



# **PICEANCE VLY NAD 83**

**RU 14-06S-094W**

**RWF 22-14 Pad**

**RWF 313-14 - Slot B3**

**Wellbore #1**

**Plan: Design #1 29Jul10 kjs**

## **Standard Planning Report - Geographic**

**08 September, 2010**



**Williams**  
Planning Report - Geographic

<b>Database:</b>	Compass R5000 WIN AUTH	<b>Local Co-ordinate Reference:</b>	Well RWF 313-14 - Slot B3
<b>Company:</b>	PICEANCE VLY NAD 83	<b>TVD Reference:</b>	KELLY BUSHING @ 5517.0usft ((24' KB) kjs)
<b>Project:</b>	RU 14-06S-094W	<b>MD Reference:</b>	KELLY BUSHING @ 5517.0usft ((24' KB) kjs)
<b>Site:</b>	RWF 22-14 Pad	<b>North Reference:</b>	True
<b>Well:</b>	RWF 313-14	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Design #1 29Jul10 kjs		

<b>Project</b>	RU 14-06S-094W, 14-06S-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 22-14 Pad		
<b>Site Position:</b>		<b>Northing:</b>	1,625,607.50 usft
<b>From:</b>	Map	<b>Easting:</b>	2,335,315.60 usft
<b>Position Uncertainty:</b>	0.0 usft	<b>Slot Radius:</b>	13.200 in
		<b>Latitude:</b>	39° 31' 38.656 N
		<b>Longitude:</b>	107° 51' 24.041 W
		<b>Grid Convergence:</b>	-1.486 °

<b>Well</b>	RWF 313-14 - Slot B3		
<b>Well Position</b>	<b>+N/-S</b>	0.0 usft	<b>Northing:</b>
	<b>+E/-W</b>	0.0 usft	<b>Easting:</b>
<b>Position Uncertainty</b>	0.0 usft		<b>Wellhead Elevation:</b>
			<b>Latitude:</b>
			<b>Longitude:</b>
			<b>Ground Level:</b>

<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</b>
			(°)	(°)	(nT)
	IGRF2010	7/29/2010	10.408	65.815	52,378

<b>Design</b>	Design #1 29Jul10 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)</b>	<b>+N/-S</b>	<b>+E/-W</b>	<b>Direction</b>
	(usft)	(usft)	(usft)	(°)
	0.0	0.0	0.0	215.26

<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	
405.7	10.00	237.00	404.3	-13.5	-20.9	3.50	3.50	0.00	237.000	
821.9	23.33	214.59	802.4	-101.6	-98.4	3.50	3.20	-5.38	-36.894	
4,898.2	23.33	214.59	4,545.4	-1,430.6	-1,014.9	0.00	0.00	0.00	0.000	
6,064.8	0.00	0.00	5,680.0	-1,623.5	-1,147.9	2.00	-2.00	0.00	180.000	
8,714.8	0.00	0.00	8,330.0	-1,623.5	-1,147.9	0.00	0.00	0.00	0.000	TD / PBHL RWF 313-



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<b>Project:</b>	RU 14-06S-094W	<b>MD Reference:</b>	KELLY BUSHING @ 5517.0usft ((24' KB) kjs)
<b>Site:</b>	RWF 22-14 Pad	<b>North Reference:</b>	True
<b>Well:</b>	RWF 313-14	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Design #1 29Jul10 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	1,625,611.60	2,335,298.60	39° 31' 38.692 N	107° 51' 24.260 W	
120.0	0.00	0.00	120.0	0.0	0.0	1,625,611.60	2,335,298.60	39° 31' 38.692 N	107° 51' 24.260 W	
<b>Start Build 3.50</b>										
405.7	10.00	237.00	404.3	-13.5	-20.9	1,625,598.60	2,335,277.40	39° 31' 38.558 N	107° 51' 24.526 W	
<b>Begin 3.5°/100 Turn &amp; Build</b>										
821.9	23.33	214.59	802.4	-101.6	-98.4	1,625,512.64	2,335,197.63	39° 31' 37.688 N	107° 51' 25.515 W	
<b>Hold 23.33 Inclination</b>										
2,039.0	23.33	214.59	1,920.0	-498.4	-372.0	1,625,123.05	2,334,913.78	39° 31' 33.766 N	107° 51' 29.008 W	
<b>Top of "G" Sand</b>										
2,147.9	23.33	214.59	2,020.0	-533.9	-396.5	1,625,088.19	2,334,888.38	39° 31' 33.415 N	107° 51' 29.320 W	
<b>Base of "G" Sand</b>										
2,256.8	23.33	214.59	2,120.0	-569.4	-421.0	1,625,053.33	2,334,862.98	39° 31' 33.064 N	107° 51' 29.633 W	
<b>9 5/8"</b>										
4,881.5	23.33	214.59	4,530.0	-1,425.2	-1,011.2	1,624,213.19	2,334,250.86	39° 31' 24.606 N	107° 51' 37.164 W	
<b>Mesaverde</b>										
4,898.2	23.33	214.59	4,545.4	-1,430.6	-1,014.9	1,624,207.83	2,334,246.95	39° 31' 24.552 N	107° 51' 37.212 W	
<b>Start Drop -2.00</b>										
6,064.8	0.00	0.00	5,680.0	-1,623.5	-1,147.9	1,624,018.50	2,334,109.00	39° 31' 22.646 N	107° 51' 38.909 W	
<b>Vertical</b>										
6,164.8	0.00	0.00	5,780.0	-1,623.5	-1,147.9	1,624,018.50	2,334,109.00	39° 31' 22.646 N	107° 51' 38.909 W	
<b>Top Gas - Approx. Top Gas</b>										
7,684.8	0.00	0.00	7,300.0	-1,623.5	-1,147.9	1,624,018.50	2,334,109.00	39° 31' 22.646 N	107° 51' 38.909 W	
<b>Cameo Coals</b>										
8,449.8	0.00	0.00	8,065.0	-1,623.5	-1,147.9	1,624,018.50	2,334,109.00	39° 31' 22.646 N	107° 51' 38.909 W	
<b>Base L. Cameo Pay</b>										
8,454.8	0.00	0.00	8,070.0	-1,623.5	-1,147.9	1,624,018.50	2,334,109.00	39° 31' 22.646 N	107° 51' 38.909 W	
<b>Coal D</b>										
8,564.8	0.00	0.00	8,180.0	-1,623.5	-1,147.9	1,624,018.50	2,334,109.00	39° 31' 22.646 N	107° 51' 38.909 W	
<b>Rollins SS</b>										
8,714.8	0.00	0.00	8,330.0	-1,623.5	-1,147.9	1,624,018.50	2,334,109.00	39° 31' 22.646 N	107° 51' 38.909 W	
<b>TD at 8714.8 - TD</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' Radius) R1	0.00	0.00	5,780.0	-1,623.5	-1,147.9	1,624,018.50	2,334,109.00	39° 31' 22.646 N	107° 51' 38.909 W	
- plan hits target center										
- Circle (radius 25.0)										
TD / PBHL RWF 313-14	0.00	0.00	8,330.0	-1,623.5	-1,147.9	1,624,018.50	2,334,109.00	39° 31' 22.646 N	107° 51' 38.909 W	
- plan hits target center										
- Point										

Casing Points					
Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (in)	Hole Diameter (in)	
2,256.8	2,120.0	9 5/8"	9.625	12.250	

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<b>Project:</b>	RU 14-06S-094W	<b>MD Reference:</b>	KELLY BUSHING @ 5517.0usft ((24' KB) kjs)
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<b>Well:</b>	RWF 313-14	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Design #1 29Jul10 kjs		

Formations					
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
2,039.0	1,920.0	Top of "G" Sand			
2,147.9	2,020.0	Base of "G" Sand			
4,881.5	4,530.0	Mesaverde			
6,164.8	5,780.0	Approx. Top Gas			
7,684.8	7,300.0	Cameo Coals			
8,449.8	8,065.0	Base L. Cameo Pay			
8,454.8	8,070.0	Coal D			
8,564.8	8,180.0	Rollins SS			
8,714.8	8,330.0	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	
405.7	404.3	-13.5	-20.9	Begin 3.5°/100 Turn & Build	
821.9	802.4	-101.6	-98.4	Hold 23.33 Inclination	
4,898.2	4,545.4	-1,430.6	-1,014.9	Start Drop -2.00	
6,064.8	5,680.0	-1,623.5	-1,147.9	Vertical	
6,164.8	5,780.0	-1,623.5	-1,147.9	Top Gas	
8,714.8	8,330.0	-1,623.5	-1,147.9	TD at 8714.8	