

Well Name: **Five Rivers K15-30D**

Surface Location: Five Rivers K15-30D Pad Sec.16-T4N-R66W
North American Datum 1983 US State Plane 1983 Colorado Northern Zone

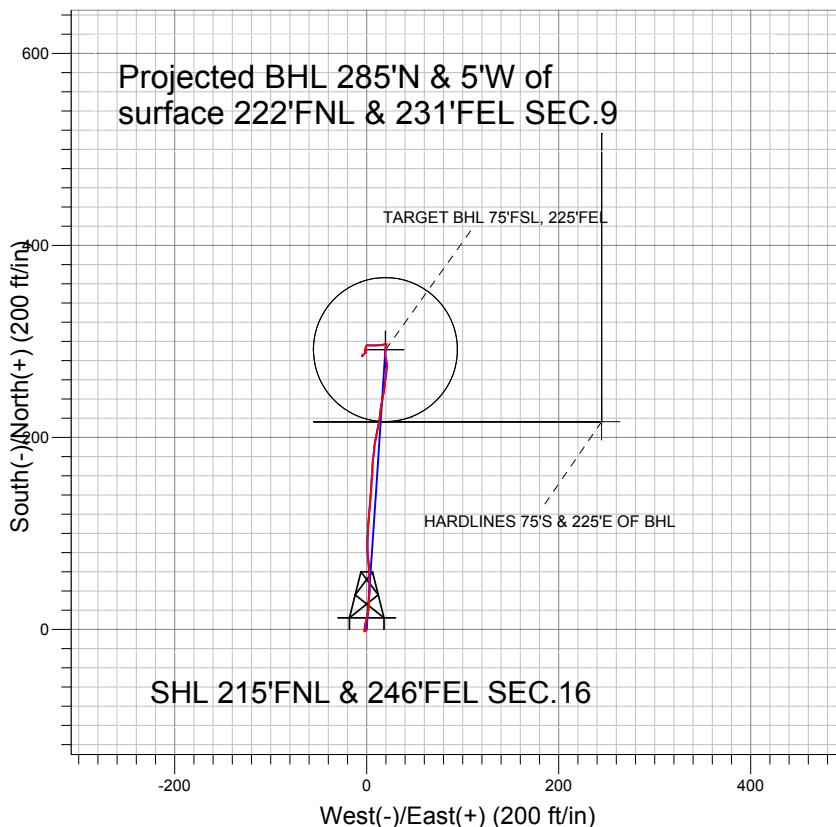
Ground Elevation: 4730.0

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
0.0	0.0	1359636.93	3202403.59	40° 19' 5.988 N	104° 46' 26.868 W

Original Well Elev WELL @ 4743.0ft (Original Well Elev)

Slot

NOBLE ENERGY INC WELD COUNTY CO

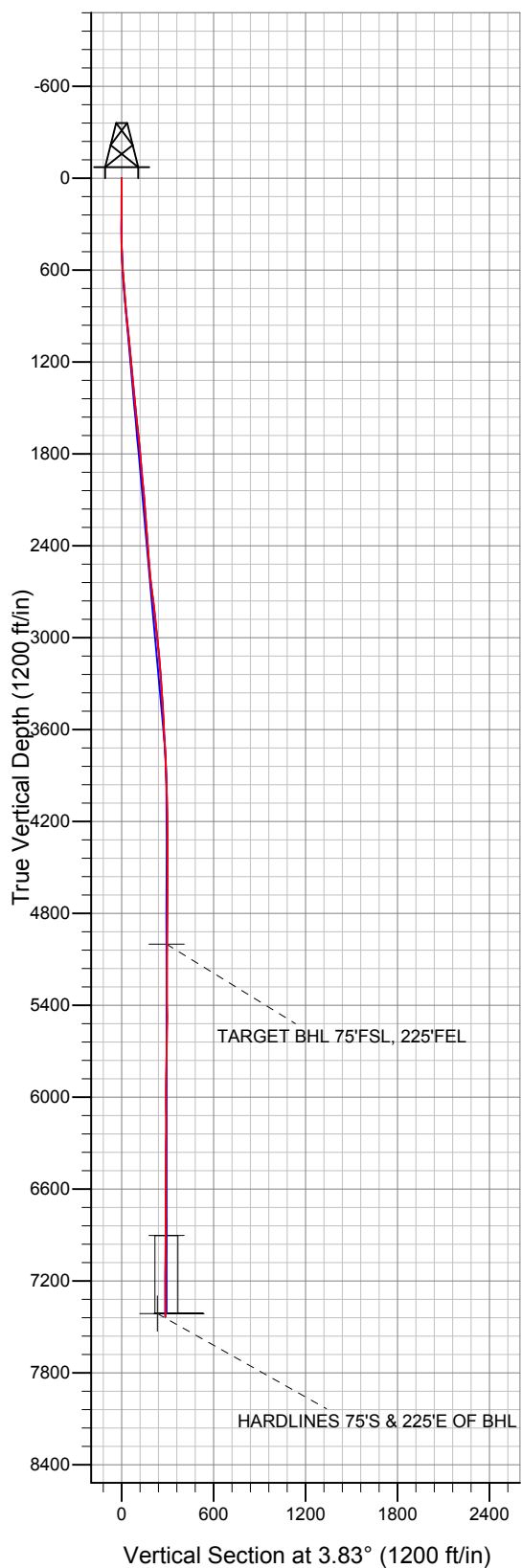


LEGEND

- Five Rivers K15-30D, Wellbore #1, PLAN 2 (FEB 10,2011) V0
- Wellbore #1
- Survey #1

Final Survey Plot

Projected Final Survey -
7449'MD & 7435'TVD @ 284' VS
0.1 deg Inc 224.2 deg AZ



Project: SEC.16-T4N-R66W
Site: Five Rivers K15-30D Pad Sec.16-T4N-R66W
Well: Five Rivers K15-30D
Plan: Wellbore #1



Directional

NOBLE ENERGY INC WELD COUNTY CO

SEC.16-T4N-R66W

Five Rivers K15-30D Pad Sec.16-T4N-R66W

Five Rivers K15-30D

Wellbore #1

Survey: Survey #1

Standard Survey Report

17 February, 2011



Company:	NOBLE ENERGY INC WELD COUNTY CO	Local Co-ordinate Reference:	Well Five Rivers K15-30D
Project:	SEC.16-T4N-R66W	TVD Reference:	WELL @ 4743.0ft (Original Well Elev)
Site:	Five Rivers K15-30D Pad Sec.16-T4N-R66W	MD Reference:	WELL @ 4743.0ft (Original Well Elev)
Well:	Five Rivers K15-30D	North Reference:	True
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	Landmark

Project	SEC.16-T4N-R66W, Weld County, Colorado		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		Using Well Reference Point
Map Zone:	Colorado Northern Zone		Using geodetic scale factor

Site	Five Rivers K15-30D Pad Sec.16-T4N-R66W		
Site Position:		Northing:	1,359,636.94 ft
From:	Lat/Long	Easting:	3,202,403.59 ft
Position Uncertainty:	0.0 ft	Slot Radius:	"
		Latitude:	40° 19' 5.988 N
		Longitude:	104° 46' 26.868 W
		Grid Convergence:	0.47 °

Well	Five Rivers K15-30D		
Well Position	+N-S	0.0 ft	Northing: 1,359,636.93 ft
	+E-W	0.0 ft	Easting: 3,202,403.59 ft
Position Uncertainty		0.0 ft	Wellhead Elevation: ft
			Latitude: 40° 19' 5.988 N
			Longitude: 104° 46' 26.868 W
			Ground Level: 4,730.0 ft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	2/1/2011	8.91	67.00	53,127

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 (°)	
	5,000.0	0.0	0.0	3.83	

Survey Program	Date	2/17/2011			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
43.0	7,449.0	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	
43.0	0.70	224.70	43.0	-0.2	-0.2	-0.2	1.63	1.63	0.00	
146.0	0.50	199.60	146.0	-1.1	-0.8	-1.1	0.32	-0.19	-24.37	
238.0	0.90	242.20	238.0	-1.8	-1.6	-1.9	0.69	0.43	46.30	
333.0	0.20	316.80	333.0	-2.0	-2.3	-2.2	0.91	-0.74	78.53	
424.0	1.30	2.50	424.0	-0.9	-2.4	-1.0	1.28	1.21	50.22	
517.0	2.50	7.00	516.9	2.2	-2.1	2.1	1.30	1.29	4.84	
603.0	4.30	13.80	602.8	7.2	-1.1	7.1	2.14	2.09	7.91	
696.0	4.40	14.70	695.5	14.0	0.6	14.1	0.13	0.11	0.97	
790.0	4.90	4.80	789.2	21.5	1.9	21.6	1.00	0.53	-10.53	
884.0	5.70	1.60	882.8	30.2	2.4	30.3	0.91	0.85	-3.40	
978.0	5.40	3.50	976.3	39.3	2.8	39.4	0.37	-0.32	2.02	
1,103.0	5.70	357.40	1,100.8	51.4	2.8	51.4	0.53	0.24	-4.88	

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Site:	Five Rivers K15-30D Pad Sec.16-T4N-R66W	MD Reference:	WELL @ 4743.0ft (Original Well Elev)
Well:	Five Rivers K15-30D	North Reference:	True
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	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)
1,197.0	5.60	358.80	1,194.3	60.6	2.5	60.6	0.18	-0.11	1.49
1,291.0	5.50	352.70	1,287.9	69.7	1.9	69.6	0.64	-0.11	-6.49
1,385.0	5.00	355.00	1,381.5	78.2	0.9	78.1	0.58	-0.53	2.45
1,479.0	6.30	1.00	1,475.0	87.4	0.7	87.3	1.52	1.38	6.38
1,573.0	5.60	1.50	1,568.5	97.2	0.9	97.0	0.75	-0.74	0.53
1,667.0	5.80	6.80	1,662.0	106.5	1.6	106.4	0.60	0.21	5.64
1,761.0	5.70	1.40	1,755.6	115.9	2.2	115.8	0.59	-0.11	-5.74
1,855.0	5.30	6.40	1,849.1	124.8	2.8	124.8	0.66	-0.43	5.32
1,949.0	4.90	3.80	1,942.8	133.2	3.6	133.1	0.49	-0.43	-2.77
2,043.0	5.20	3.70	2,036.4	141.4	4.1	141.4	0.32	0.32	-0.11
2,137.0	4.60	3.80	2,130.1	149.4	4.6	149.4	0.64	-0.64	0.11
2,231.0	4.70	5.30	2,223.7	157.0	5.2	157.0	0.17	0.11	1.60
2,325.0	3.40	3.20	2,317.5	163.7	5.8	163.7	1.39	-1.38	-2.23
2,419.0	4.50	1.00	2,411.3	170.1	6.0	170.1	1.18	1.17	-2.34
2,513.0	4.90	8.70	2,505.0	177.8	6.7	177.8	0.79	0.43	8.19
2,607.0	5.50	3.70	2,598.6	186.2	7.6	186.3	0.80	0.64	-5.32
2,701.0	7.30	10.70	2,692.0	196.6	8.9	196.8	2.08	1.91	7.45
2,795.0	6.90	12.40	2,785.3	208.0	11.3	208.3	0.48	-0.43	1.81
2,889.0	6.20	9.30	2,878.7	218.5	13.3	218.9	0.83	-0.74	-3.30
2,983.0	5.80	4.20	2,972.1	228.3	14.5	228.7	0.71	-0.43	-5.43
3,077.0	6.20	12.30	3,065.6	238.0	15.9	238.5	1.00	0.43	8.62
3,171.0	4.70	10.40	3,159.2	246.7	17.7	247.3	1.61	-1.60	-2.02
3,265.0	3.90	4.40	3,252.9	253.7	18.6	254.4	0.98	-0.85	-6.38
3,359.0	3.80	9.00	3,346.7	259.9	19.4	260.7	0.35	-0.11	4.89
3,453.0	3.90	5.50	3,440.5	266.2	20.1	267.0	0.27	0.11	-3.72
3,547.0	2.80	11.80	3,534.4	271.6	20.9	272.4	1.23	-1.17	6.70
3,641.0	2.80	350.30	3,628.2	276.1	21.0	276.9	1.11	0.00	-22.87
3,735.0	3.00	349.80	3,722.1	280.8	20.2	281.5	0.21	0.21	-0.53
3,829.0	2.80	353.10	3,816.0	285.5	19.5	286.2	0.28	-0.21	3.51
3,923.0	2.80	3.10	3,909.9	290.1	19.3	290.7	0.52	0.00	10.64
4,017.0	2.40	10.00	4,003.8	294.3	19.8	295.0	0.54	-0.43	7.34
4,111.0	0.70	27.50	4,097.8	296.8	20.4	297.5	1.86	-1.81	18.62
4,205.0	0.10	198.80	4,191.8	297.2	20.6	297.9	0.85	-0.64	182.23
4,299.0	0.10	41.50	4,285.8	297.2	20.7	297.9	0.21	0.00	-167.34
4,393.0	0.10	199.40	4,379.8	297.2	20.7	297.9	0.21	0.00	167.98
4,455.0	0.40	231.70	4,441.8	297.0	20.5	297.7	0.52	0.48	52.10
4,549.0	0.40	245.40	4,535.8	296.7	19.9	297.3	0.10	0.00	14.57
4,643.0	0.50	43.10	4,629.8	296.8	19.9	297.5	0.94	0.11	167.77
4,737.0	0.80	262.70	4,723.7	297.0	19.6	297.7	1.31	0.32	-149.36
4,831.0	2.10	258.80	4,817.7	296.6	17.2	297.1	1.39	1.38	-4.15
4,925.0	2.20	263.80	4,911.7	296.1	13.7	296.3	0.23	0.11	5.32
5,013.1	1.73	267.39	4,999.7	295.8	10.7	295.9	0.55	-0.53	4.07
TARGET BHL 75'FSL, 225'FEL									
5,019.0	1.70	267.70	5,005.6	295.8	10.5	295.9	0.55	-0.53	5.27
5,113.0	1.80	272.70	5,099.6	295.8	7.7	295.7	0.19	0.11	5.32
5,207.0	1.10	266.50	5,193.5	295.9	5.3	295.6	0.76	-0.74	-6.60
5,301.0	1.00	266.90	5,287.5	295.8	3.6	295.3	0.11	-0.11	0.43
5,395.0	0.80	288.80	5,381.5	295.9	2.1	295.4	0.42	-0.21	23.30
5,489.0	0.60	295.20	5,475.5	296.3	1.1	295.8	0.23	-0.21	6.81
5,583.0	1.10	219.50	5,569.5	295.9	0.1	295.2	1.19	0.53	-80.53
5,677.0	0.40	184.70	5,663.5	294.8	-0.5	294.1	0.86	-0.74	-37.02
5,771.0	1.10	199.50	5,757.5	293.7	-0.9	292.9	0.77	0.74	15.74
5,865.0	1.80	201.30	5,851.4	291.4	-1.7	290.7	0.75	0.74	1.91
5,959.0	0.40	85.60	5,945.4	290.1	-1.9	289.3	2.13	-1.49	-123.09

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6,053.0	0.40	29.00	6,039.4	290.4	-1.4	289.7	0.40	0.00	-60.21
6,147.0	0.30	73.00	6,133.4	290.8	-1.0	290.0	0.30	-0.11	46.81
6,241.0	0.60	168.50	6,227.4	290.3	-0.7	289.6	0.74	0.32	101.60
6,335.0	0.20	286.50	6,321.4	289.9	-0.8	289.2	0.76	-0.43	125.53
6,429.0	0.10	147.50	6,415.4	289.9	-0.9	289.2	0.30	-0.11	-147.87
6,522.0	0.40	179.90	6,508.4	289.5	-0.8	288.8	0.34	0.32	34.84
6,616.0	0.30	154.50	6,602.4	288.9	-0.7	288.2	0.19	-0.11	-27.02
6,710.0	0.50	227.20	6,696.4	288.4	-0.9	287.7	0.53	0.21	77.34
6,804.0	0.70	234.60	6,790.4	287.8	-1.7	287.1	0.23	0.21	7.87
6,898.0	0.70	226.70	6,884.4	287.1	-2.6	286.3	0.10	0.00	-8.40
6,916.4	0.64	229.54	6,902.8	287.0	-2.7	286.1	0.39	-0.35	15.43
TARGET CIRCLE 75'FSL, 225'FEL									
6,992.0	0.40	250.40	6,978.4	286.6	-3.3	285.7	0.39	-0.31	27.60
7,085.0	0.60	224.10	7,071.4	286.1	-4.0	285.2	0.32	0.22	-28.28
7,179.0	0.20	238.00	7,165.4	285.7	-4.4	284.8	0.43	-0.43	14.79
7,273.0	0.40	168.70	7,259.4	285.3	-4.5	284.4	0.40	0.21	-73.72
7,399.0	0.10	224.20	7,385.4	284.8	-4.5	283.8	0.28	-0.24	44.05
7,426.4	0.10	224.20	7,412.8	284.7	-4.5	283.8	0.00	0.00	0.00
HARDLINES 75'S & 225'E OF BHL									
7,449.0	0.10	224.20	7,435.4	284.7	-4.6	283.8	0.00	0.00	0.00

Checked By: _____ Approved By: _____ Date: _____