

Project: SEC.14-T4N-R64W
Site: Borough C14-13D Pad Sec.14-T4N-R64W
Well: Borough C14-13D
Plan: Wellbore #1



NOBLE ENERGY INC WELD COUNTY CO

SEC.14-T4N-R64W

Borough C14-13D Pad Sec.14-T4N-R64W

Borough C14-13D

Wellbore #1

Survey: Survey #1

Standard Survey Report

28 November, 2011



Company:	NOBLE ENERGY INC WELD COUNTY CO	Local Co-ordinate Reference:	Well Burough C14-13D
Project:	SEC.14-T4N-R64W	TVD Reference:	WELL @ 4661.0ft (Original Well Elev)
Site:	Burough C14-13D Pad Sec.14-T4N-R64W	MD Reference:	WELL @ 4661.0ft (Original Well Elev)
Well:	Burough C14-13D	North Reference:	True
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	Landmark

Project	SEC.14-T4N-R64W, 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	Burough C14-13D Pad Sec.14-T4N-R64W		
Site Position:		Northing:	1,357,015.08 ft
From:	Lat/Long	Easting:	3,272,680.74 ft
Position Uncertainty:	0.0 ft	Slot Radius:	"
		Latitude:	40.309280
		Longitude:	-104.522220
		Grid Convergence:	0.63 °

Well	Burough C14-13D		
Well Position	+N/-S	0.0 ft	Northing: 1,357,015.07 ft
	+E/-W	0.0 ft	Easting: 3,272,680.74 ft
Position Uncertainty	0.0 ft	Wellhead Elevation:	ft
		Latitude:	40.309280
		Longitude:	-104.522220
		Ground Level:	4,648.0 ft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	11/15/2011	8.72	67.02	53,110

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 (°)	
	5,500.0	0.0	0.0	223.04	

Survey Program	Date	11/28/2011			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
112.0	7,060.0	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	
112.0	0.30	141.10	112.0	-0.2	0.2	0.0	0.27	0.27	0.00	
206.0	0.40	102.40	206.0	-0.5	0.7	-0.1	0.27	0.11	-41.17	
299.0	0.40	102.80	299.0	-0.6	1.3	-0.4	0.00	0.00	0.43	
371.0	0.40	80.60	371.0	-0.6	1.8	-0.7	0.21	0.00	-30.83	
453.0	0.40	49.90	453.0	-0.4	2.3	-1.3	0.26	0.00	-37.44	
534.0	0.40	78.30	534.0	-0.2	2.8	-1.8	0.24	0.00	35.06	
622.0	0.40	74.80	622.0	0.0	3.4	-2.3	0.03	0.00	-3.98	
711.0	0.70	91.90	711.0	0.0	4.2	-2.9	0.38	0.34	19.21	
793.0	1.80	160.90	793.0	-1.2	5.1	-2.6	2.05	1.34	84.15	
874.0	4.20	183.40	873.9	-5.4	5.4	0.2	3.25	2.96	27.78	
956.0	7.20	186.80	955.4	-13.5	4.6	6.7	3.68	3.66	4.15	
1,038.0	8.10	198.70	1,036.7	-24.0	2.1	16.1	2.22	1.10	14.51	

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Site:	Burough C14-13D Pad Sec.14-T4N-R64W	MD Reference:	WELL @ 4661.0ft (Original Well Elev)
Well:	Burough C14-13D	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)	
1,119.0	9.70	203.30	1,116.7	-35.7	-2.4	27.7	2.16	1.98	5.68	
1,201.0	10.80	214.20	1,197.4	-48.4	-9.4	41.8	2.71	1.34	13.29	
1,283.0	12.70	224.80	1,277.7	-61.2	-20.1	58.4	3.50	2.32	12.93	
1,365.0	14.70	224.80	1,357.4	-75.0	-33.8	77.9	2.44	2.44	0.00	
1,446.0	15.70	221.90	1,435.5	-90.4	-48.4	99.1	1.55	1.23	-3.58	
1,528.0	17.00	219.80	1,514.2	-107.9	-63.4	122.1	1.74	1.59	-2.56	
1,610.0	17.80	221.40	1,592.5	-126.5	-79.4	146.6	1.14	0.98	1.95	
1,692.0	18.10	223.00	1,670.5	-145.2	-96.4	171.9	0.70	0.37	1.95	
1,773.0	17.80	223.00	1,747.5	-163.5	-113.4	196.9	0.37	-0.37	0.00	
1,855.0	17.50	225.80	1,825.7	-181.2	-130.8	221.7	1.10	-0.37	3.41	
1,937.0	16.80	226.00	1,904.0	-198.0	-148.2	245.9	0.86	-0.85	0.24	
2,019.0	16.80	224.10	1,982.5	-214.8	-164.9	269.5	0.67	0.00	-2.32	
2,100.0	17.20	223.70	2,060.0	-231.9	-181.3	293.2	0.51	0.49	-0.49	
2,182.0	18.30	224.80	2,138.1	-249.8	-198.8	318.2	1.40	1.34	1.34	
2,264.0	17.00	225.10	2,216.2	-267.3	-216.4	343.1	1.59	-1.59	0.37	
2,346.0	16.50	225.80	2,294.8	-283.9	-233.2	366.7	0.66	-0.61	0.85	
2,427.0	16.70	224.20	2,372.4	-300.3	-249.6	389.8	0.62	0.25	-1.98	
2,509.0	17.10	227.60	2,450.8	-316.9	-266.7	413.6	1.30	0.49	4.15	
2,591.0	16.80	229.30	2,529.3	-332.7	-284.6	437.4	0.71	-0.37	2.07	
2,673.0	18.70	223.90	2,607.4	-349.9	-302.7	462.3	3.06	2.32	-6.59	
2,754.0	19.30	225.60	2,684.0	-368.6	-321.2	488.7	1.01	0.74	2.10	
2,836.0	19.30	224.90	2,761.4	-387.7	-340.5	515.8	0.28	0.00	-0.85	
2,918.0	17.80	225.80	2,839.1	-406.1	-359.0	541.8	1.86	-1.83	1.10	
2,999.0	17.80	224.20	2,916.2	-423.6	-376.5	566.6	0.60	0.00	-1.98	
3,081.0	16.10	224.60	2,994.7	-440.7	-393.3	590.5	2.08	-2.07	0.49	
3,163.0	14.50	220.90	3,073.7	-456.5	-408.0	612.1	2.28	-1.95	-4.51	
3,245.0	12.90	218.80	3,153.4	-471.4	-420.4	631.5	2.04	-1.95	-2.56	
3,326.0	13.50	217.00	3,232.3	-486.0	-431.8	649.9	0.90	0.74	-2.22	
3,408.0	12.40	224.80	3,312.2	-499.9	-443.7	668.2	2.52	-1.34	9.51	
3,490.0	12.70	224.40	3,392.2	-512.6	-456.3	686.0	0.38	0.37	-0.49	
3,572.0	12.60	227.00	3,472.2	-525.1	-469.1	704.0	0.70	-0.12	3.17	
3,653.0	12.50	225.60	3,551.3	-537.3	-481.8	721.5	0.40	-0.12	-1.73	
3,735.0	13.30	225.50	3,631.2	-550.1	-494.9	739.8	0.98	0.98	-0.12	
3,817.0	13.50	225.60	3,711.0	-563.4	-508.5	758.8	0.25	0.24	0.12	
3,899.0	13.10	224.20	3,790.8	-576.8	-521.8	777.7	0.63	-0.49	-1.71	
3,980.0	12.00	222.80	3,869.9	-589.5	-533.9	795.3	1.41	-1.36	-1.73	
4,062.0	13.00	223.00	3,949.9	-602.5	-546.0	813.0	1.22	1.22	0.24	
4,144.0	13.70	224.80	4,029.7	-616.2	-559.1	831.9	0.99	0.85	2.20	
4,226.0	13.40	223.50	4,109.4	-629.9	-572.5	851.1	0.52	-0.37	-1.59	
4,307.0	13.20	223.90	4,188.3	-643.4	-585.4	869.8	0.27	-0.25	0.49	
4,389.0	12.60	221.60	4,268.2	-656.9	-597.8	888.1	0.96	-0.73	-2.80	
4,471.0	13.00	225.10	4,348.1	-670.1	-610.3	906.2	1.06	0.49	4.27	
4,553.0	12.60	223.50	4,428.1	-683.0	-623.0	924.4	0.65	-0.49	-1.95	
4,634.0	12.50	227.90	4,507.2	-695.3	-635.5	942.0	1.19	-0.12	5.43	
4,716.0	12.60	242.70	4,587.2	-705.4	-650.1	959.2	3.91	0.12	18.05	
4,798.0	12.50	240.00	4,667.3	-713.9	-665.7	976.2	0.73	-0.12	-3.29	
4,880.0	11.30	235.30	4,747.5	-722.9	-680.0	992.5	1.88	-1.46	-5.73	
4,961.0	11.00	224.60	4,827.0	-733.0	-692.0	1,008.0	2.58	-0.37	-13.21	
5,043.0	10.00	218.80	4,907.6	-744.1	-701.9	1,022.9	1.77	-1.22	-7.07	
5,125.0	7.60	221.10	4,988.7	-753.7	-709.9	1,035.4	2.96	-2.93	2.80	
5,206.0	5.50	205.20	5,069.1	-761.3	-715.1	1,044.5	3.40	-2.59	-19.63	
5,288.0	4.20	207.40	5,150.8	-767.5	-718.2	1,051.1	1.60	-1.59	2.68	
5,370.0	3.30	213.90	5,232.7	-772.1	-720.9	1,056.3	1.21	-1.10	7.93	
5,452.0	2.10	217.70	5,314.6	-775.3	-723.1	1,060.1	1.48	-1.46	4.63	

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5,533.0	1.70	227.90	5,395.5	-777.2	-724.9	1,062.8	0.64	-0.49	12.59
5,615.0	0.90	230.70	5,477.5	-778.5	-726.3	1,064.7	0.98	-0.98	3.41
5,637.5	0.90	231.33	5,500.0	-778.7	-726.6	1,065.0	0.04	0.00	2.80
TARGET BHL 700'FSL, 700'FWL									
5,697.0	0.90	233.00	5,559.5	-779.3	-727.3	1,065.9	0.04	0.00	2.80
5,779.0	0.90	257.80	5,641.5	-779.8	-728.5	1,067.1	0.47	0.00	30.24
5,860.0	0.70	240.20	5,722.5	-780.2	-729.5	1,068.1	0.39	-0.25	-21.73
5,942.0	0.60	285.00	5,804.5	-780.3	-730.4	1,068.8	0.61	-0.12	54.63
6,024.0	0.40	262.20	5,886.5	-780.2	-731.1	1,069.2	0.34	-0.24	-27.80
6,106.0	0.40	302.10	5,968.5	-780.1	-731.6	1,069.5	0.33	0.00	48.66
6,187.0	0.50	353.30	6,049.5	-779.6	-731.9	1,069.3	0.49	0.12	63.21
6,269.0	0.40	15.80	6,131.5	-779.0	-731.8	1,068.8	0.25	-0.12	27.44
6,351.0	0.50	355.50	6,213.5	-778.4	-731.8	1,068.3	0.23	0.12	-24.76
6,433.0	0.40	57.40	6,295.4	-777.8	-731.6	1,067.8	0.57	-0.12	75.49
6,514.0	0.50	23.00	6,376.4	-777.4	-731.2	1,067.2	0.35	0.12	-42.47
6,596.0	0.40	39.80	6,458.4	-776.8	-730.9	1,066.6	0.20	-0.12	20.49
6,623.1	0.46	50.25	6,485.6	-776.7	-730.7	1,066.4	0.35	0.21	38.51
LEGAL BOX 400' X 400' 659'FSL & 659'FWL									
6,623.6	0.46	50.39	6,486.0	-776.7	-730.7	1,066.4	0.35	0.23	33.54
TARGET CIRCLE 700'FSL & 700'FWL									
6,678.0	0.60	64.40	6,540.4	-776.4	-730.3	1,065.9	0.35	0.26	25.73
6,760.0	0.70	64.60	6,622.4	-776.0	-729.5	1,065.0	0.12	0.12	0.24
6,841.0	1.00	78.30	6,703.4	-775.7	-728.3	1,064.0	0.44	0.37	16.91
6,923.0	1.30	64.60	6,785.4	-775.1	-726.8	1,062.5	0.49	0.37	-16.71
7,005.0	1.50	70.40	6,867.4	-774.3	-724.9	1,060.7	0.30	0.24	7.07
7,060.0	1.50	61.20	6,922.4	-773.8	-723.6	1,059.4	0.44	0.00	-16.73

Checked By: _____	Approved By: _____	Date: _____
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