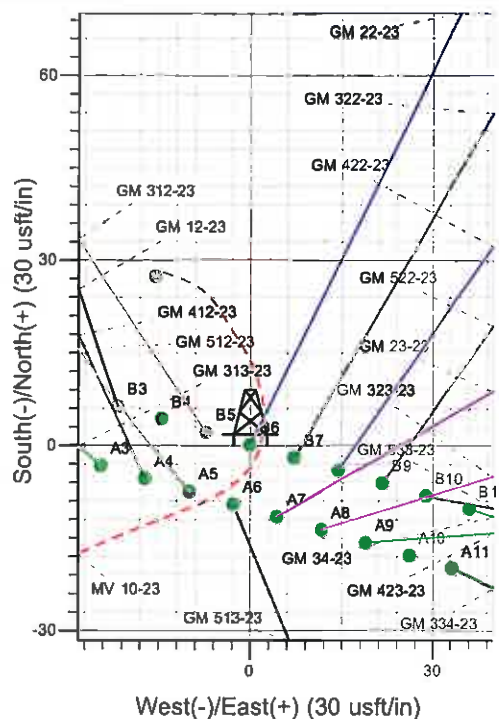
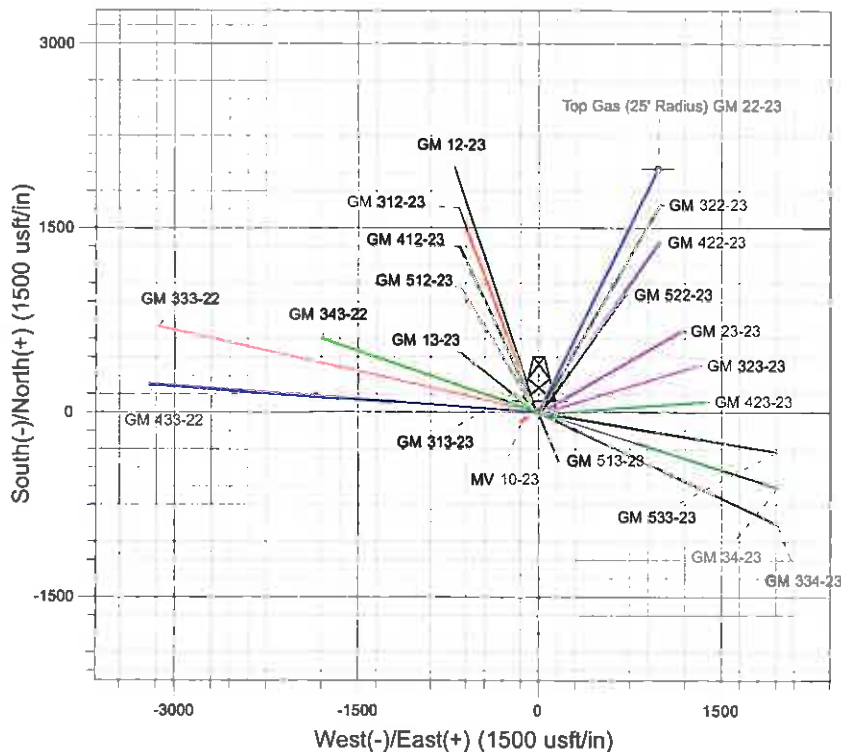
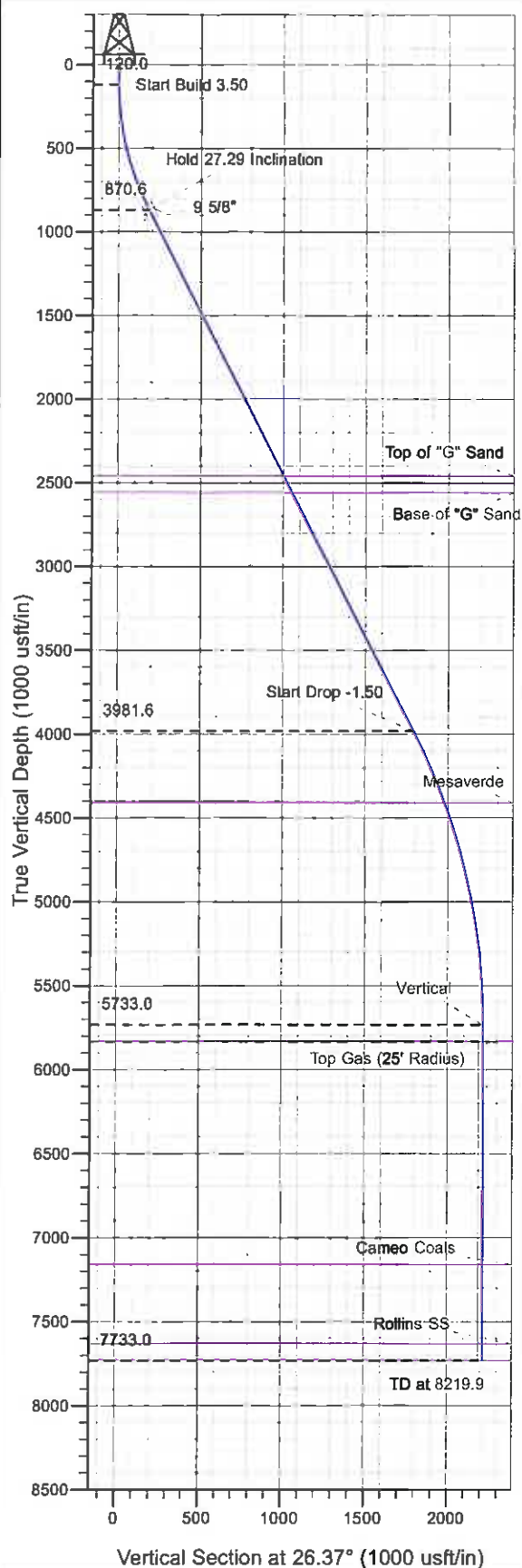




Well Name: GM 22-23  
 Surface Location: MV 10-23 Pad  
 North American Datum 1983 , US State Plane 1983 , Colorado Central Zone  
 Ground Elevation: 5976.0  
 +N/-S +E/-W Northing Easting Latitude Longitude Slot  
 0.0 0.0 1619652.52 2271237.25 39° 30' 22.604 N 108° 4' 59.356 W B6  
 KELLY BUSHING @ 6002.0usft (Nabors 576 (26' RKB) kjs)



Project: GV 23-06S-096W  
 Site: MV 10-23 Pad  
 Well: GM 22-23  
 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	VSec	Departure	Annotation
120.0	120.0	0.00	0.00	0.0	0.0	0.0	0.0	Start Build 3.50
870.6	898.8	27.29	26.37	163.3	80.9	182.2	182.2	Hold 27.29 Inclination
3981.6	4400.4	27.29	26.37	1601.4	793.8	1787.4	1787.4	Start Drop -1.50
5733.0	6219.9	0.00	0.00	1982.4	982.6	2212.6	2212.6	Vertical
5833.0	6319.9	0.00	0.00	1982.4	982.6	2212.6	2212.6	Top Gas
7733.0	8219.9	0.00	0.00	1982.4	982.6	2212.6	2212.6	TD at 8219.9

# **PICEANCE VLY NAD 83**

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

**MV 10-23 Pad**

**GM 22-23 - Slot B6**

**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 22-23 - Slot B6
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 @ 6002.0usft (Nabors 576 (26' RKB) kjs)
Site:	MV 10-23 Pad	North Reference:	True
Well:	GM 22-23	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	Latitude:	39° 30' 22.707 N
From:	Map	Easting:	2,271,201.54 usft	Longitude:	108° 4' 59.816 W
Position Uncertainty:	0.0 usft	Slot Radius:	13.200 in	Grid Convergence:	-1.629 °

Well	GM 22-23 - Slot B6					
Well Position	+N/-S	0.0 usft	Northing:	1,619,652.52 usft	Latitude:	39° 30' 22.604 N
	+E/-W	0.0 usft	Easting:	2,271,237.25 usft	Longitude:	108° 4' 59.356 W
Position Uncertainty		0.0 usft	Wellhead Elevation:		Ground Level:	5,976.0 usft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (")	Dip Angle (")	Field Strength (nT)
	IGRF2010	10/4/2010	10.482	65.750	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)	Direction (")
	0.0	0.0	0.0	26.37

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	
899.8	27.29	26.37	870.6	163.3	80.9	3.50	3.50	0.00	26.367	
4,400.4	27.29	26.37	3,981.6	1,601.4	793.8	0.00	0.00	0.00	0.000	
6,219.9	0.00	0.00	5,733.0	1,982.4	982.6	1.50	-1.50	0.00	180.000	
6,319.9	0.00	0.00	5,833.0	1,982.4	982.6	0.00	0.00	0.00	0.000	Top Gas (25' Radius)
8,219.9	0.00	0.00	7,733.0	1,982.4	982.6	0.00	0.00	0.00	0.000	

**Williams**  
Planning Report - Geographic

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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 @ 6002.0usft (Nabors 576 (26' RKB) kjs)
Site:	MV 10-23 Pad	North Reference:	True
Well:	GM 22-23	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	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	1,619,652.52	2,271,237.25	39° 30' 22.604 N	108° 4' 59.356 W
120.0	0.00	0.00	120.0	0.0	0.0	1,619,652.52	2,271,237.25	39° 30' 22.604 N	108° 4' 59.356 W
<b>Start Build 3.50</b>									
899.8	27.29	26.37	870.6	163.3	80.9	1,619,813.42	2,271,322.79	39° 30' 24.218 N	108° 4' 58.324 W
<b>Hold 27.29 Inclination</b>									
946.0	27.29	26.37	911.7	182.3	90.3	1,619,832.13	2,271,332.74	39° 30' 24.406 N	108° 4' 58.204 W
<b>9 5/8"</b>									
2,688.2	27.29	26.37	2,460.0	898.0	445.1	1,620,537.49	2,271,707.71	39° 30' 31.480 N	108° 4' 53.677 W
<b>Top of "G" Sand</b>									
2,800.8	27.29	26.37	2,560.0	944.3	468.0	1,620,583.04	2,271,731.93	39° 30' 31.937 N	108° 4' 53.385 W
<b>Base of "G" Sand</b>									
4,400.4	27.29	26.37	3,981.6	1,601.4	793.8	1,621,230.66	2,272,076.21	39° 30' 38.431 N	108° 4' 49.228 W
<b>Start Drop -1.50</b>									
4,872.1	20.22	26.37	4,413.0	1,771.5	878.1	1,621,398.31	2,272,165.34	39° 30' 40.113 N	108° 4' 48.152 W
<b>Mesaverde</b>									
6,219.9	0.00	0.00	5,733.0	1,982.4	982.6	1,621,606.10	2,272,275.80	39° 30' 42.197 N	108° 4' 46.819 W
<b>Vertical</b>									
6,319.9	0.00	0.00	5,833.0	1,982.4	982.6	1,621,606.10	2,272,275.80	39° 30' 42.197 N	108° 4' 46.819 W
<b>Top Gas - Approx. Top Gas</b>									
7,647.9	0.00	0.00	7,161.0	1,982.4	982.6	1,621,606.10	2,272,275.80	39° 30' 42.197 N	108° 4' 46.819 W
<b>Cameo Coals</b>									
8,119.9	0.00	0.00	7,633.0	1,982.4	982.6	1,621,606.10	2,272,275.80	39° 30' 42.197 N	108° 4' 46.819 W
<b>Rollins SS</b>									
8,219.9	0.00	0.00	7,733.0	1,982.4	982.6	1,621,606.10	2,272,275.80	39° 30' 42.197 N	108° 4' 46.819 W
<b>TD at 8219.9 - 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	5,833.0	1,982.4	982.6	1,621,606.10	2,272,275.80	39° 30' 42.197 N	108° 4' 46.819 W
- plan hits target center									
- Circle (radius 25.0)									

Casing Points					
Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (in)	Hole Diameter (in)	
946.0	911.7	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 22-23	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 (°)	
2,688.2	2,460.0	Top of "G" Sand				
2,800.8	2,560.0	Base of "G" Sand				
4,872.1	4,413.0	Mesaverde				
6,319.9	5,833.0	Approx. Top Gas				
7,647.9	7,161.0	Cameo Coals				
8,119.9	7,633.0	Rollins SS				
8,219.9	7,733.0	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 3.50	
899.8	870.6	163.3	80.9	Hold 27.29 Inclination	
4,400.4	3,981.6	1,601.4	793.8	Start Drop -1.50	
6,219.9	5,733.0	1,982.4	982.6	Vertical	
6,319.9	5,833.0	1,982.4	982.6	Top Gas	
8,219.9	7,733.0	1,982.4	982.6	TD at 8219.9	