

ENSIGN Directional

Well Name: Dechant D19-32D

Surface Location: Butterball D19-17D Pad Sec.19-T3N-R64W

North American Datum 1983 , US State Plane 1983Colorado Northern Zone

Ground Elevation: 4789.0

+N/-S

0.0

+E/-W

0.0

Northing

1322511.84

Easting

3252097.96

Latitude

40.215170

Longitude

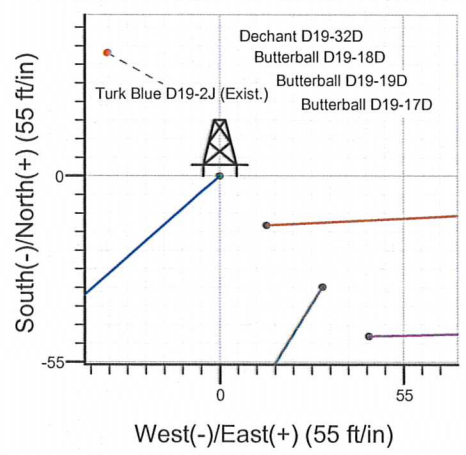
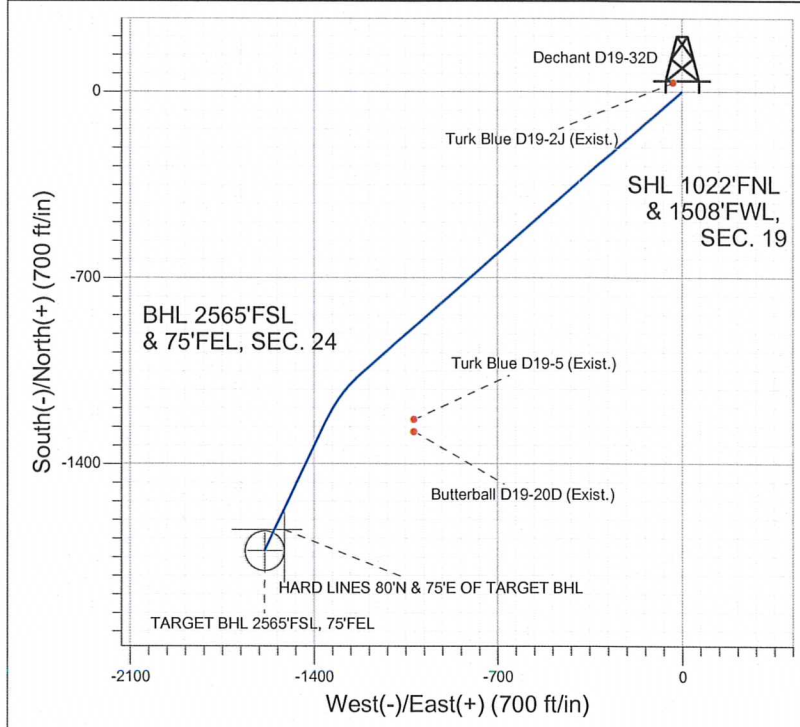
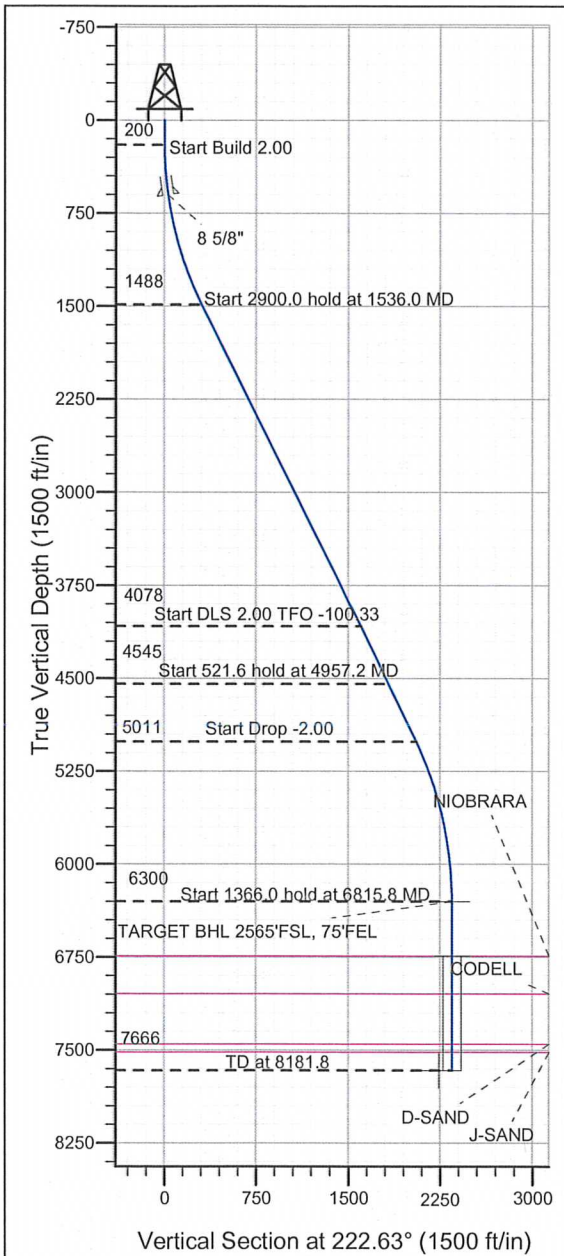
-104.597280

Slot

Original Well Elev

WELL @ 4802.0ft (Original Well Elev)

NOBLE ENERGY INC WELD COUNTY CO



Butterball D19-17D Pad Sec.19-T3N-R64W

Dechant D19-32D

Noble Dechant D19-32D Plan #1 (2-15-12)

13:44, February 23 2012

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Azimuths to True North

Magnetic North: 8.67°

Magnetic Field

Strength: 52981.9snT

Dip Angle: 66.91°

Date: 2/15/2012

Model: IGRF2010

WELLBORE TARGET DETAILS (LAT/LONG)						
Name	TVD	+N/-S	+E/-W	Latitude	Longitude	Shape
TARGET BHL 2565'FSL, 75'FEL	6300.0	-1726.7	-1589.2	40.210430	-104.602970	Point
TARGET CIRCLE 2565'FSL & 75'FEL	6741.0	-1726.7	-1589.2	40.210430	-104.602970	Circle (Radius: 75.0)
HARD LINES 80°N & 75°E OF TARGET BHL	7666.0	-1646.7	-1514.2	40.210650	-104.602701	Polygon

SECTION DETAILS										
Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	DLeg	TFace	VSec	Target
1	0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.0	TARGET BHL 2565'FSL, 75'FEL
2	200.0	0.00	0.00	200.0	0.0	0.0	0.00	0.00	0.0	
3	1536.0	26.72	229.00	1488.1	-200.7	-230.9	2.00	229.00	304.0	
4	4436.0	26.72	229.00	4078.4	-1056.2	-1215.0	0.00	0.00	1599.9	
5	4957.2	26.74	205.70	4545.2	-1239.2	-1354.6	2.00	-100.33	1829.1	
6	5478.8	26.74	205.70	5011.0	-1450.7	-1456.4	0.00	0.00	2053.7	
7	6815.8	0.00	0.00	6300.0	-1726.7	-1589.2	2.00	180.00	2346.7	
8	8181.8	0.00	0.00	7666.0	-1726.7	-1589.2	0.00	0.00	2346.7	



Directional

NOBLE ENERGY INC WELD COUNTY CO

SEC.19-T3N-R64W

Butterball D19-17D Pad Sec.19-T3N-R64W

Dechant D19-32D

Wellbore #1

Plan: Noble Dechant D19-32D Plan #1 (2-15-12)

Standard Planning Report

23 February, 2012



Database:	Landmark	Local Co-ordinate Reference:	Well Dechant D19-32D
Company:	NOBLE ENERGY INC WELD COUNTY CO	TVD Reference:	WELL @ 4802.0ft (Original Well Elev)
Project:	SEC.19-T3N-R64W	MD Reference:	WELL @ 4802.0ft (Original Well Elev)
Site:	Butterball D19-17D Pad Sec.19-T3N-R64W	North Reference:	True
Well:	Dechant D19-32D	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Noble Dechant D19-32D Plan #1 (2-15-12)		

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 D19-17D Pad Sec.19-T3N-R64W			
Site Position:		Northing:	1,322,464.95 ft	Latitude:	40.215040
From:	Lat/Long	Easting:	3,252,143.12 ft	Longitude:	-104.597120
Position Uncertainty:	0.0 ft	Slot Radius:	"	Grid Convergence:	0.58 °

Well	Dechant D19-32D					
Well Position	+N/-S	47.4 ft	Northing:	1,322,511.84 ft	Latitude:	40.215170
	+E/-W	-44.7 ft	Easting:	3,252,097.96 ft	Longitude:	-104.597280
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	4,789.0 ft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	2/15/2012	8.67	66.91	52,982

Design	Noble Dechant D19-32D Plan #1 (2-15-12)			
Audit Notes:				
Version:	Phase:	PROTOTYPE	Tie On Depth:	0.0
Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)
	0.0	0.0	0.0	222.63

Plan Sections										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	TFO (°)	Target
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.00	0.00	
200.0	0.00	0.00	200.0	0.0	0.0	0.00	0.00	0.00	0.00	
1,536.0	26.72	229.00	1,488.1	-200.7	-230.9	2.00	2.00	0.00	229.00	
4,436.0	26.72	229.00	4,078.4	-1,056.2	-1,215.0	0.00	0.00	0.00	0.00	
4,957.2	26.74	205.70	4,545.2	-1,239.2	-1,354.6	2.00	0.00	-4.47	-100.33	
5,478.8	26.74	205.70	5,011.0	-1,450.7	-1,456.4	0.00	0.00	0.00	0.00	
6,815.8	0.00	0.00	6,300.0	-1,726.7	-1,589.2	2.00	-2.00	0.00	180.00	TARGET BHL 2565
8,181.8	0.00	0.00	7,666.0	-1,726.7	-1,589.2	0.00	0.00	0.00	0.00	

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Project: SEC.19-T3N-R64W
Site: Butterball D19-17D Pad Sec.19-T3N-R64W
Well: Dechant D19-32D
Wellbore: Wellbore #1
Design: Noble Dechant D19-32D Plan #1 (2-15-12)

Local Co-ordinate Reference: Well Dechant D19-32D
TVD Reference: WELL @ 4802.0ft (Original Well Elev)
MD Reference: WELL @ 4802.0ft (Original Well Elev)
North Reference: True
Survey Calculation Method: Minimum Curvature

Planned 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
40.0	0.00	0.00	40.0	0.0	0.0	0.0	0.00	0.00	0.00
80.0	0.00	0.00	80.0	0.0	0.0	0.0	0.00	0.00	0.00
120.0	0.00	0.00	120.0	0.0	0.0	0.0	0.00	0.00	0.00
160.0	0.00	0.00	160.0	0.0	0.0	0.0	0.00	0.00	0.00
200.0	0.00	0.00	200.0	0.0	0.0	0.0	0.00	0.00	0.00
240.0	0.80	229.00	240.0	-0.2	-0.2	0.3	2.00	2.00	0.00
280.0	1.60	229.00	280.0	-0.7	-0.8	1.1	2.00	2.00	0.00
320.0	2.40	229.00	320.0	-1.6	-1.9	2.5	2.00	2.00	0.00
360.0	3.20	229.00	359.9	-2.9	-3.4	4.4	2.00	2.00	0.00
400.0	4.00	229.00	399.8	-4.6	-5.3	6.9	2.00	2.00	0.00
440.0	4.80	229.00	439.7	-6.6	-7.6	10.0	2.00	2.00	0.00
480.0	5.60	229.00	479.6	-9.0	-10.3	13.6	2.00	2.00	0.00
520.0	6.40	229.00	519.3	-11.7	-13.5	17.7	2.00	2.00	0.00
560.0	7.20	229.00	559.1	-14.8	-17.0	22.5	2.00	2.00	0.00
600.0	8.00	229.00	598.7	-18.3	-21.0	27.7	2.00	2.00	0.00
601.3	8.03	229.00	600.0	-18.4	-21.2	27.9	2.00	2.00	0.00
8 5/8"									
640.0	8.80	229.00	638.3	-22.1	-25.5	33.5	2.00	2.00	0.00
680.0	9.60	229.00	677.8	-26.3	-30.3	39.9	2.00	2.00	0.00
720.0	10.40	229.00	717.1	-30.9	-35.5	46.8	2.00	2.00	0.00
760.0	11.20	229.00	756.4	-35.8	-41.2	54.2	2.00	2.00	0.00
800.0	12.00	229.00	795.6	-41.1	-47.2	62.2	2.00	2.00	0.00
840.0	12.80	229.00	834.7	-46.7	-53.7	70.8	2.00	2.00	0.00
880.0	13.60	229.00	873.6	-52.7	-60.6	79.8	2.00	2.00	0.00
920.0	14.40	229.00	912.4	-59.0	-67.9	89.4	2.00	2.00	0.00
960.0	15.20	229.00	951.1	-65.8	-75.6	99.6	2.00	2.00	0.00
1,000.0	16.00	229.00	989.6	-72.8	-83.8	110.3	2.00	2.00	0.00
1,040.0	16.80	229.00	1,028.0	-80.2	-92.3	121.5	2.00	2.00	0.00
1,080.0	17.60	229.00	1,066.2	-88.0	-101.2	133.3	2.00	2.00	0.00
1,120.0	18.40	229.00	1,104.3	-96.1	-110.5	145.6	2.00	2.00	0.00
1,160.0	19.20	229.00	1,142.1	-104.5	-120.3	158.4	2.00	2.00	0.00
1,200.0	20.00	229.00	1,179.8	-113.3	-130.4	171.7	2.00	2.00	0.00
1,240.0	20.80	229.00	1,217.3	-122.5	-140.9	185.6	2.00	2.00	0.00
1,280.0	21.60	229.00	1,254.6	-132.0	-151.8	199.9	2.00	2.00	0.00
1,320.0	22.40	229.00	1,291.7	-141.8	-163.1	214.8	2.00	2.00	0.00
1,360.0	23.20	229.00	1,328.6	-152.0	-174.8	230.2	2.00	2.00	0.00
1,400.0	24.00	229.00	1,365.2	-162.5	-186.9	246.1	2.00	2.00	0.00
1,440.0	24.80	229.00	1,401.6	-173.3	-199.4	262.6	2.00	2.00	0.00
1,480.0	25.60	229.00	1,437.8	-184.5	-212.2	279.5	2.00	2.00	0.00
1,520.0	26.40	229.00	1,473.8	-196.0	-225.5	296.9	2.00	2.00	0.00
1,536.0	26.72	229.00	1,488.1	-200.7	-230.9	304.0	2.00	2.00	0.00
1,560.0	26.72	229.00	1,509.5	-207.8	-239.0	314.8	0.00	0.00	0.00
1,600.0	26.72	229.00	1,545.3	-219.6	-252.6	332.6	0.00	0.00	0.00
1,640.0	26.72	229.00	1,581.0	-231.4	-266.2	350.5	0.00	0.00	0.00
1,680.0	26.72	229.00	1,616.7	-243.2	-279.7	368.4	0.00	0.00	0.00
1,720.0	26.72	229.00	1,652.4	-255.0	-293.3	386.2	0.00	0.00	0.00
1,760.0	26.72	229.00	1,688.2	-266.8	-306.9	404.1	0.00	0.00	0.00
1,800.0	26.72	229.00	1,723.9	-278.6	-320.5	422.0	0.00	0.00	0.00
1,840.0	26.72	229.00	1,759.6	-290.4	-334.0	439.9	0.00	0.00	0.00
1,880.0	26.72	229.00	1,795.4	-302.2	-347.6	457.7	0.00	0.00	0.00
1,920.0	26.72	229.00	1,831.1	-314.0	-361.2	475.6	0.00	0.00	0.00
1,960.0	26.72	229.00	1,866.8	-325.8	-374.8	493.5	0.00	0.00	0.00
2,000.0	26.72	229.00	1,902.5	-337.6	-388.3	511.4	0.00	0.00	0.00

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Planned 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)
2,040.0	26.72	229.00	1,938.3	-349.4	-401.9	529.2	0.00	0.00	0.00
2,080.0	26.72	229.00	1,974.0	-361.2	-415.5	547.1	0.00	0.00	0.00
2,120.0	26.72	229.00	2,009.7	-373.0	-429.1	565.0	0.00	0.00	0.00
2,160.0	26.72	229.00	2,045.5	-384.8	-442.6	582.9	0.00	0.00	0.00
2,200.0	26.72	229.00	2,081.2	-396.6	-456.2	600.7	0.00	0.00	0.00
2,240.0	26.72	229.00	2,116.9	-408.4	-469.8	618.6	0.00	0.00	0.00
2,280.0	26.72	229.00	2,152.6	-420.2	-483.3	636.5	0.00	0.00	0.00
2,320.0	26.72	229.00	2,188.4	-432.0	-496.9	654.4	0.00	0.00	0.00
2,360.0	26.72	229.00	2,224.1	-443.8	-510.5	672.2	0.00	0.00	0.00
2,400.0	26.72	229.00	2,259.8	-455.6	-524.1	690.1	0.00	0.00	0.00
2,440.0	26.72	229.00	2,295.6	-467.4	-537.6	708.0	0.00	0.00	0.00
2,480.0	26.72	229.00	2,331.3	-479.2	-551.2	725.9	0.00	0.00	0.00
2,520.0	26.72	229.00	2,367.0	-491.0	-564.8	743.7	0.00	0.00	0.00
2,560.0	26.72	229.00	2,402.7	-502.8	-578.4	761.6	0.00	0.00	0.00
2,600.0	26.72	229.00	2,438.5	-514.6	-591.9	779.5	0.00	0.00	0.00
2,640.0	26.72	229.00	2,474.2	-526.4	-605.5	797.3	0.00	0.00	0.00
2,680.0	26.72	229.00	2,509.9	-538.2	-619.1	815.2	0.00	0.00	0.00
2,720.0	26.72	229.00	2,545.7	-550.0	-632.7	833.1	0.00	0.00	0.00
2,760.0	26.72	229.00	2,581.4	-561.8	-646.2	851.0	0.00	0.00	0.00
2,800.0	26.72	229.00	2,617.1	-573.6	-659.8	868.8	0.00	0.00	0.00
2,840.0	26.72	229.00	2,652.8	-585.4	-673.4	886.7	0.00	0.00	0.00
2,880.0	26.72	229.00	2,688.6	-597.2	-687.0	904.6	0.00	0.00	0.00
2,920.0	26.72	229.00	2,724.3	-609.0	-700.5	922.5	0.00	0.00	0.00
2,960.0	26.72	229.00	2,760.0	-620.8	-714.1	940.3	0.00	0.00	0.00
3,000.0	26.72	229.00	2,795.8	-632.6	-727.7	958.2	0.00	0.00	0.00
3,040.0	26.72	229.00	2,831.5	-644.4	-741.2	976.1	0.00	0.00	0.00
3,080.0	26.72	229.00	2,867.2	-656.2	-754.8	994.0	0.00	0.00	0.00
3,120.0	26.72	229.00	2,902.9	-668.0	-768.4	1,011.8	0.00	0.00	0.00
3,160.0	26.72	229.00	2,938.7	-679.8	-782.0	1,029.7	0.00	0.00	0.00
3,200.0	26.72	229.00	2,974.4	-691.6	-795.5	1,047.6	0.00	0.00	0.00
3,240.0	26.72	229.00	3,010.1	-703.4	-809.1	1,065.5	0.00	0.00	0.00
3,280.0	26.72	229.00	3,045.9	-715.2	-822.7	1,083.3	0.00	0.00	0.00
3,320.0	26.72	229.00	3,081.6	-727.0	-836.3	1,101.2	0.00	0.00	0.00
3,360.0	26.72	229.00	3,117.3	-738.8	-849.8	1,119.1	0.00	0.00	0.00
3,400.0	26.72	229.00	3,153.0	-750.6	-863.4	1,137.0	0.00	0.00	0.00
3,440.0	26.72	229.00	3,188.8	-762.4	-877.0	1,154.8	0.00	0.00	0.00
3,480.0	26.72	229.00	3,224.5	-774.1	-890.6	1,172.7	0.00	0.00	0.00
3,520.0	26.72	229.00	3,260.2	-785.9	-904.1	1,190.6	0.00	0.00	0.00
3,560.0	26.72	229.00	3,296.0	-797.7	-917.7	1,208.5	0.00	0.00	0.00
3,600.0	26.72	229.00	3,331.7	-809.5	-931.3	1,226.3	0.00	0.00	0.00
3,640.0	26.72	229.00	3,367.4	-821.3	-944.9	1,244.2	0.00	0.00	0.00
3,680.0	26.72	229.00	3,403.1	-833.1	-958.4	1,262.1	0.00	0.00	0.00
3,720.0	26.72	229.00	3,438.9	-844.9	-972.0	1,279.9	0.00	0.00	0.00
3,760.0	26.72	229.00	3,474.6	-856.7	-985.6	1,297.8	0.00	0.00	0.00
3,800.0	26.72	229.00	3,510.3	-868.5	-999.1	1,315.7	0.00	0.00	0.00
3,840.0	26.72	229.00	3,546.1	-880.3	-1,012.7	1,333.6	0.00	0.00	0.00
3,880.0	26.72	229.00	3,581.8	-892.1	-1,026.3	1,351.4	0.00	0.00	0.00
3,920.0	26.72	229.00	3,617.5	-903.9	-1,039.9	1,369.3	0.00	0.00	0.00
3,960.0	26.72	229.00	3,653.2	-915.7	-1,053.4	1,387.2	0.00	0.00	0.00
4,000.0	26.72	229.00	3,689.0	-927.5	-1,067.0	1,405.1	0.00	0.00	0.00
4,040.0	26.72	229.00	3,724.7	-939.3	-1,080.6	1,422.9	0.00	0.00	0.00
4,080.0	26.72	229.00	3,760.4	-951.1	-1,094.2	1,440.8	0.00	0.00	0.00
4,120.0	26.72	229.00	3,796.2	-962.9	-1,107.7	1,458.7	0.00	0.00	0.00
4,160.0	26.72	229.00	3,831.9	-974.7	-1,121.3	1,476.6	0.00	0.00	0.00

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Company: NOBLE ENERGY INC WELD COUNTY CO
Project: SEC.19-T3N-R64W
Site: Butterball D19-17D Pad Sec.19-T3N-R64W
Well: Dechant D19-32D
Wellbore: Wellbore #1
Design: Noble Dechant D19-32D Plan #1 (2-15-12)

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Survey Calculation Method: Minimum Curvature

Planned 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)
4,200.0	26.72	229.00	3,867.6	-986.5	-1,134.9	1,494.4	0.00	0.00	0.00
4,240.0	26.72	229.00	3,903.3	-998.3	-1,148.5	1,512.3	0.00	0.00	0.00
4,280.0	26.72	229.00	3,939.1	-1,010.1	-1,162.0	1,530.2	0.00	0.00	0.00
4,320.0	26.72	229.00	3,974.8	-1,021.9	-1,175.6	1,548.1	0.00	0.00	0.00
4,360.0	26.72	229.00	4,010.5	-1,033.7	-1,189.2	1,565.9	0.00	0.00	0.00
4,400.0	26.72	229.00	4,046.3	-1,045.5	-1,202.8	1,583.8	0.00	0.00	0.00
4,436.0	26.72	229.00	4,078.4	-1,056.2	-1,215.0	1,599.9	0.00	0.00	0.00
4,440.0	26.71	228.82	4,082.0	-1,057.3	-1,216.3	1,601.7	2.00	-0.36	-4.38
4,480.0	26.58	227.06	4,117.7	-1,069.3	-1,229.6	1,619.5	2.00	-0.33	-4.40
4,520.0	26.47	225.29	4,153.5	-1,081.7	-1,242.5	1,637.4	2.00	-0.27	-4.44
4,560.0	26.38	223.50	4,189.4	-1,094.4	-1,255.0	1,655.2	2.00	-0.22	-4.47
4,600.0	26.32	221.71	4,225.2	-1,107.5	-1,267.0	1,672.9	2.00	-0.16	-4.49
4,640.0	26.27	219.90	4,261.1	-1,120.9	-1,278.6	1,690.6	2.00	-0.10	-4.51
4,680.0	26.25	218.09	4,296.9	-1,134.7	-1,289.7	1,708.3	2.00	-0.05	-4.52
4,720.0	26.26	216.29	4,332.8	-1,148.8	-1,300.4	1,725.9	2.00	0.01	-4.52
4,760.0	26.28	214.48	4,368.7	-1,163.2	-1,310.7	1,743.5	2.00	0.07	-4.52
4,800.0	26.33	212.68	4,404.5	-1,178.0	-1,320.5	1,761.0	2.00	0.12	-4.50
4,840.0	26.40	210.88	4,440.4	-1,193.1	-1,329.8	1,778.4	2.00	0.18	-4.49
4,880.0	26.50	209.10	4,476.2	-1,208.5	-1,338.7	1,795.8	2.00	0.23	-4.46
4,920.0	26.61	207.33	4,512.0	-1,224.2	-1,347.2	1,813.1	2.00	0.29	-4.43
4,957.2	26.74	205.70	4,545.2	-1,239.2	-1,354.6	1,829.1	2.00	0.34	-4.39
4,960.0	26.74	205.70	4,547.7	-1,240.3	-1,355.2	1,830.4	0.00	0.00	0.00
5,000.0	26.74	205.70	4,583.4	-1,256.5	-1,363.0	1,847.6	0.00	0.00	0.00
5,040.0	26.74	205.70	4,619.2	-1,272.8	-1,370.8	1,864.8	0.00	0.00	0.00
5,080.0	26.74	205.70	4,654.9	-1,289.0	-1,378.6	1,882.0	0.00	0.00	0.00
5,120.0	26.74	205.70	4,690.6	-1,305.2	-1,386.4	1,899.2	0.00	0.00	0.00
5,160.0	26.74	205.70	4,726.3	-1,321.4	-1,394.2	1,916.4	0.00	0.00	0.00
5,200.0	26.74	205.70	4,762.0	-1,337.6	-1,402.0	1,933.7	0.00	0.00	0.00
5,240.0	26.74	205.70	4,797.8	-1,353.8	-1,409.8	1,950.9	0.00	0.00	0.00
5,280.0	26.74	205.70	4,833.5	-1,370.1	-1,417.6	1,968.1	0.00	0.00	0.00
5,320.0	26.74	205.70	4,869.2	-1,386.3	-1,425.4	1,985.3	0.00	0.00	0.00
5,360.0	26.74	205.70	4,904.9	-1,402.5	-1,433.2	2,002.5	0.00	0.00	0.00
5,400.0	26.74	205.70	4,940.7	-1,418.7	-1,441.0	2,019.7	0.00	0.00	0.00
5,440.0	26.74	205.70	4,976.4	-1,434.9	-1,448.8	2,037.0	0.00	0.00	0.00
5,478.8	26.74	205.70	5,011.0	-1,450.7	-1,456.4	2,053.7	0.00	0.00	0.00
5,480.0	26.72	205.70	5,012.1	-1,451.2	-1,456.6	2,054.2	2.00	-2.00	0.00
5,520.0	25.92	205.70	5,048.0	-1,467.1	-1,464.3	2,071.1	2.00	-2.00	0.00
5,560.0	25.12	205.70	5,084.1	-1,482.7	-1,471.8	2,087.6	2.00	-2.00	0.00
5,600.0	24.32	205.70	5,120.4	-1,497.7	-1,479.0	2,103.6	2.00	-2.00	0.00
5,640.0	23.52	205.70	5,157.0	-1,512.3	-1,486.1	2,119.1	2.00	-2.00	0.00
5,680.0	22.72	205.70	5,193.7	-1,526.5	-1,492.9	2,134.2	2.00	-2.00	0.00
5,720.0	21.92	205.70	5,230.7	-1,540.2	-1,499.5	2,148.7	2.00	-2.00	0.00
5,760.0	21.12	205.70	5,268.0	-1,553.4	-1,505.8	2,162.7	2.00	-2.00	0.00
5,800.0	20.32	205.70	5,305.4	-1,566.1	-1,512.0	2,176.3	2.00	-2.00	0.00
5,840.0	19.52	205.70	5,343.0	-1,578.4	-1,517.9	2,189.3	2.00	-2.00	0.00
5,880.0	18.72	205.70	5,380.8	-1,590.2	-1,523.5	2,201.8	2.00	-2.00	0.00
5,920.0	17.92	205.70	5,418.8	-1,601.6	-1,529.0	2,213.9	2.00	-2.00	0.00
5,960.0	17.12	205.70	5,456.9	-1,612.4	-1,534.2	2,225.4	2.00	-2.00	0.00
6,000.0	16.32	205.70	5,495.2	-1,622.8	-1,539.2	2,236.4	2.00	-2.00	0.00
6,040.0	15.52	205.70	5,533.7	-1,632.7	-1,544.0	2,246.9	2.00	-2.00	0.00
6,080.0	14.72	205.70	5,572.3	-1,642.0	-1,548.5	2,256.9	2.00	-2.00	0.00
6,120.0	13.92	205.70	5,611.0	-1,651.0	-1,552.8	2,266.3	2.00	-2.00	0.00
6,160.0	13.12	205.70	5,649.9	-1,659.4	-1,556.8	2,275.3	2.00	-2.00	0.00
6,200.0	12.32	205.70	5,689.0	-1,667.3	-1,560.6	2,283.7	2.00	-2.00	0.00

Database: Landmark
Company: NOBLE ENERGY INC WELD COUNTY CO
Project: SEC.19-T3N-R64W
Site: Butterball D19-17D Pad Sec.19-T3N-R64W
Well: Dechant D19-32D
Wellbore: Wellbore #1
Design: Noble Dechant D19-32D Plan #1 (2-15-12)

Local Co-ordinate Reference: Well Dechant D19-32D
TVD Reference: WELL @ 4802.0ft (Original Well Elev)
MD Reference: WELL @ 4802.0ft (Original Well Elev)
North Reference: True
Survey Calculation Method: Minimum Curvature

Planned 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)
6,240.0	11.52	205.70	5,728.1	-1,674.8	-1,564.2	2,291.6	2.00	-2.00	0.00
6,280.0	10.72	205.70	5,767.3	-1,681.7	-1,567.6	2,299.0	2.00	-2.00	0.00
6,320.0	9.92	205.70	5,806.7	-1,688.2	-1,570.7	2,305.8	2.00	-2.00	0.00
6,360.0	9.12	205.70	5,846.1	-1,694.1	-1,573.5	2,312.1	2.00	-2.00	0.00
6,400.0	8.32	205.70	5,885.7	-1,699.6	-1,576.2	2,317.9	2.00	-2.00	0.00
6,440.0	7.52	205.70	5,925.3	-1,704.5	-1,578.6	2,323.2	2.00	-2.00	0.00
6,480.0	6.72	205.70	5,965.0	-1,709.0	-1,580.7	2,327.9	2.00	-2.00	0.00
6,520.0	5.92	205.70	6,004.8	-1,713.0	-1,582.6	2,332.2	2.00	-2.00	0.00
6,560.0	5.12	205.70	6,044.6	-1,716.4	-1,584.3	2,335.8	2.00	-2.00	0.00
6,600.0	4.32	205.70	6,084.4	-1,719.4	-1,585.7	2,339.0	2.00	-2.00	0.00
6,640.0	3.52	205.70	6,124.3	-1,721.9	-1,586.9	2,341.6	2.00	-2.00	0.00
6,680.0	2.72	205.70	6,164.3	-1,723.8	-1,587.8	2,343.7	2.00	-2.00	0.00
6,720.0	1.92	205.70	6,204.2	-1,725.3	-1,588.5	2,345.2	2.00	-2.00	0.00
6,760.0	1.12	205.70	6,244.2	-1,726.2	-1,589.0	2,346.2	2.00	-2.00	0.00
6,800.0	0.32	205.70	6,284.2	-1,726.7	-1,589.2	2,346.7	2.00	-2.00	0.00
6,815.8	0.00	0.00	6,300.0	-1,726.7	-1,589.2	2,346.7	2.00	-2.00	0.00
TARGET BHL 2565'FSL, 75'FEL									
6,840.0	0.00	0.00	6,324.2	-1,726.7	-1,589.2	2,346.7	0.00	0.00	0.00
6,880.0	0.00	0.00	6,364.2	-1,726.7	-1,589.2	2,346.7	0.00	0.00	0.00
6,920.0	0.00	0.00	6,404.2	-1,726.7	-1,589.2	2,346.7	0.00	0.00	0.00
6,960.0	0.00	0.00	6,444.2	-1,726.7	-1,589.2	2,346.7	0.00	0.00	0.00
7,000.0	0.00	0.00	6,484.2	-1,726.7	-1,589.2	2,346.7	0.00	0.00	0.00
7,040.0	0.00	0.00	6,524.2	-1,726.7	-1,589.2	2,346.7	0.00	0.00	0.00
7,080.0	0.00	0.00	6,564.2	-1,726.7	-1,589.2	2,346.7	0.00	0.00	0.00
7,120.0	0.00	0.00	6,604.2	-1,726.7	-1,589.2	2,346.7	0.00	0.00	0.00
7,160.0	0.00	0.00	6,644.2	-1,726.7	-1,589.2	2,346.7	0.00	0.00	0.00
7,200.0	0.00	0.00	6,684.2	-1,726.7	-1,589.2	2,346.7	0.00	0.00	0.00
7,240.0	0.00	0.00	6,724.2	-1,726.7	-1,589.2	2,346.7	0.00	0.00	0.00
7,256.8	0.00	0.00	6,741.0	-1,726.7	-1,589.2	2,346.7	0.00	0.00	0.00
NIOBRARA - TARGET CIRCLE 2565'FSL & 75'FEL									
7,280.0	0.00	0.00	6,764.2	-1,726.7	-1,589.2	2,346.7	0.00	0.00	0.00
7,320.0	0.00	0.00	6,804.2	-1,726.7	-1,589.2	2,346.7	0.00	0.00	0.00
7,360.0	0.00	0.00	6,844.2	-1,726.7	-1,589.2	2,346.7	0.00	0.00	0.00
7,400.0	0.00	0.00	6,884.2	-1,726.7	-1,589.2	2,346.7	0.00	0.00	0.00
7,440.0	0.00	0.00	6,924.2	-1,726.7	-1,589.2	2,346.7	0.00	0.00	0.00
7,480.0	0.00	0.00	6,964.2	-1,726.7	-1,589.2	2,346.7	0.00	0.00	0.00
7,520.0	0.00	0.00	7,004.2	-1,726.7	-1,589.2	2,346.7	0.00	0.00	0.00
7,560.0	0.00	0.00	7,044.2	-1,726.7	-1,589.2	2,346.7	0.00	0.00	0.00
7,561.8	0.00	0.00	7,046.0	-1,726.7	-1,589.2	2,346.7	0.00	0.00	0.00
CODELL									
7,600.0	0.00	0.00	7,084.2	-1,726.7	-1,589.2	2,346.7	0.00	0.00	0.00
7,640.0	0.00	0.00	7,124.2	-1,726.7	-1,589.2	2,346.7	0.00	0.00	0.00
7,680.0	0.00	0.00	7,164.2	-1,726.7	-1,589.2	2,346.7	0.00	0.00	0.00
7,720.0	0.00	0.00	7,204.2	-1,726.7	-1,589.2	2,346.7	0.00	0.00	0.00
7,760.0	0.00	0.00	7,244.2	-1,726.7	-1,589.2	2,346.7	0.00	0.00	0.00
7,800.0	0.00	0.00	7,284.2	-1,726.7	-1,589.2	2,346.7	0.00	0.00	0.00
7,840.0	0.00	0.00	7,324.2	-1,726.7	-1,589.2	2,346.7	0.00	0.00	0.00
7,880.0	0.00	0.00	7,364.2	-1,726.7	-1,589.2	2,346.7	0.00	0.00	0.00
7,920.0	0.00	0.00	7,404.2	-1,726.7	-1,589.2	2,346.7	0.00	0.00	0.00
7,960.0	0.00	0.00	7,444.2	-1,726.7	-1,589.2	2,346.7	0.00	0.00	0.00
7,966.8	0.00	0.00	7,451.0	-1,726.7	-1,589.2	2,346.7	0.00	0.00	0.00
D-SAND									
8,000.0	0.00	0.00	7,484.2	-1,726.7	-1,589.2	2,346.7	0.00	0.00	0.00

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Wellbore: Wellbore #1
Design: Noble Dechant D19-32D Plan #1 (2-15-12)

Local Co-ordinate Reference: Well Dechant D19-32D
TVD Reference: WELL @ 4802.0ft (Original Well Elev)
MD Reference: WELL @ 4802.0ft (Original Well Elev)
North Reference: True
Survey Calculation Method: Minimum Curvature

Planned 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)
8,031.8	0.00	0.00	7,516.0	-1,726.7	-1,589.2	2,346.7	0.00	0.00	0.00
J-SAND									
8,040.0	0.00	0.00	7,524.2	-1,726.7	-1,589.2	2,346.7	0.00	0.00	0.00
8,080.0	0.00	0.00	7,564.2	-1,726.7	-1,589.2	2,346.7	0.00	0.00	0.00
8,120.0	0.00	0.00	7,604.2	-1,726.7	-1,589.2	2,346.7	0.00	0.00	0.00
8,160.0	0.00	0.00	7,644.2	-1,726.7	-1,589.2	2,346.7	0.00	0.00	0.00
8,181.8	0.00	0.00	7,666.0	-1,726.7	-1,589.2	2,346.7	0.00	0.00	0.00
HARD LINES 80'N & 75'E OF TARGET BHL									

Targets
Target Name

- hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
HARD LINES 80'N & 75'E	0.00	0.00	7,666.0	-1,646.7	-1,514.2	1,320,849.88	3,250,600.67	40.210650	-104.602701
- plan misses target center by 109.7ft at 8181.8ft MD (7666.0 TVD, -1726.7 N, -1589.2 E)									
- Polygon									
Point 1			7,666.0	0.0	0.0	1,320,849.88	3,250,600.67		
Point 2			7,666.0	-200.0	0.0	1,320,649.90	3,250,602.70		
Point 3			7,666.0	0.0	0.0	1,320,849.88	3,250,600.67		
Point 4			7,666.0	0.0	-200.0	1,320,847.85	3,250,400.69		
TARGET BHL 2565'F	0.00	0.00	6,300.0	-1,726.7	-1,589.2	1,320,769.10	3,250,526.46	40.210430	-104.602970
- plan hits target center									
- Point									
TARGET CIRCLE 2565'F	0.00	0.00	6,741.0	-1,726.7	-1,589.2	1,320,769.10	3,250,526.46	40.210430	-104.602970
- plan hits target center									
- Circle (radius 75.0)									

Casing Points

Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")
601.3	600.0	8 5/8"	8-5/8	12-1/4

Formations

Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
7,256.8	6,741.0	NIOBRARA		0.00	
7,561.8	7,046.0	CODELL		0.00	
7,966.8	7,451.0	D-SAND		0.00	
8,031.8	7,516.0	J-SAND		0.00	