



# **PICEANCE VLY NAD 83**

**GV 27-06S-096W**

**MV 23-27 Pad**

**GM 534-22 - Slot A9**

**Wellbore #1**

**Plan: Plan #2 27Sep10 kjs**

## **Standard Planning Report - Geographic**

**26 October, 2010**

**Williams**  
Planning Report - Geographic

<b>Database:</b>	Compass R5000 WIN AUTH	<b>Local Co-ordinate Reference:</b>	Well GM 534-22 - Slot A9
<b>Company:</b>	PICEANCE VLY NAD 83	<b>TVD Reference:</b>	KELLY BUSHING @ 5794.0usft (H&P 280 (24' RKB) kjs)
<b>Project:</b>	GV 27-06S-096W	<b>MD Reference:</b>	KELLY BUSHING @ 5794.0usft (H&P 280 (24' RKB) kjs)
<b>Site:</b>	MV 23-27 Pad	<b>North Reference:</b>	True
<b>Well:</b>	GM 534-22	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Plan #2 27Sep10 kjs		

<b>Project</b>	GV 27-06S-096W, Garfield County, CO, 27-06S-096W		
<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

<b>Site</b>	MV 23-27 Pad			
<b>Site Position:</b>		<b>Northing:</b>	1,617,330.50 usft	<b>Latitude:</b> 39° 29' 59.287 N
<b>From:</b> Map		<b>Easting:</b>	2,269,898.90 usft	<b>Longitude:</b> 108° 5' 15.581 W
<b>Position Uncertainty:</b>	0.0 usft	<b>Slot Radius:</b>	13.200 in	<b>Grid Convergence:</b> -1.632 °

<b>Well</b>	GM 534-22 - Slot A9			
<b>Well Position</b>	<b>+N/-S</b>	0.0 usft	<b>Northing:</b>	1,617,292.50 usft
	<b>+E/-W</b>	0.0 usft	<b>Easting:</b>	2,269,873.20 usft
<b>Position Uncertainty</b>	0.0 usft		<b>Wellhead Elevation:</b>	<b>Ground Level:</b> 5,770.0 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	4/21/2010	10.542	65.756	52,358

<b>Design</b>	Plan #2 27Sep10 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	307.53

<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	
130.0	0.00	0.00	130.0	0.0	0.0	0.00	0.00	0.00	0.000	
2,066.1	38.72	307.53	1,922.0	383.6	-499.4	2.00	2.00	0.00	307.530	
4,061.7	38.72	307.53	3,479.0	1,144.0	-1,489.3	0.00	0.00	0.00	0.000	
5,997.7	0.00	0.00	5,271.0	1,527.6	-1,988.7	2.00	-2.00	0.00	180.000	
6,097.7	0.00	0.00	5,371.0	1,527.6	-1,988.7	0.00	0.00	0.00	0.000	Top Gas (25' Radius)
7,997.7	0.00	0.00	7,271.0	1,527.6	-1,988.7	0.00	0.00	0.00	0.000	

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<b>Project:</b>	GV 27-06S-096W	<b>MD Reference:</b>	KELLY BUSHING @ 5794.0usft (H&P 280 (24' RKB) kjs)
<b>Site:</b>	MV 23-27 Pad	<b>North Reference:</b>	True
<b>Well:</b>	GM 534-22	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Plan #2 27Sep10 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	1,617,292.50	2,269,873.20	39° 29' 58.905 N	108° 5' 15.895 W
130.0	0.00	0.00	130.0	0.0	0.0	1,617,292.50	2,269,873.20	39° 29' 58.905 N	108° 5' 15.895 W
<b>Start Build 2.00</b>									
2,066.1	38.72	307.53	1,922.0	383.6	-499.4	1,617,690.15	2,269,384.97	39° 30' 2.696 N	108° 5' 22.266 W
<b>Hold 38.72 Inclination</b>									
2,116.0	38.72	307.53	1,961.0	402.6	-524.1	1,617,709.86	2,269,360.77	39° 30' 2.884 N	108° 5' 22.582 W
<b>9 5/8"</b>									
2,494.1	38.72	307.53	2,256.0	546.7	-711.7	1,617,859.24	2,269,177.37	39° 30' 4.308 N	108° 5' 24.975 W
<b>Top of "G" Sand</b>									
2,622.3	38.72	307.53	2,356.0	595.6	-775.3	1,617,909.87	2,269,115.21	39° 30' 4.791 N	108° 5' 25.786 W
<b>Base of "G" Sand</b>									
4,061.7	38.72	307.53	3,479.0	1,144.0	-1,489.3	1,618,478.44	2,268,417.13	39° 30' 10.211 N	108° 5' 34.895 W
<b>Start Drop -2.00</b>									
4,784.8	24.26	307.53	4,094.0	1,373.5	-1,788.1	1,618,716.36	2,268,125.02	39° 30' 12.479 N	108° 5' 38.707 W
<b>Mesaverde</b>									
5,997.7	0.00	0.00	5,271.0	1,527.6	-1,988.7	1,618,876.10	2,267,928.90	39° 30' 14.002 N	108° 5' 41.267 W
<b>Vertical</b>									
6,097.7	0.00	0.00	5,371.0	1,527.6	-1,988.7	1,618,876.10	2,267,928.90	39° 30' 14.002 N	108° 5' 41.267 W
<b>Top Gas - Approx. Top Gas</b>									
7,451.7	0.00	0.00	6,725.0	1,527.6	-1,988.7	1,618,876.10	2,267,928.90	39° 30' 14.002 N	108° 5' 41.267 W
<b>Cameo Coals</b>									
7,897.7	0.00	0.00	7,171.0	1,527.6	-1,988.7	1,618,876.10	2,267,928.90	39° 30' 14.002 N	108° 5' 41.267 W
<b>Rollins SS</b>									
7,997.7	0.00	0.00	7,271.0	1,527.6	-1,988.7	1,618,876.10	2,267,928.90	39° 30' 14.002 N	108° 5' 41.267 W
<b>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) GI	0.00	0.00	5,371.0	1,527.6	-1,988.7	1,618,876.10	2,267,928.90	39° 30' 14.002 N	108° 5' 41.267 W
- plan hits target center									
- Circle (radius 25.0)									

Casing Points					
Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (in)	Hole Diameter (in)	
2,116.0	1,961.0	9 5/8"	9.625	12.250	

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<b>Well:</b>	GM 534-22	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Plan #2 27Sep10 kjs		

Formations						
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
2,494.1	2,256.0	Top of "G" Sand				
2,622.3	2,356.0	Base of "G" Sand				
4,784.8	4,094.0	Mesaverde				
6,097.7	5,371.0	Approx. Top Gas				
7,451.7	6,725.0	Cameo Coals				
7,897.7	7,171.0	Rollins SS				
7,997.7	7,271.0	TD				

Plan Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates			
		+N/-S (usft)	+E/-W (usft)	Comment	
130.0	130.0	0.0	0.0	Start Build 2.00	
2,066.1	1,922.0	383.6	-499.4	Hold 38.72 Inclination	
4,061.7	3,479.0	1,144.0	-1,489.3	Start Drop -2.00	
5,997.7	5,271.0	1,527.6	-1,988.7	Vertical	
6,097.7	5,371.0	1,527.6	-1,988.7	Top Gas	
7,997.7	7,271.0	1,527.6	-1,988.7	TD at 7997.7	