

# **PICEANCE VLY NAD 83**

**PA 20-06S-095W**

**DOE 1-W-20 Pad**

**PA 24-20 - Slot A6**

**Wellbore #1**

**Plan: Plan #2 01Oct10 kjs**

## **Standard Planning Report - Geographic**

**21 October, 2010**

**Williams**  
Planning Report - Geographic

<b>Database:</b>	Compass R5000 WIN AUTH	<b>Local Co-ordinate Reference:</b>	Well PA 24-20 - Slot A6
<b>Company:</b>	PICEANCE VLY NAD 83	<b>TVD Reference:</b>	KELLY BUSHING @ 6256.0usft (SSD 577 (26' RKB) kjs)
<b>Project:</b>	PA 20-06S-095W	<b>MD Reference:</b>	KELLY BUSHING @ 6256.0usft (SSD 577 (26' RKB) kjs)
<b>Site:</b>	DOE 1-W-20 Pad	<b>North Reference:</b>	True
<b>Well:</b>	PA 24-20	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Plan #2 01Oct10 kjs		

<b>Project</b>	PA 20-06S-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		

Site		DOE 1-W-20 Pad			
Site Position:		Northing:	1,618,275.70 usft	Latitude:	39° 30' 14.005 N
From:	Map	Easting:	2,289,265.87 usft	Longitude:	108° 1' 8.935 W
Position Uncertainty:	0.0 usft	Slot Radius:	13.200 in	Grid Convergence:	-1.589 °

Well	PA 24-20 - Slot A6					
Well Position	+N/-S	0.0 usft	Northing:	1,618,303.30 usft	Latitude:	39° 30' 14.281 N
	+E/-W	0.0 usft	Easting:	2,289,277.40 usft	Longitude:	108° 1' 8.798 W
Position Uncertainty		0.0 usft	Wellhead Elevation:		Ground Level:	6,230.0 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	4/22/2010	10.511	65.773	52,365

<b>Design</b>	Plan #2 01Oct10 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	280.62

<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	
740.0	21.70	280.62	725.3	21.4	-114.0	3.50	3.50	0.00	280.618	
5,050.9	21.70	280.62	4,730.6	315.1	-1,680.7	0.00	0.00	0.00	0.000	
6,497.6	0.00	0.00	6,143.0	365.0	-1,946.8	1.50	-1.50	0.00	180.000	
6,597.6	0.00	0.00	6,243.0	365.0	-1,946.8	0.00	0.00	0.00	0.000	Top Gas (25' Radius)
8,747.6	0.00	0.00	8,393.0	365.0	-1,946.8	0.00	0.00	0.00	0.000	

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<b>Site:</b>	DOE 1-W-20 Pad	<b>North Reference:</b>	True
<b>Well:</b>	PA 24-20	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Plan #2 01Oct10 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	1,618,303.30	2,289,277.40	39° 30' 14.281 N	108° 1' 8.798 W	
120.0	0.00	0.00	120.0	0.0	0.0	1,618,303.30	2,289,277.40	39° 30' 14.281 N	108° 1' 8.798 W	
<b>Start Build 3.50</b>										
740.0	21.70	280.62	725.3	21.4	-114.0	1,618,327.83	2,289,164.01	39° 30' 14.492 N	108° 1' 10.252 W	
<b>Hold 21.70 Inclination</b>										
875.0	21.70	280.62	850.7	30.6	-163.1	1,618,338.38	2,289,115.22	39° 30' 14.583 N	108° 1' 10.878 W	
<b>9 5/8"</b>										
2,938.5	21.70	280.62	2,768.0	171.2	-913.0	1,618,499.71	2,288,369.48	39° 30' 15.973 N	108° 1' 20.446 W	
<b>Top of "G" Sand</b>										
3,046.2	21.70	280.62	2,868.0	178.5	-952.1	1,618,508.13	2,288,330.58	39° 30' 16.045 N	108° 1' 20.945 W	
<b>Base of "G" Sand</b>										
5,050.9	21.70	280.62	4,730.6	315.1	-1,680.7	1,618,664.86	2,287,606.09	39° 30' 17.395 N	108° 1' 30.241 W	
<b>Start Drop -1.50</b>										
5,240.0	18.86	280.62	4,908.0	327.2	-1,745.1	1,618,678.72	2,287,542.02	39° 30' 17.514 N	108° 1' 31.063 W	
<b>Mesaverde</b>										
6,497.6	0.00	0.00	6,143.0	365.0	-1,946.8	1,618,722.10	2,287,341.50	39° 30' 17.887 N	108° 1' 33.635 W	
<b>Vertical</b>										
6,597.6	0.00	0.00	6,243.0	365.0	-1,946.8	1,618,722.10	2,287,341.50	39° 30' 17.887 N	108° 1' 33.635 W	
<b>Top Gas - Approx. Top Gas</b>										
7,962.6	0.00	0.00	7,608.0	365.0	-1,946.8	1,618,722.10	2,287,341.50	39° 30' 17.887 N	108° 1' 33.635 W	
<b>Cameo Coals</b>										
8,597.6	0.00	0.00	8,243.0	365.0	-1,946.8	1,618,722.10	2,287,341.50	39° 30' 17.887 N	108° 1' 33.635 W	
<b>Rollins SS</b>										
8,747.6	0.00	0.00	8,393.0	365.0	-1,946.8	1,618,722.10	2,287,341.50	39° 30' 17.887 N	108° 1' 33.635 W	
<b>TD at 8747.6 - TD</b>										

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 (25' Radius) P/ - plan hits target center - Circle (radius 25.0)	0.00	0.00	6,243.0	365.0	-1,946.8	1,618,722.10	2,287,341.50	39° 30' 17.887 N	108° 1' 33.635 W	

Casing Points										
Measured Depth (usft)	Vertical Depth (usft)	Name			Casing Diameter (in)	Hole Diameter (in)				
875.0	850.7	9 5/8"			9.625	12.250				

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<b>Well:</b>	PA 24-20	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Plan #2 01Oct10 kjs		

Formations						
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
2,938.5	2,768.0	Top of "G" Sand				
3,046.2	2,868.0	Base of "G" Sand				
5,240.0	4,908.0	Mesaverde				
6,597.6	6,243.0	Approx. Top Gas				
7,962.6	7,608.0	Cameo Coals				
8,597.6	8,243.0	Rollins SS				
8,747.6	8,393.0	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	
740.0	725.3	21.4	-114.0	Hold 21.70 Inclination	
5,050.9	4,730.6	315.1	-1,680.7	Start Drop -1.50	
6,497.6	6,143.0	365.0	-1,946.8	Vertical	
6,597.6	6,243.0	365.0	-1,946.8	Top Gas	
8,747.6	8,393.0	365.0	-1,946.8	TD at 8747.6	