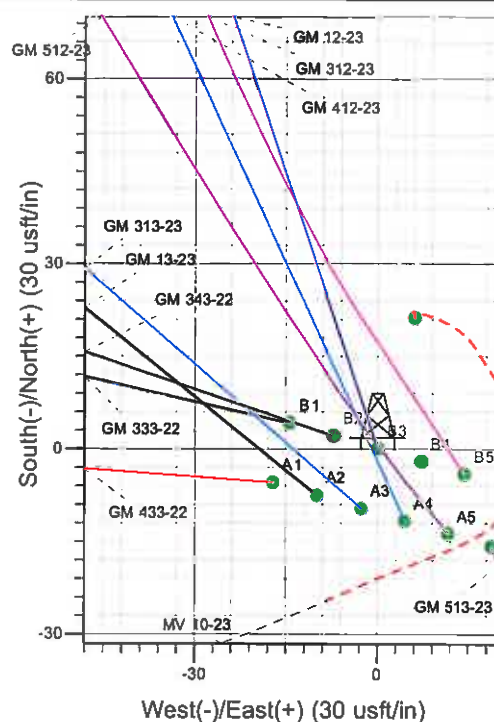
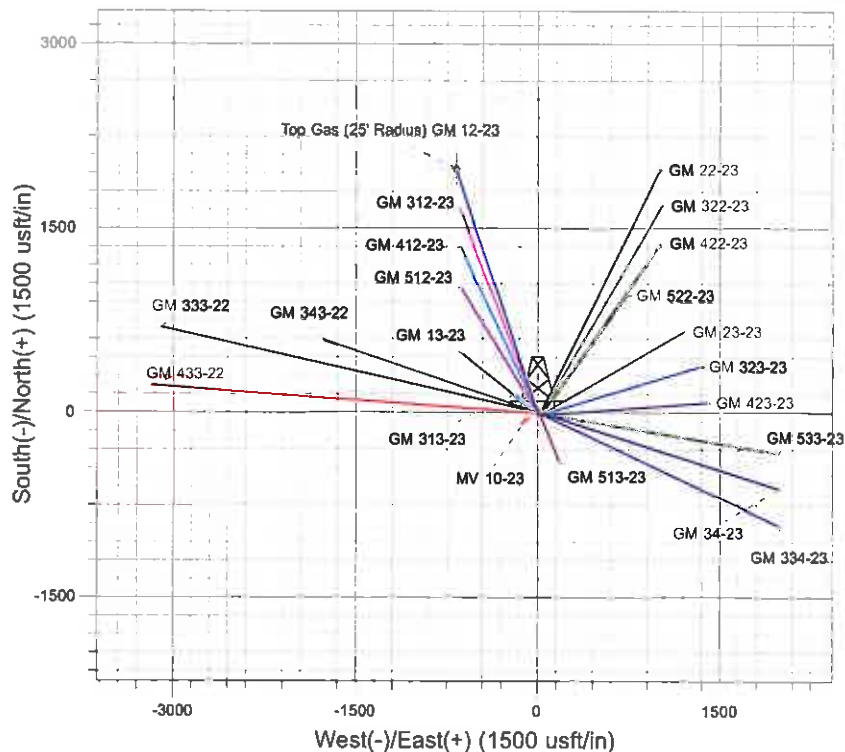
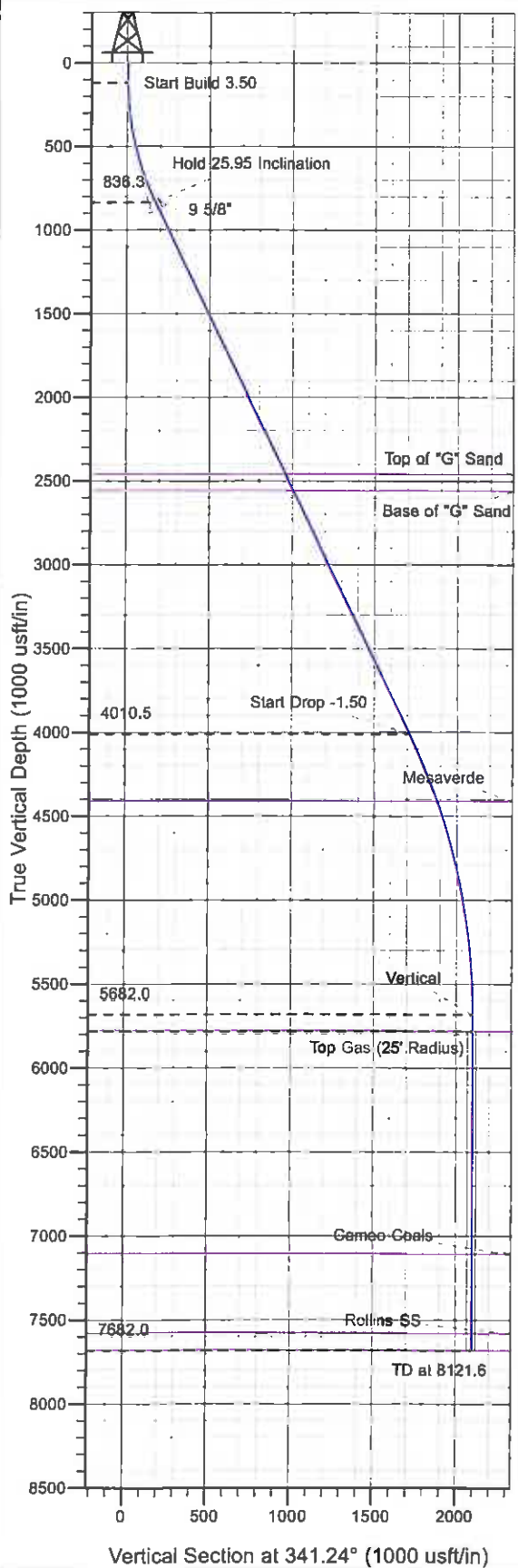




Well Name: GM 12-23  
 Surface Location: MV 10-23 Pad  
 North American Datum 1983 , US State Plane 1983 , Colorado Central Zone  
 Ground Elevation: 5976.0  
 +N/-S +E/-W Northing Easting Latitude Longitude Slot  
 0.0 0.0 1619659.35 2271215.81 39° 30' 22.666 N 108° 4' 59.632 W B3  
 KELLY BUSHING @ 6002.0usft (Nabors 576 (26' RKB) kjs)



Project: GV 23-06S-096W  
 Site: MV 10-23 Pad  
 Well: GM 12-23  
 Design #1 04Oct10 kjs



Azimuths to True North  
 Magnetic North: 10.48°  
 Magnetic Field  
 Strength: 52314.4nT  
 Dip Angle: 65.75°  
 Date: 10/4/2010  
 Model: IGRF2010

#### ANNOTATIONS

TVD	MD	Inc	Azi	+N/-S	+E/-W	VSD	Departure	Annotation
120.0	120.0	0.00	0.00	0.0	0.0	0.0	0.0	Start Build 3.50
836.3	861.4	25.95	341.24	156.3	-53.1	165.1	165.1	Hold 25.95 Inclination
4010.5	4391.5	25.95	341.24	1619.0	-549.8	1709.8	1709.8	Start Drop -1.50
5682.0	6121.6	0.00	0.00	1983.7	-673.6	2094.9	2094.9	Vertical
5782.0	6221.6	0.00	0.00	1983.7	-673.6	2094.9	2094.9	Top Gas
7682.0	8121.6	0.00	0.00	1983.7	-673.6	2094.9	2094.9	TD at 8121.6

# **PICEANCE VLY NAD 83**

**GV 23-06S-096W**

**MV 10-23 Pad**

**GM 12-23 - Slot B3**

**Wellbore #1**

**Plan: Design #1 04Oct10 kjs**

## **Standard Planning Report - Geographic**

**08 February, 2011**

**Williams**  
Planning Report - Geographic

Database:	Compass R5000 WIN AUTH	Local Co-ordinate Reference:	Well GM 12-23 - Slot B3
Company:	PICEANCE VLY NAD 83	TVD Reference:	KELLY BUSHING @ 6002.0usft (Nabors 576 (26' RKB) kjs)
Project:	GV 23-06S-096W	MD Reference:	KELLY BUSHING @ 8002.0usft (Nabors 576 (26' RKB) kjs)
Site:	MV 10-23 Pad	North Reference:	True
Well:	GM 12-23	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #1 04Oct10 kjs		

Project	GV 23-06S-096W, Garfield County, CO. 23-06S-096W		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	Colorado Central Zone		Using geodetic scale factor

Site	MV 10-23 Pad		
Site Position:		Northing:	1,619,663.89 usft
From:	Map	Easting:	2,271,201.54 usft
Position Uncertainty:	0.0 usft	Slot Radius:	13.200 in
		Latitude:	39° 30' 22.707 N
		Longitude:	108° 4' 59.816 W
		Grid Convergence:	-1.629 °

Well	GM 12-23 - Slot B3		
Well Position	+N-S	0.0 usft	Northing: 1,619,659.35 usft
	+E-W	0.0 usft	Easting: 2,271,215.81 usft
Position Uncertainty	0.0 usft	Wellhead Elevation:	Ground Level: 5,976.0 usft
		Latitude:	39° 30' 22.666 N
		Longitude:	108° 4' 59.632 W

Wellbore	Wellbore #1		
Magnetics	Model Name	Sample Date	Declination (°)
	IGRF2010	10/4/2010	10.482
			Dip Angle (°)
			65.750
			Field Strength (nT)
			52,314

Design	Design #1 04Oct10 kjs		
Audit Notes:			
Version:	Phase:	PLAN	Tie On Depth: 0.0
Vertical Section:	Depth From (TVD) (usft)	+N-S (usft)	+E-W (usft)
	0.0	0.0	0.0
			Direction (°)
			341.24

Plan Sections										
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	
861.4	25.95	341.24	836.3	156.3	-53.1	3.50	3.50	0.00	341.244	
4,391.5	25.95	341.24	4,010.5	1,619.0	-549.8	0.00	0.00	0.00	0.000	
6,121.6	0.00	0.00	5,682.0	1,983.7	-673.6	1.50	-1.50	0.00	180.000	
6,221.6	0.00	0.00	5,782.0	1,983.7	-673.6	0.00	0.00	0.00	0.000	Top Gas (25' Radius)
8,121.6	0.00	0.00	7,682.0	1,983.7	-673.6	0.00	0.00	0.00	0.000	

**Williams**  
Planning Report - Geographic

<b>Database:</b>	Compass R5000 WIN AUTH	<b>Local Co-ordinate Reference:</b>	Well GM 12-23 - Slot B3
<b>Company:</b>	PICEANCE VLY NAD 83	<b>TVD Reference:</b>	KELLY BUSHING @ 6002.0usft (Nabors 576 (26' RKB) kjs)
<b>Project:</b>	GV 23-06S-096W	<b>MD Reference:</b>	KELLY BUSHING @ 6002.0usft (Nabors 576 (26' RKB) kjs)
<b>Site:</b>	MV 10-23 Pad	<b>North Reference:</b>	True
<b>Well:</b>	GM 12-23	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Design #1 04Oct10 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	1,619,659.35	2,271,215.81	39° 30' 22.666 N	108° 4' 59.632 W
120.0	0.00	0.00	120.0	0.0	0.0	1,619,659.35	2,271,215.81	39° 30' 22.666 N	108° 4' 59.632 W
<b>Start Build 3.50</b>									
861.4	25.95	341.24	836.3	156.3	-53.1	1,619,817.08	2,271,167.21	39° 30' 24.211 N	108° 5' 0.309 W
<b>Hold 25.95 Inclination</b>									
908.0	25.95	341.24	878.2	175.6	-59.6	1,619,836.55	2,271,161.21	39° 30' 24.401 N	108° 5' 0.393 W
<b>9 5/8"</b>									
2,667.2	25.95	341.24	2,460.0	904.5	-307.1	1,620,572.17	2,270,934.52	39° 30' 31.605 N	108° 5' 3.551 W
<b>Top of "G" Sand</b>									
2,778.4	25.95	341.24	2,560.0	950.6	-322.8	1,620,618.68	2,270,920.19	39° 30' 32.061 N	108° 5' 3.751 W
<b>Base of "G" Sand</b>									
4,391.5	25.95	341.24	4,010.5	1,619.0	-549.8	1,621,293.26	2,270,712.31	39° 30' 38.667 N	108° 5' 6.647 W
<b>Start Drop -1.50</b>									
4,828.0	19.40	341.24	4,413.0	1,778.2	-603.8	1,621,453.97	2,270,662.79	39° 30' 40.241 N	108° 5' 7.337 W
<b>Mesaverde</b>									
6,121.6	0.00	0.00	5,682.0	1,983.7	-673.6	1,621,661.30	2,270,598.90	39° 30' 42.271 N	108° 5' 8.227 W
<b>Vertical</b>									
6,221.6	0.00	0.00	5,782.0	1,983.7	-673.6	1,621,661.30	2,270,598.90	39° 30' 42.271 N	108° 5' 8.227 W
<b>Top Gas - Approx. Top Gas</b>									
7,549.6	0.00	0.00	7,110.0	1,983.7	-673.6	1,621,661.30	2,270,598.90	39° 30' 42.271 N	108° 5' 8.227 W
<b>Cameo Coals</b>									
8,021.6	0.00	0.00	7,582.0	1,983.7	-673.6	1,621,661.30	2,270,598.90	39° 30' 42.271 N	108° 5' 8.227 W
<b>Rollins SS</b>									
8,121.6	0.00	0.00	7,682.0	1,983.7	-673.6	1,621,661.30	2,270,598.90	39° 30' 42.271 N	108° 5' 8.227 W
<b>TD at 8121.6 - 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) GI	0.00	0.00	5,782.0	1,983.7	-673.6	1,621,661.30	2,270,598.90	39° 30' 42.271 N	108° 5' 8.227 W
- plan hits target center									
- Circle (radius 25.0)									

Casing Points					
Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (in)	Hole Diameter (in)	
908.0	878.2	9 5/8"	9.625	12.250	

**Williams**  
Planning Report - Geographic

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Project:	GV 23-06S-096W	MD Reference:	KELLY BUSHING @ 6002.0usft (Nabors 576 (26' RKB) kjs)
Site:	MV 10-23 Pad	North Reference:	True
Well:	GM 12-23	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #1 04Oct10 kjs		

Formations					
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (")	Dip Direction (")
2,667.2	2,460.0	Top of "G" Sand			
2,778.4	2,560.0	Base of "G" Sand			
4,828.0	4,413.0	Mesaverde			
6,221.6	5,782.0	Approx. Top Gas			
7,549.6	7,110.0	Cameo Coals			
8,021.6	7,582.0	Rollins SS			
8,121.6	7,682.0	TD			

Plan Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
120.0	120.0	0.0	0.0	Start Build 3.50
861.4	836.3	156.3	-53.1	Hold 25.95 Inclination
4,391.5	4,010.5	1,619.0	-549.8	Start Drop -1.50
6,121.6	5,682.0	1,983.7	-673.6	Vertical
6,221.6	5,782.0	1,983.7	-673.6	Top Gas
8,121.6	7,682.0	1,983.7	-673.6	TD at 8121.6