



Well Name: **Dechant D31-27D**

Surface Location: Dechant D30-24D Pad Sec.30-T3N-R64W
North American Datum 1983 US State Plane 1983 Colorado Northern Zone

Ground Elevation: 4801.0

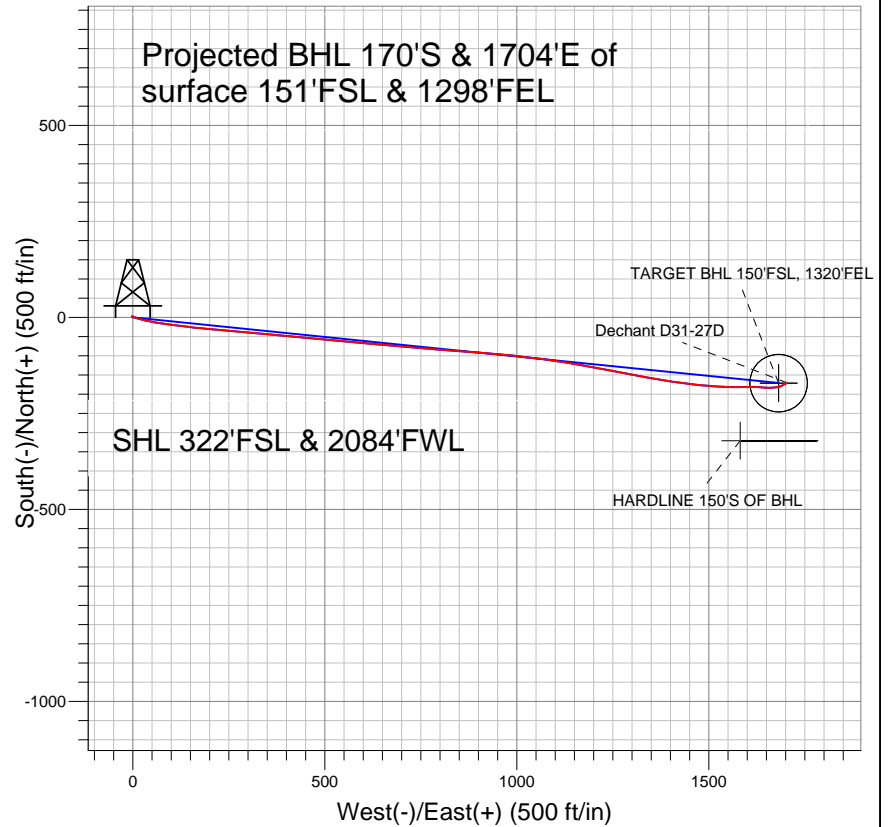
+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
0.0	0.0	1313265.01	3252731.32	40.189770	-104.595350

Original Well Elev WELL @ 4814.0ft (Original Well Elev)

Slot

NOBLE ENERGY INC WELD COUNTY CO

Projected BHL 170'S & 1704'E of
surface 151'FSL & 1298'FEL



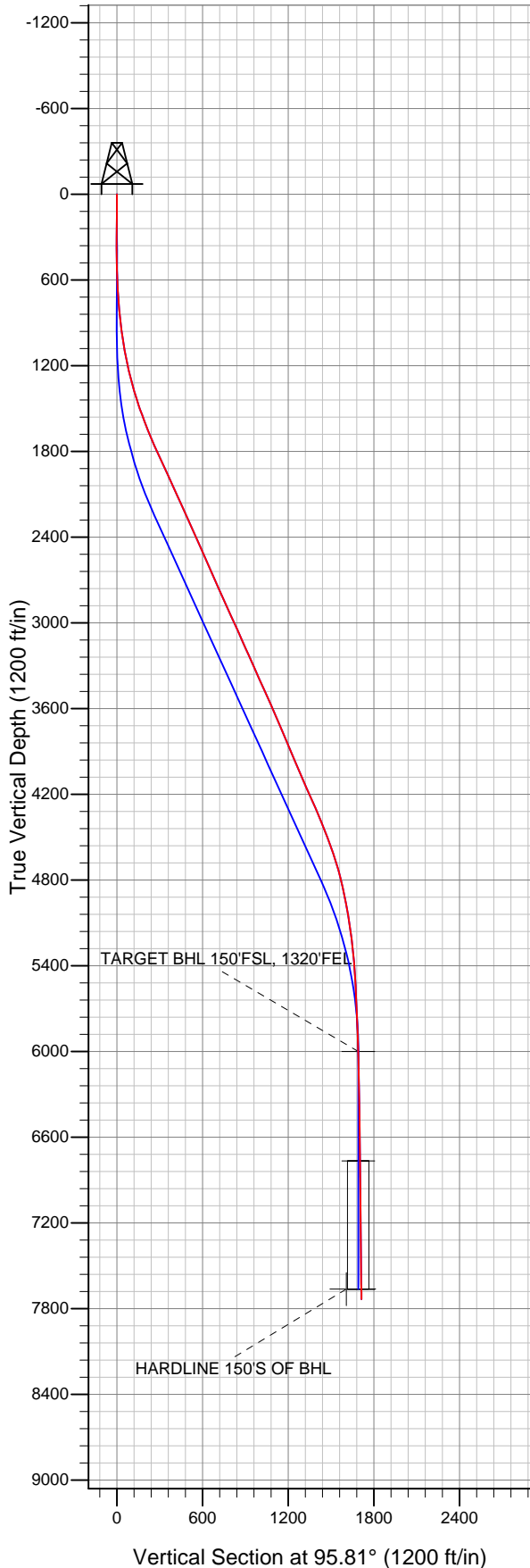
LEGEND

- ◆ Dechant D31-27D, Wellbore #1, Noble Dechant D31-27D Plan #1 (12-7-11) R V0
- Wellbore #1
- Survey #1

Final Survey Plot

Projected Final Survey -
8050'MD & 7733'TVD @ 1713'VS
0.8 deg Inc 68.6 deg AZ

Project: SEC.30-T3N-R64W
Site: Dechant D30-24D Pad Sec.30-T3N-R64W
Well: Dechant D31-27D
Plan: Wellbore #1





Directional

NOBLE ENERGY INC WELD COUNTY CO

SEC.30-T3N-R64W

Dechant D30-24D Pad Sec.30-T3N-R64W

Dechant D31-27D

Wellbore #1

Survey: Survey #1

Standard Survey Report

14 December, 2011



Company:	NOBLE ENERGY INC WELD COUNTY CO	Local Co-ordinate Reference:	Well Dechant D31-27D
Project:	SEC.30-T3N-R64W	TVD Reference:	WELL @ 4814.0ft (Original Well Elev)
Site:	Dechant D30-24D Pad Sec.30-T3N-R64W	MD Reference:	WELL @ 4814.0ft (Original Well Elev)
Well:	Dechant D31-27D	North Reference:	True
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	Landmark

Project	SEC.30-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	Dechant D30-24D Pad Sec.30-T3N-R64W				
Site Position:		Northing:	1,313,330.59ft	Latitude:	40.189950
From:	Lat/Long	Easting:	3,252,730.65ft	Longitude:	-104.595350
Position Uncertainty:	0.0 ft	Slot Radius:	"	Grid Convergence:	0.58 °

Well	Dechant D31-27D					
Well Position	+N/-S	0.0 ft	Northing:	1,313,265.01 ft	Latitude:	40.189770
	+E/-W	0.0 ft	Easting:	3,252,731.32 ft	Longitude:	-104.595350
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	4,801.0 ft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	12/7/2011	8.69	66.89	52,989

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	95.81	

Survey Program	Date	12/14/2011			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
123.0	8,050.0	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	
123.0	0.40	306.80	123.0	0.3	-0.3	-0.4	0.33	0.33	0.00	
210.0	0.80	320.50	210.0	0.9	-1.0	-1.1	0.49	0.46	15.75	
304.0	0.90	320.50	304.0	2.0	-1.9	-2.1	0.11	0.11	0.00	
396.0	0.40	344.60	396.0	2.9	-2.4	-2.7	0.61	-0.54	26.20	
489.0	1.20	119.50	489.0	2.7	-1.6	-1.9	1.62	0.86	145.05	
581.0	3.20	105.70	580.9	1.5	1.7	1.5	2.23	2.17	-15.00	
673.0	3.70	114.90	672.7	-0.4	6.8	6.8	0.81	0.54	10.00	
766.0	4.70	110.10	765.5	-3.0	13.1	13.4	1.14	1.08	-5.16	
862.0	5.50	104.70	861.1	-5.5	21.3	21.7	0.97	0.83	-5.63	
956.0	7.50	99.60	954.5	-7.7	31.7	32.3	2.21	2.13	-5.43	
1,050.0	9.50	102.90	1,047.5	-10.4	45.3	46.1	2.19	2.13	3.51	
1,144.0	11.20	100.10	1,139.9	-13.8	61.8	62.9	1.89	1.81	-2.98	

Company:	NOBLE ENERGY INC WELD COUNTY CO	Local Co-ordinate Reference:	Well Dechant D31-27D
Project:	SEC.30-T3N-R64W	TVD Reference:	WELL @ 4814.0ft (Original Well Elev)
Site:	Dechant D30-24D Pad Sec.30-T3N-R64W	MD Reference:	WELL @ 4814.0ft (Original Well Elev)
Well:	Dechant D31-27D	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)	
1,238.0	12.90	96.40	1,231.9	-16.5	81.3	82.5	1.99	1.81	-3.94	
1,332.0	15.20	98.30	1,323.0	-19.5	103.9	105.3	2.50	2.45	2.02	
1,426.0	17.30	96.40	1,413.3	-22.8	130.0	131.6	2.30	2.23	-2.02	
1,520.0	19.30	97.50	1,502.5	-26.4	159.3	161.1	2.16	2.13	1.17	
1,613.0	21.00	94.50	1,589.8	-29.7	191.1	193.1	2.14	1.83	-3.23	
1,707.0	22.30	95.20	1,677.2	-32.7	225.7	227.8	1.41	1.38	0.74	
1,801.0	23.40	93.60	1,763.8	-35.5	262.1	264.3	1.34	1.17	-1.70	
1,895.0	25.30	96.60	1,849.5	-38.9	300.7	303.0	2.41	2.02	3.19	
1,989.0	24.90	95.90	1,934.6	-43.3	340.3	342.9	0.53	-0.43	-0.74	
2,083.0	24.40	95.00	2,020.0	-47.0	379.3	382.1	0.67	-0.53	-0.96	
2,177.0	24.40	94.80	2,105.6	-50.3	418.0	421.0	0.09	0.00	-0.21	
2,271.0	24.40	94.60	2,191.2	-53.5	456.7	459.8	0.09	0.00	-0.21	
2,365.0	25.00	96.40	2,276.6	-57.3	495.8	499.1	1.02	0.64	1.91	
2,459.0	24.00	95.70	2,362.2	-61.4	534.6	538.0	1.11	-1.06	-0.74	
2,553.0	23.20	94.10	2,448.3	-64.6	572.1	575.7	1.09	-0.85	-1.70	
2,647.0	24.30	95.90	2,534.3	-67.9	609.8	613.5	1.40	1.17	1.91	
2,741.0	23.70	95.20	2,620.2	-71.6	647.8	651.7	0.71	-0.64	-0.74	
2,835.0	23.00	93.10	2,706.5	-74.3	685.0	689.0	1.16	-0.74	-2.23	
2,928.0	24.80	95.00	2,791.5	-77.0	722.5	726.6	2.10	1.94	2.04	
3,022.0	24.80	95.70	2,876.9	-80.7	761.8	766.1	0.31	0.00	0.74	
3,116.0	24.40	93.90	2,962.3	-84.0	800.8	805.2	0.90	-0.43	-1.91	
3,210.0	24.40	94.80	3,047.9	-86.9	839.5	844.0	0.40	0.00	0.96	
3,304.0	23.50	94.30	3,133.8	-89.9	877.5	882.1	0.98	-0.96	-0.53	
3,398.0	24.50	95.20	3,219.7	-93.1	915.6	920.4	1.13	1.06	0.96	
3,492.0	23.80	94.30	3,305.5	-96.3	954.0	958.8	0.84	-0.74	-0.96	
3,586.0	24.30	96.10	3,391.3	-99.8	992.1	997.1	0.94	0.53	1.91	
3,680.0	24.20	97.60	3,477.0	-104.4	1,030.4	1,035.7	0.66	-0.11	1.60	
3,774.0	24.30	97.10	3,562.7	-109.3	1,068.7	1,074.3	0.24	0.11	-0.53	
3,868.0	23.40	97.50	3,648.7	-114.2	1,106.4	1,112.3	0.97	-0.96	0.43	
3,962.0	22.10	99.60	3,735.4	-119.5	1,142.4	1,148.6	1.63	-1.38	2.23	
4,056.0	22.80	100.80	3,822.3	-125.9	1,177.7	1,184.4	0.89	0.74	1.28	
4,150.0	23.00	100.40	3,908.9	-132.6	1,213.7	1,220.8	0.27	0.21	-0.43	
4,244.0	24.20	101.00	3,995.0	-139.6	1,250.6	1,258.3	1.30	1.28	0.64	
4,338.0	23.60	100.80	4,080.9	-146.8	1,288.0	1,296.3	0.64	-0.64	-0.21	
4,432.0	23.70	101.30	4,167.0	-154.0	1,325.0	1,333.8	0.24	0.11	0.53	
4,526.0	24.10	99.00	4,253.0	-160.8	1,362.5	1,371.8	1.08	0.43	-2.45	
4,620.0	22.80	98.00	4,339.2	-166.3	1,399.5	1,409.2	1.45	-1.38	-1.06	
4,713.0	21.50	97.50	4,425.4	-171.0	1,434.3	1,444.2	1.41	-1.40	-0.54	
4,807.0	20.50	97.60	4,513.1	-175.4	1,467.6	1,477.9	1.06	-1.06	0.11	
4,901.0	19.50	93.20	4,601.4	-178.5	1,499.6	1,510.0	1.92	-1.06	-4.68	
4,995.0	17.10	93.40	4,690.7	-180.2	1,529.1	1,539.5	2.55	-2.55	0.21	
5,089.0	14.20	92.20	4,781.2	-181.5	1,554.4	1,564.8	3.10	-3.09	-1.28	
5,193.0	11.60	88.00	4,882.6	-181.6	1,577.6	1,587.9	2.66	-2.50	-4.04	
5,277.0	10.60	89.00	4,965.0	-181.2	1,593.8	1,603.9	1.21	-1.19	1.19	
5,371.0	10.20	89.40	5,057.4	-180.9	1,610.7	1,620.8	0.43	-0.43	0.43	
5,465.0	7.90	92.40	5,150.3	-181.1	1,625.5	1,635.5	2.50	-2.45	3.19	
5,559.0	6.90	95.50	5,243.5	-181.9	1,637.6	1,647.6	1.15	-1.06	3.30	
5,653.0	5.00	95.90	5,337.0	-182.9	1,647.3	1,657.3	2.02	-2.02	0.43	
5,747.0	4.00	91.50	5,430.7	-183.4	1,654.7	1,664.7	1.12	-1.06	-4.68	
5,841.0	3.20	88.00	5,524.5	-183.4	1,660.6	1,670.6	0.88	-0.85	-3.72	
5,935.0	2.60	83.70	5,618.4	-183.1	1,665.3	1,675.3	0.68	-0.64	-4.57	
6,060.0	2.40	85.70	5,743.3	-182.5	1,670.7	1,680.6	0.17	-0.16	1.60	
6,185.0	2.00	82.70	5,868.2	-182.1	1,675.5	1,685.3	0.33	-0.32	-2.40	
6,310.0	1.80	79.10	5,993.1	-181.4	1,679.6	1,689.3	0.19	-0.16	-2.88	

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Site:	Dechant D30-24D Pad Sec.30-T3N-R64W	MD Reference:	WELL @ 4814.0ft (Original Well Elev)
Well:	Dechant D31-27D	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)
6,317.0	1.78	78.97	6,000.1	-181.4	1,679.8	1,689.5	0.25	-0.24	-1.82
TARGET BHL 150'FSL, 1320'FEL									
6,435.0	1.50	76.40	6,118.0	-180.7	1,683.1	1,692.7	0.25	-0.24	-2.18
6,561.0	1.10	75.80	6,244.0	-180.0	1,685.9	1,695.4	0.32	-0.32	-0.48
6,686.0	1.10	60.90	6,369.0	-179.1	1,688.1	1,697.5	0.23	0.00	-11.92
6,811.0	1.00	62.00	6,494.0	-178.0	1,690.1	1,699.4	0.08	-0.08	0.88
6,936.0	0.90	64.90	6,619.0	-177.1	1,692.0	1,701.2	0.09	-0.08	2.32
7,062.0	0.70	50.90	6,744.9	-176.2	1,693.4	1,702.6	0.22	-0.16	-11.11
7,082.0	0.68	51.75	6,764.9	-176.0	1,693.6	1,702.8	0.10	-0.08	4.28
TARGET CIRCLE 150'FSL, 1320'FEL									
7,187.0	0.60	57.00	6,869.9	-175.3	1,694.6	1,703.6	0.10	-0.08	5.00
7,312.0	0.60	50.70	6,994.9	-174.6	1,695.6	1,704.6	0.05	0.00	-5.04
7,438.0	0.70	77.60	7,120.9	-174.0	1,696.9	1,705.8	0.25	0.08	21.35
7,563.0	0.80	69.90	7,245.9	-173.5	1,698.5	1,707.3	0.11	0.08	-6.16
7,688.0	0.70	52.10	7,370.9	-172.7	1,699.9	1,708.6	0.20	-0.08	-14.24
7,814.0	0.80	60.40	7,496.9	-171.8	1,701.3	1,709.9	0.12	0.08	6.59
7,941.0	0.80	61.00	7,623.9	-171.0	1,702.8	1,711.4	0.01	0.00	0.47
7,977.7	0.80	65.43	7,660.6	-170.7	1,703.3	1,711.8	0.17	0.00	12.07
HARDLINE 150'S OF BHL									
8,004.0	0.80	68.60	7,686.9	-170.6	1,703.6	1,712.1	0.17	0.01	12.06
8,050.0	0.80	68.60	7,732.9	-170.4	1,704.2	1,712.7	0.00	0.00	0.00

Checked By: _____ Approved By: _____ Date: _____