

# **PICEANCE VLY NAD 83**

**PA 21-06S-095W**

**PA 22-21 Pad**

**PA 511-21 - Slot B11**

**Wellbore #1**

**Plan: Design #1 18Mar10 kjs**

## **Standard Planning Report - Geographic**

**20 April, 2010**

**Williams**  
Planning Report - Geographic

<b>Database:</b>	Compass R5000 WIN AUTH	<b>Local Co-ordinate Reference:</b>	Well PA 511-21 - Slot B11
<b>Company:</b>	PICEANCE VLY NAD 83	<b>TVD Reference:</b>	KELLY BUSHING @ 6049.0usft (Nabors 577 (26' KB) JMS)
<b>Project:</b>	PA 21-06S-095W	<b>MD Reference:</b>	KELLY BUSHING @ 6049.0usft (Nabors 577 (26' KB) JMS)
<b>Site:</b>	PA 22-21 Pad	<b>North Reference:</b>	True
<b>Well:</b>	PA 511-21	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Design #1 18Mar10 kjs		

<b>Project</b>	PA 21-06S-095W, Garfield County, CO, 21-06S-095W		
<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>	PA 22-21 Pad		
<b>Site Position:</b>		<b>Northing:</b>	1,620,681.59 usft
<b>From:</b>	Map	<b>Easting:</b>	2,292,411.75 usft
<b>Position Uncertainty:</b>	0.0 usft	<b>Slot Radius:</b>	13.200 in
		<b>Latitude:</b>	39° 30' 38.635 N
		<b>Longitude:</b>	108° 0' 29.662 W
		<b>Grid Convergence:</b>	-1.582 °

Well	PA 511-21 - Slot B11					
Well Position	+N/-S	0.0 usft	Northing:	1,620,690.90 usft	Latitude:	39° 30' 38.734 N
	+E/-W	0.0 usft	Easting:	2,292,436.91 usft	Longitude:	108° 0' 29.344 W
Position Uncertainty		0.0 usft	Wellhead Elevation:		Ground Level:	6,023.0 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	3/18/2010	10.520	65.783	52,382

<b>Design</b>	Design #1 18Mar10 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	331.70

<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	
550.4	15.06	331.70	545.5	49.5	-26.7	3.50	3.50	0.00	331.700	
5,966.5	15.06	331.70	5,775.4	1,288.9	-694.0	0.00	0.00	0.00	0.000	
6,719.7	0.00	0.00	6,520.0	1,375.6	-740.7	2.00	-2.00	0.00	180.000	Top Gas (25' Radius)
8,869.7	0.00	0.00	8,670.0	1,375.6	-740.7	0.00	0.00	0.00	0.000	

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<b>Site:</b>	PA 22-21 Pad	<b>North Reference:</b>	True
<b>Well:</b>	PA 511-21	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Design #1 18Mar10 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	1,620,690.90	2,292,436.91	39° 30' 38.734 N	108° 0' 29.344 W	
120.0	0.00	0.00	120.0	0.0	0.0	1,620,690.90	2,292,436.91	39° 30' 38.734 N	108° 0' 29.344 W	
550.4	15.06	331.70	545.5	49.5	-26.7	1,620,741.15	2,292,411.62	39° 30' 39.223 N	108° 0' 29.684 W	
5,966.5	15.06	331.70	5,775.4	1,288.9	-694.0	1,621,998.46	2,291,778.76	39° 30' 51.473 N	108° 0' 38.199 W	
6,719.7	0.00	0.00	6,520.0	1,375.6	-740.7	1,622,086.40	2,291,734.50	39° 30' 52.329 N	108° 0' 38.795 W	
8,869.7	0.00	0.00	8,670.0	1,375.6	-740.7	1,622,086.40	2,291,734.50	39° 30' 52.329 N	108° 0' 38.795 W	

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) P/	0.00	0.00	6,520.0	1,375.6	-740.7	1,622,086.40	2,291,734.50	39° 30' 52.329 N	108° 0' 38.795 W	
- plan hits target center										
- Circle (radius 25.0)										

Casing Points							Casing Diameter (in)	Hole Diameter (in)
Measured Depth (usft)	Vertical Depth (usft)	Name						
887.0	870.5	9 5/8"					9.625	12.250

Formations							Dip (°)	Dip Direction (°)
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology					
2,905.9	2,820.0	Top of "G" sand						0.000
3,009.4	2,920.0	Base of "G" Sand						0.000
5,256.7	5,090.0	Mesaverde						0.000
6,719.7	6,520.0	Approx Top Gas						0.000
7,989.7	7,790.0	Cameo Coals						0.000
8,719.7	8,520.0	Rollins SS						0.000
8,869.7	8,670.0	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	
550.4	545.5	49.5	-26.7	Hold 15.06 Inclination	
5,966.5	5,775.4	1,288.9	-694.0	Start Drop -2.00	
6,719.7	6,520.0	1,375.6	-740.7	Top Gas	
8,869.7	8,670.0	1,375.6	-740.7	TD at 8869.7	