

# **PICEANCE VLY NAD 83**

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

**DOE 3-W-29 Pad**

**PA 514-29 - Slot B4**

**Wellbore #1**

**Plan: Plan #2 30Mar10 kjs**

## **Standard Planning Report - Geographic**

**30 March, 2010**

**Williams**  
Planning Report - Geographic

<b>Database:</b>	Compass R5000 WIN AUTH	<b>Local Co-ordinate Reference:</b>	Well PA 514-29 - Slot B4
<b>Company:</b>	PICEANCE VLY NAD 83	<b>TVD Reference:</b>	WELL @ 5702.0usft (Nabors 577 (26') kjs)
<b>Project:</b>	PA 29-06S-095W	<b>MD Reference:</b>	WELL @ 5702.0usft (Nabors 577 (26') kjs)
<b>Site:</b>	DOE 3-W-29 Pad	<b>North Reference:</b>	True
<b>Well:</b>	PA 514-29	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Plan #2 30Mar10 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 3-W-29 Pad			
Site Position:		Northing:	1,613,247.00 usft	Latitude:	39° 29' 23.965 N
From:	Map	Easting:	2,287,962.20 usft	Longitude:	108° 1' 23.779 W
Position Uncertainty:	0.0 usft	Slot Radius:	13.200 in	Grid Convergence:	-1.591 °

Well		PA 514-29 - Slot B4				
Well Position	+N/-S	0.0 usft	Northing:	1,613,209.96 usft	Latitude:	39° 29' 23.610 N
	+E/-W	0.0 usft	Easting:	2,288,000.72 usft	Longitude:	108° 1' 23.275 W
Position Uncertainty		0.0 usft	Wellhead Elevation:		Ground Level:	5,676.0 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	2/5/2009	10.665	65.794	52,485

<b>Design</b>	Plan #2 30Mar10 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	292.31

<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	
460.0	0.00	0.00	460.0	0.0	0.0	0.00	0.00	0.00	0.000	
1,060.0	12.00	262.00	1,055.6	-8.7	-62.0	2.00	2.00	0.00	262.000	
1,500.7	15.94	295.44	1,483.9	10.9	-162.2	2.00	0.89	7.59	80.921	
4,396.3	15.94	295.44	4,268.2	352.5	-880.1	0.00	0.00	0.00	0.000	
5,458.8	0.00	0.00	5,317.0	415.6	-1,012.7	1.50	-1.50	0.00	180.000	Top Gas (25' Radius)
7,608.8	0.00	0.00	7,467.0	415.6	-1,012.7	0.00	0.00	0.00	0.000	TD / PBHL PA 514-29

**Williams**  
Planning Report - Geographic

<b>Database:</b>	Compass R5000 WIN AUTH	<b>Local Co-ordinate Reference:</b>	Well PA 514-29 - Slot B4
<b>Company:</b>	PICEANCE VLY NAD 83	<b>TVD Reference:</b>	WELL @ 5702.0usft (Nabors 577 (26') kjs)
<b>Project:</b>	PA 29-06S-095W	<b>MD Reference:</b>	WELL @ 5702.0usft (Nabors 577 (26') kjs)
<b>Site:</b>	DOE 3-W-29 Pad	<b>North Reference:</b>	True
<b>Well:</b>	PA 514-29	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Plan #2 30Mar10 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	1,613,209.96	2,288,000.72	39° 29' 23.610 N	108° 1' 23.275 W	
460.0	0.00	0.00	460.0	0.0	0.0	1,613,209.96	2,288,000.72	39° 29' 23.610 N	108° 1' 23.275 W	
<b>Start Build 2.00</b>										
1,060.0	12.00	262.00	1,055.6	-8.7	-62.0	1,613,202.97	2,287,938.52	39° 29' 23.524 N	108° 1' 24.066 W	
<b>Begin 2°/100 Build &amp; Turn</b>										
1,500.7	15.94	295.44	1,483.9	10.9	-162.2	1,613,225.40	2,287,838.89	39° 29' 23.718 N	108° 1' 25.344 W	
<b>Hold 15.94 Inclination</b>										
1,997.9	15.94	295.44	1,962.0	69.6	-285.5	1,613,287.45	2,287,717.31	39° 29' 24.298 N	108° 1' 26.916 W	
<b>Top of "G" Sand</b>										
2,101.9	15.94	295.44	2,062.0	81.9	-311.3	1,613,300.43	2,287,691.87	39° 29' 24.419 N	108° 1' 27.245 W	
<b>Base of "G" Sand</b>										
2,205.9	15.94	295.44	2,162.0	94.1	-337.0	1,613,313.41	2,287,666.44	39° 29' 24.540 N	108° 1' 27.574 W	
<b>9 5/8"</b>										
4,114.3	15.94	295.44	3,997.0	319.3	-810.2	1,613,551.57	2,287,199.74	39° 29' 26.765 N	108° 1' 33.609 W	
<b>Mesaverde</b>										
4,396.3	15.94	295.44	4,268.2	352.5	-880.1	1,613,586.77	2,287,130.76	39° 29' 27.094 N	108° 1' 34.501 W	
<b>Start Drop -1.50</b>										
5,458.8	0.00	0.00	5,317.0	415.6	-1,012.7	1,613,653.50	2,287,000.00	39° 29' 27.717 N	108° 1' 36.192 W	
<b>Top Gas - Approx. Top Gas</b>										
6,903.8	0.00	0.00	6,762.0	415.6	-1,012.7	1,613,653.50	2,287,000.00	39° 29' 27.717 N	108° 1' 36.192 W	
<b>Cameo Coals</b>										
7,458.8	0.00	0.00	7,317.0	415.6	-1,012.7	1,613,653.50	2,287,000.00	39° 29' 27.717 N	108° 1' 36.192 W	
<b>Rollins SS</b>										
7,608.8	0.00	0.00	7,467.0	415.6	-1,012.7	1,613,653.50	2,287,000.00	39° 29' 27.717 N	108° 1' 36.192 W	
<b>TD at 7608.8 - 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/	0.00	0.00	5,317.0	415.6	-1,012.7	1,613,653.50	2,287,000.00	39° 29' 27.717 N	108° 1' 36.192 W	
- plan hits target center										
- Circle (radius 25.0)										
Top Gas (25' Radius) P/	0.00	0.00	5,317.0	415.6	-1,012.7	1,613,653.50	2,287,000.00	39° 29' 27.717 N	108° 1' 36.192 W	
- plan hits target center										
- Circle (radius 25.0)										
TD / PBHL PA 514-29 (c	0.00	0.00	7,467.0	415.6	-1,012.7	1,613,653.50	2,287,000.00	39° 29' 27.717 N	108° 1' 36.192 W	
- plan hits target center										
- Point										
TD / PBHL PA 514-29	0.00	0.00	7,467.0	415.6	-1,012.7	1,613,653.50	2,287,000.00	39° 29' 27.717 N	108° 1' 36.192 W	
- plan hits target center										
- Point										

Casing Points					
Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (in)	Hole Diameter (in)	
2,205.9	2,162.0	9 5/8"	9.625	12.250	

**Williams**  
Planning Report - Geographic

<b>Database:</b>	Compass R5000 WIN AUTH	<b>Local Co-ordinate Reference:</b>	Well PA 514-29 - Slot B4
<b>Company:</b>	PICEANCE VLY NAD 83	<b>TVD Reference:</b>	WELL @ 5702.0usft (Nabors 577 (26') kjs)
<b>Project:</b>	PA 29-06S-095W	<b>MD Reference:</b>	WELL @ 5702.0usft (Nabors 577 (26') kjs)
<b>Site:</b>	DOE 3-W-29 Pad	<b>North Reference:</b>	True
<b>Well:</b>	PA 514-29	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Plan #2 30Mar10 kjs		

Formations						
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
1,997.9	1,962.0	Top of "G" Sand				
2,101.9	2,062.0	Base of "G" Sand				
4,114.3	3,997.0	Mesaverde				
5,458.8	5,317.0	Approx. Top Gas				
6,903.8	6,762.0	Cameo Coals				
7,458.8	7,317.0	Rollins SS				
7,608.8	7,467.0	TD				

Plan Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates			
		+N/-S (usft)	+E/-W (usft)	Comment	
460.0	460.0	0.0	0.0	Start Build 2.00	
1,060.0	1,055.6	-8.7	-62.0	Begin 2°/100 Build & Turn	
1,500.7	1,483.9	10.9	-162.2	Hold 15.94 Inclination	
4,396.3	4,268.2	352.5	-880.1	Start Drop -1.50	
5,458.8	5,317.0	415.6	-1,012.7	Top Gas	
7,608.8	7,467.0	415.6	-1,012.7	TD at 7608.8	