

# **PICEANCE VLY NAD 83**

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

**RWF 34-31 Pad**

**RWF 343-31 - Slot A6**

**Wellbore #1**

**Plan: Design #1 18Feb10 kjs**

## **Standard Planning Report - Geographic**

**05 May, 2010**

**Williams**  
Planning Report - Geographic

<b>Database:</b>	Compass R5000 WIN AUTH	<b>Local Co-ordinate Reference:</b>	Well RWF 343-31 - Slot A6
<b>Company:</b>	PICEANCE VLY NAD 83	<b>TVD Reference:</b>	WELL @ 5733.0usft (SSD 573 (26' KB) kjs)
<b>Project:</b>	RU 31-06S-094W	<b>MD Reference:</b>	WELL @ 5733.0usft (SSD 573 (26' KB) kjs)
<b>Site:</b>	RWF 34-31 Pad	<b>North Reference:</b>	True
<b>Well:</b>	RWF 343-31	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Design #1 18Feb10 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 34-31 Pad			
Site Position:		Northing:	1,607,154.40 usft	Latitude:	39° 28' 30.868 N
From:	Map	Easting:	2,314,309.20 usft	Longitude:	107° 55' 45.744 W
Position Uncertainty:	0.0 usft	Slot Radius:	13.200 in	Grid Convergence:	-1.532 °

Well		RWF 343-31 - Slot A6				
Well Position	+N/-S	0.0 usft	Northing:	1,607,141.88 usft	Latitude:	39° 28' 30.749 N
	+E/-W	0.0 usft	Easting:	2,314,329.19 usft	Longitude:	107° 55' 45.485 W
Position Uncertainty		0.0 usft	Wellhead Elevation:		Ground Level:	5,707.0 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	2/18/2010	10.490	65.770	52,383

<b>Design</b>	Design #1 18Feb10 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	46.65

<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	
1,153.0	30.99	46.65	1,103.4	187.1	198.3	3.00	3.00	0.00	46.654	
4,706.9	30.99	46.65	4,149.9	1,443.2	1,529.0	0.00	0.00	0.00	0.000	
6,256.4	0.00	0.00	5,625.0	1,723.9	1,826.4	2.00	-2.00	0.00	180.000	Top Gas (25' Radius)
8,806.4	0.00	0.00	8,175.0	1,723.9	1,826.4	0.00	0.00	0.00	0.000	

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<b>Site:</b>	RWF 34-31 Pad	<b>North Reference:</b>	True
<b>Well:</b>	RWF 343-31	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Design #1 18Feb10 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	1,607,141.88	2,314,329.19	39° 28' 30.749 N	107° 55' 45.485 W	
120.0	0.00	0.00	120.0	0.0	0.0	1,607,141.88	2,314,329.19	39° 28' 30.749 N	107° 55' 45.485 W	
Start Build 3.00										
1,153.0	30.99	46.65	1,103.4	187.1	198.3	1,607,323.65	2,314,532.39	39° 28' 32.599 N	107° 55' 42.957 W	
Hold 30.99 Inclination										
2,467.2	30.99	46.65	2,230.0	651.6	690.4	1,607,774.81	2,315,036.73	39° 28' 37.190 N	107° 55' 36.681 W	
Top of "G" Sand										
2,583.9	30.99	46.65	2,330.0	692.8	734.0	1,607,814.85	2,315,081.50	39° 28' 37.597 N	107° 55' 36.124 W	
Base of "G" Sand										
2,700.5	30.99	46.65	2,430.0	734.1	777.7	1,607,854.90	2,315,126.27	39° 28' 38.005 N	107° 55' 35.567 W	
9 5/8"										
4,706.9	30.99	46.65	4,149.9	1,443.2	1,529.0	1,608,543.65	2,315,896.21	39° 28' 45.013 N	107° 55' 25.985 W	
Start Drop -2.00										
5,159.8	21.93	46.65	4,555.0	1,581.6	1,675.6	1,608,678.07	2,316,046.48	39° 28' 46.380 N	107° 55' 24.115 W	
Mesaverde										
6,256.4	0.00	0.00	5,625.0	1,723.9	1,826.4	1,608,816.30	2,316,201.00	39° 28' 47.787 N	107° 55' 22.192 W	
Top Gas - Approx. Top Gas										
7,661.4	0.00	0.00	7,030.0	1,723.9	1,826.4	1,608,816.30	2,316,201.00	39° 28' 47.787 N	107° 55' 22.192 W	
Cameo Coals										
8,486.4	0.00	0.00	7,855.0	1,723.9	1,826.4	1,608,816.30	2,316,201.00	39° 28' 47.787 N	107° 55' 22.192 W	
Coal D										
8,556.4	0.00	0.00	7,925.0	1,723.9	1,826.4	1,608,816.30	2,316,201.00	39° 28' 47.787 N	107° 55' 22.192 W	
Base L. Cameo Pay										
8,656.4	0.00	0.00	8,025.0	1,723.9	1,826.4	1,608,816.30	2,316,201.00	39° 28' 47.787 N	107° 55' 22.192 W	
Rollins SS										
8,806.4	0.00	0.00	8,175.0	1,723.9	1,826.4	1,608,816.30	2,316,201.00	39° 28' 47.787 N	107° 55' 22.192 W	
TD at 8806.4 - TD										

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' Radius) R\	0.00	0.00	5,625.0	1,723.9	1,826.4	1,608,816.30	2,316,201.00	39° 28' 47.787 N	107° 55' 22.192 W	
- plan hits target center										
- Circle (radius 25.0)										

Casing Points							Casing Diameter (in)	Hole Diameter (in)
Measured Depth (usft)	Vertical Depth (usft)	Name						
2,700.5	2,430.0	9 5/8"					9.625	12.250

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Planning Report - Geographic

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<b>Well:</b>	RWF 343-31	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Design #1 18Feb10 kjs		

Formations						
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
2,467.2	2,230.0	Top of "G" Sand				
2,583.9	2,330.0	Base of "G" Sand				
5,159.8	4,555.0	Mesaverde				
6,256.4	5,625.0	Approx. Top Gas				
7,661.4	7,030.0	Cameo Coals				
8,486.4	7,855.0	Coal D				
8,556.4	7,925.0	Base L. Cameo Pay				
8,656.4	8,025.0	Rollins SS				
8,806.4	8,175.0	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	
1,153.0	1,103.4	187.1	198.3	Hold 30.99 Inclination	
4,706.9	4,149.9	1,443.2	1,529.0	Start Drop -2.00	
6,256.4	5,625.0	1,723.9	1,826.4	Top Gas	
8,806.4	8,175.0	1,723.9	1,826.4	TD at 8806.4	