

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	800.0	0.00	0.00	800.0	0.0	0.0	0.00	0.00	0.0	
3	1689.7	17.79	0.17	1675.5	137.1	0.4	2.00	0.17	137.1	
4	4997.0	17.79	0.17	4824.5	1147.8	3.5	0.00	0.00	1147.8	
5	5886.7	0.00	0.00	5700.0	1284.8	3.9	2.00	180.00	1284.8	TARGET BHL 2550'FNL, 2550'FWL
6	7162.7	0.00	0.00	6976.0	1284.8	3.9	0.00	0.00	1284.8	



## **Directional**

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

**SEC.22-T4N-R64W**

**Coleman C22-21D Pad Sec.22-T4N-R64W**

**Coleman C22-21D**

**Wellbore #1**

**Plan: Noble Coleman C22-21D Plan #1 (05-06-10)**

## **Standard Planning Report**

**06 May, 2010**





**Database:** EDM den0-adp01 Server Data  
**Company:** NOBLE ENERGY INC WELD COUNTY CO  
**Project:** SEC.22-T4N-R64W  
**Site:** Coleman C22-21D Pad Sec.22-T4N-R64W  
**Well:** Coleman C22-21D  
**Wellbore:** Wellbore #1  
**Design:** Noble Coleman C22-21D Plan #1 (05-06-10)

**Local Co-ordinate Reference:** Well Coleman C22-21D  
**TVD Reference:** WELL @ 4681.0ft (Original Well Elev)  
**MD Reference:** WELL @ 4681.0ft (Original Well Elev)  
**North Reference:** True  
**Survey Calculation Method:** Minimum Curvature

<b>Project</b>	SEC.22-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		
<b>Map Zone:</b>	Colorado Northern Zone		Using geodetic scale factor

Site		Coleman C22-21D Pad Sec.22-T4N-R64W			
Site Position:		Northing:	1,351,643.73 ft	Latitude:	40° 17' 40.776 N
From:	Lat/Long	Easting:	3,268,558.36 ft	Longitude:	104° 32' 13.956 W
Position Uncertainty:	0.0 ft	Slot Radius:	"	Grid Convergence:	0.62 °

Well	Coleman C22-21D					
Well Position	+N/-S	0.0 ft	Northing:	1,351,643.72 ft	Latitude:	40° 17' 40.776 N
	+E/-W	0.0 ft	Easting:	3,268,558.36 ft	Longitude:	104° 32' 13.956 W
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	4,668.0 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	5/6/2010	8.88	67.04	53,219

<b>Design</b>	Noble Coleman C22-21D Plan #1 (05-06-10)			
<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</b>	<b>+E/-W</b>	<b>Direction</b>
	(ft)	(ft)	(ft)	(°)
	0.0	0.0	0.0	0.17

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	
800.0	0.00	0.00	800.0	0.0	0.0	0.00	0.00	0.00	0.00	
1,689.7	17.79	0.17	1,675.5	137.1	0.4	2.00	2.00	0.00	0.17	
4,997.0	17.79	0.17	4,824.5	1,147.8	3.5	0.00	0.00	0.00	0.00	
5,886.7	0.00	0.00	5,700.0	1,284.8	3.9	2.00	-2.00	0.00	180.00	TARGET BHL 255C
7,162.7	0.00	0.00	6,976.0	1,284.8	3.9	0.00	0.00	0.00	0.00	

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Wellbore: Wellbore #1  
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Local Co-ordinate Reference: Well Coleman C22-21D  
TVD Reference: WELL @ 4681.0ft (Original Well Elev)  
MD Reference: WELL @ 4681.0ft (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
550.0	0.00	0.00	550.0	0.0	0.0	0.0	0.00	0.00	0.00
8 5/8"									
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	0.80	0.17	840.0	0.3	0.0	0.3	2.00	2.00	0.00
880.0	1.60	0.17	880.0	1.1	0.0	1.1	2.00	2.00	0.00
920.0	2.40	0.17	920.0	2.5	0.0	2.5	2.00	2.00	0.00
960.0	3.20	0.17	959.9	4.5	0.0	4.5	2.00	2.00	0.00
1,000.0	4.00	0.17	999.8	7.0	0.0	7.0	2.00	2.00	0.00
1,040.0	4.80	0.17	1,039.7	10.0	0.0	10.0	2.00	2.00	0.00
1,080.0	5.60	0.17	1,079.6	13.7	0.0	13.7	2.00	2.00	0.00
1,120.0	6.40	0.17	1,119.3	17.9	0.1	17.9	2.00	2.00	0.00
1,160.0	7.20	0.17	1,159.1	22.6	0.1	22.6	2.00	2.00	0.00
1,200.0	8.00	0.17	1,198.7	27.9	0.1	27.9	2.00	2.00	0.00
1,240.0	8.80	0.17	1,238.3	33.7	0.1	33.7	2.00	2.00	0.00
1,280.0	9.60	0.17	1,277.8	40.1	0.1	40.1	2.00	2.00	0.00
1,320.0	10.40	0.17	1,317.1	47.1	0.1	47.1	2.00	2.00	0.00
1,360.0	11.20	0.17	1,356.4	54.6	0.2	54.6	2.00	2.00	0.00
1,400.0	12.00	0.17	1,395.6	62.6	0.2	62.6	2.00	2.00	0.00
1,440.0	12.80	0.17	1,434.7	71.2	0.2	71.2	2.00	2.00	0.00
1,480.0	13.60	0.17	1,473.6	80.3	0.2	80.3	2.00	2.00	0.00
1,520.0	14.40	0.17	1,512.4	90.0	0.3	90.0	2.00	2.00	0.00
1,560.0	15.20	0.17	1,551.1	100.2	0.3	100.2	2.00	2.00	0.00
1,600.0	16.00	0.17	1,589.6	111.0	0.3	111.0	2.00	2.00	0.00
1,640.0	16.80	0.17	1,628.0	122.3	0.4	122.3	2.00	2.00	0.00
1,680.0	17.60	0.17	1,666.2	134.1	0.4	134.1	2.00	2.00	0.00
1,689.7	17.79	0.17	1,675.5	137.1	0.4	137.1	2.00	2.00	0.00
1,720.0	17.79	0.17	1,704.3	146.3	0.4	146.3	0.00	0.00	0.00
1,760.0	17.79	0.17	1,742.4	158.5	0.5	158.5	0.00	0.00	0.00
1,800.0	17.79	0.17	1,780.5	170.8	0.5	170.8	0.00	0.00	0.00
1,840.0	17.79	0.17	1,818.6	183.0	0.6	183.0	0.00	0.00	0.00
1,880.0	17.79	0.17	1,856.7	195.2	0.6	195.2	0.00	0.00	0.00
1,920.0	17.79	0.17	1,894.7	207.4	0.6	207.4	0.00	0.00	0.00
1,960.0	17.79	0.17	1,932.8	219.7	0.7	219.7	0.00	0.00	0.00
2,000.0	17.79	0.17	1,970.9	231.9	0.7	231.9	0.00	0.00	0.00



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MD Reference: WELL @ 4681.0ft (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	17.79	0.17	2,009.0	244.1	0.7	244.1	0.00	0.00	0.00
2,080.0	17.79	0.17	2,047.1	256.3	0.8	256.3	0.00	0.00	0.00
2,120.0	17.79	0.17	2,085.2	268.6	0.8	268.6	0.00	0.00	0.00
2,160.0	17.79	0.17	2,123.3	280.8	0.8	280.8	0.00	0.00	0.00
2,200.0	17.79	0.17	2,161.4	293.0	0.9	293.0	0.00	0.00	0.00
2,240.0	17.79	0.17	2,199.4	305.2	0.9	305.2	0.00	0.00	0.00
2,280.0	17.79	0.17	2,237.5	317.4	1.0	317.4	0.00	0.00	0.00
2,320.0	17.79	0.17	2,275.6	329.7	1.0	329.7	0.00	0.00	0.00
2,360.0	17.79	0.17	2,313.7	341.9	1.0	341.9	0.00	0.00	0.00
2,400.0	17.79	0.17	2,351.8	354.1	1.1	354.1	0.00	0.00	0.00
2,440.0	17.79	0.17	2,389.9	366.3	1.1	366.3	0.00	0.00	0.00
2,480.0	17.79	0.17	2,428.0	378.6	1.1	378.6	0.00	0.00	0.00
2,520.0	17.79	0.17	2,466.0	390.8	1.2	390.8	0.00	0.00	0.00
2,560.0	17.79	0.17	2,504.1	403.0	1.2	403.0	0.00	0.00	0.00
2,600.0	17.79	0.17	2,542.2	415.2	1.3	415.2	0.00	0.00	0.00
2,640.0	17.79	0.17	2,580.3	427.5	1.3	427.5	0.00	0.00	0.00
2,680.0	17.79	0.17	2,618.4	439.7	1.3	439.7	0.00	0.00	0.00
2,720.0	17.79	0.17	2,656.5	451.9	1.4	451.9	0.00	0.00	0.00
2,760.0	17.79	0.17	2,694.6	464.1	1.4	464.1	0.00	0.00	0.00
2,800.0	17.79	0.17	2,732.6	476.4	1.4	476.4	0.00	0.00	0.00
2,840.0	17.79	0.17	2,770.7	488.6	1.5	488.6	0.00	0.00	0.00
2,880.0	17.79	0.17	2,808.8	500.8	1.5	500.8	0.00	0.00	0.00
2,920.0	17.79	0.17	2,846.9	513.0	1.5	513.0	0.00	0.00	0.00
2,960.0	17.79	0.17	2,885.0	525.3	1.6	525.3	0.00	0.00	0.00
3,000.0	17.79	0.17	2,923.1	537.5	1.6	537.5	0.00	0.00	0.00
3,040.0	17.79	0.17	2,961.2	549.7	1.7	549.7	0.00	0.00	0.00
3,080.0	17.79	0.17	2,999.3	561.9	1.7	561.9	0.00	0.00	0.00
3,120.0	17.79	0.17	3,037.3	574.2	1.7	574.2	0.00	0.00	0.00
3,160.0	17.79	0.17	3,075.4	586.4	1.8	586.4	0.00	0.00	0.00
3,200.0	17.79	0.17	3,113.5	598.6	1.8	598.6	0.00	0.00	0.00
3,240.0	17.79	0.17	3,151.6	610.8	1.8	610.8	0.00	0.00	0.00
3,280.0	17.79	0.17	3,189.7	623.1	1.9	623.1	0.00	0.00	0.00
3,320.0	17.79	0.17	3,227.8	635.3	1.9	635.3	0.00	0.00	0.00
3,360.0	17.79	0.17	3,265.9	647.5	1.9	647.5	0.00	0.00	0.00
3,400.0	17.79	0.17	3,303.9	659.7	2.0	659.7	0.00	0.00	0.00
3,440.0	17.79	0.17	3,342.0	672.0	2.0	672.0	0.00	0.00	0.00
3,480.0	17.79	0.17	3,380.1	684.2	2.1	684.2	0.00	0.00	0.00
3,520.0	17.79	0.17	3,418.2	696.4	2.1	696.4	0.00	0.00	0.00
3,560.0	17.79	0.17	3,456.3	708.6	2.1	708.6	0.00	0.00	0.00
3,600.0	17.79	0.17	3,494.4	720.9	2.2	720.9	0.00	0.00	0.00
3,640.0	17.79	0.17	3,532.5	733.1	2.2	733.1	0.00	0.00	0.00
3,680.0	17.79	0.17	3,570.5	745.3	2.2	745.3	0.00	0.00	0.00
3,720.0	17.79	0.17	3,608.6	757.5	2.3	757.5	0.00	0.00	0.00
3,760.0	17.79	0.17	3,646.7	769.7	2.3	769.7	0.00	0.00	0.00
3,800.0	17.79	0.17	3,684.8	782.0	2.4	782.0	0.00	0.00	0.00
3,840.0	17.79	0.17	3,722.9	794.2	2.4	794.2	0.00	0.00	0.00
3,880.0	17.79	0.17	3,761.0	806.4	2.4	806.4	0.00	0.00	0.00
3,920.0	17.79	0.17	3,799.1	818.6	2.5	818.7	0.00	0.00	0.00
3,960.0	17.79	0.17	3,837.1	830.9	2.5	830.9	0.00	0.00	0.00
4,000.0	17.79	0.17	3,875.2	843.1	2.5	843.1	0.00	0.00	0.00
4,040.0	17.79	0.17	3,913.3	855.3	2.6	855.3	0.00	0.00	0.00
4,080.0	17.79	0.17	3,951.4	867.5	2.6	867.5	0.00	0.00	0.00
4,120.0	17.79	0.17	3,989.5	879.8	2.6	879.8	0.00	0.00	0.00
4,160.0	17.79	0.17	4,027.6	892.0	2.7	892.0	0.00	0.00	0.00

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MD Reference: WELL @ 4681.0ft (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)
4,200.0	17.79	0.17	4,065.7	904.2	2.7	904.2	0.00	0.00	0.00
4,240.0	17.79	0.17	4,103.8	916.4	2.8	916.4	0.00	0.00	0.00
4,280.0	17.79	0.17	4,141.8	928.7	2.8	928.7	0.00	0.00	0.00
4,320.0	17.79	0.17	4,179.9	940.9	2.8	940.9	0.00	0.00	0.00
4,360.0	17.79	0.17	4,218.0	953.1	2.9	953.1	0.00	0.00	0.00
4,400.0	17.79	0.17	4,256.1	965.3	2.9	965.3	0.00	0.00	0.00
4,440.0	17.79	0.17	4,294.2	977.6	2.9	977.6	0.00	0.00	0.00
4,480.0	17.79	0.17	4,332.3	989.8	3.0	989.8	0.00	0.00	0.00
4,520.0	17.79	0.17	4,370.4	1,002.0	3.0	1,002.0	0.00	0.00	0.00
4,560.0	17.79	0.17	4,408.4	1,014.2	3.1	1,014.2	0.00	0.00	0.00
4,600.0	17.79	0.17	4,446.5	1,026.5	3.1	1,026.5	0.00	0.00	0.00
4,640.0	17.79	0.17	4,484.6	1,038.7	3.1	1,038.7	0.00	0.00	0.00
4,680.0	17.79	0.17	4,522.7	1,050.9	3.2	1,050.9	0.00	0.00	0.00
4,720.0	17.79	0.17	4,560.8	1,063.1	3.2	1,063.1	0.00	0.00	0.00
4,760.0	17.79	0.17	4,598.9	1,075.4	3.2	1,075.4	0.00	0.00	0.00
4,800.0	17.79	0.17	4,637.0	1,087.6	3.3	1,087.6	0.00	0.00	0.00
4,840.0	17.79	0.17	4,675.0	1,099.8	3.3	1,099.8	0.00	0.00	0.00
4,880.0	17.79	0.17	4,713.1	1,112.0	3.3	1,112.0	0.00	0.00	0.00
4,920.0	17.79	0.17	4,751.2	1,124.3	3.4	1,124.3	0.00	0.00	0.00
4,960.0	17.79	0.17	4,789.3	1,136.5	3.4	1,136.5	0.00	0.00	0.00
4,997.0	17.79	0.17	4,824.5	1,147.8	3.5	1,147.8	0.00	0.00	0.00
5,000.0	17.73	0.17	4,827.4	1,148.7	3.5	1,148.7	2.00	-2.00	0.00
5,040.0	16.93	0.17	4,865.6	1,160.6	3.5	1,160.6	2.00	-2.00	0.00
5,080.0	16.13	0.17	4,903.9	1,172.0	3.5	1,172.0	2.00	-2.00	0.00
5,120.0	15.33	0.17	4,942.4	1,182.9	3.6	1,182.9	2.00	-2.00	0.00
5,160.0	14.53	0.17	4,981.1	1,193.2	3.6	1,193.2	2.00	-2.00	0.00
5,200.0	13.73	0.17	5,019.9	1,202.9	3.6	1,202.9	2.00	-2.00	0.00
5,240.0	12.93	0.17	5,058.8	1,212.2	3.6	1,212.2	2.00	-2.00	0.00
5,280.0	12.13	0.17	5,097.8	1,220.8	3.7	1,220.8	2.00	-2.00	0.00
5,320.0	11.33	0.17	5,137.0	1,229.0	3.7	1,229.0	2.00	-2.00	0.00
5,360.0	10.53	0.17	5,176.3	1,236.6	3.7	1,236.6	2.00	-2.00	0.00
5,400.0	9.73	0.17	5,215.6	1,243.6	3.7	1,243.6	2.00	-2.00	0.00
5,440.0	8.93	0.17	5,255.1	1,250.1	3.8	1,250.1	2.00	-2.00	0.00
5,480.0	8.13	0.17	5,294.7	1,256.0	3.8	1,256.0	2.00	-2.00	0.00
5,520.0	7.33	0.17	5,334.3	1,261.4	3.8	1,261.4	2.00	-2.00	0.00
5,560.0	6.53	0.17	5,374.0	1,266.2	3.8	1,266.2	2.00	-2.00	0.00
5,600.0	5.73	0.17	5,413.8	1,270.5	3.8	1,270.5	2.00	-2.00	0.00
5,640.0	4.93	0.17	5,453.6	1,274.2	3.8	1,274.2	2.00	-2.00	0.00
5,680.0	4.13	0.17	5,493.5	1,277.4	3.8	1,277.4	2.00	-2.00	0.00
5,720.0	3.33	0.17	5,533.4	1,280.0	3.9	1,280.0	2.00	-2.00	0.00
5,760.0	2.53	0.17	5,573.3	1,282.0	3.9	1,282.0	2.00	-2.00	0.00
5,800.0	1.73	0.17	5,613.3	1,283.5	3.9	1,283.5	2.00	-2.00	0.00
5,840.0	0.93	0.17	5,653.3	1,284.5	3.9	1,284.5	2.00	-2.00	0.00
5,880.0	0.13	0.17	5,693.3	1,284.8	3.9	1,284.8	2.00	-2.00	0.00
5,886.7	0.00	0.00	5,700.0	1,284.8	3.9	1,284.8	2.00	-2.00	-2.58
TARGET BHL 2550'FNL, 2550'FWL									
5,920.0	0.00	0.00	5,733.3	1,284.8	3.9	1,284.8	0.00	0.00	0.00
5,960.0	0.00	0.00	5,773.3	1,284.8	3.9	1,284.8	0.00	0.00	0.00
6,000.0	0.00	0.00	5,813.3	1,284.8	3.9	1,284.8	0.00	0.00	0.00
6,040.0	0.00	0.00	5,853.3	1,284.8	3.9	1,284.8	0.00	0.00	0.00
6,080.0	0.00	0.00	5,893.3	1,284.8	3.9	1,284.8	0.00	0.00	0.00
6,120.0	0.00	0.00	5,933.3	1,284.8	3.9	1,284.8	0.00	0.00	0.00
6,160.0	0.00	0.00	5,973.3	1,284.8	3.9	1,284.8	0.00	0.00	0.00
6,200.0	0.00	0.00	6,013.3	1,284.8	3.9	1,284.8	0.00	0.00	0.00



Database: EDM den0-adp01 Server Data  
 Company: NOBLE ENERGY INC WELD COUNTY CO  
 Project: SEC.22-T4N-R64W  
 Site: Coleman C22-21D Pad Sec.22-T4N-R64W  
 Well: Coleman C22-21D  
 Wellbore: Wellbore #1  
 Design: Noble Coleman C22-21D Plan #1 (05-06-10)

Local Co-ordinate Reference: Well Coleman C22-21D  
 TVD Reference: WELL @ 4681.0ft (Original Well Elev)  
 MD Reference: WELL @ 4681.0ft (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	0.00	0.00	6,053.3	1,284.8	3.9	1,284.8	0.00	0.00	0.00
6,280.0	0.00	0.00	6,093.3	1,284.8	3.9	1,284.8	0.00	0.00	0.00
6,320.0	0.00	0.00	6,133.3	1,284.8	3.9	1,284.8	0.00	0.00	0.00
6,360.0	0.00	0.00	6,173.3	1,284.8	3.9	1,284.8	0.00	0.00	0.00
6,400.0	0.00	0.00	6,213.3	1,284.8	3.9	1,284.8	0.00	0.00	0.00
6,440.0	0.00	0.00	6,253.3	1,284.8	3.9	1,284.8	0.00	0.00	0.00
6,480.0	0.00	0.00	6,293.3	1,284.8	3.9	1,284.8	0.00	0.00	0.00
6,520.0	0.00	0.00	6,333.3	1,284.8	3.9	1,284.8	0.00	0.00	0.00
6,560.0	0.00	0.00	6,373.3	1,284.8	3.9	1,284.8	0.00	0.00	0.00
6,600.0	0.00	0.00	6,413.3	1,284.8	3.9	1,284.8	0.00	0.00	0.00
6,640.0	0.00	0.00	6,453.3	1,284.8	3.9	1,284.8	0.00	0.00	0.00
6,680.0	0.00	0.00	6,493.3	1,284.8	3.9	1,284.8	0.00	0.00	0.00
6,720.0	0.00	0.00	6,533.3	1,284.8	3.9	1,284.8	0.00	0.00	0.00
6,722.7	0.00	0.00	6,536.0	1,284.8	3.9	1,284.8	0.00	0.00	0.00
<b>NIOBRARA - TARGET CIRCLE 2550'FNL, 2550'FWL</b>									
6,760.0	0.00	0.00	6,573.3	1,284.8	3.9	1,284.8	0.00	0.00	0.00
6,800.0	0.00	0.00	6,613.3	1,284.8	3.9	1,284.8	0.00	0.00	0.00
6,840.0	0.00	0.00	6,653.3	1,284.8	3.9	1,284.8	0.00	0.00	0.00
6,880.0	0.00	0.00	6,693.3	1,284.8	3.9	1,284.8	0.00	0.00	0.00
6,920.0	0.00	0.00	6,733.3	1,284.8	3.9	1,284.8	0.00	0.00	0.00
6,960.0	0.00	0.00	6,773.3	1,284.8	3.9	1,284.8	0.00	0.00	0.00
7,000.0	0.00	0.00	6,813.3	1,284.8	3.9	1,284.8	0.00	0.00	0.00
7,012.7	0.00	0.00	6,826.0	1,284.8	3.9	1,284.8	0.00	0.00	0.00
<b>CODELL</b>									
7,040.0	0.00	0.00	6,853.3	1,284.8	3.9	1,284.8	0.00	0.00	0.00
7,080.0	0.00	0.00	6,893.3	1,284.8	3.9	1,284.8	0.00	0.00	0.00
7,120.0	0.00	0.00	6,933.3	1,284.8	3.9	1,284.8	0.00	0.00	0.00
7,160.0	0.00	0.00	6,973.3	1,284.8	3.9	1,284.8	0.00	0.00	0.00
7,162.7	0.00	0.00	6,976.0	1,284.8	3.9	1,284.8	0.00	0.00	0.00
<b>HARDLINES 90'S &amp; E OF BHL</b>									

**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 2550'FNL - plan hits target center - Circle (radius 75.0)	0.00	0.00	6,536.0	1,284.8	3.9	1,352,928.43	3,268,548.31	40° 17' 53.472 N	104° 32' 13.906 W
TARGET BHL 2550'FNL - plan hits target center - Point	0.00	0.00	5,700.0	1,284.8	3.9	1,352,928.47	3,268,548.28	40° 17' 53.472 N	104° 32' 13.906 W
HARDLINES 90'S & E - plan misses target center by 127.3ft at 7162.7ft MD (6976.0 TVD, 1284.8 N, 3.9 E) - Polygon	0.00	0.00	6,976.0	1,194.8	93.9	1,352,839.42	3,268,639.28	40° 17' 52.583 N	104° 32' 12.744 W
Point 1			6,976.0	0.0	0.0	1,352,839.42	3,268,639.28		
Point 2			6,976.0	0.0	-200.0	1,352,837.25	3,268,439.30		
Point 3			6,976.0	0.0	0.0	1,352,839.42	3,268,639.28		
Point 4			6,976.0	200.0	0.0	1,353,039.40	3,268,637.11		

**Database:** EDM den0-adp01 Server Data  
**Company:** NOBLE ENERGY INC WELD COUNTY CO  
**Project:** SEC.22-T4N-R64W  
**Site:** Coleman C22-21D Pad Sec.22-T4N-R64W  
**Well:** Coleman C22-21D  
**Wellbore:** Wellbore #1  
**Design:** Noble Coleman C22-21D Plan #1 (05-06-10)

**Local Co-ordinate Reference:** Well Coleman C22-21D  
**TVD Reference:** WELL @ 4681.0ft (Original Well Elev)  
**MD Reference:** WELL @ 4681.0ft (Original Well Elev)  
**North Reference:** True  
**Survey Calculation Method:** Minimum Curvature

#### Casing Points

Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")
550.0	550.0	8 5/8"	8-5/8	12-1/4

#### Formations

Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
6,722.7	6,536.0	NIOBRARA		0.00	
7,012.7	6,826.0	CODELL		0.00	





## Directional

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

**SEC.22-T4N-R64W**

**Coleman C22-21D Pad Sec.22-T4N-R64W**

**Coleman C22-21D**

**Wellbore #1**

**Noble Coleman C22-21D Plan #1 (05-06-10)**

## **Anticollision Report**

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**06 May, 2010**



Company: NOBLE ENERGY INC WELD COUNTY CO  
Project: SEC.22-T4N-R64W  
Reference Site: Coleman C22-21D Pad Sec.22-T4N-R64W  
Site Error: 0.0ft  
Reference Well: Coleman C22-21D  
Well Error: 0.0ft  
Reference Wellbore: Wellbore #1  
Reference Design: Noble Coleman C22-21D Plan #1 (05-06-10)

Local Co-ordinate Reference: Well Coleman C22-21D  
TVD Reference: WELL @ 4681.0ft (Original Well Elev)  
MD Reference: WELL @ 4681.0ft (Original Well Elev)  
North Reference: True  
Survey Calculation Method: Minimum Curvature  
Output errors are at: 2.00 sigma  
Database: EDM den0-adp01 Server Data  
Offset TVD Reference: Offset Datum

Reference	Noble Coleman C22-21D Plan #1 (0)		
Filter type:	NO GLOBAL FILTER: Using user defined selection & filtering criteria		
Interpolation Method:	MD Interval 100.0ft	Error Model:	ISCWSA
Depth Range:	Unlimited	Scan Method:	Closest Approach 3D
Results Limited by:	Maximum center-center distance of 2,000.0ft	Error Surface:	Elliptical Conic
Warning Levels Evaluated at:	2.00 Sigma		

Survey Tool Program	Date 5/6/2010			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
0.0	7,162.7	Noble Coleman C22-21D Plan #1 (05-06-10)	MWD	MWD - Standard

Summary						
Site Name	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Separation Factor	Warning
Offset Well - Wellbore - Design						
Coleman C22-21D Pad Sec.22-T4N-R64W						
Cantrell 1 (Exist.) - Wellbore #1 - Design #1	2,785.3	2,718.6	576.1	559.5	34.778 CC	
Cantrell 1 (Exist.) - Wellbore #1 - Design #1	2,800.0	2,732.6	576.1	559.4	34.532 ES	
Cantrell 1 (Exist.) - Wellbore #1 - Design #1	7,162.7	6,960.0	996.5	959.5	26.938 SF	
Herbst C22-24 (Vert.) - Wellbore #1 - Design #1	800.0	800.0	25.5	22.2	7.630 CC, ES	
Herbst C22-24 (Vert.) - Wellbore #1 - Design #1	900.0	900.0	27.2	23.5	7.185 SF	

Offset Design Coleman C22-21D Pad Sec.22-T4N-R64W - Cantrell 1 (Exist.) - Wellbore #1 - Design #1											
Survey Program: 0-MWD											
Reference											
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)
0.0	0.0	0.0	0.0	0.0	0.0	-50.51	473.6	-574.6	744.7		
100.0	100.0	100.0	100.0	0.1	0.1	-50.51	473.6	-574.6	744.7	744.5	0.20
200.0	200.0	200.0	200.0	0.3	0.3	-50.51	473.6	-574.6	744.7	744.0	0.65
300.0	300.0	300.0	300.0	0.5	0.5	-50.51	473.6	-574.6	744.7	743.6	1.09
400.0	400.0	400.0	400.0	0.8	0.8	-50.51	473.6	-574.6	744.7	743.1	1.54
500.0	500.0	500.0	500.0	1.0	1.0	-50.51	473.6	-574.6	744.7	742.7	1.99
600.0	600.0	600.0	600.0	1.2	1.2	-50.51	473.6	-574.6	744.7	742.2	2.44
700.0	700.0	700.0	700.0	1.4	1.4	-50.51	473.6	-574.6	744.7	741.8	2.89
800.0	800.0	800.0	800.0	1.7	1.7	-50.51	473.6	-574.6	744.7	741.3	3.34
900.0	900.0	900.0	900.0	1.9	1.9	-50.80	473.6	-574.6	743.5	739.8	3.79
1,000.0	999.8	999.8	999.8	2.1	2.1	-51.16	473.6	-574.6	740.3	736.0	4.24
1,100.0	1,099.5	1,099.5	1,099.5	2.4	2.3	-51.78	473.6	-574.6	734.8	730.1	4.69
1,200.0	1,198.7	1,198.7	1,198.7	2.6	2.6	-52.65	473.6	-574.6	727.3	722.2	5.15
1,300.0	1,297.5	1,297.5	1,297.5	2.9	2.8	-53.79	473.6	-574.6	717.9	712.2	5.63
1,400.0	1,395.6	1,395.6	1,395.6	3.2	3.0	-55.20	473.6	-574.6	706.6	700.5	6.13
1,500.0	1,493.1	1,493.1	1,493.1	3.6	3.2	-56.92	473.6	-574.6	693.9	687.2	6.68
1,600.0	1,589.6	1,589.6	1,589.6	4.0	3.4	-58.94	473.6	-574.6	679.8	672.5	7.27
1,700.0	1,685.3	1,685.3	1,685.3	4.4	3.7	-61.27	473.6	-574.6	664.7	656.8	7.92
1,800.0	1,780.5	1,780.5	1,780.5	5.0	3.9	-63.54	473.6	-574.6	650.0	641.4	8.63
1,900.0	1,875.7	1,875.7	1,875.7	5.5	4.1	-65.91	473.6	-574.6	636.4	627.1	9.37
2,000.0	1,970.9	1,970.9	1,970.9	6.0	4.3	-68.36	473.6	-574.6	624.1	613.9	10.14
2,100.0	2,066.1	2,066.1	2,066.1	6.6	4.5	-70.91	473.6	-574.6	613.0	602.0	10.93

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation



**Company:** NOBLE ENERGY INC WELD COUNTY CO  
**Project:** SEC.22-T4N-R64W  
**Reference Site:** Coleman C22-21D Pad Sec.22-T4N-R64W  
**Site Error:** 0.0ft  
**Reference Well:** Coleman C22-21D  
**Well Error:** 0.0ft  
**Reference Wellbore:** Wellbore #1  
**Reference Design:** Noble Coleman C22-21D Plan #1 (05-06-10)

**Local Co-ordinate Reference:** Well Coleman C22-21D  
**TVD Reference:** WELL @ 4681.0ft (Original Well Elev)  
**MD Reference:** WELL @ 4681.0ft (Original Well Elev)  
**North Reference:** True  
**Survey Calculation Method:** Minimum Curvature  
**Output errors are at** 2.00 sigma  
**Database:** EDM den0-adp01 Server Data  
**Offset TVD Reference:** Offset Datum

Offset Design Coleman C22-21D Pad Sec.22-T4N-R64W - Cantrell 1 (Exist.) - Wellbore #1 - Design #1													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance						Warning	
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor		
2,200.0	2,161.4	2,161.4	2,161.4	7.2	4.7	-73.53	473.6	-574.6	603.2	591.5	11.73	51.408		
2,300.0	2,256.6	2,256.6	2,256.6	7.7	4.9	-76.23	473.6	-574.6	594.8	582.3	12.55	47.382		
2,400.0	2,351.8	2,351.8	2,351.8	8.3	5.2	-78.99	473.6	-574.6	588.0	574.6	13.38	43.934		
2,500.0	2,447.0	2,447.0	2,447.0	8.9	5.4	-81.80	473.6	-574.6	582.6	568.4	14.22	40.986		
2,600.0	2,542.2	2,542.2	2,542.2	9.5	5.6	-84.65	473.6	-574.6	578.8	563.8	15.05	38.472		
2,700.0	2,637.4	2,637.4	2,637.4	10.1	5.8	-87.53	473.6	-574.6	576.7	560.8	15.87	36.337		
2,785.3	2,718.6	2,718.6	2,718.6	10.6	6.0	-90.00	473.6	-574.6	576.1	559.5	16.56	34.778	CC	
2,800.0	2,732.6	2,732.6	2,732.6	10.7	6.0	-90.43	473.6	-574.6	576.1	559.4	16.68	34.532	ES	
2,900.0	2,827.9	2,827.9	2,827.9	11.3	6.2	-93.32	473.6	-574.6	577.1	559.6	17.48	33.016		
3,000.0	2,923.1	2,923.1	2,923.1	11.9	6.4	-96.19	473.6	-574.6	579.8	561.5	18.26	31.753		
3,100.0	3,018.3	3,018.3	3,018.3	12.5	6.7	-99.03	473.6	-574.6	584.0	565.0	19.02	30.712		
3,200.0	3,113.5	3,113.5	3,113.5	13.1	6.9	-101.83	473.6	-574.6	589.8	570.1	19.75	29.865		
3,300.0	3,208.7	3,208.7	3,208.7	13.7	7.1	-104.57	473.6	-574.6	597.2	576.7	20.46	29.189		
3,400.0	3,303.9	3,303.9	3,303.9	14.3	7.3	-107.25	473.6	-574.6	605.9	584.8	21.14	28.662		
3,500.0	3,399.2	3,399.2	3,399.2	14.9	7.5	-109.85	473.6	-574.6	616.1	594.3	21.80	28.266		
3,600.0	3,494.4	3,494.4	3,494.4	15.5	7.7	-112.37	473.6	-574.6	627.6	605.1	22.43	27.984		
3,700.0	3,589.6	3,589.6	3,589.6	16.1	7.9	-114.80	473.6	-574.6	640.3	617.3	23.03	27.802		
3,800.0	3,684.8	3,684.8	3,684.8	16.7	8.2	-117.14	473.6	-574.6	654.2	630.6	23.61	27.706		
3,900.0	3,780.0	3,780.0	3,780.0	17.3	8.4	-119.38	473.6	-574.6	669.3	645.1	24.17	27.685		
4,000.0	3,875.2	3,875.2	3,875.2	17.9	8.6	-121.53	473.6	-574.6	685.3	660.6	24.71	27.729		
4,100.0	3,970.4	3,970.4	3,970.4	18.5	8.8	-123.59	473.6	-574.6	702.3	677.1	25.24	27.829		
4,200.0	4,065.7	4,065.7	4,065.7	19.1	9.0	-125.55	473.6	-574.6	720.3	694.5	25.75	27.977		
4,300.0	4,160.9	4,160.9	4,160.9	19.7	9.2	-127.42	473.6	-574.6	739.0	712.8	26.24	28.165		
4,400.0	4,256.1	4,256.1	4,256.1	20.3	9.4	-129.20	473.6	-574.6	758.5	731.8	26.72	28.388		
4,500.0	4,351.3	4,351.3	4,351.3	20.9	9.7	-130.90	473.6	-574.6	778.8	751.6	27.19	28.640		
4,600.0	4,446.5	4,446.5	4,446.5	21.5	9.9	-132.51	473.6	-574.6	799.6	772.0	27.65	28.916		
4,700.0	4,541.7	4,541.7	4,541.7	22.1	10.1	-134.04	473.6	-574.6	821.1	793.0	28.11	29.212		
4,800.0	4,637.0	4,637.0	4,637.0	22.7	10.3	-135.50	473.6	-574.6	843.2	814.6	28.56	29.525		
4,900.0	4,732.2	4,732.2	4,732.2	23.3	10.5	-136.89	473.6	-574.6	865.7	836.7	29.00	29.850		
5,000.0	4,827.4	4,827.4	4,827.4	23.9	10.7	-138.22	473.6	-574.6	888.8	859.4	29.44	30.188		
5,100.0	4,923.2	4,923.2	4,923.2	24.4	10.9	-139.70	473.6	-574.6	910.9	881.1	29.79	30.580		
5,200.0	5,019.9	5,019.9	5,019.9	24.8	11.2	-140.95	473.6	-574.6	930.7	900.6	30.13	30.886		
5,300.0	5,117.4	5,117.4	5,117.4	25.2	11.4	-142.00	473.6	-574.6	948.2	917.7	30.48	31.107		
5,400.0	5,215.6	5,215.6	5,215.6	25.5	11.6	-142.86	473.6	-574.6	963.0	932.2	30.82	31.246		
5,500.0	5,314.5	5,314.5	5,314.5	25.8	11.8	-143.54	473.6	-574.6	975.2	944.1	31.15	31.305		
5,600.0	5,413.8	5,413.8	5,413.8	26.0	12.0	-144.06	473.6	-574.6	984.7	953.2	31.47	31.286		
5,700.0	5,513.4	5,513.4	5,513.4	26.2	12.3	-144.42	473.6	-574.6	991.4	959.6	31.78	31.192		
5,800.0	5,613.3	5,613.3	5,613.3	26.4	12.5	-144.62	473.6	-574.6	995.3	963.2	32.08	31.025		
5,900.0	5,713.3	5,713.3	5,713.3	26.5	12.7	-144.51	473.6	-574.6	996.4	964.0	32.37	30.778		
6,000.0	5,813.3	5,813.3	5,813.3	26.6	12.9	-144.51	473.6	-574.6	996.4	963.6	32.73	30.439		
6,100.0	5,913.3	5,913.3	5,913.3	26.7	13.2	-144.51	473.6	-574.6	996.4	963.3	33.09	30.107		
6,200.0	6,013.3	6,013.3	6,013.3	26.8	13.4	-144.51	473.6	-574.6	996.4	962.9	33.46	29.780		
6,300.0	6,113.3	6,113.3	6,113.3	26.9	13.6	-144.51	473.6	-574.6	996.4	962.6	33.82	29.459		
6,400.0	6,213.3	6,213.3	6,213.3	27.0	13.8	-144.51	473.6	-574.6	996.4	962.2	34.19	29.143		
6,500.0	6,313.3	6,313.3	6,313.3	27.1	14.1	-144.51	473.6	-574.6	996.4	961.8	34.56	28.833		
6,600.0	6,413.3	6,413.3	6,413.3	27.2	14.3	-144.51	473.6	-574.6	996.4	961.4	34.93	28.529		
6,700.0	6,513.3	6,513.3	6,513.3	27.3	14.5	-144.51	473.6	-574.6	996.4	961.1	35.30	28.229		
6,800.0	6,613.3	6,613.3	6,613.3	27.4	14.7	-144.51	473.6	-574.6	996.4	960.7	35.67	27.935		
6,900.0	6,713.3	6,713.3	6,713.3	27.5	15.0	-144.51	473.6	-574.6	996.4	960.3	36.04	27.646		
7,000.0	6,813.3	6,813.3	6,813.3	27.6	15.2	-144.51	473.6	-574.6	996.4	960.0	36.42	27.361		
7,100.0	6,913.3	6,913.3	6,913.3	27.8	15.4	-144.51	473.6	-574.6	996.4	959.6	36.79	27.082		
7,134.6	6,947.9	6,947.9	6,947.9	27.8	15.5	-144.51	473.6	-574.6	996.4	959.5	36.92	26.986		

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

Company: NOBLE ENERGY INC WELD COUNTY CO  
Project: SEC.22-T4N-R64W  
Reference Site: Coleman C22-21D Pad Sec.22-T4N-R64W  
Site Error: 0.0ft  
Reference Well: Coleman C22-21D  
Well Error: 0.0ft  
Reference Wellbore: Wellbore #1  
Reference Design: Noble Coleman C22-21D Plan #1 (05-06-10)

Local Co-ordinate Reference: Well Coleman C22-21D  
TVD Reference: WELL @ 4681.0ft (Original Well Elev)  
MD Reference: WELL @ 4681.0ft (Original Well Elev)  
North Reference: True  
Survey Calculation Method: Minimum Curvature  
Output errors are at: 2.00 sigma  
Database: EDM den0-adp01 Server Data  
Offset TVD Reference: Offset Datum

<b>Offset Design</b> Coleman C22-21D Pad Sec.22-T4N-R64W - Cantrell 1 (Exist.) - Wellbore #1 - Design #1												Offset Site Error:	0.0 ft
Survey Program: 0-MWD												Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance						
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
7,162.7	6,976.0	6,960.0	6,960.0	27.8	15.5	-144.51	473.6	-574.6	996.5	959.5	36.99	26.938 SF	



**Company:** NOBLE ENERGY INC WELD COUNTY CO  
**Project:** SEC.22-T4N-R64W  
**Reference Site:** Coleman C22-21D Pad Sec.22-T4N-R64W  
**Site Error:** 0.0ft  
**Reference Well:** Coleman C22-21D  
**Well Error:** 0.0ft  
**Reference Wellbore:** Wellbore #1  
**Reference Design:** Noble Coleman C22-21D Plan #1 (05-06-10)

**Local Co-ordinate Reference:** Well Coleman C22-21D  
**TVD Reference:** WELL @ 4681.0ft (Original Well Elev)  
**MD Reference:** WELL @ 4681.0ft (Original Well Elev)  
**North Reference:** True  
**Survey Calculation Method:** Minimum Curvature  
**Output errors are at** 2.00 sigma  
**Database:** EDM den0-adp01 Server Data  
**Offset TVD Reference:** Offset Datum

Offset Design Coleman C22-21D Pad Sec.22-T4N-R64W - Herbst C22-24 (Vert.) - Wellbore #1 - Design #1														Offset Site Error:	0.0 ft
Survey Program: 0-MWD														Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Distance		Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning		
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)		Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)							
0.0	0.0	0.0	0.0	0.0	0.0	180.00	-25.5	0.0	25.5						
100.0	100.0	100.0	100.0	0.1	0.1	180.00	-25.5	0.0	25.5	25.3	0.20	130.411			
200.0	200.0	200.0	200.0	0.3	0.3	180.00	-25.5	0.0	25.5	24.9	0.65	39.532			
300.0	300.0	300.0	300.0	0.5	0.5	180.00	-25.5	0.0	25.5	24.4	1.09	23.297			
400.0	400.0	400.0	400.0	0.8	0.8	180.00	-25.5	0.0	25.5	24.0	1.54	16.515			
500.0	500.0	500.0	500.0	1.0	1.0	180.00	-25.5	0.0	25.5	23.5	1.99	12.791			
600.0	600.0	600.0	600.0	1.2	1.2	180.00	-25.5	0.0	25.5	23.1	2.44	10.438			
700.0	700.0	700.0	700.0	1.4	1.4	180.00	-25.5	0.0	25.5	22.6	2.89	8.816			
800.0	800.0	800.0	800.0	1.7	1.7	180.00	-25.5	0.0	25.5	22.2	3.34	7.630 CC, ES			
900.0	900.0	900.0	900.0	1.9	1.9	179.84	-25.5	0.0	27.2	23.5	3.79	7.185 SF			
1,000.0	999.8	999.8	999.8	2.1	2.1	179.86	-25.5	0.0	32.5	28.2	4.24	7.660			
1,100.0	1,099.5	1,099.5	1,099.5	2.4	2.3	179.89	-25.5	0.0	41.2	36.5	4.68	8.793			
1,200.0	1,198.7	1,198.7	1,198.7	2.6	2.6	179.92	-25.5	0.0	53.4	48.3	5.13	10.415			
1,300.0	1,297.5	1,297.5	1,297.5	2.9	2.8	179.94	-25.5	0.0	69.0	63.5	5.56	12.411			
1,400.0	1,395.6	1,395.6	1,395.6	3.2	3.0	179.95	-25.5	0.0	88.1	82.1	5.99	14.699			
1,500.0	1,493.1	1,493.1	1,493.1	3.6	3.2	179.96	-25.5	0.0	110.6	104.2	6.42	17.220			
1,600.0	1,589.6	1,589.6	1,589.6	4.0	3.4	179.97	-25.5	0.0	136.5	129.6	6.85	19.929			
1,700.0	1,685.3	1,685.3	1,685.3	4.4	3.7	179.97	-25.5	0.0	165.7	158.4	7.28	22.774			
1,800.0	1,780.5	1,780.5	1,780.5	5.0	3.9	179.98	-25.5	0.0	196.3	188.5	7.75	25.329			
1,900.0	1,875.7	1,875.7	1,875.7	5.5	4.1	179.98	-25.5	0.0	226.8	218.6	8.23	27.570			
2,000.0	1,970.9	1,970.9	1,970.9	6.0	4.3	179.98	-25.5	0.0	257.4	248.7	8.71	29.548			
2,100.0	2,066.1	2,066.1	2,066.1	6.6	4.5	179.98	-25.5	0.0	287.9	278.7	9.20	31.304			
2,200.0	2,161.4	2,161.4	2,161.4	7.2	4.7	179.99	-25.5	0.0	318.5	308.8	9.69	32.872			
2,300.0	2,256.6	2,256.6	2,256.6	7.7	4.9	179.99	-25.5	0.0	349.1	338.9	10.18	34.278			
2,400.0	2,351.8	2,351.8	2,351.8	8.3	5.2	179.99	-25.5	0.0	379.6	368.9	10.68	35.547			
2,500.0	2,447.0	2,447.0	2,447.0	8.9	5.4	179.99	-25.5	0.0	410.2	399.0	11.18	36.695			
2,600.0	2,542.2	2,542.2	2,542.2	9.5	5.6	179.99	-25.5	0.0	440.7	429.1	11.68	37.740			
2,700.0	2,637.4	2,637.4	2,637.4	10.1	5.8	179.99	-25.5	0.0	471.3	459.1	12.18	38.693			
2,800.0	2,732.6	2,732.6	2,732.6	10.7	6.0	179.99	-25.5	0.0	501.9	489.2	12.68	39.567			
2,900.0	2,827.9	2,827.9	2,827.9	11.3	6.2	179.99	-25.5	0.0	532.4	519.2	13.19	40.370			
3,000.0	2,923.1	2,923.1	2,923.1	11.9	6.4	179.99	-25.5	0.0	563.0	549.3	13.69	41.110			
3,100.0	3,018.3	3,018.3	3,018.3	12.5	6.7	179.99	-25.5	0.0	593.6	579.3	14.20	41.795			
3,200.0	3,113.5	3,113.5	3,113.5	13.1	6.9	179.99	-25.5	0.0	624.1	609.4	14.71	42.430			
3,300.0	3,208.7	3,208.7	3,208.7	13.7	7.1	179.99	-25.5	0.0	654.7	639.5	15.22	43.021			
3,400.0	3,303.9	3,303.9	3,303.9	14.3	7.3	179.99	-25.5	0.0	685.2	669.5	15.73	43.571			
3,500.0	3,399.2	3,399.2	3,399.2	14.9	7.5	179.99	-25.5	0.0	715.8	699.6	16.24	44.085			
3,600.0	3,494.4	3,494.4	3,494.4	15.5	7.7	179.99	-25.5	0.0	746.4	729.6	16.75	44.566			
3,700.0	3,589.6	3,589.6	3,589.6	16.1	7.9	179.99	-25.5	0.0	776.9	759.7	17.26	45.017			
3,800.0	3,684.8	3,684.8	3,684.8	16.7	8.2	179.99	-25.5	0.0	807.5	789.7	17.77	45.441			
3,900.0	3,780.0	3,780.0	3,780.0	17.3	8.4	179.99	-25.5	0.0	838.0	819.8	18.28	45.840			
4,000.0	3,875.2	3,875.2	3,875.2	17.9	8.6	179.99	-25.5	0.0	868.6	849.8	18.79	46.216			
4,100.0	3,970.4	3,970.4	3,970.4	18.5	8.8	179.99	-25.5	0.0	899.2	879.9	19.31	46.571			
4,200.0	4,065.7	4,065.7	4,065.7	19.1	9.0	180.00	-25.5	0.0	929.7	909.9	19.82	46.907			
4,300.0	4,160.9	4,160.9	4,160.9	19.7	9.2	180.00	-25.5	0.0	960.3	939.9	20.33	47.225			
4,400.0	4,256.1	4,256.1	4,256.1	20.3	9.4	180.00	-25.5	0.0	990.8	970.0	20.85	47.527			
4,500.0	4,351.3	4,351.3	4,351.3	20.9	9.7	180.00	-25.5	0.0	1,021.4	1,000.0	21.36	47.813			
4,600.0	4,446.5	4,446.5	4,446.5	21.5	9.9	180.00	-25.5	0.0	1,052.0	1,030.1	21.88	48.085			
4,700.0	4,541.7	4,541.7	4,541.7	22.1	10.1	180.00	-25.5	0.0	1,082.5	1,060.1	22.39	48.344			
4,800.0	4,637.0	4,637.0	4,637.0	22.7	10.3	180.00	-25.5	0.0	1,113.1	1,090.2	22.91	48.591			
4,900.0	4,732.2	4,732.2	4,732.2	23.3	10.5	180.00	-25.5	0.0	1,143.7	1,120.2	23.42	48.826			
5,000.0	4,827.4	4,827.4	4,827.4	23.9	10.7	180.00	-25.5	0.0	1,174.2	1,150.3	23.94	49.044			
5,100.0	4,923.2	4,923.2	4,923.2	24.4	10.9	180.00	-25.5	0.0	1,203.0	1,178.5	24.51	49.076			

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

Company: NOBLE ENERGY INC WELD COUNTY CO  
Project: SEC.22-T4N-R64W  
Reference Site: Coleman C22-21D Pad Sec.22-T4N-R64W  
Site Error: 0.0ft  
Reference Well: Coleman C22-21D  
Well Error: 0.0ft  
Reference Wellbore: Wellbore #1  
Reference Design: Noble Coleman C22-21D Plan #1 (05-06-10)

Local Co-ordinate Reference: Well Coleman C22-21D  
TVD Reference: WELL @ 4681.0ft (Original Well Elev)  
MD Reference: WELL @ 4681.0ft (Original Well Elev)  
North Reference: True  
Survey Calculation Method: Minimum Curvature  
Output errors are at 2.00 sigma  
Database: EDM den0-adp01 Server Data  
Offset TVD Reference: Offset Datum

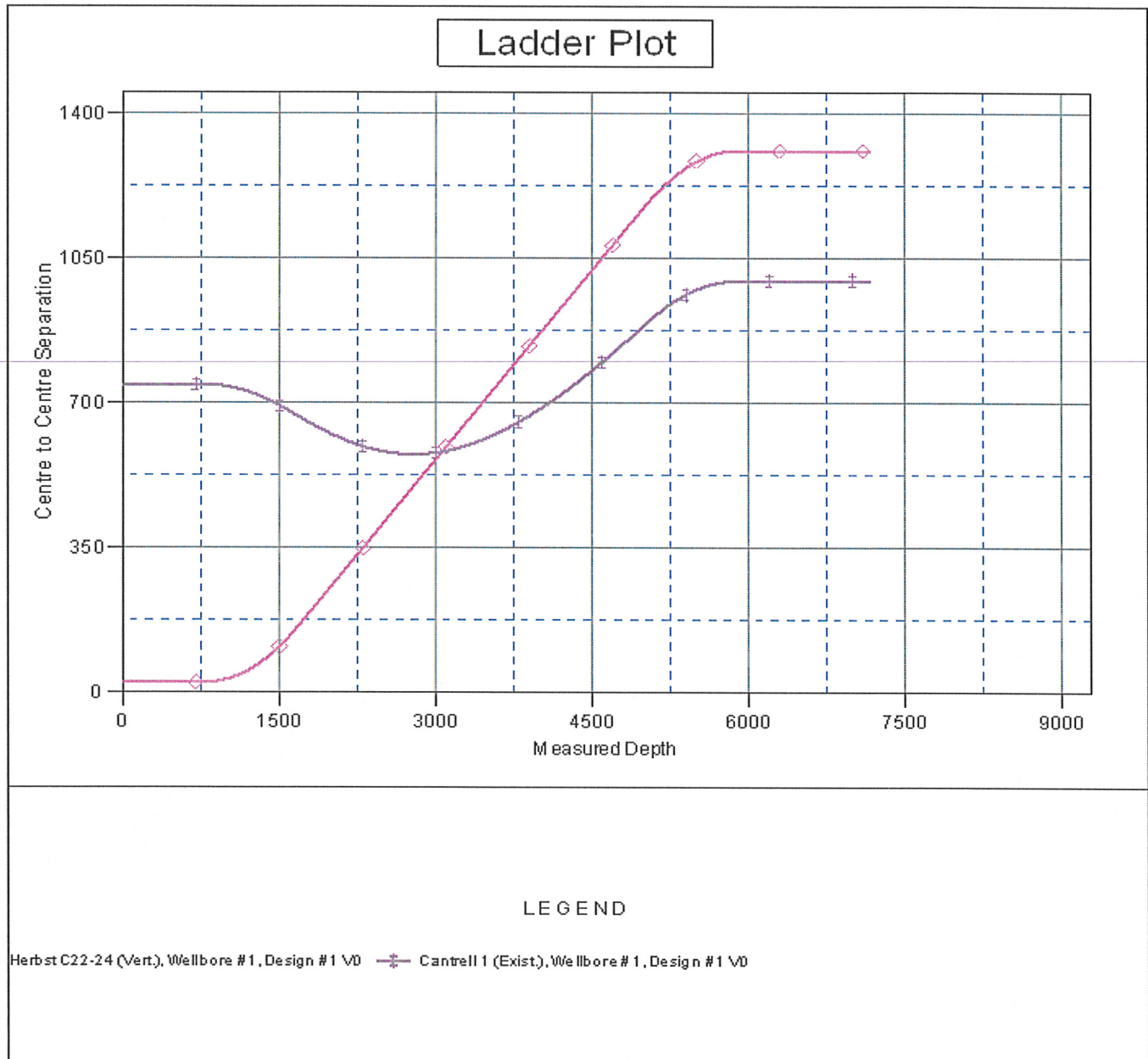
Offset Design Coleman C22-21D Pad Sec.22-T4N-R64W - Herbst C22-24 (Vert.) - Wellbore #1 - Design #1													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance						Warning	
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor		
5,200.0	5,019.9	5,019.9	5,019.9	24.8	11.2	180.00	-25.5	0.0	1,228.4	1,203.4	25.05	49.038		
5,300.0	5,117.4	5,117.4	5,117.4	25.2	11.4	180.00	-25.5	0.0	1,250.5	1,224.9	25.55	48.937		
5,400.0	5,215.6	5,215.6	5,215.6	25.5	11.6	180.00	-25.5	0.0	1,269.1	1,243.1	26.02	48.777		
5,500.0	5,314.5	5,314.5	5,314.5	25.8	11.8	180.00	-25.5	0.0	1,284.3	1,257.8	26.45	48.562		
5,600.0	5,413.8	5,413.8	5,413.8	26.0	12.0	180.00	-25.5	0.0	1,296.0	1,269.2	26.83	48.296		
5,700.0	5,513.4	5,513.4	5,513.4	26.2	12.3	180.00	-25.5	0.0	1,304.3	1,277.1	27.18	47.980		
5,800.0	5,613.3	5,613.3	5,613.3	26.4	12.5	180.00	-25.5	0.0	1,309.0	1,281.5	27.49	47.617		
5,900.0	5,713.3	5,713.3	5,713.3	26.5	12.7	-179.83	-25.5	0.0	1,310.3	1,282.6	27.78	47.177		
6,000.0	5,813.3	5,813.3	5,813.3	26.6	12.9	-179.83	-25.5	0.0	1,310.3	1,282.2	28.18	46.505		
6,100.0	5,913.3	5,913.3	5,913.3	26.7	13.2	-179.83	-25.5	0.0	1,310.3	1,281.8	28.58	45.849		
6,200.0	6,013.3	6,013.3	6,013.3	26.8	13.4	-179.83	-25.5	0.0	1,310.3	1,281.4	28.98	45.210		
6,300.0	6,113.3	6,113.3	6,113.3	26.9	13.6	-179.83	-25.5	0.0	1,310.3	1,281.0	29.39	44.587		
6,400.0	6,213.3	6,213.3	6,213.3	27.0	13.8	-179.83	-25.5	0.0	1,310.3	1,280.5	29.79	43.979		
6,500.0	6,313.3	6,313.3	6,313.3	27.1	14.1	-179.83	-25.5	0.0	1,310.3	1,280.1	30.20	43.386		
6,600.0	6,413.3	6,413.3	6,413.3	27.2	14.3	-179.83	-25.5	0.0	1,310.3	1,279.7	30.61	42.807		
6,700.0	6,513.3	6,513.3	6,513.3	27.3	14.5	-179.83	-25.5	0.0	1,310.3	1,279.3	31.02	42.242		
6,800.0	6,613.3	6,613.3	6,613.3	27.4	14.7	-179.83	-25.5	0.0	1,310.3	1,278.9	31.43	41.690		
6,900.0	6,713.3	6,713.3	6,713.3	27.5	15.0	-179.83	-25.5	0.0	1,310.3	1,278.5	31.84	41.152		
7,000.0	6,813.3	6,813.3	6,813.3	27.6	15.2	-179.83	-25.5	0.0	1,310.3	1,278.1	32.25	40.626		
7,100.0	6,913.3	6,913.3	6,913.3	27.8	15.4	-179.83	-25.5	0.0	1,310.3	1,277.7	32.67	40.112		
7,162.7	6,976.0	6,976.0	6,976.0	27.8	15.6	-179.83	-25.5	0.0	1,310.3	1,277.4	32.93	39.796		



Company: NOBLE ENERGY INC WELD COUNTY CO  
Project: SEC.22-T4N-R64W  
Reference Site: Coleman C22-21D Pad Sec.22-T4N-R64W  
Site Error: 0.0ft  
Reference Well: Coleman C22-21D  
Well Error: 0.0ft  
Reference Wellbore: Wellbore #1  
Reference Design: Noble Coleman C22-21D Plan #1 (05-06-10)

Local Co-ordinate Reference: Well Coleman C22-21D  
TVD Reference: WELL @ 4681.0ft (Original Well Elev)  
MD Reference: WELL @ 4681.0ft (Original Well Elev)  
North Reference: True  
Survey Calculation Method: Minimum Curvature  
Output errors are at: 2.00 sigma  
Database: EDM den0-adp01 Server Data  
Offset TVD Reference: Offset Datum

Reference Depths are relative to WELL @ 4681.0ft (Original Well Elev) Coordinates are relative to: Coleman C22-21D  
Offset Depths are relative to Offset Datum  
Central Meridian is 105° 30' 0.000 W °  
Coordinate System is US State Plane 1983, Colorado Northern Zone  
Grid Convergence at Surface is: 0.62°

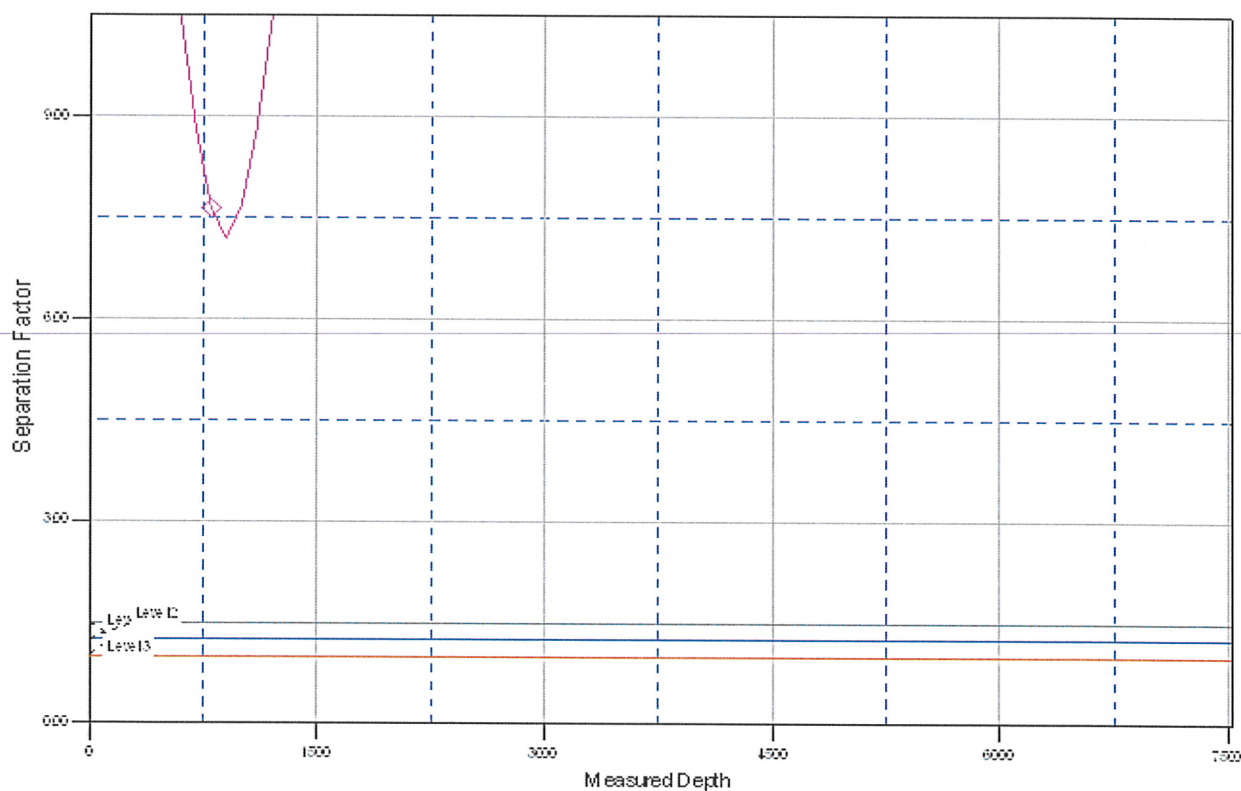


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Grid Convergence at Surface is: 0.62°

## Separation Factor Plot



### LEGEND

— Herbst C22-24 (Vert), Wellbore #1, Design #1 \VD — Cantrell 1 (Exist), Wellbore #1, Design #1 \VD