

Well Name: **Brown PC E02-31D**

Surface Location: Brown PC E02-32 Pad Sec.3-T6N-R65W
 North American Datum 1983 US State Plane 1983 Colorado Northern Zone

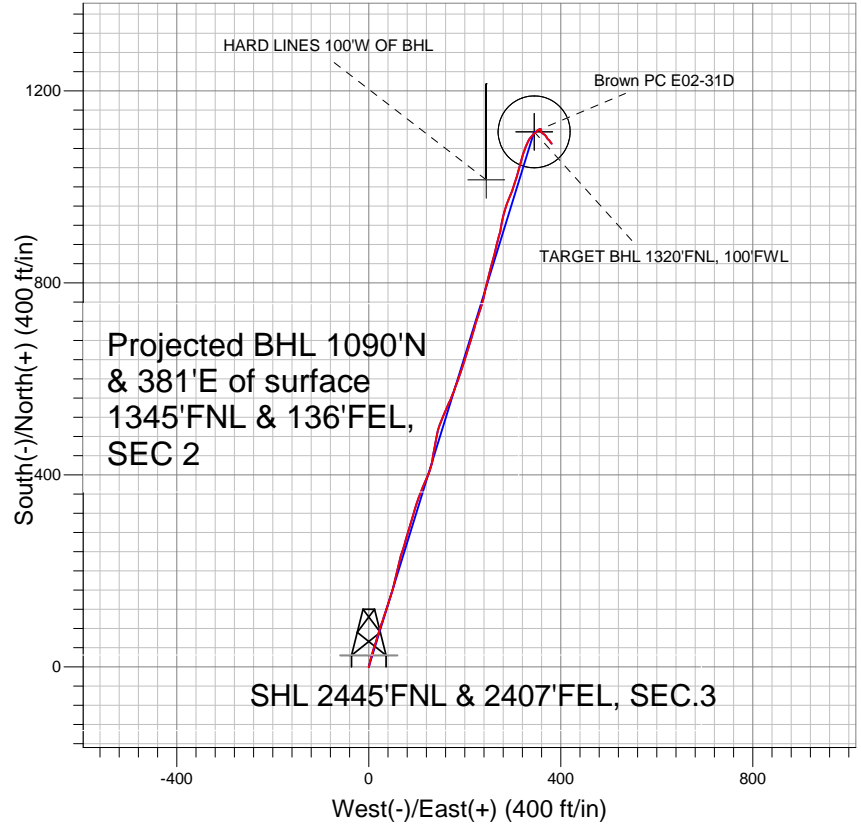
Ground Elevation: 4836.0

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
0.0	0.0	1432090.09	3238929.07	40.516310	-104.640630

Original Well Elev WELL @ 4849.0ft (Original Well Elev)

Slot

NOBLE ENERGY INC WELD COUNTY CO



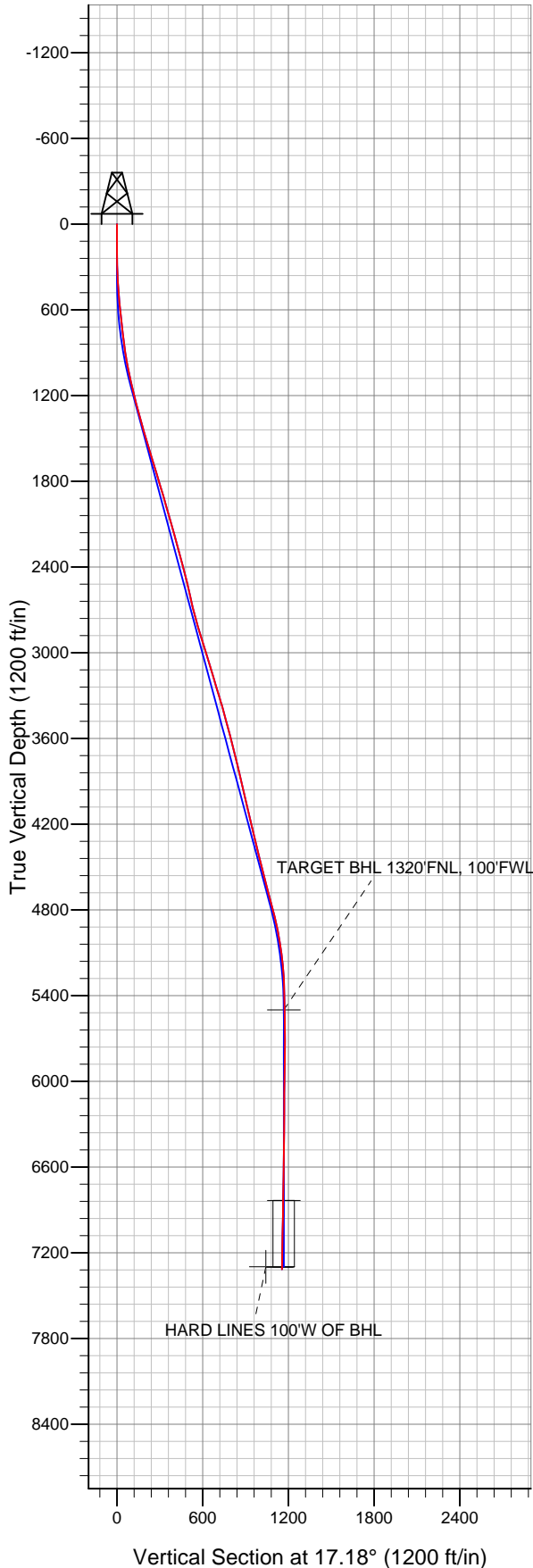
LEGEND

- Brown PC E02-31D, Wellbore #1, Noble Brown PC E02-31D Plan #1 (2-07-11) VO
- Wellbore #1
- Survey #1

Final Survey Plot

Projected Final Survey -
 7465'MD & 7317'TVD @ 1154'VS
 1.8 deg Inc 148.0 deg AZ

Project: SEC.3-T6N-R65W
 Site: Brown PC E02-32 Pad Sec.3-T6N-R65W
 Well: Brown PC E02-31D
 Plan: Wellbore #1





Directional

NOBLE ENERGY INC WELD COUNTY CO

SEC.3-T6N-R65W

Brown PC E02-32 Pad Sec.3-T6N-R65W

Brown PC E02-31D

Wellbore #1

Survey: Survey #1

Standard Survey Report

01 August, 2011



Company:	NOBLE ENERGY INC WELD COUNTY CO	Local Co-ordinate Reference:	Well Brown PC E02-31D
Project:	SEC.3-T6N-R65W	TVD Reference:	WELL @ 4849.0ft (Original Well Elev)
Site:	Brown PC E02-32 Pad Sec.3-T6N-R65W	MD Reference:	WELL @ 4849.0ft (Original Well Elev)
Well:	Brown PC E02-31D	North Reference:	True
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	Landmark

Project	SEC.3-T6N-R65W, 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	Brown PC E02-32 Pad Sec.3-T6N-R65W		
Site Position:		Northing:	1,432,075.53 ft
From:	Lat/Long	Easting:	3,238,929.21 ft
Position Uncertainty:	0.0 ft	Slot Radius:	"
		Latitude:	40.516270
		Longitude:	-104.640630
		Grid Convergence:	0.56 °

Well	Brown PC E02-31D		
Well Position	+N/-S	0.0 ft	Northing: 1,432,090.09 ft
	+E/-W	0.0 ft	Easting: 3,238,929.07 ft
Position Uncertainty	0.0 ft	Wellhead Elevation:	ft
		Latitude:	40.516310
		Longitude:	-104.640630
		Ground Level:	4,836.0 ft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	2/7/2011	8.86	67.18	53,243

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	17.18	

Survey Program	Date	8/1/2011			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
132.0	7,465.0	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	
132.0	0.20	138.10	132.0	-0.2	0.2	-0.1	0.15	0.15	0.00	
196.0	0.00	89.00	196.0	-0.3	0.2	-0.2	0.31	-0.31	0.00	
289.0	1.00	15.50	289.0	0.5	0.4	0.6	1.08	1.08	0.00	
382.0	2.90	10.70	381.9	3.6	1.1	3.8	2.05	2.04	-5.16	
474.0	4.90	13.60	473.7	9.7	2.5	10.0	2.18	2.17	3.15	
566.0	6.20	15.20	565.3	18.3	4.7	18.9	1.42	1.41	1.74	
654.0	6.10	16.00	652.8	27.4	7.2	28.3	0.15	-0.11	0.91	
714.0	5.90	15.20	712.5	33.5	8.9	34.6	0.36	-0.33	-1.33	
796.0	6.50	21.50	794.0	41.8	11.7	43.4	1.11	0.73	7.68	
877.0	8.20	16.40	874.3	51.7	15.0	53.8	2.25	2.10	-6.30	
959.0	10.20	15.70	955.2	64.3	18.6	66.9	2.44	2.44	-0.85	
1,041.0	11.70	17.90	1,035.8	79.2	23.2	82.5	1.90	1.83	2.68	

Company:	NOBLE ENERGY INC WELD COUNTY CO	Local Co-ordinate Reference:	Well Brown PC E02-31D
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Site:	Brown PC E02-32 Pad Sec.3-T6N-R65W	MD Reference:	WELL @ 4849.0ft (Original Well Elev)
Well:	Brown PC E02-31D	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)
1,123.0	12.80	19.30	1,115.9	95.6	28.7	99.9	1.39	1.34	1.71
1,204.0	13.80	17.50	1,194.7	113.3	34.6	118.5	1.34	1.23	-2.22
1,286.0	14.60	18.40	1,274.2	132.5	40.8	138.6	1.01	0.98	1.10
1,368.0	15.40	17.50	1,353.4	152.7	47.3	159.8	1.02	0.98	-1.10
1,450.0	16.40	13.40	1,432.3	174.3	53.3	182.3	1.83	1.22	-5.00
1,531.0	16.70	12.90	1,509.9	196.8	58.5	205.3	0.41	0.37	-0.62
1,613.0	17.20	13.30	1,588.4	220.0	64.0	229.1	0.63	0.61	0.49
1,695.0	17.30	19.10	1,666.7	243.4	70.7	253.4	2.10	0.12	7.07
1,777.0	16.40	15.10	1,745.2	266.1	77.7	277.2	1.79	-1.10	-4.88
1,858.0	16.50	16.00	1,822.8	288.2	83.9	300.1	0.34	0.12	1.11
1,940.0	16.30	18.30	1,901.5	310.3	90.7	323.2	0.83	-0.24	2.80
2,022.0	15.70	15.80	1,980.3	331.9	97.3	345.8	1.11	-0.73	-3.05
2,104.0	15.80	19.80	2,059.3	353.1	104.1	368.1	1.33	0.12	4.88
2,185.0	16.00	22.40	2,137.2	373.8	112.1	390.2	0.91	0.25	3.21
2,267.0	16.10	24.70	2,216.0	394.5	121.2	412.7	0.78	0.12	2.80
2,349.0	15.00	16.60	2,295.0	415.0	129.0	434.6	2.97	-1.34	-9.88
2,431.0	13.90	8.50	2,374.4	435.0	133.5	455.0	2.80	-1.34	-9.88
2,512.0	15.50	10.20	2,452.7	455.2	136.8	475.3	2.05	1.98	2.10
2,594.0	13.10	10.20	2,532.2	475.2	140.4	495.4	2.93	-2.93	0.00
2,676.0	13.00	13.80	2,612.1	493.3	144.3	513.9	1.00	-0.12	4.39
2,758.0	13.60	23.80	2,691.9	511.0	150.3	532.7	2.90	0.73	12.20
2,839.0	15.30	22.40	2,770.3	529.6	158.3	552.8	2.14	2.10	-1.73
2,921.0	16.70	25.50	2,849.1	550.3	167.5	575.2	2.00	1.71	3.78
3,003.0	18.10	19.40	2,927.4	572.9	176.8	599.6	2.80	1.71	-7.44
3,084.0	17.00	21.10	3,004.6	595.8	185.2	624.0	1.50	-1.36	2.10
3,166.0	17.70	18.10	3,082.9	618.9	193.4	648.4	1.39	0.85	-3.66
3,248.0	16.00	17.50	3,161.4	641.5	200.7	672.2	2.08	-2.07	-0.73
3,330.0	16.40	16.30	3,240.1	663.4	207.3	695.0	0.64	0.49	-1.46
3,411.0	17.10	17.00	3,317.7	685.8	214.0	718.4	0.90	0.86	0.86
3,493.0	15.10	15.10	3,396.4	707.6	220.3	741.1	2.52	-2.44	-2.32
3,575.0	15.10	19.70	3,475.6	728.0	226.7	762.5	1.46	0.00	5.61
3,657.0	14.90	18.30	3,554.8	748.0	233.6	783.7	0.50	-0.24	-1.71
3,738.0	15.10	12.70	3,633.1	768.2	239.2	804.6	1.81	0.25	-6.91
3,820.0	14.10	12.90	3,712.4	788.4	243.8	825.2	1.22	-1.22	0.24
3,902.0	13.00	13.30	3,792.1	807.1	248.1	844.4	1.35	-1.34	0.49
3,984.0	12.80	14.20	3,872.1	824.9	252.5	862.6	0.35	-0.24	1.10
4,065.0	13.10	15.50	3,951.0	842.4	257.1	880.8	0.52	0.37	1.60
4,147.0	13.50	13.80	4,030.8	860.7	261.9	899.6	0.68	0.49	-2.07
4,229.0	14.00	13.90	4,110.5	879.6	266.6	919.1	0.61	0.61	0.12
4,311.0	13.50	16.20	4,190.1	898.4	271.6	938.5	0.90	-0.61	2.80
4,392.0	12.50	9.20	4,269.0	916.1	275.6	956.7	2.30	-1.23	-8.64
4,474.0	13.80	12.60	4,348.9	934.4	279.2	975.2	1.84	1.59	4.15
4,556.0	13.80	17.30	4,428.5	953.3	284.2	994.7	1.37	0.00	5.73
4,638.0	14.90	21.80	4,508.0	972.5	291.1	1,015.0	1.91	1.34	5.49
4,719.0	13.50	21.00	4,586.5	991.0	298.3	1,034.9	1.75	-1.73	-0.99
4,801.0	14.30	15.50	4,666.1	1,009.6	304.5	1,054.5	1.88	0.98	-6.71
4,883.0	16.40	16.30	4,745.2	1,030.5	310.4	1,076.2	2.57	2.56	0.98
4,964.0	13.90	16.90	4,823.3	1,050.8	316.5	1,097.4	3.09	-3.09	0.74
5,046.0	11.80	18.40	4,903.3	1,068.2	322.0	1,115.6	2.59	-2.56	1.83
5,128.0	10.30	16.30	4,983.8	1,083.2	326.7	1,131.3	1.89	-1.83	-2.56
5,210.0	8.80	31.90	5,064.6	1,095.5	332.0	1,144.7	3.63	-1.83	19.02
5,291.0	7.70	40.20	5,144.8	1,105.0	338.8	1,155.7	2.00	-1.36	10.25
5,373.0	4.80	49.00	5,226.3	1,111.4	345.0	1,163.7	3.71	-3.54	10.73
5,455.0	2.50	49.00	5,308.1	1,114.8	348.9	1,168.1	2.80	-2.80	0.00

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Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
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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)
5,537.0	1.50	50.30	5,390.1	1,116.7	351.1	1,170.6	1.22	-1.22	1.59
5,618.0	1.50	52.20	5,471.0	1,118.0	352.7	1,172.3	0.06	0.00	2.35
5,646.7	1.57	54.76	5,499.7	1,118.5	353.3	1,172.9	0.33	0.23	8.93
TARGET BHL 1320'FNL, 100'FWL									
5,741.0	1.80	61.80	5,594.0	1,119.9	355.7	1,175.0	0.33	0.25	7.46
5,864.0	1.80	129.60	5,716.9	1,119.6	358.9	1,175.6	1.63	0.00	55.12
5,986.0	1.00	241.60	5,838.9	1,117.9	359.4	1,174.2	1.94	-0.66	91.80
6,109.0	0.60	199.40	5,961.9	1,116.7	358.3	1,172.7	0.56	-0.33	-34.31
6,231.0	0.70	156.50	6,083.9	1,115.5	358.4	1,171.5	0.40	0.08	-35.16
6,354.0	1.00	133.60	6,206.9	1,114.0	359.4	1,170.5	0.36	0.24	-18.62
6,477.0	1.20	126.10	6,329.9	1,112.5	361.3	1,169.6	0.20	0.16	-6.10
6,599.0	1.70	120.20	6,451.8	1,110.9	363.8	1,168.8	0.43	0.41	-4.84
6,722.0	1.90	130.40	6,574.8	1,108.6	367.0	1,167.6	0.31	0.16	8.29
6,845.0	1.80	147.60	6,697.7	1,105.7	369.6	1,165.5	0.46	-0.08	13.98
6,967.0	1.60	151.90	6,819.7	1,102.6	371.4	1,163.1	0.19	-0.16	3.52
6,980.6	1.59	150.18	6,833.3	1,102.2	371.6	1,162.8	0.36	-0.04	-12.65
TARGET CIRCLE 1320'FNL & 100'FWL									
7,090.0	1.60	136.20	6,942.6	1,099.8	373.4	1,161.0	0.36	0.01	-12.78
7,212.0	1.80	136.70	7,064.6	1,097.2	375.9	1,159.3	0.16	0.16	0.41
7,335.0	2.20	144.10	7,187.5	1,093.9	378.6	1,156.9	0.39	0.33	6.02
7,414.0	1.90	147.10	7,266.4	1,091.5	380.2	1,155.1	0.40	-0.38	3.80
7,446.3	1.84	147.66	7,298.7	1,090.6	380.8	1,154.5	0.20	-0.20	1.73
HARD LINES 100'W OF BHL									
7,465.0	1.80	148.00	7,317.4	1,090.1	381.1	1,154.1	0.20	-0.20	1.83

Checked By: _____	Approved By: _____	Date: _____
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