

# Conoco Phillips Company

SweetwaterCounty, Wyoming

Sec.2-T4S-R64W

Cline 4-64-2-1H

Plan A

Plan: Plan A Rev 0 (Pilot Hole)

## Sperry Drilling Services

## Proposal Report

12 March, 2013

Well Coordinates: 251,221.15 S, 3,161,358.04 E (39° 43' 58.09" N, 104° 30' 33.14" W)

Ground Level: 5,586.00 ft

Local Coordinate Origin:

Centered on Well Cline 4-64-2-1H

Viewing Datum:

Rkb 24 ft @ 5610.00ft (H&P 280)

TVDs to System:

N

North Reference:

True

Unit System:

API - US Survey Feet - Custom

Version: 2003.16 Build: 43I

**HALLIBURTON**

## Plan Report for Cline 4-64-2-1H - Plan A Rev 0 (Pilot Hole)

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)	Toolface Azimuth (°)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
300.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
400.00	0.00	0.00	400.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
500.00	0.00	0.00	500.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
600.00	0.00	0.00	600.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
700.00	0.00	0.00	700.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
800.00	0.00	0.00	800.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
900.00	0.00	0.00	900.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1,000.00	0.00	0.00	1,000.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1,100.00	0.00	0.00	1,100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1,200.00	0.00	0.00	1,200.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1,300.00	0.00	0.00	1,300.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1,400.00	0.00	0.00	1,400.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1,500.00	0.00	0.00	1,500.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1,570.00	0.00	0.00	1,570.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fox Hills Aquifer										
1,600.00	0.00	0.00	1,600.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1,688.00	0.00	0.00	1,688.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pierre Shale (Base Fox Hills)										
1,700.00	0.00	0.00	1,700.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1,800.00	0.00	0.00	1,800.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1,900.00	0.00	0.00	1,900.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2,000.00	0.00	0.00	2,000.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2,100.00	0.00	0.00	2,100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2,200.00	0.00	0.00	2,200.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2,300.00	0.00	0.00	2,300.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2,400.00	0.00	0.00	2,400.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2,500.00	0.00	0.00	2,500.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2,600.00	0.00	0.00	2,600.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2,700.00	0.00	0.00	2,700.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2,800.00	0.00	0.00	2,800.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2,900.00	0.00	0.00	2,900.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3,000.00	0.00	0.00	3,000.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3,100.00	0.00	0.00	3,100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3,200.00	0.00	0.00	3,200.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3,300.00	0.00	0.00	3,300.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3,400.00	0.00	0.00	3,400.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3,500.00	0.00	0.00	3,500.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3,600.00	0.00	0.00	3,600.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3,700.00	0.00	0.00	3,700.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3,800.00	0.00	0.00	3,800.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3,900.00	0.00	0.00	3,900.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4,000.00	0.00	0.00	4,000.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4,100.00	0.00	0.00	4,100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4,200.00	0.00	0.00	4,200.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4,300.00	0.00	0.00	4,300.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4,400.00	0.00	0.00	4,400.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4,500.00	0.00	0.00	4,500.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4,600.00	0.00	0.00	4,600.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4,700.00	0.00	0.00	4,700.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4,800.00	0.00	0.00	4,800.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4,900.00	0.00	0.00	4,900.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5,000.00	0.00	0.00	5,000.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5,100.00	0.00	0.00	5,100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5,200.00	0.00	0.00	5,200.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5,300.00	0.00	0.00	5,300.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

## Plan Report for Cline 4-64-2-1H - Plan A Rev 0 (Pilot Hole)

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)	Toolface Azimuth (°)
5,400.00	0.00	0.00	5,400.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5,500.00	0.00	0.00	5,500.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5,600.00	0.00	0.00	5,600.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5,700.00	0.00	0.00	5,700.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5,800.00	0.00	0.00	5,800.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5,900.00	0.00	0.00	5,900.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6,000.00	0.00	0.00	6,000.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6,100.00	0.00	0.00	6,100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6,200.00	0.00	0.00	6,200.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6,300.00	0.00	0.00	6,300.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6,400.00	0.00	0.00	6,400.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6,500.00	0.00	0.00	6,500.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6,600.00	0.00	0.00	6,600.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6,700.00	0.00	0.00	6,700.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6,800.00	0.00	0.00	6,800.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6,900.00	0.00	0.00	6,900.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7,000.00	0.00	0.00	7,000.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7,026.00	0.00	0.00	7,026.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>Sharon Springs Shale</b>										
7,100.00	0.00	0.00	7,100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7,200.00	0.00	0.00	7,200.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7,202.00	0.00	0.00	7,202.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>Niobrara Fm.</b>										
7,277.00	0.00	0.00	7,277.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>Niobrara B</b>										
7,300.00	0.00	0.00	7,300.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7,323.00	0.00	0.00	7,323.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>Niobrara C Chalk</b>										
7,389.00	0.00	0.00	7,389.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>Niobrara D Chalk</b>										
7,400.00	0.00	0.00	7,400.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7,500.00	0.00	0.00	7,500.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7,529.00	0.00	0.00	7,529.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>Fort Hays Limestone</b>										
7,557.00	0.00	0.00	7,557.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>Carlisle Shale</b>										
7,600.00	0.00	0.00	7,600.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7,616.00	0.00	0.00	7,616.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>Greenhorn</b>										
7,700.00	0.00	0.00	7,700.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7,707.00	0.00	0.00	7,707.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>Total Depth 7707.00 ft</b>										

Plan Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates +N/-S (ft)	+E/-W (ft)	Comment
7,707.00	7,707.00	0.00	0.00	Total Depth 7707.00 ft

Vertical Section Information

Angle Type	Target	Azimuth (°)	Origin Type	Origin +N/-S (ft)	+E/-W (ft)	Start TVD (ft)
TD	No Target (Freehand)	0.00	Slot	0.00	0.00	0.00

## Plan Report for Cline 4-64-2-1H - Plan A Rev 0 (Pilot Hole)

### Survey tool program

From (ft)	To (ft)	Survey/Plan	Survey Tool
0.00	7,707.00	Plan A Rev 0 (Pilot Hole)	MWD

### Formation Details

Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
1,570.00	1,570.00	Fox Hills Aquifer			
1,688.00	1,688.00	Pierre Shale (Base Fox Hills)			
7,026.00	7,026.00	Sharon Springs Shale			
7,202.00	7,202.00	Niobrara Fm.			
7,277.00	7,277.00	Niobrara B			
7,323.00	7,323.00	Niobrara C Chalk			
7,389.00	7,389.00	Niobrara D Chalk			
7,529.00	7,529.00	Fort Hays Limestone			
7,557.00	7,557.00	Carlisle Shale			
7,616.00	7,616.00	Greenhorn			

### *Targets associated with this wellbore*

Target Name	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Shape
Sec.2-T4S-R64W SB	0.00	0.00	0.00	Polygon
Cline 4-64-2-1H PAR0_BHL Tgt	7,426.00	104.78	-4,548.50	Point
Cline 4-64-2-1H PAR0_WP2 Tgt	7,426.00	82.91	-3,599.05	Point
Sec.2-T4S-R64W SL	0.00	0.00	0.00	Polygon
Cline 4-64-2-1H PAR0_WP1 Tgt	7,352.00	33.39	-1,449.62	Point

## North Reference Sheet for Sec.2-T4S-R64W - Cline 4-64-2-1H - Plan A

All data is in US Feet unless otherwise stated. Directions and Coordinates are relative to True North Reference.  
Vertical Depths are relative to Rkb 24 ft @ 5610.00ft (H&P 280). Northing and Easting are relative to Cline 4-64-2-1H  
Coordinate System is US State Plane 1983, Wyoming West Central Zone using datum North American Datum 1983, ellipsoid GRS 1980

Projection method is Transverse Mercator (Gauss-Kruger)  
Central Meridian is -108.75°, Longitude Origin:0° 0' 0.000 E°, Latitude Origin:0° 0' 0.000 N°  
False Easting: 1,968,500.00ft, False Northing: 0.00ft, Scale Reduction: 1.00156453

Grid Coordinates of Well: -251,221.15 ft N, 3,161,358.04 ft E  
Geographical Coordinates of Well: 39° 43' 58.09" N, 104° 30' 33.14" W  
Grid Convergence at Surface is: 2.71°

Based upon Minimum Curvature type calculations, at a Measured Depth of 7,707.00ft  
the Bottom Hole Displacement is 0.00ft in the Direction of 0.00° (True).

Magnetic Convergence at surface is: -5.76° (30 May 2013, , BGGM2012)

