

# **PICEANCE VLY NAD 83**

**PA 07-07S-095W**

**PA 21-7 Pad**

**PA 341-7 - Slot A5**

**Wellbore #1**

**Plan: Plan #1 21Apr09 kjs**

## **Standard Planning Report - Geographic**

**23 April, 2010**

**Williams**  
Planning Report - Geographic

<b>Database:</b>	Compass R5000 WIN AUTH	<b>Local Co-ordinate Reference:</b>	Well PA 341-7 - Slot A5
<b>Company:</b>	PICEANCE VLY NAD 83	<b>TVD Reference:</b>	KELLY BUSHING @ 5109.0usft (SSD (26' KB) JMS)
<b>Project:</b>	PA 07-07S-095W	<b>MD Reference:</b>	KELLY BUSHING @ 5109.0usft (SSD (26' KB) JMS)
<b>Site:</b>	PA 21-7 Pad	<b>North Reference:</b>	True
<b>Well:</b>	PA 341-7	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Plan #1 21Apr09 kjs		

<b>Project</b>	PA 07-07S-095W, Garfield County, CO		
<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 21-7 Pad		
<b>Site Position:</b>		<b>Northing:</b>	1,601,212.50 usft
<b>From:</b>	Map	<b>Easting:</b>	2,281,792.10 usft
<b>Position Uncertainty:</b>	0.0 usft	<b>Slot Radius:</b>	13.200 in
		<b>Latitude:</b>	39° 27' 23.366 N
		<b>Longitude:</b>	108° 2' 38.155 W
		<b>Grid Convergence:</b>	-1.604 °

<b>Well</b>	PA 341-7 - Slot A5		
<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 (nT)</b>
	IGRF2005-10	4/21/2009	10.625	65.766	52,472

<b>Design</b>	Plan #1 21Apr09 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	78.51

<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	
1,486.6	45.10	78.51	1,349.8	101.7	500.4	3.30	3.30	0.00	78.508	
4,054.8	45.10	78.51	3,162.7	464.1	2,282.9	0.00	0.00	0.00	0.000	
5,309.6	20.00	78.51	4,212.0	597.6	2,939.2	2.00	-2.00	0.00	180.000	Top Gas (50x100' Eliq
6,309.6	0.00	0.00	5,191.8	632.0	3,108.5	2.00	-2.00	-7.85	180.000	
7,479.8	0.00	0.00	6,362.0	632.0	3,108.5	0.00	0.00	0.00	0.000	

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<b>Project:</b>	PA 07-07S-095W	<b>MD Reference:</b>	KELLY BUSHING @ 5109.0usft (SSD (26' KB) JMS)
<b>Site:</b>	PA 21-7 Pad	<b>North Reference:</b>	True
<b>Well:</b>	PA 341-7	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Plan #1 21Apr09 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	1,601,195.40	2,281,860.00	39° 27' 23.216 N	108° 2' 37.284 W	
120.0	0.00	0.00	120.0	0.0	0.0	1,601,195.40	2,281,860.00	39° 27' 23.216 N	108° 2' 37.284 W	
Start Build 3.30										
1,427.0	43.13	78.51	1,307.0	93.5	459.7	1,601,275.95	2,282,322.15	39° 27' 24.139 N	108° 2' 31.422 W	
Top of "G" Sand										
1,486.6	45.10	78.51	1,349.8	101.7	500.4	1,601,283.07	2,282,363.00	39° 27' 24.221 N	108° 2' 30.904 W	
Hold 45.10 Inclination										
1,537.0	45.10	78.51	1,385.4	108.8	535.4	1,601,289.21	2,282,398.19	39° 27' 24.291 N	108° 2' 30.458 W	
9 5/8"										
1,567.6	45.10	78.51	1,407.0	113.2	556.6	1,601,292.93	2,282,419.56	39° 27' 24.334 N	108° 2' 30.187 W	
Base of "G" Sand										
4,054.8	45.10	78.51	3,162.7	464.1	2,282.9	1,601,595.43	2,284,154.94	39° 27' 27.802 N	108° 2' 8.177 W	
Start Drop -2.00										
4,102.9	44.13	78.51	3,197.0	470.9	2,316.1	1,601,601.24	2,284,188.28	39° 27' 27.869 N	108° 2' 7.755 W	
Mesaverde										
5,309.6	20.00	78.51	4,212.0	597.6	2,939.2	1,601,710.43	2,284,814.68	39° 27' 29.120 N	108° 1' 59.810 W	
Top Gas - Approx. Top Gas										
6,309.6	0.00	0.00	5,191.8	632.0	3,108.5	1,601,740.10	2,284,984.88	39° 27' 29.460 N	108° 1' 57.651 W	
Vertical										
6,779.8	0.00	0.00	5,662.0	632.0	3,108.5	1,601,740.10	2,284,984.88	39° 27' 29.460 N	108° 1' 57.651 W	
Cameo Coals										
7,329.8	0.00	0.00	6,212.0	632.0	3,108.5	1,601,740.10	2,284,984.88	39° 27' 29.460 N	108° 1' 57.651 W	
Rollins SS										
7,479.8	0.00	0.00	6,362.0	632.0	3,108.5	1,601,740.10	2,284,984.88	39° 27' 29.460 N	108° 1' 57.651 W	
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 (50x100' Elipse - plan misses target center by 77.5usft at 5323.7usft MD (4225.3 TVD, 598.5 N, 2943.9 E) - Ellipse (radii L50.0 W100.0 on 353.00 azi)	0.00	0.00	4,212.0	613.8	3,018.7	1,601,724.40	2,284,894.60	39° 27' 29.280 N	108° 1' 58.796 W	

Casing Points						
Measured Depth (usft)	Vertical Depth (usft)	Name			Casing Diameter (in)	Hole Diameter (in)
1,537.0	1,385.4	9 5/8"			9.625	12.250

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Planning Report - Geographic

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<b>Well:</b>	PA 341-7	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Plan #1 21Apr09 kjs		

Formations						
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
1,427.0	1,307.0	Top of "G" Sand				
1,567.6	1,407.0	Base of "G" Sand				
4,102.9	3,197.0	Mesaverde				
5,309.6	4,212.0	Approx. Top Gas				
6,779.8	5,662.0	Cameo Coals				
7,329.8	6,212.0	Rollins SS				
7,479.8	6,362.0	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 3.30	
1,486.6	1,349.8	101.7	500.4	Hold 45.10 Inclination	
4,054.8	3,162.7	464.1	2,282.9	Start Drop -2.00	
5,309.6	4,212.0	597.6	2,939.2	Top Gas	
6,309.6	5,191.8	632.0	3,108.5	Vertical	
7,479.8	6,362.0	632.0	3,108.5	TD at 7479.8	