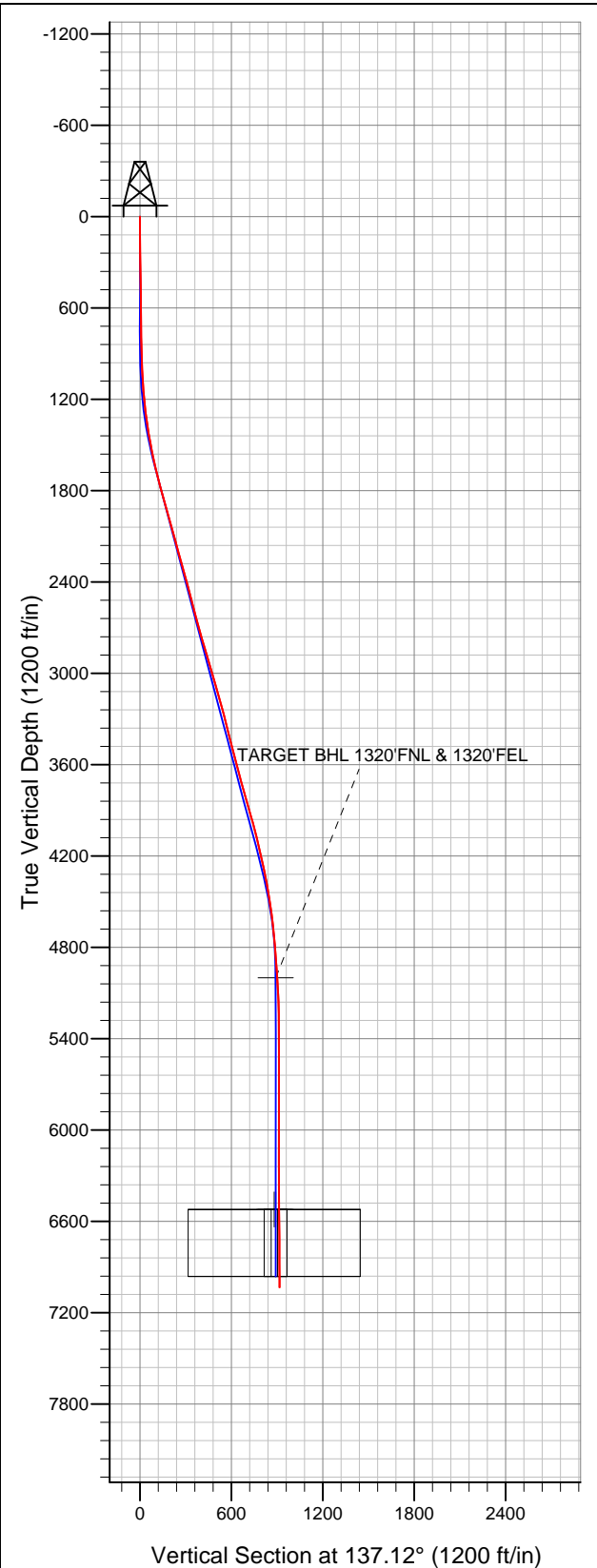


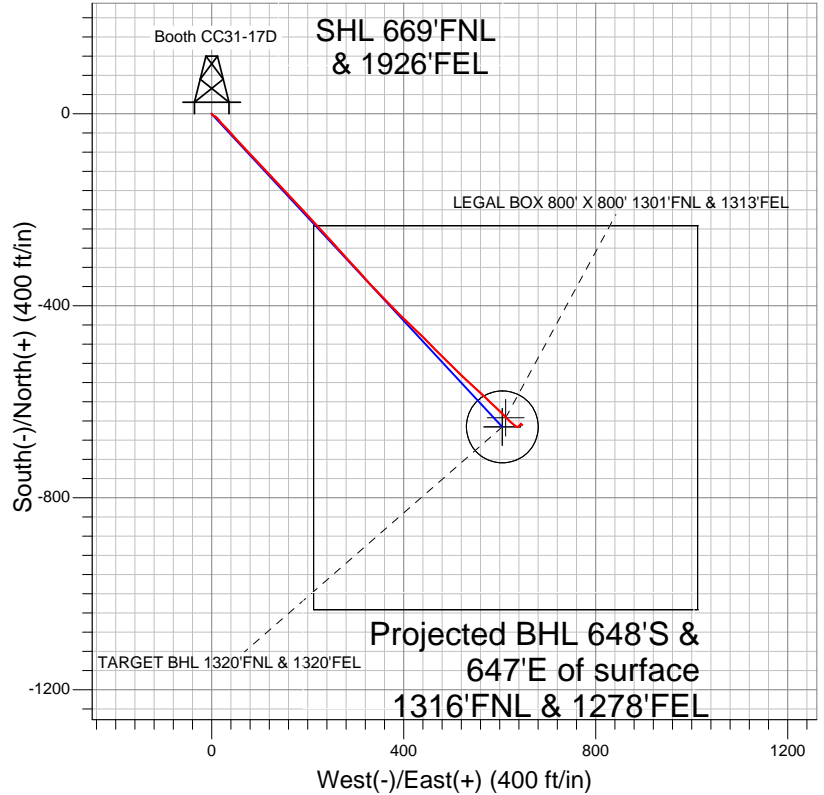
Well Name: Booth CC31-17D

Surface Location: Booth CC31-17D Pad Sec.31-T4N-R63W
North American Datum 1983 US State Plane 1983Colorado Northern Zone
Ground Elevation: 4784.0

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.0	0.0	1344390.41	3285170.44	40.274240	-104.477960	
		Original Well Elev	WELL @ 4797.0ft (Original Well Elev)			



NOBLE ENERGY INC WELD COUNTY CO



LEGEND

- Survey #1
- △ Booth CC31-17D, Wellbore #1, Noble Booth CC31-17D Plan #1 (9-7-11) V0
- Wellbore #1

Final Survey Plot

Projected Final Survey -
7142'MD & 7034'TVD @ 915'VS
0.40 deg Inc 94.10 deg AZ

Project: SEC.31-T4N-R63W
Site: Booth CC31-17D Pad Sec.31-T4N-R63W
Well: Booth CC31-17D
Plan: Wellbore #1



NOBLE ENERGY INC WELD COUNTY CO

SEC.31-T4N-R63W

Booth CC31-17D Pad Sec.31-T4N-R63W

Booth CC31-17D

Wellbore #1

Survey: Survey #1

Standard Survey Report

21 March, 2012



Company:	NOBLE ENERGY INC WELD COUNTY CO	Local Co-ordinate Reference:	Well Booth CC31-17D
Project:	SEC.31-T4N-R63W	TVD Reference:	WELL @ 4797.0ft (Original Well Elev)
Site:	Booth CC31-17D Pad Sec.31-T4N-R63W	MD Reference:	WELL @ 4797.0ft (Original Well Elev)
Well:	Booth CC31-17D	North Reference:	True
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	Landmark

Project	SEC.31-T4N-R63W, Weld County, CO		
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	Booth CC31-17D Pad Sec.31-T4N-R63W				
Site Position:		Northing:	1,344,390.42 ft	Latitude:	40.274240
From:	Lat/Long	Easting:	3,285,170.44 ft	Longitude:	-104.477960
Position Uncertainty:	0.0 ft	Slot Radius:	"	Grid Convergence:	0.66 °

Well	Booth CC31-17D					
Well Position	+N-S	0.0 ft	Northing:	1,344,390.41 ft	Latitude:	40.274240
	+E-W	0.0 ft	Easting:	3,285,170.44 ft	Longitude:	-104.477960
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	4,784.0 ft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	3/15/2012	8.60	66.97	53,017

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 (°)	
	5,000.0	0.0	0.0	137.12	

Survey Program	Date	3/21/2012			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
110.0	7,142.0	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	
110.0	0.40	140.90	110.0	-0.3	0.2	0.4	0.36	0.36	0.00	
237.0	0.40	139.40	237.0	-1.0	0.8	1.3	0.01	0.00	-1.18	
364.0	0.60	146.60	364.0	-1.9	1.5	2.4	0.16	0.16	5.67	
490.0	1.00	120.30	490.0	-3.0	2.8	4.1	0.42	0.32	-20.87	
617.0	0.90	126.80	617.0	-4.1	4.5	6.1	0.12	-0.08	5.12	
740.0	0.70	107.40	739.9	-4.9	6.0	7.7	0.27	-0.16	-15.77	
845.0	0.80	111.20	844.9	-5.4	7.3	8.9	0.11	0.10	3.62	
926.0	1.50	129.80	925.9	-6.3	8.7	10.5	0.97	0.86	22.96	
1,008.0	2.60	135.60	1,007.9	-8.3	10.8	13.4	1.36	1.34	7.07	
1,090.0	4.00	139.90	1,089.7	-11.8	13.9	18.1	1.73	1.71	5.24	
1,171.0	5.10	139.10	1,170.5	-16.7	18.1	24.6	1.36	1.36	-0.99	
1,253.0	6.60	137.50	1,252.0	-22.9	23.7	32.9	1.84	1.83	-1.95	

Company:	NOBLE ENERGY INC WELD COUNTY CO	Local Co-ordinate Reference:	Well Booth CC31-17D
Project:	SEC.31-T4N-R63W	TVD Reference:	WELL @ 4797.0ft (Original Well Elev)
Site:	Booth CC31-17D Pad Sec.31-T4N-R63W	MD Reference:	WELL @ 4797.0ft (Original Well Elev)
Well:	Booth CC31-17D	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)	
1,335.0	7.60	135.30	1,333.4	-30.2	30.7	43.0	1.26	1.22	-2.68	
1,417.0	9.10	138.50	1,414.5	-39.0	38.8	54.9	1.91	1.83	3.90	
1,498.0	10.70	137.10	1,494.3	-49.3	48.2	68.9	2.00	1.98	-1.73	
1,580.0	12.30	137.70	1,574.7	-61.3	59.2	85.2	1.96	1.95	0.73	
1,662.0	13.10	135.20	1,654.7	-74.4	71.6	103.2	1.18	0.98	-3.05	
1,744.0	14.10	137.70	1,734.4	-88.3	84.9	122.5	1.41	1.22	3.05	
1,826.0	15.60	138.60	1,813.6	-104.0	98.9	143.5	1.85	1.83	1.10	
1,908.0	15.70	136.40	1,892.6	-120.3	113.9	165.6	0.73	0.12	-2.68	
1,989.0	15.60	136.10	1,970.6	-136.1	129.0	187.5	0.16	-0.12	-0.37	
2,071.0	15.50	136.80	2,049.6	-152.0	144.1	209.5	0.26	-0.12	0.85	
2,153.0	15.30	138.20	2,128.7	-168.1	158.8	231.2	0.51	-0.24	1.71	
2,235.0	15.80	135.80	2,207.7	-184.1	173.8	253.2	0.99	0.61	-2.93	
2,316.0	15.50	136.20	2,285.7	-199.9	189.0	275.1	0.39	-0.37	0.49	
2,398.0	15.00	136.70	2,364.8	-215.5	203.9	296.6	0.63	-0.61	0.61	
2,480.0	14.40	138.20	2,444.1	-230.8	217.9	317.4	0.87	-0.73	1.83	
2,561.0	14.80	139.30	2,522.5	-246.2	231.4	337.8	0.60	0.49	1.36	
2,643.0	15.10	136.90	2,601.7	-261.9	245.5	359.0	0.84	0.37	-2.93	
2,725.0	15.30	137.00	2,680.8	-277.6	260.2	380.5	0.25	0.24	0.12	
2,807.0	16.40	138.40	2,759.7	-294.2	275.3	402.9	1.42	1.34	1.71	
2,888.0	16.70	137.80	2,837.3	-311.4	290.7	426.0	0.43	0.37	-0.74	
2,970.0	15.90	136.60	2,916.0	-328.2	306.3	449.0	1.06	-0.98	-1.46	
3,052.0	16.40	138.90	2,994.8	-345.1	321.6	471.8	0.99	0.61	2.80	
3,134.0	15.60	136.30	3,073.6	-361.8	336.9	494.4	1.31	-0.98	-3.17	
3,216.0	15.70	135.80	3,152.6	-377.8	352.2	516.5	0.20	0.12	-0.61	
3,297.0	15.50	136.40	3,230.6	-393.4	367.3	538.3	0.32	-0.25	0.74	
3,379.0	14.40	135.00	3,309.8	-408.6	382.1	559.4	1.41	-1.34	-1.71	
3,461.0	13.90	134.10	3,389.3	-422.7	396.4	579.4	0.67	-0.61	-1.10	
3,543.0	14.40	134.30	3,468.9	-436.6	410.7	599.5	0.61	0.61	0.24	
3,625.0	14.90	133.60	3,548.2	-451.0	425.7	620.2	0.65	0.61	-0.85	
3,706.0	15.20	134.60	3,626.4	-465.7	440.8	641.2	0.49	0.37	1.23	
3,788.0	14.80	136.00	3,705.6	-480.7	455.7	662.4	0.66	-0.49	1.71	
3,870.0	15.60	135.00	3,784.8	-496.1	470.8	683.9	1.03	0.98	-1.22	
3,952.0	16.20	135.20	3,863.6	-512.0	486.6	706.3	0.73	0.73	0.24	
4,033.0	16.00	134.10	3,941.4	-527.8	502.6	728.8	0.45	-0.25	-1.36	
4,115.0	14.80	133.50	4,020.5	-542.8	518.3	750.5	1.48	-1.46	-0.73	
4,197.0	13.60	133.60	4,100.0	-556.7	532.9	770.6	1.46	-1.46	0.12	
4,279.0	13.00	132.50	4,179.8	-569.6	546.7	789.4	0.79	-0.73	-1.34	
4,361.0	12.00	132.00	4,259.8	-581.5	559.8	807.1	1.23	-1.22	-0.61	
4,442.0	11.30	133.10	4,339.2	-592.6	571.9	823.4	0.91	-0.86	1.36	
4,524.0	9.80	134.00	4,419.8	-602.9	582.8	838.4	1.84	-1.83	1.10	
4,606.0	8.90	133.40	4,500.7	-612.1	592.4	851.7	1.10	-1.10	-0.73	
4,688.0	7.60	134.60	4,581.8	-620.3	600.9	863.4	1.60	-1.59	1.46	
4,769.0	6.10	132.40	4,662.3	-627.0	607.9	873.0	1.88	-1.85	-2.72	
4,851.0	5.30	137.30	4,743.9	-632.7	613.6	881.2	1.14	-0.98	5.98	
4,933.0	4.70	139.30	4,825.5	-638.0	618.4	888.3	0.76	-0.73	2.44	
5,015.0	4.00	127.20	4,907.3	-642.3	622.9	894.5	1.40	-0.85	-14.76	
5,097.0	3.60	127.30	4,989.1	-645.6	627.2	899.8	0.49	-0.49	0.12	
5,107.1	3.54	127.59	4,999.2	-645.9	627.7	900.5	0.65	-0.62	2.92	
TARGET BHL 1320'FNL & 1320'FEL										
5,178.0	3.10	130.00	5,070.0	-648.5	630.9	904.5	0.65	-0.62	3.39	
5,260.0	1.60	136.50	5,151.9	-650.8	633.4	907.9	1.85	-1.83	7.93	
5,342.0	1.50	117.80	5,233.9	-652.1	635.1	910.0	0.63	-0.12	-22.80	
5,506.0	0.80	48.60	5,397.9	-652.3	637.9	912.1	0.87	-0.43	-42.20	
5,669.0	0.90	42.70	5,560.8	-650.7	639.6	912.0	0.08	0.06	-3.62	

Company:	NOBLE ENERGY INC WELD COUNTY CO	Local Co-ordinate Reference:	Well Booth CC31-17D
Project:	SEC.31-T4N-R63W	TVD Reference:	WELL @ 4797.0ft (Original Well Elev)
Site:	Booth CC31-17D Pad Sec.31-T4N-R63W	MD Reference:	WELL @ 4797.0ft (Original Well Elev)
Well:	Booth CC31-17D	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)
5,832.0	1.10	50.50	5,723.8	-648.7	641.7	912.0	0.15	0.12	4.79
5,996.0	0.70	42.60	5,887.8	-647.0	643.6	912.0	0.25	-0.24	-4.82
6,159.0	0.40	12.80	6,050.8	-645.7	644.4	911.6	0.25	-0.18	-18.28
6,323.0	0.40	209.90	6,214.8	-645.6	644.2	911.5	0.48	0.00	-99.33
6,486.0	0.30	157.80	6,377.8	-646.5	644.1	912.0	0.20	-0.06	-31.96
6,630.1	0.30	131.43	6,521.9	-647.1	644.5	912.8	0.09	0.00	-18.31
LEGAL BOX 800' X 800' 1301'FNL & 1313'FEL - TARGET CIRCLE 1320'FNL & 1320'FEL									
6,650.0	0.30	127.90	6,541.8	-647.2	644.6	912.9	0.09	0.02	-17.69
6,813.0	0.40	112.80	6,704.8	-647.7	645.4	913.8	0.08	0.06	-9.26
6,977.0	0.20	83.00	6,868.8	-647.8	646.3	914.5	0.15	-0.12	-18.17
7,096.0	0.40	94.10	6,987.8	-647.9	646.9	914.9	0.17	0.17	9.33
7,142.0	0.40	94.10	7,033.8	-647.9	647.2	915.1	0.00	0.00	0.00

Checked By: _____	Approved By: _____	Date: _____
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