



Directional

**NOBLE ENERGY INC WELD
COUNTY CO**

SEC.17-T3N-R64W

LDS D17-31D PAD Sec.17-T3N-R64W

LDS D17-31D

Wellbore #1

Plan: Noble LDS D17-31D Plan #1 (9-02-10)

Standard Planning Report

07 September, 2010



Database: Landmark
Company: NOBLE ENERGY INC WELD COUNTY CO
Project: SEC.17-T3N-R64W
Site: LDS D17-31D PAD Sec.17-T3N-R64W
Well: LDS D17-31D
Wellbore: Wellbore #1
Design: Noble LDS D17-31D Plan #1 (9-02-10)

Local Co-ordinate Reference: Well LDS D17-31D
TVD Reference: WELL @ 4769.0ft (Original Well Elev)
MD Reference: WELL @ 4769.0ft (Original Well Elev)
North Reference: True
Survey Calculation Method: Minimum Curvature

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		Using Well Reference Point
Map Zone:	Colorado Northern Zone		Using geodetic scale factor

Site	LDS D17-31D PAD Sec.17-T3N-R64W				
Site Position:		Northing:	1,326,227.25 ft	Latitude:	40° 13' 30.936 N
From:	Lat/Long	Easting:	3,255,955.57 ft	Longitude:	104° 34' 59.988 W
Position Uncertainty:	0.0 ft	Slot Radius:	"	Grid Convergence:	0.59 °

Well	LDS D17-31D					
Well Position	+N/-S	0.0 ft	Northing:	1,326,227.23 ft	Latitude:	40° 13' 30.936 N
	+E/-W	0.0 ft	Easting:	3,255,955.57 ft	Longitude:	104° 34' 59.988 W
Position Uncertainty	0.0 ft	Wellhead Elevation:	ft	Ground Level:	4,756.0 ft	

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	9/7/2010	8.86	66.97	53,141

Design	Noble LDS D17-31D Plan #1 (9-02-10)				
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	344.71	

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	
900.0	0.00	0.00	900.0	0.0	0.0	0.00	0.00	0.00	0.00	
1,864.1	19.28	344.71	1,846.0	155.0	-42.4	2.00	2.00	0.00	344.71	
5,156.8	19.28	344.71	4,954.0	1,203.8	-329.0	0.00	0.00	0.00	0.00	
6,120.9	0.00	0.00	5,900.0	1,358.9	-371.4	2.00	-2.00	0.00	180.00	TARGET BHL 132C
7,929.9	0.00	0.00	7,709.0	1,358.9	-371.4	0.00	0.00	0.00	0.00	

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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	0.00	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
700.0	0.00	0.00	700.0	0.0	0.0	0.0	0.00	0.00	0.00
8 5/8"									
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
900.0	0.00	0.00	900.0	0.0	0.0	0.0	0.00	0.00	0.00
920.0	0.40	344.71	920.0	0.1	0.0	0.1	2.00	2.00	0.00
960.0	1.20	344.71	960.0	0.6	-0.2	0.6	2.00	2.00	0.00
1,000.0	2.00	344.71	1,000.0	1.7	-0.5	1.7	2.00	2.00	0.00
1,040.0	2.80	344.71	1,039.9	3.3	-0.9	3.4	2.00	2.00	0.00
1,080.0	3.60	344.71	1,079.9	5.5	-1.5	5.7	2.00	2.00	0.00
1,120.0	4.40	344.71	1,119.8	8.1	-2.2	8.4	2.00	2.00	0.00
1,160.0	5.20	344.71	1,159.6	11.4	-3.1	11.8	2.00	2.00	0.00
1,200.0	6.00	344.71	1,199.5	15.1	-4.1	15.7	2.00	2.00	0.00
1,240.0	6.80	344.71	1,239.2	19.4	-5.3	20.2	2.00	2.00	0.00
1,280.0	7.60	344.71	1,278.9	24.3	-6.6	25.2	2.00	2.00	0.00
1,320.0	8.40	344.71	1,318.5	29.6	-8.1	30.7	2.00	2.00	0.00
1,360.0	9.20	344.71	1,358.0	35.5	-9.7	36.9	2.00	2.00	0.00
1,400.0	10.00	344.71	1,397.5	42.0	-11.5	43.5	2.00	2.00	0.00
1,440.0	10.80	344.71	1,436.8	48.9	-13.4	50.7	2.00	2.00	0.00
1,480.0	11.60	344.71	1,476.0	56.4	-15.4	58.5	2.00	2.00	0.00
1,520.0	12.40	344.71	1,515.2	64.5	-17.6	66.8	2.00	2.00	0.00
1,560.0	13.20	344.71	1,554.2	73.0	-20.0	75.7	2.00	2.00	0.00
1,600.0	14.00	344.71	1,593.1	82.1	-22.4	85.1	2.00	2.00	0.00
1,640.0	14.80	344.71	1,631.8	91.7	-25.1	95.0	2.00	2.00	0.00
1,680.0	15.60	344.71	1,670.4	101.8	-27.8	105.5	2.00	2.00	0.00
1,720.0	16.40	344.71	1,708.8	112.4	-30.7	116.6	2.00	2.00	0.00
1,760.0	17.20	344.71	1,747.1	123.6	-33.8	128.1	2.00	2.00	0.00
1,800.0	18.00	344.71	1,785.3	135.3	-37.0	140.2	2.00	2.00	0.00
1,840.0	18.80	344.71	1,823.2	147.4	-40.3	152.8	2.00	2.00	0.00
1,864.1	19.28	344.71	1,846.0	155.0	-42.4	160.7	2.00	2.00	0.00
1,880.0	19.28	344.71	1,861.0	160.1	-43.7	166.0	0.00	0.00	0.00
1,920.0	19.28	344.71	1,898.8	172.8	-47.2	179.2	0.00	0.00	0.00
1,960.0	19.28	344.71	1,936.5	185.6	-50.7	192.4	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)
2,000.0	19.28	344.71	1,974.3	198.3	-54.2	205.6	0.00	0.00	0.00
2,040.0	19.28	344.71	2,012.0	211.0	-57.7	218.8	0.00	0.00	0.00
2,080.0	19.28	344.71	2,049.8	223.8	-61.2	232.0	0.00	0.00	0.00
2,120.0	19.28	344.71	2,087.6	236.5	-64.6	245.2	0.00	0.00	0.00
2,160.0	19.28	344.71	2,125.3	249.3	-68.1	258.4	0.00	0.00	0.00
2,200.0	19.28	344.71	2,163.1	262.0	-71.6	271.6	0.00	0.00	0.00
2,240.0	19.28	344.71	2,200.8	274.8	-75.1	284.8	0.00	0.00	0.00
2,280.0	19.28	344.71	2,238.6	287.5	-78.6	298.0	0.00	0.00	0.00
2,320.0	19.28	344.71	2,276.3	300.2	-82.1	311.2	0.00	0.00	0.00
2,360.0	19.28	344.71	2,314.1	313.0	-85.5	324.5	0.00	0.00	0.00
2,400.0	19.28	344.71	2,351.8	325.7	-89.0	337.7	0.00	0.00	0.00
2,440.0	19.28	344.71	2,389.6	338.5	-92.5	350.9	0.00	0.00	0.00
2,480.0	19.28	344.71	2,427.4	351.2	-96.0	364.1	0.00	0.00	0.00
2,520.0	19.28	344.71	2,465.1	363.9	-99.5	377.3	0.00	0.00	0.00
2,560.0	19.28	344.71	2,502.9	376.7	-102.9	390.5	0.00	0.00	0.00
2,600.0	19.28	344.71	2,540.6	389.4	-106.4	403.7	0.00	0.00	0.00
2,640.0	19.28	344.71	2,578.4	402.2	-109.9	416.9	0.00	0.00	0.00
2,680.0	19.28	344.71	2,616.1	414.9	-113.4	430.1	0.00	0.00	0.00
2,720.0	19.28	344.71	2,653.9	427.6	-116.9	443.3	0.00	0.00	0.00
2,760.0	19.28	344.71	2,691.7	440.4	-120.4	456.5	0.00	0.00	0.00
2,800.0	19.28	344.71	2,729.4	453.1	-123.8	469.7	0.00	0.00	0.00
2,840.0	19.28	344.71	2,767.2	465.9	-127.3	483.0	0.00	0.00	0.00
2,880.0	19.28	344.71	2,804.9	478.6	-130.8	496.2	0.00	0.00	0.00
2,920.0	19.28	344.71	2,842.7	491.4	-134.3	509.4	0.00	0.00	0.00
2,960.0	19.28	344.71	2,880.4	504.1	-137.8	522.6	0.00	0.00	0.00
3,000.0	19.28	344.71	2,918.2	516.8	-141.2	535.8	0.00	0.00	0.00
3,040.0	19.28	344.71	2,955.9	529.6	-144.7	549.0	0.00	0.00	0.00
3,080.0	19.28	344.71	2,993.7	542.3	-148.2	562.2	0.00	0.00	0.00
3,120.0	19.28	344.71	3,031.5	555.1	-151.7	575.4	0.00	0.00	0.00
3,160.0	19.28	344.71	3,069.2	567.8	-155.2	588.6	0.00	0.00	0.00
3,200.0	19.28	344.71	3,107.0	580.5	-158.7	601.8	0.00	0.00	0.00
3,240.0	19.28	344.71	3,144.7	593.3	-162.1	615.0	0.00	0.00	0.00
3,280.0	19.28	344.71	3,182.5	606.0	-165.6	628.2	0.00	0.00	0.00
3,320.0	19.28	344.71	3,220.2	618.8	-169.1	641.5	0.00	0.00	0.00
3,360.0	19.28	344.71	3,258.0	631.5	-172.6	654.7	0.00	0.00	0.00
3,400.0	19.28	344.71	3,295.8	644.2	-176.1	667.9	0.00	0.00	0.00
3,440.0	19.28	344.71	3,333.5	657.0	-179.6	681.1	0.00	0.00	0.00
3,480.0	19.28	344.71	3,371.3	669.7	-183.0	694.3	0.00	0.00	0.00
3,520.0	19.28	344.71	3,409.0	682.5	-186.5	707.5	0.00	0.00	0.00
3,560.0	19.28	344.71	3,446.8	695.2	-190.0	720.7	0.00	0.00	0.00
3,600.0	19.28	344.71	3,484.5	708.0	-193.5	733.9	0.00	0.00	0.00
3,640.0	19.28	344.71	3,522.3	720.7	-197.0	747.1	0.00	0.00	0.00
3,680.0	19.28	344.71	3,560.0	733.4	-200.4	760.3	0.00	0.00	0.00
3,720.0	19.28	344.71	3,597.8	746.2	-203.9	773.5	0.00	0.00	0.00
3,760.0	19.28	344.71	3,635.6	758.9	-207.4	786.8	0.00	0.00	0.00
3,800.0	19.28	344.71	3,673.3	771.7	-210.9	800.0	0.00	0.00	0.00
3,840.0	19.28	344.71	3,711.1	784.4	-214.4	813.2	0.00	0.00	0.00
3,880.0	19.28	344.71	3,748.8	797.1	-217.9	826.4	0.00	0.00	0.00
3,920.0	19.28	344.71	3,786.6	809.9	-221.3	839.6	0.00	0.00	0.00
3,960.0	19.28	344.71	3,824.3	822.6	-224.8	852.8	0.00	0.00	0.00
4,000.0	19.28	344.71	3,862.1	835.4	-228.3	866.0	0.00	0.00	0.00
4,040.0	19.28	344.71	3,899.9	848.1	-231.8	879.2	0.00	0.00	0.00
4,080.0	19.28	344.71	3,937.6	860.9	-235.3	892.4	0.00	0.00	0.00
4,120.0	19.28	344.71	3,975.4	873.6	-238.7	905.6	0.00	0.00	0.00

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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)
4,160.0	19.28	344.71	4,013.1	886.3	-242.2	918.8	0.00	0.00	0.00
4,200.0	19.28	344.71	4,050.9	899.1	-245.7	932.0	0.00	0.00	0.00
4,240.0	19.28	344.71	4,088.6	911.8	-249.2	945.3	0.00	0.00	0.00
4,280.0	19.28	344.71	4,126.4	924.6	-252.7	958.5	0.00	0.00	0.00
4,320.0	19.28	344.71	4,164.1	937.3	-256.2	971.7	0.00	0.00	0.00
4,360.0	19.28	344.71	4,201.9	950.0	-259.6	984.9	0.00	0.00	0.00
4,400.0	19.28	344.71	4,239.7	962.8	-263.1	998.1	0.00	0.00	0.00
4,440.0	19.28	344.71	4,277.4	975.5	-266.6	1,011.3	0.00	0.00	0.00
4,480.0	19.28	344.71	4,315.2	988.3	-270.1	1,024.5	0.00	0.00	0.00
4,520.0	19.28	344.71	4,352.9	1,001.0	-273.6	1,037.7	0.00	0.00	0.00
4,560.0	19.28	344.71	4,390.7	1,013.7	-277.1	1,050.9	0.00	0.00	0.00
4,600.0	19.28	344.71	4,428.4	1,026.5	-280.5	1,064.1	0.00	0.00	0.00
4,640.0	19.28	344.71	4,466.2	1,039.2	-284.0	1,077.3	0.00	0.00	0.00
4,680.0	19.28	344.71	4,504.0	1,052.0	-287.5	1,090.5	0.00	0.00	0.00
4,720.0	19.28	344.71	4,541.7	1,064.7	-291.0	1,103.8	0.00	0.00	0.00
4,760.0	19.28	344.71	4,579.5	1,077.5	-294.5	1,117.0	0.00	0.00	0.00
4,800.0	19.28	344.71	4,617.2	1,090.2	-297.9	1,130.2	0.00	0.00	0.00
4,840.0	19.28	344.71	4,655.0	1,102.9	-301.4	1,143.4	0.00	0.00	0.00
4,880.0	19.28	344.71	4,692.7	1,115.7	-304.9	1,156.6	0.00	0.00	0.00
4,920.0	19.28	344.71	4,730.5	1,128.4	-308.4	1,169.8	0.00	0.00	0.00
4,960.0	19.28	344.71	4,768.2	1,141.2	-311.9	1,183.0	0.00	0.00	0.00
5,000.0	19.28	344.71	4,806.0	1,153.9	-315.4	1,196.2	0.00	0.00	0.00
5,040.0	19.28	344.71	4,843.8	1,166.6	-318.8	1,209.4	0.00	0.00	0.00
5,080.0	19.28	344.71	4,881.5	1,179.4	-322.3	1,222.6	0.00	0.00	0.00
5,120.0	19.28	344.71	4,919.3	1,192.1	-325.8	1,235.8	0.00	0.00	0.00
5,156.8	19.28	344.71	4,954.0	1,203.8	-329.0	1,248.0	0.00	0.00	0.00
5,160.0	19.22	344.71	4,957.0	1,204.9	-329.3	1,249.0	2.00	-2.00	0.00
5,200.0	18.42	344.71	4,994.9	1,217.3	-332.7	1,262.0	2.00	-2.00	0.00
5,240.0	17.62	344.71	5,032.9	1,229.2	-335.9	1,274.3	2.00	-2.00	0.00
5,280.0	16.82	344.71	5,071.1	1,240.7	-339.1	1,286.2	2.00	-2.00	0.00
5,320.0	16.02	344.71	5,109.5	1,251.6	-342.0	1,297.5	2.00	-2.00	0.00
5,360.0	15.22	344.71	5,148.0	1,262.0	-344.9	1,308.2	2.00	-2.00	0.00
5,400.0	14.42	344.71	5,186.7	1,271.8	-347.6	1,318.5	2.00	-2.00	0.00
5,440.0	13.62	344.71	5,225.5	1,281.2	-350.1	1,328.2	2.00	-2.00	0.00
5,480.0	12.82	344.71	5,264.4	1,290.0	-352.5	1,337.3	2.00	-2.00	0.00
5,520.0	12.02	344.71	5,303.5	1,298.3	-354.8	1,345.9	2.00	-2.00	0.00
5,560.0	11.22	344.71	5,342.7	1,306.1	-356.9	1,354.0	2.00	-2.00	0.00
5,600.0	10.42	344.71	5,382.0	1,313.3	-358.9	1,361.5	2.00	-2.00	0.00
5,640.0	9.62	344.71	5,421.4	1,320.0	-360.8	1,368.4	2.00	-2.00	0.00
5,680.0	8.82	344.71	5,460.8	1,326.2	-362.4	1,374.8	2.00	-2.00	0.00
5,720.0	8.02	344.71	5,500.4	1,331.8	-364.0	1,380.7	2.00	-2.00	0.00
5,760.0	7.22	344.71	5,540.1	1,337.0	-365.4	1,386.0	2.00	-2.00	0.00
5,800.0	6.42	344.71	5,579.8	1,341.5	-366.6	1,390.7	2.00	-2.00	0.00
5,840.0	5.62	344.71	5,619.6	1,345.6	-367.7	1,394.9	2.00	-2.00	0.00
5,880.0	4.82	344.71	5,659.4	1,349.1	-368.7	1,398.6	2.00	-2.00	0.00
5,920.0	4.02	344.71	5,699.3	1,352.1	-369.5	1,401.7	2.00	-2.00	0.00
5,960.0	3.22	344.71	5,739.2	1,354.5	-370.2	1,404.2	2.00	-2.00	0.00
6,000.0	2.42	344.71	5,779.1	1,356.4	-370.7	1,406.1	2.00	-2.00	0.00
6,040.0	1.62	344.71	5,819.1	1,357.8	-371.1	1,407.5	2.00	-2.00	0.00
6,080.0	0.82	344.71	5,859.1	1,358.6	-371.3	1,408.4	2.00	-2.00	0.00
6,120.0	0.02	344.71	5,899.1	1,358.9	-371.4	1,408.7	2.00	-2.00	0.00
6,120.9	0.00	0.00	5,900.0	1,358.9	-371.4	1,408.7	2.00	-2.00	1,717.65
TARGET BHL 1320'FNL, 75'FEL									
6,160.0	0.00	0.00	5,939.1	1,358.9	-371.4	1,408.7	0.00	0.00	0.00

Database: Landmark
Company: NOBLE ENERGY INC WELD COUNTY CO
Project: SEC.17-T3N-R64W
Site: LDS D17-31D PAD Sec.17-T3N-R64W
Well: LDS D17-31D
Wellbore: Wellbore #1
Design: Noble LDS D17-31D Plan #1 (9-02-10)

Local Co-ordinate Reference: Well LDS D17-31D
TVD Reference: WELL @ 4769.0ft (Original Well Elev)
MD Reference: WELL @ 4769.0ft (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)
6,200.0	0.00	0.00	5,979.1	1,358.9	-371.4	1,408.7	0.00	0.00	0.00
6,240.0	0.00	0.00	6,019.1	1,358.9	-371.4	1,408.7	0.00	0.00	0.00
6,280.0	0.00	0.00	6,059.1	1,358.9	-371.4	1,408.7	0.00	0.00	0.00
6,320.0	0.00	0.00	6,099.1	1,358.9	-371.4	1,408.7	0.00	0.00	0.00
6,360.0	0.00	0.00	6,139.1	1,358.9	-371.4	1,408.7	0.00	0.00	0.00
6,400.0	0.00	0.00	6,179.1	1,358.9	-371.4	1,408.7	0.00	0.00	0.00
6,440.0	0.00	0.00	6,219.1	1,358.9	-371.4	1,408.7	0.00	0.00	0.00
6,480.0	0.00	0.00	6,259.1	1,358.9	-371.4	1,408.7	0.00	0.00	0.00
6,520.0	0.00	0.00	6,299.1	1,358.9	-371.4	1,408.7	0.00	0.00	0.00
6,560.0	0.00	0.00	6,339.1	1,358.9	-371.4	1,408.7	0.00	0.00	0.00
6,600.0	0.00	0.00	6,379.1	1,358.9	-371.4	1,408.7	0.00	0.00	0.00
6,640.0	0.00	0.00	6,419.1	1,358.9	-371.4	1,408.7	0.00	0.00	0.00
6,680.0	0.00	0.00	6,459.1	1,358.9	-371.4	1,408.7	0.00	0.00	0.00
6,720.0	0.00	0.00	6,499.1	1,358.9	-371.4	1,408.7	0.00	0.00	0.00
6,760.0	0.00	0.00	6,539.1	1,358.9	-371.4	1,408.7	0.00	0.00	0.00
6,800.0	0.00	0.00	6,579.1	1,358.9	-371.4	1,408.7	0.00	0.00	0.00
6,840.0	0.00	0.00	6,619.1	1,358.9	-371.4	1,408.7	0.00	0.00	0.00
6,880.0	0.00	0.00	6,659.1	1,358.9	-371.4	1,408.7	0.00	0.00	0.00
6,919.9	0.00	0.00	6,699.0	1,358.9	-371.4	1,408.7	0.00	0.00	0.00
Niobrara - TARGET CIRCLE 1320'FNL, 75'FEL									
6,920.0	0.00	0.00	6,699.1	1,358.9	-371.4	1,408.7	0.00	0.00	0.00
6,960.0	0.00	0.00	6,739.1	1,358.9	-371.4	1,408.7	0.00	0.00	0.00
7,000.0	0.00	0.00	6,779.1	1,358.9	-371.4	1,408.7	0.00	0.00	0.00
7,040.0	0.00	0.00	6,819.1	1,358.9	-371.4	1,408.7	0.00	0.00	0.00
7,080.0	0.00	0.00	6,859.1	1,358.9	-371.4	1,408.7	0.00	0.00	0.00
7,120.0	0.00	0.00	6,899.1	1,358.9	-371.4	1,408.7	0.00	0.00	0.00
7,160.0	0.00	0.00	6,939.1	1,358.9	-371.4	1,408.7	0.00	0.00	0.00
7,200.0	0.00	0.00	6,979.1	1,358.9	-371.4	1,408.7	0.00	0.00	0.00
7,240.0	0.00	0.00	7,019.1	1,358.9	-371.4	1,408.7	0.00	0.00	0.00
7,249.9	0.00	0.00	7,029.0	1,358.9	-371.4	1,408.7	0.00	0.00	0.00
Codell									
7,280.0	0.00	0.00	7,059.1	1,358.9	-371.4	1,408.7	0.00	0.00	0.00
7,320.0	0.00	0.00	7,099.1	1,358.9	-371.4	1,408.7	0.00	0.00	0.00
7,360.0	0.00	0.00	7,139.1	1,358.9	-371.4	1,408.7	0.00	0.00	0.00
7,400.0	0.00	0.00	7,179.1	1,358.9	-371.4	1,408.7	0.00	0.00	0.00
7,440.0	0.00	0.00	7,219.1	1,358.9	-371.4	1,408.7	0.00	0.00	0.00
7,480.0	0.00	0.00	7,259.1	1,358.9	-371.4	1,408.7	0.00	0.00	0.00
7,520.0	0.00	0.00	7,299.1	1,358.9	-371.4	1,408.7	0.00	0.00	0.00
7,560.0	0.00	0.00	7,339.1	1,358.9	-371.4	1,408.7	0.00	0.00	0.00
7,600.0	0.00	0.00	7,379.1	1,358.9	-371.4	1,408.7	0.00	0.00	0.00
7,640.0	0.00	0.00	7,419.1	1,358.9	-371.4	1,408.7	0.00	0.00	0.00
7,659.9	0.00	0.00	7,439.0	1,358.9	-371.4	1,408.7	0.00	0.00	0.00
D-Sand									
7,680.0	0.00	0.00	7,459.1	1,358.9	-371.4	1,408.7	0.00	0.00	0.00
7,720.0	0.00	0.00	7,499.1	1,358.9	-371.4	1,408.7	0.00	0.00	0.00
7,729.9	0.00	0.00	7,509.0	1,358.9	-371.4	1,408.7	0.00	0.00	0.00
J-Sand									
7,760.0	0.00	0.00	7,539.1	1,358.9	-371.4	1,408.7	0.00	0.00	0.00
7,800.0	0.00	0.00	7,579.1	1,358.9	-371.4	1,408.7	0.00	0.00	0.00
7,840.0	0.00	0.00	7,619.1	1,358.9	-371.4	1,408.7	0.00	0.00	0.00
7,880.0	0.00	0.00	7,659.1	1,358.9	-371.4	1,408.7	0.00	0.00	0.00
7,920.0	0.00	0.00	7,699.1	1,358.9	-371.4	1,408.7	0.00	0.00	0.00
7,929.9	0.00	0.00	7,709.0	1,358.9	-371.4	1,408.7	0.00	0.00	0.00

Database: Landmark
 Company: NOBLE ENERGY INC WELD COUNTY CO
 Project: SEC.17-T3N-R64W
 Site: LDS D17-31D PAD Sec.17-T3N-R64W
 Well: LDS D17-31D
 Wellbore: Wellbore #1
 Design: Noble LDS D17-31D Plan #1 (9-02-10)

Local Co-ordinate Reference: Well LDS D17-31D
 TVD Reference: WELL @ 4769.0ft (Original Well Elev)
 MD Reference: WELL @ 4769.0ft (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)
HARDLINES 75'E OF 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
TARGET CIRCLE 132' - plan hits target - Circle (radius 75.0)	0.00	0.59	6,699.0	1,358.9	-371.4	1,327,582.12	3,255,570.19	40° 13' 44.364 N	104° 35' 4.776 W
HARDLINES 75'E OF - plan misses by 124.9ft at 7929.9ft MD (7709.0 TVD, 1358.9 N, -371.4 E) - Polygon	0.00	0.59	7,709.0	1,258.9	-296.4	1,327,482.95	3,255,646.19	40° 13' 43.376 N	104° 35' 3.809 W
Point 1			7,709.0	0.0	0.0	1,327,482.95	3,255,646.19		
Point 2			7,709.0	200.0	0.0	1,327,682.94	3,255,646.19		
TARGET BHL 1320'F - plan hits target - Point	0.00	0.59	5,900.0	1,358.9	-371.4	1,327,582.12	3,255,570.19	40° 13' 44.364 N	104° 35' 4.776 W

Casing Points

Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")
700.0	700.0	8 5/8"	8-5/8	12-1/4

Formations

Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
6,919.9	6,699.0	Niobrara		0.00	
7,249.9	7,029.0	Codell		0.00	
7,659.9	7,439.0	D-Sand		0.00	
7,729.9	7,509.0	J-Sand		0.00	