

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	750.0	0.00	0.00	750.0	0.0	0.0	0.00	0.00	0.0	
3	2075.4	26.51	108.63	2028.6	-96.2	285.4	2.00	108.63	301.2	
4	5196.3	26.51	108.63	4821.4	-541.2	1605.3	0.00	0.00	1694.0	
5	6521.6	0.00	0.00	6100.0	-637.5	1890.6	2.00	180.00	1995.2	TARGET BHL 75'FNL, 2550'FWL
6	7449.6	0.00	0.00	7028.0	-637.5	1890.6	0.00	0.00	1995.2	



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

**SEC.9-T4N-R64W**

**Alter C16-29D Pad Sec.9-T4N-R64W**

**Alter C16-28D**

**Wellbore #1**

**Plan: Noble Alter C16-28D Plan #1 (8-04-11)**

## **Standard Planning Report**

**18 August, 2011**



**Database:** Landmark  
**Company:** NOBLE ENERGY INC WELD COUNTY CO  
**Project:** SEC.9-T4N-R64W  
**Site:** Alter C16-29D Pad Sec.9-T4N-R64W  
**Well:** Alter C16-28D  
**Wellbore:** Wellbore #1  
**Design:** Noble Alter C16-28D Plan #1 (8-04-11)

**Local Co-ordinate Reference:** Well Alter C16-28D  
**TVD Reference:** WELL @ 4713.0ft (Original Well Elev)  
**MD Reference:** WELL @ 4713.0ft (Original Well Elev)  
**North Reference:** True  
**Survey Calculation Method:** Minimum Curvature

<b>Project</b>	SEC.9-T4N-R64W, Weld County, Colorado		
<b>Map System:</b>	US State Plane 1983	<b>System Datum:</b>	Mean Sea Level
<b>Geo Datum:</b>	North American Datum 1983		Using Well Reference Point
<b>Map Zone:</b>	Colorado Northern Zone		Using geodetic scale factor

Site	Alter C16-29D Pad Sec.9-T4N-R64W				
Site Position:		Northing:	1,361,209.77 ft	Latitude:	40.321130
From:	Lat/Long	Easting:	3,261,346.59ft	Longitude:	-104.562700
Position Uncertainty:	0.0 ft	Slot Radius:	"	Grid Convergence:	0.61 °

Well	Alter C16-28D					
Well Position	+N/-S	21.8 ft	Northing:	1,361,231.62 ft	Latitude:	40.321190
	+E/-W	0.0 ft	Easting:	3,261,346.36 ft	Longitude:	-104.562700
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	4,700.0 ft

<b>Wellbore</b>	Wellbore #1				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	IGRF2010	8/4/2011	8.73	67.02	53,098

<b>Design</b>	Noble Alter C16-28D Plan #1 (8-04-11)				
<b>Audit Notes:</b>					
<b>Version:</b>	<b>Phase:</b>	PROTOTYPE	<b>Tie On Depth:</b>	0.0	
<b>Vertical Section:</b>	<b>Depth From (TVD)</b>	<b>+N/-S (ft)</b>	<b>+E/-W (ft)</b>	<b>Direction (°)</b>	
	0.0	0.0	0.0	108.63	

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	
750.0	0.00	0.00	750.0	0.0	0.0	0.00	0.00	0.00	0.00	
2,075.4	26.51	108.63	2,028.6	-96.2	285.4	2.00	2.00	0.00	108.63	
5,196.3	26.51	108.63	4,821.4	-541.2	1,605.3	0.00	0.00	0.00	0.00	
6,521.6	0.00	0.00	6,100.0	-637.5	1,890.6	2.00	-2.00	0.00	180.00	TARGET BHL 75°FI
7,449.6	0.00	0.00	7,028.0	-637.5	1,890.6	0.00	0.00	0.00	0.00	

**Database:** Landmark  
**Company:** NOBLE ENERGY INC WELD COUNTY CO  
**Project:** SEC.9-T4N-R64W  
**Site:** Alter C16-29D Pad Sec.9-T4N-R64W  
**Well:** Alter C16-28D  
**Wellbore:** Wellbore #1  
**Design:** Noble Alter C16-28D Plan #1 (8-04-11)

**Local Co-ordinate Reference:** Well Alter C16-28D  
**TVD Reference:** WELL @ 4713.0ft (Original Well Elev)  
**MD Reference:** WELL @ 4713.0ft (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
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
650.0	0.00	0.00	650.0	0.0	0.0	0.0	0.00	0.00	0.00
8 5/8"									
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
750.0	0.00	0.00	750.0	0.0	0.0	0.0	0.00	0.00	0.00
760.0	0.20	108.63	760.0	0.0	0.0	0.0	2.00	2.00	0.00
800.0	1.00	108.63	800.0	-0.1	0.4	0.4	2.00	2.00	0.00
840.0	1.80	108.63	840.0	-0.5	1.3	1.4	2.00	2.00	0.00
880.0	2.60	108.63	880.0	-0.9	2.8	2.9	2.00	2.00	0.00
920.0	3.40	108.63	919.9	-1.6	4.8	5.0	2.00	2.00	0.00
960.0	4.20	108.63	959.8	-2.5	7.3	7.7	2.00	2.00	0.00
1,000.0	5.00	108.63	999.7	-3.5	10.3	10.9	2.00	2.00	0.00
1,040.0	5.80	108.63	1,039.5	-4.7	13.9	14.7	2.00	2.00	0.00
1,080.0	6.60	108.63	1,079.3	-6.1	18.0	19.0	2.00	2.00	0.00
1,120.0	7.40	108.63	1,119.0	-7.6	22.6	23.9	2.00	2.00	0.00
1,160.0	8.20	108.63	1,158.6	-9.4	27.8	29.3	2.00	2.00	0.00
1,200.0	9.00	108.63	1,198.2	-11.3	33.4	35.3	2.00	2.00	0.00
1,240.0	9.80	108.63	1,237.6	-13.4	39.6	41.8	2.00	2.00	0.00
1,280.0	10.60	108.63	1,277.0	-15.6	46.3	48.9	2.00	2.00	0.00
1,320.0	11.40	108.63	1,316.2	-18.1	53.6	56.5	2.00	2.00	0.00
1,360.0	12.20	108.63	1,355.4	-20.7	61.3	64.7	2.00	2.00	0.00
1,400.0	13.00	108.63	1,394.4	-23.5	69.6	73.4	2.00	2.00	0.00
1,440.0	13.80	108.63	1,433.3	-26.4	78.4	82.7	2.00	2.00	0.00
1,480.0	14.60	108.63	1,472.1	-29.6	87.7	92.5	2.00	2.00	0.00
1,520.0	15.40	108.63	1,510.8	-32.9	97.5	102.9	2.00	2.00	0.00
1,560.0	16.20	108.63	1,549.3	-36.3	107.8	113.7	2.00	2.00	0.00
1,600.0	17.00	108.63	1,587.6	-40.0	118.6	125.2	2.00	2.00	0.00
1,640.0	17.80	108.63	1,625.8	-43.8	130.0	137.1	2.00	2.00	0.00
1,680.0	18.60	108.63	1,663.8	-47.8	141.8	149.6	2.00	2.00	0.00
1,720.0	19.40	108.63	1,701.6	-52.0	154.1	162.7	2.00	2.00	0.00
1,760.0	20.20	108.63	1,739.2	-56.3	167.0	176.2	2.00	2.00	0.00
1,800.0	21.00	108.63	1,776.6	-60.8	180.3	190.3	2.00	2.00	0.00
1,840.0	21.80	108.63	1,813.9	-65.5	194.1	204.9	2.00	2.00	0.00
1,880.0	22.60	108.63	1,850.9	-70.3	208.5	220.0	2.00	2.00	0.00
1,920.0	23.40	108.63	1,887.7	-75.3	223.3	235.6	2.00	2.00	0.00
1,960.0	24.20	108.63	1,924.3	-80.4	238.6	251.8	2.00	2.00	0.00
2,000.0	25.00	108.63	1,960.7	-85.8	254.3	268.4	2.00	2.00	0.00

**Database:** Landmark  
**Company:** NOBLE ENERGY INC WELD COUNTY CO  
**Project:** SEC.9-T4N-R64W  
**Site:** Alter C16-29D Pad Sec.9-T4N-R64W  
**Well:** Alter C16-28D  
**Wellbore:** Wellbore #1  
**Design:** Noble Alter C16-28D Plan #1 (8-04-11)

**Local Co-ordinate Reference:** Well Alter C16-28D  
**TVD Reference:** WELL @ 4713.0ft (Original Well Elev)  
**MD Reference:** WELL @ 4713.0ft (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)
2,040.0	25.80	108.63	1,996.8	-91.2	270.6	285.6	2.00	2.00	0.00
2,075.4	26.51	108.63	2,028.6	-96.2	285.4	301.2	2.00	2.00	0.00
2,080.0	26.51	108.63	2,032.7	-96.9	287.3	303.2	0.00	0.00	0.00
2,120.0	26.51	108.63	2,068.5	-102.6	304.2	321.1	0.00	0.00	0.00
2,160.0	26.51	108.63	2,104.3	-108.3	321.2	338.9	0.00	0.00	0.00
2,200.0	26.51	108.63	2,140.1	-114.0	338.1	356.8	0.00	0.00	0.00
2,240.0	26.51	108.63	2,175.9	-119.7	355.0	374.6	0.00	0.00	0.00
2,280.0	26.51	108.63	2,211.7	-125.4	371.9	392.5	0.00	0.00	0.00
2,320.0	26.51	108.63	2,247.5	-131.1	388.8	410.3	0.00	0.00	0.00
2,360.0	26.51	108.63	2,283.3	-136.8	405.7	428.2	0.00	0.00	0.00
2,400.0	26.51	108.63	2,319.1	-142.5	422.7	446.0	0.00	0.00	0.00
2,440.0	26.51	108.63	2,354.9	-148.2	439.6	463.9	0.00	0.00	0.00
2,480.0	26.51	108.63	2,390.7	-153.9	456.5	481.7	0.00	0.00	0.00
2,520.0	26.51	108.63	2,426.5	-159.6	473.4	499.6	0.00	0.00	0.00
2,560.0	26.51	108.63	2,462.3	-165.3	490.3	517.5	0.00	0.00	0.00
2,600.0	26.51	108.63	2,498.1	-171.0	507.2	535.3	0.00	0.00	0.00
2,640.0	26.51	108.63	2,533.9	-176.7	524.2	553.2	0.00	0.00	0.00
2,680.0	26.51	108.63	2,569.7	-182.4	541.1	571.0	0.00	0.00	0.00
2,720.0	26.51	108.63	2,605.5	-188.1	558.0	588.9	0.00	0.00	0.00
2,760.0	26.51	108.63	2,641.3	-193.8	574.9	606.7	0.00	0.00	0.00
2,800.0	26.51	108.63	2,677.0	-199.5	591.8	624.6	0.00	0.00	0.00
2,840.0	26.51	108.63	2,712.8	-205.2	608.7	642.4	0.00	0.00	0.00
2,880.0	26.51	108.63	2,748.6	-211.0	625.7	660.3	0.00	0.00	0.00
2,920.0	26.51	108.63	2,784.4	-216.7	642.6	678.1	0.00	0.00	0.00
2,960.0	26.51	108.63	2,820.2	-222.4	659.5	696.0	0.00	0.00	0.00
3,000.0	26.51	108.63	2,856.0	-228.1	676.4	713.8	0.00	0.00	0.00
3,040.0	26.51	108.63	2,891.8	-233.8	693.3	731.7	0.00	0.00	0.00
3,080.0	26.51	108.63	2,927.6	-239.5	710.2	749.5	0.00	0.00	0.00
3,120.0	26.51	108.63	2,963.4	-245.2	727.2	767.4	0.00	0.00	0.00
3,160.0	26.51	108.63	2,999.2	-250.9	744.1	785.2	0.00	0.00	0.00
3,200.0	26.51	108.63	3,035.0	-256.6	761.0	803.1	0.00	0.00	0.00
3,240.0	26.51	108.63	3,070.8	-262.3	777.9	820.9	0.00	0.00	0.00
3,280.0	26.51	108.63	3,106.6	-268.0	794.8	838.8	0.00	0.00	0.00
3,320.0	26.51	108.63	3,142.4	-273.7	811.8	856.6	0.00	0.00	0.00
3,360.0	26.51	108.63	3,178.2	-279.4	828.7	874.5	0.00	0.00	0.00
3,400.0	26.51	108.63	3,214.0	-285.1	845.6	892.4	0.00	0.00	0.00
3,440.0	26.51	108.63	3,249.8	-290.8	862.5	910.2	0.00	0.00	0.00
3,480.0	26.51	108.63	3,285.6	-296.5	879.4	928.1	0.00	0.00	0.00
3,520.0	26.51	108.63	3,321.4	-302.2	896.3	945.9	0.00	0.00	0.00
3,560.0	26.51	108.63	3,357.2	-307.9	913.3	963.8	0.00	0.00	0.00
3,600.0	26.51	108.63	3,393.0	-313.6	930.2	981.6	0.00	0.00	0.00
3,640.0	26.51	108.63	3,428.7	-319.3	947.1	999.5	0.00	0.00	0.00
3,680.0	26.51	108.63	3,464.5	-325.0	964.0	1,017.3	0.00	0.00	0.00
3,720.0	26.51	108.63	3,500.3	-330.7	980.9	1,035.2	0.00	0.00	0.00
3,760.0	26.51	108.63	3,536.1	-336.4	997.8	1,053.0	0.00	0.00	0.00
3,800.0	26.51	108.63	3,571.9	-342.1	1,014.8	1,070.9	0.00	0.00	0.00
3,840.0	26.51	108.63	3,607.7	-347.8	1,031.7	1,088.7	0.00	0.00	0.00
3,880.0	26.51	108.63	3,643.5	-353.5	1,048.6	1,106.6	0.00	0.00	0.00
3,920.0	26.51	108.63	3,679.3	-359.2	1,065.5	1,124.4	0.00	0.00	0.00
3,960.0	26.51	108.63	3,715.1	-365.0	1,082.4	1,142.3	0.00	0.00	0.00
4,000.0	26.51	108.63	3,750.9	-370.7	1,099.3	1,160.1	0.00	0.00	0.00
4,040.0	26.51	108.63	3,786.7	-376.4	1,116.3	1,178.0	0.00	0.00	0.00
4,080.0	26.51	108.63	3,822.5	-382.1	1,133.2	1,195.8	0.00	0.00	0.00
4,120.0	26.51	108.63	3,858.3	-387.8	1,150.1	1,213.7	0.00	0.00	0.00

**Database:** Landmark  
**Company:** NOBLE ENERGY INC WELD COUNTY CO  
**Project:** SEC.9-T4N-R64W  
**Site:** Alter C16-29D Pad Sec.9-T4N-R64W  
**Well:** Alter C16-28D  
**Wellbore:** Wellbore #1  
**Design:** Noble Alter C16-28D Plan #1 (8-04-11)

**Local Co-ordinate Reference:** Well Alter C16-28D  
**TVD Reference:** WELL @ 4713.0ft (Original Well Elev)  
**MD Reference:** WELL @ 4713.0ft (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)
4,160.0	26.51	108.63	3,894.1	-393.5	1,167.0	1,231.6	0.00	0.00	0.00
4,200.0	26.51	108.63	3,929.9	-399.2	1,183.9	1,249.4	0.00	0.00	0.00
4,240.0	26.51	108.63	3,965.7	-404.9	1,200.8	1,267.3	0.00	0.00	0.00
4,280.0	26.51	108.63	4,001.5	-410.6	1,217.8	1,285.1	0.00	0.00	0.00
4,320.0	26.51	108.63	4,037.3	-416.3	1,234.7	1,303.0	0.00	0.00	0.00
4,360.0	26.51	108.63	4,073.1	-422.0	1,251.6	1,320.8	0.00	0.00	0.00
4,400.0	26.51	108.63	4,108.9	-427.7	1,268.5	1,338.7	0.00	0.00	0.00
4,440.0	26.51	108.63	4,144.6	-433.4	1,285.4	1,356.5	0.00	0.00	0.00
4,480.0	26.51	108.63	4,180.4	-439.1	1,302.3	1,374.4	0.00	0.00	0.00
4,520.0	26.51	108.63	4,216.2	-444.8	1,319.3	1,392.2	0.00	0.00	0.00
4,560.0	26.51	108.63	4,252.0	-450.5	1,336.2	1,410.1	0.00	0.00	0.00
4,600.0	26.51	108.63	4,287.8	-456.2	1,353.1	1,427.9	0.00	0.00	0.00
4,640.0	26.51	108.63	4,323.6	-461.9	1,370.0	1,445.8	0.00	0.00	0.00
4,680.0	26.51	108.63	4,359.4	-467.6	1,386.9	1,463.6	0.00	0.00	0.00
4,720.0	26.51	108.63	4,395.2	-473.3	1,403.8	1,481.5	0.00	0.00	0.00
4,760.0	26.51	108.63	4,431.0	-479.0	1,420.8	1,499.3	0.00	0.00	0.00
4,800.0	26.51	108.63	4,466.8	-484.7	1,437.7	1,517.2	0.00	0.00	0.00
4,840.0	26.51	108.63	4,502.6	-490.4	1,454.6	1,535.0	0.00	0.00	0.00
4,880.0	26.51	108.63	4,538.4	-496.1	1,471.5	1,552.9	0.00	0.00	0.00
4,920.0	26.51	108.63	4,574.2	-501.8	1,488.4	1,570.7	0.00	0.00	0.00
4,960.0	26.51	108.63	4,610.0	-507.5	1,505.3	1,588.6	0.00	0.00	0.00
5,000.0	26.51	108.63	4,645.8	-513.3	1,522.3	1,606.5	0.00	0.00	0.00
5,040.0	26.51	108.63	4,681.6	-519.0	1,539.2	1,624.3	0.00	0.00	0.00
5,080.0	26.51	108.63	4,717.4	-524.7	1,556.1	1,642.2	0.00	0.00	0.00
5,120.0	26.51	108.63	4,753.2	-530.4	1,573.0	1,660.0	0.00	0.00	0.00
5,160.0	26.51	108.63	4,789.0	-536.1	1,589.9	1,677.9	0.00	0.00	0.00
5,196.3	26.51	108.63	4,821.4	-541.2	1,605.3	1,694.0	0.00	0.00	0.00
5,200.0	26.43	108.63	4,824.8	-541.8	1,606.8	1,695.7	2.00	-2.00	0.00
5,240.0	25.63	108.63	4,860.7	-547.4	1,623.5	1,713.3	2.00	-2.00	0.00
5,280.0	24.83	108.63	4,896.9	-552.8	1,639.6	1,730.3	2.00	-2.00	0.00
5,320.0	24.03	108.63	4,933.3	-558.1	1,655.3	1,746.9	2.00	-2.00	0.00
5,360.0	23.23	108.63	4,969.9	-563.2	1,670.5	1,762.9	2.00	-2.00	0.00
5,400.0	22.43	108.63	5,006.8	-568.2	1,685.2	1,778.4	2.00	-2.00	0.00
5,440.0	21.63	108.63	5,043.9	-573.0	1,699.4	1,793.4	2.00	-2.00	0.00
5,480.0	20.83	108.63	5,081.2	-577.6	1,713.2	1,807.9	2.00	-2.00	0.00
5,520.0	20.03	108.63	5,118.7	-582.1	1,726.4	1,821.9	2.00	-2.00	0.00
5,560.0	19.23	108.63	5,156.3	-586.4	1,739.1	1,835.3	2.00	-2.00	0.00
5,600.0	18.43	108.63	5,194.2	-590.5	1,751.4	1,848.2	2.00	-2.00	0.00
5,640.0	17.63	108.63	5,232.2	-594.5	1,763.1	1,860.6	2.00	-2.00	0.00
5,680.0	16.83	108.63	5,270.4	-598.2	1,774.3	1,872.5	2.00	-2.00	0.00
5,720.0	16.03	108.63	5,308.8	-601.9	1,785.0	1,883.8	2.00	-2.00	0.00
5,760.0	15.23	108.63	5,347.3	-605.3	1,795.3	1,894.6	2.00	-2.00	0.00
5,800.0	14.43	108.63	5,386.0	-608.6	1,805.0	1,904.8	2.00	-2.00	0.00
5,840.0	13.63	108.63	5,424.8	-611.7	1,814.1	1,914.5	2.00	-2.00	0.00
5,880.0	12.83	108.63	5,463.7	-614.6	1,822.8	1,923.6	2.00	-2.00	0.00
5,920.0	12.03	108.63	5,502.8	-617.3	1,831.0	1,932.3	2.00	-2.00	0.00
5,960.0	11.23	108.63	5,542.0	-619.9	1,838.6	1,940.3	2.00	-2.00	0.00
6,000.0	10.43	108.63	5,581.3	-622.3	1,845.8	1,947.8	2.00	-2.00	0.00
6,040.0	9.63	108.63	5,620.6	-624.5	1,852.4	1,954.8	2.00	-2.00	0.00
6,080.0	8.83	108.63	5,660.1	-626.6	1,858.4	1,961.2	2.00	-2.00	0.00
6,120.0	8.03	108.63	5,699.7	-628.5	1,864.0	1,967.1	2.00	-2.00	0.00
6,160.0	7.23	108.63	5,739.3	-630.2	1,869.0	1,972.4	2.00	-2.00	0.00
6,200.0	6.43	108.63	5,779.0	-631.7	1,873.5	1,977.2	2.00	-2.00	0.00
6,240.0	5.63	108.63	5,818.8	-633.0	1,877.5	1,981.4	2.00	-2.00	0.00

**Database:** Landmark  
**Company:** NOBLE ENERGY INC WELD COUNTY CO  
**Project:** SEC.9-T4N-R64W  
**Site:** Alter C16-29D Pad Sec.9-T4N-R64W  
**Well:** Alter C16-28D  
**Wellbore:** Wellbore #1  
**Design:** Noble Alter C16-28D Plan #1 (8-04-11)

**Local Co-ordinate Reference:** Well Alter C16-28D  
**TVD Reference:** WELL @ 4713.0ft (Original Well Elev)  
**MD Reference:** WELL @ 4713.0ft (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)
6,280.0	4.83	108.63	5,858.7	-634.2	1,881.0	1,985.0	2.00	-2.00	0.00
6,320.0	4.03	108.63	5,898.5	-635.2	1,883.9	1,988.1	2.00	-2.00	0.00
6,360.0	3.23	108.63	5,938.5	-636.0	1,886.3	1,990.6	2.00	-2.00	0.00
6,400.0	2.43	108.63	5,978.4	-636.6	1,888.2	1,992.6	2.00	-2.00	0.00
6,440.0	1.63	108.63	6,018.4	-637.1	1,889.5	1,994.0	2.00	-2.00	0.00
6,480.0	0.83	108.63	6,058.4	-637.4	1,890.3	1,994.9	2.00	-2.00	0.00
6,520.0	0.03	108.63	6,098.4	-637.5	1,890.6	1,995.2	2.00	-2.00	0.00
6,521.6	0.00	0.00	6,100.0	-637.5	1,890.6	1,995.2	2.00	-2.00	-6,674.90
<b>TARGET BHL 75'FNL, 2550'FWL</b>									
6,560.0	0.00	0.00	6,138.4	-637.5	1,890.6	1,995.2	0.00	0.00	0.00
6,600.0	0.00	0.00	6,178.4	-637.5	1,890.6	1,995.2	0.00	0.00	0.00
6,640.0	0.00	0.00	6,218.4	-637.5	1,890.6	1,995.2	0.00	0.00	0.00
6,680.0	0.00	0.00	6,258.4	-637.5	1,890.6	1,995.2	0.00	0.00	0.00
6,720.0	0.00	0.00	6,298.4	-637.5	1,890.6	1,995.2	0.00	0.00	0.00
6,760.0	0.00	0.00	6,338.4	-637.5	1,890.6	1,995.2	0.00	0.00	0.00
6,800.0	0.00	0.00	6,378.4	-637.5	1,890.6	1,995.2	0.00	0.00	0.00
6,840.0	0.00	0.00	6,418.4	-637.5	1,890.6	1,995.2	0.00	0.00	0.00
6,880.0	0.00	0.00	6,458.4	-637.5	1,890.6	1,995.2	0.00	0.00	0.00
6,920.0	0.00	0.00	6,498.4	-637.5	1,890.6	1,995.2	0.00	0.00	0.00
6,960.0	0.00	0.00	6,538.4	-637.5	1,890.6	1,995.2	0.00	0.00	0.00
7,000.0	0.00	0.00	6,578.4	-637.5	1,890.6	1,995.2	0.00	0.00	0.00
7,004.6	0.00	0.00	6,583.0	-637.5	1,890.6	1,995.2	0.00	0.00	0.00
<b>NIOBRARA - TARGET CIRCLE 75'FNL &amp; 2550'FWL</b>									
7,040.0	0.00	0.00	6,618.4	-637.5	1,890.6	1,995.2	0.00	0.00	0.00
7,080.0	0.00	0.00	6,658.4	-637.5	1,890.6	1,995.2	0.00	0.00	0.00
7,120.0	0.00	0.00	6,698.4	-637.5	1,890.6	1,995.2	0.00	0.00	0.00
7,160.0	0.00	0.00	6,738.4	-637.5	1,890.6	1,995.2	0.00	0.00	0.00
7,200.0	0.00	0.00	6,778.4	-637.5	1,890.6	1,995.2	0.00	0.00	0.00
7,240.0	0.00	0.00	6,818.4	-637.5	1,890.6	1,995.2	0.00	0.00	0.00
7,280.0	0.00	0.00	6,858.4	-637.5	1,890.6	1,995.2	0.00	0.00	0.00
7,299.6	0.00	0.00	6,878.0	-637.5	1,890.6	1,995.2	0.00	0.00	0.00
<b>CODELL</b>									
7,320.0	0.00	0.00	6,898.4	-637.5	1,890.6	1,995.2	0.00	0.00	0.00
7,360.0	0.00	0.00	6,938.4	-637.5	1,890.6	1,995.2	0.00	0.00	0.00
7,400.0	0.00	0.00	6,978.4	-637.5	1,890.6	1,995.2	0.00	0.00	0.00
7,440.0	0.00	0.00	7,018.4	-637.5	1,890.6	1,995.2	0.00	0.00	0.00
7,449.6	0.00	0.00	7,028.0	-637.5	1,890.6	1,995.2	0.00	0.00	0.00
<b>HARD LINES 75'N &amp; 90'E OF BHL</b>									

**Database:** Landmark  
**Company:** NOBLE ENERGY INC WELD COUNTY CO  
**Project:** SEC.9-T4N-R64W  
**Site:** Alter C16-29D Pad Sec.9-T4N-R64W  
**Well:** Alter C16-28D  
**Wellbore:** Wellbore #1  
**Design:** Noble Alter C16-28D Plan #1 (8-04-11)

**Local Co-ordinate Reference:** Well Alter C16-28D  
**TVD Reference:** WELL @ 4713.0ft (Original Well Elev)  
**MD Reference:** WELL @ 4713.0ft (Original Well Elev)  
**North Reference:** True  
**Survey Calculation Method:** Minimum Curvature

#### 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 75'N & ! - plan misses target center by 117.1ft at 7449.6ft MD (7028.0 TVD, -637.5 N, 1890.6 E) - Polygon	0.00	0.00	7,028.0	-562.5	1,980.6	1,360,690.11	3,263,332.70	40.319646	-104.555597
Point 1			7,028.0	0.0	0.0	1,360,690.11	3,263,332.70		
Point 2			7,028.0	0.0	-200.0	1,360,688.00	3,263,132.72		
Point 3			7,028.0	0.0	0.0	1,360,690.11	3,263,332.70		
Point 4			7,028.0	-200.0	0.0	1,360,490.13	3,263,334.82		
TARGET CIRCLE 75' - plan hits target center - Circle (radius 75.0)	0.00	0.00	6,583.0	-637.5	1,890.6	1,360,614.21	3,263,243.53	40.319440	-104.555920
TARGET BHL 75'FNL - plan hits target center - Point	0.00	0.00	6,100.0	-637.5	1,890.6	1,360,614.21	3,263,243.53	40.319440	-104.555920

#### Casing Points

Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")
650.0	650.0	8 5/8"	8-5/8	12-1/4

#### Formations

Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
7,004.6	6,583.0	NIOBRARA		0.00	
7,299.6	6,878.0	CODELL		0.00	