

# **PICEANCE VLY NAD 83**

**PA 29-06S-095W**

**DOE 2-W-29 Pad**

**PA 522-29 - Slot A6**

**Wellbore #1**

**Plan: Plan #2 08Jan10 kjs**

## **Standard Planning Report - Geographic**

**23 February, 2010**

**Williams**  
Planning Report - Geographic

<b>Database:</b>	Compass R5000 WIN AUTH	<b>Local Co-ordinate Reference:</b>	Well PA 522-29 - Slot A6
<b>Company:</b>	PICEANCE VLY NAD 83	<b>TVD Reference:</b>	Corrected Elev. @ 5916.0usft (Cyclone 17 (21' KB) kjs)
<b>Project:</b>	PA 29-06S-095W	<b>MD Reference:</b>	Corrected Elev. @ 5916.0usft (Cyclone 17 (21' KB) kjs)
<b>Site:</b>	DOE 2-W-29 Pad	<b>North Reference:</b>	True
<b>Well:</b>	PA 522-29	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Plan #2 08Jan10 kjs		

<b>Project</b>	PA 29-06S-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		Using geodetic scale factor

Site		DOE 2-W-29 Pad			
Site Position:		Northing:	1,616,110.00 usft	Latitude:	39° 29' 52.810 N
From:	Map	Easting:	2,290,002.20 usft	Longitude:	108° 0' 58.779 W
Position Uncertainty:	0.0 usft	Slot Radius:	0.000 in	Grid Convergence:	-1.587 °

Well	PA 522-29 - Slot A6					
Well Position	+N/-S	0.0 usft	Northing:	1,616,098.50 usft	Latitude:	39° 29' 52.707 N
	+E/-W	0.0 usft	Easting:	2,290,039.70 usft	Longitude:	108° 0' 58.297 W
Position Uncertainty		0.0 usft	Wellhead Elevation:		Ground Level:	5,895.0 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>
	IGRF2005-10	8/20/2009	10.575	65.797	52,460

<b>Design</b>	Plan #2 08Jan10 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	270.79

<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	
291.4	6.00	225.00	291.1	-6.3	-6.3	3.50	3.50	0.00	225.000	
1,202.7	31.13	271.79	1,150.6	-33.2	-280.7	3.00	2.76	5.13	55.129	
4,264.2	31.13	271.79	3,771.4	16.2	-1,862.6	0.00	0.00	0.00	0.000	
6,339.5	0.00	0.00	5,746.0	33.3	-2,412.3	1.50	-1.50	4.25	180.000	Top Gas (25' Radius)
8,489.5	0.00	0.00	7,896.0	33.3	-2,412.3	0.00	0.00	0.00	0.000	TD / PBHL PA 522-29

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Planning Report - Geographic

<b>Database:</b>	Compass R5000 WIN AUTH	<b>Local Co-ordinate Reference:</b>	Well PA 522-29 - Slot A6
<b>Company:</b>	PICEANCE VLY NAD 83	<b>TVD Reference:</b>	Corrected Elev. @ 5916.0usft (Cyclone 17 (21' KB) kjs)
<b>Project:</b>	PA 29-06S-095W	<b>MD Reference:</b>	Corrected Elev. @ 5916.0usft (Cyclone 17 (21' KB) kjs)
<b>Site:</b>	DOE 2-W-29 Pad	<b>North Reference:</b>	True
<b>Well:</b>	PA 522-29	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Plan #2 08Jan10 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	1,616,098.50	2,290,039.70	39° 29' 52.707 N	108° 0' 58.297 W	
120.0	0.00	0.00	120.0	0.0	0.0	1,616,098.50	2,290,039.70	39° 29' 52.707 N	108° 0' 58.297 W	
Start Build 3.50										
291.4	6.00	225.00	291.1	-6.3	-6.3	1,616,092.33	2,290,033.19	39° 29' 52.644 N	108° 0' 58.378 W	
Begin 3°/100 Build & Turn										
500.0	10.86	253.33	497.5	-19.7	-32.9	1,616,079.71	2,290,006.27	39° 29' 52.512 N	108° 0' 58.716 W	
1,000.0	25.15	269.42	972.0	-34.4	-185.1	1,616,069.26	2,289,853.68	39° 29' 52.367 N	108° 1' 0.659 W	
1,202.7	31.13	271.79	1,150.6	-33.2	-280.7	1,616,073.10	2,289,758.24	39° 29' 52.379 N	108° 1' 1.877 W	
Hold 31.13 Inclination										
1,500.0	31.13	271.79	1,405.1	-28.4	-434.3	1,616,082.14	2,289,604.80	39° 29' 52.426 N	108° 1' 3.837 W	
2,000.0	31.13	271.79	1,833.1	-20.3	-692.7	1,616,097.35	2,289,346.78	39° 29' 52.506 N	108° 1' 7.133 W	
2,500.0	31.13	271.79	2,261.1	-12.3	-951.0	1,616,112.56	2,289,088.76	39° 29' 52.585 N	108° 1' 10.428 W	
2,552.4	31.13	271.79	2,306.0	-11.4	-978.1	1,616,114.16	2,289,061.72	39° 29' 52.594 N	108° 1' 10.774 W	
Top of "G" Sand										
2,669.2	31.13	271.79	2,406.0	-9.5	-1,038.4	1,616,117.71	2,289,001.43	39° 29' 52.612 N	108° 1' 11.544 W	
Base of "G" Sand										
2,786.0	31.13	271.79	2,506.0	-7.7	-1,098.8	1,616,121.26	2,288,941.15	39° 29' 52.631 N	108° 1' 12.314 W	
9 5/8"										
3,000.0	31.13	271.79	2,689.2	-4.2	-1,209.4	1,616,127.77	2,288,830.73	39° 29' 52.665 N	108° 1' 13.724 W	
3,500.0	31.13	271.79	3,117.2	3.8	-1,467.7	1,616,142.98	2,288,572.71	39° 29' 52.744 N	108° 1' 17.020 W	
4,000.0	31.13	271.79	3,545.2	11.9	-1,726.1	1,616,158.19	2,288,314.69	39° 29' 52.824 N	108° 1' 20.316 W	
4,264.2	31.13	271.79	3,771.4	16.2	-1,862.6	1,616,166.23	2,288,178.33	39° 29' 52.866 N	108° 1' 22.057 W	
Begin 1.5°/100 Drop										
4,500.0	27.59	271.79	3,976.8	19.8	-1,978.1	1,616,173.03	2,288,062.96	39° 29' 52.901 N	108° 1' 23.531 W	
4,991.7	20.22	271.79	4,426.0	26.0	-2,177.1	1,616,184.75	2,287,864.21	39° 29' 52.963 N	108° 1' 26.070 W	
Mesaverde										
5,000.0	20.09	271.79	4,433.8	26.1	-2,180.0	1,616,184.92	2,287,861.35	39° 29' 52.963 N	108° 1' 26.106 W	
5,500.0	12.59	271.79	4,913.3	30.4	-2,320.5	1,616,193.19	2,287,721.02	39° 29' 53.007 N	108° 1' 27.899 W	
6,000.0	5.09	271.79	5,407.0	32.8	-2,397.3	1,616,197.71	2,287,644.35	39° 29' 53.030 N	108° 1' 28.878 W	
6,339.5	0.00	0.00	5,746.0	33.3	-2,412.3	1,616,198.60	2,287,629.30	39° 29' 53.035 N	108° 1' 29.070 W	
Top Gas - Approx. Top Gas										
6,500.0	0.00	0.00	5,906.5	33.3	-2,412.3	1,616,198.60	2,287,629.30	39° 29' 53.035 N	108° 1' 29.070 W	
7,000.0	0.00	0.00	6,406.5	33.3	-2,412.3	1,616,198.60	2,287,629.30	39° 29' 53.035 N	108° 1' 29.070 W	
7,500.0	0.00	0.00	6,906.5	33.3	-2,412.3	1,616,198.60	2,287,629.30	39° 29' 53.035 N	108° 1' 29.070 W	
7,779.5	0.00	0.00	7,186.0	33.3	-2,412.3	1,616,198.60	2,287,629.30	39° 29' 53.035 N	108° 1' 29.070 W	
Cameo Coals										
8,000.0	0.00	0.00	7,406.5	33.3	-2,412.3	1,616,198.60	2,287,629.30	39° 29' 53.035 N	108° 1' 29.070 W	
8,339.5	0.00	0.00	7,746.0	33.3	-2,412.3	1,616,198.60	2,287,629.30	39° 29' 53.035 N	108° 1' 29.070 W	
Rollins SS										
8,489.5	0.00	0.00	7,896.0	33.3	-2,412.3	1,616,198.60	2,287,629.30	39° 29' 53.035 N	108° 1' 29.070 W	
TD at 8489.5 - TD										

**Williams**  
Planning Report - Geographic

<b>Database:</b>	Compass R5000 WIN AUTH	<b>Local Co-ordinate Reference:</b>	Well PA 522-29 - Slot A6
<b>Company:</b>	PICEANCE VLY NAD 83	<b>TVD Reference:</b>	Corrected Elev. @ 5916.0usft (Cyclone 17 (21' KB) kjs)
<b>Project:</b>	PA 29-06S-095W	<b>MD Reference:</b>	Corrected Elev. @ 5916.0usft (Cyclone 17 (21' KB) kjs)
<b>Site:</b>	DOE 2-W-29 Pad	<b>North Reference:</b>	True
<b>Well:</b>	PA 522-29	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Plan #2 08Jan10 kjs		

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	5,746.0	33.3	-2,412.3	1,616,198.60	2,287,629.30	39° 29' 53.035 N	108° 1' 29.070 W
TD / PBHL PA 522-29 - plan hits target center - Point	0.00	0.00	7,896.0	33.3	-2,412.3	1,616,198.60	2,287,629.30	39° 29' 53.035 N	108° 1' 29.070 W

Casing Points					
Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (in)	Hole Diameter (in)	
2,786.0	2,506.0	9 5/8"	9.625	12.250	

Formations						
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
2,552.4	2,306.0	Top of "G" Sand				
2,669.2	2,406.0	Base of "G" Sand				
4,991.7	4,426.0	Mesaverde				
6,339.5	5,746.0	Approx. Top Gas				
7,779.5	7,186.0	Cameo Coals				
8,339.5	7,746.0	Rollins SS				
8,489.5	7,896.0	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	
291.4	291.1	-6.3	-6.3	Begin 3°/100 Build & Turn	
1,202.7	1,150.6	-33.2	-280.7	Hold 31.13 Inclination	
4,264.2	3,771.4	16.2	-1,862.6	Begin 1.5°/100 Drop	
6,339.5	5,746.0	33.3	-2,412.3	Top Gas	
8,489.5	7,896.0	33.3	-2,412.3	TD at 8489.5	