



Weld County, Co. (Nad 83)
Sec. 17-T1N-R67W
UPRR PAN AM N4

Plan A (Permit Only)

Sperry Drilling Services Proposal Report

25 April, 2013

Well Coordinates: 680,079.62 N, 964,034.71 E (40° 02' 44.23" N, 104° 55' 07.64" W)

Ground Level: 5,128.01 ft

Local Coordinate Origin:	Centered on Well UPRR PAN AM N4
Viewing Datum:	RKB=22' @ 5150.0ft (Rig)
TVDs to System:	N
North Reference:	True
Unit System:	API

Version: 2003.16 Build: 431

HALLIBURTON

Plan Report for UPRR PAN AM N4 - Plan A Rev 0

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 (°)
100.0	0.00	0.00	100.0	0.0	0.0	0.0	0.00	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	0.00
300.0	0.00	0.00	300.0	0.0	0.0	0.0	0.00	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	0.00
500.0	0.00	0.00	500.0	0.0	0.0	0.0	0.00	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	0.00
700.0	0.00	0.00	700.0	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	0.0	0.00	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	0.00
1,000.0	0.00	0.00	1,000.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00
Kickoff at 1000.0ft										
1,100.0	3.00	90.43	1,100.0	0.0	2.6	2.6	3.00	3.00	0.00	90.43
1,200.0	6.00	90.43	1,199.6	-0.1	10.5	10.5	3.00	3.00	0.00	0.00
1,300.0	9.00	90.43	1,298.8	-0.2	23.5	23.5	3.00	3.00	0.00	0.00
1,400.0	12.00	90.43	1,397.1	-0.3	41.7	41.7	3.00	3.00	0.00	0.00
1,500.0	15.00	90.43	1,494.3	-0.5	65.1	65.1	3.00	3.00	0.00	0.00
Build Rate = 3.00°/100ft										
1,600.0	18.00	90.43	1,590.2	-0.7	93.5	93.5	3.00	3.00	0.00	0.00
1,700.0	21.00	90.43	1,684.4	-0.9	126.8	126.9	3.00	3.00	0.00	0.00
1,800.0	24.00	90.43	1,776.8	-1.2	165.1	165.1	3.00	3.00	0.00	0.00
1,833.3	25.00	90.43	1,807.1	-1.3	178.9	178.9	3.00	3.00	0.00	0.00
Hold Angle at 25.00										
1,900.0	25.00	90.43	1,867.6	-1.5	207.1	207.1	0.00	0.00	0.00	0.00
2,000.0	25.00	90.43	1,958.2	-1.9	249.4	249.4	0.00	0.00	0.00	0.00
2,100.0	25.00	90.43	2,048.8	-2.2	291.6	291.6	0.00	0.00	0.00	0.00
2,146.7	25.00	90.43	2,091.2	-2.3	311.4	311.4	0.00	0.00	0.00	0.00
Begin Drop at 2146.7ft										
2,200.0	23.40	90.43	2,139.8	-2.5	333.2	333.2	3.00	-3.00	0.00	180.00
2,300.0	20.40	90.43	2,232.5	-2.8	370.5	370.5	3.00	-3.00	0.00	180.00
2,400.0	17.40	90.43	2,327.1	-3.0	402.9	402.9	3.00	-3.00	0.00	180.00
2,500.0	14.40	90.43	2,423.3	-3.2	430.3	430.3	3.00	-3.00	0.00	180.00
Build Rate = 3.00°/100ft										
2,600.0	11.40	90.43	2,520.8	-3.4	452.6	452.6	3.00	-3.00	0.00	180.00
2,700.0	8.40	90.43	2,619.3	-3.5	469.8	469.8	3.00	-3.00	0.00	180.00
2,800.0	5.40	90.43	2,718.5	-3.6	481.8	481.8	3.00	-3.00	0.00	180.00
2,900.0	2.40	90.43	2,818.3	-3.6	488.6	488.6	3.00	-3.00	0.00	180.00
2,980.0	0.00	0.00	2,898.3	-3.6	490.3	490.3	3.00	-3.00	0.00	-180.00
Hold Angle at 0.00										
3,000.0	0.00	0.00	2,918.3	-3.6	490.3	490.3	0.00	0.00	0.00	0.00
3,100.0	0.00	0.00	3,018.3	-3.6	490.3	490.3	0.00	0.00	0.00	0.00
3,200.0	0.00	0.00	3,118.3	-3.6	490.3	490.3	0.00	0.00	0.00	0.00
3,300.0	0.00	0.00	3,218.3	-3.6	490.3	490.3	0.00	0.00	0.00	0.00
3,400.0	0.00	0.00	3,318.3	-3.6	490.3	490.3	0.00	0.00	0.00	0.00
3,500.0	0.00	0.00	3,418.3	-3.6	490.3	490.3	0.00	0.00	0.00	0.00
3,600.0	0.00	0.00	3,518.3	-3.6	490.3	490.3	0.00	0.00	0.00	0.00
3,700.0	0.00	0.00	3,618.3	-3.6	490.3	490.3	0.00	0.00	0.00	0.00
3,800.0	0.00	0.00	3,718.3	-3.6	490.3	490.3	0.00	0.00	0.00	0.00
3,900.0	0.00	0.00	3,818.3	-3.6	490.3	490.3	0.00	0.00	0.00	0.00
4,000.0	0.00	0.00	3,918.3	-3.6	490.3	490.3	0.00	0.00	0.00	0.00
4,100.0	0.00	0.00	4,018.3	-3.6	490.3	490.3	0.00	0.00	0.00	0.00
4,200.0	0.00	0.00	4,118.3	-3.6	490.3	490.3	0.00	0.00	0.00	0.00
4,300.0	0.00	0.00	4,218.3	-3.6	490.3	490.3	0.00	0.00	0.00	0.00
4,400.0	0.00	0.00	4,318.3	-3.6	490.3	490.3	0.00	0.00	0.00	0.00
4,500.0	0.00	0.00	4,418.3	-3.6	490.3	490.3	0.00	0.00	0.00	0.00
4,600.0	0.00	0.00	4,518.3	-3.6	490.3	490.3	0.00	0.00	0.00	0.00
4,700.0	0.00	0.00	4,618.3	-3.6	490.3	490.3	0.00	0.00	0.00	0.00
4,800.0	0.00	0.00	4,718.3	-3.6	490.3	490.3	0.00	0.00	0.00	0.00
4,900.0	0.00	0.00	4,818.3	-3.6	490.3	490.3	0.00	0.00	0.00	0.00

Plan Report for UPRR PAN AM N4 - Plan A Rev 0

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 (°)
5,000.0	0.00	0.00	4,918.3	-3.6	490.3	490.3	0.00	0.00	0.00	0.00
5,100.0	0.00	0.00	5,018.3	-3.6	490.3	490.3	0.00	0.00	0.00	0.00
5,111.7	0.00	0.00	5,030.0	-3.6	490.3	490.3	0.00	0.00	0.00	0.00
Total Depth = 5111.7ft - UPRR PAN AM N4 BHL										

Plan Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
1,000.0	1,000.0	0.0	0.0	Kickoff at 1000.0ft
1,500.0	1,494.3	-0.5	65.1	Build Rate = 3.00°/100ft
1,833.3	1,807.1	-1.3	178.9	Hold Angle at 25.00
2,146.7	2,091.2	-2.3	311.4	Begin Drop at 2146.7ft
2,500.0	2,423.3	-3.2	430.3	Build Rate = 3.00°/100ft
2,980.0	2,898.3	-3.6	490.3	Hold Angle at 0.00
5,111.7	5,030.0	-3.6	490.3	Total Depth = 5111.7ft

Vertical Section Information

Angle Type	Target	Azimuth (°)	Origin Type	Origin		Start TVD (ft)
				+N/-S (ft)	+E/-W (ft)	
TD	No Target (Freehand)	90.43	Slot	0.0	0.0	0.0

Survey tool program

From (ft)	To (ft)	Survey/Plan	Survey Tool
0.0	5,111.7	Plan A Rev 0	

Targets associated with this wellbore

Target Name	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Shape
UPRR PAN AM N4 Section Lines	0.0	0.0	0.0	Polygon
UPRR PAN AM N4 BHL	5,030.0	-3.6	490.3	Point
UPRR PAN AM N4 Setbacks	0.0	0.0	0.0	Polygon

North Reference Sheet for Sec. 17-T1N-R67W - UPRR PAN AM N4 - Plan A

All data is in Feet unless otherwise stated. Directions and Coordinates are relative to True North Reference.

Vertical Depths are relative to RKB=22' @ 5150.0ft (Rig). Northing and Easting are relative to UPRR PAN AM N4

Coordinate System is US State Plane 1983, Colorado Southern Zone using datum North American Datum 1983, ellipsoid GRS 1980

Projection method is Lambert Conformal Conic (2 parallel)

Central Meridian is -105.50°, Longitude Origin:0° 0' 0.000 E°, Latitude Origin:38° 26' 0.000 N°

False Easting: 914,401.83m, False Northing: 304,800.61m, Scale Reduction: 1.00069529

Grid Coordinates of Well: 680,079.62 m N, 964,034.71 m E

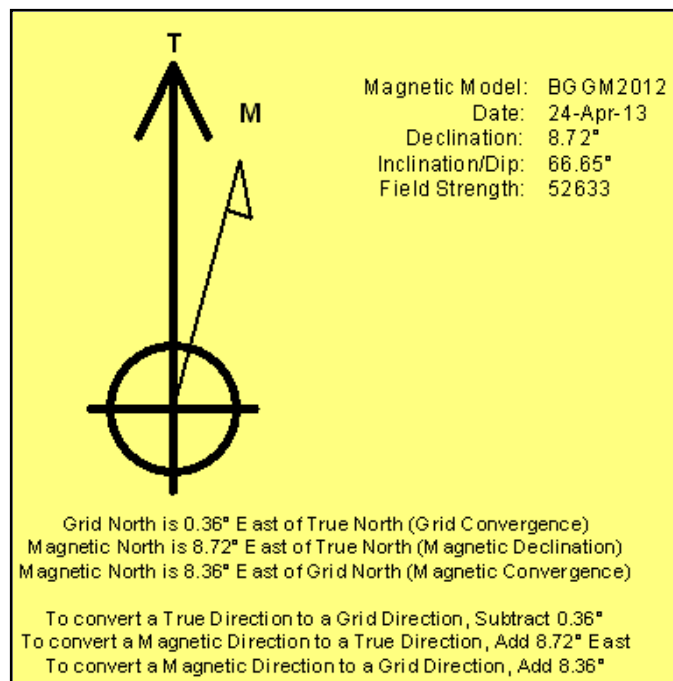
Geographical Coordinates of Well: 40° 02' 44.23" N, 104° 55' 07.64" W

Grid Convergence at Surface is: 0.36°

Based upon Minimum Curvature type calculations, at a Measured Depth of 5,111.74ft

the Bottom Hole Displacement is 490.31ft in the Direction of 90.43° (True).

Magnetic Convergence at surface is: -8.36° (24 April 2013, , BGGM2012)



Project: Weld County, Co. (Nad 83)

Site: Sec. 17-T1N-R67W

Well: UPRR PAN AM N4

Wellbore: Plan A

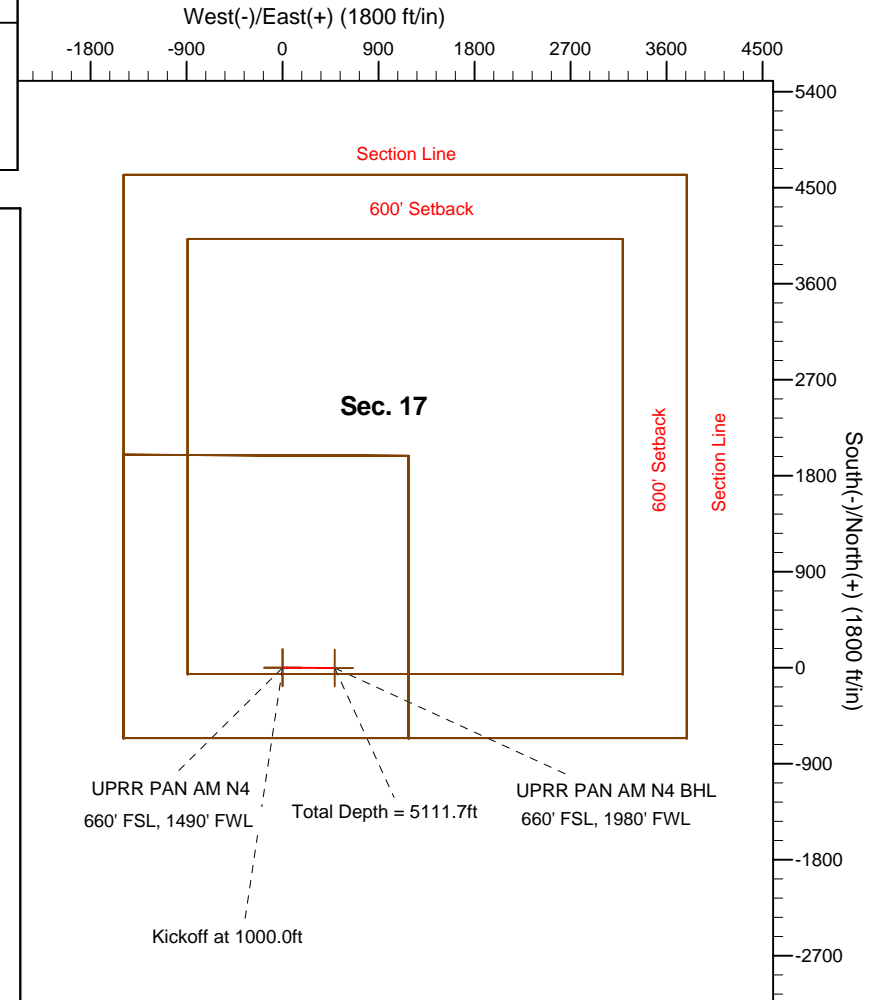
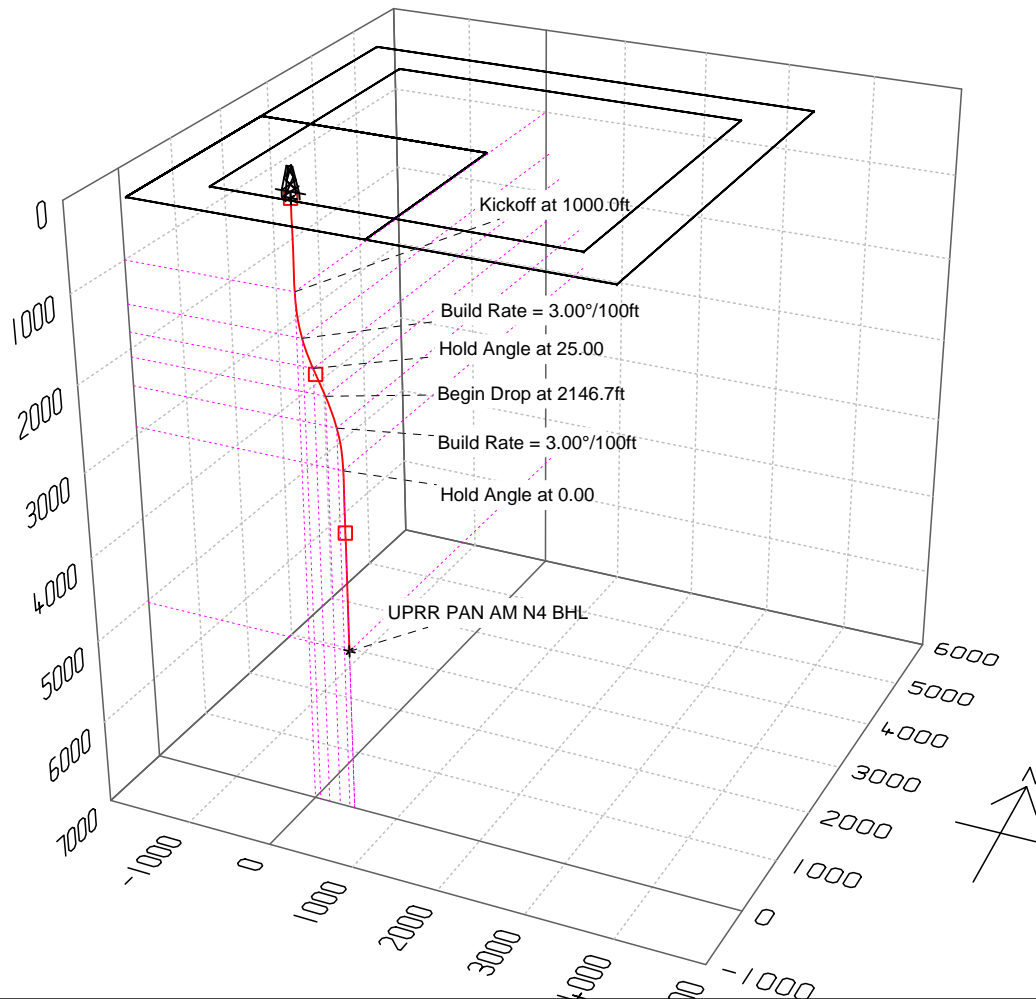
Design: Plan A Rev 0



HALLIBURTON
Sperry Drilling

SECTION DETAILS

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	1000.0	0.00	0.00	1000.0	0.0	0.0	0.00	0.00	0.0	
3	1833.3	25.00	90.43	1807.1	-1.3	178.9	3.00	90.43	178.9	
4	2146.7	25.00	90.43	2091.2	-2.3	311.4	0.00	0.00	311.4	
5	2980.0	0.00	0.00	2898.3	-3.6	490.3	3.00	180.00	490.3	
6	5111.7	0.00	0.00	5030.0	-3.6	490.3	0.00	0.00	490.3	UPRR PAN AM N4 BHL



WELL DETAILS: UPRR PAN AM N4

Ground Level: 5128.0
Northing 680079.62 Easting 964034.71 Latitude 40° 2' 44.232 N Longitude 104° 55' 7.644 W

Plan: Plan A Rev 0 (UPRR PAN AM N4/Plan A)

Created By: Daniel Kohler Date: 4/24/2013
Checked: _____ Date: _____
Reviewed: _____ Date: _____
Approved: _____ Date: _____