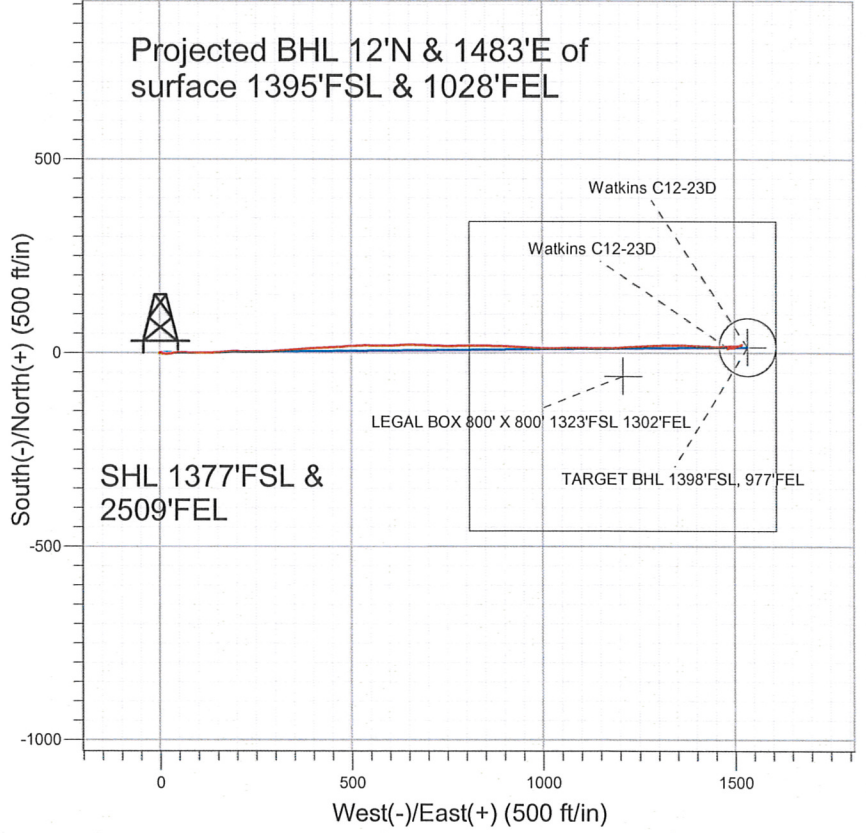


**NOBLE ENERGY INC WELD COUNTY CO**



**LEGEND**

- ▲ Watkins C12-23D, Wellbore #1, Noble Watkins C12-23D Plan #2 (11-16-11) VO
- Wellbore #1
- Survey #1

**Final Survey Plot**

Projected Final Survey -  
 7170'MD & 6886'TVD @ 1483'VS  
 1.1 deg Inc 242.3 deg AZ

Project: SEC.12-T4N-R64W  
 Site: Watkins C12-23 Pad Sec.12-T4N-R64W  
 Well: Watkins C12-23D  
 Plan: Wellbore #1



## Directional

# NOBLE ENERGY INC WELD COUNTY CO

SEC.12-T4N-R64W

Watkins C12-23 Pad Sec.12-T4N-R64W

Watkins C12-23D

Wellbore #1

Survey: Survey #1

## Standard Survey Report

15 December, 2011



<b>Company:</b>	NOBLE ENERGY INC WELD COUNTY CO	<b>Local Co-ordinate Reference:</b>	Well Watkins C12-23D
<b>Project:</b>	SEC.12-T4N-R64W	<b>TVD Reference:</b>	WELL @ 4640.0ft (Original Well Elev)
<b>Site:</b>	Watkins C12-23 Pad Sec.12-T4N-R64W	<b>MD Reference:</b>	WELL @ 4640.0ft (Original Well Elev)
<b>Well:</b>	Watkins C12-23D	<b>North Reference:</b>	True
<b>Wellbore:</b>	Wellbore #1	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Wellbore #1	<b>Database:</b>	Landmark

<b>Project</b>	SEC.12-T4N-R64W, Weld County, CO		
<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

<b>Site</b>	Watkins C12-23 Pad Sec.12-T4N-R64W				
<b>Site Position:</b>		<b>Northing:</b>	1,362,246.49ft	<b>Latitude:</b>	40.323440
<b>From:</b>	Lat/Long	<b>Easting:</b>	3,279,198.15ft	<b>Longitude:</b>	-104.498640
<b>Position Uncertainty:</b>	0.0 ft	<b>Slot Radius:</b>	"	<b>Grid Convergence:</b>	0.65 °

<b>Well</b>	Watkins C12-23D					
<b>Well Position</b>	<b>+N/-S</b>	0.0 ft	<b>Northing:</b>	1,362,246.46 ft	<b>Latitude:</b>	40.323440
	<b>+E/-W</b>	0.0 ft	<b>Easting:</b>	3,279,198.15 ft	<b>Longitude:</b>	-104.498640
<b>Position Uncertainty</b>		0.0 ft	<b>Wellhead Elevation:</b>	ft	<b>Ground Level:</b>	4,627.0 ft

<b>Wellbore</b>	Wellbore #1				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	IGRF2010	11/23/2011	8.66	67.02	53,075

<b>Design</b>	Wellbore #1				
<b>Audit Notes:</b>					
<b>Version:</b>	1.0	<b>Phase:</b>	ACTUAL	<b>Tie On Depth:</b>	0.0
<b>Vertical Section:</b>		<b>Depth From (TVD) (ft)</b>	<b>+N/-S (ft)</b>	<b>+E/-W (ft)</b>	<b>Direction (°)</b>
		0.0	0.0	0.0	89.45

<b>Survey Program</b>	Date 12/15/2011				
<b>From (ft)</b>	<b>To (ft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>	
74.0	7,170.0	Survey #1 (Wellbore #1)	MWD	MWD - Standard	

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	0.40	257.60	74.0	-0.1	-0.3	-0.3	0.54	0.54	0.00
168.0	0.40	73.70	168.0	0.0	-0.3	-0.3	0.85	0.00	187.34
260.0	0.40	334.40	260.0	0.3	-0.1	-0.1	0.66	0.00	-107.93
363.0	0.50	44.30	363.0	1.0	0.1	0.1	0.51	0.10	67.86
445.0	0.80	94.30	445.0	1.2	0.9	0.9	0.75	0.37	60.98
526.0	0.40	74.60	526.0	1.2	1.7	1.7	0.55	-0.49	-24.32
608.0	0.50	66.10	608.0	1.5	2.3	2.3	0.15	0.12	-10.37
690.0	0.40	100.20	690.0	1.6	2.9	3.0	0.34	-0.12	41.59
772.0	0.40	61.70	772.0	1.6	3.5	3.5	0.32	0.00	-46.95
853.0	0.40	90.70	853.0	1.8	4.0	4.0	0.25	0.00	35.80
935.0	0.80	127.10	935.0	1.4	4.7	4.8	0.65	0.49	44.39
1,017.0	0.90	135.00	1,017.0	0.6	5.7	5.7	0.19	0.12	9.63

<b>Company:</b>	NOBLE ENERGY INC WELD COUNTY CO	<b>Local Co-ordinate Reference:</b>	Well Watkins C12-23D
<b>Project:</b>	SEC.12-T4N-R64W	<b>TVD Reference:</b>	WELL @ 4640.0ft (Original Well Elev)
<b>Site:</b>	Watkins C12-23 Pad Sec.12-T4N-R64W	<b>MD Reference:</b>	WELL @ 4640.0ft (Original Well Elev)
<b>Well:</b>	Watkins C12-23D	<b>North Reference:</b>	True
<b>Wellbore:</b>	Wellbore #1	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Wellbore #1	<b>Database:</b>	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)
1,034.0	1.00	143.10	1,034.0	0.4	5.8	5.8	0.98	0.59	47.65
1,085.0	1.00	150.00	1,085.0	-0.3	6.3	6.3	0.24	0.00	13.53
1,116.0	1.00	132.80	1,115.9	-0.8	6.7	6.7	0.96	0.00	-55.48
1,198.0	3.10	94.30	1,197.9	-1.4	9.4	9.4	2.93	2.56	-46.95
1,280.0	3.90	100.20	1,279.7	-2.1	14.4	14.3	1.07	0.98	7.20
1,361.0	5.70	83.00	1,360.5	-2.1	21.1	21.0	2.82	2.22	-21.23
1,443.0	7.30	77.20	1,441.9	-0.4	30.2	30.2	2.11	1.95	-7.07
1,525.0	8.60	84.40	1,523.1	1.3	41.4	41.4	1.99	1.59	8.78
1,607.0	10.60	91.60	1,604.0	1.7	55.0	55.0	2.84	2.44	8.78
1,688.0	12.00	89.70	1,683.4	1.6	70.9	70.9	1.79	1.73	-2.35
1,770.0	13.00	90.60	1,763.5	1.5	88.6	88.6	1.24	1.22	1.10
1,852.0	14.50	93.60	1,843.1	0.8	108.1	108.1	2.02	1.83	3.66
1,934.0	15.90	87.60	1,922.3	0.6	129.6	129.6	2.57	1.71	-7.32
2,015.0	17.70	86.30	1,999.8	1.9	152.9	153.0	2.27	2.22	-1.60
2,097.0	19.40	83.40	2,077.5	4.2	178.9	178.9	2.36	2.07	-3.54
2,179.0	19.30	92.80	2,154.9	5.1	206.0	206.0	3.80	-0.12	11.46
2,261.0	21.30	92.10	2,231.8	3.9	234.4	234.4	2.46	2.44	-0.85
2,342.0	24.10	88.20	2,306.5	3.9	265.6	265.7	3.92	3.46	-4.81
2,424.0	24.70	86.90	2,381.2	5.4	299.5	299.5	0.98	0.73	-1.59
2,506.0	25.50	85.30	2,455.5	7.7	334.2	334.2	1.28	0.98	-1.95
2,588.0	26.50	85.30	2,529.2	10.7	370.0	370.1	1.22	1.22	0.00
2,669.0	25.80	86.30	2,601.9	13.3	405.6	405.7	1.02	-0.86	1.23
2,751.0	26.70	87.80	2,675.4	15.1	441.8	442.0	1.36	1.10	1.83
2,833.0	26.70	86.00	2,748.7	17.1	478.6	478.8	0.99	0.00	-2.20
2,914.0	24.50	87.00	2,821.7	19.3	513.5	513.7	2.77	-2.72	1.23
2,996.0	24.70	90.60	2,896.3	20.0	547.7	547.8	1.84	0.24	4.39
3,078.0	23.60	90.90	2,971.1	19.6	581.2	581.4	1.35	-1.34	0.37
3,160.0	21.60	87.20	3,046.8	20.0	612.7	612.9	2.99	-2.44	-4.51
3,241.0	18.80	87.30	3,122.8	21.4	640.6	640.8	3.46	-3.46	0.12
3,323.0	19.70	92.00	3,200.3	21.5	667.6	667.8	2.18	1.10	5.73
3,405.0	19.50	91.40	3,277.5	20.7	695.1	695.3	0.35	-0.24	-0.73
3,487.0	20.10	93.20	3,354.7	19.6	722.9	723.0	1.04	0.73	2.20
3,568.0	18.60	90.00	3,431.1	18.8	749.7	749.8	2.27	-1.85	-3.95
3,650.0	20.80	89.30	3,508.3	19.0	777.3	777.5	2.70	2.68	-0.85
3,732.0	23.70	90.00	3,584.2	19.2	808.4	808.5	3.55	3.54	0.85
3,814.0	24.10	89.90	3,659.1	19.2	841.6	841.8	0.49	0.49	-0.12
3,895.0	23.50	90.90	3,733.2	19.0	874.3	874.4	0.89	-0.74	1.23
3,977.0	22.70	92.50	3,808.7	18.0	906.4	906.6	1.24	-0.98	1.95
4,059.0	24.40	94.10	3,883.8	16.1	939.1	939.3	2.21	2.07	1.95
4,141.0	27.60	92.80	3,957.5	14.0	975.0	975.1	3.96	3.90	-1.59
4,222.0	26.60	90.90	4,029.6	12.8	1,011.9	1,012.0	1.63	-1.23	-2.35
4,304.0	25.90	87.60	4,103.2	13.2	1,048.2	1,048.2	1.97	-0.85	-4.02
4,386.0	25.20	90.90	4,177.2	13.7	1,083.5	1,083.6	1.93	-0.85	4.02
4,468.0	24.50	91.10	4,251.6	13.1	1,118.0	1,118.0	0.86	-0.85	0.24
4,549.0	26.80	90.40	4,324.6	12.7	1,153.0	1,153.1	2.86	2.84	-0.86
4,631.0	25.90	86.50	4,398.1	13.6	1,189.4	1,189.5	2.38	-1.10	-4.76
4,713.0	23.80	87.40	4,472.5	15.5	1,223.8	1,223.9	2.60	-2.56	1.10
4,795.0	23.20	85.60	4,547.7	17.5	1,256.4	1,256.5	1.14	-0.73	-2.20
4,876.0	21.80	88.30	4,622.5	19.1	1,287.4	1,287.5	2.15	-1.73	3.33
4,958.0	18.60	87.20	4,699.5	20.2	1,315.7	1,315.8	3.93	-3.90	-1.34
5,040.0	19.10	91.60	4,777.1	20.5	1,342.1	1,342.3	1.84	0.61	5.37
5,121.0	18.00	89.90	4,853.9	20.1	1,367.9	1,368.0	1.51	-1.36	-2.10
5,203.0	17.80	92.50	4,931.9	19.6	1,393.1	1,393.2	1.00	-0.24	3.17
5,286.0	14.80	94.30	5,011.5	18.3	1,416.3	1,416.4	3.66	-3.61	2.17

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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)
5,367.0	13.40	90.60	5,090.1	17.4	1,436.0	1,436.1	2.05	-1.73	-4.57
5,448.0	10.80	95.00	5,169.3	16.6	1,453.0	1,453.1	3.40	-3.21	5.43
5,530.0	9.80	85.60	5,250.0	16.5	1,467.6	1,467.7	2.38	-1.22	-11.46
5,612.0	8.60	84.80	5,330.9	17.6	1,480.7	1,480.8	1.47	-1.46	-0.98
5,694.0	7.60	86.50	5,412.1	18.5	1,492.2	1,492.3	1.25	-1.22	2.07
5,775.0	6.10	87.20	5,492.5	19.0	1,501.8	1,501.9	1.85	-1.85	0.86
5,857.0	4.80	91.10	5,574.2	19.2	1,509.6	1,509.7	1.65	-1.59	4.76
5,939.0	3.30	79.00	5,655.9	19.5	1,515.4	1,515.5	2.10	-1.83	-14.76
6,021.0	2.30	44.90	5,737.9	21.2	1,518.8	1,519.0	2.32	-1.22	-41.59
6,102.0	0.40	31.90	5,818.8	22.6	1,520.1	1,520.3	2.36	-2.35	-16.05
6,183.1	1.08	235.49	5,899.9	22.4	1,519.6	1,519.8	1.80	0.84	-192.83
<b>TARGET BHL 1398'FSL, 977'FEL</b>									
6,184.0	1.10	235.40	5,900.8	22.4	1,519.6	1,519.8	1.80	1.79	-10.28
6,266.0	1.80	239.30	5,982.8	21.2	1,517.9	1,518.0	0.86	0.85	4.76
6,348.0	2.10	245.10	6,064.7	20.0	1,515.4	1,515.5	0.44	0.37	7.07
6,429.0	2.40	250.20	6,145.7	18.8	1,512.5	1,512.6	0.44	0.37	6.30
6,511.0	2.60	251.90	6,227.6	17.6	1,509.1	1,509.2	0.26	0.24	2.07
6,593.0	2.70	250.70	6,309.5	16.4	1,505.5	1,505.6	0.14	0.12	-1.46
6,675.0	2.10	245.00	6,391.4	15.1	1,502.3	1,502.4	0.79	-0.73	-6.95
6,747.4	2.18	257.04	6,463.8	14.2	1,499.8	1,499.8	0.63	0.12	16.64
<b>TARGET CIRCLE 1398'FSL &amp; 977'FEL</b>									
6,756.0	2.20	258.40	6,472.4	14.2	1,499.4	1,499.5	0.63	0.19	15.76
6,761.4	2.23	258.69	6,477.8	14.1	1,499.2	1,499.3	0.64	0.60	5.31
<b>LEGAL BOX 800' X 800' 1323'FSL 1302'FEL</b>									
6,838.0	2.70	262.00	6,554.3	13.6	1,496.0	1,496.0	0.64	0.61	4.33
6,920.0	3.90	267.60	6,636.2	13.2	1,491.3	1,491.3	1.51	1.46	6.83
7,001.0	2.80	266.90	6,717.0	13.0	1,486.6	1,486.6	1.36	-1.36	-0.86
7,083.0	0.90	234.70	6,799.0	12.5	1,484.0	1,484.1	2.55	-2.32	-39.27
7,119.0	1.00	238.60	6,835.0	12.2	1,483.5	1,483.6	0.33	0.28	10.83
7,170.0	1.10	242.30	6,886.0	11.7	1,482.7	1,482.8	0.24	0.20	7.25

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