

Well Name: **Borough C23-30D**

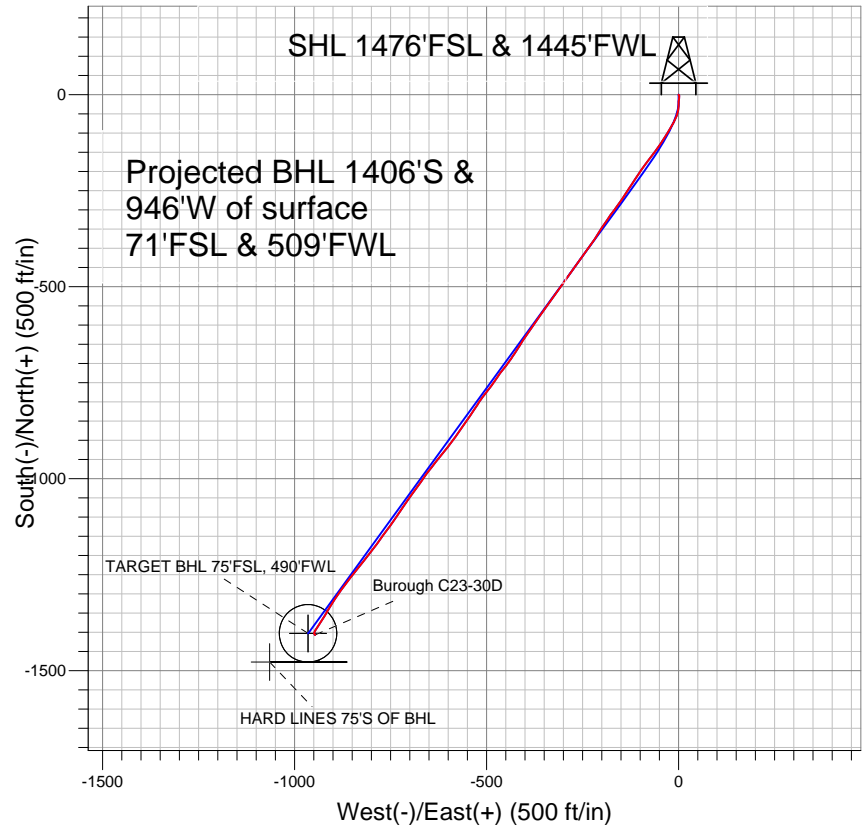
Surface Location: Borough C14-13D Pad Sec.14-T4N-R64W
 North American Datum 1983 US State Plane 1983 Colorado Northern Zone

Ground Elevation: 4648.0

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.0	0.0	1357015.30	3272703.05	40.309280	-104.522140	

Original Well Elev WELL @ 4661.0ft (Original Well Elev)

NOBLE ENERGY INC WELD COUNTY CO



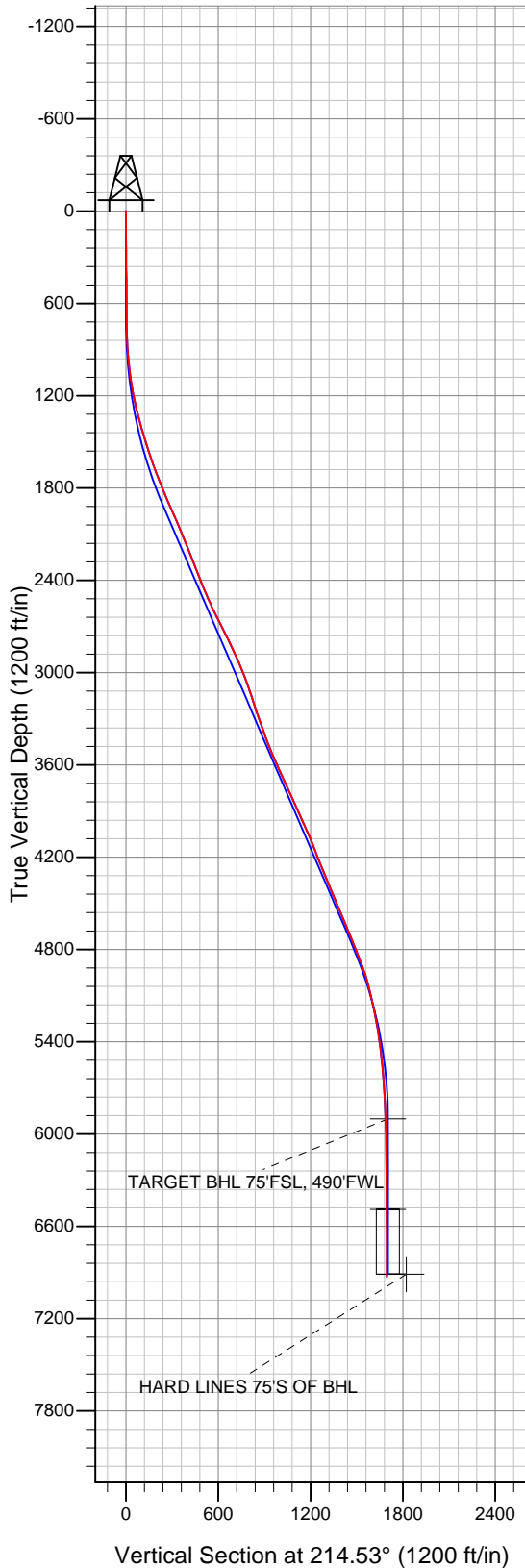
LEGEND

- Borough C23-30D, Wellbore #1, Noble Borough C23-30D Plan #1 (11-25-11) R V0
- Wellbore #1
- Survey #1

Final Survey Plot

Projected Final Survey -
 7240'MD & 6929'TVD @ 1695'VS
 0.5 deg Inc 50.0 deg AZ

Project: SEC.14-T4N-R64W
 Site: Borough C14-13D Pad Sec.14-T4N-R64W
 Well: Borough C23-30D
 Plan: Wellbore #1





Directional

NOBLE ENERGY INC WELD COUNTY CO

SEC.14-T4N-R64W

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

Borough C23-30D

Wellbore #1

Survey: Survey #1

Standard Survey Report

30 November, 2011



Company:	NOBLE ENERGY INC WELD COUNTY CO	Local Co-ordinate Reference:	Well Burough C23-30D
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 C23-30D	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 C23-30D		
Well Position	+N/-S	0.0 ft	Northing: 1,357,015.30 ft
	+E/-W	0.0 ft	Easting: 3,272,703.05 ft
Position Uncertainty	0.0 ft	Wellhead Elevation:	ft
		Latitude:	40.309280
		Longitude:	-104.522140
		Ground Level:	4,648.0 ft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	11/25/2011	8.67	67.00	53,064

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	214.53	

Survey Program	Date	11/30/2011			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
74.0	7,240.0	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	
74.0	0.60	155.70	74.0	-0.4	0.2	0.2	0.81	0.81	0.00	
168.0	0.70	118.80	168.0	-1.1	0.9	0.4	0.45	0.11	-39.26	
260.0	0.70	162.20	260.0	-1.9	1.5	0.7	0.56	0.00	47.17	
363.0	0.30	193.60	363.0	-2.7	1.7	1.3	0.46	-0.39	30.49	
445.0	0.50	172.00	445.0	-3.3	1.7	1.8	0.30	0.24	-26.34	
526.0	0.70	196.30	526.0	-4.1	1.6	2.5	0.39	0.25	30.00	
608.0	0.30	180.80	608.0	-4.8	1.4	3.2	0.51	-0.49	-18.90	
644.0	0.40	172.00	644.0	-5.0	1.4	3.3	0.31	0.28	-24.44	
711.0	0.40	187.50	711.0	-5.5	1.4	3.7	0.16	0.00	23.13	
793.0	1.70	180.60	793.0	-7.0	1.4	5.0	1.59	1.59	-8.41	
874.0	3.70	190.00	873.9	-10.8	0.9	8.4	2.52	2.47	11.60	
956.0	6.20	183.40	955.6	-17.8	0.2	14.6	3.12	3.05	-8.05	

Company:	NOBLE ENERGY INC WELD COUNTY CO	Local Co-ordinate Reference:	Well Burough C23-30D
Project:	SEC.14-T4N-R64W	TVD Reference:	WELL @ 4661.0ft (Original Well Elev)
Site:	Burrough C14-13D Pad Sec.14-T4N-R64W	MD Reference:	WELL @ 4661.0ft (Original Well Elev)
Well:	Burough C23-30D	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)	
1,038.0	8.50	181.70	1,036.9	-28.3	-0.2	23.4	2.82	2.80	-2.07	
1,119.0	9.80	188.90	1,116.8	-41.1	-1.5	34.7	2.14	1.60	8.89	
1,201.0	11.40	200.30	1,197.4	-55.6	-5.4	48.8	3.21	1.95	13.90	
1,283.0	13.10	208.80	1,277.6	-71.3	-12.7	65.9	3.02	2.07	10.37	
1,365.0	15.50	210.00	1,357.0	-89.0	-22.6	86.1	2.95	2.93	1.46	
1,446.0	16.70	213.00	1,434.9	-108.1	-34.4	108.5	1.80	1.48	3.70	
1,528.0	17.20	213.00	1,513.3	-128.2	-47.4	132.4	0.61	0.61	0.00	
1,610.0	18.40	217.90	1,591.4	-148.5	-61.9	157.5	2.34	1.46	5.98	
1,692.0	20.40	217.50	1,668.7	-170.1	-78.6	184.7	2.44	2.44	-0.49	
1,773.0	21.80	214.40	1,744.3	-193.7	-95.7	213.8	2.21	1.73	-3.83	
1,855.0	22.20	213.00	1,820.3	-219.3	-112.7	244.5	0.80	0.49	-1.71	
1,937.0	23.50	214.40	1,895.9	-245.7	-130.4	276.4	1.72	1.59	1.71	
2,019.0	23.70	213.00	1,971.0	-273.0	-148.6	309.2	0.73	0.24	-1.71	
2,100.0	23.50	216.70	2,045.3	-299.6	-167.1	341.6	1.85	-0.25	4.57	
2,182.0	22.40	214.70	2,120.8	-325.6	-185.8	373.6	1.64	-1.34	-2.44	
2,254.0	21.50	212.50	2,187.5	-348.0	-200.7	400.5	1.69	-1.25	-3.06	
2,346.0	21.20	214.00	2,273.2	-376.0	-219.1	433.9	0.68	-0.33	1.63	
2,427.0	21.50	215.00	2,348.7	-400.3	-235.8	463.4	0.58	0.37	1.23	
2,509.0	22.10	215.60	2,424.8	-425.2	-253.4	493.9	0.78	0.73	0.73	
2,591.0	23.20	215.80	2,500.5	-450.8	-271.8	525.5	1.34	1.34	0.24	
2,673.0	25.90	216.30	2,575.1	-478.4	-291.8	559.5	3.30	3.29	0.61	
2,754.0	26.90	215.30	2,647.6	-507.6	-312.9	595.5	1.35	1.23	-1.23	
2,836.0	26.80	215.30	2,720.8	-537.8	-334.3	632.5	0.12	-0.12	0.00	
2,918.0	25.90	214.70	2,794.3	-567.6	-355.2	668.9	1.14	-1.10	-0.73	
2,999.0	23.10	215.80	2,868.0	-595.0	-374.6	702.5	3.50	-3.46	1.36	
3,081.0	24.30	214.90	2,943.0	-621.9	-393.6	735.5	1.53	1.46	-1.10	
3,163.0	22.40	211.90	3,018.3	-649.0	-411.5	768.0	2.73	-2.32	-3.66	
3,245.0	19.00	212.80	3,095.0	-673.5	-427.0	796.9	4.16	-4.15	1.10	
3,326.0	17.20	215.80	3,172.0	-694.3	-441.2	822.1	2.50	-2.22	3.70	
3,408.0	18.90	219.00	3,250.0	-714.5	-456.6	847.4	2.40	2.07	3.90	
3,490.0	19.60	213.70	3,327.4	-736.2	-472.6	874.4	2.29	0.85	-6.46	
3,572.0	19.60	217.40	3,404.6	-758.6	-488.6	901.9	1.51	0.00	4.51	
3,653.0	21.70	217.50	3,480.4	-781.3	-506.0	930.5	2.59	2.59	0.12	
3,735.0	24.00	212.30	3,556.0	-807.4	-524.1	962.3	3.73	2.80	-6.34	
3,817.0	24.70	215.10	3,630.7	-835.5	-542.9	996.1	1.65	0.85	3.41	
3,899.0	24.70	214.90	3,705.2	-863.6	-562.5	1,030.3	0.10	0.00	-0.24	
3,980.0	23.80	215.10	3,779.1	-890.9	-581.6	1,063.6	1.12	-1.11	0.25	
4,062.0	24.30	217.70	3,853.9	-917.7	-601.4	1,097.0	1.43	0.61	3.17	
4,144.0	24.60	220.00	3,928.6	-944.2	-622.7	1,130.8	1.22	0.37	2.80	
4,226.0	24.60	217.40	4,003.1	-970.8	-644.1	1,164.9	1.32	0.00	-3.17	
4,307.0	22.70	215.60	4,077.3	-996.9	-663.4	1,197.3	2.51	-2.35	-2.22	
4,389.0	21.20	214.70	4,153.4	-1,022.0	-681.1	1,228.0	1.87	-1.83	-1.10	
4,471.0	21.30	217.40	4,229.8	-1,046.0	-698.5	1,257.7	1.20	0.12	3.29	
4,553.0	22.20	212.80	4,306.0	-1,070.8	-716.0	1,288.0	2.35	1.10	-5.61	
4,634.0	23.30	214.20	4,380.7	-1,096.9	-733.3	1,319.4	1.51	1.36	1.73	
4,716.0	21.90	216.50	4,456.4	-1,122.7	-751.5	1,350.9	2.02	-1.71	2.80	
4,798.0	22.70	215.80	4,532.3	-1,147.8	-769.8	1,382.0	1.03	0.98	-0.85	
4,880.0	23.50	217.20	4,607.7	-1,173.6	-789.0	1,414.1	1.18	0.98	1.71	
4,961.0	22.90	217.50	4,682.1	-1,199.0	-808.3	1,446.0	0.75	-0.74	0.37	
5,043.0	21.20	218.40	4,758.1	-1,223.3	-827.3	1,476.7	2.11	-2.07	1.10	
5,125.0	21.90	219.10	4,834.4	-1,246.8	-846.1	1,506.7	0.91	0.85	0.85	
5,206.0	20.60	216.70	4,909.9	-1,269.9	-864.2	1,536.0	1.93	-1.60	-2.96	
5,288.0	16.40	216.30	4,987.6	-1,290.8	-879.6	1,562.0	5.12	-5.12	-0.49	
5,370.0	14.10	214.50	5,066.7	-1,308.4	-892.2	1,583.6	2.86	-2.80	-2.20	

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Site:	Borough C14-13D Pad Sec.14-T4N-R64W	MD Reference:	WELL @ 4661.0ft (Original Well Elev)
Well:	Borough C23-30D	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)
5,452.0	12.10	209.80	5,146.6	-1,324.1	-902.1	1,602.2	2.76	-2.44	-5.73
5,533.0	11.80	212.60	5,225.9	-1,338.4	-910.8	1,618.9	0.81	-0.37	3.46
5,615.0	9.10	208.90	5,306.5	-1,351.2	-918.4	1,633.7	3.39	-3.29	-4.51
5,697.0	7.90	213.00	5,387.6	-1,361.6	-924.6	1,645.8	1.64	-1.46	5.00
5,779.0	6.80	213.30	5,468.9	-1,370.4	-930.4	1,656.3	1.34	-1.34	0.37
5,860.0	5.70	212.60	5,549.4	-1,377.8	-935.2	1,665.1	1.36	-1.36	-0.86
5,942.0	4.60	209.80	5,631.1	-1,384.0	-939.0	1,672.5	1.38	-1.34	-3.41
6,024.0	4.20	216.80	5,712.9	-1,389.3	-942.4	1,678.7	0.82	-0.49	8.54
6,106.0	2.90	210.90	5,794.7	-1,393.5	-945.3	1,683.8	1.64	-1.59	-7.20
6,187.0	1.50	207.50	5,875.6	-1,396.2	-946.8	1,686.9	1.74	-1.73	-4.20
6,211.7	1.50	204.70	5,900.3	-1,396.8	-947.1	1,687.5	0.30	-0.02	-11.33
TARGET BHL 75'FSL, 490'FWL									
6,269.0	1.50	198.20	5,957.6	-1,398.1	-947.7	1,689.0	0.30	0.01	-11.35
6,351.0	1.10	198.40	6,039.6	-1,399.9	-948.2	1,690.8	0.49	-0.49	0.24
6,433.0	0.80	207.70	6,121.6	-1,401.2	-948.8	1,692.1	0.41	-0.37	11.34
6,514.0	0.50	207.40	6,202.6	-1,402.0	-949.2	1,693.0	0.37	-0.37	-0.37
6,596.0	0.50	140.90	6,284.6	-1,402.6	-949.1	1,693.5	0.67	0.00	-81.10
6,678.0	0.70	197.00	6,366.6	-1,403.3	-949.0	1,694.1	0.72	0.24	68.41
6,760.0	0.40	160.90	6,448.6	-1,404.1	-949.1	1,694.7	0.54	-0.37	-44.02
6,800.4	0.43	143.19	6,488.9	-1,404.3	-949.0	1,694.8	0.33	0.08	-43.89
TARGET CIRCLE 75'FSL & 490'FWL									
6,841.0	0.50	129.00	6,529.6	-1,404.6	-948.7	1,694.9	0.33	0.17	-34.91
6,923.0	0.90	140.90	6,611.6	-1,405.3	-948.0	1,695.1	0.52	0.49	14.51
7,005.0	0.30	166.40	6,693.5	-1,406.0	-947.6	1,695.4	0.78	-0.73	31.10
7,096.0	0.60	127.40	6,784.5	-1,406.5	-947.2	1,695.6	0.45	0.33	-42.86
7,168.0	0.20	4.90	6,856.5	-1,406.6	-946.8	1,695.5	1.01	-0.56	-170.14
7,189.0	0.40	45.80	6,877.5	-1,406.5	-946.8	1,695.4	1.34	0.95	194.76
7,221.4	0.46	48.68	6,909.9	-1,406.4	-946.6	1,695.2	0.21	0.20	8.88
HARD LINES 75'S OF BHL									
7,240.0	0.50	50.00	6,928.5	-1,406.3	-946.5	1,695.0	0.21	0.20	7.11

Checked By: _____ Approved By: _____ Date: _____