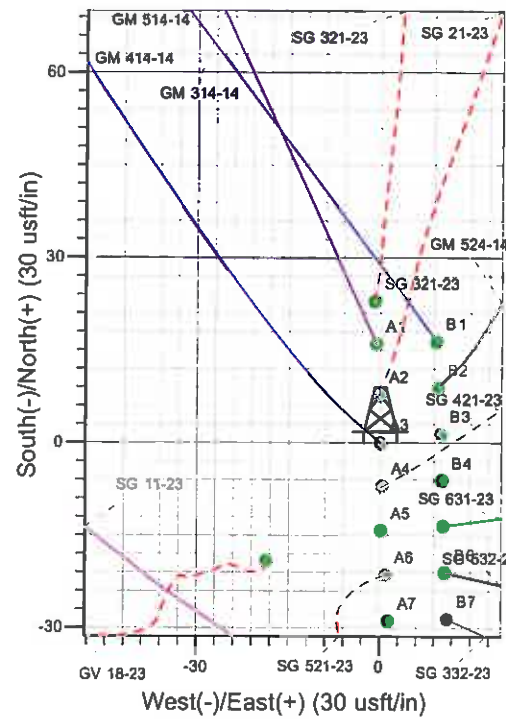
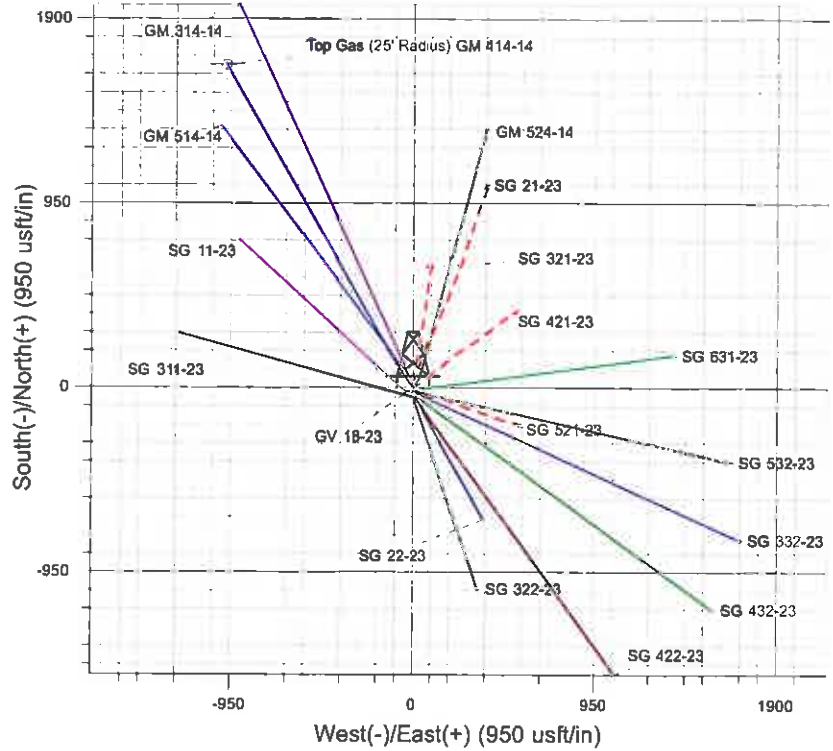
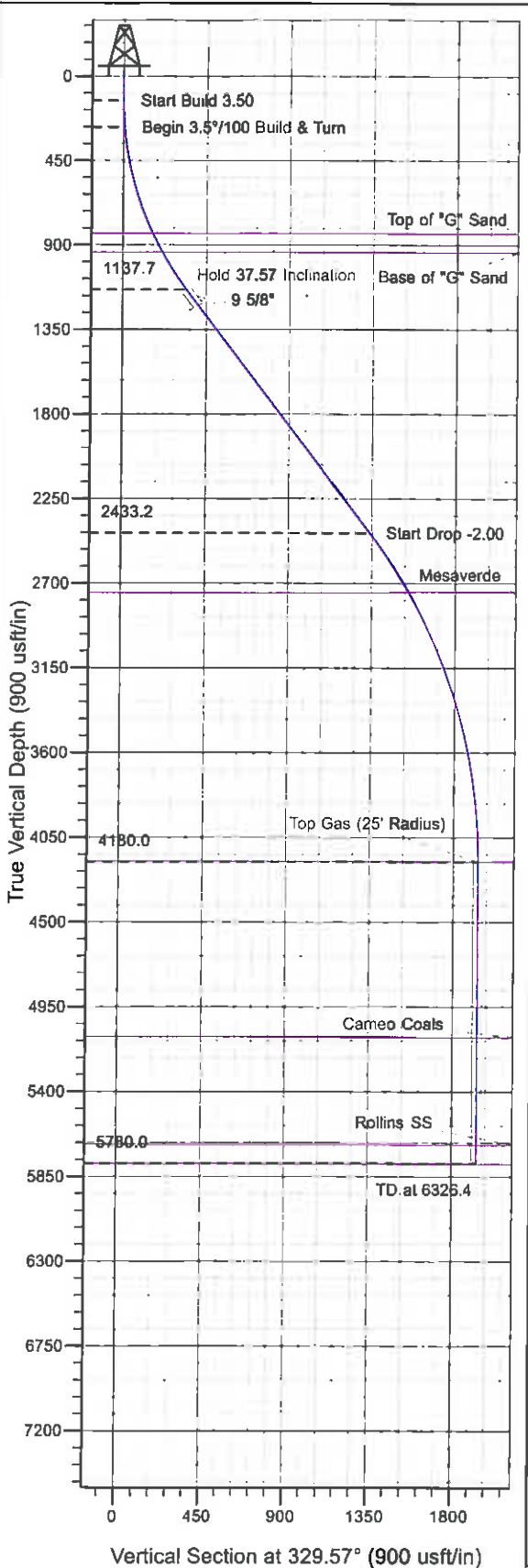




Well Name: GM 414-14  
 Surface Location: GV 18-23 Pad  
 North American Datum 1983 , US State Plane 1983 , Colorado Central Zone  
 Ground Elevation: 5134.0  
 +N/-S 0.0    +E/-W 0.0    Northing 1590905.50    Easting 2270829.10    Latitude 39° 25' 38.478 N    Longitude 108° 4' 54.140 W    Slot A3  
 KELLY BUSHING @ 5158.0ustf (H&P 278 (24' RKB) kjs)



Project: SG 23-07S-096W  
 Site: GV 18-23 Pad  
 Well: GM 414-14  
 Design #1 06Apr11 kjs

Azimuths to True North  
 Magnetic North: 10.40°  
 Magnetic Field  
 Strength: 52276.5snT  
 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 3.50
272.7	272.9	5.00	310.00	4.0	-4.8	5.9	6.2	Begin 3.5°/100 Build & Turn
1137.7	1213.2	37.57	330.06	286.6	-184.2	340.4	343.0	Hold 37.57 Inclination
2433.2	2847.8	37.57	330.06	1150.3	-681.6	1337.1	1339.7	Start Drop -2.00
4180.0	4726.4	0.00	330.08	1665.2	-978.2	1931.2	1933.9	Top Gas
5780.0	6326.4	0.00	330.08	1665.2	-978.2	1931.2	1933.9	TD at 6326.4

# **PICEANCE VLY NAD 83**

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

**GV 18-23 Pad**

**GM 414-14 - Slot A3**

**Wellbore #1**

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

## **Standard Planning Report - Geographic**

**26 May, 2011**

**Williams**  
Planning Report - Geographic

<b>Database:</b>	Compass R5000 WIN AUTH	<b>Local Co-ordinate Reference:</b>	Well GM 414-14 - Slot A3
<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 414-14	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Design #1 06Apr11 kjs		

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

<b>Well</b>	GM 414-14 - Slot A3					
<b>Well Position</b>	+N-S	0.0 usft	<b>Northing:</b>	1,590,905.50 usft	<b>Latitude:</b>	39° 25' 38.478 N
	+E-W	0.0 usft	<b>Easting:</b>	2,270,829.10 usft	<b>Longitude:</b>	108° 4' 54.140 W
<b>Position Uncertainty</b>		0.0 usft	<b>Wellhead Elevation:</b>		<b>Ground Level:</b>	5,134.0 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>
	IGRF2005-10	2/4/2011	10.404	65.689	52,276

<b>Design</b>	Design #1 06Apr11 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	329.57

<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)	TFD (")	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	
272.9	5.00	310.00	272.7	4.0	-4.8	3.50	3.50	0.00	310.000	
1,213.2	37.57	330.06	1,137.7	286.6	-184.2	3.50	3.46	2.13	22.640	
2,847.8	37.57	330.06	2,433.2	1,150.3	-681.6	0.00	0.00	0.00	0.000	
4,726.4	0.00	330.08	4,180.0	1,665.2	-978.2	2.00	-2.00	0.00	180.000	Top Gas (25' Radius)
6,326.4	0.00	330.08	5,780.0	1,665.2	-978.2	0.00	0.00	0.00	330.080	

**Williams**  
Planning Report - Geographic

<b>Database:</b>	Compass R5000 WIN AUTH	<b>Local Co-ordinate Reference:</b>	Well GM 414-14 - S101 A3
<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 414-14	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	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	1,590,905.50	2,270,829.10	39° 25' 38.478 N	108° 4' 54.140 W	
130.0	0.00	0.00	130.0	0.0	0.0	1,590,905.50	2,270,829.10	39° 25' 38.478 N	108° 4' 54.140 W	
<b>Start Build 3.50</b>										
272.9	5.00	310.00	272.7	4.0	-4.8	1,590,909.63	2,270,824.44	39° 25' 38.518 N	108° 4' 54.201 W	
<b>Begin 3.5°/100 Build &amp; Turn</b>										
863.6	25.36	328.50	840.0	129.8	-91.5	1,591,037.83	2,270,741.29	39° 25' 39.761 N	108° 4' 55.306 W	
<b>Top of "G" Sand</b>										
976.2	29.29	329.13	940.0	174.0	-118.3	1,591,082.78	2,270,715.82	39° 25' 40.198 N	108° 4' 55.647 W	
<b>Base of "G" Sand</b>										
1,213.2	37.57	330.06	1,137.7	286.6	-184.2	1,591,187.20	2,270,653.12	39° 25' 41.311 N	108° 4' 56.487 W	
<b>Hold 37.57 Inclination</b>										
1,313.0	37.57	330.06	1,216.7	339.3	-214.6	1,591,250.75	2,270,624.27	39° 25' 41.832 N	108° 4' 56.874 W	
<b>9 5/8"</b>										
2,847.8	37.57	330.06	2,433.2	1,150.3	-681.6	1,592,074.62	2,270,180.47	39° 25' 49.847 N	108° 5' 2.827 W	
<b>Start Drop -2.00</b>										
3,229.1	29.94	330.06	2,750.0	1,333.8	-787.3	1,592,261.03	2,270,080.06	39° 25' 51.660 N	108° 5' 4.174 W	
<b>Mesaverde</b>										
4,726.4	0.00	330.08	4,180.0	1,665.2	-978.2	1,592,597.70	2,269,898.70	39° 25' 54.935 N	108° 5' 6.606 W	
<b>Top Gas - Approx. Top Gas</b>										
5,656.4	0.00	330.08	5,110.0	1,665.2	-978.2	1,592,597.70	2,269,898.70	39° 25' 54.935 N	108° 5' 6.606 W	
<b>Cameo Coals</b>										
6,226.4	0.00	330.08	5,680.0	1,665.2	-978.2	1,592,597.70	2,269,898.70	39° 25' 54.935 N	108° 5' 6.606 W	
<b>Rollins SS</b>										
6,326.4	0.00	330.08	5,780.0	1,665.2	-978.2	1,592,597.70	2,269,898.70	39° 25' 54.935 N	108° 5' 6.606 W	
<b>TD at 6326.4 - 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	4,180.0	1,665.2	-978.2	1,592,597.70	2,269,898.70	39° 25' 54.935 N	108° 5' 6.606 W	
- hit/miss target										
- Shape										
- plan hits target center										
- Circle (radius 25.0)										

Casing Points						
Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (in)	Hole Diameter (in)		
1,313.0	1,216.7	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 414-14 - Slot A3
<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 414-14	<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 (°)
863.6	840.0	Top of "G" Sand			
976.2	940.0	Base of "G" Sand			
3,229.1	2,750.0	Mesaverde			
4,726.4	4,180.0	Approx. Top Gas			
5,656.4	5,110.0	Cameo Coals			
6,226.4	5,680.0	Rollins SS			
6,326.4	5,780.0	TD			

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 3.50	
272.9	272.7	4.0	-4.8	Begin 3.5"/100 Build & Turn	
1,213.2	1,137.7	286.6	-184.2	Hold 37.57 Inclination	
2,847.8	2,433.2	1,150.3	-681.6	Start Drop -2.00	
4,726.4	4,180.0	1,665.2	-978.2	Top Gas	
6,326.4	5,780.0	1,665.2	-978.2	TD at 6326.4	