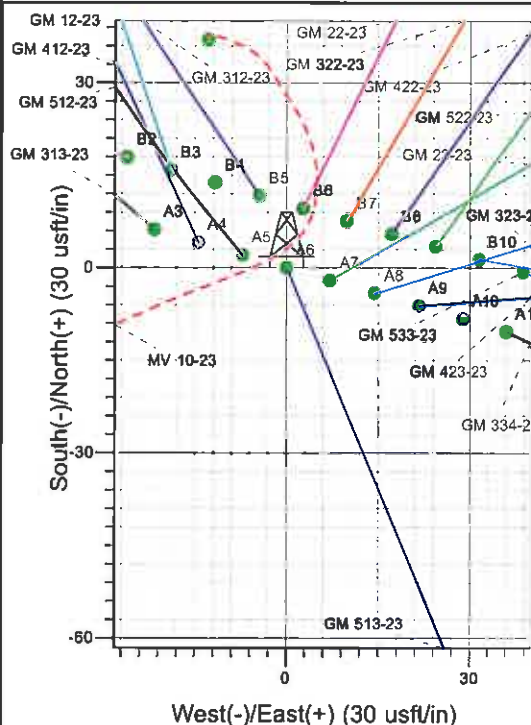
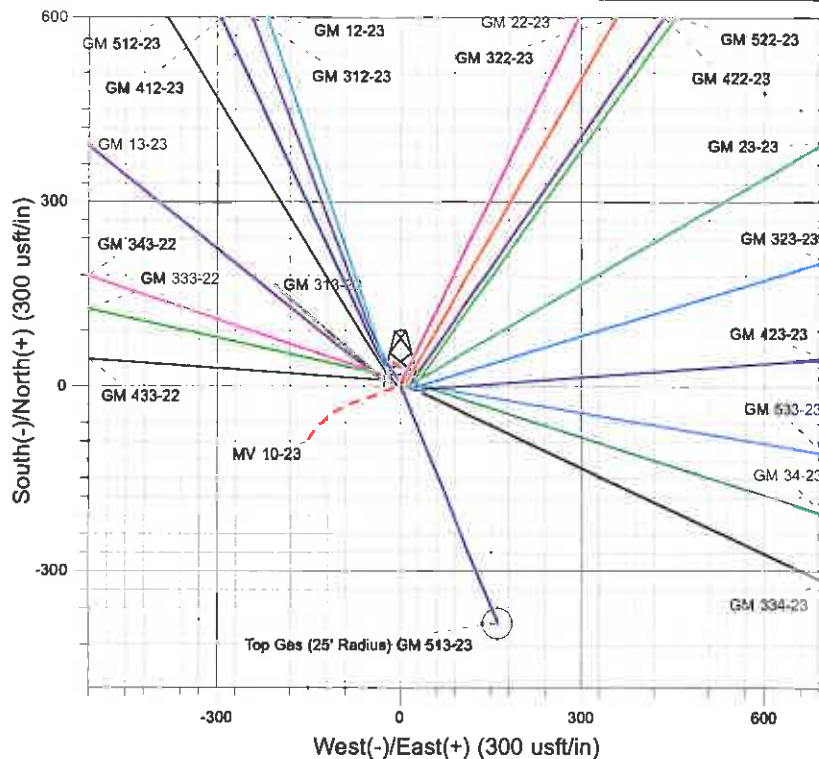
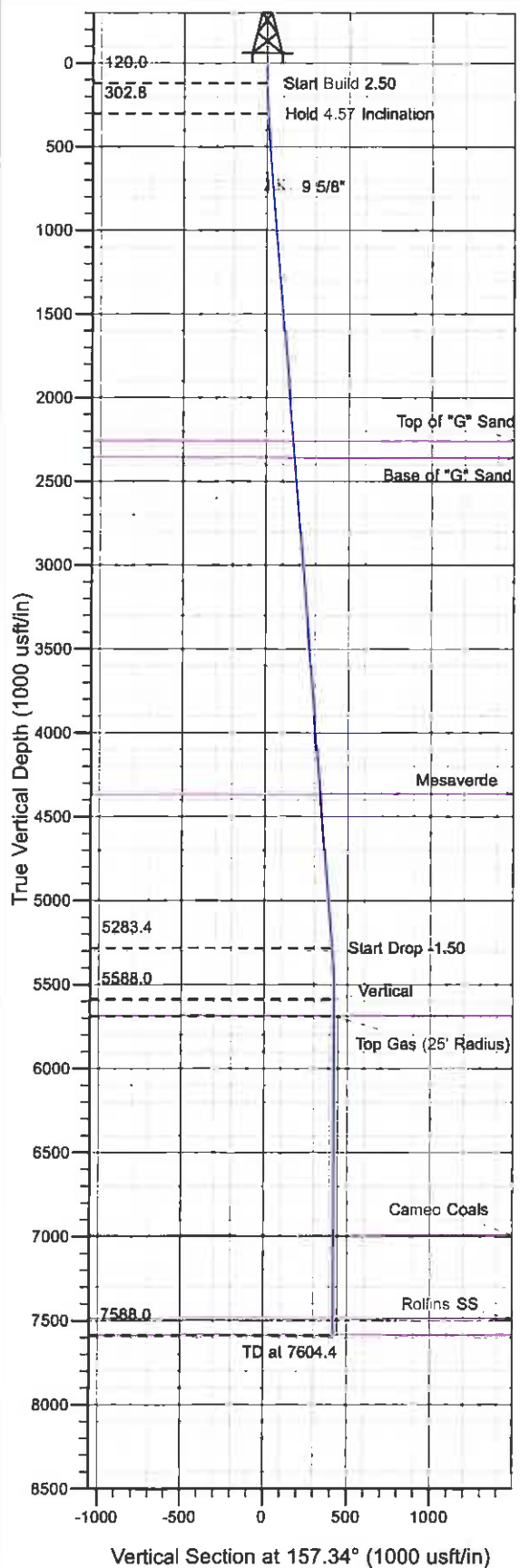




Well Name: GM 513-23  
 Surface Location: MV 10-23 Pad  
 North American Datum 1983 , US State Plane 1983 , Colorado Central Zone  
 Ground Elevation: 5976.0  
 +N/-S 0.0 +E/-W 0.0 Northing 1619642.98 Easting 2271234.24 Latitude 39° 30' 22.509 N Longitude 108° 4' 59.391 W Slot A6  
 KELLY BUSHING @ 6002.0usft (Nabors 576 (26' RKB) kjs)



Project: GV 23-06S-096W  
 Site: MV 10-23 Pad  
 Well: GM 513-23  
 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 2.50
302.8	303.0	4.57	157.34	-6.7	2.8	7.3	7.3	Hold 4.57 Inclination
5283.4	5299.5	4.57	157.34	-374.4	156.3	405.8	405.8	Start Drop -1.50
5588.0	5604.4	0.00	0.00	-385.7	181.0	417.9	417.9	Vertical
5688.0	5704.4	0.00	0.00	-385.7	181.0	417.9	417.9	Top Gas
7588.0	7604.4	0.00	0.00	-385.7	181.0	417.9	417.9	TD at 7604.4

# **PICEANCE VLY NAD 83**

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

**MV 10-23 Pad**

**GM 513-23 - Slot A6**

**Wellbore #1**

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

## **Standard Planning Report - Geographic**

**09 February, 2011**

**Williams**  
Planning Report - Geographic

<b>Database:</b>	Compass R5000 WIN AUTH	<b>Local Co-ordinate Reference:</b>	Well GM 513-23 - Slot A6
<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 513-23	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Design #1 04Oct10 kjs		

<b>Project</b>	GV 23-06S-096W, Garfield County, CO, 23-06S-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 10-23 Pad			
<b>Site Position:</b>		<b>Northing:</b>	1,619,663.89 usft	<b>Latitude:</b> 39° 30' 22.707 N
<b>From:</b>	Map	<b>Easting:</b>	2,271,201.54 usft	<b>Longitude:</b> 108° 4' 59.816 W
<b>Position Uncertainty:</b>	0.0 usft	<b>Slot Radius:</b>	13.200 in	<b>Grid Convergence:</b> -1.629 °

<b>Well</b>	GM 513-23 - Slot A6			
<b>Well Position</b>	+N/-S	0.0 usft	<b>Northing:</b>	1,619,642.98 usft
	+E/-W	0.0 usft	<b>Easting:</b>	2,271,234.24 usft
<b>Position Uncertainty</b>	0.0 usft		<b>Wellhead Elevation:</b>	<b>Ground Level:</b> 5,976.0 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	10/4/2010	10.482	65.750	52,314

<b>Design</b>	Design #1 04Oct10 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	157.34

<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	
303.0	4.57	157.34	302.8	-6.7	2.8	2.50	2.50	0.00	157.342	
5,299.5	4.57	157.34	5,283.4	-374.4	156.3	0.00	0.00	0.00	0.000	
5,604.4	0.00	0.00	5,588.0	-385.7	161.0	1.50	-1.50	0.00	180.000	
5,704.4	0.00	0.00	5,688.0	-385.7	161.0	0.00	0.00	0.00	0.000	Top Gas (25' Radius)
7,604.4	0.00	0.00	7,588.0	-385.7	161.0	0.00	0.00	0.00	0.000	

**Williams**  
Planning Report - Geographic

Database:	Compass R5000 WIN AUTH	Local Co-ordinate Reference:	Well GM 513-23 - Slot A6
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 513-23	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	1,619,642.98	2,271,234.24	39° 30' 22.509 N	108° 4' 59.391 W
120.0	0.00	0.00	120.0	0.0	0.0	1,619,642.98	2,271,234.24	39° 30' 22.509 N	108° 4' 59.391 W
Start Build 2.50									
303.0	4.57	157.34	302.8	-6.7	2.8	1,619,636.16	2,271,236.86	39° 30' 22.443 N	108° 4' 59.355 W
Hold 4.57 Inclination									
761.0	4.57	157.34	759.3	-40.4	16.9	1,619,602.07	2,271,249.97	39° 30' 22.110 N	108° 4' 59.176 W
Ø 5/8"									
2,262.4	4.57	157.34	2,256.0	-150.9	63.0	1,619,490.31	2,271,292.93	39° 30' 21.018 N	108° 4' 58.587 W
Top of "G" Sand									
2,362.8	4.57	157.34	2,356.0	-158.3	66.1	1,619,482.84	2,271,295.80	39° 30' 20.945 N	108° 4' 58.548 W
Base of "G" Sand									
4,379.2	4.57	157.34	4,366.0	-306.7	128.0	1,619,332.75	2,271,353.50	39° 30' 19.478 N	108° 4' 57.758 W
Mesaverde									
5,299.5	4.57	157.34	5,283.4	-374.4	156.3	1,619,264.25	2,271,379.84	39° 30' 18.809 N	108° 4' 57.397 W
Start Drop -1.50									
5,604.4	0.00	0.00	5,588.0	-385.7	161.0	1,619,252.90	2,271,384.20	39° 30' 18.698 N	108° 4' 57.337 W
Vertical									
5,704.4	0.00	0.00	5,688.0	-385.7	161.0	1,619,252.90	2,271,384.20	39° 30' 18.698 N	108° 4' 57.337 W
Top Gas - Approx. Top Gas									
7,009.4	0.00	0.00	6,993.0	-385.7	161.0	1,619,252.90	2,271,384.20	39° 30' 18.698 N	108° 4' 57.337 W
Cameo Coals									
7,504.4	0.00	0.00	7,488.0	-385.7	161.0	1,619,252.90	2,271,384.20	39° 30' 18.698 N	108° 4' 57.337 W
Rollins SS									
7,604.4	0.00	0.00	7,588.0	-385.7	161.0	1,619,252.90	2,271,384.20	39° 30' 18.698 N	108° 4' 57.337 W
TD at 7604.4 - TD									

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	5,688.0	-385.7	161.0	1,619,252.90	2,271,384.20	39° 30' 18.698 N	108° 4' 57.337 W
- plan hits target center									
- Circle (radius 25.0)									

Casing Points					
Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (in)	Hole Diameter (in)	
761.0	759.3	Ø 5/8"	9.625	12.250	

**Williams**  
Planning Report - Geographic

<b>Database:</b>	Compass R5000 WIN AUTH	<b>Local Co-ordinate Reference:</b>	Well GM 513-23 - Slot A6
<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 513-23	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Design #1 04Oct10 kjs		

Formations						
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (")	Dip Direction (")	
2,262.4	2,256.0	Top of "G" Sand				
2,362.8	2,356.0	Base of "G" Sand				
4,379.2	4,366.0	Mesaverde				
5,704.4	5,688.0	Approx. Top Gas				
7,009.4	6,993.0	Cameo Coals				
7,504.4	7,488.0	Rollins SS				
7,604.4	7,588.0	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 2.50	
303.0	302.8	-6.7	2.8	Hold 4.57 Inclination	
5,299.5	5,283.4	-374.4	156.3	Start Drop -1.50	
5,604.4	5,588.0	-385.7	161.0	Vertical	
5,704.4	5,688.0	-385.7	161.0	Top Gas	
7,604.4	7,588.0	-385.7	161.0	TD at 7604.4	