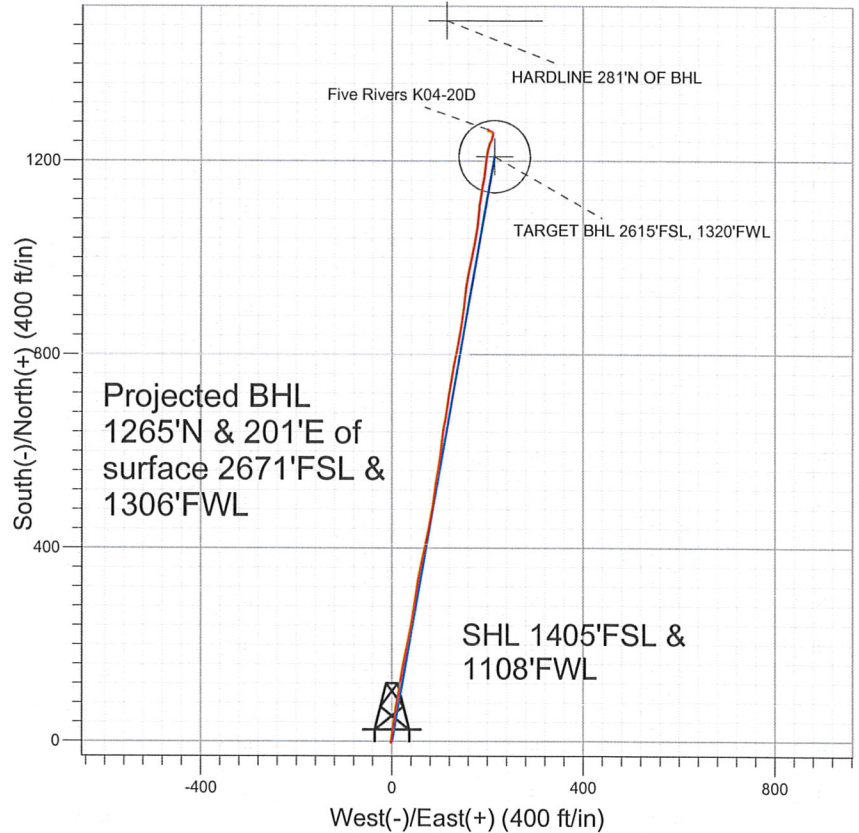


## NOBLE ENERGY INC WELD COUNTY CO



### LEGEND

- △ Five Rivers K04-20D, Wellbore #1, Noble Five Rivers K04-20D Plan #2 (4-19-11) V0
- Wellbore #1
- Survey #1

## Final Survey Plot

Projected Final Survey -  
 7556'MD & 7370'TVD @ 1281°VS  
 0.6 deg Inc 336.1 deg AZ

Project: SEC.4-T4N-R66W  
 Site: Five Rivers K04-20D Pad Sec.4-T4N-R66W  
 Well: Five Rivers K04-20D  
 Plan: Wellbore #1



# **NOBLE ENERGY INC WELD COUNTY CO**

**SEC.4-T4N-R66W**

**Five Rivers K04-20D Pad Sec.4-T4N-R66W**

**Five Rivers K04-20D**

**Wellbore #1**

**Survey: Survey #1**

## **Standard Survey Report**

**18 August, 2011**



**Company:** NOBLE ENERGY INC WELD COUNTY CO  
**Project:** SEC.4-T4N-R66W  
**Site:** Five Rivers K04-20D Pad Sec.4-T4N-R66W  
**Well:** Five Rivers K04-20D  
**Wellbore:** Wellbore #1  
**Design:** Wellbore #1

**Local Co-ordinate Reference:** Well Five Rivers K04-20D  
**TVD Reference:** WELL @ 4704.0ft (Original Well Elev)  
**MD Reference:** WELL @ 4704.0ft (Original Well Elev)  
**North Reference:** True  
**Survey Calculation Method:** Minimum Curvature  
**Database:** Landmark

<b>Project</b>	SEC.4-T4N-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

**Site** Five Rivers K04-20D Pad Sec.4-T4N-R66W

**Site Position:** Northing: 1,366,571.03ft Latitude: 40° 20' 14.856 N  
**From:** Lat/Long Easting: 3,198,078.76ft Longitude: 104° 47' 21.984 W  
**Position Uncertainty:** 0.0 ft Slot Radius: " Grid Convergence: 0.46 °

<b>Well</b>	Five Rivers K04-20D			
<b>Well Position</b>	+N/-S	0.0 ft	<b>Northing:</b>	1,366,571.02 ft
	+E/-W	0.0 ft	<b>Easting:</b>	3,198,078.76 ft
<b>Position Uncertainty</b>	0.0 ft	<b>Wellhead Elevation:</b>	ft	<b>Ground Level:</b> 4,691.0 ft

**Wellbore** Wellbore #1

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	4/19/2011	8.89	67.00	53,114

**Design** Wellbore #1

**Audit Notes:**

**Version:** 1.0 **Phase:** ACTUAL **Tie On Depth:** 0.0

Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)
	0.0	0.0	0.0	10.06

**Survey Program** Date 8/18/2011

From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
700.0	7,556.0	Survey #1 (Wellbore #1)	MWD	MWD - Standard

**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)
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	0.00
700.0	0.30	224.20	700.0	-1.3	-1.3	-1.5	0.04	0.04	0.00
782.0	0.40	231.10	782.0	-1.6	-1.7	-1.9	0.13	0.12	8.41
864.0	0.20	303.70	864.0	-1.7	-2.0	-2.1	0.48	-0.24	88.54
945.0	1.60	26.70	945.0	-0.7	-1.6	-0.9	1.96	1.73	102.47
1,027.0	3.10	3.90	1,026.9	2.6	-0.9	2.4	2.12	1.83	-27.80
1,109.0	5.10	6.20	1,108.7	8.4	-0.4	8.2	2.45	2.44	2.80
1,191.0	7.00	9.70	1,190.2	17.0	0.8	16.8	2.36	2.32	4.27
1,272.0	9.00	8.70	1,270.4	28.1	2.6	28.1	2.48	2.47	-1.23
1,354.0	10.10	7.60	1,351.3	41.6	4.6	41.7	1.36	1.34	-1.34
1,436.0	10.70	7.10	1,432.0	56.2	6.4	56.5	0.74	0.73	-0.61
1,518.0	12.10	10.30	1,512.3	72.2	8.9	72.7	1.87	1.71	3.90
1,599.0	13.30	10.50	1,591.4	89.8	12.1	90.5	1.48	1.48	0.25



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**Project:** SEC.4-T4N-R66W  
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**Well:** Five Rivers K04-20D  
**Wellbore:** Wellbore #1  
**Design:** Wellbore #1

**Local Co-ordinate Reference:** Well Five Rivers K04-20D  
**TVD Reference:** WELL @ 4704.0ft (Original Well Elev)  
**MD Reference:** WELL @ 4704.0ft (Original Well Elev)  
**North Reference:** True  
**Survey Calculation Method:** Minimum Curvature  
**Database:** 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)
1,681.0	13.80	9.30	1,671.1	108.7	15.4	109.7	0.70	0.61	-1.46
1,763.0	14.50	9.10	1,750.6	128.5	18.6	129.8	0.86	0.85	-0.24
1,844.0	14.90	10.10	1,828.9	148.7	22.1	150.3	0.58	0.49	1.23
1,926.0	15.90	10.00	1,908.0	170.2	25.9	172.1	1.22	1.22	-0.12
2,008.0	17.20	12.60	1,986.6	193.1	30.5	195.4	1.82	1.59	3.17
2,090.0	18.60	12.70	2,064.6	217.7	36.0	220.6	1.71	1.71	0.12
2,171.0	18.20	9.60	2,141.5	242.7	40.9	246.2	1.30	-0.49	-3.83
2,253.0	18.10	8.10	2,219.4	268.0	44.9	271.7	0.58	-0.12	-1.83
2,335.0	18.40	9.70	2,297.3	293.3	48.8	297.4	0.71	0.37	1.95
2,416.0	19.90	7.50	2,373.8	319.6	52.8	323.9	2.05	1.85	-2.72
2,498.0	20.30	11.80	2,450.8	347.4	57.5	352.1	1.87	0.49	5.24
2,580.0	22.70	12.20	2,527.1	376.8	63.8	382.1	2.93	2.93	0.49
2,662.0	22.90	11.00	2,602.7	407.9	70.2	413.9	0.62	0.24	-1.46
2,743.0	24.40	12.30	2,676.9	439.7	76.7	446.4	1.96	1.85	1.60
2,825.0	23.60	10.80	2,751.8	472.4	83.4	479.7	1.23	-0.98	-1.83
2,907.0	21.40	6.90	2,827.6	503.4	88.3	511.1	3.24	-2.68	-4.76
2,988.0	22.90	7.70	2,902.6	533.7	92.2	541.6	1.89	1.85	0.99
3,070.0	22.60	10.30	2,978.2	565.0	97.1	573.3	1.28	-0.37	3.17
3,152.0	20.00	7.30	3,054.6	594.4	101.7	603.0	3.44	-3.17	-3.66
3,234.0	18.50	4.40	3,132.0	621.3	104.5	630.0	2.17	-1.83	-3.54
3,315.0	19.10	12.00	3,208.7	647.1	108.3	656.0	3.11	0.74	9.38
3,397.0	16.50	8.20	3,286.8	671.7	112.7	681.1	3.47	-3.17	-4.63
3,479.0	16.00	8.90	3,365.5	694.4	116.1	704.0	0.65	-0.61	0.85
3,561.0	16.70	9.80	3,444.2	717.2	119.9	727.1	0.91	0.85	1.10
3,642.0	17.20	8.20	3,521.7	740.5	123.6	750.7	0.84	0.62	-1.98
3,724.0	16.20	10.10	3,600.2	763.8	127.3	774.3	1.39	-1.22	2.32
3,806.0	17.40	12.00	3,678.7	787.0	131.9	797.9	1.61	1.46	2.32
3,887.0	17.60	10.90	3,755.9	810.9	136.7	822.3	0.48	0.25	-1.36
3,969.0	17.50	10.20	3,834.1	835.2	141.2	847.0	0.28	-0.12	-0.85
4,051.0	17.00	9.70	3,912.4	859.1	145.4	871.3	0.64	-0.61	-0.61
4,133.0	16.20	8.30	3,991.0	882.3	149.1	894.8	1.09	-0.98	-1.71
4,214.0	14.90	5.40	4,069.1	903.8	151.7	916.4	1.87	-1.60	-3.58
4,296.0	14.30	6.90	4,148.4	924.4	153.9	937.1	0.86	-0.73	1.83
4,378.0	16.30	8.20	4,227.5	945.8	156.8	958.7	2.47	2.44	1.59
4,459.0	17.40	10.40	4,305.0	969.0	160.6	982.1	1.57	1.36	2.72
4,541.0	17.90	12.40	4,383.2	993.4	165.5	1,007.0	0.96	0.61	2.44
4,623.0	18.70	12.30	4,461.0	1,018.5	171.0	1,032.7	0.98	0.98	-0.12
4,705.0	16.70	9.80	4,539.1	1,043.0	175.8	1,057.6	2.61	-2.44	-3.05
4,786.0	16.30	6.40	4,616.8	1,065.7	179.1	1,080.6	1.29	-0.49	-4.20
4,868.0	15.40	5.30	4,695.7	1,088.0	181.3	1,103.0	1.16	-1.10	-1.34
4,950.0	14.50	8.60	4,774.9	1,109.0	183.9	1,124.1	1.51	-1.10	4.02
5,031.0	13.00	7.10	4,853.6	1,128.1	186.5	1,143.3	1.90	-1.85	-1.85
5,113.0	12.90	11.50	4,933.5	1,146.2	189.5	1,161.7	1.21	-0.12	5.37
5,195.0	11.10	9.70	5,013.7	1,162.9	192.7	1,178.7	2.24	-2.20	-2.20
5,277.0	9.20	7.70	5,094.4	1,177.2	194.9	1,193.2	2.36	-2.32	-2.44
5,358.0	8.20	6.00	5,174.5	1,189.4	196.3	1,205.4	1.27	-1.23	-2.10
5,440.0	6.90	5.20	5,255.8	1,200.1	197.4	1,216.1	1.59	-1.59	-0.98
5,522.0	6.10	5.90	5,337.2	1,209.3	198.3	1,225.4	0.98	-0.98	0.85
5,604.0	5.70	12.90	5,418.8	1,217.6	199.6	1,233.8	1.00	-0.49	8.54
5,685.0	4.60	14.90	5,499.5	1,224.7	201.4	1,241.0	1.38	-1.36	2.47
5,767.0	4.10	18.70	5,581.2	1,230.7	203.2	1,247.2	0.70	-0.61	4.63
5,849.0	3.60	22.70	5,663.1	1,235.8	205.1	1,252.6	0.69	-0.61	4.88
5,930.0	2.90	24.80	5,743.9	1,240.0	206.9	1,257.1	0.88	-0.86	2.59
5,984.8	2.63	21.88	5,798.7	1,242.4	208.0	1,259.7	0.55	-0.49	-5.33

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<b>TARGET BHL 2615'FSL, 1320'FWL</b>									
6,012.0	2.50	20.20	5,825.8	1,243.6	208.4	1,260.9	0.55	-0.48	-6.18
6,094.0	2.20	16.30	5,907.8	1,246.8	209.5	1,264.2	0.41	-0.37	-4.76
6,176.0	2.10	13.60	5,989.7	1,249.7	210.3	1,267.3	0.17	-0.12	-3.29
6,257.0	1.90	14.90	6,070.7	1,252.5	211.0	1,270.1	0.25	-0.25	1.60
6,339.0	1.20	15.40	6,152.6	1,254.6	211.5	1,272.3	0.85	-0.85	0.61
6,502.0	0.80	338.50	6,315.6	1,257.3	211.6	1,274.9	0.45	-0.25	-22.64
6,666.0	0.80	316.20	6,479.6	1,259.2	210.4	1,276.6	0.19	0.00	-13.60
6,829.0	0.90	302.80	6,642.6	1,260.7	208.5	1,277.8	0.14	0.06	-8.22
6,993.0	0.90	291.60	6,806.6	1,261.9	206.2	1,278.5	0.11	0.00	-6.83
7,050.1	0.86	290.82	6,863.6	1,262.2	205.4	1,278.7	0.07	-0.06	-1.36
<b>TARGET CIRCLE 2615'FSL, 1320'FWL</b>									
7,156.0	0.80	289.20	6,969.5	1,262.7	204.0	1,279.0	0.07	-0.06	-1.53
7,320.0	0.60	301.90	7,133.5	1,263.6	202.2	1,279.5	0.15	-0.12	7.74
7,506.0	0.60	336.10	7,319.5	1,265.0	200.9	1,280.6	0.19	0.00	18.39
7,543.0	0.60	336.10	7,356.5	1,265.3	200.8	1,281.0	0.00	0.00	0.00
<b>HARDLINE 281'N OF BHL</b>									
7,556.0	0.60	336.10	7,369.5	1,265.5	200.7	1,281.1	0.00	0.00	0.00

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