

# **PICEANCE VLY NAD 83**

**RU 31-06S-094W**

**RWF 13-31 Pad**

**RWF 423-31 - Slot A10**

**Wellbore #1**

**Plan: Plan #2 09Apr10 kjs**

## **Standard Planning Report - Geographic**

**12 April, 2010**

**Williams**  
Planning Report - Geographic

<b>Database:</b>	Compass R5000 WIN AUTH	<b>Local Co-ordinate Reference:</b>	Well RWF 423-31 - Slot A10
<b>Company:</b>	PICEANCE VLY NAD 83	<b>TVD Reference:</b>	KB H&P @ 5382.0usft (H&P)
<b>Project:</b>	RU 31-06S-094W	<b>MD Reference:</b>	KB H&P @ 5382.0usft (H&P)
<b>Site:</b>	RWF 13-31 Pad	<b>North Reference:</b>	True
<b>Well:</b>	RWF 423-31	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Plan #2 09Apr10 kjs		

<b>Project</b>	RU 31-06S-094W, 31-06S-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		

Site		RWF 13-31 Pad			
Site Position:		Northing:	1,608,890.20 usft	Latitude:	39° 28' 47.650 N
From:	Map	Easting:	2,312,921.60 usft	Longitude:	107° 56' 4.027 W
Position Uncertainty:	0.0 usft	Slot Radius:	13.200 in	Grid Convergence:	-1.535 °

Well	RWF 423-31 - Slot A10					
Well Position	+N/-S	0.0 usft	Northing:	1,608,922.00 usft	Latitude:	39° 28' 47.981 N
	+E/-W	0.0 usft	Easting:	2,312,981.14 usft	Longitude:	107° 56' 3.279 W
Position Uncertainty		0.0 usft	Wellhead Elevation:		Ground Level:	5,358.0 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>
	IGRF200510	11/24/2008	10.632	65.816	52,537

<b>Design</b>	Plan #2 09Apr10 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	123.51

<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	
453.3	10.00	123.51	451.6	-16.0	24.2	3.00	3.00	0.00	123.510	
2,144.4	10.00	123.51	2,117.0	-178.1	269.0	0.00	0.00	0.00	0.000	
2,574.2	22.89	123.51	2,528.4	-245.2	370.3	3.00	3.00	0.00	0.003	
3,944.8	22.89	123.51	3,791.0	-539.6	814.9	0.00	0.00	0.00	0.000	
5,471.1	0.00	0.00	5,277.0	-705.7	1,065.8	1.50	-1.50	0.00	180.000	Top Gas (25' Radius)
8,021.1	0.00	0.00	7,827.0	-705.7	1,065.8	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 423-31 - Slot A10
<b>Company:</b>	PICEANCE VLY NAD 83	<b>TVD Reference:</b>	KB H&P @ 5382.0usft (H&P)
<b>Project:</b>	RU 31-06S-094W	<b>MD Reference:</b>	KB H&P @ 5382.0usft (H&P)
<b>Site:</b>	RWF 13-31 Pad	<b>North Reference:</b>	True
<b>Well:</b>	RWF 423-31	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Plan #2 09Apr10 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	1,608,922.00	2,312,981.14	39° 28' 47.981 N	107° 56' 3.279 W	
120.0	0.00	0.00	120.0	0.0	0.0	1,608,922.00	2,312,981.14	39° 28' 47.981 N	107° 56' 3.279 W	
Start Build 3.00										
453.3	10.00	123.51	451.6	-16.0	24.2	1,608,905.34	2,313,004.89	39° 28' 47.822 N	107° 56' 2.971 W	
Hold 10.00 Inclination										
1,111.7	10.00	123.51	1,100.0	-79.1	119.5	1,608,839.70	2,313,098.49	39° 28' 47.198 N	107° 56' 1.755 W	
9 5/8"										
1,941.3	10.00	123.51	1,917.0	-158.7	239.6	1,608,756.97	2,313,216.43	39° 28' 46.412 N	107° 56' 0.223 W	
Top of "G" Sand										
2,042.8	10.00	123.51	2,017.0	-168.4	254.3	1,608,746.85	2,313,230.86	39° 28' 46.316 N	107° 56' 0.036 W	
Base of "G" Sand										
2,144.4	10.00	123.51	2,117.0	-178.1	269.0	1,608,736.72	2,313,245.30	39° 28' 46.220 N	107° 55' 59.848 W	
Begin 3°/100 Build										
2,574.2	22.89	123.51	2,528.4	-245.2	370.3	1,608,666.99	2,313,344.72	39° 28' 45.557 N	107° 55' 58.557 W	
Hold 22.89 Inclination										
3,944.8	22.89	123.51	3,791.0	-539.6	814.9	1,608,360.79	2,313,781.25	39° 28' 42.647 N	107° 55' 52.887 W	
Start Drop -1.50										
4,404.3	16.00	123.51	4,224.0	-624.0	942.3	1,608,272.99	2,313,906.43	39° 28' 41.813 N	107° 55' 51.261 W	
Mesaverde										
5,471.1	0.00	0.00	5,277.0	-705.7	1,065.8	1,608,188.00	2,314,027.60	39° 28' 41.005 N	107° 55' 49.687 W	
Top Gas - Approx. Top Gas										
6,881.1	0.00	0.00	6,687.0	-705.7	1,065.8	1,608,188.00	2,314,027.60	39° 28' 41.005 N	107° 55' 49.687 W	
Cameo Coals										
7,711.1	0.00	0.00	7,517.0	-705.7	1,065.8	1,608,188.00	2,314,027.60	39° 28' 41.005 N	107° 55' 49.687 W	
Coal D										
7,781.1	0.00	0.00	7,587.0	-705.7	1,065.8	1,608,188.00	2,314,027.60	39° 28' 41.005 N	107° 55' 49.687 W	
Base L. Cameo Pay										
7,871.1	0.00	0.00	7,677.0	-705.7	1,065.8	1,608,188.00	2,314,027.60	39° 28' 41.005 N	107° 55' 49.687 W	
Rollins SS										
8,021.1	0.00	0.00	7,827.0	-705.7	1,065.8	1,608,188.00	2,314,027.60	39° 28' 41.005 N	107° 55' 49.687 W	
TD at 8021.1 - TD										

Design Targets										
Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude	
Top Gas (25' Radius) R1 - plan hits target center - Circle (radius 25.0)	0.00	0.00	5,277.0	-705.7	1,065.8	1,608,188.00	2,314,027.60	39° 28' 41.005 N	107° 55' 49.687 W	

Casing Points					
Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (in)	Hole Diameter (in)	
1,111.7	1,100.0	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 423-31 - Slot A10
<b>Company:</b>	PICEANCE VLY NAD 83	<b>TVD Reference:</b>	KB H&P @ 5382.0usft (H&P)
<b>Project:</b>	RU 31-06S-094W	<b>MD Reference:</b>	KB H&P @ 5382.0usft (H&P)
<b>Site:</b>	RWF 13-31 Pad	<b>North Reference:</b>	True
<b>Well:</b>	RWF 423-31	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Plan #2 09Apr10 kjs		

Formations						
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
1,941.3	1,917.0	Top of "G" Sand				
2,042.8	2,017.0	Base of "G" Sand				
4,404.3	4,224.0	Mesaverde				
5,471.1	5,277.0	Approx. Top Gas				
6,881.1	6,687.0	Cameo Coals				
7,711.1	7,517.0	Coal D				
7,781.1	7,587.0	Base L. Cameo Pay				
7,871.1	7,677.0	Rollins SS				
8,021.1	7,827.0	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 3.00	
453.3	451.6	-16.0	24.2	Hold 10.00 Inclination	
2,144.4	2,117.0	-178.1	269.0	Begin 3°/100 Build	
2,574.2	2,528.4	-245.2	370.3	Hold 22.89 Inclination	
3,944.8	3,791.0	-539.6	814.9	Start Drop -1.50	
5,471.1	5,277.0	-705.7	1,065.8	Top Gas	
8,021.1	7,827.0	-705.7	1,065.8	TD at 8021.1	