352.3	1,643.3	-673.7	1,772.6	2.58	-2.42	-3.91
5,862.0	9.90	336.10	5,478.1	1,665.3	-683.7	1,796.6	1.49	-1.48	0.86
5,991.0	8.20	335.90	5,605.4	1,683.8	-691.9	1,816.8	1.32	-1.32	-0.16
6,119.0	7.30	334.50	5,732.3	1,699.5	-699.2	1,833.9	0.72	-0.70	-1.09
6,247.0	5.40	335.00	5,859.5	1,712.3	-705.2	1,848.0	1.48	-1.48	0.39
6,375.0	4.40	331.70	5,987.0	1,722.1	-710.1	1,858.8	0.81	-0.78	-2.58
6,504.0	3.00	335.60	6,115.7	1,729.5	-713.8	1,867.1	1.10	-1.09	3.02
6,590.3	2.53	336.45	6,201.9	1,733.3	-715.5	1,871.2	0.54	-0.54	0.99
<b>TARGET BHL 1425'FNL &amp; 75'FEL</b>									
6,633.0	2.30	337.00	6,244.6	1,734.9	-716.2	1,873.0	0.54	-0.54	1.29
6,760.0	1.30	336.50	6,371.5	1,738.6	-717.8	1,877.0	0.79	-0.79	-0.39
6,888.0	1.00	351.90	6,499.5	1,741.1	-718.5	1,879.5	0.33	-0.23	12.03
6,965.9	0.82	354.02	6,577.4	1,742.3	-718.7	1,880.7	0.24	-0.23	2.72
<b>TARGET CIRCLE 1425'FNL &amp; 75'FEL</b>									
7,017.0	0.70	356.00	6,628.5	1,743.0	-718.8	1,881.4	0.24	-0.23	3.88
7,145.0	0.80	336.30	6,756.5	1,744.6	-719.2	1,883.0	0.21	0.08	-15.39
7,273.0	2.10	321.30	6,884.4	1,747.2	-721.0	1,886.1	1.05	1.02	-11.72
7,395.0	2.10	314.70	7,006.4	1,750.5	-724.0	1,890.2	0.20	0.00	-5.41
<b>HARDLINE 75'E OF BHL</b>									
7,440.0	2.10	314.70	7,051.3	1,751.7	-725.1	1,891.7	0.00	0.00	0.00

<b>Company:</b>	NOBLE ENERGY INC WELD COUNTY CO	<b>Local Co-ordinate Reference:</b>	Well Herbst C27-31D
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<b>Well:</b>	Herbst C27-31D	<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

Checked By: _____	Approved By: _____	Date: _____
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