

Well Name: **Five Rivers K10-30D**

Surface Location: Five Rivers K03-33D Pad Sec.3-T4N-R66W
North American Datum 1983 US State Plane 1983 Colorado Northern Zone

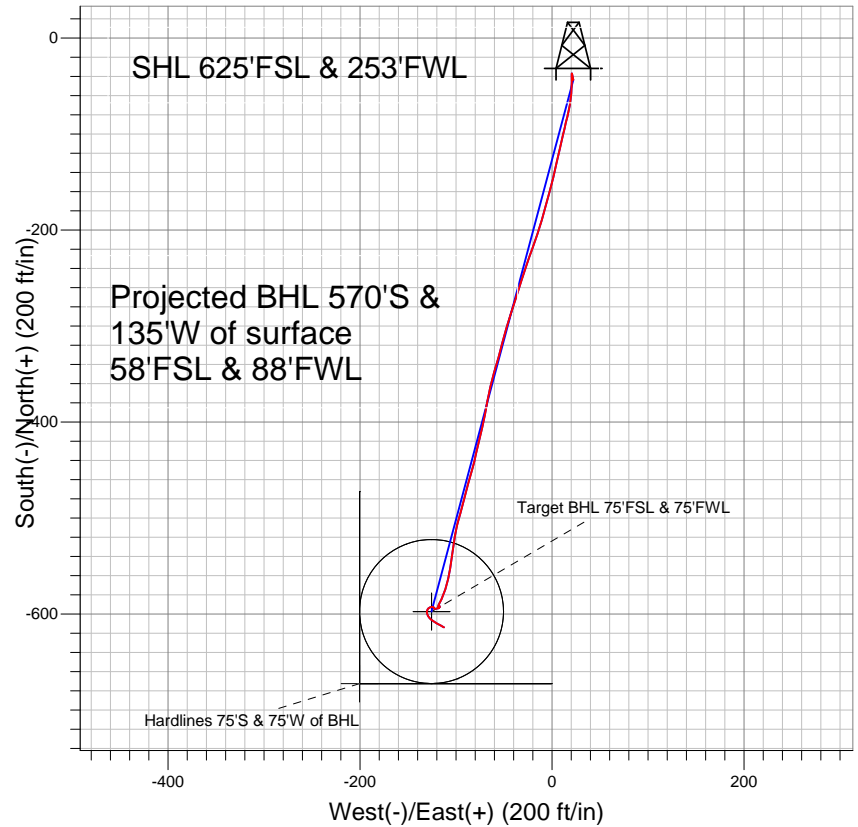
Ground Elevation: 4721.0

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
-43.7	22.3	1365807.81	3202796.35	40° 20' 6.936 N	104° 46' 21.144 W

Original Well Elev WELL @ 4734.0ft (Original Well Elev)

Slot

NOBLE ENERGY INC WELD COUNTY CO



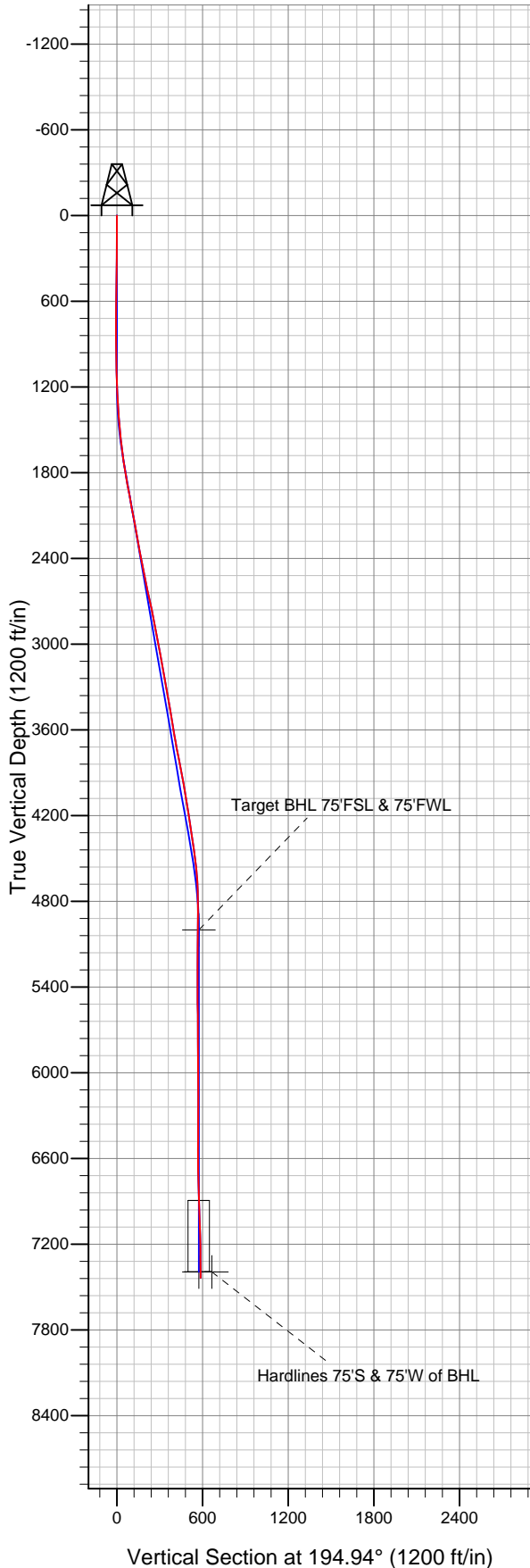
LEGEND

- + Five Rivers K10-30D, Wellbore #1, Noble Five Rivers K10-30D Plan#1 (6-29-10) VO
- Wellbore #1
- Survey #1

Final Survey Plot

Projected Final Survey -
7485'MD & 7436'TVD @ 586'VS
1.0 deg Inc 120.0 deg AZ

Project: SEC.3-T4N-R66W
Site: Five Rivers K03-33D Pad Sec.3-T4N-R66W
Well: Five Rivers K10-30D
Plan: Wellbore #1





Directional

NOBLE ENERGY INC WELD COUNTY CO

SEC.3-T4N-R66W

Five Rivers K03-33D Pad Sec.3-T4N-R66W

Five Rivers K10-30D

Wellbore #1

Survey: Survey #1

Standard Survey Report

08 July, 2011



Company:	NOBLE ENERGY INC WELD COUNTY CO	Local Co-ordinate Reference:	Site Five Rivers K03-33D Pad Sec.3-T4N-R66W
Project:	SEC.3-T4N-R66W	TVD Reference:	WELL @ 4734.0ft (Original Well Elev)
Site:	Five Rivers K03-33D Pad Sec.3-T4N-R66W	MD Reference:	WELL @ 4734.0ft (Original Well Elev)
Well:	Five Rivers K10-30D	North Reference:	True
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	Landmark

Project	SEC.3-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 K03-33D Pad Sec.3-T4N-R66W		
Site Position:		Northing:	1,365,851.35ft
From:	Lat/Long	Easting:	3,202,773.69ft
Position Uncertainty:	0.0 ft	Slot Radius:	"
		Latitude:	40° 20' 7.368 N
		Longitude:	104° 46' 21.432 W
		Grid Convergence:	0.47 °

Well	Five Rivers K10-30D		
Well Position	+N-S	-43.7 ft	Northing:
	+E-W	22.3 ft	Easting:
Position Uncertainty		0.0 ft	Wellhead Elevation:
			ft
			Latitude:
			40° 20' 6.936 N
			Longitude:
			104° 46' 21.144 W
			Ground Level:
			4,721.0ft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	6/17/2011	8.86	67.00	53,097

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	-43.7	22.3	194.94	

Survey Program	Date	7/8/2011			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
597.0	7,485.0	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	-43.7	22.3	0.0	0.00	0.00	0.00	
597.0	1.10	346.40	597.0	-38.2	21.0	-5.0	0.18	0.18	0.00	
683.0	0.50	6.60	683.0	-37.0	20.8	-6.1	0.76	-0.70	23.49	
769.0	0.40	192.50	769.0	-36.9	20.8	-6.2	1.05	-0.12	-202.44	
854.0	0.30	189.40	854.0	-37.4	20.7	-5.7	0.12	-0.12	-3.65	
940.0	0.60	186.40	939.9	-38.1	20.6	-5.0	0.35	0.35	-3.49	
1,025.0	1.30	174.40	1,024.9	-39.5	20.6	-3.7	0.85	0.82	-14.12	
1,111.0	1.50	183.20	1,110.9	-41.6	20.7	-1.7	0.34	0.23	10.23	
1,196.0	1.40	180.30	1,195.9	-43.7	20.6	0.4	0.15	-0.12	-3.41	
1,282.0	2.80	180.50	1,281.8	-46.9	20.6	3.5	1.63	1.63	0.23	
1,367.0	4.00	183.40	1,366.7	-51.9	20.4	8.4	1.43	1.41	3.41	
1,453.0	5.10	182.80	1,452.4	-58.7	20.0	15.1	1.28	1.28	-0.70	
1,538.0	6.30	189.70	1,537.0	-67.1	19.1	23.4	1.62	1.41	8.12	

Company:	NOBLE ENERGY INC WELD COUNTY CO	Local Co-ordinate Reference:	Site Five Rivers K03-33D Pad Sec.3-T4N-R66W
Project:	SEC.3-T4N-R66W	TVD Reference:	WELL @ 4734.0ft (Original Well Elev)
Site:	Five Rivers K03-33D Pad Sec.3-T4N-R66W	MD Reference:	WELL @ 4734.0ft (Original Well Elev)
Well:	Five Rivers K10-30D	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)	
1,624.0	7.30	192.70	1,622.4	-77.1	17.1	33.6	1.23	1.16	3.49	
1,709.0	8.30	193.50	1,706.6	-88.3	14.4	45.1	1.18	1.18	0.94	
1,795.0	9.40	192.40	1,791.6	-101.2	11.5	58.3	1.29	1.28	-1.28	
1,880.0	10.20	193.20	1,875.3	-115.3	8.3	72.8	0.95	0.94	0.94	
1,966.0	10.30	192.40	1,959.9	-130.2	4.9	88.1	0.20	0.12	-0.93	
2,051.0	10.70	193.70	2,043.5	-145.3	1.4	103.6	0.55	0.47	1.53	
2,137.0	10.40	195.80	2,128.1	-160.5	-2.6	119.3	0.57	-0.35	2.44	
2,222.0	9.90	194.90	2,211.7	-175.0	-6.6	134.3	0.62	-0.59	-1.06	
2,308.0	10.40	195.90	2,296.4	-189.6	-10.6	149.4	0.62	0.58	1.16	
2,393.0	10.80	198.40	2,379.9	-204.5	-15.2	165.1	0.72	0.47	2.94	
2,479.0	10.90	200.50	2,464.4	-219.8	-20.6	181.2	0.47	0.12	2.44	
2,564.0	12.10	198.10	2,547.7	-235.8	-26.2	198.1	1.52	1.41	-2.82	
2,650.0	12.40	198.30	2,631.7	-253.1	-31.9	216.3	0.35	0.35	0.23	
2,735.0	12.30	197.30	2,714.8	-270.4	-37.5	234.5	0.28	-0.12	-1.18	
2,821.0	10.90	198.20	2,799.0	-286.9	-42.7	251.7	1.64	-1.63	1.05	
2,907.0	10.30	196.60	2,883.5	-302.0	-47.5	267.5	0.78	-0.70	-1.86	
2,992.0	11.00	194.40	2,967.1	-317.1	-51.7	283.2	0.95	0.82	-2.59	
3,078.0	11.00	195.40	3,051.5	-333.0	-55.9	299.6	0.22	0.00	1.16	
3,163.0	10.60	195.40	3,135.0	-348.4	-60.1	315.6	0.47	-0.47	0.00	
3,249.0	10.50	194.00	3,219.5	-363.6	-64.1	331.3	0.32	-0.12	-1.63	
3,334.0	9.70	190.30	3,303.2	-378.1	-67.3	346.2	1.21	-0.94	-4.35	
3,420.0	9.20	189.70	3,388.1	-392.0	-69.7	360.3	0.59	-0.58	-0.70	
3,505.0	9.50	194.20	3,471.9	-405.5	-72.6	374.1	0.93	0.35	5.29	
3,591.0	9.80	193.80	3,556.7	-419.5	-76.1	388.5	0.36	0.35	-0.47	
3,676.0	9.60	191.70	3,640.5	-433.5	-79.2	402.8	0.48	-0.24	-2.47	
3,762.0	10.80	195.50	3,725.1	-448.3	-82.8	418.0	1.60	1.40	4.42	
3,847.0	11.40	195.60	3,808.6	-464.1	-87.2	434.4	0.71	0.71	0.12	
3,933.0	10.90	194.10	3,892.9	-480.1	-91.5	451.0	0.67	-0.58	-1.74	
4,018.0	10.20	195.50	3,976.5	-495.2	-95.5	466.5	0.88	-0.82	1.65	
4,104.0	9.20	192.30	4,061.3	-509.2	-99.0	481.0	1.32	-1.16	-3.72	
4,189.0	8.80	190.20	4,145.2	-522.3	-101.6	494.3	0.61	-0.47	-2.47	
4,275.0	9.40	187.50	4,230.1	-535.7	-103.6	507.8	0.86	0.70	-3.14	
4,360.0	8.70	190.10	4,314.1	-548.9	-105.7	521.1	0.95	-0.82	3.06	
4,446.0	8.00	192.20	4,399.2	-561.2	-108.1	533.6	0.89	-0.81	2.44	
4,531.0	7.40	192.70	4,483.4	-572.3	-110.5	544.9	0.71	-0.71	0.59	
4,617.0	5.90	204.90	4,568.8	-581.7	-113.6	554.8	2.39	-1.74	14.19	
4,702.0	4.00	209.40	4,653.5	-588.2	-116.9	562.0	2.28	-2.24	5.29	
4,788.0	1.50	186.10	4,739.4	-592.0	-118.5	566.0	3.13	-2.91	-27.09	
4,873.0	1.00	93.80	4,824.4	-593.1	-117.9	567.0	2.16	-0.59	-108.59	
4,959.0	0.30	33.20	4,910.4	-593.0	-117.0	566.6	1.04	-0.81	-70.47	
5,045.0	0.30	359.60	4,996.4	-592.6	-116.9	566.2	0.20	0.00	-39.07	
5,048.6	0.30	358.94	5,000.0	-592.6	-116.9	566.2	0.10	-0.01	-18.27	
Target BHL 75°FSL & 75°FWL										
5,130.0	0.30	343.90	5,081.4	-592.1	-116.9	565.8	0.10	0.00	-18.48	
5,216.0	0.30	316.70	5,167.4	-591.8	-117.2	565.5	0.16	0.00	-31.63	
5,301.0	0.10	260.80	5,252.4	-591.6	-117.4	565.4	0.30	-0.24	-65.76	
5,387.0	0.10	339.80	5,338.4	-591.6	-117.5	565.4	0.15	0.00	91.86	
5,472.0	0.30	42.20	5,423.4	-591.3	-117.4	565.1	0.32	0.24	73.41	
5,558.0	0.20	229.30	5,509.4	-591.3	-117.3	565.0	0.58	-0.12	-201.05	
5,643.0	0.70	221.00	5,594.4	-591.7	-117.8	565.6	0.59	0.59	-9.76	
5,729.0	0.40	139.00	5,680.4	-592.4	-117.9	566.2	0.88	-0.35	-95.35	
5,814.0	0.70	165.80	5,765.4	-593.1	-117.6	566.9	0.46	0.35	31.53	
5,900.0	0.30	228.40	5,851.4	-593.8	-117.6	567.5	0.72	-0.47	72.79	
5,985.0	0.60	251.00	5,936.4	-594.0	-118.2	567.9	0.40	0.35	26.59	

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Well:	Five Rivers K10-30D	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)
6,071.0	0.90	263.90	6,022.3	-594.3	-119.3	568.4	0.40	0.35	15.00
6,156.0	1.10	265.30	6,107.3	-594.4	-120.8	569.0	0.24	0.24	1.65
6,242.0	1.10	265.30	6,193.3	-594.5	-122.4	569.5	0.00	0.00	0.00
6,327.0	0.60	23.70	6,278.3	-594.2	-123.1	569.3	1.74	-0.59	139.29
6,413.0	0.50	347.20	6,364.3	-593.4	-123.0	568.6	0.42	-0.12	-42.44
6,498.0	0.60	304.60	6,449.3	-592.8	-123.4	568.1	0.48	0.12	-50.12
6,584.0	0.70	280.40	6,535.3	-592.5	-124.3	568.0	0.34	0.12	-28.14
6,669.0	1.00	251.40	6,620.3	-592.6	-125.5	568.4	0.61	0.35	-34.12
6,755.0	1.10	248.80	6,706.3	-593.1	-127.0	569.3	0.13	0.12	-3.02
6,840.0	1.50	232.60	6,791.3	-594.1	-128.7	570.7	0.63	0.47	-19.06
6,926.0	2.00	199.50	6,877.2	-596.2	-130.1	573.1	1.29	0.58	-38.49
7,011.0	3.30	164.90	6,962.1	-600.0	-129.9	576.7	2.36	1.53	-40.71
7,097.0	4.00	133.90	7,048.0	-604.4	-127.1	580.3	2.40	0.81	-36.05
7,183.0	3.30	125.10	7,133.8	-607.9	-122.9	582.6	1.04	-0.81	-10.23
7,268.0	3.10	116.50	7,218.7	-610.4	-118.9	583.9	0.61	-0.24	-10.12
7,354.0	2.20	119.10	7,304.6	-612.2	-115.3	584.8	1.06	-1.05	3.02
7,436.0	1.30	119.50	7,386.5	-613.4	-113.2	585.4	1.10	-1.10	0.49
Hardlines 75'S & 75'W of BHL - Target Circle 75'FSL & 75'FWL									
7,485.0	1.00	120.00	7,435.5	-613.9	-112.3	585.6	0.61	-0.61	1.02

Checked By: _____ Approved By: _____ Date: _____