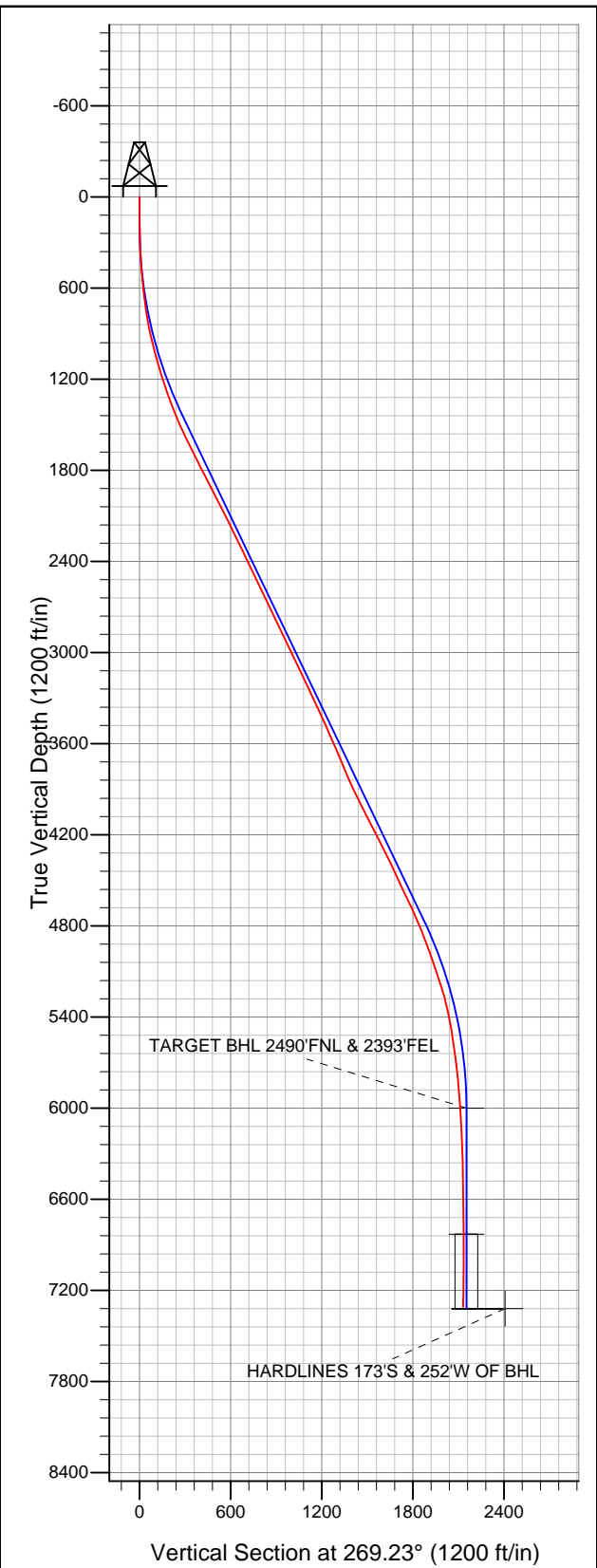


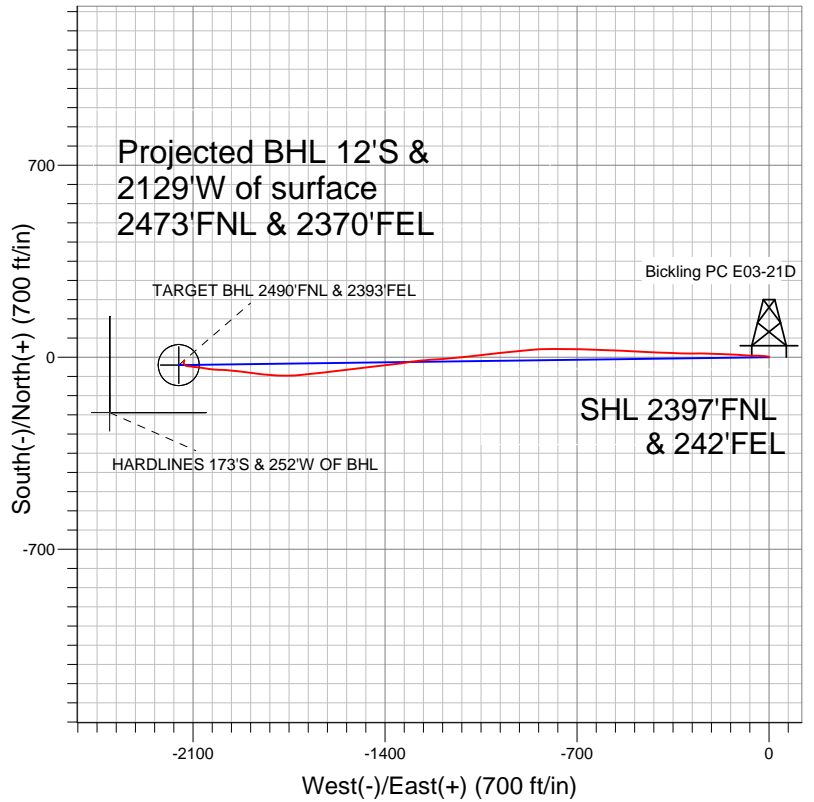


# Well Name: Bickling PC E03-21D

Surface Location: Brown PC E03-17D Pad Sec.3-T6N-R65W  
North American Datum 1983 US State Plane 1983 Colorado Northern Zone  
Ground Elevation: 4838.0  
+N/-S +E/-W Northing Easting Latitude Longitude Slot  
0.0 0.0 1432137.42 3238925.83 40.516440 -104.640640  
Original Well Elev WELL @ 4851.0ft (Original Well Elev)



## NOBLE ENERGY INC WELD COUNTY CO



### LEGEND

- △ Bickling PC E03-21D, Wellbore #1, Noble Bickling PC E03-21D Plan #1 (3-28-12) V0
- Wellbore #1

## Final Survey Plot

Projected Final Survey -  
7745'MD & 7310'TVD @ 2129'VS  
1.3 deg Inc 19.0 deg AZ

Project: SEC.3-T6N-R65W  
Site: Brown PC E03-17D Pad Sec.3-T6N-R65W  
Well: Bickling PC E03-21D  
Plan: Wellbore #1



# **NOBLE ENERGY INC WELD COUNTY CO**

**SEC.3-T6N-R65W**

**Brown PC E03-17D Pad Sec.3-T6N-R65W**

**Bickling PC E03-21D**

**Wellbore #1**

**Design: Wellbore #1**

## **Standard Survey Report**

**02 April, 2012**



<b>Company:</b>	NOBLE ENERGY INC WELD COUNTY CO	<b>Local Co-ordinate Reference:</b>	Well Bickling PC E03-21D
<b>Project:</b>	SEC.3-T6N-R65W	<b>TVD Reference:</b>	WELL @ 4851.0ft (Original Well Elev)
<b>Site:</b>	Brown PC E03-17D Pad Sec.3-T6N-R65W	<b>MD Reference:</b>	WELL @ 4851.0ft (Original Well Elev)
<b>Well:</b>	Bickling PC E03-21D	<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.3-T6N-R65W, 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

Site	Brown PC E03-17D Pad Sec.3-T6N-R65W				
Site Position:		Northing:	1,432,162.93ft	Latitude:	40.516510
From:	Lat/Long	Easting:	3,238,925.58ft	Longitude:	-104.640640
Position Uncertainty:	0.0 ft	Slot Radius:	"	Grid Convergence:	0.56 °

Well	Bickling PC E03-21D					
Well Position	+N/-S	0.0 ft	Northing:	1,432,137.42 ft	Latitude:	40.516440
	+E/-W	0.0 ft	Easting:	3,238,925.83 ft	Longitude:	-104.640640
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	4,838.0 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	3/27/2012	8.70	67.14	53,123

<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	269.23	

<b>Survey Program</b>	<b>Date</b>	4/2/2012			
<b>From (ft)</b>	<b>To (ft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>	
178.0	7,745.0	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	
178.0	0.70	303.70	178.0	0.6	-0.9	0.9	0.39	0.39	0.00	
268.0	1.20	300.60	268.0	1.4	-2.2	2.2	0.56	0.56	-3.44	
331.0	2.40	286.10	331.0	2.1	-4.0	4.0	2.02	1.90	-23.02	
397.0	3.60	277.20	396.9	2.7	-7.4	7.4	1.94	1.82	-13.48	
464.0	4.70	277.20	463.7	3.3	-12.2	12.2	1.64	1.64	0.00	
468.0	4.10	275.60	467.7	3.4	-12.5	12.5	15.31	-15.00	-40.00	
553.0	5.30	276.10	552.4	4.1	-19.4	19.4	1.41	1.41	0.59	
638.0	6.40	273.10	636.9	4.8	-28.1	28.0	1.34	1.29	-3.53	
715.0	7.80	271.00	713.3	5.1	-37.6	37.5	1.85	1.82	-2.73	
818.0	10.20	270.20	815.1	5.2	-53.7	53.6	2.33	2.33	-0.78	
903.0	12.00	272.60	898.5	5.7	-70.0	70.0	2.19	2.12	2.82	
989.0	14.00	273.50	982.3	6.7	-89.4	89.3	2.34	2.33	1.05	

<b>Company:</b>	NOBLE ENERGY INC WELD COUNTY CO	<b>Local Co-ordinate Reference:</b>	Well Bickling PC E03-21D
<b>Project:</b>	SEC.3-T6N-R65W	<b>TVD Reference:</b>	WELL @ 4851.0ft (Original Well Elev)
<b>Site:</b>	Brown PC E03-17D Pad Sec.3-T6N-R65W	<b>MD Reference:</b>	WELL @ 4851.0ft (Original Well Elev)
<b>Well:</b>	Bickling PC E03-21D	<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)	
1,074.0	15.80	273.70	1,064.4	8.1	-111.2	111.1	2.12	2.12	0.24	
1,160.0	17.00	272.10	1,146.9	9.3	-135.4	135.3	1.49	1.40	-1.86	
1,245.0	18.40	274.00	1,227.9	10.7	-161.2	161.1	1.78	1.65	2.24	
1,331.0	19.70	272.10	1,309.2	12.2	-189.2	189.1	1.67	1.51	-2.21	
1,416.0	21.20	270.80	1,388.8	12.9	-218.9	218.7	1.84	1.76	-1.53	
1,502.0	22.70	269.40	1,468.6	12.9	-251.1	250.9	1.85	1.74	-1.63	
1,587.0	24.60	271.70	1,546.4	13.3	-285.2	285.0	2.48	2.24	2.71	
1,673.0	26.50	271.00	1,624.0	14.2	-322.2	322.0	2.24	2.21	-0.81	
1,758.0	27.60	271.70	1,699.7	15.1	-360.9	360.7	1.35	1.29	0.82	
1,844.0	27.30	272.40	1,776.0	16.5	-400.5	400.2	0.51	-0.35	0.81	
1,929.0	27.30	273.00	1,851.6	18.3	-439.4	439.2	0.32	0.00	0.71	
2,015.0	26.60	273.50	1,928.2	20.5	-478.4	478.0	0.86	-0.81	0.58	
2,100.0	26.70	273.00	2,004.2	22.7	-516.4	516.1	0.29	0.12	-0.59	
2,186.0	26.70	271.90	2,081.0	24.4	-555.0	554.7	0.57	0.00	-1.28	
2,271.0	26.80	271.60	2,156.9	25.5	-593.3	592.9	0.20	0.12	-0.35	
2,357.0	25.90	271.70	2,234.0	26.6	-631.4	631.0	1.05	-1.05	0.12	
2,442.0	25.70	271.60	2,310.5	27.7	-668.4	668.0	0.24	-0.24	-0.12	
2,528.0	25.90	271.60	2,388.0	28.7	-705.8	705.4	0.23	0.23	0.00	
2,613.0	26.00	271.70	2,464.4	29.8	-743.0	742.5	0.13	0.12	0.12	
2,699.0	25.30	269.40	2,541.9	30.2	-780.2	779.7	1.42	-0.81	-2.67	
2,784.0	25.10	268.20	2,618.8	29.4	-816.4	815.9	0.65	-0.24	-1.41	
2,870.0	25.90	266.50	2,696.4	27.7	-853.4	852.9	1.26	0.93	-1.98	
2,955.0	26.10	264.50	2,772.8	24.8	-890.5	890.1	1.06	0.24	-2.35	
3,041.0	25.90	264.50	2,850.1	21.2	-928.0	927.7	0.23	-0.23	0.00	
3,126.0	25.90	263.60	2,926.6	17.3	-965.0	964.7	0.46	0.00	-1.06	
3,212.0	25.50	262.60	3,004.1	12.8	-1,002.0	1,001.7	0.69	-0.47	-1.16	
3,297.0	25.90	263.10	3,080.7	8.2	-1,038.6	1,038.4	0.54	0.47	0.59	
3,383.0	25.10	264.70	3,158.3	4.3	-1,075.4	1,075.2	1.23	-0.93	1.86	
3,468.0	25.40	264.90	3,235.2	1.0	-1,111.5	1,111.4	0.37	0.35	0.24	
3,554.0	25.70	263.30	3,312.8	-2.8	-1,148.4	1,148.3	0.87	0.35	-1.86	
3,639.0	24.80	264.50	3,389.7	-6.7	-1,184.4	1,184.4	1.22	-1.06	1.41	
3,725.0	24.20	267.20	3,467.9	-9.2	-1,220.0	1,220.0	1.48	-0.70	3.14	
3,810.0	23.00	266.10	3,545.8	-11.2	-1,254.0	1,254.0	1.50	-1.41	-1.29	
3,896.0	23.90	263.10	3,624.7	-14.5	-1,288.0	1,288.1	1.74	1.05	-3.49	
3,981.0	23.40	260.10	3,702.6	-19.4	-1,321.7	1,321.9	1.53	-0.59	-3.53	
4,067.0	22.50	263.30	3,781.8	-24.3	-1,354.9	1,355.1	1.79	-1.05	3.72	
4,152.0	24.40	262.90	3,859.7	-28.4	-1,388.5	1,388.7	2.24	2.24	-0.47	
4,238.0	25.80	263.10	3,937.6	-32.8	-1,424.7	1,425.0	1.63	1.63	0.23	
4,323.0	26.70	264.00	4,013.9	-37.0	-1,462.1	1,462.4	1.16	1.06	1.06	
4,409.0	27.70	264.30	4,090.3	-41.0	-1,501.2	1,501.6	1.17	1.16	0.35	
4,494.0	28.10	262.60	4,165.5	-45.6	-1,540.7	1,541.1	1.05	0.47	-2.00	
4,580.0	26.80	262.80	4,241.8	-50.6	-1,580.0	1,580.5	1.52	-1.51	0.23	
4,665.0	25.60	262.60	4,318.0	-55.4	-1,617.2	1,617.8	1.42	-1.41	-0.24	
4,751.0	25.70	263.50	4,395.6	-59.9	-1,654.2	1,654.8	0.47	0.12	1.05	
4,836.0	25.40	264.20	4,472.3	-63.8	-1,690.6	1,691.3	0.50	-0.35	0.82	
4,922.0	25.30	267.00	4,550.0	-66.6	-1,727.3	1,728.1	1.40	-0.12	3.26	
5,007.0	25.50	271.00	4,626.8	-67.3	-1,763.8	1,764.5	2.03	0.24	4.71	
5,093.0	25.00	272.60	4,704.6	-66.1	-1,800.4	1,801.1	0.98	-0.58	1.86	
5,178.0	23.10	274.40	4,782.2	-64.0	-1,835.0	1,835.7	2.40	-2.24	2.12	
5,264.0	21.00	277.40	4,861.9	-60.7	-1,867.1	1,867.7	2.77	-2.44	3.49	
5,349.0	20.70	279.80	4,941.3	-56.2	-1,897.0	1,897.6	1.07	-0.35	2.82	
5,435.0	19.30	275.60	5,022.1	-52.2	-1,926.1	1,926.7	2.33	-1.63	-4.88	
5,520.0	18.80	275.10	5,102.5	-49.7	-1,953.8	1,954.2	0.62	-0.59	-0.59	
5,606.0	17.90	275.10	5,184.1	-47.3	-1,980.7	1,981.2	1.05	-1.05	0.00	

<b>Company:</b>	NOBLE ENERGY INC WELD COUNTY CO	<b>Local Co-ordinate Reference:</b>	Well Bickling PC E03-21D
<b>Project:</b>	SEC.3-T6N-R65W	<b>TVD Reference:</b>	WELL @ 4851.0ft (Original Well Elev)
<b>Site:</b>	Brown PC E03-17D Pad Sec.3-T6N-R65W	<b>MD Reference:</b>	WELL @ 4851.0ft (Original Well Elev)
<b>Well:</b>	Bickling PC E03-21D	<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)
5,691.0	15.70	270.50	5,265.5	-46.0	-2,005.2	2,005.7	3.02	-2.59	-5.41
5,777.0	12.40	277.20	5,348.9	-44.7	-2,026.0	2,026.5	4.27	-3.84	7.79
5,862.0	10.40	277.40	5,432.2	-42.6	-2,042.7	2,043.1	2.35	-2.35	0.24
5,948.0	9.80	279.60	5,516.9	-40.4	-2,057.6	2,058.0	0.83	-0.70	2.56
6,033.0	8.30	277.70	5,600.8	-38.4	-2,070.8	2,071.2	1.80	-1.76	-2.24
6,119.0	6.60	276.30	5,686.1	-37.0	-2,081.9	2,082.2	1.99	-1.98	-1.63
6,204.0	6.20	277.20	5,770.6	-35.9	-2,091.3	2,091.6	0.49	-0.47	1.06
6,290.0	4.90	274.00	5,856.2	-35.0	-2,099.6	2,099.9	1.55	-1.51	-3.72
6,375.0	4.70	277.90	5,940.9	-34.3	-2,106.6	2,106.9	0.45	-0.24	4.59
6,437.4	4.19	276.03	6,003.1	-33.7	-2,111.4	2,111.7	0.85	-0.82	-3.00
<b>TARGET BHL 2490'FNL &amp; 2393'FEL</b>									
6,461.0	4.00	275.20	6,026.6	-33.5	-2,113.1	2,113.4	0.85	-0.81	-3.52
6,546.0	2.80	278.10	6,111.5	-33.0	-2,118.1	2,118.4	1.43	-1.41	3.41
6,632.0	2.50	282.50	6,197.4	-32.3	-2,122.0	2,122.3	0.42	-0.35	5.12
6,717.0	1.80	282.00	6,282.3	-31.6	-2,125.2	2,125.4	0.82	-0.82	-0.59
6,803.0	1.60	299.90	6,368.3	-30.7	-2,127.5	2,127.7	0.66	-0.23	20.81
6,888.0	1.10	320.10	6,453.2	-29.5	-2,129.1	2,129.3	0.80	-0.59	23.76
6,974.0	1.20	307.80	6,539.2	-28.3	-2,130.3	2,130.5	0.31	0.12	-14.30
7,059.0	1.10	337.10	6,624.2	-27.0	-2,131.3	2,131.5	0.69	-0.12	34.47
7,145.0	1.80	333.40	6,710.2	-25.0	-2,132.3	2,132.4	0.82	0.81	-4.30
7,230.0	1.10	332.50	6,795.2	-23.1	-2,133.2	2,133.4	0.82	-0.82	-1.06
7,265.9	1.14	334.91	6,831.0	-22.5	-2,133.5	2,133.7	0.17	0.11	6.72
<b>TARGET CIRCLE 2490'FNL &amp; 2393'FEL</b>									
7,316.0	1.20	338.00	6,881.1	-21.6	-2,134.0	2,134.0	0.17	0.12	6.16
7,401.0	1.40	21.40	6,966.1	-19.8	-2,133.9	2,134.0	1.15	0.24	51.06
7,487.0	1.80	19.00	7,052.1	-17.5	-2,133.1	2,133.1	0.47	0.47	-2.79
7,572.0	1.30	10.00	7,137.1	-15.3	-2,132.5	2,132.5	0.65	-0.59	-10.59
7,658.0	1.60	20.00	7,223.0	-13.2	-2,131.9	2,131.9	0.46	0.35	11.63
7,700.0	1.30	19.00	7,265.0	-12.2	-2,131.5	2,131.5	0.72	-0.71	-2.38
7,745.0	1.30	19.00	7,310.0	-11.2	-2,131.2	2,131.2	0.00	0.00	0.00
<b>HARDLINES 173'S &amp; 252'W OF BHL</b>									

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