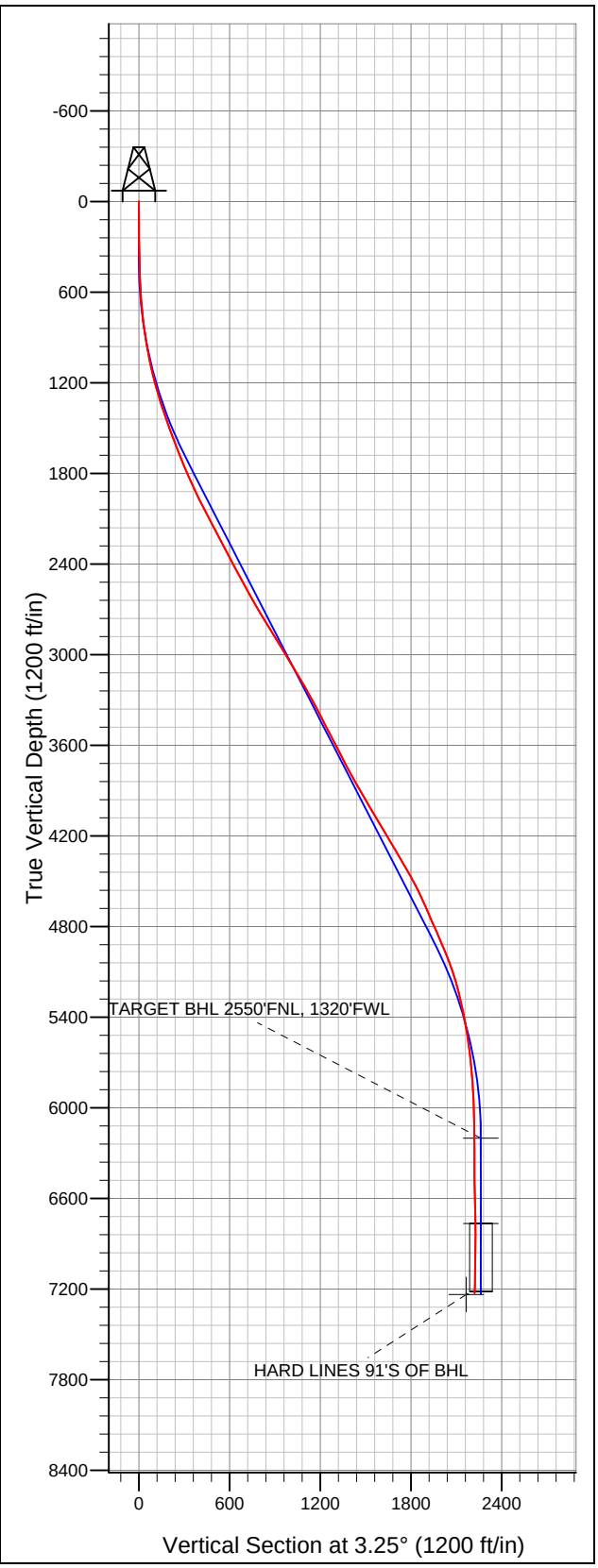
ENSIGN Directional

Well Name: Boulter PC G11-20D

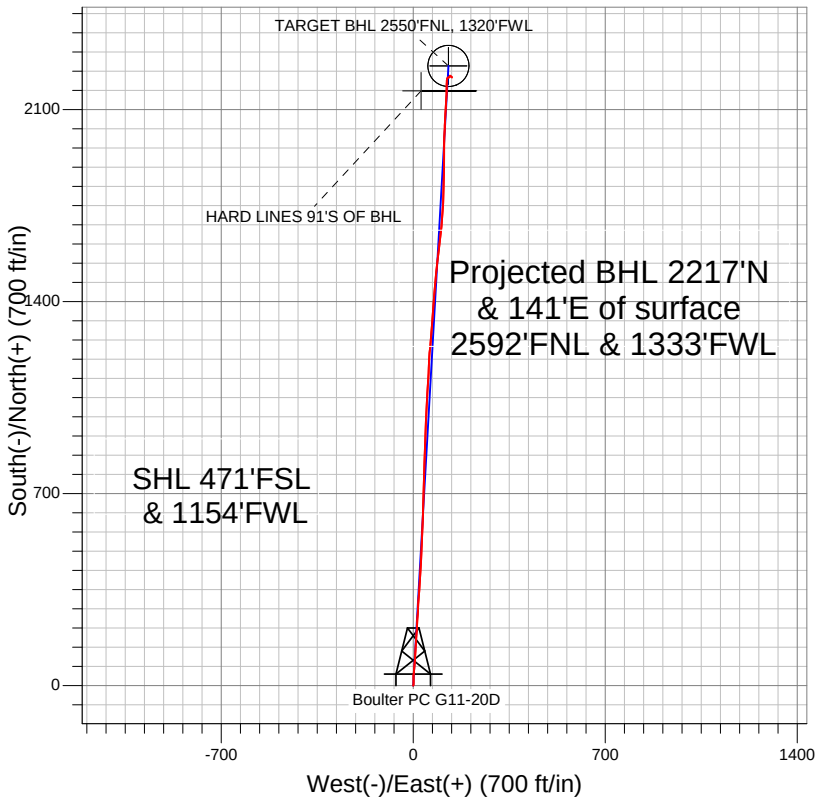
Surface Location: Boulter PC G11-20D Pad Sec.11-T4N-R65W
North American Datum 1983 US State Plane 1983 Colorado Northern Zone
Ground Elevation: 4683.0

+N/-S	+E/-W	Northing	Easting	Latittude	Longitude	Slot
0.0	0.0	1360974.47	3241057.14	40.321050	-104.635470	

Original Well Elev WELL @ 4696.0ft (Original Well Elev)



NOBLE ENERGY INC WELD COUNTY CO



LEGEND

- Survey #1
- Boulter PC G11-20D, Wellbore #1, Noble Boulter PC G11-20D Plan #1 (1-3-12) R V0
- Wellbore #1

Final Survey Plot

Projected Final Survey -
7729'MD & 7226'TVD @ 2221'VS
1.60 deg Inc 134.10 deg AZ

Project: SEC.11-T4N-R65W
Site: Boulter PC G11-20D Pad Sec.11-T4N-R65W
Well: Boulter PC G11-20D
Plan: Wellbore #1

ENSIGN Directional

NOBLE ENERGY INC WELD COUNTY CO

SEC.11-T4N-R65W
Boulter PC G11-20D Pad Sec.11-T4N-R65W
Boulter PC G11-20D

Wellbore #1

Survey: Survey #1

Standard Survey Report

09 January, 2012

noble energy

Company:	NOBLE ENERGY INC WELD COUNTY CO	**Local Co-ordinate Reference:**	Well Boulter PC G11-20D
Project:	SEC.11-T4N-R65W	**TVD Reference:**	WELL @ 4696.0ft (Original Well Elev)
Site:	Boulter PC G11-20D Pad Sec.11-T4N-R65W	**MD Reference:**	WELL @ 4696.0ft (Original Well Elev)
Well:	Boulter PC G11-20D	**North Reference:**	True
Wellbore:	Wellbore #1	**Survey Calculation Method:**	Minimum Curvature
Design:	Wellbore #1	**Database:**	Landmark

Project SEC.11-T4N-R65W, Weld County, Colorado

Map System:	US State Plane 1983	**System Datum:**	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	Colorado Northern Zone		Using geodetic scale factor

Site Boulter PC G11-20D Pad Sec.11-T4N-R65W

Site Position:		**Northing:**	1,360,974.49 ft	**Latitude:**	40.321050
From:	Lat/Long	**Easting:**	3,241,057.14 ft	**Longitude:**	-104.635470
Position Uncertainty:	0.0 ft	**Slot Radius:**	"	**Grid Convergence:**	0.56 °

Well Boulter PC G11-20D

Well Position	**+N/-S**	0.0 ft	**Northing:**	1,360,974.47 ft	**Latitude:**	40.321050
	+E/-W	0.0 ft	**Easting:**	3,241,057.14 ft	**Longitude:**	-104.635470
Position Uncertainty		0.0 ft	**Wellhead Elevation:**	ft	**Ground Level:**	4,683.0 ft

Wellbore Wellbore #1

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF200510	1/3/2012	8.67	67.00	53,070

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	3.25

Survey Program **Date** 1/9/2012

From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
142.0	7,729.0	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
142.0	0.40	36.30	142.0	0.4	0.3	0.4	0.28	0.28	0.00
237.0	0.60	16.40	237.0	1.1	0.6	1.2	0.28	0.21	-20.95
332.0	0.80	9.30	332.0	2.3	0.9	2.3	0.23	0.21	-7.47
427.0	1.40	7.40	427.0	4.1	1.1	4.1	0.63	0.63	-2.00
522.0	2.40	357.20	521.9	7.2	1.2	7.3	1.11	1.05	-10.74
617.0	3.80	0.60	616.8	12.4	1.1	12.4	1.49	1.47	3.58
725.0	5.90	359.70	724.4	21.5	1.1	21.5	1.95	1.94	-0.83
809.0	6.70	359.70	807.9	30.7	1.1	30.7	0.95	0.95	0.00
890.0	8.20	4.70	888.2	41.2	1.5	41.2	2.02	1.85	6.17
972.0	10.20	5.70	969.1	54.2	2.7	54.3	2.45	2.44	1.22
1,053.0	11.90	5.60	1,048.6	69.7	4.3	69.8	2.10	2.10	-0.12
1,135.0	13.40	4.50	1,128.6	87.6	5.8	87.8	1.85	1.83	-1.34

Company:	NOBLE ENERGY INC WELD COUNTY CO	**Local Co-ordinate Reference:**	Well Boulter PC G11-20D
Project:	SEC.11-T4N-R65W	**TVD Reference:**	WELL @ 4696.0ft (Original Well Elev)
Site:	Boulter PC G11-20D Pad Sec.11-T4N-R65W	**MD Reference:**	WELL @ 4696.0ft (Original Well Elev)
Well:	Boulter PC G11-20D	**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)
1,217.0	15.10	3.40	1,208.1	107.7	7.2	107.9	2.10	2.07	-1.34
1,299.0	16.80	2.10	1,286.9	130.2	8.3	130.5	2.12	2.07	-1.59
1,380.0	18.20	3.90	1,364.2	154.5	9.6	154.8	1.85	1.73	2.22
1,462.0	19.30	4.00	1,441.8	180.8	11.4	181.2	1.34	1.34	0.12
1,544.0	19.70	2.60	1,519.1	208.2	13.0	208.6	0.75	0.49	-1.71
1,626.0	20.60	3.60	1,596.1	236.4	14.5	236.8	1.18	1.10	1.22
1,708.0	22.10	3.70	1,672.5	266.2	16.4	266.7	1.83	1.83	0.12
1,790.0	22.70	2.00	1,748.3	297.4	17.9	297.9	1.08	0.73	-2.07
1,871.0	23.60	5.70	1,822.8	329.1	20.1	329.7	2.11	1.11	4.57
1,953.0	25.10	3.60	1,897.5	362.8	22.8	363.5	2.11	1.83	-2.56
2,035.0	25.60	3.50	1,971.6	397.8	25.0	398.6	0.61	0.61	-0.12
2,117.0	27.00	2.50	2,045.1	434.1	26.9	435.0	1.79	1.71	-1.22
2,198.0	28.70	3.70	2,116.7	471.9	28.9	472.8	2.21	2.10	1.48
2,280.0	28.10	2.80	2,188.9	510.8	31.2	511.8	0.90	-0.73	-1.10
2,362.0	27.90	1.50	2,261.3	549.3	32.6	550.3	0.78	-0.24	-1.59
2,444.0	27.40	2.00	2,333.9	587.3	33.8	588.3	0.67	-0.61	0.61
2,525.0	27.70	2.90	2,405.7	624.8	35.4	625.8	0.63	0.37	1.11
2,607.0	28.10	1.60	2,478.2	663.1	36.9	664.1	0.89	0.49	-1.59
2,689.0	27.90	1.30	2,550.6	701.6	37.8	702.6	0.30	-0.24	-0.37
2,771.0	29.60	1.40	2,622.5	741.0	38.8	742.0	2.07	2.07	0.12
2,852.0	30.90	2.40	2,692.4	781.8	40.1	782.8	1.72	1.60	1.23
2,934.0	31.30	1.90	2,762.7	824.1	41.7	825.2	0.58	0.49	-0.61
3,016.0	32.40	2.10	2,832.3	867.4	43.2	868.4	1.35	1.34	0.24
3,098.0	30.30	1.20	2,902.3	910.0	44.5	911.1	2.62	-2.56	-1.10
3,180.0	31.30	2.00	2,972.8	952.0	45.6	953.0	1.32	1.22	0.98
3,261.0	32.10	1.80	3,041.7	994.5	47.1	995.6	1.00	0.99	-0.25
3,343.0	31.40	3.00	3,111.4	1,037.6	48.9	1,038.7	1.15	-0.85	1.46
3,425.0	29.90	4.70	3,181.9	1,079.3	51.6	1,080.5	2.11	-1.83	2.07
3,507.0	28.10	4.00	3,253.7	1,119.0	54.7	1,120.3	2.23	-2.20	-0.85
3,589.0	27.60	1.70	3,326.2	1,157.2	56.6	1,158.6	1.45	-0.61	-2.80
3,670.0	27.60	3.20	3,398.0	1,194.7	58.2	1,196.1	0.86	0.00	1.85
3,752.0	27.90	5.80	3,470.5	1,232.8	61.2	1,234.3	1.52	0.37	3.17
3,834.0	27.90	5.00	3,543.0	1,271.0	64.8	1,272.6	0.46	0.00	-0.98
3,916.0	27.60	5.00	3,615.6	1,309.0	68.1	1,310.8	0.37	-0.37	0.00
3,997.0	26.50	2.90	3,687.7	1,345.8	70.7	1,347.6	1.80	-1.36	-2.59
4,079.0	28.70	4.20	3,760.4	1,383.7	73.0	1,385.6	2.78	2.68	1.59
4,161.0	29.30	5.10	3,832.1	1,423.3	76.3	1,425.3	0.90	0.73	1.10
4,243.0	29.10	5.70	3,903.7	1,463.1	80.0	1,465.3	0.43	-0.24	0.73
4,324.0	31.50	5.40	3,973.6	1,503.8	84.0	1,506.1	2.97	2.96	-0.37
4,406.0	31.50	6.00	4,043.5	1,546.4	88.2	1,548.9	0.38	0.00	0.73
4,488.0	30.90	7.10	4,113.7	1,588.6	93.1	1,591.3	1.01	-0.73	1.34
4,570.0	30.00	6.40	4,184.3	1,629.9	98.0	1,632.8	1.18	-1.10	-0.85
4,651.0	29.50	5.00	4,254.7	1,669.9	102.0	1,673.0	1.06	-0.62	-1.73
4,733.0	30.60	5.00	4,325.6	1,710.8	105.5	1,714.0	1.34	1.34	0.00
4,815.0	30.40	3.50	4,396.3	1,752.3	108.6	1,755.6	0.96	-0.24	-1.83
4,897.0	29.90	1.60	4,467.2	1,793.4	110.5	1,796.8	1.31	-0.61	-2.32
4,979.0	26.80	1.30	4,539.4	1,832.3	111.5	1,835.7	3.78	-3.78	-0.37
5,060.0	24.20	359.20	4,612.5	1,867.2	111.6	1,870.5	3.40	-3.21	-2.59
5,142.0	23.60	0.30	4,687.4	1,900.4	111.5	1,903.7	0.91	-0.73	1.34
5,224.0	23.90	0.60	4,762.5	1,933.5	111.7	1,936.7	0.39	0.37	0.37
5,306.0	23.90	1.80	4,837.5	1,966.7	112.4	1,969.9	0.59	0.00	1.46
5,388.0	23.10	2.00	4,912.7	1,999.3	113.5	2,002.6	0.98	-0.98	0.24
5,469.0	22.20	2.00	4,987.4	2,030.5	114.6	2,033.7	1.11	-1.11	0.00
5,551.0	19.90	3.00	5,063.9	2,059.9	115.9	2,063.2	2.84	-2.80	1.22

Company:	NOBLE ENERGY INC WELD COUNTY CO	**Local Co-ordinate Reference:**	Well Boulter PC G11-20D
Project:	SEC.11-T4N-R65W	**TVD Reference:**	WELL @ 4696.0ft (Original Well Elev)
Site:	Boulter PC G11-20D Pad Sec.11-T4N-R65W	**MD Reference:**	WELL @ 4696.0ft (Original Well Elev)
Well:	Boulter PC G11-20D	**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)
5,633.0	16.80	3.20	5,141.8	2,085.7	117.3	2,089.0	3.78	-3.78	0.24
5,714.0	14.70	2.80	5,219.7	2,107.7	118.4	2,111.0	2.60	-2.59	-0.49
5,796.0	12.70	3.40	5,299.4	2,127.1	119.5	2,130.4	2.45	-2.44	0.73
5,878.0	11.50	3.50	5,379.6	2,144.2	120.5	2,147.6	1.46	-1.46	0.12
5,960.0	9.80	3.10	5,460.1	2,159.3	121.4	2,162.8	2.08	-2.07	-0.49
6,042.0	8.20	1.80	5,541.1	2,172.2	121.9	2,175.6	1.97	-1.95	-1.59
6,123.0	7.20	355.20	5,621.4	2,183.0	121.7	2,186.4	1.65	-1.23	-8.15
6,205.0	5.70	4.30	5,702.9	2,192.2	121.6	2,195.5	2.21	-1.83	11.10
6,287.0	4.70	4.20	5,784.5	2,199.6	122.1	2,203.0	1.22	-1.22	-0.12
6,369.0	3.60	6.10	5,866.3	2,205.5	122.6	2,208.9	1.35	-1.34	2.32
6,450.0	2.40	7.90	5,947.2	2,209.7	123.2	2,213.1	1.49	-1.48	2.22
6,532.0	1.70	16.70	6,029.2	2,212.6	123.7	2,216.0	0.93	-0.85	10.73
6,614.0	1.00	24.80	6,111.1	2,214.4	124.4	2,217.9	0.88	-0.85	9.88
6,695.0	0.90	51.40	6,192.1	2,215.4	125.2	2,219.0	0.55	-0.12	32.84
6,703.3	0.90	53.20	6,200.4	2,215.5	125.3	2,219.0	0.35	-0.05	21.81
TARGET BHL 2550'FNL, 1320'FWL									
6,777.0	0.90	69.50	6,274.1	2,216.1	126.3	2,219.6	0.35	0.01	22.10
6,859.0	1.00	73.00	6,356.1	2,216.5	127.6	2,220.2	0.14	0.12	4.27
6,941.0	1.00	102.70	6,438.1	2,216.5	129.0	2,220.3	0.63	0.00	36.22
7,023.0	1.40	58.10	6,520.1	2,216.9	130.5	2,220.7	1.20	0.49	-54.39
7,104.0	1.40	30.50	6,601.0	2,218.3	131.8	2,222.2	0.82	0.00	-34.07
7,186.0	1.50	24.90	6,683.0	2,220.1	132.8	2,224.1	0.21	0.12	-6.83
7,268.0	1.20	25.40	6,765.0	2,221.9	133.6	2,225.9	0.37	-0.37	0.61
7,269.3	1.19	25.88	6,766.3	2,221.9	133.6	2,225.9	1.30	-1.06	36.51
TARGET CIRCLE 2550'FNL & 1320'FWL									
7,349.0	0.70	86.40	6,846.0	2,222.7	134.5	2,226.7	1.30	-0.61	75.95
7,431.0	1.20	136.90	6,928.0	2,222.1	135.6	2,226.2	1.13	0.61	61.59
7,513.0	1.40	128.10	7,010.0	2,220.8	136.9	2,225.0	0.34	0.24	-10.73
7,595.0	1.50	130.90	7,091.9	2,219.5	138.5	2,223.8	0.15	0.12	3.41
7,683.0	1.60	134.10	7,179.9	2,217.9	140.3	2,222.3	0.15	0.11	3.64
7,729.0	1.60	134.10	7,225.9	2,217.0	141.2	2,221.4	0.00	0.00	0.00
HARD LINES 91'S OF BHL									

Checked By: _____ Approved By: _____ Date: _____