

Well Name: **Butterball D19-22D**

Surface Location: Butterball D19-22D Pad Sec.19-T3N-R64W
 North American Datum 1983 US State Plane 1983 Colorado Northern Zone

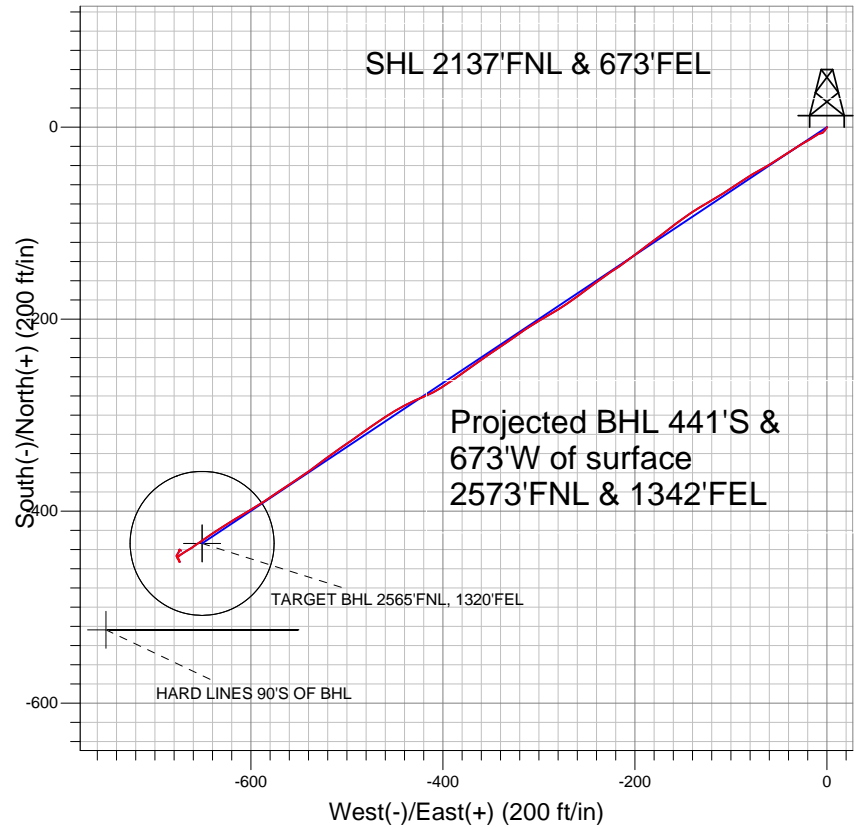
Ground Elevation: 4770.0

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
0.0	0.0	1321452.43	3255013.43	40.212180	-104.586880

Original Well Elev WELL @ 4783.0ft (Original Well Elev)

Slot

NOBLE ENERGY INC WELD COUNTY CO

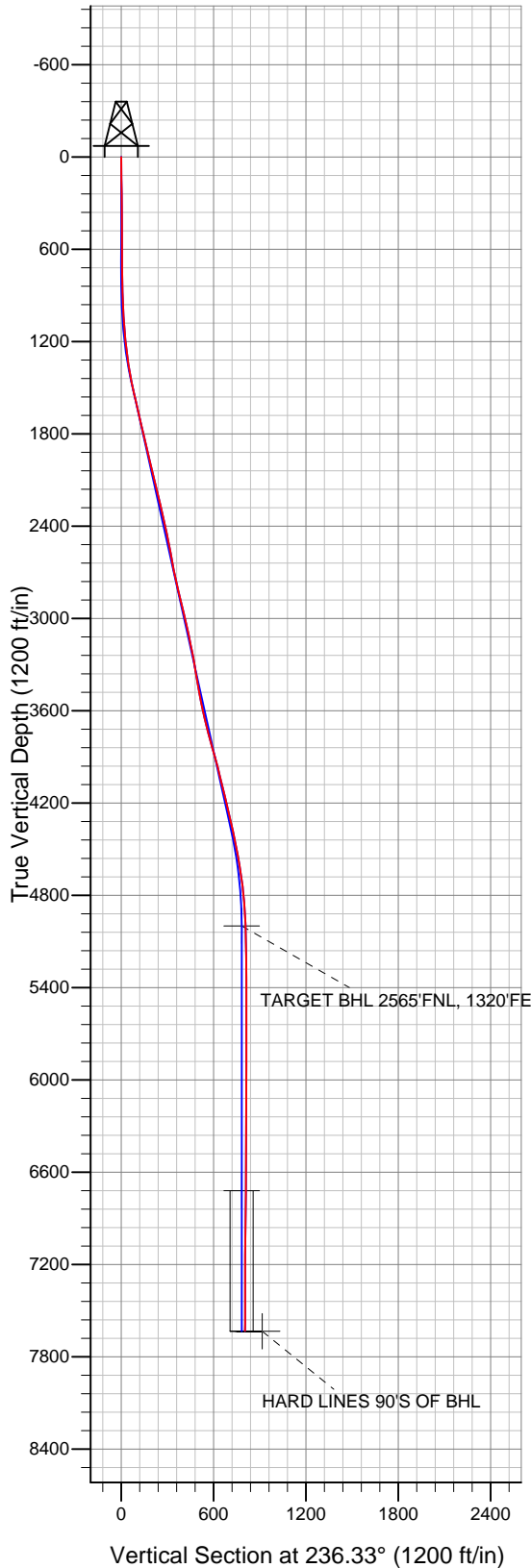


LEGEND

- Butterball D19-22D, Wellbore #1, Noble Butterball D19-22D Plan #1 (5-24-11) V0
- Wellbore #1
- Survey #1

Final Survey Plot

Projected Final Survey -
 7717'MD & 7632'TVD @ 804'VS
 0.4 deg Inc 128.1 deg AZ



Project: SEC.19-T3N-R64W
 Site: Butterball D19-22D Pad Sec.19-T3N-R64W
 Well: Butterball D19-22D
 Plan: Wellbore #1



Directional

NOBLE ENERGY INC WELD COUNTY CO

SEC.19-T3N-R64W

Butterball D19-22D Pad Sec.19-T3N-R64W

Butterball D19-22D

Wellbore #1

Survey: Survey #1

Standard Survey Report

07 November, 2011



Company:	NOBLE ENERGY INC WELD COUNTY CO	Local Co-ordinate Reference:	Well Butterball D19-22D
Project:	SEC.19-T3N-R64W	TVD Reference:	WELL @ 4783.0ft (Original Well Elev)
Site:	Butterball D19-22D Pad Sec.19-T3N-R64W	MD Reference:	WELL @ 4783.0ft (Original Well Elev)
Well:	Butterball D19-22D	North Reference:	True
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	Landmark

Project	SEC.19-T3N-R64W, 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	Butterball D19-22D Pad Sec.19-T3N-R64W				
Site Position:		Northing:	1,321,452.43ft	Latitude:	40.212180
From:	Lat/Long	Easting:	3,255,013.43ft	Longitude:	-104.586880
Position Uncertainty:	0.0 ft	Slot Radius:	"	Grid Convergence:	0.59 °

Well	Butterball D19-22D					
Well Position	+N/-S	0.0 ft	Northing:	1,321,452.43 ft	Latitude:	40.212180
	+E/-W	0.0 ft	Easting:	3,255,013.43 ft	Longitude:	-104.586880
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	4,770.0 ft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	10/28/2011	8.70	66.92	53,013

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	236.33	

Survey Program	Date	11/7/2011			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
138.0	7,717.0	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	
138.0	0.60	208.30	138.0	-0.6	-0.3	0.6	0.43	0.43	0.00	
233.0	0.70	212.20	233.0	-1.6	-0.9	1.6	0.12	0.11	4.11	
328.0	0.90	217.60	328.0	-2.6	-1.7	2.8	0.22	0.21	5.68	
423.0	0.40	218.50	423.0	-3.5	-2.3	3.9	0.53	-0.53	0.95	
518.0	0.60	221.00	518.0	-4.1	-2.8	4.7	0.21	0.21	2.63	
613.0	0.60	225.00	613.0	-4.9	-3.5	5.6	0.04	0.00	4.21	
742.0	0.70	227.70	742.0	-5.9	-4.6	7.1	0.08	0.08	2.09	
849.0	0.70	268.80	849.0	-6.3	-5.7	8.3	0.46	0.00	38.41	
931.0	1.50	257.50	930.9	-6.6	-7.3	9.7	1.01	0.98	-13.78	
1,012.0	2.60	236.00	1,011.9	-7.8	-9.8	12.5	1.63	1.36	-26.54	
1,094.0	4.10	238.20	1,093.7	-10.4	-13.9	17.3	1.84	1.83	2.68	
1,176.0	5.80	240.50	1,175.4	-14.0	-20.0	24.4	2.09	2.07	2.80	

Company:	NOBLE ENERGY INC WELD COUNTY CO	Local Co-ordinate Reference:	Well Butterball D19-22D
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Site:	Butterball D19-22D Pad Sec.19-T3N-R64W	MD Reference:	WELL @ 4783.0ft (Original Well Elev)
Well:	Butterball D19-22D	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)
1,257.0	7.40	238.60	1,255.9	-18.7	-28.0	33.7	1.99	1.98	-2.35
1,339.0	9.10	237.40	1,337.0	-25.0	-37.9	45.4	2.08	2.07	-1.46
1,421.0	10.30	236.20	1,417.9	-32.5	-49.5	59.2	1.48	1.46	-1.46
1,503.0	11.50	240.20	1,498.4	-40.7	-62.7	74.7	1.73	1.46	4.88
1,585.0	12.60	240.10	1,578.6	-49.2	-77.5	91.8	1.34	1.34	-0.12
1,667.0	12.70	234.60	1,658.6	-58.9	-92.6	109.7	1.47	0.12	-6.71
1,748.0	13.30	238.10	1,737.5	-69.0	-107.8	128.0	1.22	0.74	4.32
1,830.0	14.10	240.60	1,817.2	-78.9	-124.5	147.3	1.21	0.98	3.05
1,912.0	13.80	236.30	1,896.8	-89.2	-141.4	167.1	1.32	-0.37	-5.24
1,994.0	13.10	232.10	1,976.5	-100.3	-156.8	186.1	1.47	-0.85	-5.12
2,075.0	12.70	232.30	2,055.5	-111.4	-171.1	204.2	0.50	-0.49	0.25
2,157.0	13.30	234.40	2,135.4	-122.4	-185.9	222.6	0.93	0.73	2.56
2,239.0	13.90	232.20	2,215.1	-133.9	-201.4	241.8	0.97	0.73	-2.68
2,321.0	13.00	233.70	2,294.8	-145.4	-216.6	260.9	1.18	-1.10	1.83
2,402.0	12.70	237.30	2,373.8	-155.6	-231.4	278.9	1.06	-0.37	4.44
2,484.0	12.00	233.00	2,453.9	-165.6	-245.8	296.4	1.41	-0.85	-5.24
2,566.0	11.20	233.90	2,534.2	-175.5	-259.1	312.9	1.00	-0.98	1.10
2,647.0	9.80	234.70	2,613.9	-184.1	-271.0	327.6	1.74	-1.73	0.99
2,729.0	11.80	239.30	2,694.4	-192.4	-283.9	343.0	2.65	2.44	5.61
2,811.0	12.70	239.80	2,774.5	-201.2	-298.9	360.3	1.11	1.10	0.61
2,893.0	13.30	236.10	2,854.4	-211.0	-314.6	378.8	1.25	0.73	-4.51
2,975.0	13.70	234.60	2,934.2	-221.9	-330.3	397.9	0.65	0.49	-1.83
3,056.0	13.20	236.30	3,013.0	-232.6	-345.8	416.7	0.79	-0.62	2.10
3,138.0	12.10	234.80	3,093.0	-242.7	-360.6	434.7	1.40	-1.34	-1.83
3,220.0	11.70	233.80	3,173.2	-252.6	-374.4	451.6	0.55	-0.49	-1.22
3,302.0	10.40	236.40	3,253.7	-261.6	-387.2	467.3	1.70	-1.59	3.17
3,384.0	8.70	235.00	3,334.5	-269.2	-398.5	480.9	2.09	-2.07	-1.71
3,465.0	9.70	242.70	3,414.5	-275.9	-409.6	493.8	1.96	1.23	9.51
3,547.0	10.60	246.70	3,495.2	-282.0	-422.6	508.1	1.39	1.10	4.88
3,629.0	12.40	244.50	3,575.6	-288.8	-437.5	524.2	2.26	2.20	-2.68
3,711.0	13.80	237.60	3,655.4	-297.8	-453.7	542.7	2.56	1.71	-8.41
3,793.0	13.90	235.60	3,735.1	-308.7	-470.1	562.4	0.60	0.12	-2.44
3,874.0	15.80	234.90	3,813.3	-320.5	-487.1	583.1	2.36	2.35	-0.86
3,956.0	15.70	234.90	3,892.3	-333.3	-505.4	605.4	0.12	-0.12	0.00
4,038.0	14.90	232.90	3,971.4	-346.0	-522.8	627.0	1.17	-0.98	-2.44
4,120.0	13.80	234.30	4,050.8	-358.1	-539.2	647.3	1.41	-1.34	1.71
4,201.0	13.10	236.80	4,129.6	-368.8	-554.7	666.1	1.12	-0.86	3.09
4,283.0	13.70	235.40	4,209.3	-379.4	-570.5	685.1	0.83	0.73	-1.71
4,365.0	13.10	237.30	4,289.1	-389.9	-586.3	704.1	0.91	-0.73	2.32
4,447.0	12.60	239.40	4,369.1	-399.5	-601.8	722.3	0.83	-0.61	2.56
4,528.0	11.60	238.50	4,448.3	-408.2	-616.4	739.3	1.26	-1.23	-1.11
4,610.0	10.60	237.50	4,528.7	-416.6	-629.8	755.1	1.24	-1.22	-1.22
4,692.0	8.70	235.50	4,609.6	-424.1	-641.2	768.8	2.35	-2.32	-2.44
4,774.0	8.00	235.30	4,690.7	-430.9	-651.0	780.7	0.85	-0.85	-0.24
4,856.0	6.00	237.10	4,772.1	-436.5	-659.3	790.7	2.45	-2.44	2.20
4,937.0	4.40	236.00	4,852.7	-440.5	-665.5	798.1	1.98	-1.98	-1.36
5,019.0	4.00	240.00	4,934.5	-443.7	-670.5	804.1	0.60	-0.49	4.88
5,083.3	2.27	236.77	4,998.7	-445.5	-673.5	807.6	2.70	-2.69	-5.02
TARGET BHL 2565'FNL, 1320'FEL									
5,101.0	1.80	234.80	5,016.4	-445.9	-674.1	808.2	2.70	-2.67	-11.14
5,264.0	0.80	167.30	5,179.4	-448.5	-675.9	811.2	1.02	-0.61	-41.41
5,428.0	1.40	158.30	5,343.3	-451.4	-674.9	812.0	0.38	0.37	-5.49
5,591.0	0.30	359.50	5,506.3	-452.9	-674.2	812.2	1.03	-0.67	-97.42
5,755.0	0.80	331.40	5,670.3	-451.4	-674.7	811.8	0.34	0.30	-17.13

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Design:	Wellbore #1	Database:	Landmark

Survey										
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5,918.0	0.60	327.50	5,833.3	-449.7	-675.7	811.7	0.13	-0.12	-2.39	
6,082.0	0.40	321.30	5,997.3	-448.5	-676.6	811.7	0.13	-0.12	-3.78	
6,246.0	0.40	342.70	6,161.3	-447.6	-677.1	811.6	0.09	0.00	13.05	
6,409.0	0.40	348.20	6,324.3	-446.5	-677.4	811.3	0.02	0.00	3.37	
6,572.0	0.20	66.50	6,487.3	-445.8	-677.2	810.8	0.25	-0.12	48.04	
6,736.0	0.50	50.80	6,651.3	-445.2	-676.4	809.8	0.19	0.18	-9.57	
6,804.9	0.52	34.93	6,720.2	-444.8	-676.0	809.2	0.21	0.03	-23.03	
TARGET CIRCLE 2565'FNL & 1320'FEL										
6,899.0	0.60	16.80	6,814.3	-444.0	-675.6	808.4	0.21	0.09	-19.27	
7,063.0	0.80	17.00	6,978.3	-442.0	-675.0	806.9	0.12	0.12	0.12	
7,226.0	0.40	11.30	7,141.3	-440.4	-674.6	805.6	0.25	-0.25	-3.50	
7,390.0	0.10	108.60	7,305.3	-439.9	-674.3	805.1	0.26	-0.18	59.33	
7,553.0	0.50	124.40	7,468.3	-440.3	-673.6	804.7	0.25	0.25	9.69	
7,671.0	0.40	128.10	7,586.3	-440.9	-672.9	804.4	0.09	-0.08	3.14	
7,717.0	0.40	128.10	7,632.3	-441.1	-672.6	804.3	0.00	0.00	0.00	
HARD LINES 90'S OF BHL										

Checked By: _____ Approved By: _____ Date: _____