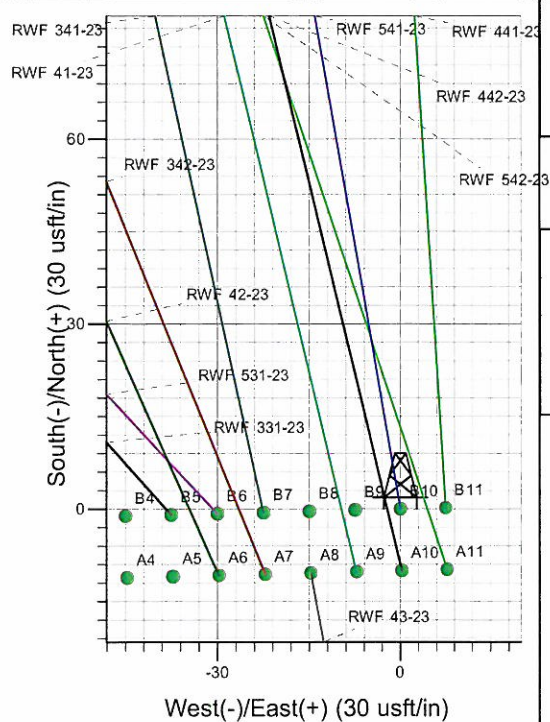
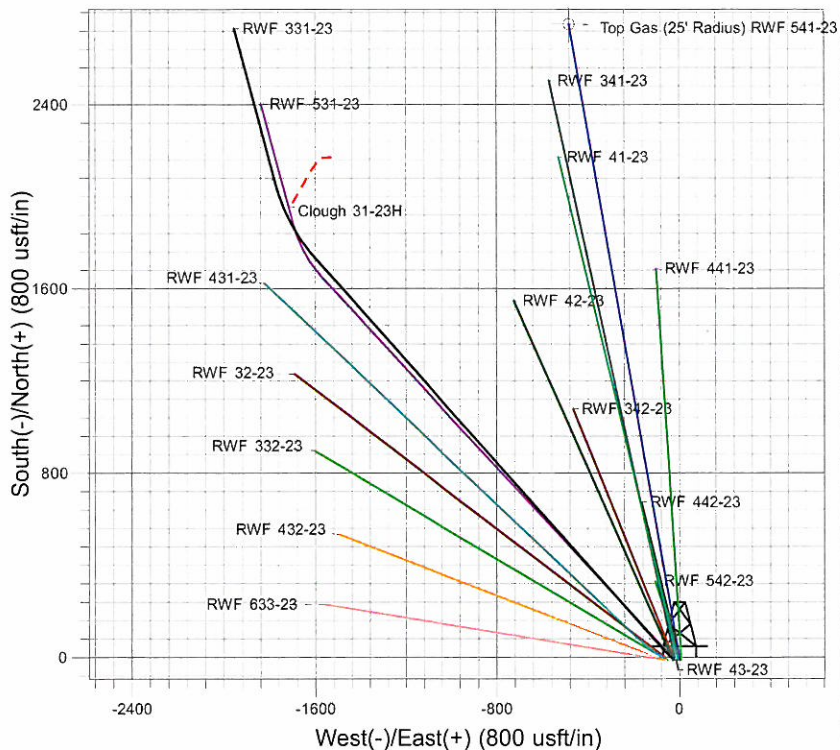
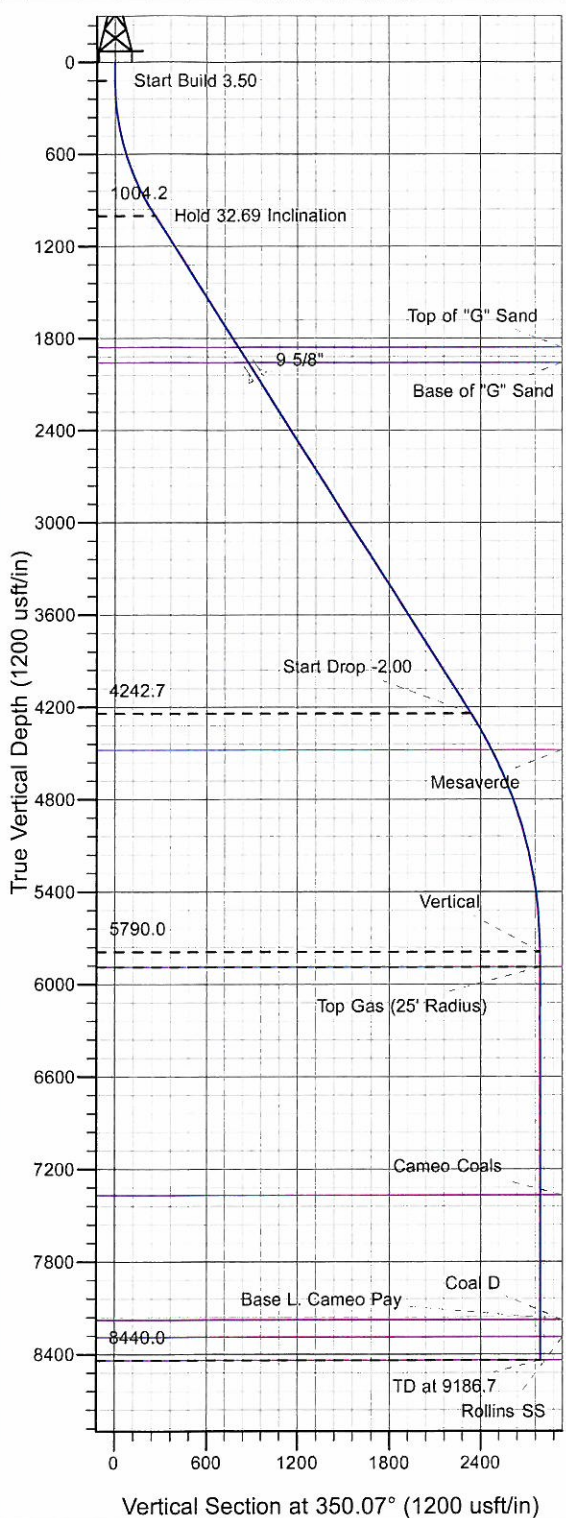




Well Name: RWF 541-23  
 Surface Location: RWF 43-23 Pad  
 North American Datum 1983 , US State Plane 1983 , Colorado Central Zone  
 Ground Elevation: 5599.0  
 +N/-S +E/-W Northing Easting Latitude Longitude Slot  
 0.0 0.0 1619214.50 2337911.50 39° 30' 36.155 N 107° 50' 48.815 W B10  
 KELLY BUSHING @ 5623.0usft (H&P (24' RKB) kjs)



Project: RU 23-06S-094W  
 Site: RWF 43-23 Pad  
 Well: RWF 541-23  
 Plan #3 25Aug10 kjs



Azimuths to True North  
 Magnetic North: 10.43°  
 Magnetic Field  
 Strength: 52395.1snT  
 Dip Angle: 65.81°  
 Date: 4/27/2010  
 Model: IGRF2010

#### ANNOTATIONS

TVD	MD	Inc	Azi	+N/-S	+E/-W	VSec	Departure	Annotation
120.0	120.0	0.00	0.00	0.0	0.0	0.0	0.0	Start Build 3.50
1004.2	1054.1	32.69	350.07	255.4	-44.7	259.3	259.3	Hold 32.69 Inclination
4242.7	4902.1	32.69	350.07	2302.8	-403.0	2337.8	2337.8	Start Drop -2.00
5790.0	6536.7	0.00	0.00	2749.8	-481.2	2791.6	2791.6	Vertical
5890.0	6636.7	0.00	0.00	2749.8	-481.2	2791.6	2791.6	Top Gas
8440.0	9186.7	0.00	0.00	2749.8	-481.2	2791.6	2791.6	TD at 9186.7

# **PICEANCE VLY NAD 83**

**RU 23-06S-094W**

**RWF 43-23 Pad**

**RWF 541-23 - Slot B10**

**Wellbore #1**

**Plan: Plan #3 25Aug10 kjs**

## **Standard Planning Report - Geographic**

**26 August, 2010**



**Williams**  
Planning Report - Geographic

<b>Database:</b>	Compass R5000 WIN AUTH	<b>Local Co-ordinate Reference:</b>	Well RWF 541-23 - Slot B10
<b>Company:</b>	PICEANCE VLY NAD 83	<b>TVD Reference:</b>	KELLY BUSHING @ 5623.0usft (H&P (24' RKB) kjs)
<b>Project:</b>	RU 23-06S-094W	<b>MD Reference:</b>	KELLY BUSHING @ 5623.0usft (H&P (24' RKB) kjs)
<b>Site:</b>	RWF 43-23 Pad	<b>North Reference:</b>	True
<b>Well:</b>	RWF 541-23	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Plan #3 25Aug10 kjs		

<b>Project</b>	RU 23-06S-094W, Garfield County, CO, 23-06S-094W		
<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 Central Zone		Using geodetic scale factor

<b>Site</b>	RWF 43-23 Pad			
<b>Site Position:</b>		<b>Northing:</b>	1,619,204.50 usft	<b>Latitude:</b> 39° 30' 36.053 N
<b>From:</b>	Map	<b>Easting:</b>	2,337,897.00 usft	<b>Longitude:</b> 107° 50' 48.996 W
<b>Position Uncertainty:</b>	0.0 usft	<b>Slot Radius:</b>	13.200 in	<b>Grid Convergence:</b> -1.480 °

<b>Well</b>	RWF 541-23 - Slot B10			
<b>Well Position</b>	<b>+N/-S</b>	0.0 usft	<b>Northing:</b>	1,619,214.50 usft
	<b>+E/-W</b>	0.0 usft	<b>Easting:</b>	2,337,911.50 usft
<b>Position Uncertainty</b>	0.0 usft		<b>Wellhead Elevation:</b>	<b>Ground Level:</b> 5,599.0 usft

<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	4/27/2010	10.434	65.810	52,395

<b>Design</b>	Plan #3 25Aug10 kjs			
<b>Audit Notes:</b>				
<b>Version:</b>	<b>Phase:</b>	PLAN	<b>Tie On Depth:</b>	0.0
<b>Vertical Section:</b>	<b>Depth From (TVD) (usft)</b>	<b>+N/-S (usft)</b>	<b>+E/-W (usft)</b>	<b>Direction (°)</b>
	0.0	0.0	0.0	350.07

<b>Plan Sections</b>										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	TFO (°)	Target
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.00	0.000	
120.0	0.00	0.00	120.0	0.0	0.0	0.00	0.00	0.00	0.000	
1,054.1	32.69	350.07	1,004.2	255.4	-44.7	3.50	3.50	0.00	350.074	
4,902.1	32.69	350.07	4,242.7	2,302.8	-403.0	0.00	0.00	0.00	0.000	
6,536.7	0.00	0.00	5,790.0	2,749.8	-481.2	2.00	-2.00	0.00	180.000	
6,636.7	0.00	0.00	5,890.0	2,749.8	-481.2	0.00	0.00	0.00	0.000	Top Gas (25' Radius)
9,186.7	0.00	0.00	8,440.0	2,749.8	-481.2	0.00	0.00	0.00	0.000	



**Williams**  
Planning Report - Geographic

<b>Database:</b>	Compass R5000 WIN AUTH	<b>Local Co-ordinate Reference:</b>	Well RWF 541-23 - Slot B10
<b>Company:</b>	PICEANCE VLY NAD 83	<b>TVD Reference:</b>	KELLY BUSHING @ 5623.0usft (H&P (24' RKB) kjs)
<b>Project:</b>	RU 23-06S-094W	<b>MD Reference:</b>	KELLY BUSHING @ 5623.0usft (H&P (24' RKB) kjs)
<b>Site:</b>	RWF 43-23 Pad	<b>North Reference:</b>	True
<b>Well:</b>	RWF 541-23	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Plan #3 25Aug10 kjs		

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
0.0	0.00	0.00	0.0	0.0	0.0	1,619,214.50	2,337,911.50	39° 30' 36.155 N	107° 50' 48.815 W
120.0	0.00	0.00	120.0	0.0	0.0	1,619,214.50	2,337,911.50	39° 30' 36.155 N	107° 50' 48.815 W
<b>Start Build 3.50</b>									
1,054.1	32.69	350.07	1,004.2	255.4	-44.7	1,619,471.00	2,337,873.41	39° 30' 38.680 N	107° 50' 49.385 W
<b>Hold 32.69 Inclination</b>									
2,071.0	32.69	350.07	1,860.0	796.5	-139.4	1,620,014.28	2,337,792.75	39° 30' 44.027 N	107° 50' 50.593 W
<b>Top of "G" Sand</b>									
2,189.8	32.69	350.07	1,960.0	859.7	-150.4	1,620,077.76	2,337,783.32	39° 30' 44.652 N	107° 50' 50.734 W
<b>Base of "G" Sand</b>									
2,308.6	32.69	350.07	2,060.0	922.9	-161.5	1,620,141.24	2,337,773.89	39° 30' 45.277 N	107° 50' 50.875 W
<b>9 5/8"</b>									
4,902.1	32.69	350.07	4,242.7	2,302.8	-403.0	1,621,526.81	2,337,568.16	39° 30' 58.914 N	107° 50' 53.957 W
<b>Start Drop -2.00</b>									
5,176.1	27.21	350.07	4,480.0	2,437.5	-426.6	1,621,662.09	2,337,548.07	39° 31' 0.245 N	107° 50' 54.257 W
<b>Mesaverde</b>									
6,536.7	0.00	0.00	5,790.0	2,749.8	-481.2	1,621,975.70	2,337,501.50	39° 31' 3.332 N	107° 50' 54.955 W
<b>Vertical</b>									
6,636.7	0.00	0.00	5,890.0	2,749.8	-481.2	1,621,975.70	2,337,501.50	39° 31' 3.332 N	107° 50' 54.955 W
<b>Top Gas - Approx. Top Gas</b>									
8,116.7	0.00	0.00	7,370.0	2,749.8	-481.2	1,621,975.70	2,337,501.50	39° 31' 3.332 N	107° 50' 54.955 W
<b>Cameo Coals</b>									
8,921.7	0.00	0.00	8,175.0	2,749.8	-481.2	1,621,975.70	2,337,501.50	39° 31' 3.332 N	107° 50' 54.955 W
<b>Base L. Cameo Pay</b>									
8,926.7	0.00	0.00	8,180.0	2,749.8	-481.2	1,621,975.70	2,337,501.50	39° 31' 3.332 N	107° 50' 54.955 W
<b>Coal D</b>									
9,036.7	0.00	0.00	8,290.0	2,749.8	-481.2	1,621,975.70	2,337,501.50	39° 31' 3.332 N	107° 50' 54.955 W
<b>Rollins SS</b>									
9,186.7	0.00	0.00	8,440.0	2,749.8	-481.2	1,621,975.70	2,337,501.50	39° 31' 3.332 N	107° 50' 54.955 W
<b>TD at 9186.7 - TD</b>									

Design Targets									
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
- hi/miss target									
- Shape									
Top Gas (25' Radius) R\	0.00	0.00	5,890.0	2,749.8	-481.2	1,621,975.70	2,337,501.50	39° 31' 3.332 N	107° 50' 54.955 W
- plan hits target center									
- Circle (radius 25.0)									

Casing Points					
Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (in)	Hole Diameter (in)	
2,308.6	2,060.0	9 5/8"	9.625	12.250	

# Williams

## Planning Report - Geographic

<b>Database:</b>	Compass R5000 WIN AUTH	<b>Local Co-ordinate Reference:</b>	Well RWF 541-23 - Slot B10
<b>Company:</b>	PICEANCE VLY NAD 83	<b>TVD Reference:</b>	KELLY BUSHING @ 5623.0usft (H&P (24' RKB) kjs)
<b>Project:</b>	RU 23-06S-094W	<b>MD Reference:</b>	KELLY BUSHING @ 5623.0usft (H&P (24' RKB) kjs)
<b>Site:</b>	RWF 43-23 Pad	<b>North Reference:</b>	True
<b>Well:</b>	RWF 541-23	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Plan #3 25Aug10 kjs		

Formations						
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
2,071.0	1,860.0	Top of "G" Sand				
2,189.8	1,960.0	Base of "G" Sand				
5,176.1	4,480.0	Mesaverde				
6,636.7	5,890.0	Approx. Top Gas				
8,116.7	7,370.0	Cameo Coals				
8,921.7	8,175.0	Base L. Cameo Pay				
8,926.7	8,180.0	Coal D				
9,036.7	8,290.0	Rollins SS				
9,186.7	8,440.0	TD				

Plan Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates			
		+N/-S (usft)	+E/-W (usft)	Comment	
120.0	120.0	0.0	0.0	Start Build 3.50	
1,054.1	1,004.2	255.4	-44.7	Hold 32.69 Inclination	
4,902.1	4,242.7	2,302.8	-403.0	Start Drop -2.00	
6,536.7	5,790.0	2,749.8	-481.2	Vertical	
6,636.7	5,890.0	2,749.8	-481.2	Top Gas	
9,186.7	8,440.0	2,749.8	-481.2	TD at 9186.7	