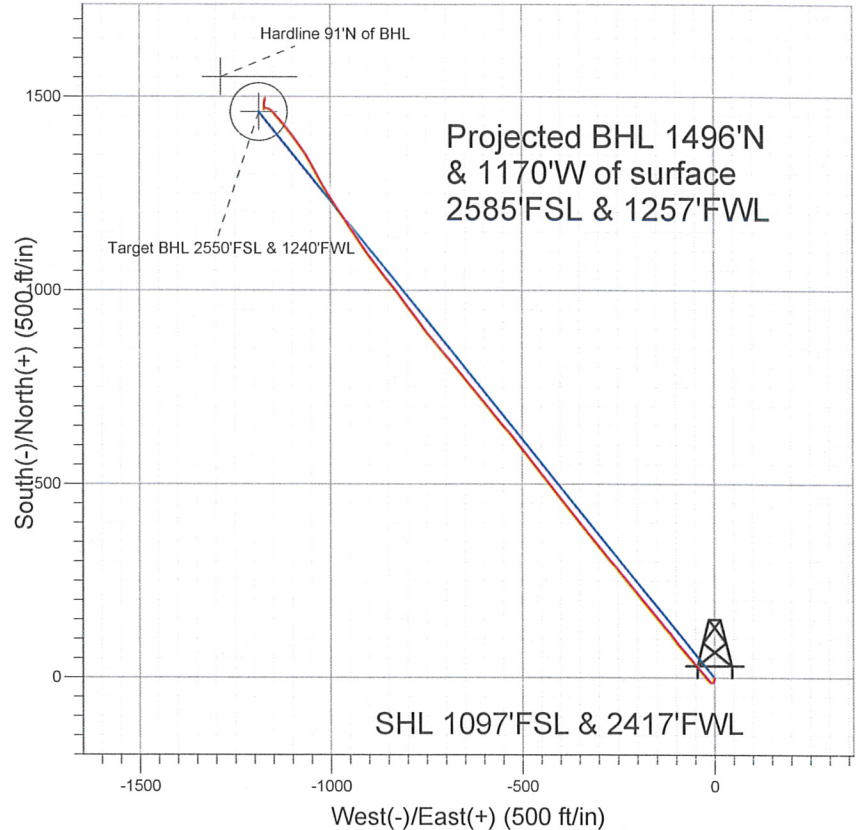


NOBLE ENERGY INC WELD COUNTY CO



LEGEND

- Frank PC H22-20D, Wellbore #1, Noble Frank PC H22-20D Plan #2 (9-01-10) VO
- Wellbore #1
- Survey #1

Final Survey Plot

Projected Final Survey -
 7690'MD & 7278'TVD @ 1899'VS
 1.3 deg Inc 14.7 deg AZ

Project: SEC.22-T3N-R65W
 Site: Moser PC H22-21D Pad Sec.22-T3N-65W
 Well: Frank PC H22-20D
 Plan: Wellbore #1



Directional

**NOBLE ENERGY INC WELD
COUNTY CO**

SEC.22-T3N-R65W

Moser PC H22-21D Pad Sec.22-T3N-65W

Frank PC H22-20D

Wellbore #1

Survey: Survey #1

Standard Survey Report

07 July, 2011



Company: NOBLE ENERGY INC WELD COUNTY CO
Project: SEC.22-T3N-R65W
Site: Moser PC H22-21D Pad Sec.22-T3N-65W
Well: Frank PC H22-20D
Wellbore: Wellbore #1
Design: Wellbore #1

Local Co-ordinate Reference: Well Frank PC H22-20D
TVD Reference: WELL @ 4821.0ft (Original Well Elev)
MD Reference: WELL @ 4821.0ft (Original Well Elev)
North Reference: True
Survey Calculation Method: Minimum Curvature
Database: Landmark

Project	SEC.22-T3N-R65W, 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 Moser PC H22-21D Pad Sec.22-T3N-65W

Site Position: Northing: 1,319,261.29ft Latitude: 40.206650
From: Lat/Long Easting: 3,237,248.93ft Longitude: -104.650560
Position Uncertainty: 0.0 ft Slot Radius: " Grid Convergence: 0.55 °

Well	Frank PC H22-20D			
Well Position	+N/-S	0.0 ft	Northing:	1,319,268.34 ft
	+E/-W	0.0 ft	Easting:	3,237,226.52 ft
Position Uncertainty	0.0 ft		Wellhead Elevation:	ft
			Latitude:	40.206670
			Longitude:	-104.650640
			Ground Level:	4,808.0 ft

Wellbore Wellbore #1

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	7/28/2010	8.90	66.94	53,135

Design Wellbore #1

Audit Notes:

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

Vertical Section: Depth From (TVD) +N/-S +E/-W Direction
 (ft) (ft) (ft) (°)
 0.0 0.0 0.0 320.90

Survey Program		Date	7/7/2011		
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
727.0	7,690.0	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
727.0	1.90	192.70	726.9	-11.8	-2.6	-7.5	0.26	0.26	0.00
813.0	1.30	250.80	812.8	-13.5	-3.9	-8.0	1.91	-0.70	67.56
898.0	1.90	288.00	897.8	-13.4	-6.1	-6.5	1.37	0.71	43.76
984.0	3.10	309.00	983.7	-11.4	-9.3	-3.0	1.73	1.40	24.42
1,070.0	4.30	322.80	1,069.5	-7.4	-13.1	2.5	1.73	1.40	16.05
1,155.0	5.60	320.50	1,154.2	-1.7	-17.6	9.8	1.55	1.53	-2.71
1,241.0	7.00	320.40	1,239.7	5.6	-23.6	19.2	1.63	1.63	-0.12
1,326.0	8.50	315.60	1,323.9	14.1	-31.3	30.7	1.92	1.76	-5.65
1,412.0	10.20	320.50	1,408.8	24.5	-40.6	44.6	2.18	1.98	5.70
1,498.0	11.60	319.70	1,493.2	37.0	-51.1	60.9	1.64	1.63	-0.93
1,583.0	13.60	320.80	1,576.2	51.2	-62.9	79.4	2.37	2.35	1.29
1,669.0	13.70	317.10	1,659.8	66.5	-76.2	99.7	1.02	0.12	-4.30

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Design: Wellbore #1

Local Co-ordinate Reference: Well Frank PC H22-20D
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MD Reference: WELL @ 4821.0ft (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)
1,754.0	15.10	319.60	1,742.1	82.3	-90.3	120.8	1.80	1.65	2.94
1,840.0	17.00	325.30	1,824.7	101.2	-104.7	144.5	2.87	2.21	6.63
1,926.0	18.20	319.10	1,906.7	121.7	-120.6	170.5	2.59	1.40	-7.21
2,011.0	19.20	320.50	1,987.2	142.5	-138.2	197.8	1.29	1.18	1.65
2,097.0	20.40	321.70	2,068.1	165.2	-156.5	226.9	1.47	1.40	1.40
2,182.0	21.40	321.80	2,147.5	189.0	-175.3	257.2	1.18	1.18	0.12
2,268.0	23.90	320.20	2,226.9	214.7	-196.1	290.3	2.99	2.91	-1.86
2,354.0	24.40	321.30	2,305.4	242.0	-218.4	325.5	0.78	0.58	1.28
2,439.0	24.30	321.70	2,382.8	269.4	-240.2	360.5	0.23	-0.12	0.47
2,525.0	25.60	318.00	2,460.8	297.1	-263.6	396.8	2.36	1.51	-4.30
2,610.0	26.70	321.00	2,537.1	325.6	-287.9	434.2	2.02	1.29	3.53
2,696.0	28.10	320.80	2,613.4	356.3	-312.9	473.8	1.63	1.63	-0.23
2,782.0	29.90	322.40	2,688.7	389.0	-338.7	515.5	2.28	2.09	1.86
2,867.0	30.00	321.50	2,762.3	422.4	-364.9	557.9	0.54	0.12	-1.06
2,953.0	29.90	321.50	2,836.8	456.0	-391.6	600.9	0.12	-0.12	0.00
3,038.0	30.40	321.50	2,910.3	489.4	-418.2	643.5	0.59	0.59	0.00
3,124.0	30.00	321.50	2,984.7	523.3	-445.1	686.8	0.47	-0.47	0.00
3,210.0	28.10	321.60	3,059.8	556.0	-471.1	728.6	2.21	-2.21	0.12
3,295.0	27.30	321.60	3,135.1	586.9	-495.6	768.1	0.94	-0.94	0.00
3,381.0	28.30	320.80	3,211.2	618.2	-520.8	808.2	1.24	1.16	-0.93
3,466.0	26.60	318.80	3,286.6	648.1	-546.1	847.3	2.27	-2.00	-2.35
3,552.0	26.50	320.30	3,363.5	677.4	-571.0	885.8	0.79	-0.12	1.74
3,638.0	28.40	321.50	3,439.8	708.1	-596.0	925.4	2.30	2.21	1.40
3,723.0	27.90	319.20	3,514.8	739.0	-621.6	965.5	1.41	-0.59	-2.71
3,809.0	28.20	320.70	3,590.7	770.0	-647.6	1,005.9	0.89	0.35	1.74
3,894.0	28.20	322.00	3,665.6	801.3	-672.7	1,046.1	0.72	0.00	1.53
3,980.0	27.20	318.20	3,741.7	832.0	-698.3	1,086.1	2.36	-1.16	-4.42
4,066.0	28.20	319.50	3,817.9	862.1	-724.6	1,126.0	1.36	1.16	1.51
4,151.0	29.20	322.50	3,892.4	893.8	-750.2	1,166.8	2.06	1.18	3.53
4,237.0	29.70	323.10	3,967.3	927.5	-775.8	1,209.1	0.68	0.58	0.70
4,322.0	31.20	324.00	4,040.6	962.2	-801.4	1,252.1	1.84	1.76	1.06
4,408.0	31.80	322.10	4,113.9	998.1	-828.4	1,297.0	1.35	0.70	-2.21
4,494.0	28.90	321.90	4,188.1	1,032.3	-855.1	1,340.4	3.37	-3.37	-0.23
4,579.0	29.50	322.80	4,262.3	1,065.1	-880.5	1,381.9	0.87	0.71	1.06
4,665.0	29.10	325.00	4,337.3	1,099.1	-905.3	1,423.9	1.34	-0.47	2.56
4,750.0	29.30	325.40	4,411.5	1,133.2	-928.9	1,465.3	0.33	0.24	0.47
4,836.0	28.20	326.30	4,486.9	1,167.4	-952.2	1,506.5	1.37	-1.28	1.05
4,922.0	26.70	327.60	4,563.3	1,200.6	-973.8	1,545.9	1.88	-1.74	1.51
5,007.0	25.50	326.30	4,639.6	1,232.0	-994.2	1,583.1	1.56	-1.41	-1.53
5,093.0	23.70	327.70	4,717.8	1,262.0	-1,013.7	1,618.7	2.20	-2.09	1.63
5,178.0	22.00	331.40	4,796.1	1,290.4	-1,030.4	1,651.3	2.62	-2.00	4.35
5,264.0	19.70	332.20	4,876.5	1,317.4	-1,044.9	1,681.4	2.69	-2.67	0.93
5,350.0	19.10	329.90	4,957.6	1,342.4	-1,058.7	1,709.5	1.13	-0.70	-2.67
5,435.0	18.60	324.40	5,038.0	1,365.4	-1,073.6	1,736.7	2.17	-0.59	-6.47
5,521.0	16.80	323.60	5,120.0	1,386.6	-1,089.0	1,762.8	2.11	-2.09	-0.93
5,606.0	14.50	322.60	5,201.8	1,404.9	-1,102.7	1,785.7	2.72	-2.71	-1.18
5,692.0	13.00	320.60	5,285.3	1,421.0	-1,115.4	1,806.2	1.83	-1.74	-2.33
5,778.0	10.90	319.10	5,369.5	1,434.6	-1,126.9	1,824.0	2.47	-2.44	-1.74
5,863.0	8.50	317.20	5,453.3	1,445.3	-1,136.4	1,838.3	2.85	-2.82	-2.24
5,949.0	6.70	321.90	5,538.5	1,453.9	-1,143.8	1,849.6	2.21	-2.09	5.47
6,034.0	5.10	315.80	5,623.0	1,460.5	-1,149.5	1,858.4	2.02	-1.88	-7.18
6,120.0	4.60	309.80	5,708.7	1,465.4	-1,154.8	1,865.6	0.83	-0.58	-6.98
6,206.0	4.20	293.70	5,794.5	1,468.9	-1,160.3	1,871.7	1.50	-0.47	-18.72
6,291.0	3.40	284.70	5,879.3	1,470.8	-1,165.6	1,876.6	1.17	-0.94	-10.59

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6,312.6	3.09	282.96	5,900.9	1,471.1	-1,166.8	1,877.5	1.50	-1.43	-8.07
Target BHL 2550'FSL & 1240'FWL									
6,377.0	2.20	274.90	5,965.2	1,471.6	-1,169.7	1,879.8	1.50	-1.39	-12.51
6,462.0	1.20	248.50	6,050.2	1,471.4	-1,172.2	1,881.2	1.46	-1.18	-31.06
6,634.0	1.50	169.30	6,222.1	1,468.5	-1,173.5	1,879.7	1.01	0.17	-46.05
6,719.0	1.10	355.30	6,307.1	1,468.3	-1,173.3	1,879.4	3.05	-0.47	-204.71
6,890.0	1.80	5.20	6,478.1	1,472.6	-1,173.2	1,882.7	0.43	0.41	5.79
7,062.0	2.00	2.80	6,650.0	1,478.3	-1,172.8	1,886.9	0.13	0.12	-1.40
7,208.4	1.74	2.47	6,796.3	1,483.0	-1,172.6	1,890.4	0.18	-0.18	-0.23
Target Circle 2550'FSL 1240'FWL									
7,233.0	1.70	2.40	6,820.9	1,483.8	-1,172.6	1,891.0	0.18	-0.18	-0.27
7,404.0	1.80	13.60	6,991.8	1,488.9	-1,171.8	1,894.5	0.21	0.06	6.55
7,575.0	1.30	17.30	7,162.7	1,493.4	-1,170.6	1,897.2	0.30	-0.29	2.16
7,644.0	1.30	14.70	7,231.7	1,494.9	-1,170.2	1,898.1	0.09	0.00	-3.77
7,690.0	1.30	14.70	7,277.7	1,495.9	-1,169.9	1,898.7	0.00	0.00	0.00
Hardline 91'N of BHL									

Checked By: _____ Approved By: _____ Date: _____