

#### LEGEND

- Dechant D31-21D, Wellbore #1, Noble Dechant D31-21D Plan #1 (4-27-11) V0
- Wellbore #1
- Survey #1

## Final Survey Plot

Projected Final Survey -  
7791'MD & 7698'TVD @ 805' VS  
0.9 deg Inc 253.3 deg AZ

Project: SEC.31-T3N-R64W  
Site: Dechant D31-21D Pad Sec.31-T3N-R64W  
Well: Dechant D31-21D  
Plan: Wellbore #1



**Directional**

**NOBLE ENERGY INC WELD  
COUNTY CO**

**SEC.31-T3N-R64W**

**Dechant D31-21D Pad Sec.31-T3N-R64W**

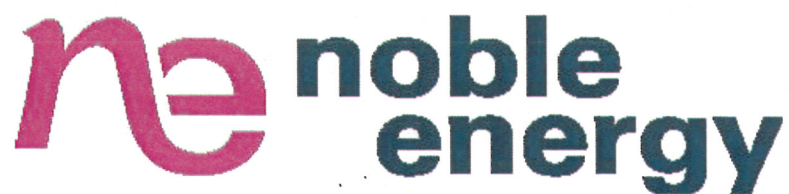
**Dechant D31-21D**

**Wellbore #1**

**Survey: Survey #1**

**Standard Survey Report**

**14 September, 2011**





**Company:** NOBLE ENERGY INC WELD COUNTY CO  
**Project:** SEC.31-T3N-R64W  
**Site:** Dechant D31-21D Pad Sec.31-T3N-R64W  
**Well:** Dechant D31-21D  
**Wellbore:** Wellbore #1  
**Design:** Wellbore #1

**Local Co-ordinate Reference:** Well Dechant D31-21D  
**TVD Reference:** WELL @ 4824.0ft (Original Well Elev)  
**MD Reference:** WELL @ 4824.0ft (Original Well Elev)  
**North Reference:** True  
**Survey Calculation Method:** Minimum Curvature  
**Database:** Landmark

**Project** SEC.31-T3N-R64W, Weld County, Colorado

<b>Map System:</b> US State Plane 1983	<b>System Datum:</b> Mean Sea Level
<b>Geo Datum:</b> North American Datum 1983	Using Well Reference Point
<b>Map Zone:</b> Colorado Northern Zone	Using geodetic scale factor

**Site** Dechant D31-21D Pad Sec.31-T3N-R64W

<b>Site Position:</b>	<b>Northing:</b> 1,309,796.48 ft	<b>Latitude:</b> 40.180220
<b>From:</b> Lat/Long	<b>Easting:</b> 3,253,761.47 ft	<b>Longitude:</b> -104.591790
<b>Position Uncertainty:</b> 0.0 ft	<b>Slot Radius:</b> "	<b>Grid Convergence:</b> 0.59 °

<b>Well</b> Dechant D31-21D				
<b>Well Position</b> +N/-S	0.0 ft	<b>Northing:</b> 1,309,796.46 ft	<b>Latitude:</b> 40.180220	
+E/-W	0.0 ft	<b>Easting:</b> 3,253,761.47 ft	<b>Longitude:</b> -104.591790	
<b>Position Uncertainty</b>	0.0 ft	<b>Wellhead Elevation:</b> ft	<b>Ground Level:</b> 4,811.0 ft	

**Wellbore** Wellbore #1

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	5/5/2011	8.77	66.91	53,047

**Design** Wellbore #1

**Audit Notes:**

<b>Version:</b> 1.0	<b>Phase:</b> ACTUAL	<b>Tie On Depth:</b> 0.0
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Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)
	0.0	0.0	0.0	323.50

**Survey Program** Date 9/14/2011

From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
119.0	7,791.0	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
119.0	0.50	49.00	119.0	0.3	0.4	0.0	0.42	0.42	0.00
236.0	0.80	5.10	236.0	1.5	0.8	0.7	0.48	0.26	-37.52
328.0	0.40	27.60	328.0	2.4	1.1	1.3	0.50	-0.43	24.46
420.0	1.30	3.50	420.0	3.7	1.3	2.3	1.03	0.98	-26.20
512.0	2.50	1.60	511.9	6.8	1.4	4.6	1.31	1.30	-2.07
605.0	3.90	0.50	604.8	12.0	1.5	8.8	1.51	1.51	-1.18
697.0	5.80	356.60	696.4	19.7	1.2	15.1	2.09	2.07	-4.24
759.0	6.80	350.70	758.1	26.5	0.4	21.0	1.92	1.61	-9.52
768.0	6.80	350.70	767.0	27.5	0.3	22.0	0.00	0.00	0.00
834.0	7.30	351.50	832.5	35.6	-1.0	29.2	0.77	0.76	1.21
928.0	9.40	344.50	925.5	48.9	-3.9	41.6	2.48	2.23	-7.45
1,022.0	11.20	341.00	1,018.0	64.9	-8.9	57.5	2.03	1.91	-3.72

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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)
1,116.0	11.70	339.20	1,110.1	82.4	-15.3	75.4	0.65	0.53	-1.91
1,210.0	12.60	336.40	1,202.0	100.7	-22.8	94.5	1.14	0.96	-2.98
1,303.0	13.40	336.90	1,292.6	119.9	-31.1	114.9	0.87	0.86	0.54
1,397.0	14.20	332.90	1,383.9	140.2	-40.6	136.9	1.32	0.85	-4.26
1,491.0	14.80	328.90	1,474.9	160.8	-52.1	160.2	1.24	0.64	-4.26
1,585.0	14.60	325.00	1,565.8	180.8	-65.0	184.0	1.07	-0.21	-4.15
1,679.0	15.00	321.80	1,656.7	200.0	-79.4	208.0	0.97	0.43	-3.40
1,773.0	13.50	320.10	1,747.8	218.0	-93.9	231.1	1.66	-1.60	-1.81
1,867.0	14.00	317.80	1,839.1	234.8	-108.6	253.4	0.79	0.53	-2.45
1,961.0	13.60	316.20	1,930.4	251.2	-123.9	275.7	0.59	-0.43	-1.70
2,055.0	14.20	316.90	2,021.7	267.6	-139.4	298.1	0.66	0.64	0.74
2,149.0	13.50	316.00	2,112.9	283.9	-154.9	320.4	0.78	-0.74	-0.96
2,243.0	14.00	316.90	2,204.3	300.1	-170.3	342.6	0.58	0.53	0.96
2,337.0	15.00	315.70	2,295.3	317.1	-186.6	365.9	1.11	1.06	-1.28
2,431.0	14.20	316.20	2,386.2	334.2	-203.1	389.4	0.86	-0.85	0.53
2,525.0	13.60	318.10	2,477.5	350.7	-218.4	411.9	0.80	-0.64	2.02
2,619.0	14.70	321.00	2,568.6	368.2	-233.3	434.8	1.39	1.17	3.09
2,713.0	14.40	316.60	2,659.6	386.0	-248.8	458.3	1.22	-0.32	-4.68
2,806.0	15.70	319.00	2,749.4	403.9	-265.0	482.3	1.55	1.40	2.58
2,900.0	15.70	320.10	2,839.9	423.2	-281.5	507.7	0.32	0.00	1.17
2,994.0	15.10	318.70	2,930.5	442.2	-297.8	532.6	0.75	-0.64	-1.49
3,088.0	15.10	315.30	3,021.3	460.1	-314.5	556.9	0.94	0.00	-3.62
3,182.0	14.50	315.30	3,112.2	477.2	-331.4	580.7	0.64	-0.64	0.00
3,276.0	14.00	313.00	3,203.3	493.3	-348.0	603.5	0.80	-0.53	-2.45
3,370.0	13.00	310.00	3,294.7	507.8	-364.4	625.0	1.30	-1.06	-3.19
3,464.0	13.10	315.00	3,386.3	522.2	-380.0	645.8	1.21	0.11	5.32
3,558.0	11.60	319.20	3,478.1	536.8	-393.7	665.7	1.86	-1.60	4.47
3,652.0	12.10	321.10	3,570.1	551.7	-406.1	685.0	0.67	0.53	2.02
3,746.0	12.50	319.70	3,661.9	567.1	-418.8	705.0	0.53	0.43	-1.49
3,840.0	11.90	317.20	3,753.8	582.0	-432.0	724.8	0.85	-0.64	-2.66
3,934.0	10.30	315.90	3,846.0	595.1	-444.4	742.7	1.72	-1.70	-1.38
4,028.0	10.20	315.70	3,938.5	607.1	-456.1	759.3	0.11	-0.11	-0.21
4,122.0	8.80	315.50	4,031.2	618.2	-467.0	774.7	1.49	-1.49	-0.21
4,216.0	6.40	313.20	4,124.4	626.9	-475.8	787.0	2.57	-2.55	-2.45
4,310.0	4.30	312.90	4,218.0	632.9	-482.2	795.6	2.23	-2.23	-0.32
4,404.0	4.40	301.80	4,311.7	637.2	-487.9	802.4	0.90	0.11	-11.81
4,497.0	3.40	294.20	4,404.5	640.2	-493.4	808.1	1.21	-1.08	-8.17
4,591.0	2.30	289.50	4,498.4	642.0	-497.7	812.1	1.20	-1.17	-5.00
4,685.0	1.80	284.20	4,592.3	643.0	-500.9	814.8	0.57	-0.53	-5.64
4,779.0	1.10	351.50	4,686.3	644.2	-502.5	816.8	1.82	-0.74	71.60
4,904.0	2.40	6.50	4,811.2	648.0	-502.4	819.7	1.09	1.04	12.00
5,029.0	2.30	24.10	4,936.1	652.9	-501.1	822.9	0.58	-0.08	14.08
5,092.4	1.56	31.26	4,999.5	654.8	-500.1	823.8	1.22	-1.16	11.30
TARGET BHL 2530'FNL, 2490'FEL									
5,155.0	0.90	49.60	5,062.1	655.8	-499.3	824.2	1.22	-1.06	29.29
5,280.0	0.60	347.70	5,187.1	657.1	-498.7	824.9	0.65	-0.24	-49.52
5,405.0	0.40	86.10	5,312.1	657.8	-498.4	825.2	0.61	-0.16	78.72
5,530.0	0.90	99.30	5,437.1	657.7	-497.0	824.3	0.41	0.40	10.56
5,656.0	1.40	81.00	5,563.0	657.7	-494.5	822.9	0.49	0.40	-14.52
5,781.0	2.10	97.20	5,688.0	657.7	-490.7	820.6	0.68	0.56	12.96
5,907.0	1.30	80.00	5,813.9	657.7	-487.0	818.3	0.75	-0.63	-13.65
6,031.0	0.70	61.90	5,937.9	658.3	-484.9	817.6	0.54	-0.48	-14.60
6,157.0	0.60	359.60	6,063.9	659.3	-484.3	818.0	0.54	-0.08	-49.44
6,282.0	0.10	235.40	6,188.9	659.9	-484.4	818.6	0.53	-0.40	-99.36



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6,407.0	0.40	26.70	6,313.9	660.2	-484.3	818.8	0.39	0.24	121.04
6,532.0	0.50	77.50	6,438.9	660.7	-483.5	818.7	0.32	0.08	40.64
6,658.0	0.40	116.20	6,564.9	660.6	-482.6	818.1	0.25	-0.08	30.71
6,783.0	0.90	124.40	6,689.9	659.9	-481.4	816.8	0.41	0.40	6.56
6,860.4	1.00	140.36	6,767.3	659.0	-480.5	815.5	0.37	0.13	20.61
TARGET CIRCLE 2530'FNL, 2490'FEL									
6,908.0	1.10	148.30	6,814.9	658.3	-480.0	814.7	0.37	0.20	16.70
7,034.0	1.00	152.20	6,940.8	656.3	-478.8	812.4	0.10	-0.08	3.10
7,159.0	0.80	152.20	7,065.8	654.6	-477.9	810.4	0.16	-0.16	0.00
7,284.0	0.60	199.30	7,190.8	653.2	-477.7	809.2	0.47	-0.16	37.68
7,409.0	0.70	180.00	7,315.8	651.8	-477.9	808.2	0.19	0.08	-15.44
7,534.0	0.80	182.00	7,440.8	650.2	-477.9	806.9	0.08	0.08	1.60
7,659.0	1.00	164.30	7,565.8	648.2	-477.7	805.2	0.27	0.16	-14.16
7,745.0	0.90	253.30	7,651.8	647.3	-478.1	804.8	1.55	-0.12	103.49
HARDLINES 106'S & 151'W OF BHL									
7,791.0	0.90	253.30	7,697.8	647.1	-478.8	805.0	0.00	0.00	0.00

Checked By: \_\_\_\_\_ Approved By: \_\_\_\_\_ Date: \_\_\_\_\_