




LEGEND

-  Five Rivers K08-17D, Wellbore #1, Noble Five Rivers K08-17D Plan #2 (7-12-11) V0
 Wellbore #1
 Survey #1

Final Survey Plot

Projected Final Survey -
7527'MD & 7355'TVD @ 1251'VS
0.8 deg Inc 13.1 deg AZ

Project: SEC.8-T4N-R66W
Site: Five Rivers K08-07D Pad Sec.8-T4N-R66W
Well: Five Rivers K08-17D
Plan: Wellbore #1



Directional

**NOBLE ENERGY INC WELD
COUNTY CO**

SEC.8-T4N-R66W

Five Rivers K08-07D Pad Sec.8-T4N-R66W

Five Rivers K08-17D

Wellbore #1

Survey: Survey #1

Standard Survey Report

01 August, 2011



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 Site: Five Rivers K08-07D Pad Sec.8-T4N-R66W
 Well: Five Rivers K08-17D
 Wellbore: Wellbore #1
 Design: Wellbore #1

Local Co-ordinate Reference: Well Five Rivers K08-17D
 TVD Reference: WELL @ 4711.0ft (Original Well Elev)
 MD Reference: WELL @ 4711.0ft (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 K08-07D Pad Sec.8-T4N-R66W

Site Position:	From:	Lat/Long	Northing:	1,363,142.27 ft	Latitude:	40.328080
			Easting:	3,196,625.73 ft	Longitude:	-104.794750
Position Uncertainty:		0.0 ft	Slot Radius:	"	Grid Convergence:	0.46 °

Well	Five Rivers K08-17D					
Well Position	+N/-S	0.0 ft	Northing:	1,363,142.66 ft	Latitude:	40.328080
	+E/-W	0.0 ft	Easting:	3,196,675.91 ft	Longitude:	-104.794570
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	4,698.0 ft

Wellbore Wellbore #1

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	7/12/2011	8.86	66.99	53,084

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	312.09

Survey Program Date 8/1/2011

From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
688.0	7,527.0	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
688.0	0.40	333.00	688.0	2.1	-1.1	2.2	0.06	0.06	0.00
782.0	0.50	320.60	782.0	2.7	-1.5	3.0	0.15	0.11	-13.19
875.0	2.90	17.80	874.9	5.3	-1.0	4.3	2.86	2.58	61.51
970.0	4.00	18.10	969.8	10.7	0.7	6.7	1.16	1.16	0.32
1,063.0	6.50	3.20	1,062.4	19.1	2.0	11.3	3.04	2.69	-16.02
1,157.0	6.90	347.80	1,155.7	29.9	1.1	19.2	1.95	0.43	-16.38
1,250.0	8.00	328.10	1,248.0	40.9	-3.5	30.0	2.97	1.18	-21.18
1,343.0	9.00	321.00	1,340.0	52.0	-11.5	43.4	1.56	1.08	-7.63
1,437.0	9.50	314.90	1,432.7	63.2	-21.6	58.4	1.17	0.53	-6.49
1,530.0	12.40	312.60	1,524.0	75.4	-34.4	76.0	3.15	3.12	-2.47
1,624.0	13.80	312.90	1,615.6	89.9	-50.0	97.3	1.49	1.49	0.32
1,717.0	15.60	314.70	1,705.5	106.2	-67.0	120.9	2.00	1.94	1.94

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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)
1,811.0	18.20	313.80	1,795.5	125.3	-86.6	148.2	2.78	2.77	-0.96
1,903.0	19.20	308.30	1,882.6	144.6	-108.9	177.7	2.20	1.09	-5.98
1,997.0	18.50	308.80	1,971.6	163.5	-132.6	208.0	0.76	-0.74	0.53
2,093.0	17.40	308.70	2,062.9	182.0	-155.7	237.5	1.15	-1.15	-0.10
2,186.0	16.50	311.30	2,151.9	199.4	-176.5	264.6	1.27	-0.97	2.80
2,279.0	16.40	311.90	2,241.1	216.9	-196.2	291.0	0.21	-0.11	0.65
2,372.0	17.10	311.50	2,330.1	234.7	-216.2	317.8	0.76	0.75	-0.43
2,466.0	17.10	308.70	2,420.0	252.5	-237.3	345.4	0.88	0.00	-2.98
2,559.0	18.50	310.90	2,508.5	270.8	-259.1	373.8	1.67	1.51	2.37
2,653.0	18.90	310.20	2,597.5	290.3	-282.0	403.9	0.49	0.43	-0.74
2,746.0	19.40	310.00	2,685.4	310.0	-305.4	434.4	0.54	0.54	-0.22
2,839.0	17.50	310.60	2,773.6	329.0	-327.8	463.8	2.05	-2.04	0.65
2,933.0	17.70	308.90	2,863.2	347.2	-349.7	492.2	0.59	0.21	-1.81
3,027.0	17.30	310.10	2,952.9	365.2	-371.5	520.4	0.57	-0.43	1.28
3,120.0	17.10	309.10	3,041.7	382.7	-392.7	547.9	0.38	-0.22	-1.08
3,215.0	15.90	307.20	3,132.8	399.4	-413.9	574.8	1.38	-1.26	-2.00
3,308.0	16.60	312.80	3,222.1	416.1	-433.8	600.8	1.84	0.75	6.02
3,402.0	16.70	315.20	3,312.1	434.8	-453.1	627.7	0.74	0.11	2.55
3,495.0	17.30	311.60	3,401.1	453.5	-472.9	654.9	1.30	0.65	-3.87
3,588.0	16.30	310.00	3,490.1	471.0	-493.2	681.8	1.18	-1.08	-1.72
3,681.0	17.10	310.10	3,579.2	488.2	-513.7	708.5	0.86	0.86	0.11
3,774.0	18.30	308.10	3,667.8	506.1	-535.6	736.7	1.45	1.29	-2.15
3,867.0	18.70	308.00	3,756.0	524.2	-558.9	766.1	0.43	0.43	-0.11
3,960.0	18.80	308.40	3,844.0	542.7	-582.4	796.0	0.18	0.11	0.43
4,054.0	17.50	307.80	3,933.4	560.8	-605.4	825.2	1.40	-1.38	-0.64
4,147.0	16.50	307.00	4,022.3	577.3	-627.0	852.3	1.10	-1.08	-0.86
4,241.0	16.70	307.90	4,112.4	593.7	-648.3	879.0	0.35	0.21	0.96
4,335.0	16.20	317.60	4,202.5	611.6	-667.8	905.6	2.97	-0.53	10.32
4,431.0	15.80	314.50	4,294.8	630.7	-686.2	932.0	0.98	-0.42	-3.23
4,524.0	16.10	306.60	4,384.3	647.3	-705.6	957.4	2.35	0.32	-8.49
4,619.0	16.90	311.60	4,475.3	664.3	-726.5	984.4	1.71	0.84	5.26
4,712.0	14.70	310.60	4,564.8	680.9	-745.5	1,009.7	2.38	-2.37	-1.08
4,805.0	14.20	309.30	4,654.9	695.8	-763.3	1,032.9	0.64	-0.54	-1.40
4,900.0	16.00	312.70	4,746.6	712.1	-782.0	1,057.6	2.11	1.89	3.58
4,993.0	15.80	310.60	4,836.0	729.0	-801.0	1,083.1	0.65	-0.22	-2.26
5,088.0	15.80	311.20	4,927.5	746.0	-820.5	1,108.9	0.17	0.00	0.63
5,181.0	13.20	309.10	5,017.5	761.0	-838.3	1,132.2	2.85	-2.80	-2.26
5,274.0	12.80	307.40	5,108.1	774.0	-854.7	1,153.1	0.60	-0.43	-1.83
5,368.0	11.20	305.80	5,200.0	785.6	-870.4	1,172.5	1.74	-1.70	-1.70
5,461.0	9.10	307.90	5,291.6	795.4	-883.6	1,188.8	2.29	-2.26	2.26
5,554.0	7.70	310.70	5,383.6	804.0	-894.1	1,202.4	1.57	-1.51	3.01
5,649.0	5.80	313.00	5,477.9	811.4	-902.4	1,213.6	2.02	-2.00	2.42
5,742.0	3.60	323.50	5,570.6	817.0	-907.6	1,221.1	2.53	-2.37	11.29
5,836.0	3.00	343.40	5,664.5	821.7	-910.0	1,226.1	1.37	-0.64	21.17
5,929.0	1.20	330.50	5,757.4	824.9	-911.2	1,229.1	1.99	-1.94	-13.87
5,971.6	1.11	328.19	5,800.0	825.6	-911.7	1,230.0	0.24	-0.22	-5.43
TARGET BHL 1320'FNL, 1320'FEL									
6,022.0	1.00	324.90	5,850.4	826.4	-912.2	1,230.8	0.24	-0.21	-6.52
6,115.0	0.80	311.90	5,943.4	827.5	-913.1	1,232.3	0.31	-0.22	-13.98
6,209.0	0.70	303.80	6,037.4	828.3	-914.1	1,233.5	0.15	-0.11	-8.62
6,302.0	0.80	300.70	6,130.3	828.9	-915.1	1,234.7	0.12	0.11	-3.33
6,396.0	0.80	305.80	6,224.3	829.6	-916.2	1,236.0	0.08	0.00	5.43
6,490.0	1.10	305.60	6,318.3	830.5	-917.5	1,237.6	0.32	0.32	-0.21
6,583.0	1.00	306.20	6,411.3	831.5	-918.9	1,239.2	0.11	-0.11	0.65

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6,677.0	1.10	303.00	6,505.3	832.5	-920.3	1,241.0	0.12	0.11	-3.40
6,771.0	1.10	303.80	6,599.3	833.5	-921.8	1,242.7	0.02	0.00	0.85
6,864.0	1.00	313.40	6,692.3	834.6	-923.1	1,244.4	0.22	-0.11	10.32
6,958.0	1.10	310.90	6,786.2	835.7	-924.4	1,246.2	0.12	0.11	-2.66
7,037.0	0.93	298.97	6,865.2	836.5	-925.5	1,247.5	0.35	-0.22	-15.10
LEGAL BOX 800' X 800' 1380'FNL, 1328'FEL									
7,037.5	0.92	298.88	6,865.7	836.5	-925.5	1,247.5	0.35	-0.19	-17.83
TARGET CIRCLE 1320'FNL & 1320'FEL									
7,051.0	0.90	296.40	6,879.2	836.6	-925.7	1,247.8	0.35	-0.18	-18.35
7,144.0	0.70	310.90	6,972.2	837.3	-926.8	1,249.0	0.30	-0.22	15.59
7,238.0	0.60	5.90	7,066.2	838.2	-927.2	1,249.9	0.65	-0.11	58.51
7,331.0	0.70	22.90	7,159.2	839.2	-926.9	1,250.4	0.23	0.11	18.28
7,424.0	0.70	15.60	7,252.2	840.3	-926.5	1,250.8	0.10	0.00	-7.85
7,482.0	0.80	13.10	7,310.2	841.0	-926.4	1,251.2	0.18	0.17	-4.31
7,527.0	0.80	13.10	7,355.2	841.6	-926.2	1,251.5	0.00	0.00	0.00

Checked By: _____ Approved By: _____ Date: _____