



## **Directional**

### **NOBLE ENERGY INC WELD COUNTY CO**

**SEC.27-T6N-R64W**

**Howard A27-17D Pad Sec.27-T6N-R64W**

**Howard A27-17D**

**Wellbore #1**

**Plan: Noble Howard A27-17D Plan #1 (12-23-10)**

### **Standard Planning Report**

**23 December, 2010**



Database: Landmark  
 Company: NOBLE ENERGY INC WELD COUNTY CO  
 Project: SEC.27-T6N-R64W  
 Site: Howard A27-17D Pad Sec.27-T6N-R64W  
 Well: Howard A27-17D  
 Wellbore: Wellbore #1  
 Design: Noble Howard A27-17D Plan #1 (12-23-10)

Local Co-ordinate Reference: Well Howard A27-17D  
 TVD Reference: WELL @ 4710.0ft (Original Well Elev)  
 MD Reference: WELL @ 4710.0ft (Original Well Elev)  
 North Reference: True  
 Survey Calculation Method: Minimum Curvature

Project	SEC.27-T6N-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	Howard A27-17D Pad Sec.27-T6N-R64W				
Site Position:		Northing:	1,412,840.91 ft	Latitude:	40° 27' 45.324 N
From:	Lat/Long	Easting:	3,270,156.22 ft	Longitude:	104° 31' 44.688 W
Position Uncertainty:	0.0 ft	Slot Radius:	"	Grid Convergence:	0.63 °

Well	Howard A27-17D					
Well Position	+N/-S	0.0 ft	Northing:	1,412,840.90 ft	Latitude:	40° 27' 45.324 N
	+E/-W	0.0 ft	Easting:	3,270,156.22 ft	Longitude:	104° 31' 44.688 W
Position Uncertainty	0.0 ft	Wellhead Elevation:	ft	Ground Level:	4,697.0 ft	

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	12/23/2010	8.81	67.16	53,241

Design: Noble Howard A27-17D Plan #1 (12-23-10)

#### Audit Notes:

Version:	Phase:	PROTOTYPE	Tie On Depth:	0.0
Vertical Section:	Depth From (TVD)	+N/-S	+E/-W	Direction
	(ft)	(ft)	(ft)	(°)
	0.0	0.0	0.0	227.17

#### 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	
700.0	0.00	0.00	700.0	0.0	0.0	0.00	0.00	0.00	0.00	
1,306.2	12.12	227.17	1,301.7	-43.4	-46.9	2.00	2.00	0.00	227.17	
4,473.4	12.12	227.17	4,398.3	-495.7	-534.7	0.00	0.00	0.00	0.00	
5,079.7	0.00	0.00	5,000.0	-539.2	-581.6	2.00	-2.00	0.00	180.00	TARGET BHL 125C
7,126.7	0.00	0.00	7,047.0	-539.2	-581.6	0.00	0.00	0.00	0.00	

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 MD Reference: WELL @ 4710.0ft (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	0.00	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
500.0	0.00	0.00	500.0	0.0	0.0	0.0	0.00	0.00	0.00
8 5/8"									
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
720.0	0.40	227.17	720.0	0.0	-0.1	0.1	2.00	2.00	0.00
760.0	1.20	227.17	760.0	-0.4	-0.5	0.6	2.00	2.00	0.00
800.0	2.00	227.17	800.0	-1.2	-1.3	1.7	2.00	2.00	0.00
840.0	2.80	227.17	839.9	-2.3	-2.5	3.4	2.00	2.00	0.00
880.0	3.60	227.17	879.9	-3.8	-4.1	5.7	2.00	2.00	0.00
920.0	4.40	227.17	919.8	-5.7	-6.2	8.4	2.00	2.00	0.00
960.0	5.20	227.17	959.6	-8.0	-8.6	11.8	2.00	2.00	0.00
1,000.0	6.00	227.17	999.5	-10.7	-11.5	15.7	2.00	2.00	0.00
1,040.0	6.80	227.17	1,039.2	-13.7	-14.8	20.2	2.00	2.00	0.00
1,080.0	7.60	227.17	1,078.9	-17.1	-18.5	25.2	2.00	2.00	0.00
1,120.0	8.40	227.17	1,118.5	-20.9	-22.5	30.7	2.00	2.00	0.00
1,160.0	9.20	227.17	1,158.0	-25.1	-27.0	36.9	2.00	2.00	0.00
1,200.0	10.00	227.17	1,197.5	-29.6	-31.9	43.5	2.00	2.00	0.00
1,240.0	10.80	227.17	1,236.8	-34.5	-37.2	50.7	2.00	2.00	0.00
1,280.0	11.60	227.17	1,276.0	-39.8	-42.9	58.5	2.00	2.00	0.00
1,306.2	12.12	227.17	1,301.7	-43.4	-46.9	63.9	2.00	2.00	0.00
1,320.0	12.12	227.17	1,315.2	-45.4	-49.0	66.8	0.00	0.00	0.00
1,360.0	12.12	227.17	1,354.3	-51.1	-55.1	75.2	0.00	0.00	0.00
1,400.0	12.12	227.17	1,393.4	-56.8	-61.3	83.6	0.00	0.00	0.00
1,440.0	12.12	227.17	1,432.5	-62.5	-67.5	92.0	0.00	0.00	0.00
1,480.0	12.12	227.17	1,471.6	-68.3	-73.6	100.4	0.00	0.00	0.00
1,520.0	12.12	227.17	1,510.7	-74.0	-79.8	108.8	0.00	0.00	0.00
1,560.0	12.12	227.17	1,549.8	-79.7	-86.0	117.2	0.00	0.00	0.00
1,600.0	12.12	227.17	1,588.9	-85.4	-92.1	125.6	0.00	0.00	0.00
1,640.0	12.12	227.17	1,628.0	-91.1	-98.3	134.0	0.00	0.00	0.00
1,680.0	12.12	227.17	1,667.1	-96.8	-104.4	142.4	0.00	0.00	0.00
1,720.0	12.12	227.17	1,706.3	-102.5	-110.6	150.8	0.00	0.00	0.00
1,760.0	12.12	227.17	1,745.4	-108.2	-116.8	159.2	0.00	0.00	0.00
1,800.0	12.12	227.17	1,784.5	-114.0	-122.9	167.6	0.00	0.00	0.00
1,840.0	12.12	227.17	1,823.6	-119.7	-129.1	176.0	0.00	0.00	0.00
1,880.0	12.12	227.17	1,862.7	-125.4	-135.2	184.4	0.00	0.00	0.00
1,920.0	12.12	227.17	1,901.8	-131.1	-141.4	192.8	0.00	0.00	0.00
1,960.0	12.12	227.17	1,940.9	-136.8	-147.6	201.2	0.00	0.00	0.00



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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)
2,000.0	12.12	227.17	1,980.0	-142.5	-153.7	209.6	0.00	0.00	0.00
2,040.0	12.12	227.17	2,019.1	-148.2	-159.9	218.0	0.00	0.00	0.00
2,080.0	12.12	227.17	2,058.2	-153.9	-166.0	226.4	0.00	0.00	0.00
2,120.0	12.12	227.17	2,097.3	-159.7	-172.2	234.8	0.00	0.00	0.00
2,160.0	12.12	227.17	2,136.4	-165.4	-178.4	243.2	0.00	0.00	0.00
2,200.0	12.12	227.17	2,175.5	-171.1	-184.5	251.6	0.00	0.00	0.00
2,240.0	12.12	227.17	2,214.7	-176.8	-190.7	260.0	0.00	0.00	0.00
2,280.0	12.12	227.17	2,253.8	-182.5	-196.9	268.4	0.00	0.00	0.00
2,320.0	12.12	227.17	2,292.9	-188.2	-203.0	276.8	0.00	0.00	0.00
2,360.0	12.12	227.17	2,332.0	-193.9	-209.2	285.2	0.00	0.00	0.00
2,400.0	12.12	227.17	2,371.1	-199.6	-215.3	293.6	0.00	0.00	0.00
2,440.0	12.12	227.17	2,410.2	-205.3	-221.5	302.0	0.00	0.00	0.00
2,480.0	12.12	227.17	2,449.3	-211.1	-227.7	310.4	0.00	0.00	0.00
2,520.0	12.12	227.17	2,488.4	-216.8	-233.8	318.8	0.00	0.00	0.00
2,560.0	12.12	227.17	2,527.5	-222.5	-240.0	327.2	0.00	0.00	0.00
2,600.0	12.12	227.17	2,566.6	-228.2	-246.1	335.7	0.00	0.00	0.00
2,640.0	12.12	227.17	2,605.7	-233.9	-252.3	344.1	0.00	0.00	0.00
2,680.0	12.12	227.17	2,644.8	-239.6	-258.5	352.5	0.00	0.00	0.00
2,720.0	12.12	227.17	2,683.9	-245.3	-264.6	360.9	0.00	0.00	0.00
2,760.0	12.12	227.17	2,723.1	-251.0	-270.8	369.3	0.00	0.00	0.00
2,800.0	12.12	227.17	2,762.2	-256.8	-277.0	377.7	0.00	0.00	0.00
2,840.0	12.12	227.17	2,801.3	-262.5	-283.1	386.1	0.00	0.00	0.00
2,880.0	12.12	227.17	2,840.4	-268.2	-289.3	394.5	0.00	0.00	0.00
2,920.0	12.12	227.17	2,879.5	-273.9	-295.4	402.9	0.00	0.00	0.00
2,960.0	12.12	227.17	2,918.6	-279.6	-301.6	411.3	0.00	0.00	0.00
3,000.0	12.12	227.17	2,957.7	-285.3	-307.8	419.7	0.00	0.00	0.00
3,040.0	12.12	227.17	2,996.8	-291.0	-313.9	428.1	0.00	0.00	0.00
3,080.0	12.12	227.17	3,035.9	-296.7	-320.1	436.5	0.00	0.00	0.00
3,120.0	12.12	227.17	3,075.0	-302.5	-326.2	444.9	0.00	0.00	0.00
3,160.0	12.12	227.17	3,114.1	-308.2	-332.4	453.3	0.00	0.00	0.00
3,200.0	12.12	227.17	3,153.2	-313.9	-338.6	461.7	0.00	0.00	0.00
3,240.0	12.12	227.17	3,192.3	-319.6	-344.7	470.1	0.00	0.00	0.00
3,280.0	12.12	227.17	3,231.5	-325.3	-350.9	478.5	0.00	0.00	0.00
3,320.0	12.12	227.17	3,270.6	-331.0	-357.1	486.9	0.00	0.00	0.00
3,360.0	12.12	227.17	3,309.7	-336.7	-363.2	495.3	0.00	0.00	0.00
3,400.0	12.12	227.17	3,348.8	-342.4	-369.4	503.7	0.00	0.00	0.00
3,440.0	12.12	227.17	3,387.9	-348.1	-375.5	512.1	0.00	0.00	0.00
3,480.0	12.12	227.17	3,427.0	-353.9	-381.7	520.5	0.00	0.00	0.00
3,520.0	12.12	227.17	3,466.1	-359.6	-387.9	528.9	0.00	0.00	0.00
3,560.0	12.12	227.17	3,505.2	-365.3	-394.0	537.3	0.00	0.00	0.00
3,600.0	12.12	227.17	3,544.3	-371.0	-400.2	545.7	0.00	0.00	0.00
3,640.0	12.12	227.17	3,583.4	-376.7	-406.3	554.1	0.00	0.00	0.00
3,680.0	12.12	227.17	3,622.5	-382.4	-412.5	562.5	0.00	0.00	0.00
3,720.0	12.12	227.17	3,661.6	-388.1	-418.7	570.9	0.00	0.00	0.00
3,760.0	12.12	227.17	3,700.7	-393.8	-424.8	579.3	0.00	0.00	0.00
3,800.0	12.12	227.17	3,739.9	-399.6	-431.0	587.7	0.00	0.00	0.00
3,840.0	12.12	227.17	3,779.0	-405.3	-437.1	596.1	0.00	0.00	0.00
3,880.0	12.12	227.17	3,818.1	-411.0	-443.3	604.5	0.00	0.00	0.00
3,920.0	12.12	227.17	3,857.2	-416.7	-449.5	612.9	0.00	0.00	0.00
3,960.0	12.12	227.17	3,896.3	-422.4	-455.6	621.3	0.00	0.00	0.00
4,000.0	12.12	227.17	3,935.4	-428.1	-461.8	629.7	0.00	0.00	0.00
4,040.0	12.12	227.17	3,974.5	-433.8	-468.0	638.1	0.00	0.00	0.00
4,080.0	12.12	227.17	4,013.6	-439.5	-474.1	646.5	0.00	0.00	0.00
4,120.0	12.12	227.17	4,052.7	-445.3	-480.3	654.9	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)
4,160.0	12.12	227.17	4,091.8	-451.0	-486.4	663.3	0.00	0.00	0.00
4,200.0	12.12	227.17	4,130.9	-456.7	-492.6	671.7	0.00	0.00	0.00
4,240.0	12.12	227.17	4,170.0	-462.4	-498.8	680.1	0.00	0.00	0.00
4,280.0	12.12	227.17	4,209.1	-468.1	-504.9	688.5	0.00	0.00	0.00
4,320.0	12.12	227.17	4,248.3	-473.8	-511.1	696.9	0.00	0.00	0.00
4,360.0	12.12	227.17	4,287.4	-479.5	-517.2	705.3	0.00	0.00	0.00
4,400.0	12.12	227.17	4,326.5	-485.2	-523.4	713.7	0.00	0.00	0.00
4,440.0	12.12	227.17	4,365.6	-490.9	-529.6	722.1	0.00	0.00	0.00
4,473.4	12.12	227.17	4,398.3	-495.7	-534.7	729.2	0.00	0.00	0.00
4,480.0	11.99	227.17	4,404.7	-496.7	-535.7	730.5	2.00	-2.00	0.00
4,520.0	11.19	227.17	4,443.9	-502.1	-541.6	738.6	2.00	-2.00	0.00
4,560.0	10.39	227.17	4,483.2	-507.2	-547.1	746.1	2.00	-2.00	0.00
4,600.0	9.59	227.17	4,522.6	-511.9	-552.2	753.0	2.00	-2.00	0.00
4,640.0	8.79	227.17	4,562.0	-516.3	-556.9	759.4	2.00	-2.00	0.00
4,680.0	7.99	227.17	4,601.6	-520.2	-561.2	765.2	2.00	-2.00	0.00
4,720.0	7.19	227.17	4,641.3	-523.8	-565.0	770.5	2.00	-2.00	0.00
4,760.0	6.39	227.17	4,681.0	-527.1	-568.5	775.2	2.00	-2.00	0.00
4,800.0	5.59	227.17	4,720.8	-529.9	-571.6	779.4	2.00	-2.00	0.00
4,840.0	4.79	227.17	4,760.6	-532.4	-574.2	783.0	2.00	-2.00	0.00
4,880.0	3.99	227.17	4,800.5	-534.4	-576.5	786.1	2.00	-2.00	0.00
4,920.0	3.19	227.17	4,840.4	-536.1	-578.3	788.6	2.00	-2.00	0.00
4,960.0	2.39	227.17	4,880.4	-537.5	-579.8	790.6	2.00	-2.00	0.00
5,000.0	1.59	227.17	4,920.3	-538.4	-580.8	792.0	2.00	-2.00	0.00
5,040.0	0.79	227.17	4,960.3	-539.0	-581.4	792.8	2.00	-2.00	0.00
5,079.7	0.00	0.00	5,000.0	-539.2	-581.6	793.1	2.00	-2.00	0.00
TARGET BHL 1250'FNL, 1220'FEL									
5,080.0	0.00	0.00	5,000.3	-539.2	-581.6	793.1	0.00	0.00	0.00
5,120.0	0.00	0.00	5,040.3	-539.2	-581.6	793.1	0.00	0.00	0.00
5,160.0	0.00	0.00	5,080.3	-539.2	-581.6	793.1	0.00	0.00	0.00
5,200.0	0.00	0.00	5,120.3	-539.2	-581.6	793.1	0.00	0.00	0.00
5,240.0	0.00	0.00	5,160.3	-539.2	-581.6	793.1	0.00	0.00	0.00
5,280.0	0.00	0.00	5,200.3	-539.2	-581.6	793.1	0.00	0.00	0.00
5,320.0	0.00	0.00	5,240.3	-539.2	-581.6	793.1	0.00	0.00	0.00
5,360.0	0.00	0.00	5,280.3	-539.2	-581.6	793.1	0.00	0.00	0.00
5,400.0	0.00	0.00	5,320.3	-539.2	-581.6	793.1	0.00	0.00	0.00
5,440.0	0.00	0.00	5,360.3	-539.2	-581.6	793.1	0.00	0.00	0.00
5,480.0	0.00	0.00	5,400.3	-539.2	-581.6	793.1	0.00	0.00	0.00
5,520.0	0.00	0.00	5,440.3	-539.2	-581.6	793.1	0.00	0.00	0.00
5,560.0	0.00	0.00	5,480.3	-539.2	-581.6	793.1	0.00	0.00	0.00
5,600.0	0.00	0.00	5,520.3	-539.2	-581.6	793.1	0.00	0.00	0.00
5,640.0	0.00	0.00	5,560.3	-539.2	-581.6	793.1	0.00	0.00	0.00
5,680.0	0.00	0.00	5,600.3	-539.2	-581.6	793.1	0.00	0.00	0.00
5,720.0	0.00	0.00	5,640.3	-539.2	-581.6	793.1	0.00	0.00	0.00
5,760.0	0.00	0.00	5,680.3	-539.2	-581.6	793.1	0.00	0.00	0.00
5,800.0	0.00	0.00	5,720.3	-539.2	-581.6	793.1	0.00	0.00	0.00
5,840.0	0.00	0.00	5,760.3	-539.2	-581.6	793.1	0.00	0.00	0.00
5,880.0	0.00	0.00	5,800.3	-539.2	-581.6	793.1	0.00	0.00	0.00
5,920.0	0.00	0.00	5,840.3	-539.2	-581.6	793.1	0.00	0.00	0.00
5,960.0	0.00	0.00	5,880.3	-539.2	-581.6	793.1	0.00	0.00	0.00
6,000.0	0.00	0.00	5,920.3	-539.2	-581.6	793.1	0.00	0.00	0.00
6,040.0	0.00	0.00	5,960.3	-539.2	-581.6	793.1	0.00	0.00	0.00
6,080.0	0.00	0.00	6,000.3	-539.2	-581.6	793.1	0.00	0.00	0.00
6,120.0	0.00	0.00	6,040.3	-539.2	-581.6	793.1	0.00	0.00	0.00
6,160.0	0.00	0.00	6,080.3	-539.2	-581.6	793.1	0.00	0.00	0.00



Database:	Landmark	Local Co-ordinate Reference:	Well Howard A27-17D
Company:	NOBLE ENERGY INC WELD COUNTY CO	TVD Reference:	WELL @ 4710.0ft (Original Well Elev)
Project:	SEC.27-T6N-R64W	MD Reference:	WELL @ 4710.0ft (Original Well Elev)
Site:	Howard A27-17D Pad Sec.27-T6N-R64W	North Reference:	True
Well:	Howard A27-17D	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Noble Howard A27-17D Plan #1 (12-23-10)		

#### 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	6,120.3	-539.2	-581.6	793.1	0.00	0.00	0.00
6,240.0	0.00	0.00	6,160.3	-539.2	-581.6	793.1	0.00	0.00	0.00
6,280.0	0.00	0.00	6,200.3	-539.2	-581.6	793.1	0.00	0.00	0.00
6,320.0	0.00	0.00	6,240.3	-539.2	-581.6	793.1	0.00	0.00	0.00
6,360.0	0.00	0.00	6,280.3	-539.2	-581.6	793.1	0.00	0.00	0.00
6,400.0	0.00	0.00	6,320.3	-539.2	-581.6	793.1	0.00	0.00	0.00
6,440.0	0.00	0.00	6,360.3	-539.2	-581.6	793.1	0.00	0.00	0.00
6,480.0	0.00	0.00	6,400.3	-539.2	-581.6	793.1	0.00	0.00	0.00
6,520.0	0.00	0.00	6,440.3	-539.2	-581.6	793.1	0.00	0.00	0.00
6,560.0	0.00	0.00	6,480.3	-539.2	-581.6	793.1	0.00	0.00	0.00
6,600.0	0.00	0.00	6,520.3	-539.2	-581.6	793.1	0.00	0.00	0.00
6,640.0	0.00	0.00	6,560.3	-539.2	-581.6	793.1	0.00	0.00	0.00
6,666.7	0.00	0.00	6,587.0	-539.2	-581.6	793.1	0.00	0.00	0.00
<b>NIOBRARA - LEGAL BOX 800' X 800' 1350'FNL &amp; 1319'FEL - TARGET CIRCLE 1250'FNL &amp; 1220'FEL</b>									
6,680.0	0.00	0.00	6,600.3	-539.2	-581.6	793.1	0.00	0.00	0.00
6,720.0	0.00	0.00	6,640.3	-539.2	-581.6	793.1	0.00	0.00	0.00
6,760.0	0.00	0.00	6,680.3	-539.2	-581.6	793.1	0.00	0.00	0.00
6,800.0	0.00	0.00	6,720.3	-539.2	-581.6	793.1	0.00	0.00	0.00
6,840.0	0.00	0.00	6,760.3	-539.2	-581.6	793.1	0.00	0.00	0.00
6,880.0	0.00	0.00	6,800.3	-539.2	-581.6	793.1	0.00	0.00	0.00
6,920.0	0.00	0.00	6,840.3	-539.2	-581.6	793.1	0.00	0.00	0.00
6,960.0	0.00	0.00	6,880.3	-539.2	-581.6	793.1	0.00	0.00	0.00
6,976.7	0.00	0.00	6,897.0	-539.2	-581.6	793.1	0.00	0.00	0.00
<b>CODELL</b>									
7,000.0	0.00	0.00	6,920.3	-539.2	-581.6	793.1	0.00	0.00	0.00
7,040.0	0.00	0.00	6,960.3	-539.2	-581.6	793.1	0.00	0.00	0.00
7,080.0	0.00	0.00	7,000.3	-539.2	-581.6	793.1	0.00	0.00	0.00
7,120.0	0.00	0.00	7,040.3	-539.2	-581.6	793.1	0.00	0.00	0.00
7,126.7	0.00	0.00	7,047.0	-539.2	-581.6	793.1	0.00	0.00	0.00

#### Targets

Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
LEGAL BOX 800' X 800'	0.00	0.00	6,587.0	-639.2	-680.6	1,412,194.32	3,269,482.68	40° 27' 39.008 N	104° 31' 53.493 W
- hit/miss target									
- Shape									
- plan misses target center by 140.7ft at 6666.7ft MD (6587.0 TVD, -539.2 N, -581.6 E)									
- Rectangle (sides W800.0 H800.0 D460.0)									
TARGET CIRCLE 1250'FNL	0.00	0.00	6,587.0	-539.2	-581.6	1,412,295.41	3,269,580.59	40° 27' 39.996 N	104° 31' 52.212 W
- plan hits target center									
- Circle (radius 75.0)									
TARGET BHL 1250'F	0.00	0.00	5,000.0	-539.2	-581.6	1,412,295.41	3,269,580.59	40° 27' 39.996 N	104° 31' 52.212 W
- plan hits target center									
- Point									

#### Casing Points

Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")
500.0	500.0	8 5/8"	8-5/8	12-1/4

**Database:** Landmark  
**Company:** NOBLE ENERGY INC WELD COUNTY CO  
**Project:** SEC.27-T6N-R64W  
**Site:** Howard A27-17D Pad Sec.27-T6N-R64W  
**Well:** Howard A27-17D  
**Wellbore:** Wellbore #1  
**Design:** Noble Howard A27-17D Plan #1 (12-23-10)

**Local Co-ordinate Reference:** Well Howard A27-17D  
**TVD Reference:** WELL @ 4710.0ft (Original Well Elev)  
**MD Reference:** WELL @ 4710.0ft (Original Well Elev)  
**North Reference:** True  
**Survey Calculation Method:** Minimum Curvature

Formations

Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
6,666.7	6,587.0	NIOBRARA		0.00	
6,976.7	6,897.0	CODELL		0.00	