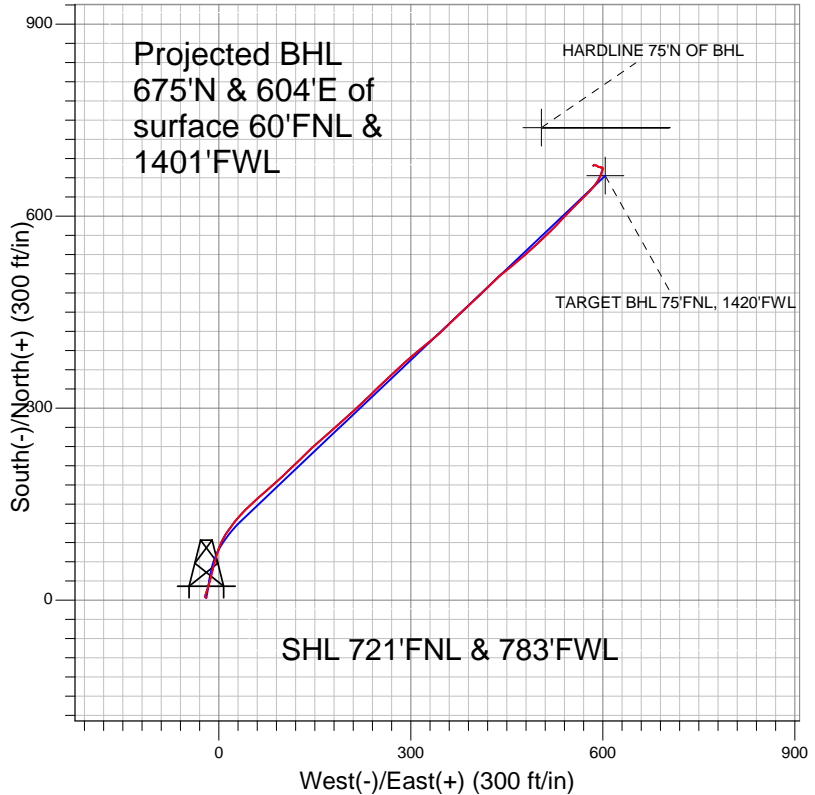


## NOBLE ENERGY INC WELD COUNTY CO



### LEGEND

- △ Sherwood L30-29D, Wellbore #1, Noble Sherwood L30-29D Plan #3 (10-15-09) V0
- Wellbore #1
- Survey #1

## Final Survey Plot

Projected Final Survey -  
 8095'MD & 7975'TVD @ 903' VS  
 0.3 deg Inc 261.1 deg AZ

Project: SEC.30-T3N-R66W  
 Site: Sherwood Pad Sec.30-T3N-R66W  
 Well: Sherwood L30-29D  
 Plan: Wellbore #1



## **Directional**

# **NOBLE ENERGY INC WELD COUNTY CO**

**SEC.30-T3N-R66W**

**Sherwood Pad Sec.30-T3N-R66W**

**Sherwood L30-29D**

**Wellbore #1**

**Survey: Survey #1**

## **Standard Survey Report**

**03 December, 2010**



<b>Company:</b>	NOBLE ENERGY INC WELD COUNTY CO	<b>Local Co-ordinate Reference:</b>	Site Sherwood Pad Sec.30-T3N-R66W
<b>Project:</b>	SEC.30-T3N-R66W	<b>TVD Reference:</b>	WELL @ 4833.0ft (Original Well Elev)
<b>Site:</b>	Sherwood Pad Sec.30-T3N-R66W	<b>MD Reference:</b>	WELL @ 4833.0ft (Original Well Elev)
<b>Well:</b>	Sherwood L30-29D	<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.30-T3N-R66W, 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>	Sherwood Pad Sec.30-T3N-R66W		
<b>Site Position:</b>		<b>Northing:</b>	1,316,714.12 ft
<b>From:</b>	Lat/Long	<b>Easting:</b>	3,187,930.49 ft
<b>Position Uncertainty:</b>	0.0 ft	<b>Slot Radius:</b>	"
		<b>Latitude:</b>	40° 12' 2.952 N
		<b>Longitude:</b>	104° 49' 37.920 W
		<b>Grid Convergence:</b>	0.43 °

<b>Well</b>	Sherwood L30-29D		
<b>Well Position</b>	<b>+N/-S</b>	3.6 ft	<b>Northing:</b>
	<b>+E/-W</b>	-19.6 ft	<b>Easting:</b>
<b>Position Uncertainty</b>		0.0 ft	<b>Wellhead Elevation:</b>
			ft
			<b>Latitude:</b>
			40° 12' 2.988 N
			<b>Longitude:</b>
			104° 49' 38.172 W
			<b>Ground Level:</b>
			4,820.0 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	6/30/2009	9.11	66.95	53,245
	IGRF200510	10/15/2009	9.07	66.94	53,215

<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	3.6	-19.6	41.85	

<b>Survey Program</b>	<b>Date</b>	12/3/2010			
<b>From (ft)</b>	<b>To (ft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>	
633.0	8,095.0	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	3.6	-19.6	0.0	0.00	0.00	0.00	
633.0	0.40	297.10	633.0	4.6	-21.5	-0.6	0.06	0.06	0.00	
727.0	0.50	28.90	727.0	5.1	-21.6	-0.2	0.69	0.11	97.66	
821.0	0.70	9.70	821.0	6.1	-21.3	0.6	0.30	0.21	-20.43	
915.0	1.10	13.90	915.0	7.5	-21.0	1.9	0.43	0.43	4.47	
1,009.0	2.30	14.80	1,008.9	10.2	-20.3	4.4	1.28	1.28	0.96	
1,103.0	4.00	17.90	1,102.8	15.2	-18.8	9.1	1.82	1.81	3.30	
1,197.0	5.40	16.00	1,196.5	22.5	-16.6	16.1	1.50	1.49	-2.02	
1,291.0	6.90	18.50	1,289.9	32.1	-13.6	25.2	1.62	1.60	2.66	
1,385.0	8.70	13.60	1,383.1	44.4	-10.1	36.7	2.04	1.91	-5.21	
1,479.0	10.40	12.50	1,475.7	59.6	-6.6	50.3	1.82	1.81	-1.17	
1,573.0	11.00	18.00	1,568.1	76.4	-2.0	65.9	1.26	0.64	5.85	

<b>Company:</b>	NOBLE ENERGY INC WELD COUNTY CO	<b>Local Co-ordinate Reference:</b>	Site Sherwood Pad Sec.30-T3N-R66W
<b>Project:</b>	SEC.30-T3N-R66W	<b>TVD Reference:</b>	WELL @ 4833.0ft (Original Well Elev)
<b>Site:</b>	Sherwood Pad Sec.30-T3N-R66W	<b>MD Reference:</b>	WELL @ 4833.0ft (Original Well Elev)
<b>Well:</b>	Sherwood L30-29D	<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)	
1,667.0	12.50	28.40	1,660.2	93.9	5.6	84.0	2.75	1.60	11.06	
1,761.0	15.10	35.20	1,751.4	112.9	17.5	106.1	3.26	2.77	7.23	
1,855.0	14.90	41.40	1,842.2	131.9	32.6	130.3	1.72	-0.21	6.60	
1,949.0	15.60	49.10	1,932.9	149.3	50.1	155.0	2.28	0.74	8.19	
2,043.0	16.00	47.90	2,023.4	166.2	69.3	180.4	0.55	0.43	-1.28	
2,137.0	17.20	47.80	2,113.5	184.2	89.2	207.1	1.28	1.28	-0.11	
2,231.0	16.00	46.60	2,203.5	202.5	108.9	233.8	1.33	-1.28	-1.28	
2,325.0	15.40	45.70	2,294.0	220.1	127.2	259.2	0.69	-0.64	-0.96	
2,419.0	16.00	45.90	2,384.5	237.8	145.5	284.6	0.64	0.64	0.21	
2,512.0	16.10	49.30	2,473.9	255.2	164.5	310.1	1.02	0.11	3.66	
2,606.0	17.60	49.40	2,563.9	272.9	185.1	337.1	1.60	1.60	0.11	
2,700.0	18.70	47.30	2,653.2	292.4	207.0	366.2	1.36	1.17	-2.23	
2,794.0	17.80	45.30	2,742.5	312.7	228.3	395.6	1.17	-0.96	-2.13	
2,888.0	17.80	47.10	2,832.0	332.6	249.0	424.2	0.59	0.00	1.91	
2,982.0	18.30	46.70	2,921.3	352.5	270.3	453.2	0.55	0.53	-0.43	
3,076.0	16.90	47.30	3,010.9	371.9	291.1	481.5	1.50	-1.49	0.64	
3,170.0	17.80	51.50	3,100.7	390.1	312.4	509.3	1.64	0.96	4.47	
3,264.0	17.60	49.50	3,190.2	408.3	334.4	537.6	0.68	-0.21	-2.13	
3,358.0	16.80	47.10	3,280.0	426.7	355.2	565.2	1.14	-0.85	-2.55	
3,452.0	17.30	44.40	3,369.9	446.0	374.9	592.7	1.00	0.53	-2.87	
3,546.0	16.40	49.20	3,459.9	464.6	394.7	619.8	1.76	-0.96	5.11	
3,640.0	15.50	44.70	3,550.2	482.2	413.6	645.5	1.63	-0.96	-4.79	
3,734.0	13.20	44.60	3,641.3	498.8	430.0	668.8	2.45	-2.45	-0.11	
3,828.0	14.10	52.00	3,732.6	513.5	446.5	690.8	2.09	0.96	7.87	
3,922.0	14.50	50.90	3,823.7	528.0	464.7	713.7	0.51	0.43	-1.17	
4,016.0	16.90	47.90	3,914.2	544.6	484.0	738.9	2.69	2.55	-3.19	
4,110.0	16.50	45.90	4,004.3	563.0	503.7	765.8	0.74	-0.43	-2.13	
4,204.0	15.20	45.90	4,094.7	580.9	522.1	791.4	1.38	-1.38	0.00	
4,298.0	12.80	42.00	4,185.9	597.2	537.9	814.1	2.74	-2.55	-4.15	
4,392.0	11.70	45.80	4,277.7	611.6	551.7	834.0	1.45	-1.17	4.04	
4,486.0	11.10	45.40	4,369.9	624.6	565.0	852.5	0.64	-0.64	-0.43	
4,580.0	9.50	43.30	4,462.4	636.6	576.8	869.3	1.75	-1.70	-2.23	
4,674.0	9.10	40.00	4,555.1	647.9	586.9	884.5	0.71	-0.43	-3.51	
4,768.0	6.80	25.40	4,648.2	658.6	594.0	897.3	3.24	-2.45	-15.53	
4,862.0	4.00	17.90	4,741.8	666.8	597.4	905.6	3.07	-2.98	-7.98	
4,956.0	3.00	20.10	4,835.6	672.2	599.3	910.9	1.07	-1.06	2.34	
5,050.0	1.10	323.80	4,929.6	675.3	599.6	913.4	2.72	-2.02	-59.89	
5,144.0	1.10	280.30	5,023.6	676.1	598.2	913.1	0.87	0.00	-46.28	
5,238.0	0.10	285.50	5,117.6	676.3	597.2	912.6	1.06	-1.06	5.53	
5,320.4	0.19	284.47	5,200.0	676.4	597.0	912.5	0.11	0.11	-1.25	
TARGET BHL 75'FNL, 1420'FWL										
5,332.0	0.20	284.40	5,211.6	676.4	597.0	912.5	0.11	0.11	-0.62	
5,426.0	0.20	300.80	5,305.6	676.5	596.7	912.4	0.06	0.00	17.45	
5,520.0	0.10	134.30	5,399.6	676.5	596.6	912.3	0.32	-0.11	-177.13	
5,612.0	0.20	227.60	5,491.6	676.4	596.5	912.2	0.25	0.11	101.41	
5,708.0	0.10	273.30	5,587.6	676.3	596.3	911.9	0.15	-0.10	47.60	
5,802.0	0.40	260.60	5,681.6	676.2	595.9	911.6	0.32	0.32	-13.51	
5,896.0	0.60	306.70	5,775.6	676.5	595.2	911.3	0.46	0.21	49.04	
5,990.0	0.80	286.80	5,869.5	676.9	594.2	911.0	0.33	0.21	-21.17	
6,084.0	0.50	272.80	5,963.5	677.2	593.1	910.5	0.36	-0.32	-14.89	
6,178.0	0.60	294.60	6,057.5	677.4	592.3	910.1	0.24	0.11	23.19	
6,272.0	0.50	322.00	6,151.5	677.9	591.6	910.0	0.30	-0.11	29.15	
6,366.0	0.30	307.40	6,245.5	678.4	591.1	910.1	0.24	-0.21	-15.53	
6,459.0	0.10	253.60	6,338.5	678.5	590.9	910.0	0.27	-0.22	-57.85	

<b>Company:</b>	NOBLE ENERGY INC WELD COUNTY CO	<b>Local Co-ordinate Reference:</b>	Site Sherwood Pad Sec.30-T3N-R66W
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<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)	
6,553.0	0.20	312.80	6,432.5	678.6	590.7	909.9	0.18	0.11	62.98	
6,647.0	0.10	323.90	6,526.5	678.8	590.5	909.9	0.11	-0.11	11.81	
6,741.0	0.20	266.10	6,620.5	678.8	590.3	909.8	0.18	0.11	-61.49	
6,835.0	0.40	291.90	6,714.5	678.9	589.8	909.6	0.25	0.21	27.45	
6,928.0	0.50	312.90	6,807.5	679.3	589.2	909.5	0.21	0.11	22.58	
7,023.0	0.40	278.80	6,902.5	679.7	588.6	909.3	0.30	-0.11	-35.89	
7,113.0	0.40	268.80	6,992.5	679.7	588.0	908.9	0.08	0.00	-11.11	
7,211.0	0.50	300.10	7,090.5	679.9	587.3	908.6	0.27	0.10	31.94	
7,305.0	0.20	255.00	7,184.5	680.1	586.7	908.4	0.41	-0.32	-47.98	
7,398.0	0.20	234.00	7,277.5	679.9	586.5	908.1	0.08	0.00	-22.58	
7,492.0	0.30	274.70	7,371.5	679.9	586.1	907.8	0.21	0.11	43.30	
7,586.0	0.20	179.80	7,465.5	679.7	585.8	907.5	0.40	-0.11	-100.96	
7,680.0	0.00	311.10	7,559.5	679.6	585.8	907.4	0.21	-0.21	0.00	
7,774.0	0.20	245.60	7,653.5	679.5	585.7	907.2	0.21	0.21	0.00	
7,868.0	0.40	185.40	7,747.5	679.1	585.5	906.8	0.37	0.21	-64.04	
7,962.0	0.10	228.20	7,841.5	678.7	585.4	906.5	0.35	-0.32	45.53	
8,033.7	0.27	259.53	7,913.2	678.6	585.2	906.3	0.27	0.24	43.70	
<b>HARDLINE 75'N OF BHL</b>										
8,045.0	0.30	261.10	7,924.5	678.6	585.1	906.2	0.27	0.26	13.85	
8,095.0	0.30	261.10	7,974.5	678.6	584.9	906.0	0.00	0.00	0.00	

Checked By: _____	Approved By: _____	Date: _____
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