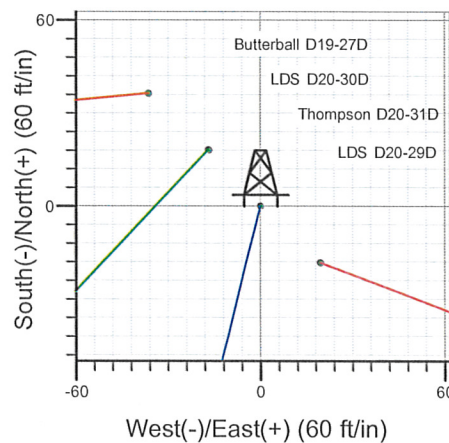
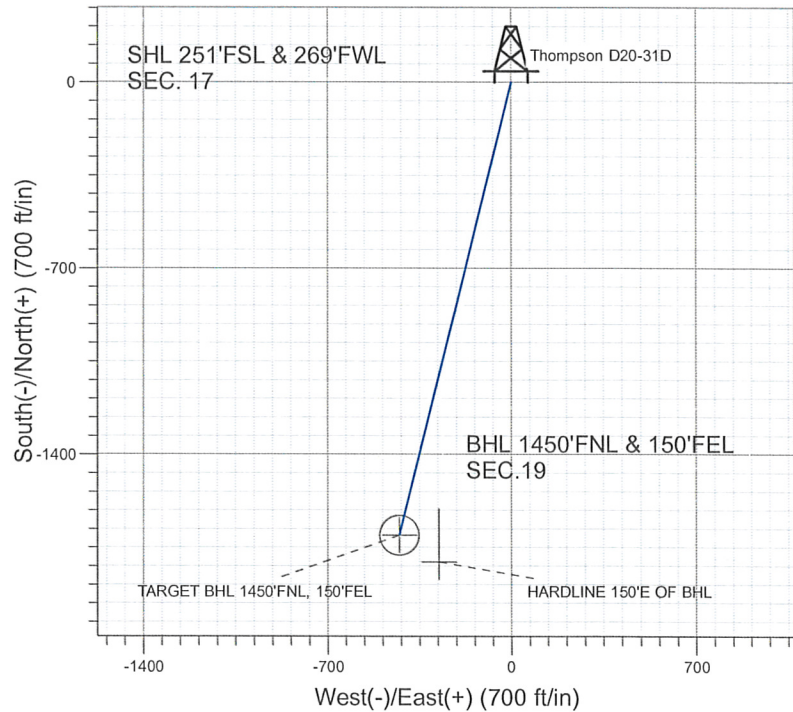
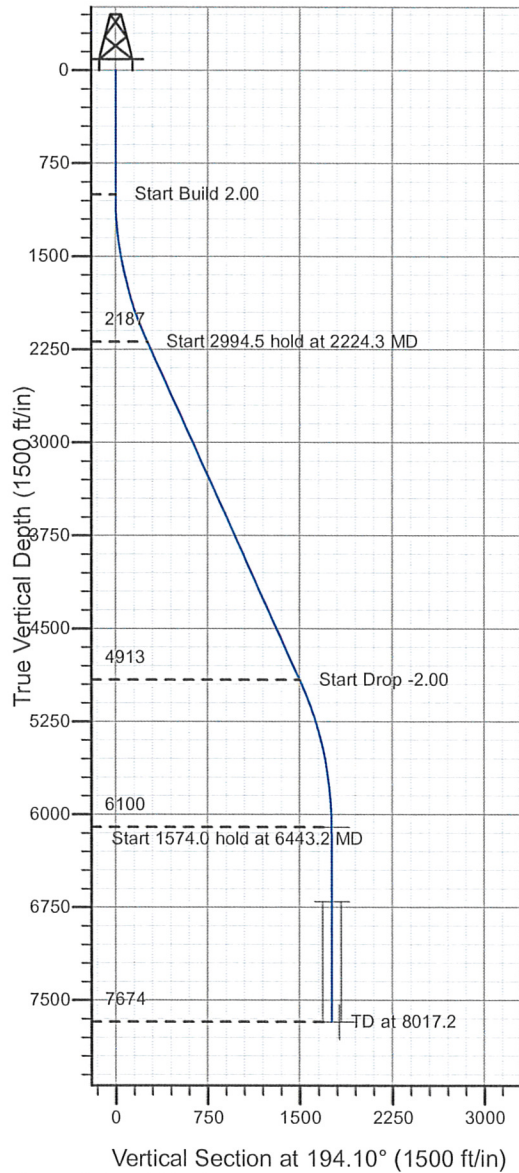


Well Name: Thompson D20-31D

Surface Location: LDS D20-29D Pad Sec.17-T3N-R64W
North American Datum 1983 , US State Plane 1983 , Colorado Northern Zone

Ground Elevation: 4763.0
+N/-S+E/-W Northing Easting Latitude Longitude Slot
0.0 0.0 1323855.47 3255940.99 40° 13' 7.500 N 104° 35' 0.492 W
Original Well Elev WELL @ 4776.0ft (Original Well Elev)

NOBLE ENERGY INC WELD COUNTY CO



LDS D20-29D Pad Sec.17-T3N-R64W
Thompson D20-31D
Noble Thompson D20-31D Plan #1 (12-16-09)
15:32, December 17 2009



Azimuths to True North
Magnetic North: 8.91°

Magnetic Field
Strength: 53233.1snT
Dip Angle: 66.99°
Date: 12/16/2009
Model: IGRF200510

WELLBORE TARGET DETAILS (LAT/LONG)

Name	TVD	+N/-S	+E/-W	Latitude	Longitude	Shape
TARGET BHL 1450'FNL, 150'FEL	6100.0	-1703.6	-427.8	40° 12' 50.665 N	104° 35' 6.006 W	Point
TARGET CIRCLE 1450'FNL, 150'FEL	6704.0	-1703.6	-427.8	40° 12' 50.665 N	104° 35' 6.006 W	Circle (Radius: 75.0)
HARDLINE 150'E OF BHL	7674.0	-1803.6	-277.8	40° 12' 49.677 N	104° 35' 4.073 W	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	
2	1000.0	0.00	0.00	1000.0	0.0	0.0	0.00	0.00	0.0	
3	2224.3	24.49	194.10	2187.4	-249.9	-62.8	2.00	194.10	257.7	
4	5218.9	24.49	194.10	4912.6	-1453.7	-365.0	0.00	0.00	1498.8	
5	6443.2	0.00	0.00	6100.0	-1703.6	-427.8	2.00	180.00	1756.5	TARGET BHL 1450'FNL, 150'FEL
6	8017.2	0.00	0.00	7674.0	-1703.6	-427.8	0.00	0.00	1756.5	



Directional

NOBLE ENERGY INC WELD COUNTY CO

SEC.17-T3N-R64W

LDS D20-29D Pad Sec.17-T3N-R64W

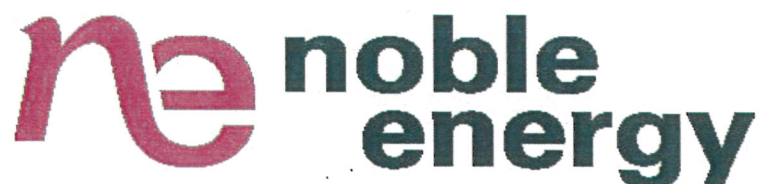
Thompson D20-31D

Wellbore #1

Plan: Noble Thompson D20-31D Plan #1 (12-16-09)

Standard Planning Report

17 December, 2009



Database:	EDM den0-adp01 Server Data	Local Co-ordinate Reference:	Well Thompson D20-31D
Company:	NOBLE ENERGY INC WELD COUNTY CO	TVD Reference:	WELL @ 4776.0ft (Original Well Elev)
Project:	SEC.17-T3N-R64W	MD Reference:	WELL @ 4776.0ft (Original Well Elev)
Site:	LDS D20-29D Pad Sec.17-T3N-R64W	North Reference:	True
Well:	Thompson D20-31D	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Noble Thompson D20-31D Plan #1 (12-16-09)		

Project	SEC.17-T3N-R64W, Weld County, Colorado		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	Colorado Northern Zone		Using geodetic scale factor

Site	LDS D20-29D Pad Sec.17-T3N-R64W				
Site Position:		Northing:	1,323,837.46 ft	Latitude:	40° 13' 7.320 N
From:	Lat/Long	Easting:	3,255,960.73 ft	Longitude:	104° 35' 0.240 W
Position Uncertainty:	0.0 ft	Slot Radius:	"	Grid Convergence:	0.59 °

Well	Thompson D20-31D					
Well Position	+N/-S	18.2 ft	Northing:	1,323,855.47 ft	Latitude:	40° 13' 7.500 N
	+E/-W	-19.5 ft	Easting:	3,255,940.99 ft	Longitude:	104° 35' 0.492 W
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	4,763.0 ft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF200510	12/16/2009	8.92	66.99	53,233

Design	Noble Thompson D20-31D Plan #1 (12-16-09)				
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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	194.10	

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	
1,000.0	0.00	0.00	1,000.0	0.0	0.0	0.00	0.00	0.00	0.00	
2,224.3	24.49	194.10	2,187.4	-249.9	-62.8	2.00	2.00	0.00	194.10	
5,218.9	24.49	194.10	4,912.6	-1,453.7	-365.0	0.00	0.00	0.00	0.00	
6,443.2	0.00	0.00	6,100.0	-1,703.6	-427.8	2.00	-2.00	0.00	180.00	TARGET BHL 145C
8,017.2	0.00	0.00	7,674.0	-1,703.6	-427.8	0.00	0.00	0.00	0.00	

Database:	EDM den0-adp01 Server Data	Local Co-ordinate Reference:	Well Thompson D20-31D
Company:	NOBLE ENERGY INC WELD COUNTY CO	TVD Reference:	WELL @ 4776.0ft (Original Well Elev)
Project:	SEC.17-T3N-R64W	MD Reference:	WELL @ 4776.0ft (Original Well Elev)
Site:	LDS D20-29D Pad Sec.17-T3N-R64W	North Reference:	True
Well:	Thompson D20-31D	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Noble Thompson D20-31D Plan #1 (12-16-09)		

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	0.00	0.00	240.0	0.0	0.0	0.0	0.00	0.00	0.00
280.0	0.00	0.00	280.0	0.0	0.0	0.0	0.00	0.00	0.00
320.0	0.00	0.00	320.0	0.0	0.0	0.0	0.00	0.00	0.00
360.0	0.00	0.00	360.0	0.0	0.0	0.0	0.00	0.00	0.00
400.0	0.00	0.00	400.0	0.0	0.0	0.0	0.00	0.00	0.00
440.0	0.00	0.00	440.0	0.0	0.0	0.0	0.00	0.00	0.00
480.0	0.00	0.00	480.0	0.0	0.0	0.0	0.00	0.00	0.00
520.0	0.00	0.00	520.0	0.0	0.0	0.0	0.00	0.00	0.00
560.0	0.00	0.00	560.0	0.0	0.0	0.0	0.00	0.00	0.00
600.0	0.00	0.00	600.0	0.0	0.0	0.0	0.00	0.00	0.00
640.0	0.00	0.00	640.0	0.0	0.0	0.0	0.00	0.00	0.00
680.0	0.00	0.00	680.0	0.0	0.0	0.0	0.00	0.00	0.00
720.0	0.00	0.00	720.0	0.0	0.0	0.0	0.00	0.00	0.00
760.0	0.00	0.00	760.0	0.0	0.0	0.0	0.00	0.00	0.00
800.0	0.00	0.00	800.0	0.0	0.0	0.0	0.00	0.00	0.00
840.0	0.00	0.00	840.0	0.0	0.0	0.0	0.00	0.00	0.00
880.0	0.00	0.00	880.0	0.0	0.0	0.0	0.00	0.00	0.00
920.0	0.00	0.00	920.0	0.0	0.0	0.0	0.00	0.00	0.00
960.0	0.00	0.00	960.0	0.0	0.0	0.0	0.00	0.00	0.00
1,000.0	0.00	0.00	1,000.0	0.0	0.0	0.0	0.00	0.00	0.00
1,040.0	0.80	194.10	1,040.0	-0.3	-0.1	0.3	2.00	2.00	0.00
1,080.0	1.60	194.10	1,080.0	-1.1	-0.3	1.1	2.00	2.00	0.00
1,120.0	2.40	194.10	1,120.0	-2.4	-0.6	2.5	2.00	2.00	0.00
1,160.0	3.20	194.10	1,159.9	-4.3	-1.1	4.5	2.00	2.00	0.00
1,200.0	4.00	194.10	1,199.8	-6.8	-1.7	7.0	2.00	2.00	0.00
1,240.0	4.80	194.10	1,239.7	-9.7	-2.4	10.0	2.00	2.00	0.00
1,280.0	5.60	194.10	1,279.6	-13.3	-3.3	13.7	2.00	2.00	0.00
1,320.0	6.40	194.10	1,319.3	-17.3	-4.3	17.9	2.00	2.00	0.00
1,360.0	7.20	194.10	1,359.1	-21.9	-5.5	22.6	2.00	2.00	0.00
1,400.0	8.00	194.10	1,398.7	-27.0	-6.8	27.9	2.00	2.00	0.00
1,440.0	8.80	194.10	1,438.3	-32.7	-8.2	33.7	2.00	2.00	0.00
1,480.0	9.60	194.10	1,477.8	-38.9	-9.8	40.1	2.00	2.00	0.00
1,520.0	10.40	194.10	1,517.1	-45.6	-11.5	47.1	2.00	2.00	0.00
1,560.0	11.20	194.10	1,556.4	-52.9	-13.3	54.6	2.00	2.00	0.00
1,600.0	12.00	194.10	1,595.6	-60.7	-15.2	62.6	2.00	2.00	0.00
1,640.0	12.80	194.10	1,634.7	-69.0	-17.3	71.2	2.00	2.00	0.00
1,680.0	13.60	194.10	1,673.6	-77.9	-19.6	80.3	2.00	2.00	0.00
1,720.0	14.40	194.10	1,712.4	-87.3	-21.9	90.0	2.00	2.00	0.00
1,760.0	15.20	194.10	1,751.1	-97.2	-24.4	100.2	2.00	2.00	0.00
1,800.0	16.00	194.10	1,789.6	-107.6	-27.0	111.0	2.00	2.00	0.00
1,840.0	16.80	194.10	1,828.0	-118.6	-29.8	122.3	2.00	2.00	0.00
1,880.0	17.60	194.10	1,866.2	-130.1	-32.7	134.1	2.00	2.00	0.00
1,920.0	18.40	194.10	1,904.3	-142.0	-35.7	146.5	2.00	2.00	0.00
1,960.0	19.20	194.10	1,942.1	-154.6	-38.8	159.3	2.00	2.00	0.00
2,000.0	20.00	194.10	1,979.8	-167.6	-42.1	172.8	2.00	2.00	0.00
2,040.0	20.80	194.10	2,017.3	-181.1	-45.5	186.7	2.00	2.00	0.00
2,080.0	21.60	194.10	2,054.6	-195.1	-49.0	201.2	2.00	2.00	0.00
2,120.0	22.40	194.10	2,091.7	-209.7	-52.6	216.2	2.00	2.00	0.00

Database:	EDM den0-adp01 Server Data	Local Co-ordinate Reference:	Well Thompson D20-31D
Company:	NOBLE ENERGY INC WELD COUNTY CO	TVD Reference:	WELL @ 4776.0ft (Original Well Elev)
Project:	SEC.17-T3N-R64W	MD Reference:	WELL @ 4776.0ft (Original Well Elev)
Site:	LDS D20-29D Pad Sec.17-T3N-R64W	North Reference:	True
Well:	Thompson D20-31D	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Noble Thompson D20-31D Plan #1 (12-16-09)		

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)
2,160.0	23.20	194.10	2,128.6	-224.7	-56.4	231.7	2.00	2.00	0.00
2,200.0	24.00	194.10	2,165.2	-240.2	-60.3	247.7	2.00	2.00	0.00
2,224.3	24.49	194.10	2,187.4	-249.9	-62.8	257.7	2.00	2.00	0.00
2,240.0	24.49	194.10	2,201.7	-256.2	-64.3	264.2	0.00	0.00	0.00
2,280.0	24.49	194.10	2,238.1	-272.3	-68.4	280.7	0.00	0.00	0.00
2,320.0	24.49	194.10	2,274.5	-288.4	-72.4	297.3	0.00	0.00	0.00
2,360.0	24.49	194.10	2,310.9	-304.4	-76.4	313.9	0.00	0.00	0.00
2,400.0	24.49	194.10	2,347.3	-320.5	-80.5	330.5	0.00	0.00	0.00
2,440.0	24.49	194.10	2,383.7	-336.6	-84.5	347.1	0.00	0.00	0.00
2,480.0	24.49	194.10	2,420.1	-352.7	-88.6	363.6	0.00	0.00	0.00
2,520.0	24.49	194.10	2,456.5	-368.8	-92.6	380.2	0.00	0.00	0.00
2,560.0	24.49	194.10	2,492.9	-384.8	-96.6	396.8	0.00	0.00	0.00
2,600.0	24.49	194.10	2,529.3	-400.9	-100.7	413.4	0.00	0.00	0.00
2,640.0	24.49	194.10	2,565.7	-417.0	-104.7	430.0	0.00	0.00	0.00
2,680.0	24.49	194.10	2,602.1	-433.1	-108.8	446.5	0.00	0.00	0.00
2,720.0	24.49	194.10	2,638.5	-449.2	-112.8	463.1	0.00	0.00	0.00
2,760.0	24.49	194.10	2,674.9	-465.2	-116.8	479.7	0.00	0.00	0.00
2,800.0	24.49	194.10	2,711.3	-481.3	-120.9	496.3	0.00	0.00	0.00
2,840.0	24.49	194.10	2,747.7	-497.4	-124.9	512.8	0.00	0.00	0.00
2,880.0	24.49	194.10	2,784.1	-513.5	-128.9	529.4	0.00	0.00	0.00
2,920.0	24.49	194.10	2,820.5	-529.6	-133.0	546.0	0.00	0.00	0.00
2,960.0	24.49	194.10	2,856.9	-545.6	-137.0	562.6	0.00	0.00	0.00
3,000.0	24.49	194.10	2,893.3	-561.7	-141.1	579.2	0.00	0.00	0.00
3,040.0	24.49	194.10	2,929.7	-577.8	-145.1	595.7	0.00	0.00	0.00
3,080.0	24.49	194.10	2,966.1	-593.9	-149.1	612.3	0.00	0.00	0.00
3,120.0	24.49	194.10	3,002.5	-610.0	-153.2	628.9	0.00	0.00	0.00
3,160.0	24.49	194.10	3,038.9	-626.0	-157.2	645.5	0.00	0.00	0.00
3,200.0	24.49	194.10	3,075.3	-642.1	-161.2	662.1	0.00	0.00	0.00
3,240.0	24.49	194.10	3,111.7	-658.2	-165.3	678.6	0.00	0.00	0.00
3,280.0	24.49	194.10	3,148.1	-674.3	-169.3	695.2	0.00	0.00	0.00
3,320.0	24.49	194.10	3,184.5	-690.4	-173.4	711.8	0.00	0.00	0.00
3,360.0	24.49	194.10	3,220.9	-706.4	-177.4	728.4	0.00	0.00	0.00
3,400.0	24.49	194.10	3,257.3	-722.5	-181.4	745.0	0.00	0.00	0.00
3,440.0	24.49	194.10	3,293.7	-738.6	-185.5	761.5	0.00	0.00	0.00
3,480.0	24.49	194.10	3,330.1	-754.7	-189.5	778.1	0.00	0.00	0.00
3,520.0	24.49	194.10	3,366.5	-770.8	-193.5	794.7	0.00	0.00	0.00
3,560.0	24.49	194.10	3,402.9	-786.8	-197.6	811.3	0.00	0.00	0.00
3,600.0	24.49	194.10	3,439.3	-802.9	-201.6	827.9	0.00	0.00	0.00
3,640.0	24.49	194.10	3,475.7	-819.0	-205.7	844.4	0.00	0.00	0.00
3,680.0	24.49	194.10	3,512.1	-835.1	-209.7	861.0	0.00	0.00	0.00
3,720.0	24.49	194.10	3,548.5	-851.2	-213.7	877.6	0.00	0.00	0.00
3,760.0	24.49	194.10	3,584.9	-867.2	-217.8	894.2	0.00	0.00	0.00
3,800.0	24.49	194.10	3,621.4	-883.3	-221.8	910.7	0.00	0.00	0.00
3,840.0	24.49	194.10	3,657.8	-899.4	-225.8	927.3	0.00	0.00	0.00
3,880.0	24.49	194.10	3,694.2	-915.5	-229.9	943.9	0.00	0.00	0.00
3,920.0	24.49	194.10	3,730.6	-931.6	-233.9	960.5	0.00	0.00	0.00
3,960.0	24.49	194.10	3,767.0	-947.6	-238.0	977.1	0.00	0.00	0.00
4,000.0	24.49	194.10	3,803.4	-963.7	-242.0	993.6	0.00	0.00	0.00
4,040.0	24.49	194.10	3,839.8	-979.8	-246.0	1,010.2	0.00	0.00	0.00
4,080.0	24.49	194.10	3,876.2	-995.9	-250.1	1,026.8	0.00	0.00	0.00
4,120.0	24.49	194.10	3,912.6	-1,012.0	-254.1	1,043.4	0.00	0.00	0.00
4,160.0	24.49	194.10	3,949.0	-1,028.0	-258.2	1,060.0	0.00	0.00	0.00
4,200.0	24.49	194.10	3,985.4	-1,044.1	-262.2	1,076.5	0.00	0.00	0.00
4,240.0	24.49	194.10	4,021.8	-1,060.2	-266.2	1,093.1	0.00	0.00	0.00

Database: EDM den0-adp01 Server Data
 Company: NOBLE ENERGY INC WELD COUNTY CO
 Project: SEC.17-T3N-R64W
 Site: LDS D20-29D Pad Sec.17-T3N-R64W
 Well: Thompson D20-31D
 Wellbore: Wellbore #1
 Design: Noble Thompson D20-31D Plan #1 (12-16-09)

Local Co-ordinate Reference: Well Thompson D20-31D
 TVD Reference: WELL @ 4776.0ft (Original Well Elev)
 MD Reference: WELL @ 4776.0ft (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)
4,280.0	24.49	194.10	4,058.2	-1,076.3	-270.3	1,109.7	0.00	0.00	0.00
4,320.0	24.49	194.10	4,094.6	-1,092.4	-274.3	1,126.3	0.00	0.00	0.00
4,360.0	24.49	194.10	4,131.0	-1,108.4	-278.3	1,142.9	0.00	0.00	0.00
4,400.0	24.49	194.10	4,167.4	-1,124.5	-282.4	1,159.4	0.00	0.00	0.00
4,440.0	24.49	194.10	4,203.8	-1,140.6	-286.4	1,176.0	0.00	0.00	0.00
4,480.0	24.49	194.10	4,240.2	-1,156.7	-290.5	1,192.6	0.00	0.00	0.00
4,520.0	24.49	194.10	4,276.6	-1,172.8	-294.5	1,209.2	0.00	0.00	0.00
4,560.0	24.49	194.10	4,313.0	-1,188.8	-298.5	1,225.8	0.00	0.00	0.00
4,600.0	24.49	194.10	4,349.4	-1,204.9	-302.6	1,242.3	0.00	0.00	0.00
4,640.0	24.49	194.10	4,385.8	-1,221.0	-306.6	1,258.9	0.00	0.00	0.00
4,680.0	24.49	194.10	4,422.2	-1,237.1	-310.6	1,275.5	0.00	0.00	0.00
4,720.0	24.49	194.10	4,458.6	-1,253.2	-314.7	1,292.1	0.00	0.00	0.00
4,760.0	24.49	194.10	4,495.0	-1,269.2	-318.7	1,308.6	0.00	0.00	0.00
4,800.0	24.49	194.10	4,531.4	-1,285.3	-322.8	1,325.2	0.00	0.00	0.00
4,840.0	24.49	194.10	4,567.8	-1,301.4	-326.8	1,341.8	0.00	0.00	0.00
4,880.0	24.49	194.10	4,604.2	-1,317.5	-330.8	1,358.4	0.00	0.00	0.00
4,920.0	24.49	194.10	4,640.6	-1,333.6	-334.9	1,375.0	0.00	0.00	0.00
4,960.0	24.49	194.10	4,677.0	-1,349.6	-338.9	1,391.5	0.00	0.00	0.00
5,000.0	24.49	194.10	4,713.4	-1,365.7	-342.9	1,408.1	0.00	0.00	0.00
5,040.0	24.49	194.10	4,749.8	-1,381.8	-347.0	1,424.7	0.00	0.00	0.00
5,080.0	24.49	194.10	4,786.2	-1,397.9	-351.0	1,441.3	0.00	0.00	0.00
5,120.0	24.49	194.10	4,822.6	-1,414.0	-355.1	1,457.9	0.00	0.00	0.00
5,160.0	24.49	194.10	4,859.0	-1,430.0	-359.1	1,474.4	0.00	0.00	0.00
5,200.0	24.49	194.10	4,895.4	-1,446.1	-363.1	1,491.0	0.00	0.00	0.00
5,218.9	24.49	194.10	4,912.6	-1,453.7	-365.0	1,498.8	0.00	0.00	0.00
5,240.0	24.06	194.10	4,931.9	-1,462.1	-367.2	1,507.5	2.00	-2.00	0.00
5,280.0	23.26	194.10	4,968.5	-1,477.7	-371.1	1,523.6	2.00	-2.00	0.00
5,320.0	22.46	194.10	5,005.4	-1,492.8	-374.8	1,539.1	2.00	-2.00	0.00
5,360.0	21.66	194.10	5,042.4	-1,507.4	-378.5	1,554.1	2.00	-2.00	0.00
5,400.0	20.86	194.10	5,079.7	-1,521.4	-382.0	1,568.7	2.00	-2.00	0.00
5,440.0	20.06	194.10	5,117.2	-1,535.0	-385.4	1,582.6	2.00	-2.00	0.00
5,480.0	19.26	194.10	5,154.9	-1,548.0	-388.7	1,596.1	2.00	-2.00	0.00
5,520.0	18.46	194.10	5,192.7	-1,560.6	-391.9	1,609.0	2.00	-2.00	0.00
5,560.0	17.66	194.10	5,230.7	-1,572.6	-394.9	1,621.4	2.00	-2.00	0.00
5,600.0	16.86	194.10	5,268.9	-1,584.1	-397.8	1,633.3	2.00	-2.00	0.00
5,640.0	16.06	194.10	5,307.3	-1,595.1	-400.5	1,644.6	2.00	-2.00	0.00
5,680.0	15.26	194.10	5,345.8	-1,605.6	-403.2	1,655.4	2.00	-2.00	0.00
5,720.0	14.46	194.10	5,384.5	-1,615.5	-405.7	1,665.7	2.00	-2.00	0.00
5,760.0	13.66	194.10	5,423.3	-1,625.0	-408.0	1,675.4	2.00	-2.00	0.00
5,800.0	12.86	194.10	5,462.2	-1,633.9	-410.3	1,684.6	2.00	-2.00	0.00
5,840.0	12.06	194.10	5,501.3	-1,642.2	-412.4	1,693.2	2.00	-2.00	0.00
5,880.0	11.26	194.10	5,540.4	-1,650.1	-414.4	1,701.3	2.00	-2.00	0.00
5,920.0	10.46	194.10	5,579.7	-1,657.4	-416.2	1,708.9	2.00	-2.00	0.00
5,960.0	9.66	194.10	5,619.1	-1,664.2	-417.9	1,715.8	2.00	-2.00	0.00
6,000.0	8.86	194.10	5,658.6	-1,670.4	-419.5	1,722.3	2.00	-2.00	0.00
6,040.0	8.06	194.10	5,698.1	-1,676.1	-420.9	1,728.2	2.00	-2.00	0.00
6,080.0	7.26	194.10	5,737.8	-1,681.3	-422.2	1,733.5	2.00	-2.00	0.00
6,120.0	6.46	194.10	5,777.5	-1,685.9	-423.4	1,738.3	2.00	-2.00	0.00
6,160.0	5.66	194.10	5,817.3	-1,690.0	-424.4	1,742.5	2.00	-2.00	0.00
6,200.0	4.86	194.10	5,857.1	-1,693.6	-425.3	1,746.2	2.00	-2.00	0.00
6,240.0	4.06	194.10	5,897.0	-1,696.6	-426.0	1,749.3	2.00	-2.00	0.00
6,280.0	3.26	194.10	5,936.9	-1,699.1	-426.7	1,751.9	2.00	-2.00	0.00
6,320.0	2.46	194.10	5,976.8	-1,701.0	-427.1	1,753.9	2.00	-2.00	0.00
6,360.0	1.66	194.10	6,016.8	-1,702.4	-427.5	1,755.3	2.00	-2.00	0.00

Database: EDM den0-adp01 Server Data
 Company: NOBLE ENERGY INC WELD COUNTY CO
 Project: SEC.17-T3N-R64W
 Site: LDS D20-29D Pad Sec.17-T3N-R64W
 Well: Thompson D20-31D
 Wellbore: Wellbore #1
 Design: Noble Thompson D20-31D Plan #1 (12-16-09)

Local Co-ordinate Reference: Well Thompson D20-31D
 TVD Reference: WELL @ 4776.0ft (Original Well Elev)
 MD Reference: WELL @ 4776.0ft (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)
6,400.0	0.86	194.10	6,056.8	-1,703.3	-427.7	1,756.2	2.00	-2.00	0.00
6,440.0	0.06	194.10	6,096.8	-1,703.6	-427.8	1,756.5	2.00	-2.00	0.00
6,443.2	0.00	0.00	6,100.0	-1,703.6	-427.8	1,756.5	2.00	-2.00	0.00
TARGET BHL 1450'FNL, 150'FEL									
6,480.0	0.00	0.00	6,136.8	-1,703.6	-427.8	1,756.5	0.00	0.00	0.00
6,520.0	0.00	0.00	6,176.8	-1,703.6	-427.8	1,756.5	0.00	0.00	0.00
6,560.0	0.00	0.00	6,216.8	-1,703.6	-427.8	1,756.5	0.00	0.00	0.00
6,600.0	0.00	0.00	6,256.8	-1,703.6	-427.8	1,756.5	0.00	0.00	0.00
6,640.0	0.00	0.00	6,296.8	-1,703.6	-427.8	1,756.5	0.00	0.00	0.00
6,680.0	0.00	0.00	6,336.8	-1,703.6	-427.8	1,756.5	0.00	0.00	0.00
6,720.0	0.00	0.00	6,376.8	-1,703.6	-427.8	1,756.5	0.00	0.00	0.00
6,760.0	0.00	0.00	6,416.8	-1,703.6	-427.8	1,756.5	0.00	0.00	0.00
6,800.0	0.00	0.00	6,456.8	-1,703.6	-427.8	1,756.5	0.00	0.00	0.00
6,840.0	0.00	0.00	6,496.8	-1,703.6	-427.8	1,756.5	0.00	0.00	0.00
6,880.0	0.00	0.00	6,536.8	-1,703.6	-427.8	1,756.5	0.00	0.00	0.00
6,920.0	0.00	0.00	6,576.8	-1,703.6	-427.8	1,756.5	0.00	0.00	0.00
6,960.0	0.00	0.00	6,616.8	-1,703.6	-427.8	1,756.5	0.00	0.00	0.00
7,000.0	0.00	0.00	6,656.8	-1,703.6	-427.8	1,756.5	0.00	0.00	0.00
7,040.0	0.00	0.00	6,696.8	-1,703.6	-427.8	1,756.5	0.00	0.00	0.00
7,047.2	0.00	0.00	6,704.0	-1,703.6	-427.8	1,756.5	0.00	0.00	0.00
NIOBRARA - TARGET CIRCLE 1450'FNL, 150'FEL									
7,080.0	0.00	0.00	6,736.8	-1,703.6	-427.8	1,756.5	0.00	0.00	0.00
7,120.0	0.00	0.00	6,776.8	-1,703.6	-427.8	1,756.5	0.00	0.00	0.00
7,160.0	0.00	0.00	6,816.8	-1,703.6	-427.8	1,756.5	0.00	0.00	0.00
7,200.0	0.00	0.00	6,856.8	-1,703.6	-427.8	1,756.5	0.00	0.00	0.00
7,240.0	0.00	0.00	6,896.8	-1,703.6	-427.8	1,756.5	0.00	0.00	0.00
7,280.0	0.00	0.00	6,936.8	-1,703.6	-427.8	1,756.5	0.00	0.00	0.00
7,320.0	0.00	0.00	6,976.8	-1,703.6	-427.8	1,756.5	0.00	0.00	0.00
7,349.2	0.00	0.00	7,006.0	-1,703.6	-427.8	1,756.5	0.00	0.00	0.00
CODELL									
7,360.0	0.00	0.00	7,016.8	-1,703.6	-427.8	1,756.5	0.00	0.00	0.00
7,400.0	0.00	0.00	7,056.8	-1,703.6	-427.8	1,756.5	0.00	0.00	0.00
7,440.0	0.00	0.00	7,096.8	-1,703.6	-427.8	1,756.5	0.00	0.00	0.00
7,480.0	0.00	0.00	7,136.8	-1,703.6	-427.8	1,756.5	0.00	0.00	0.00
7,520.0	0.00	0.00	7,176.8	-1,703.6	-427.8	1,756.5	0.00	0.00	0.00
7,560.0	0.00	0.00	7,216.8	-1,703.6	-427.8	1,756.5	0.00	0.00	0.00
7,600.0	0.00	0.00	7,256.8	-1,703.6	-427.8	1,756.5	0.00	0.00	0.00
7,640.0	0.00	0.00	7,296.8	-1,703.6	-427.8	1,756.5	0.00	0.00	0.00
7,680.0	0.00	0.00	7,336.8	-1,703.6	-427.8	1,756.5	0.00	0.00	0.00
7,720.0	0.00	0.00	7,376.8	-1,703.6	-427.8	1,756.5	0.00	0.00	0.00
7,760.0	0.00	0.00	7,416.8	-1,703.6	-427.8	1,756.5	0.00	0.00	0.00
7,800.0	0.00	0.00	7,456.8	-1,703.6	-427.8	1,756.5	0.00	0.00	0.00
7,817.2	0.00	0.00	7,474.0	-1,703.6	-427.8	1,756.5	0.00	0.00	0.00
J-SAND									
7,840.0	0.00	0.00	7,496.8	-1,703.6	-427.8	1,756.5	0.00	0.00	0.00
7,880.0	0.00	0.00	7,536.8	-1,703.6	-427.8	1,756.5	0.00	0.00	0.00
7,920.0	0.00	0.00	7,576.8	-1,703.6	-427.8	1,756.5	0.00	0.00	0.00
7,960.0	0.00	0.00	7,616.8	-1,703.6	-427.8	1,756.5	0.00	0.00	0.00
8,000.0	0.00	0.00	7,656.8	-1,703.6	-427.8	1,756.5	0.00	0.00	0.00
8,017.2	0.00	0.00	7,674.0	-1,703.6	-427.8	1,756.5	0.00	0.00	0.00
HARDLINE 150'E OF BHL									

Database:	EDM den0-adp01 Server Data	Local Co-ordinate Reference:	Well Thompson D20-31D
Company:	NOBLE ENERGY INC WELD COUNTY CO	TVD Reference:	WELL @ 4776.0ft (Original Well Elev)
Project:	SEC.17-T3N-R64W	MD Reference:	WELL @ 4776.0ft (Original Well Elev)
Site:	LDS D20-29D Pad Sec.17-T3N-R64W	North Reference:	True
Well:	Thompson D20-31D	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Noble Thompson D20-31D Plan #1 (12-16-09)		

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
TARGET CIRCLE 14' - plan hits target center - Circle (radius 75.0)	0.00	0.00	6,704.0	-1,703.6	-427.8	1,322,147.61	3,255,530.84	40° 12' 50.665 N	104° 35' 6.006 W
TARGET BHL 1450'F - plan hits target center - Point	0.00	0.00	6,100.0	-1,703.6	-427.8	1,322,147.60	3,255,530.85	40° 12' 50.665 N	104° 35' 6.006 W
HARDLINE 150'E OF - plan misses target center by 180.3ft at 8017.2ft MD (7674.0 TVD, -1703.6 N, -427.8 E) - Polygon	0.00	0.00	7,674.0	-1,803.6	-277.8	1,322,049.17	3,255,681.86	40° 12' 49.677 N	104° 35' 4.073 W
Point 1			7,674.0	0.0	0.0	1,322,049.17	3,255,681.86		
Point 2			7,674.0	200.0	0.0	1,322,249.15	3,255,679.79		

Formations

Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
7,047.2	6,704.0	NIOBRARA		0.00	
7,349.2	7,006.0	CODELL		0.00	
7,817.2	7,474.0	J-SAND		0.00	