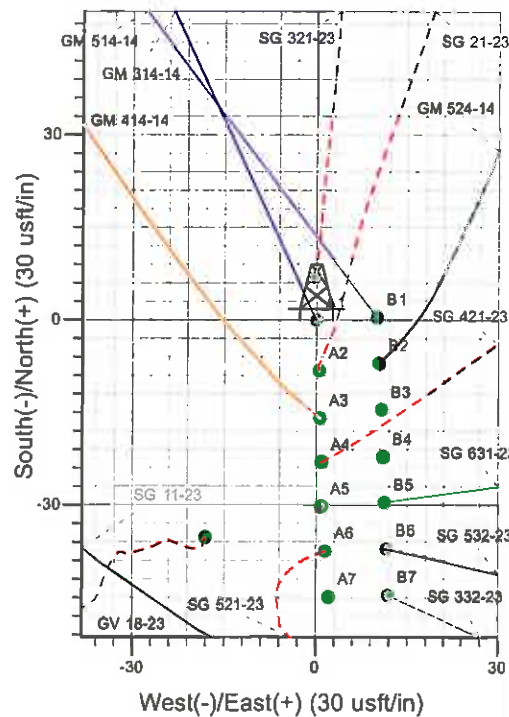
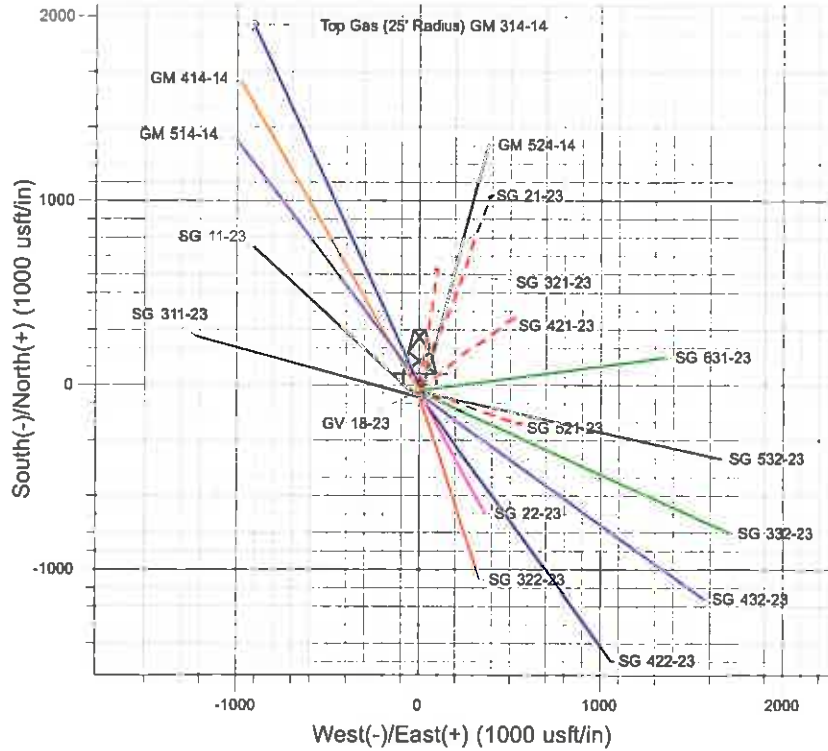
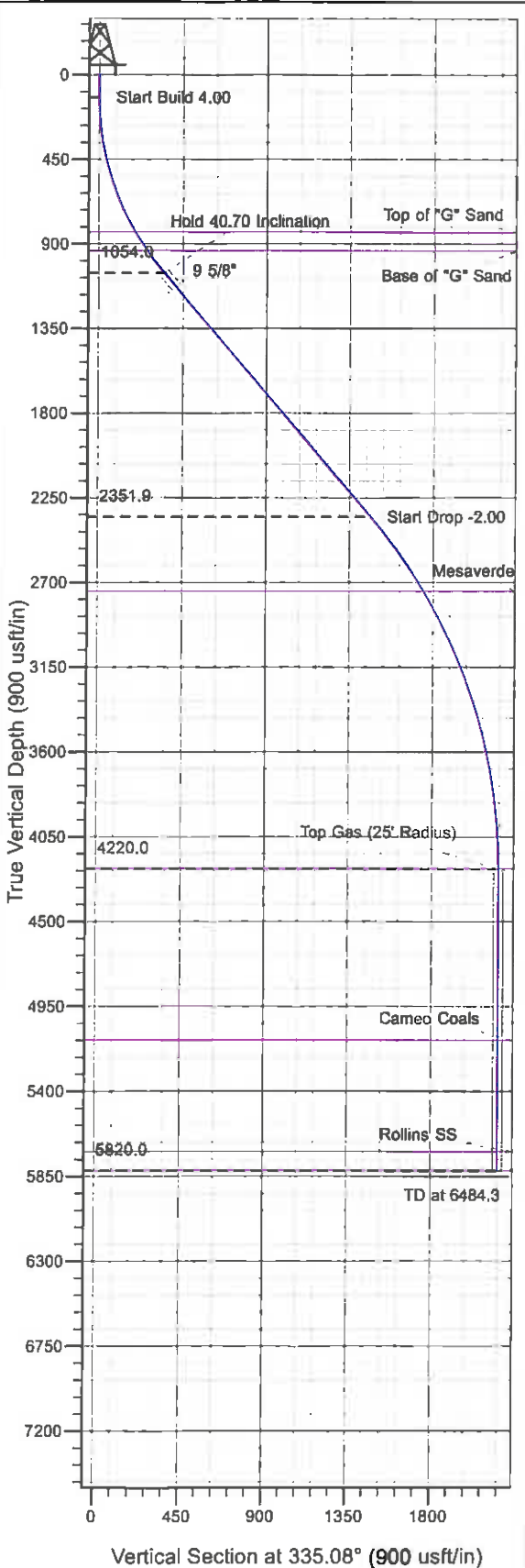




Well Name: GM 314-14  
 Surface Location: GV 18-23 Pad  
 North American Datum 1983 , US State Plane 1983 , Colorado Central Zone  
 Ground Elevation: 5134.0

+N/-S +E/-W Northing Easting Latitude Longitude Slot  
 0.0 0.0 1590921.50 2270828.90 39° 25' 38.636 N 108° 4' 54.148 W A1  
 KELLY BUSHING @ 5158.0usft (H&P 278 (24' RKB) kjs)



Project: SG 23-07S-096W  
 Site: GV 18-23 Pad  
 Well: GM 314-14  
 Design #1 06Apr11 kjs



Azimuths to True North  
 Magnetic North: 10.40°  
 Magnetic Field  
 Strength: 52276.5nT  
 Dip Angle: 65.69°  
 Date: 2/4/2011  
 Model: IGRF2005-10

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 4.00
1054.0	1137.5	40.70	335.08	314.2	-146.0	346.4	346.4	Hold 40.70 Inclination
2351.0	2849.4	40.70	335.08	1326.5	-618.3	1462.7	1462.7	Start Drop -2.00
4220.0	4884.3	0.00	0.00	1954.9	-908.3	2155.6	2155.6	Top gas
5820.0	6484.3	0.00	0.00	1954.9	-908.3	2155.6	2155.6	TD at 6484.3

# **PICEANCE VLY NAD 83**

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

**GV 18-23 Pad**

**GM 314-14 - Slot A1**

**Wellbore #1**

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

## **Standard Planning Report - Geographic**

**26 May, 2011**

**Williams**  
Planning Report - Geographic

Database:	Compass R5000 WIN AUTH	Local Co-ordinate Reference:	Well GM 314-14 - Slot A1
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:	GM 314-14	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	GM 314-14 - Slot A1					
Well Position	+N/-S	0.0 usft	Northing:	1,590,921.50 usft	Latitude:	39° 25' 38.636 N
	+E/-W	0.0 usft	Easting:	2,270,828.90 usft	Longitude:	108° 4' 54.148 W
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	65.689	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	335.08

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	
1,137.5	40.70	335.08	1,054.0	314.2	-146.0	4.00	4.00	0.00	335.079	
2,849.4	40.70	335.08	2,351.9	1,326.5	-616.3	0.00	0.00	0.00	0.000	
4,884.3	0.00	0.00	4,220.0	1,954.9	-908.3	2.00	-2.00	0.00	180.000	Top Gas (25' Radius)
6,484.3	0.00	0.00	5,820.0	1,954.9	-908.3	0.00	0.00	0.00	0.000	

**Williams**  
Planning Report - Geographic

Database:	Compass R5000 WVN AUTH	Local CO-ordinate reference:	Well GM 314-14 - Slot A1
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:	GM 314-14	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	1,590,921.50	2,270,828.90	39° 25' 38.636 N	108° 4' 54.148 W
120.0	0.00	0.00	120.0	0.0	0.0	1,590,921.50	2,270,828.90	39° 25' 38.636 N	108° 4' 54.148 W
<b>Start Build 4.00</b>									
874.4	30.18	335.08	840.0	176.0	-81.8	1,591,099.77	2,270,752.15	39° 25' 40.376 N	108° 4' 55.191 W
<b>Top of "G" Sand</b>									
993.1	34.92	335.08	940.0	233.9	-108.7	1,591,158.40	2,270,726.91	39° 25' 40.948 N	108° 4' 55.533 W
<b>Base of "G" Sand</b>									
1,137.5	40.70	335.08	1,054.0	314.2	-146.0	1,591,239.68	2,270,691.92	39° 25' 41.741 N	108° 4' 56.008 W
<b>Hold 40.70 Inclination</b>									
1,238.0	40.70	335.08	1,130.3	373.6	-173.6	1,591,299.88	2,270,666.00	39° 25' 42.329 N	108° 4' 56.360 W
<b>9 5/8"</b>									
2,849.4	40.70	335.08	2,351.9	1,326.5	-616.3	1,592,264.95	2,270,250.53	39° 25' 51.747 N	108° 5' 2.003 W
<b>Start Drop -2.00</b>									
3,340.7	30.87	335.08	2,750.0	1,586.8	-737.3	1,592,528.52	2,270,137.07	39° 25' 54.319 N	108° 5' 3.544 W
<b>Mesaverde</b>									
4,884.3	0.00	0.00	4,220.0	1,954.9	-908.3	1,592,901.32	2,269,976.57	39° 25' 57.957 N	108° 5' 5.724 W
<b>Top gas - Approx. Top Gas</b>									
5,794.3	0.00	0.00	5,130.0	1,954.9	-908.3	1,592,901.32	2,269,976.57	39° 25' 57.957 N	108° 5' 5.724 W
<b>Cameo Coals</b>									
6,384.3	0.00	0.00	5,720.0	1,954.9	-908.3	1,592,901.32	2,269,976.57	39° 25' 57.957 N	108° 5' 5.724 W
<b>Rolline SS</b>									
6,484.3	0.00	0.00	5,820.0	1,954.9	-908.3	1,592,901.32	2,269,976.57	39° 25' 57.957 N	108° 5' 5.724 W
<b>TD at 6484.3 - TD</b>									

Design Targets									
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
Top Gas (25' Radius) GI	0.00	0.00	4,220.0	1,955.9	-914.5	1,592,902.50	2,269,970.40	39° 25' 57.967 N	108° 5' 5.803 W
- hit/miss target									
- Shape									
- plan misses target center by 6.3usft at 4884.3usft MD (4220.0 TVD, 1954.9 N, -908.3 E)									
- Circle (radius 25.0)									

Casing Points					
Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (in)	Hole Diameter (in)	
1,238.0	1,130.3	9 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 314-14 - Slot A1
<b>Company:</b>	PICEANCE VLY NAD 83	<b>TVD Reference:</b>	KELLY BUSHING @ 5158.0usft (H&P 278 (24' RKB) kjs)
<b>Project:</b>	SG 23-07S-096W	<b>MD Reference:</b>	KELLY BUSHING @ 5158.0usft (H&P 278 (24' RKB) kjs)
<b>Site:</b>	GV 18-23 Pad	<b>North Reference:</b>	True
<b>Well:</b>	GM 314-14	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Design #1 06Apr11 kjs		

Formations					
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (")	Dip Direction (")
874.4	840.0	Top of "G" Sand			
993.1	940.0	Base of "G" Sand			
3,340.7	2,750.0	Mesaverde			
4,884.3	4,220.0	Approx. Top Gas			
5,794.3	5,130.0	Cameo Coals			
6,384.3	5,720.0	Rollins SS			
6,484.3	5,820.0	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 4.00	
1,137.5	1,054.0	314.2	-146.0	Hold 40.70 Inclination	
2,849.4	2,351.9	1,326.5	-616.3	Start Drop -2.00	
4,884.3	4,220.0	1,954.9	-908.3	Top gas	
6,484.3	5,820.0	1,954.9	-908.3	TD at 6484.3	