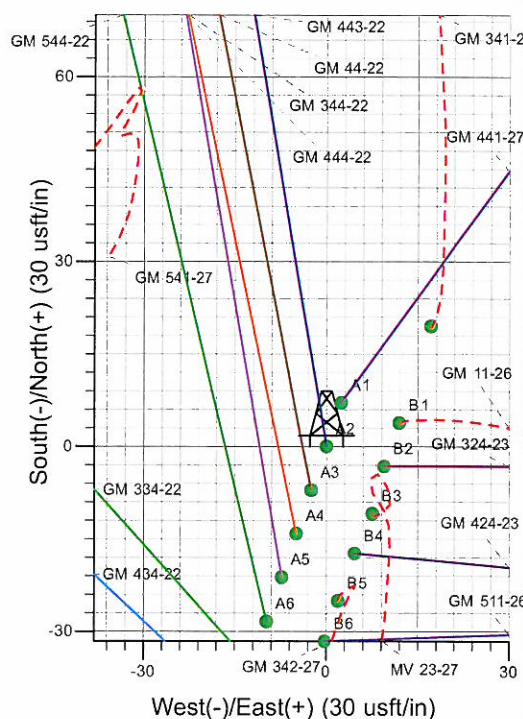
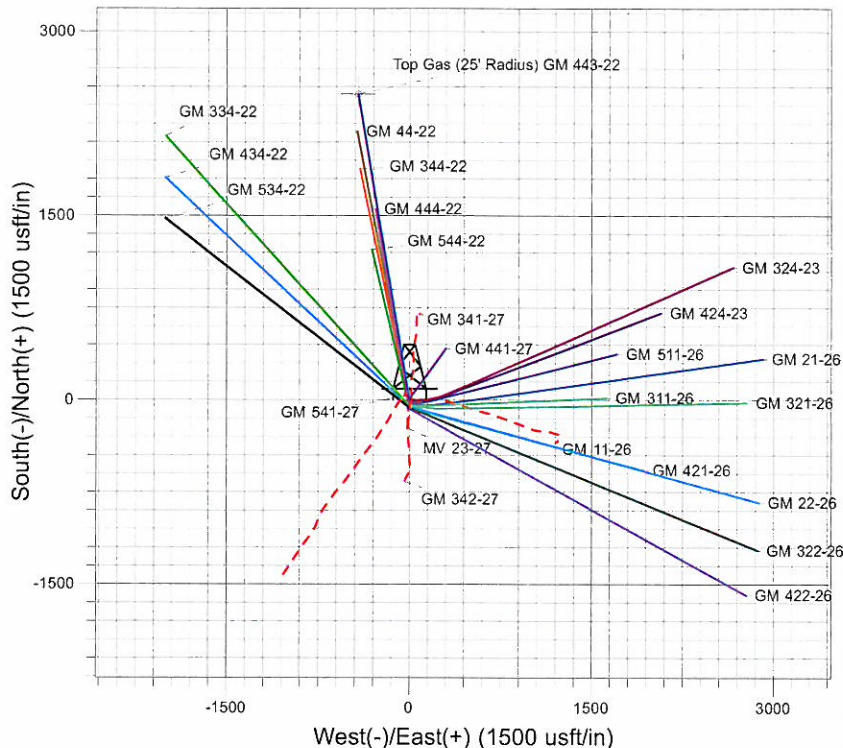
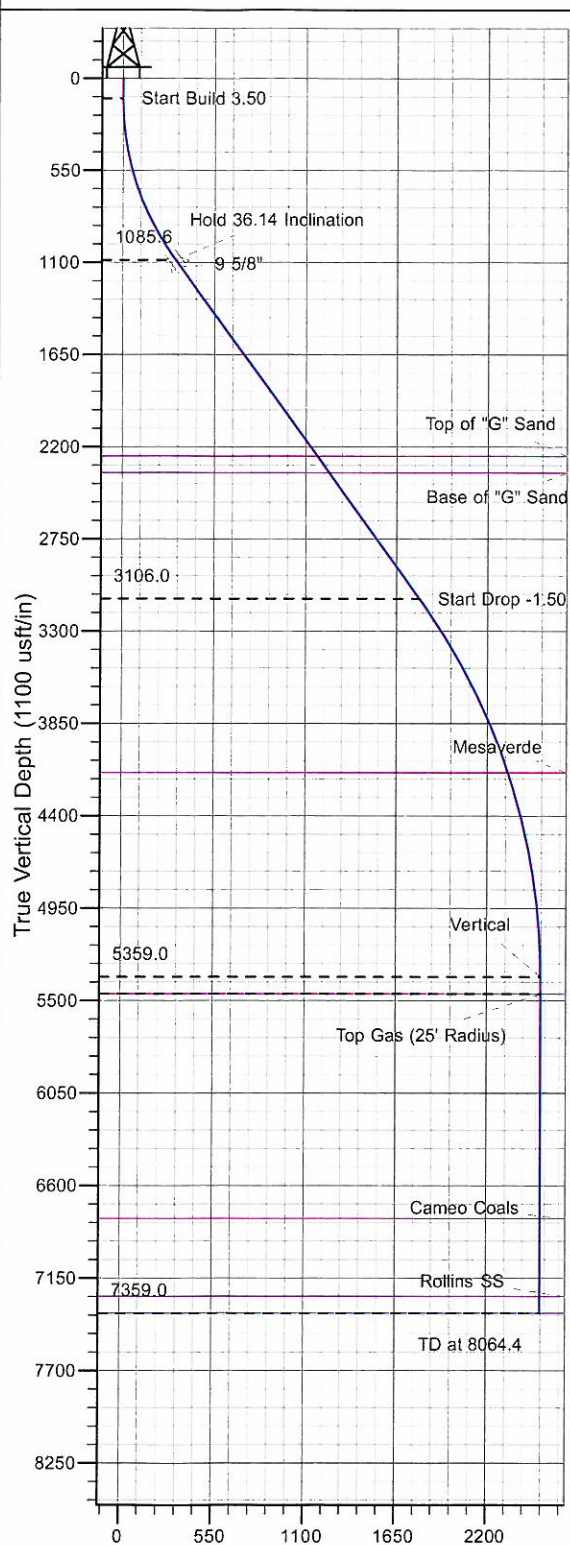




Well Name: GM 443-22  
 Surface Location: MV 23-27 Pad  
 North American Datum 1983 , US State Plane 1983 , Colorado Central Zone  
 Ground Elevation: 5770.0  
 +N/-S +E/-W Northing Easting Latitude Longitude Slot  
 0.0 0.0 1617341.60 2269891.70 39° 29' 59.395 N 108° 5' 15.677 W A2  
 KELLY BUSHING @ 5794.0usft (H&P 280 (24' RKB) kjs)



Project: GV 27-06S-096W  
 Site: MV 23-27 Pad  
 Well: GM 443-22  
 Plan #2 27Sep10 kjs



Azimuths to True North  
 Magnetic North: 10.54°  
 Magnetic Field  
 Strength: 52357.8snT  
 Dip Angle: 65.76°  
 Date: 4/21/2010  
 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
1085.6	1152.7	36.14	350.36	310.6	-52.8	315.1	315.1	Hold 36.14 Inclination
3106.0	3654.7	36.14	350.36	1765.6	-299.8	1790.8	1790.8	Start Drop -1.50
5359.0	6064.4	0.00	0.00	2490.4	-422.9	2526.0	2526.0	Vertical
5459.0	6164.4	0.00	0.00	2490.4	-422.9	2526.0	2526.0	Top Gas
7359.0	8064.4	0.00	0.00	2490.4	-422.9	2526.0	2526.0	TD at 8064.4

# **PICEANCE VLY NAD 83**

**GV 27-06S-096W**

**MV 23-27 Pad**

**GM 443-22 - Slot A2**

**Wellbore #1**

**Plan: Plan #2 27Sep10 kjs**

## **Standard Planning Report - Geographic**

**26 October, 2010**



**Williams**  
Planning Report - Geographic

<b>Database:</b>	Compass R5000 WIN AUTH	<b>Local Co-ordinate Reference:</b>	Well GM 443-22 - Slot A2
<b>Company:</b>	PICEANCE VLY NAD 83	<b>TVD Reference:</b>	KELLY BUSHING @ 5794.0usft (H&P 280 (24' RKB) kjs)
<b>Project:</b>	GV 27-06S-096W	<b>MD Reference:</b>	KELLY BUSHING @ 5794.0usft (H&P 280 (24' RKB) kjs)
<b>Site:</b>	MV 23-27 Pad	<b>North Reference:</b>	True
<b>Well:</b>	GM 443-22	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Plan #2 27Sep10 kjs		

<b>Project</b>	GV 27-06S-096W, Garfield County, CO, 27-06S-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 23-27 Pad			
<b>Site Position:</b>		<b>Northing:</b>	1,617,330.50 usft	<b>Latitude:</b> 39° 29' 59.287 N
<b>From:</b> Map		<b>Easting:</b>	2,269,898.90 usft	<b>Longitude:</b> 108° 5' 15.581 W
<b>Position Uncertainty:</b>	0.0 usft	<b>Slot Radius:</b>	13.200 in	<b>Grid Convergence:</b> -1.632 °

<b>Well</b>	GM 443-22 - Slot A2			
<b>Well Position</b>	<b>+N/-S</b>	0.0 usft	<b>Northing:</b>	1,617,341.60 usft
	<b>+E/-W</b>	0.0 usft	<b>Easting:</b>	2,269,891.70 usft
<b>Position Uncertainty</b>	0.0 usft		<b>Wellhead Elevation:</b>	<b>Ground Level:</b> 5,770.0 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	4/21/2010	10.542	65.756	52,358

<b>Design</b>	Plan #2 27Sep10 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	350.36

<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	
1,152.7	36.14	350.36	1,085.6	310.6	-52.8	3.50	3.50	0.00	350.362	
3,654.7	36.14	350.36	3,106.0	1,765.6	-299.8	0.00	0.00	0.00	0.000	
6,064.4	0.00	0.00	5,359.0	2,490.4	-422.9	1.50	-1.50	0.00	180.000	
6,164.4	0.00	0.00	5,459.0	2,490.4	-422.9	0.00	0.00	0.00	0.000	Top Gas (25' Radius)
8,064.4	0.00	0.00	7,359.0	2,490.4	-422.9	0.00	0.00	0.00	0.000	



**Williams**  
Planning Report - Geographic

<b>Database:</b>	Compass R5000 WIN AUTH	<b>Local Co-ordinate Reference:</b>	Well GM 443-22 - Slot A2
<b>Company:</b>	PICEANCE VLY NAD 83	<b>TVD Reference:</b>	KELLY BUSHING @ 5794.0usft (H&P 280 (24' RKB) kjs)
<b>Project:</b>	GV 27-06S-096W	<b>MD Reference:</b>	KELLY BUSHING @ 5794.0usft (H&P 280 (24' RKB) kjs)
<b>Site:</b>	MV 23-27 Pad	<b>North Reference:</b>	True
<b>Well:</b>	GM 443-22	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Plan #2 27Sep10 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	1,617,341.60	2,269,891.70	39° 29' 59.395 N	108° 5' 15.677 W	
120.0	0.00	0.00	120.0	0.0	0.0	1,617,341.60	2,269,891.70	39° 29' 59.395 N	108° 5' 15.677 W	
Start Build 3.50										
1,152.7	36.14	350.36	1,085.6	310.6	-52.8	1,617,653.59	2,269,847.82	39° 30' 2.465 N	108° 5' 16.350 W	
Hold 36.14 Inclination										
1,203.0	36.14	350.36	1,126.2	339.9	-57.7	1,617,682.97	2,269,843.69	39° 30' 2.754 N	108° 5' 16.413 W	
9 5/8"										
2,602.1	36.14	350.36	2,256.0	1,153.5	-195.9	1,618,500.12	2,269,728.76	39° 30' 10.795 N	108° 5' 18.176 W	
Top of "G" Sand										
2,725.9	36.14	350.36	2,356.0	1,225.5	-208.1	1,618,572.45	2,269,718.59	39° 30' 11.507 N	108° 5' 18.332 W	
Base of "G" Sand										
3,654.7	36.14	350.36	3,106.0	1,765.6	-299.8	1,619,114.91	2,269,642.29	39° 30' 16.845 N	108° 5' 19.502 W	
Start Drop -1.50										
4,827.9	18.55	350.36	4,144.0	2,294.8	-389.7	1,619,646.45	2,269,567.53	39° 30' 22.075 N	108° 5' 20.649 W	
Mesaverde										
6,064.4	0.00	0.00	5,359.0	2,490.4	-422.9	1,619,842.90	2,269,539.90	39° 30' 24.008 N	108° 5' 21.073 W	
Vertical										
6,164.4	0.00	0.00	5,459.0	2,490.4	-422.9	1,619,842.90	2,269,539.90	39° 30' 24.008 N	108° 5' 21.073 W	
Top Gas - Approx. Top Gas										
7,502.4	0.00	0.00	6,797.0	2,490.4	-422.9	1,619,842.90	2,269,539.90	39° 30' 24.008 N	108° 5' 21.073 W	
Cameo Coals										
7,964.4	0.00	0.00	7,259.0	2,490.4	-422.9	1,619,842.90	2,269,539.90	39° 30' 24.008 N	108° 5' 21.073 W	
Rollins SS										
8,064.4	0.00	0.00	7,359.0	2,490.4	-422.9	1,619,842.90	2,269,539.90	39° 30' 24.008 N	108° 5' 21.073 W	
TD at 8064.4 - TD										

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 - hit/miss target - Shape - plan hits target center - Circle (radius 25.0)	0.00	0.00	5,459.0	2,490.4	-422.9	1,619,842.90	2,269,539.90	39° 30' 24.008 N	108° 5' 21.073 W	

Casing Points							Casing Diameter (in)	Hole Diameter (in)
Measured Depth (usft)	Vertical Depth (usft)	Name						
1,203.0	1,126.2	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 443-22 - Slot A2
<b>Company:</b>	PICEANCE VLY NAD 83	<b>TVD Reference:</b>	KELLY BUSHING @ 5794.0usft (H&P 280 (24' RKB) kjs)
<b>Project:</b>	GV 27-06S-096W	<b>MD Reference:</b>	KELLY BUSHING @ 5794.0usft (H&P 280 (24' RKB) kjs)
<b>Site:</b>	MV 23-27 Pad	<b>North Reference:</b>	True
<b>Well:</b>	GM 443-22	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Plan #2 27Sep10 kjs		

Formations						
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
2,602.1	2,256.0	Top of "G" Sand				
2,725.9	2,356.0	Base of "G" Sand				
4,827.9	4,144.0	Mesaverde				
6,164.4	5,459.0	Approx. Top Gas				
7,502.4	6,797.0	Cameo Coals				
7,964.4	7,259.0	Rollins SS				
8,064.4	7,359.0	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	
1,152.7	1,085.6	310.6	-52.8	Hold 36.14 Inclination	
3,654.7	3,106.0	1,765.6	-299.8	Start Drop -1.50	
6,064.4	5,359.0	2,490.4	-422.9	Vertical	
6,164.4	5,459.0	2,490.4	-422.9	Top Gas	
8,064.4	7,359.0	2,490.4	-422.9	TD at 8064.4	