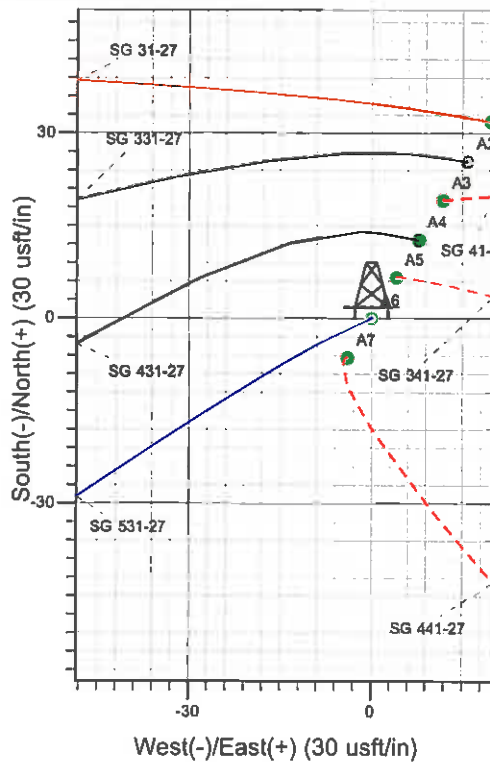
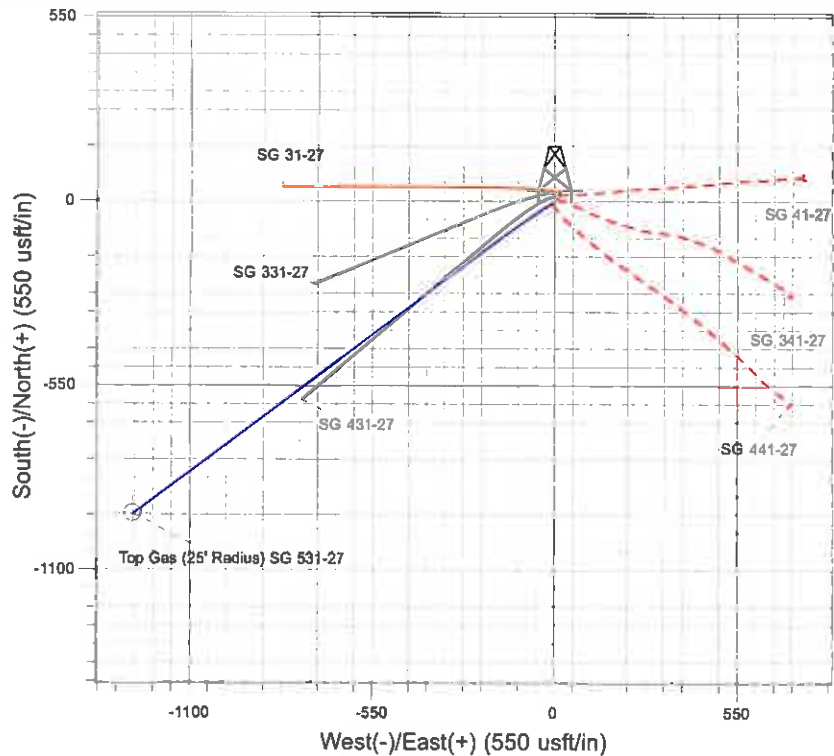
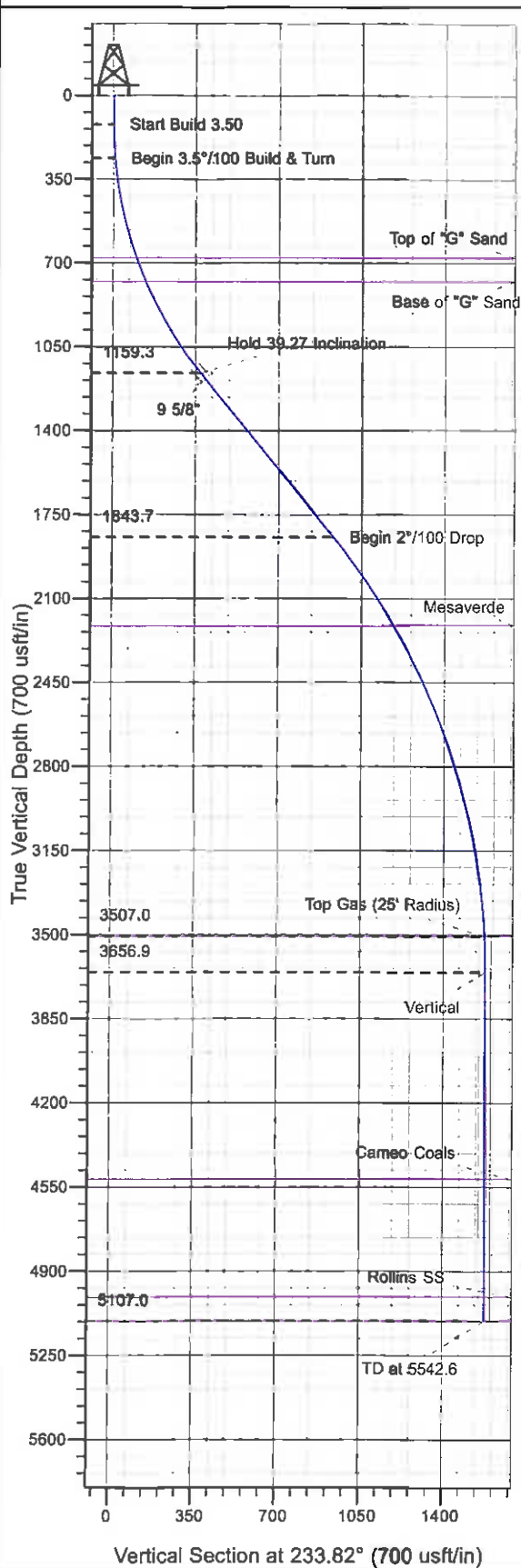




Well Name: SG 531-27  
 Surface Location: SG 41-27 Pad  
 North American Datum 1983 , US State Plane 1983 , Colorado Central Zone  
 Ground Elevation: 5085.0  
 +N/-S +E/-W Northing Easting Latitude Longitude Slot  
 0.0 0.0 1586613.80 2268067.90 39° 24' 55.300 N 108° 5' 27.756 W A6  
 KELLY BUSHING @ 5109.0usft (H&P (24' KB) kjs)



Project: SG 27-075-096W  
 Site: SG 41-27 Pad  
 Well: SG 531-27  
 Plan #1 14Dec07 kjs

Azimuths to True North  
 Magnetic North: 10.82°  
 Magnetic Field  
 Strength: 52575.0snT  
 Dip Angle: 65.76°  
 Date: 12/13/2007  
 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 3.50
262.7	282.9	5.00	245.00	-2.6	-5.6	6.1	6.2	Begin 3.5°/100 Build & Turn
1159.3	1245.2	39.27	233.45	-212.2	-303.2	370.0	370.9	Hold 39.27 Inclination
1843.7	2129.2	39.27	233.45	-545.4	-752.6	929.5	930.4	Begin 2°/100 Drop
3507.0	3942.6	3.00	233.46	-928.3	-1269.1	1572.4	1573.3	Top Gas
3656.9	4092.6	0.00	0.00	-930.6	-1272.3	1576.3	1577.3	Vertical
5107.0	5542.6	0.00	0.00	-930.6	-1272.3	1576.3	1577.3	TD at 5542.6

# **PICEANCE VLY NAD 83**

**SG 27-07S-096W**

**SG 41-27 Pad**

**SG 531-27 - Slot A6**

**Wellbore #1**

**Plan: Plan #1 14Dec07 kjs**

## **Standard Planning Report - Geographic**

**27 January, 2011**

**Williams**  
Planning Report - Geographic

Database:	Compass R5000 WIN AUTH	Local Co-ordinate Reference:	Well SG 531-27 - Slot A6
Company:	PICEANCE VLY NAD 83	TVD Reference:	KELLY BUSHING @ 5109.0usft (H&P (24' KB) kjs)
Project:	SG 27-07S-096W	MD Reference:	KELLY BUSHING @ 5109.0usft (H&P (24' KB) kjs)
Site:	SG 41-27 Pad	North Reference:	True
Well:	SG 531-27	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 14Dec07 kjs		

Project	SG 27-07S-096W, Garfield County, CO. 27-07S-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	SG 41-27 Pad				
Site Position:		Northing:	1,586,632.60 usft	Latitude:	39° 24' 55.489 N
From:	Map	Easting:	2,268,080.20 usft	Longitude:	108° 5' 27.606 W
Position Uncertainty:	0.0 usft	Slot Radius:	13.200 in	Grid Convergence:	-1.634 °

Well	SG 531-27 - Slot A6					
Well Position	+N/-S	0.0 usft	Northing:	1,586,613.80 usft	Latitude:	39° 24' 55.300 N
	+E/-W	0.0 usft	Easting:	2,268,067.90 usft	Longitude:	108° 5' 27.756 W
Position Uncertainty		0.0 usft	Wellhead Elevation:		Ground Level:	5,085.0 usft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2005-10	12/13/2007	10.817	65.756	52,575

Design	Plan #1 14Dec07 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	233.82

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	
262.9	5.00	245.00	262.7	-2.6	-5.6	3.50	3.50	0.00	245.000	
1,245.2	39.27	233.45	1,159.3	-212.2	-303.2	3.50	3.49	-1.18	-12.970	
2,129.2	39.27	233.45	1,843.7	-545.4	-752.6	0.00	0.00	0.00	0.000	
3,942.6	3.00	233.46	3,507.0	-928.3	-1,269.1	2.00	-2.00	0.00	179.999	Top Gas (25' Radius)
4,092.6	0.00	0.00	3,656.9	-930.6	-1,272.3	2.00	-2.00	84.36	180.000	
5,542.6	0.00	0.00	5,107.0	-930.6	-1,272.3	0.00	0.00	0.00	0.000	

**Williams**  
Planning Report - Geographic

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Project:	SG 27-07S-096W	MD Reference:	KELLY BUSHING @ 5109.0usft (H&P (24' KB) kjs)
Site:	SG 41-27 Pad	North Reference:	True
Well:	SG 531-27	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 14Dec07 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	1,586,613.80	2,268,067.90	39° 24' 55.300 N	108° 5' 27.756 W
120.0	0.00	0.00	120.0	0.0	0.0	1,586,613.80	2,268,067.90	39° 24' 55.300 N	108° 5' 27.756 W
<b>Start Build 3.50</b>									
262.9	5.00	245.00	262.7	-2.6	-5.6	1,586,611.33	2,268,062.18	39° 24' 55.274 N	108° 5' 27.828 W
<b>Begin 3.5°/100 Build &amp; Turn</b>									
688.2	19.79	235.19	677.0	-51.8	-82.0	1,586,564.31	2,267,984.46	39° 24' 54.788 N	108° 5' 28.801 W
<b>Top of "G" Sand</b>									
795.8	23.55	234.65	777.0	-74.7	-114.5	1,586,542.40	2,267,951.31	39° 24' 54.562 N	108° 5' 29.215 W
<b>Base of "G" Sand</b>									
1,245.2	39.27	233.45	1,159.3	-212.2	-303.2	1,586,410.34	2,267,758.82	39° 24' 53.203 N	108° 5' 31.619 W
<b>Hold 39.27 Inclination</b>									
1,277.0	39.27	233.45	1,183.9	-224.2	-319.3	1,586,398.82	2,267,742.31	39° 24' 53.084 N	108° 5' 31.825 W
<b>9 5/8"</b>									
2,129.2	39.27	233.45	1,843.7	-545.4	-752.6	1,586,090.10	2,267,300.06	39° 24' 49.910 N	108° 5' 37.345 W
<b>Begin 2°/100 Drop</b>									
2,578.1	30.29	233.45	2,212.0	-697.7	-958.1	1,585,943.69	2,267,090.32	39° 24' 48.404 N	108° 5' 39.964 W
<b>Mesaverde</b>									
3,942.6	3.00	233.46	3,507.0	-928.3	-1,269.1	1,585,722.10	2,266,772.86	39° 24' 46.125 N	108° 5' 43.926 W
<b>Top Gas - Approx. Top Gas</b>									
4,092.6	0.00	0.00	3,656.9	-930.6	-1,272.3	1,585,719.86	2,266,769.64	39° 24' 46.102 N	108° 5' 43.966 W
<b>Vertical</b>									
4,952.6	0.00	0.00	4,517.0	-930.6	-1,272.3	1,585,719.86	2,266,769.64	39° 24' 46.102 N	108° 5' 43.966 W
<b>Cameo Coals</b>									
5,442.6	0.00	0.00	5,007.0	-930.6	-1,272.3	1,585,719.86	2,266,769.64	39° 24' 46.102 N	108° 5' 43.966 W
<b>Rollins SS</b>									
5,542.6	0.00	0.00	5,107.0	-930.6	-1,272.3	1,585,719.86	2,266,769.64	39° 24' 46.102 N	108° 5' 43.966 W
<b>TD at 5542.6 - TD</b>									

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	3,507.0	-930.4	-1,272.3	1,585,720.10	2,266,769.60	39° 24' 46.104 N	108° 5' 43.967 W
- plan misses target center by 3.8usft at 3942.7usft MD (3507.1 TVD, -928.3 N, -1269.2 E)									
- Circle (radius 25.0)									
TD / PBHL SG 531-27	0.00	0.00	5,107.0	-930.4	-1,272.3	1,585,720.10	2,266,769.60	39° 24' 46.104 N	108° 5' 43.967 W
- plan misses target center by 0.2usft at 5542.6usft MD (5107.0 TVD, -930.6 N, -1272.3 E)									
- Point									

Casing Points					
Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (in)	Hole Diameter (in)	
1,277.0	1,183.9	9 5/8"	9.625	12.250	

**Williams**  
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Project:	SG 27-07S-096W	MD Reference:	KELLY BUSHING @ 5109.0usft (H&P (24' KB) kjs)
Site:	SG 41-27 Pad	North Reference:	True
Well:	SG 531-27	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 14Dec07 kjs		

Formations					
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
688.2	677.0	Top of "G" Sand			
795.8	777.0	Base of "G" Sand			
2,578.1	2,212.0	Mesaverde			
3,942.6	3,507.0	Approx. Top Gas			
4,952.6	4,517.0	Cameo Coals			
5,442.6	5,007.0	Rollins SS			
5,542.6	5,107.0	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 3.50
262.9	262.7	-2.6	-5.6	Begin 3.5°/100 Build & Turn
1,245.2	1,159.3	-212.2	-303.2	Hold 39.27 Inclination
2,129.2	1,843.7	-545.4	-752.6	Begin 2°/100 Drop
3,942.6	3,507.0	-928.3	-1,269.1	Top Gas
4,092.6	3,656.9	-930.6	-1,272.3	Vertical
5,542.6	5,107.0	-930.6	-1,272.3	TD at 5542.6