

# **PICEANCE VLY NAD 83**

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

**DOE 3-W-29 Pad**

**PA 513-29 - Slot B9**

**Wellbore #1**

**Plan: Plan #2 26Jan10 kjs**

## **Standard Planning Report - Geographic**

**23 March, 2010**

**Williams**  
Planning Report - Geographic

<b>Database:</b>	Compass R5000 WIN AUTH	<b>Local Co-ordinate Reference:</b>	Well PA 513-29 - Slot B9
<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 513-29	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Plan #2 26Jan10 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 513-29 - Slot B9					
Well Position	+N/-S	0.0 usft	Northing:	1,613,230.43 usft	Latitude:	39° 29' 23.803 N
	+E/-W	0.0 usft	Easting:	2,287,969.31 usft	Longitude:	108° 1' 23.683 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	2/3/2009	10.666	65.794	52,486

<b>Design</b>	Plan #2 26Jan10 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	316.31

<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	
120.0	0.00	0.00	120.0	0.0	0.0	0.00	0.00	0.00	0.000	
342.2	5.00	312.00	341.9	6.5	-7.2	2.25	2.25	0.00	312.000	
1,497.9	33.87	316.41	1,420.3	279.3	-272.3	2.50	2.50	0.38	5.091	
4,844.6	33.87	316.41	4,199.0	1,630.4	-1,558.5	0.00	0.00	0.00	0.000	
6,138.3	8.00	316.41	5,397.0	1,962.4	-1,874.5	2.00	-2.00	0.00	-180.000	Top Gas (25' Radius)
6,538.3	0.00	0.00	5,795.7	1,982.6	-1,893.7	2.00	-2.00	10.90	180.000	
8,289.6	0.00	0.00	7,547.0	1,982.6	-1,893.7	0.00	0.00	0.00	0.000	

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Planning Report - Geographic

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<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 513-29	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Plan #2 26Jan10 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	1,613,230.43	2,287,969.31	39° 29' 23.803 N	108° 1' 23.683 W	
120.0	0.00	0.00	120.0	0.0	0.0	1,613,230.43	2,287,969.31	39° 29' 23.803 N	108° 1' 23.683 W	
<b>Start Build 2.25</b>										
342.2	5.00	312.00	341.9	6.5	-7.2	1,613,237.11	2,287,962.29	39° 29' 23.867 N	108° 1' 23.775 W	
<b>Begin 2.5°/100 Build &amp; Turn</b>										
1,497.9	33.87	316.41	1,420.3	279.3	-272.3	1,613,517.13	2,287,704.86	39° 29' 26.563 N	108° 1' 27.156 W	
<b>Hold 33.87 Inclination</b>										
2,174.5	33.87	316.41	1,982.0	552.4	-532.3	1,613,797.38	2,287,452.55	39° 29' 29.263 N	108° 1' 30.473 W	
<b>Top of "G" Sand</b>										
2,294.9	33.87	316.41	2,082.0	601.0	-578.6	1,613,847.26	2,287,407.63	39° 29' 29.743 N	108° 1' 31.063 W	
<b>Base of "G" Sand</b>										
2,415.3	33.87	316.41	2,182.0	649.6	-624.9	1,613,897.15	2,287,362.72	39° 29' 30.224 N	108° 1' 31.654 W	
<b>9 5/8"</b>										
4,679.7	33.87	316.41	4,062.0	1,563.8	-1,495.1	1,614,835.06	2,286,518.30	39° 29' 39.258 N	108° 1' 42.754 W	
<b>Mesaverde</b>										
4,844.6	33.87	316.41	4,199.0	1,630.4	-1,558.5	1,614,903.38	2,286,456.79	39° 29' 39.916 N	108° 1' 43.563 W	
<b>Begin 2°/100 Drop</b>										
6,138.3	8.00	316.41	5,397.0	1,962.4	-1,874.5	1,615,244.02	2,286,150.10	39° 29' 43.197 N	108° 1' 47.595 W	
<b>Top Gas - Approx. Top Gas</b>										
6,538.3	0.00	0.00	5,795.7	1,982.6	-1,893.7	1,615,264.74	2,286,131.45	39° 29' 43.397 N	108° 1' 47.840 W	
<b>Vertical</b>										
7,589.6	0.00	0.00	6,847.0	1,982.6	-1,893.7	1,615,264.74	2,286,131.45	39° 29' 43.397 N	108° 1' 47.840 W	
<b>Cameo Coals</b>										
8,139.6	0.00	0.00	7,397.0	1,982.6	-1,893.7	1,615,264.74	2,286,131.45	39° 29' 43.397 N	108° 1' 47.840 W	
<b>Rollins SS</b>										
8,289.6	0.00	0.00	7,547.0	1,982.6	-1,893.7	1,615,264.74	2,286,131.45	39° 29' 43.397 N	108° 1' 47.840 W	
<b>TD at 8289.6 - TD</b>										

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	5,397.0	1,973.1	-1,884.5	1,615,255.00	2,286,140.40	39° 29' 43.303 N	108° 1' 47.722 W	
- plan misses target center by 14.5usft at 6139.4usft MD (5398.0 TVD, 1962.5 N, -1874.6 E)										
- Circle (radius 25.0)										
TD / PBHL PA 513-29	0.00	0.00	7,547.0	1,973.1	-1,884.5	1,615,255.00	2,286,140.40	39° 29' 43.303 N	108° 1' 47.722 W	
- plan misses target center by 13.2usft at 8289.6usft MD (7547.0 TVD, 1982.6 N, -1893.7 E)										
- Point										

Casing Points					
Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (in)	Hole Diameter (in)	
2,415.3	2,182.0	9 5/8"	9.625	12.250	

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<b>Site:</b>	DOE 3-W-29 Pad	<b>North Reference:</b>	True
<b>Well:</b>	PA 513-29	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Plan #2 26Jan10 kjs		

Formations						
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
2,174.5	1,982.0	Top of "G" Sand				
2,294.9	2,082.0	Base of "G" Sand				
4,679.7	4,062.0	Mesaverde				
6,138.3	5,397.0	Approx. Top Gas				
7,589.6	6,847.0	Cameo Coals				
8,139.6	7,397.0	Rollins SS				
8,289.6	7,547.0	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 2.25	
342.2	341.9	6.5	-7.2	Begin 2.5°/100 Build & Turn	
1,497.9	1,420.3	279.3	-272.3	Hold 33.87 Inclination	
4,844.6	4,199.0	1,630.4	-1,558.5	Begin 2°/100 Drop	
6,138.3	5,397.0	1,962.4	-1,874.5	Top Gas	
6,538.3	5,795.7	1,982.6	-1,893.7	Vertical	
8,289.6	7,547.0	1,982.6	-1,893.7	TD at 8289.6	