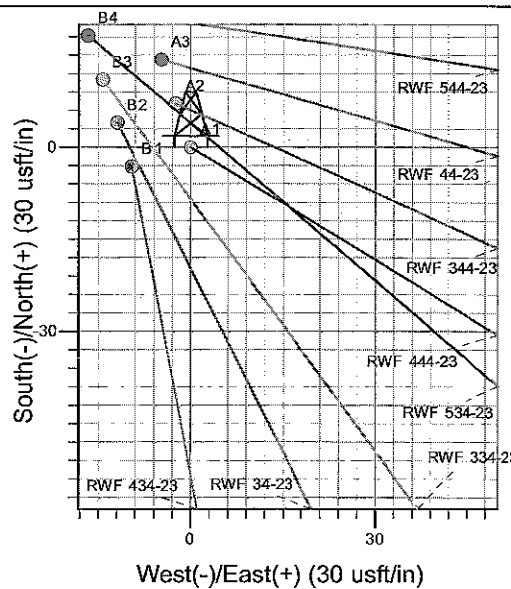
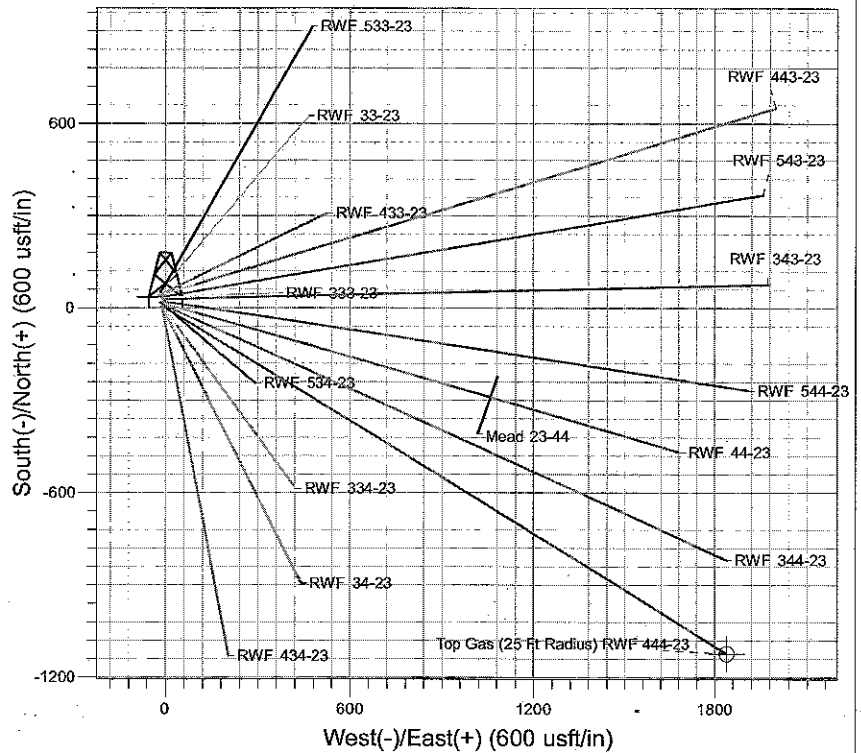
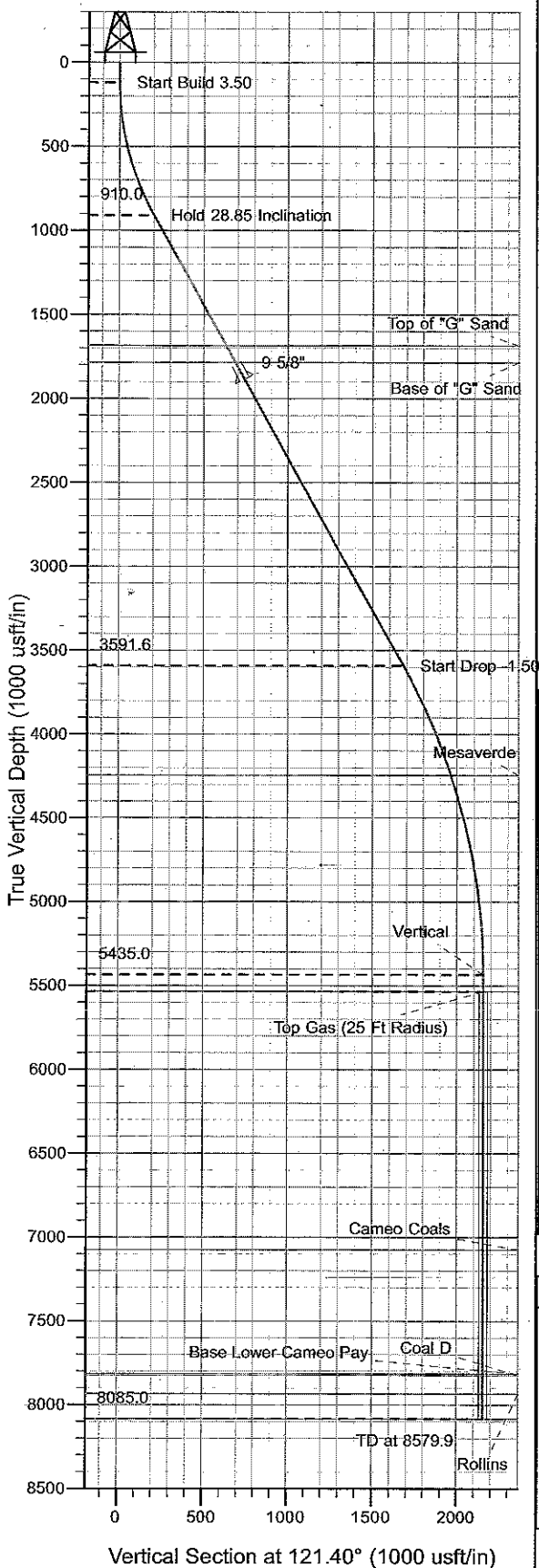




Well Name: RWF 444-23  
 Surface Location: RWF 33-23 Pad  
 North American Datum 1983 , US State Plane 1983 , Colorado Central Zone  
 Ground Elevation: 5501.5  
 +N/-S +E/-W Northing Easting Latitude Longitude Slot  
 0.0 0.0 1618307.10 2335788.60 39° 30' 26.647 N 107° 51' 15.592 W A1  
 WELL @ 5525.5usft (Original Well Elev)



Project: RU 23-06S-094W  
 Site: RWF 33-23 Pad  
 Well: RWF 444-23  
 Plan #2 07Apr10 kjs

Azimuths to True North  
 Magnetic North: 10.61°  
 Magnetic Field  
 Strength: 52571.6snT  
 Dip Angle: 65.86°  
 Date: 10/16/2008  
 Model: IGRF2005-10

#### 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
910.0	944.4	28.86	121.40	-105.9	173.5	203.3	203.3	Hold 28.85 Inclination
3591.6	4006.1	28.86	121.40	-875.8	1434.7	1680.8	1680.8	Start Drop -1.50
5435.0	5929.9	0.00	0.00	-1122.9	1839.5	2155.1	2155.1	Vertical
5535.0	6029.9	0.00	0.00	-1122.9	1839.5	2155.1	2155.1	Top Gas
8085.0	8579.9	0.00	0.00	-1122.9	1839.5	2155.1	2155.1	TD at 8579.9

# **PICEANCE VLY NAD 83**

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

**RWF 33-23 Pad**

**RWF 444-23 - Slot A1**

**Wellbore #1**

**Plan: Plan #2 07Apr10 kjs**

## **Standard Planning Report - Geographic**

**22 July, 2010**

# Williams

## Planning Report - Geographic

Database:	Compass R5000 WIN AUTH	Local Co-ordinate Reference:	Well RWF 444-23 - Slot A1
Company:	PICEANCE VLY NAD 83	TVD Reference:	WELL @ 5525.5usft (Original Well Elev)
Project:	RU 23-06S-094W	MD Reference:	WELL @ 5525.5usft (Original Well Elev)
Site:	RWF 33-23 Pad	North Reference:	True
Well:	RWF 444-23	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #2 07Apr10 kjs		

Project	RU 23-06S-094W, Garfield County, CO, 23-06S-094W		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	Colorado Central Zone		Using geodetic scale factor

Site	RWF 33-23 Pad		
Site Position:		Northing:	1,618,354.40 usft
From:	Map	Easting:	2,335,763.80 usft
Position Uncertainty:	0.0 usft	Slot Radius:	13.200 in
		Latitude:	39° 30' 27.108 N
		Longitude:	107° 51' 15.924 W
		Grid Convergence:	-1.485 °

Well	RWF 444-23 - Slot A1		
Well Position	+N/-S	0.0 usft	Northing:
	+E/-W	0.0 usft	Easting:
Position Uncertainty	0.0 usft	Wellhead Elevation:	
		Latitude:	39° 30' 26.647 N
		Longitude:	107° 51' 15.592 W
		Ground Level:	5,501.5 usft

Wellbore	Wellbore #1		
Magnetics	Model Name	Sample Date	Declination
	IGRF2005-10	10/16/2008	10.614
			Dip Angle
			65.857
			Field Strength
			52,572

Design	Plan #2 07Apr10 kjs		
Audit Notes:			
Version:	Phase:	PLAN	Tie On Depth:
			0.0
Vertical Section:	Depth From (TVD)	+N/-S	+E/-W
	(usft)	(usft)	(usft)
	0.0	0.0	0.0
			Direction
			121.40

Plan Sections										
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	
944.4	28.86	121.40	910.0	-105.9	173.5	3.50	3.50	0.00	121.401	
4,006.1	28.86	121.40	3,591.6	-875.8	1,434.7	0.00	0.00	0.00	0.000	
5,929.9	0.00	0.00	5,435.0	-1,122.9	1,839.5	1.50	-1.50	0.00	180.000	
6,029.9	0.00	0.00	5,535.0	-1,122.9	1,839.5	0.00	0.00	0.00	0.000	Top Gas (25 Ft Radius)
8,579.9	0.00	0.00	8,085.0	-1,122.9	1,839.5	0.00	0.00	0.00	0.000	

**Williams**  
Planning Report - Geographic

Database:	Compass R5000 WIN AUTH	Local Co-ordinate Reference:	Well RWF 444-23 - Slot A1
Company:	PICEANCE VLY NAD 83	TVD Reference:	WELL @ 5525.5usft (Original Well Elev)
Project:	RU 23-06S-094W	MD Reference:	WELL @ 5525.5usft (Original Well Elev)
Site:	RWF 33-23 Pad	North Reference:	True
Well:	RWF 444-23	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #2 07Apr10 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	1,618,307.10	2,335,788.60	39° 30' 26.647 N	107° 51' 15.592 W
120.0	0.00	0.00	120.0	0.0	0.0	1,618,307.10	2,335,788.60	39° 30' 26.647 N	107° 51' 15.592 W
<b>Start Build 3.50</b>									
944.4	28.86	121.40	910.0	-105.9	173.5	1,618,196.74	2,335,959.28	39° 30' 25.601 N	107° 51' 13.379 W
<b>Hold 28.85 Inclination</b>									
1,829.3	28.86	121.40	1,685.0	-328.4	538.0	1,617,964.89	2,336,317.86	39° 30' 23.402 N	107° 51' 8.729 W
<b>Top of "G" Sand</b>									
1,943.5	28.86	121.40	1,785.0	-357.1	585.0	1,617,934.97	2,336,364.13	39° 30' 23.118 N	107° 51' 8.129 W
<b>Base of "G" Sand</b>									
2,057.6	28.86	121.40	1,885.0	-385.8	632.0	1,617,905.06	2,336,410.40	39° 30' 22.834 N	107° 51' 7.529 W
<b>9 5/8"</b>									
4,006.1	28.86	121.40	3,591.6	-875.8	1,434.7	1,617,394.49	2,337,200.05	39° 30' 17.992 N	107° 50' 57.289 W
<b>Start Drop -1.50</b>									
4,719.7	18.15	121.40	4,245.0	-1,023.8	1,677.2	1,617,240.21	2,337,438.67	39° 30' 16.528 N	107° 50' 54.194 W
<b>Mesaverde</b>									
5,929.9	0.00	0.00	5,435.0	-1,122.9	1,839.5	1,617,137.00	2,337,598.30	39° 30' 15.549 N	107° 50' 52.124 W
<b>Vertical</b>									
6,029.9	0.00	0.00	5,535.0	-1,122.9	1,839.5	1,617,137.00	2,337,598.30	39° 30' 15.549 N	107° 50' 52.124 W
<b>Top Gas - Approx. Top Gas</b>									
7,569.9	0.00	0.00	7,075.0	-1,122.9	1,839.5	1,617,137.00	2,337,598.30	39° 30' 15.549 N	107° 50' 52.124 W
<b>Cameo Coals</b>									
8,309.9	0.00	0.00	7,815.0	-1,122.9	1,839.5	1,617,137.00	2,337,598.30	39° 30' 15.549 N	107° 50' 52.124 W
<b>Base Lower Cameo Pay</b>									
8,319.9	0.00	0.00	7,825.0	-1,122.9	1,839.5	1,617,137.00	2,337,598.30	39° 30' 15.549 N	107° 50' 52.124 W
<b>Coal D</b>									
8,429.9	0.00	0.00	7,935.0	-1,122.9	1,839.5	1,617,137.00	2,337,598.30	39° 30' 15.549 N	107° 50' 52.124 W
<b>Rollins</b>									
8,579.8	0.00	0.00	8,084.9	-1,122.9	1,839.5	1,617,137.00	2,337,598.30	39° 30' 15.549 N	107° 50' 52.124 W
<b>TD</b>									
8,579.9	0.00	0.00	8,085.0	-1,122.9	1,839.5	1,617,137.00	2,337,598.30	39° 30' 15.549 N	107° 50' 52.124 W
<b>TD at 8579.9</b>									

**Design Targets**

Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
- hit/miss target									
- Shape									
Top Gas (25 Ft Radius)	0.00	0.00	5,535.0	-1,122.9	1,839.5	1,617,137.00	2,337,598.30	39° 30' 15.549 N	107° 50' 52.124 W
- plan hits target center									
- Circle (radius 25.0)									

**Casing Points**

Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (in)	Hole Diameter (in)
2,057.6	1,885.0	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 444-23 - Slot A1
<b>Company:</b>	PICEANCE VLY NAD 83	<b>TVD Reference:</b>	WELL @ 5525.5usft (Original Well Elev)
<b>Project:</b>	RU 23-06S-094W	<b>MD Reference:</b>	WELL @ 5525.5usft (Original Well Elev)
<b>Site:</b>	RWF 33-23 Pad	<b>North Reference:</b>	True
<b>Well:</b>	RWF 444-23	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Plan #2 07Apr10 kjs		

Formations						
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
1,829.3	1,685.0	Top of "G" Sand				
1,943.5	1,785.0	Base of "G" Sand				
4,719.7	4,245.0	Mesaverde				
6,029.9	5,535.0	Approx. Top Gas				
7,569.9	7,075.0	Cameo Coals				
8,309.9	7,815.0	Base Lower Cameo Pay				
8,319.9	7,825.0	Coal D				
8,429.9	7,935.0	Rollins				
8,579.8	8,084.9	TD		0.000		

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	
944.4	910.0	-105.9	173.5	Hold 28.85 Inclination	
4,006.1	3,591.6	-875.8	1,434.7	Start Drop -1.50	
5,929.9	5,435.0	-1,122.9	1,839.5	Vertical	
6,029.9	5,535.0	-1,122.9	1,839.5	Top Gas	
8,579.9	8,085.0	-1,122.9	1,839.5	TD at 8579.9	