

# **PICEANCE VLY NAD 83**

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

**RWF 13-31 Pad**

**RWF 24-31 - Slot B6**

**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 24-31 - Slot B6
<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 24-31	<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 24-31 - Slot B6					
Well Position	+N/-S	0.0 usft	Northing:	1,608,916.69 usft	Latitude:	39° 28' 47.920 N
	+E/-W	0.0 usft	Easting:	2,312,949.96 usft	Longitude:	107° 56' 3.675 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	138.43	

<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	
150.0	0.00	0.00	150.0	0.0	0.0	0.00	0.00	0.00	0.000	
630.0	12.00	138.43	626.5	-37.5	33.2	2.50	2.50	0.00	138.430	
2,455.4	12.00	138.43	2,412.0	-321.4	285.1	0.00	0.00	0.00	0.000	
2,966.5	27.33	138.43	2,891.9	-449.7	398.9	3.00	3.00	0.00	0.000	
4,153.8	27.33	138.43	3,946.6	-857.5	760.6	0.00	0.00	0.00	0.000	
5,520.5	0.00	0.00	5,262.0	-1,096.8	972.9	2.00	-2.00	0.00	180.000	Top Gas (25' Radius)
8,075.5	0.00	0.00	7,817.0	-1,096.8	972.9	0.00	0.00	0.00	0.000	

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<b>Database:</b>	Compass R5000 WIN AUTH	<b>Local Co-ordinate Reference:</b>	Well RWF 24-31 - Slot B6
<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 24-31	<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	1,608,916.69	2,312,949.96	39° 28' 47.920 N	107° 56' 3.675 W	
150.0	0.00	0.00	150.0	0.0	0.0	1,608,916.69	2,312,949.96	39° 28' 47.920 N	107° 56' 3.675 W	
Start Build 2.50										
630.0	12.00	138.43	626.5	-37.5	33.2	1,608,878.34	2,312,982.18	39° 28' 47.549 N	107° 56' 3.251 W	
Hold 12.00 Inclination										
1,114.1	12.00	138.43	1,100.0	-112.8	100.0	1,608,801.28	2,313,046.92	39° 28' 46.805 N	107° 56' 2.399 W	
9 5/8"										
1,944.2	12.00	138.43	1,912.0	-241.9	214.5	1,608,669.13	2,313,157.94	39° 28' 45.529 N	107° 56' 0.939 W	
Top of "G" Sand										
2,046.5	12.00	138.43	2,012.0	-257.8	228.6	1,608,652.86	2,313,171.62	39° 28' 45.372 N	107° 56' 0.759 W	
Base of "G" Sand										
2,455.4	12.00	138.43	2,412.0	-321.4	285.1	1,608,587.76	2,313,226.31	39° 28' 44.743 N	107° 56' 0.039 W	
Start Build 3.00										
2,966.5	27.33	138.43	2,891.9	-449.7	398.9	1,608,456.46	2,313,336.63	39° 28' 43.475 N	107° 55' 58.588 W	
Hold 27.33 Inclination										
4,153.8	27.33	138.43	3,946.6	-857.5	760.6	1,608,039.08	2,313,687.34	39° 28' 39.444 N	107° 55' 53.974 W	
Start Drop -2.00										
4,447.5	21.46	138.43	4,214.0	-948.3	841.1	1,607,946.22	2,313,765.36	39° 28' 38.547 N	107° 55' 52.948 W	
Mesaverde										
5,520.5	0.00	0.00	5,262.0	-1,096.8	972.9	1,607,794.20	2,313,893.10	39° 28' 37.079 N	107° 55' 51.267 W	
Top gas										
5,525.5	0.00	0.00	5,267.0	-1,096.8	972.9	1,607,794.20	2,313,893.10	39° 28' 37.079 N	107° 55' 51.267 W	
Approx. Top Gas										
6,935.5	0.00	0.00	6,677.0	-1,096.8	972.9	1,607,794.20	2,313,893.10	39° 28' 37.079 N	107° 55' 51.267 W	
Cameo Coals										
7,760.5	0.00	0.00	7,502.0	-1,096.8	972.9	1,607,794.20	2,313,893.10	39° 28' 37.079 N	107° 55' 51.267 W	
Coal D										
7,830.5	0.00	0.00	7,572.0	-1,096.8	972.9	1,607,794.20	2,313,893.10	39° 28' 37.079 N	107° 55' 51.267 W	
Base L. Cameo Pay										
7,925.5	0.00	0.00	7,667.0	-1,096.8	972.9	1,607,794.20	2,313,893.10	39° 28' 37.079 N	107° 55' 51.267 W	
Rollins SS										
8,075.5	0.00	0.00	7,817.0	-1,096.8	972.9	1,607,794.20	2,313,893.10	39° 28' 37.079 N	107° 55' 51.267 W	
TD at 8075.5										

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	5,262.0	-1,096.8	972.9	1,607,794.20	2,313,893.10	39° 28' 37.079 N	107° 55' 51.267 W	
- plan hits target center										
- Circle (radius 25.0)										

Casing Points							Casing Diameter (in)	Hole Diameter (in)
Measured Depth (usft)	Vertical Depth (usft)	Name						
1,114.1	1,100.0	9 5/8"					9.625	12.250

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<b>Well:</b>	RWF 24-31	<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 (°)	
1,944.2	1,912.0	Top of "G" Sand				
2,046.5	2,012.0	Base of "G" Sand				
4,447.5	4,214.0	Mesaverde				
5,525.5	5,267.0	Approx. Top Gas				
6,935.5	6,677.0	Cameo Coals				
7,760.5	7,502.0	Coal D				
7,830.5	7,572.0	Base L. Cameo Pay				
7,925.5	7,667.0	Rollins SS				
8,075.5	7,817.0	TD				

Plan Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates			
		+N/-S (usft)	+E/-W (usft)	Comment	
150.0	150.0	0.0	0.0	Start Build 2.50	
630.0	626.5	-37.5	33.2	Hold 12.00 Inclination	
2,455.4	2,412.0	-321.4	285.1	Start Build 3.00	
2,966.5	2,891.9	-449.7	398.9	Hold 27.33 Inclination	
4,153.8	3,946.6	-857.5	760.6	Start Drop -2.00	
5,520.5	5,262.0	-1,096.8	972.9	Top gas	
8,075.5	7,817.0	-1,096.8	972.9	TD at 8075.5	