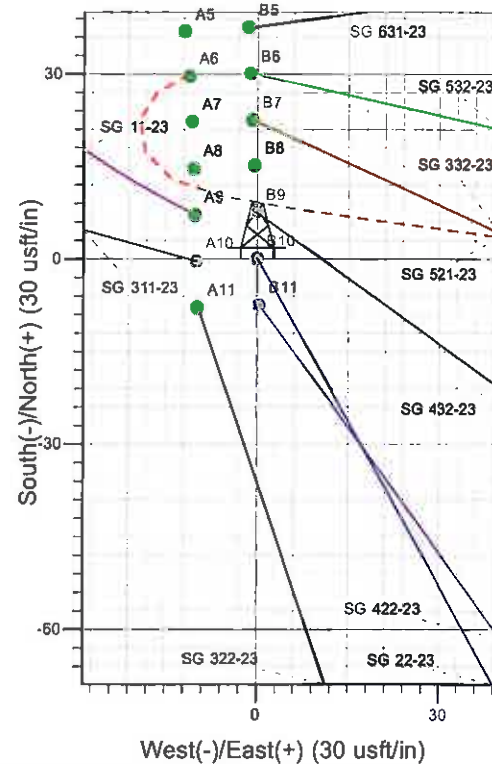
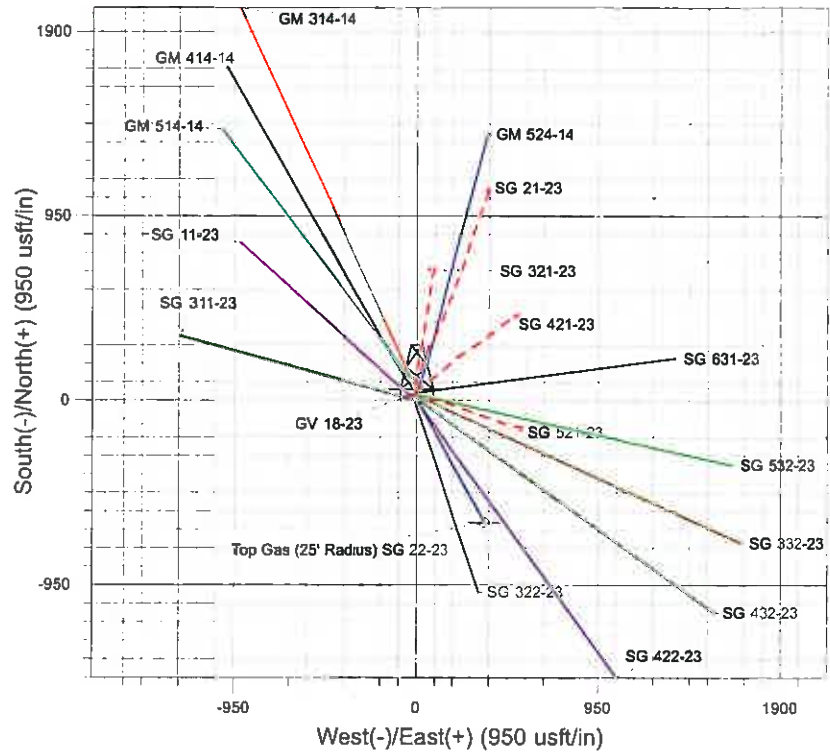
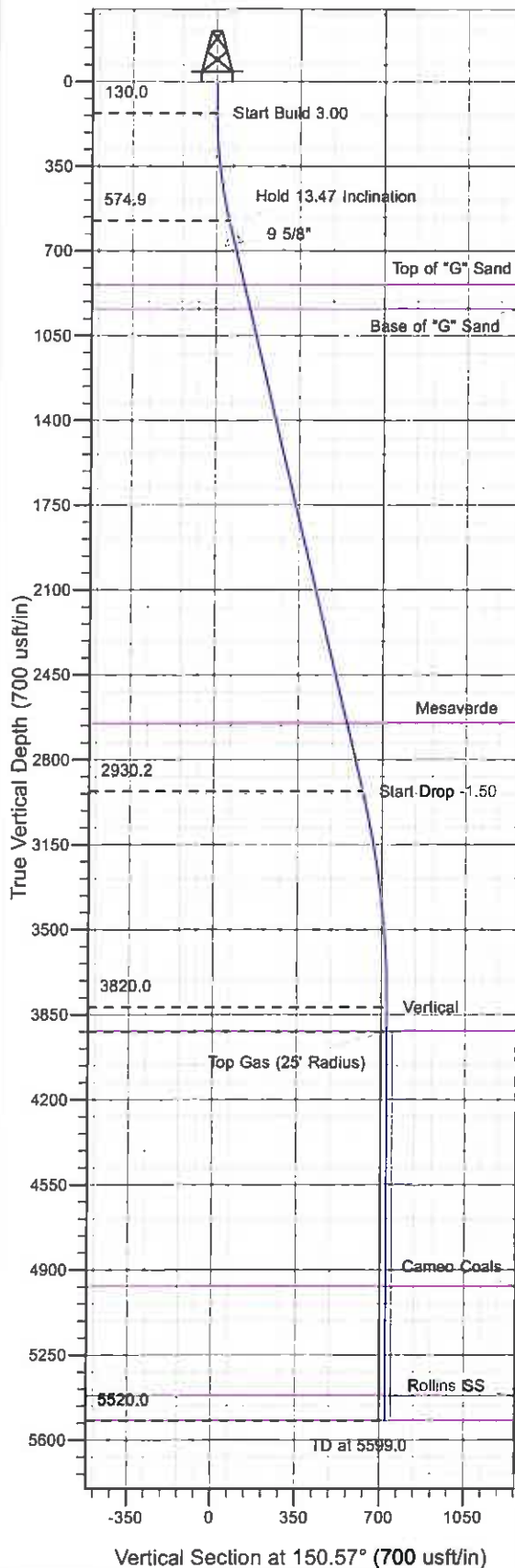




Well Name: SG 22-23  
 Surface Location: GV 18-23 Pad  
 North American Datum 1983 , US State Plane 1983 , Colorado Central Zone  
 Ground Elevation: 5134.0  
 +N/-S +E/-W Northing Easting Latitude Longitude Slot  
 0.0 0.0 1590854.10 2270839.70 39° 25' 37.973 N 108° 4' 53.986 W B10  
 KELLY BUSHING @ 5158.0usft (H&P 278 (24' RKB) kjs)



Project: SG 23-07S-096W  
 Site: GV 18-23 Pad  
 Well: SG 22-23  
 Design #1 06Apr11 kjs



Azimuths to True North  
 Magnetic North: 10.40°  
 Magnetic Field  
 Strength: 52276.4snT  
 Dip Angle: 65.69°  
 Date: 2/4/2011  
 Model: IGRF2005-10

#### ANNOTATIONS

TVD	MD	Inc	Azi	+N/-S	+E/-W	VSec	Departure	Annotation
130.0	130.0	0.00	0.00	0.0	0.0	0.0	0.0	Start Build 3.00
574.9	579.0	13.47	150.57	-45.8	25.8	52.5	52.5	Hold 13.47 Inclination
2930.2	3000.9	13.47	150.57	-537.2	303.0	616.7	616.7	Start Drop -1.50
3820.0	3899.0	0.00	0.00	-628.7	354.6	721.8	721.8	Vertical
3920.0	3999.0	0.00	0.00	-628.7	354.6	721.8	721.8	Top Gas
5520.0	5599.0	0.00	0.00	-628.7	354.6	721.8	721.8	TD at 5599.0

# **PICEANCE VLY NAD 83**

**SG 23-07S-096W**

**GV 18-23 Pad**

**SG 22-23 - Slot B10**

**Wellbore #1**

**Plan: Design #1 06Apr11 kjs**

## **Standard Planning Report - Geographic**

**01 June, 2011**

**Williams**  
Planning Report - Geographic

Database:	Compass R5000 WIN AUTH	Local Co-ordinate Reference:	Well SG 22-23 - Slot B10
Company:	PICEANCE VLY NAD 83	TVD Reference:	KELLY BUSHING @ 5158.0usft (H&P 278 (24' RKB) kjs)
Project:	SG 23-07S-096W	MD Reference:	KELLY BUSHING @ 5158.0usft (H&P 278 (24' RKB) kjs)
Site:	GV 18-23 Pad	North Reference:	True
Well:	SG 22-23	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #1 06Apr11 kjs		

Project	SG 23-07S-096W, Garfield County, CO, 23-07S-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	GV 18-23 Pad			
Site Position:		Northing:	1,590,884.00 usft	Latitude: 39° 25' 38.266 N
From:	Map	Easting:	2,270,829.40 usft	Longitude: 108° 4' 54.128 W
Position Uncertainty:	0.0 usft	Slot Radius:	13.200 in	Grid Convergence: -1.628 °

Well	SG 22-23 - Slot B10			
Well Position	+N/-S	0.0 usft	Northing:	1,590,854.10 usft
	+E/-W	0.0 usft	Easting:	2,270,839.70 usft
Position Uncertainty	0.0 usft	Wellhead Elevation:		Ground Level: 5,134.0 usft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2005-10	2/4/2011	10.404	65.688	52,276

Design	Design #1 06Apr11 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	150.57

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	
130.0	0.00	0.00	130.0	0.0	0.0	0.00	0.00	0.00	0.000	
579.0	13.47	150.57	574.9	-45.8	25.8	3.00	3.00	0.00	150.575	
3,000.9	13.47	150.57	2,930.2	-537.2	303.0	0.00	0.00	0.00	0.000	
3,899.0	0.00	0.00	3,820.0	-628.7	354.6	1.50	-1.50	0.00	180.000	
3,999.0	0.00	0.00	3,920.0	-628.7	354.6	0.00	0.00	0.00	0.000	Top Gas (25' Radius)
5,599.0	0.00	0.00	5,520.0	-628.7	354.6	0.00	0.00	0.00	0.000	

**Williams**  
Planning Report - Geographic

Database:	Compass R5000 WIN AUTH	Local Co-ordinate Reference:	Well SG 22-23 - Slot B10
Company:	PICEANCE VLY NAD 83	TVD Reference:	KELLY BUSHING @ 5158.0usft (H&P 278 (24' RKB) kjs)
Project:	SG 23-07S-096W	MD Reference:	KELLY BUSHING @ 5158.0usft (H&P 278 (24' RKB) kjs)
Site:	GV 18-23 Pad	North Reference:	True
Well:	SG 22-23	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #1 06Apr11 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	1,590,854.10	2,270,839.70	39° 25' 37.973 N	108° 4' 53.986 W
130.0	0.00	0.00	130.0	0.0	0.0	1,590,854.10	2,270,839.70	39° 25' 37.973 N	108° 4' 53.986 W
Start Build 3.00									
579.0	13.47	150.57	574.9	-45.8	25.8	1,590,807.62	2,270,864.20	39° 25' 37.521 N	108° 4' 53.657 W
Hold 13.47 Inclination									
679.0	13.47	150.57	672.1	-66.0	37.3	1,590,787.02	2,270,875.06	39° 25' 37.320 N	108° 4' 53.511 W
9 5/8"									
851.6	13.47	150.57	840.0	-101.1	57.0	1,590,751.45	2,270,893.81	39° 25' 36.974 N	108° 4' 53.260 W
Top of "G" Sand									
954.5	13.47	150.57	940.0	-121.9	68.8	1,590,730.26	2,270,904.99	39° 25' 36.768 N	108° 4' 53.110 W
Base of "G" Sand									
2,712.8	13.47	150.57	2,650.0	-478.7	270.0	1,590,367.92	2,271,096.00	39° 25' 33.242 N	108° 4' 50.545 W
Mesaverde									
3,000.9	13.47	150.57	2,930.2	-537.2	303.0	1,590,308.55	2,271,127.30	39° 25' 32.664 N	108° 4' 50.125 W
Start Drop -1.50									
3,899.0	0.00	0.00	3,820.0	-628.7	354.6	1,590,215.60	2,271,176.30	39° 25' 31.760 N	108° 4' 49.467 W
Vertical									
3,999.0	0.00	0.00	3,920.0	-628.7	354.6	1,590,215.60	2,271,176.30	39° 25' 31.760 N	108° 4' 49.467 W
Top Gas - Approx. Top Gas									
5,049.0	0.00	0.00	4,970.0	-628.7	354.6	1,590,215.60	2,271,176.30	39° 25' 31.760 N	108° 4' 49.467 W
Cameo Coals									
5,499.0	0.00	0.00	5,420.0	-628.7	354.6	1,590,215.60	2,271,176.30	39° 25' 31.760 N	108° 4' 49.467 W
Rollins SS									
5,599.0	0.00	0.00	5,520.0	-628.7	354.6	1,590,215.60	2,271,176.30	39° 25' 31.760 N	108° 4' 49.467 W
TD at 5599.0									

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) SC	0.00	0.00	3,920.0	-628.7	354.6	1,590,215.60	2,271,176.30	39° 25' 31.760 N	108° 4' 49.467 W
- plan hits target center									
- Circle (radius 25.0)									

Casing Points					
Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (in)	Hole Diameter (in)	
679.0	672.1	9 5/8"	9.625	12.250	

**Williams**  
Planning Report - Geographic

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Project:	SG 23-07S-096W	MD Reference:	KELLY BUSHING @ 5158.0usft (H&P 278 (24' RKB) kjs)
Site:	GV 18-23 Pad	North Reference:	True
Well:	SG 22-23	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #1 06Apr11 kjs		

Formations						
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (")	Dip Direction (")	
851.6	840.0	Top of "G" Sand				
954.5	940.0	Base of "G" Sand				
2,712.8	2,650.0	Mesaverde				
3,999.0	3,920.0	Approx. Top Gas				
5,049.0	4,970.0	Cameo Coals				
5,499.0	5,420.0	Rollins SS				

Plan Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates			Comment
		+N/-S (usft)	+E/-W (usft)		
130.0	130.0	0.0	0.0		Start Build 3.00
579.0	574.9	-45.8	25.8		Hold 13.47 Inclination
3,000.9	2,930.2	-537.2	303.0		Start Drop -1.50
3,899.0	3,820.0	-628.7	354.6		Vertical
3,999.0	3,920.0	-628.7	354.6		Top Gas
5,599.0	5,520.0	-628.7	354.6		TD at 5599.0