

Well Name: **Boulter G14-29D**

Surface Location: Boulter G14-29D Pad Sec.14-T4N-R65W  
 North American Datum 1983 US State Plane 1983 Colorado Northern Zone

Ground Elevation: 4694.0

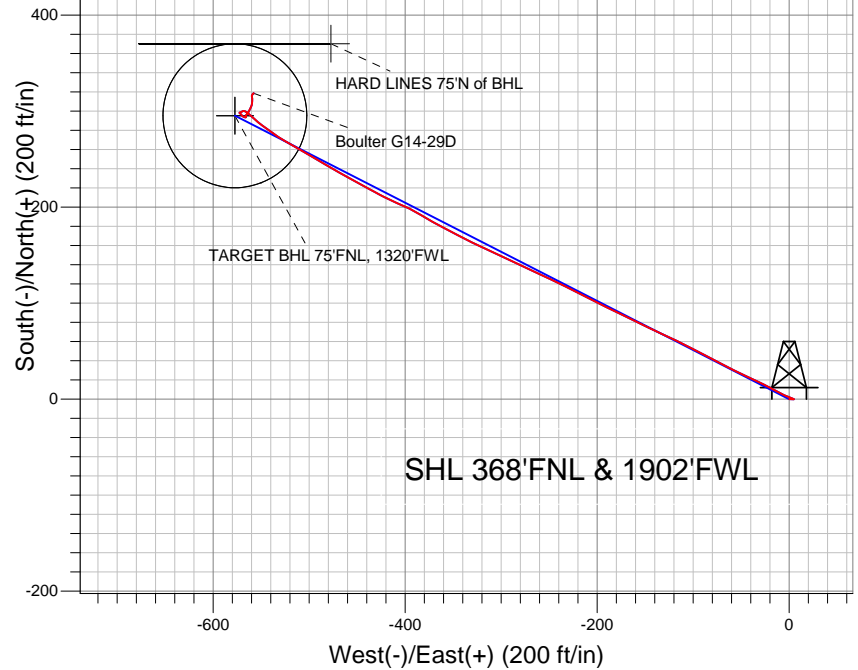
+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
0.0	0.0	1360140.33	3241815.40	40° 19' 7.464 N	104° 37' 58.008 W

Original Well Elev WELL @ 4707.0ft (Original Well Elev)

Slot

## NOBLE ENERGY INC WELD COUNTY CO

Projected BHL 319'N & 558'W of  
 surface 51'FNL & 1339'FWL



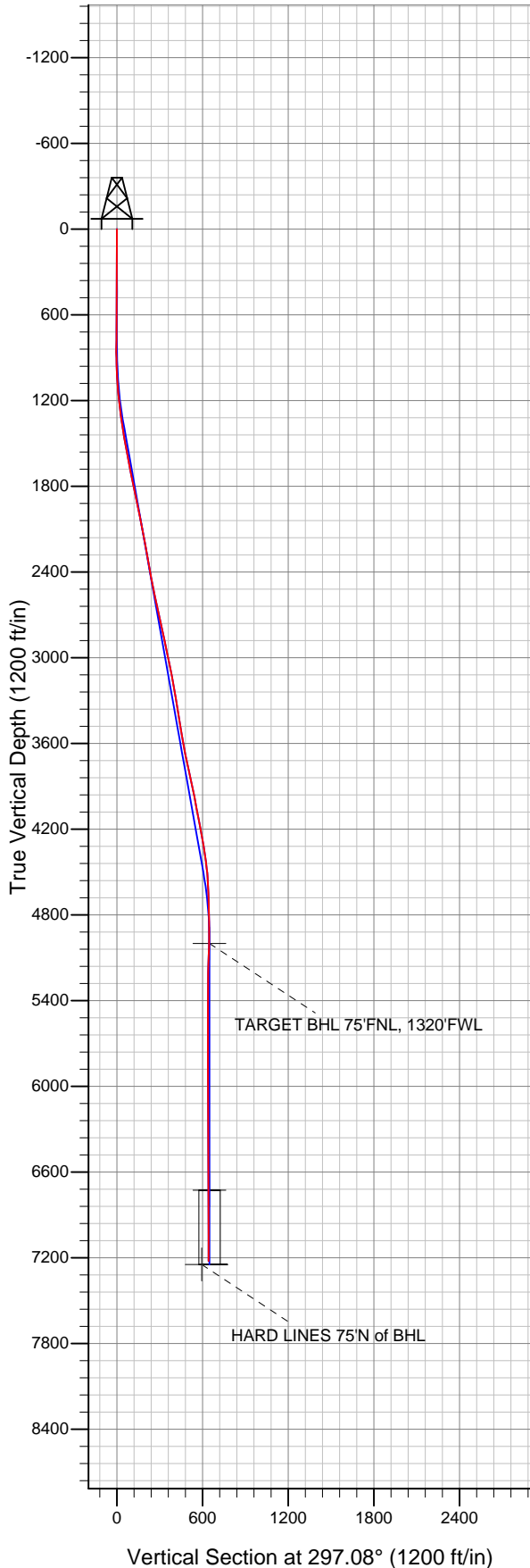
### LEGEND

- △ Boulter G14-29D, Wellbore #1, Noble Boulter G14-29D Plan #2 (5-10-11) V0
- Wellbore #1
- Survey #1

## Final Survey Plot

Projected Final Survey -  
 7283'MD & 7223'TVD @ 642'VS  
 0.2 deg Inc 319.0 deg AZ

Project: SEC.14-T4N-R65W  
 Site: Boulter G14-29D Pad Sec.14-T4N-R65W  
 Well: Boulter G14-29D  
 Plan: Wellbore #1





## **Directional**

# **NOBLE ENERGY INC WELD COUNTY CO**

**SEC.14-T4N-R65W**

**Boulter G14-29D Pad Sec.14-T4N-R65W**

**Boulter G14-29D**

**Wellbore #1**

**Survey: Survey #1**

## **Standard Survey Report**

**22 August, 2011**



<b>Company:</b>	NOBLE ENERGY INC WELD COUNTY CO	<b>Local Co-ordinate Reference:</b>	Site Boulter G14-29D Pad Sec.14-T4N-R65W
<b>Project:</b>	SEC.14-T4N-R65W	<b>TVD Reference:</b>	WELL @ 4707.0ft (Original Well Elev)
<b>Site:</b>	Boulter G14-29D Pad Sec.14-T4N-R65W	<b>MD Reference:</b>	WELL @ 4707.0ft (Original Well Elev)
<b>Well:</b>	Boulter G14-29D	<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.14-T4N-R65W, 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

<b>Site</b>	Boulter G14-29D Pad Sec.14-T4N-R65W		
<b>Site Position:</b>		<b>Northing:</b>	1,360,140.34 ft
<b>From:</b>	Lat/Long	<b>Easting:</b>	3,241,815.40 ft
<b>Position Uncertainty:</b>	0.0 ft	<b>Slot Radius:</b>	"
		<b>Latitude:</b>	40° 19' 7.464 N
		<b>Longitude:</b>	104° 37' 58.008 W
		<b>Grid Convergence:</b>	0.56 °

<b>Well</b>	Boulter G14-29D		
<b>Well Position</b>	<b>+N/-S</b>	0.0 ft	<b>Northing:</b> 1,360,140.33 ft
	<b>+E/-W</b>	0.0 ft	<b>Easting:</b> 3,241,815.40 ft
<b>Position Uncertainty</b>	0.0 ft		<b>Wellhead Elevation:</b> ft
			<b>Latitude:</b> 40° 19' 7.464 N
			<b>Longitude:</b> 104° 37' 58.008 W
			<b>Ground Level:</b> 4,694.0 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	5/10/2011	8.80	67.01	53,115

<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	297.08	

<b>Survey Program</b>	<b>Date</b>	8/22/2011			
<b>From (ft)</b>	<b>To (ft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>	
775.0	7,283.0	Survey #1 (Wellbore #1)	MWD	MWD - Standard	

<b>Survey</b>										
<b>Measured Depth (ft)</b>	<b>Inclination (°)</b>	<b>Azimuth (°)</b>	<b>Vertical Depth (ft)</b>	<b>+N/-S (ft)</b>	<b>+E/-W (ft)</b>	<b>Vertical Section (ft)</b>	<b>Dogleg Rate (°/100ft)</b>	<b>Build Rate (°/100ft)</b>	<b>Turn Rate (°/100ft)</b>	
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	0.00	
775.0	0.70	92.60	775.0	-0.2	4.7	-4.3	0.09	0.09	0.00	
860.0	0.40	307.30	860.0	-0.1	5.0	-4.5	1.24	-0.35	-170.94	
946.0	1.80	292.60	946.0	0.6	3.5	-2.8	1.65	1.63	-17.09	
1,031.0	3.20	291.00	1,030.9	2.0	0.1	0.8	1.65	1.65	-1.88	
1,117.0	4.50	293.70	1,116.7	4.2	-5.3	6.6	1.53	1.51	3.14	
1,202.0	5.70	298.40	1,201.3	7.6	-12.0	14.1	1.49	1.41	5.53	
1,288.0	7.30	298.30	1,286.8	12.2	-20.6	23.9	1.86	1.86	-0.12	
1,373.0	9.00	295.20	1,370.9	17.6	-31.4	35.9	2.07	2.00	-3.65	
1,459.0	10.00	295.10	1,455.7	23.6	-44.2	50.1	1.16	1.16	-0.12	
1,544.0	10.30	295.90	1,539.4	30.1	-57.7	65.1	0.39	0.35	0.94	
1,630.0	11.10	298.80	1,623.9	37.4	-71.9	81.0	1.12	0.93	3.37	
1,715.0	11.40	297.10	1,707.3	45.2	-86.5	97.6	0.53	0.35	-2.00	

<b>Company:</b>	NOBLE ENERGY INC WELD COUNTY CO	<b>Local Co-ordinate Reference:</b>	Site Boulter G14-29D Pad Sec.14-T4N-R65W
<b>Project:</b>	SEC.14-T4N-R65W	<b>TVD Reference:</b>	WELL @ 4707.0ft (Original Well Elev)
<b>Site:</b>	Boulter G14-29D Pad Sec.14-T4N-R65W	<b>MD Reference:</b>	WELL @ 4707.0ft (Original Well Elev)
<b>Well:</b>	Boulter G14-29D	<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)
1,801.0	11.60	297.30	1,791.6	53.0	-101.8	114.8	0.24	0.23	0.23
1,886.0	11.50	295.60	1,874.8	60.6	-117.0	131.8	0.42	-0.12	-2.00
1,972.0	11.20	294.50	1,959.2	67.8	-132.4	148.7	0.43	-0.35	-1.28
2,057.0	11.60	295.50	2,042.5	74.9	-147.6	165.5	0.52	0.47	1.18
2,143.0	11.30	296.50	2,126.8	82.3	-162.9	182.6	0.42	-0.35	1.16
2,228.0	10.20	296.10	2,210.3	89.4	-177.1	198.4	1.30	-1.29	-0.47
2,314.0	10.00	295.90	2,294.9	96.0	-190.7	213.5	0.24	-0.23	-0.23
2,399.0	10.50	296.90	2,378.6	102.7	-204.2	228.6	0.62	0.59	1.18
2,485.0	10.70	297.20	2,463.1	109.9	-218.3	244.4	0.24	0.23	0.35
2,570.0	10.90	296.20	2,546.6	117.1	-232.6	260.4	0.32	0.24	-1.18
2,656.0	12.60	295.20	2,630.8	124.6	-248.3	277.9	1.99	1.98	-1.16
2,741.0	12.80	295.10	2,713.7	132.6	-265.3	296.5	0.24	0.24	-0.12
2,827.0	13.00	295.10	2,797.6	140.7	-282.6	315.7	0.23	0.23	0.00
2,913.0	11.10	294.70	2,881.7	148.3	-298.9	333.7	2.21	-2.21	-0.47
2,998.0	11.90	295.60	2,965.0	155.5	-314.3	350.6	0.96	0.94	1.06
3,084.0	11.70	295.40	3,049.1	163.1	-330.1	368.2	0.24	-0.23	-0.23
3,169.0	11.20	298.00	3,132.4	170.6	-345.2	385.1	0.85	-0.59	3.06
3,255.0	9.70	297.40	3,217.0	177.9	-359.0	400.7	1.75	-1.74	-0.70
3,340.0	9.30	299.70	3,300.9	184.6	-371.3	414.7	0.65	-0.47	2.71
3,426.0	9.50	300.90	3,385.7	191.7	-383.5	428.7	0.33	0.23	1.40
3,511.0	9.10	296.30	3,469.6	198.3	-395.5	442.4	0.99	-0.47	-5.41
3,597.0	9.90	292.70	3,554.4	204.1	-408.4	456.6	1.16	0.93	-4.19
3,682.0	10.20	297.30	3,638.1	210.4	-421.9	471.4	1.01	0.35	5.41
3,768.0	12.40	299.00	3,722.4	218.4	-436.7	488.2	2.59	2.56	1.98
3,853.0	12.20	298.70	3,805.5	227.1	-452.6	506.3	0.25	-0.24	-0.35
3,939.0	12.20	299.10	3,889.5	235.9	-468.5	524.5	0.10	0.00	0.47
4,024.0	11.30	300.80	3,972.7	244.5	-483.5	541.8	1.13	-1.06	2.00
4,110.0	10.40	301.00	4,057.2	252.8	-497.4	557.9	1.05	-1.05	0.23
4,195.0	11.20	299.00	4,140.7	260.8	-511.2	573.9	1.04	0.94	-2.35
4,281.0	10.90	300.60	4,225.1	269.0	-525.5	590.3	0.50	-0.35	1.86
4,366.0	9.70	305.60	4,308.7	277.2	-538.2	605.4	1.76	-1.41	5.88
4,452.0	7.90	306.60	4,393.7	285.0	-548.8	618.4	2.10	-2.09	1.16
4,537.0	6.40	312.30	4,478.1	291.6	-557.0	628.7	1.95	-1.76	6.71
4,623.0	3.70	311.50	4,563.7	296.7	-562.7	636.1	3.14	-3.14	-0.93
4,708.0	2.50	300.70	4,648.6	299.5	-566.3	640.6	1.56	-1.41	-12.71
4,794.0	1.60	244.10	4,734.5	299.9	-569.0	643.2	2.44	-1.05	-65.81
4,879.0	1.80	241.30	4,819.5	298.8	-571.2	644.6	0.25	0.24	-3.29
4,965.0	0.30	292.80	4,905.5	298.2	-572.6	645.6	1.90	-1.74	59.88
5,051.0	1.10	121.60	4,991.5	297.8	-572.1	645.0	1.62	0.93	-199.07
5,059.5	1.18	125.92	5,000.0	297.8	-572.0	644.8	1.41	0.98	50.99
<b>TARGET BHL 75'FNL, 1320'FWL</b>									
5,136.0	2.10	146.80	5,076.5	296.1	-570.6	642.8	1.41	1.20	27.29
5,222.0	2.10	116.30	5,162.4	294.1	-568.3	639.9	1.28	0.00	-35.47
5,307.0	0.70	102.70	5,247.4	293.3	-566.4	637.8	1.68	-1.65	-16.00
5,393.0	0.30	52.00	5,333.4	293.3	-565.7	637.2	0.65	-0.47	-58.95
5,478.0	0.30	336.10	5,418.4	293.7	-565.6	637.3	0.43	0.00	-89.29
5,564.0	0.50	316.60	5,504.4	294.1	-566.0	637.8	0.28	0.23	-22.67
5,649.0	0.60	21.50	5,589.4	294.8	-566.1	638.2	0.70	0.12	76.35
5,735.0	0.90	38.50	5,675.4	295.8	-565.5	638.2	0.43	0.35	19.77
5,820.0	1.10	40.20	5,760.3	296.9	-564.6	637.8	0.24	0.24	2.00
5,906.0	1.60	35.30	5,846.3	298.5	-563.3	637.5	0.60	0.58	-5.70
5,991.0	1.50	30.30	5,931.3	300.5	-562.1	637.2	0.20	-0.12	-5.88
6,077.0	1.00	10.90	6,017.3	302.2	-561.4	637.4	0.75	-0.58	-22.56
6,162.0	0.70	26.90	6,102.3	303.4	-561.0	637.6	0.45	-0.35	18.82

<b>Company:</b>	NOBLE ENERGY INC WELD COUNTY CO	<b>Local Co-ordinate Reference:</b>	Site Boulter G14-29D Pad Sec.14-T4N-R65W
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<b>Site:</b>	Boulter G14-29D Pad Sec.14-T4N-R65W	<b>MD Reference:</b>	WELL @ 4707.0ft (Original Well Elev)
<b>Well:</b>	Boulter G14-29D	<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)	
6,248.0	1.00	29.80	6,188.3	304.5	-560.4	637.6	0.35	0.35	3.37	
6,333.0	1.40	13.10	6,273.2	306.1	-559.8	637.8	0.62	0.47	-19.65	
6,419.0	1.50	7.70	6,359.2	308.3	-559.4	638.4	0.20	0.12	-6.28	
6,504.0	1.40	1.90	6,444.2	310.4	-559.2	639.2	0.21	-0.12	-6.82	
6,590.0	1.10	0.10	6,530.2	312.3	-559.2	640.0	0.35	-0.35	-2.09	
6,675.0	1.10	347.80	6,615.1	313.9	-559.3	640.9	0.28	0.00	-14.47	
6,761.0	1.00	358.80	6,701.1	315.5	-559.5	641.8	0.26	-0.12	12.79	
6,786.5	0.89	5.01	6,726.7	315.9	-559.5	642.0	0.58	-0.42	24.32	
TARGET CIRCLE 75'FNL & 1320'FWL										
6,846.0	0.70	26.10	6,786.1	316.7	-559.3	642.2	0.58	-0.32	35.47	
6,932.0	0.40	53.60	6,872.1	317.3	-558.8	642.0	0.46	-0.35	31.98	
7,017.0	0.40	47.50	6,957.1	317.7	-558.4	641.8	0.05	0.00	-7.18	
7,103.0	0.40	47.40	7,043.1	318.1	-557.9	641.6	0.00	0.00	-0.12	
7,189.0	0.10	352.50	7,129.1	318.4	-557.7	641.5	0.41	-0.35	-63.84	
7,240.0	0.20	319.00	7,180.1	318.5	-557.8	641.6	0.25	0.20	-65.69	
7,283.0	0.20	319.00	7,223.1	318.6	-557.9	641.8	0.00	0.00	0.00	
HARD LINES 75'N of BHL										

Checked By: _____	Approved By: _____	Date: _____
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