

Well Name: **Five Rivers K16-30D**

Surface Location: Five Rivers K08-24D Pad Sec.8-T4N-R66W  
North American Datum 1983 US State Plane 1983 Colorado Northern Zone

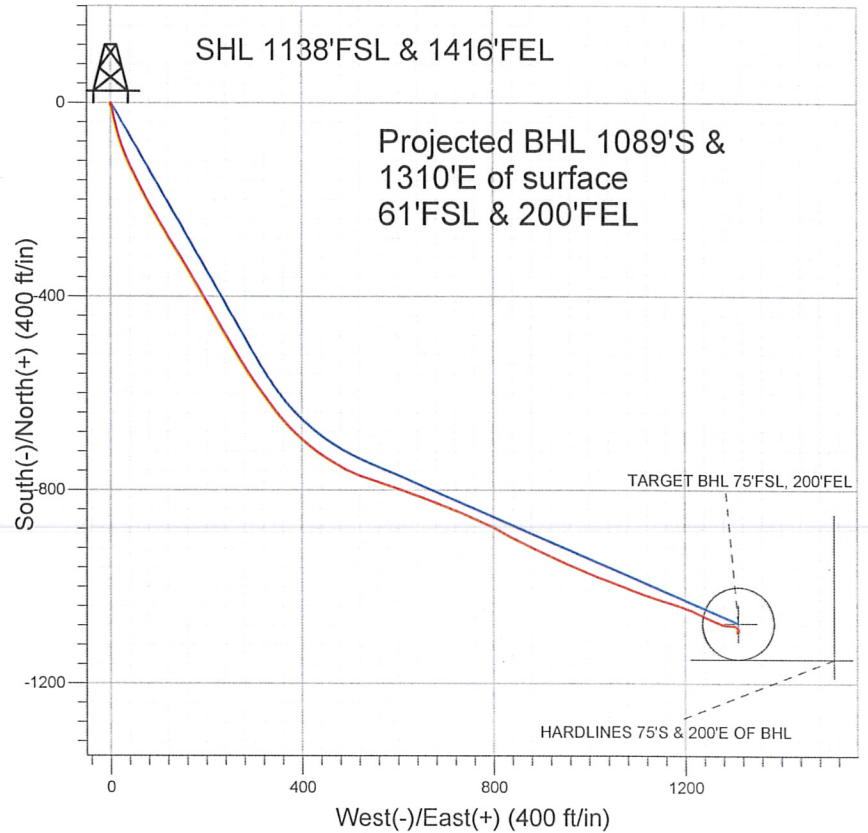
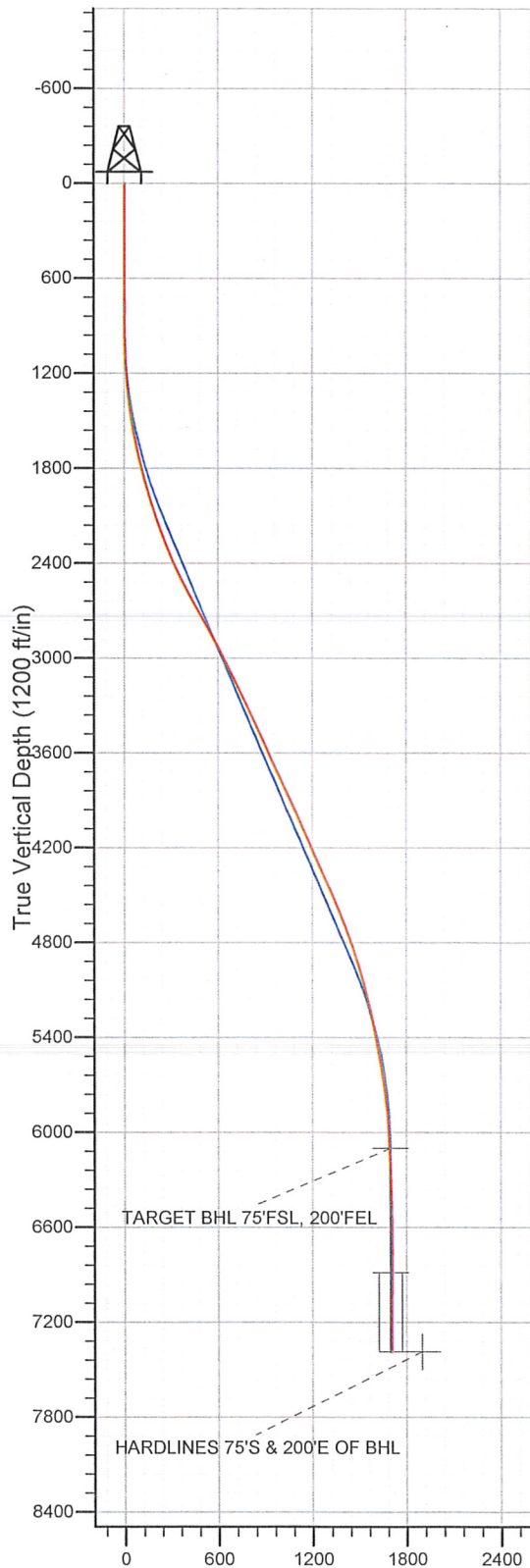
Ground Elevation: 4703.0

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
0.0	0.0	1360961.70	3195912.51	40.322110	-104.797370

Original Well Elev WELL @ 4716.0ft (Original Well Elev)

Slot

## NOBLE ENERGY INC WELD COUNTY CO



### LEGEND

- Five Rivers K16-30D, Wellbore #1, Noble Five Rivers K16-30D Plan #1 (05-13-10) V0
- Wellbore #1
- Survey #1

## Final Survey Plot

Projected Final Survey -  
7745'MD & 7385'TVD @ 1634'VS  
0.7 deg Inc 32.2 deg AZ

Project: SEC.8-T4N-R66W  
Site: Five Rivers K08-24D Pad Sec.8-T4N-R66W  
Well: Five Rivers K16-30D  
Plan: Wellbore #1

Company: NOBLE ENERGY INC WELD COUNTY CO  
 Project: SEC.8-T4N-R66W  
 Site: Five Rivers K08-24D Pad Sec.8-T4N-R66W  
 Well: Five Rivers K16-30D  
 Wellbore: Wellbore #1  
 Design: Wellbore #1

Local Co-ordinate Reference: Well Five Rivers K16-30D  
 TVD Reference: WELL @ 4716.0ft (Original Well Elev)  
 MD Reference: WELL @ 4716.0ft (Original Well Elev)  
 North Reference: True  
 Survey Calculation Method: Minimum Curvature  
 Database: Landmark

Project	SEC.8-T4N-R66W, Weld County, Colorado		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	Colorado Northern Zone		Using geodetic scale factor

Site Five Rivers K08-24D Pad Sec.8-T4N-R66W

Site Position:		Northing:	1,363,128.14 ft	Latitude:	40.328060
From:	Lat/Long	Easting:	3,195,764.31 ft	Longitude:	-104.797840
Position Uncertainty:	0.0 ft	Slot Radius:	"	Grid Convergence:	0.45 °

Well	Five Rivers K16-30D					
Well Position	+N/-S	0.0 ft	Northing:	1,360,961.70 ft	Latitude:	40.322110
	+E/-W	0.0 ft	Easting:	3,195,912.51 ft	Longitude:	-104.797370
Position Uncertainty	0.0 ft	Wellhead Elevation:	ft	Ground Level:	4,703.0 ft	

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	5/13/2010	9.03	67.02	53,242

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	129.40

Survey Program	Date 3/29/2011				
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
642.0	7,745.0	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
642.0	0.30	206.30	642.0	-1.5	-0.7	0.4	0.05	0.05	0.00
735.0	0.30	213.10	735.0	-1.9	-1.0	0.5	0.04	0.00	7.31
829.0	0.40	231.40	829.0	-2.3	-1.4	0.4	0.16	0.11	19.47
922.0	0.10	154.30	922.0	-2.6	-1.6	0.4	0.42	-0.32	-82.90
1,016.0	1.20	146.40	1,016.0	-3.5	-1.0	1.4	1.17	1.17	-8.40
1,110.0	3.40	155.20	1,109.9	-6.9	0.7	4.9	2.36	2.34	9.36
1,203.0	5.70	166.60	1,202.6	-13.9	2.9	11.1	2.65	2.47	12.26
1,297.0	7.90	168.20	1,295.9	-24.7	5.3	19.8	2.35	2.34	1.70
1,391.0	8.90	166.10	1,388.9	-38.1	8.4	30.7	1.11	1.06	-2.23
1,484.0	10.50	165.40	1,480.6	-53.3	12.3	43.3	1.73	1.72	-0.75
1,578.0	12.90	164.80	1,572.6	-71.7	17.2	58.8	2.56	2.55	-0.64
1,671.0	14.10	158.10	1,663.1	-92.2	24.1	77.2	2.12	1.29	-7.20



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**Well:** Five Rivers K16-30D  
**Wellbore:** Wellbore #1  
**Design:** Wellbore #1

**Local Co-ordinate Reference:** Well Five Rivers K16-30D  
**TVD Reference:** WELL @ 4716.0ft (Original Well Elev)  
**MD Reference:** WELL @ 4716.0ft (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)
1,765.0	15.40	156.20	1,754.0	-114.3	33.4	98.4	1.48	1.38	-2.02
1,858.0	16.40	157.10	1,843.4	-137.7	43.5	121.0	1.11	1.08	0.97
1,952.0	17.30	151.50	1,933.4	-162.2	55.4	145.7	1.97	0.96	-5.96
2,046.0	19.60	151.90	2,022.5	-188.4	69.5	173.2	2.45	2.45	0.43
2,139.0	20.60	151.20	2,109.9	-216.5	84.7	202.8	1.11	1.08	-0.75
2,233.0	21.50	148.60	2,197.6	-245.7	101.6	234.5	1.38	0.96	-2.77
2,327.0	22.80	149.50	2,284.7	-276.1	119.8	267.8	1.43	1.38	0.96
2,420.0	24.70	148.20	2,369.8	-308.1	139.2	303.1	2.12	2.04	-1.40
2,514.0	27.00	149.30	2,454.4	-343.2	160.5	341.8	2.50	2.45	1.17
2,607.0	29.50	149.40	2,536.3	-381.0	182.9	383.2	2.69	2.69	0.11
2,701.0	30.60	150.10	2,617.7	-421.7	206.6	427.3	1.23	1.17	0.74
2,794.0	31.90	149.60	2,697.2	-463.4	230.9	472.5	1.43	1.40	-0.54
2,888.0	30.00	149.90	2,777.8	-505.2	255.2	517.8	2.03	-2.02	0.32
2,982.0	29.10	147.00	2,859.6	-544.7	279.4	561.6	1.80	-0.96	-3.09
3,075.0	28.40	144.50	2,941.1	-581.6	304.6	604.6	1.50	-0.75	-2.69
3,169.0	28.00	144.40	3,023.9	-617.8	330.4	647.4	0.43	-0.43	-0.11
3,262.0	26.20	138.90	3,106.7	-651.0	356.6	688.8	3.32	-1.94	-5.91
3,356.0	25.80	134.50	3,191.2	-681.0	384.9	729.6	2.10	-0.43	-4.68
3,450.0	25.90	128.90	3,275.8	-708.2	415.5	770.5	2.60	0.11	-5.96
3,543.0	25.30	123.00	3,359.7	-731.8	447.9	810.6	2.81	-0.65	-6.34
3,637.0	25.90	118.80	3,444.5	-752.6	482.8	850.8	2.03	0.64	-4.47
3,730.0	25.20	110.90	3,528.4	-769.5	519.1	889.5	3.74	-0.75	-8.49
3,824.0	25.10	107.50	3,613.5	-782.6	556.8	927.0	1.54	-0.11	-3.62
3,918.0	26.30	109.30	3,698.2	-795.5	595.5	965.0	1.52	1.28	1.91
4,011.0	26.60	109.80	3,781.5	-809.4	634.5	1,004.0	0.40	0.32	0.54
4,105.0	26.20	111.60	3,865.7	-824.1	673.6	1,043.6	0.95	-0.43	1.91
4,198.0	25.80	112.00	3,949.3	-839.3	711.4	1,082.5	0.47	-0.43	0.43
4,292.0	24.00	112.00	4,034.5	-854.1	748.1	1,120.2	1.91	-1.91	0.00
4,386.0	24.10	115.20	4,120.4	-869.4	783.2	1,157.1	1.39	0.11	3.40
4,479.0	25.10	118.80	4,204.9	-887.0	817.7	1,194.9	1.94	1.08	3.87
4,573.0	24.20	116.40	4,290.4	-905.2	852.4	1,233.2	1.43	-0.96	-2.55
4,667.0	25.00	115.40	4,375.8	-922.3	887.6	1,271.3	0.96	0.85	-1.06
4,760.0	25.80	114.50	4,459.9	-939.1	923.8	1,309.9	0.96	0.86	-0.97
4,854.0	23.90	113.30	4,545.1	-955.1	959.9	1,348.0	2.09	-2.02	-1.28
4,947.0	22.90	112.90	4,630.5	-969.6	993.9	1,383.4	1.09	-1.08	-0.43
5,041.0	21.30	110.90	4,717.6	-982.8	1,026.7	1,417.2	1.88	-1.70	-2.13
5,134.0	21.00	111.50	4,804.3	-994.9	1,058.0	1,449.0	0.40	-0.32	0.65
5,228.0	18.80	109.90	4,892.7	-1,006.3	1,087.9	1,479.3	2.41	-2.34	-1.70
5,321.0	17.20	109.60	4,981.2	-1,016.0	1,114.9	1,506.4	1.72	-1.72	-0.32
5,415.0	14.70	107.20	5,071.5	-1,024.2	1,139.4	1,530.5	2.75	-2.66	-2.55
5,509.0	15.30	107.30	5,162.3	-1,031.4	1,162.6	1,553.1	0.64	0.64	0.11
5,602.0	13.50	109.20	5,252.4	-1,038.6	1,184.6	1,574.6	2.00	-1.94	2.04
5,696.0	11.90	108.50	5,344.1	-1,045.3	1,204.2	1,594.0	1.71	-1.70	-0.74
5,789.0	11.10	115.30	5,435.2	-1,052.2	1,221.4	1,611.6	1.69	-0.86	7.31
5,883.0	10.10	116.50	5,527.6	-1,059.7	1,236.9	1,628.4	1.09	-1.06	1.28
5,977.0	8.90	113.30	5,620.3	-1,066.3	1,251.0	1,643.5	1.39	-1.28	-3.40
6,070.0	8.80	114.30	5,712.2	-1,072.0	1,264.1	1,657.2	0.20	-0.11	1.08
6,164.0	7.40	108.00	5,805.3	-1,076.9	1,276.4	1,669.8	1.76	-1.49	-6.70
6,257.0	5.50	98.50	5,897.7	-1,079.4	1,286.5	1,679.2	2.34	-2.04	-10.22
6,351.0	3.70	89.90	5,991.4	-1,080.0	1,294.0	1,685.4	2.05	-1.91	-9.15
6,444.0	4.00	95.00	6,084.2	-1,080.3	1,300.2	1,690.4	0.49	0.32	5.48
6,460.2	3.69	96.73	6,100.4	-1,080.4	1,301.3	1,691.3	2.03	-1.90	10.67
TARGET BHL 75'FSL, 200'FEL									
6,538.0	2.30	111.30	6,178.0	-1,081.3	1,305.2	1,694.9	2.03	-1.79	18.74

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Survey

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6,632.0	1.90	133.00	6,272.0	-1,083.0	1,308.1	1,698.3	0.94	-0.43	23.09
6,725.0	1.50	145.70	6,364.9	-1,085.1	1,309.9	1,701.0	0.59	-0.43	13.66
6,819.0	1.50	163.20	6,458.9	-1,087.3	1,311.0	1,703.2	0.49	0.00	18.62
6,912.0	1.50	185.60	6,551.9	-1,089.7	1,311.2	1,704.9	0.63	0.00	24.09
7,068.0	0.50	202.70	6,707.9	-1,092.3	1,310.7	1,706.2	0.66	-0.64	10.96
7,224.0	0.60	238.90	6,863.8	-1,093.4	1,309.8	1,706.1	0.23	0.06	23.21
7,246.2	0.51	246.83	6,886.0	-1,093.5	1,309.6	1,706.0	0.55	-0.42	35.74
<b>TARGET CIRCLE 75'FSL, 200'FEL</b>									
7,380.0	0.50	339.90	7,019.8	-1,093.2	1,308.9	1,705.3	0.55	0.00	69.55
7,536.0	0.70	13.10	7,175.8	-1,091.6	1,308.8	1,704.2	0.25	0.13	21.28
7,661.0	0.70	17.30	7,300.8	-1,090.1	1,309.2	1,703.6	0.04	0.00	3.36
7,700.0	0.50	20.20	7,339.8	-1,089.7	1,309.4	1,703.5	0.52	-0.51	7.44
7,745.0	0.70	32.20	7,384.8	-1,089.3	1,309.6	1,703.4	0.52	0.44	26.67
<b>HARDLINES 75'S &amp; 200'E OF BHL</b>									

Checked By: _____	Approved By: _____	Date: _____
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