

# **PICEANCE VLY NAD 83**

**RU 09-07S-094W**

**SR 33-9 Pad**

**SR 543-9 - Slot A10**

**Wellbore #1**

**Plan: Plan #2 07Jun10 kjs**

## **Standard Planning Report - Geographic**

**12 July, 2010**

**Williams**  
Planning Report - Geographic

<b>Database:</b>	Compass R5000 WIN AUTH	<b>Local Co-ordinate Reference:</b>	Well SR 543-9 - Slot A10
<b>Company:</b>	PICEANCE VLY NAD 83	<b>TVD Reference:</b>	KELLY BUSHING @ 7027.0usft (H&P (24' RKB) kjs)
<b>Project:</b>	RU 09-07S-094W	<b>MD Reference:</b>	KELLY BUSHING @ 7027.0usft (H&P (24' RKB) kjs)
<b>Site:</b>	SR 33-9 Pad	<b>North Reference:</b>	True
<b>Well:</b>	SR 543-9	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Plan #2 07Jun10 kjs		

<b>Project</b>	RU 09-07S-094W, 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		SR 33-9 Pad			
Site Position:		Northing:	1,597,935.60 usft	Latitude:	39° 27' 2.817 N
From:	Map	Easting:	2,325,884.60 usft	Longitude:	107° 53' 15.083 W
Position Uncertainty:	0.0 usft	Slot Radius:	13.200 in	Grid Convergence:	-1.506 °

Well	SR 543-9 - Slot A10					
Well Position	+N/-S	0.0 usft	Northing:	1,597,924.10 usft	Latitude:	39° 27' 2.702 N
	+E/-W	0.0 usft	Easting:	2,325,880.00 usft	Longitude:	107° 53' 15.138 W
Position Uncertainty		0.0 usft	Wellhead Elevation:		Ground Level:	7,003.0 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	2/9/2009	10.579	65.796	52,493

<b>Design</b>	Plan #2 07Jun10 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	93.05

<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	
392.8	8.18	93.05	391.8	-1.0	19.4	3.00	3.00	0.00	93.047	
6,019.5	8.18	93.05	5,961.3	-43.6	819.2	0.00	0.00	0.00	0.000	
6,565.1	0.00	0.00	6,505.0	-45.7	858.0	1.50	-1.50	0.00	180.000	
6,665.1	0.00	0.00	6,605.0	-45.7	858.0	0.00	0.00	0.00	0.000	Top Gas (25' radius) §
9,185.1	0.00	0.00	9,125.0	-45.7	858.0	0.00	0.00	0.00	0.000	

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<b>Project:</b>	RU 09-07S-094W	<b>MD Reference:</b>	KELLY BUSHING @ 7027.0usft (H&P (24' RKB) kjs)
<b>Site:</b>	SR 33-9 Pad	<b>North Reference:</b>	True
<b>Well:</b>	SR 543-9	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Plan #2 07Jun10 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	1,597,924.10	2,325,880.00	39° 27' 2.702 N	107° 53' 15.138 W	
120.0	0.00	0.00	120.0	0.0	0.0	1,597,924.10	2,325,880.00	39° 27' 2.702 N	107° 53' 15.138 W	
<b>Start Build 3.00</b>										
392.8	8.18	93.05	391.8	-1.0	19.4	1,597,922.55	2,325,899.39	39° 27' 2.692 N	107° 53' 14.891 W	
<b>Hold 8.18 Inclination</b>										
1,108.2	8.18	93.05	1,100.0	-6.4	121.1	1,597,914.47	2,326,000.90	39° 27' 2.638 N	107° 53' 13.594 W	
<b>9 5/8"</b>										
3,245.0	8.18	93.05	3,215.0	-22.6	424.8	1,597,890.33	2,326,304.07	39° 27' 2.478 N	107° 53' 9.722 W	
<b>Top of "G" Sand</b>										
3,346.0	8.18	93.05	3,315.0	-23.4	439.2	1,597,889.19	2,326,318.40	39° 27' 2.471 N	107° 53' 9.539 W	
<b>Base of "G" Sand</b>										
5,694.9	8.18	93.05	5,640.0	-41.1	773.1	1,597,862.65	2,326,651.68	39° 27' 2.295 N	107° 53' 5.283 W	
<b>Mesaverde</b>										
6,019.5	8.18	93.05	5,961.3	-43.6	819.2	1,597,858.98	2,326,697.73	39° 27' 2.271 N	107° 53' 4.695 W	
<b>Start Drop -1.50</b>										
6,565.1	0.00	0.00	6,505.0	-45.7	858.0	1,597,855.90	2,326,736.50	39° 27' 2.250 N	107° 53' 4.200 W	
<b>Vertical</b>										
6,665.1	0.00	0.00	6,605.0	-45.7	858.0	1,597,855.90	2,326,736.50	39° 27' 2.250 N	107° 53' 4.200 W	
<b>Top Gas - Approx. Top Gas</b>										
8,120.1	0.00	0.00	8,060.0	-45.7	858.0	1,597,855.90	2,326,736.50	39° 27' 2.250 N	107° 53' 4.200 W	
<b>Cameo Coals</b>										
8,820.1	0.00	0.00	8,760.0	-45.7	858.0	1,597,855.90	2,326,736.50	39° 27' 2.250 N	107° 53' 4.200 W	
<b>Coal D</b>										
8,940.1	0.00	0.00	8,880.0	-45.7	858.0	1,597,855.90	2,326,736.50	39° 27' 2.250 N	107° 53' 4.200 W	
<b>Base L. Cameo Pay</b>										
9,065.1	0.00	0.00	9,005.0	-45.7	858.0	1,597,855.90	2,326,736.50	39° 27' 2.250 N	107° 53' 4.200 W	
<b>Rollins SS</b>										
9,185.1	0.00	0.00	9,125.0	-45.7	858.0	1,597,855.90	2,326,736.50	39° 27' 2.250 N	107° 53' 4.200 W	
<b>TD at 9185.1 - 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) SR	0.00	0.00	6,605.0	-45.7	858.0	1,597,855.90	2,326,736.50	39° 27' 2.250 N	107° 53' 4.200 W	
- plan hits target center										
- Circle (radius 25.0)										

Casing Points					
Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (in)	Hole Diameter (in)	
1,108.2	1,100.0	9 5/8"	9.625	12.250	

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<b>Well:</b>	SR 543-9	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Plan #2 07Jun10 kjs		

Formations						
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
3,245.0	3,215.0	Top of "G" Sand				
3,346.0	3,315.0	Base of "G" Sand				
5,694.9	5,640.0	Mesaverde				
6,665.1	6,605.0	Approx. Top Gas				
8,120.1	8,060.0	Cameo Coals				
8,820.1	8,760.0	Coal D				
8,940.1	8,880.0	Base L. Cameo Pay				
9,065.1	9,005.0	Rollins SS				
9,185.1	9,125.0	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 3.00	
392.8	391.8	-1.0	19.4	Hold 8.18 Inclination	
6,019.5	5,961.3	-43.6	819.2	Start Drop -1.50	
6,565.1	6,505.0	-45.7	858.0	Vertical	
6,665.1	6,605.0	-45.7	858.0	Top Gas	
9,185.1	9,125.0	-45.7	858.0	TD at 9185.1	