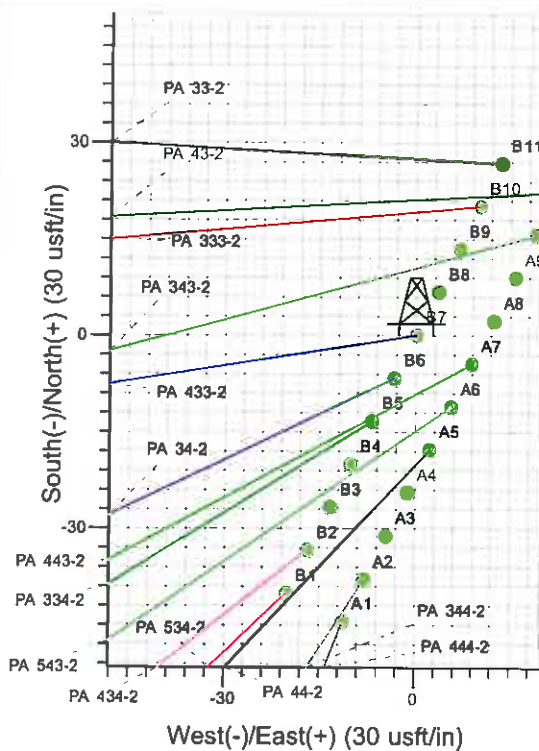
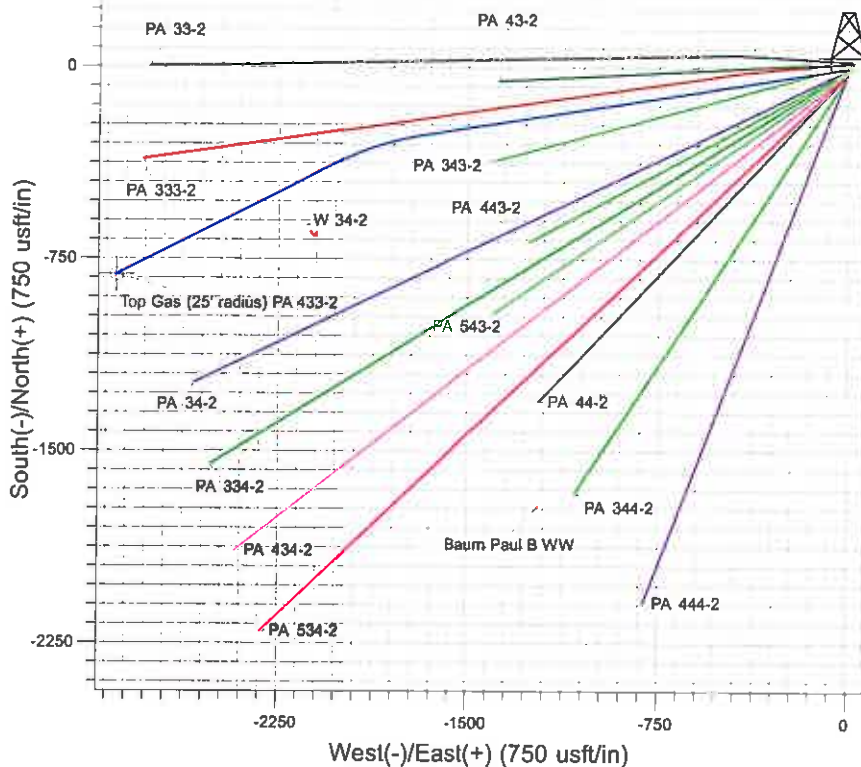
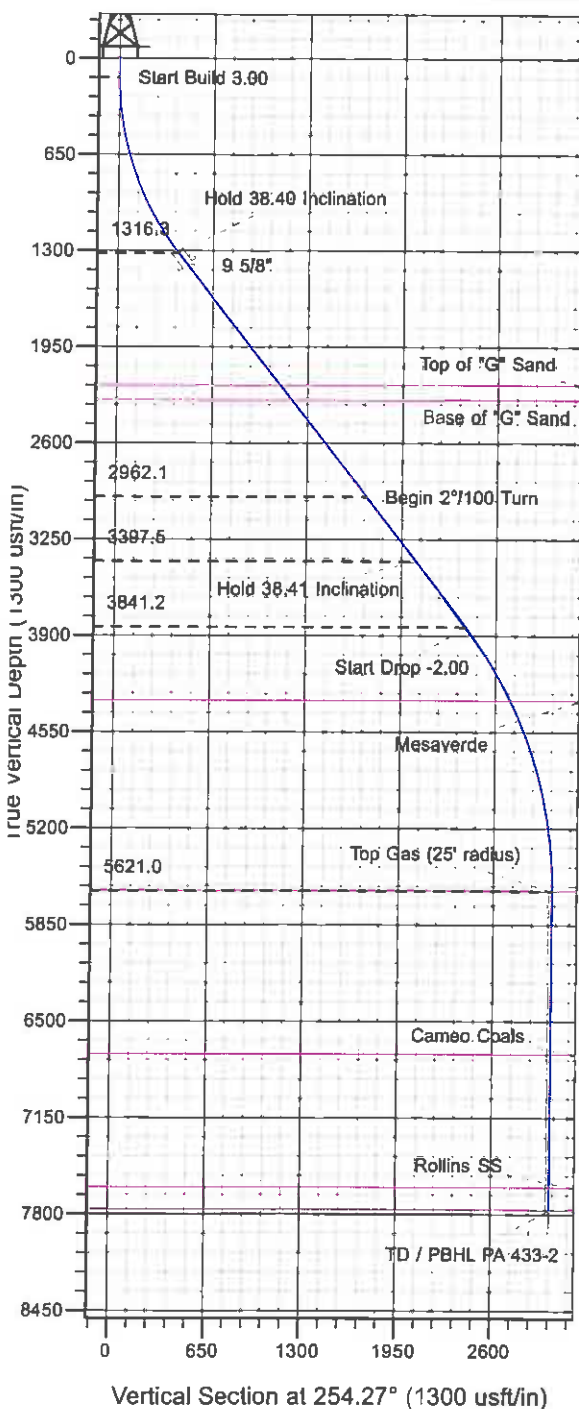




Surface Location: GV 84-1 Pad - West Cellar  
 North American Datum 1983 , US State Plane 1983 , Colorado Central Zone  
 Ground Elevation: 6027.0

+N/-S    +E/-W    Northing    Easting    Latitude    Longitude    Slot  
 0.0       0.0       1603985.30    2307257.80    39° 27' 57.684 N    107° 57' 14.547 W    B7  
 WELL @ 6051.0usft (Original Well Elev)

PA 433-2



Project: PA 01-07S-095W  
 Site: GV 84-1 Pad - West Cellar  
 Well: PA 433-2  
 Design #1 22Mar11 kjs

Azimuths to True North  
 Magnetic North: 10.36°  
 Magnetic Field  
 Strength: 52262.3snT  
 Dip Angle: 65.73°  
 Date: 3/22/2011  
 Model: IGRF2010

#### ANNOTATIONS

TVD	MD	Inc	Azi	+N/-S	+E/-W	V	Sed	Departure	Annotation
130.0	130.0	0.00	0.00	0.0	0.0	0.0	0.0	0.0	Start Build 3.00
1316.3	1410.0	38.40	261.00	-84.8	-408.0	410.3	413.1	413.1	Hold 38.40 Inclination
2962.1	3510.0	38.40	261.00	-268.7	-1696.4	1705.7	1717.5	1717.5	Begin 2°/100 Turn
3397.5	4063.9	38.41	243.12	-373.7	-2020.8	2046.4	2059.9	2059.9	Hold 38.41 Inclination
3841.2	4630.2	38.41	243.12	-532.8	-2334.6	2391.6	2411.8	2411.8	Start Drop -2.00
5621.0	6550.6	0.00	0.00	-813.0	-2887.5	2999.8	3031.7	3031.7	Top Gas
7771.0	8700.6	0.00	0.00	-813.0	-2887.5	2999.8	3031.7	3031.7	TD at 8700.6

# **PICEANCE VLY NAD 83**

**PA 01-07S-095W**

**GV 84-1 Pad - West Cellar**

**PA 433-2 - Slot B7**

**Wellbore #1**

**Plan: Design #1 22Mar11 kjs**

## **Standard Planning Report - Geographic**

**16 May, 2011**

# Williams

## Planning Report - Geographic

<b>Database:</b>	Compass R5000 WIN AUTH	<b>Local Co-ordinate Reference:</b>	Well PA 433-2 - Slot B7
<b>Company:</b>	PICEANCE VLY NAD 83	<b>TVD Reference:</b>	WELL @ 6051.0usft (Original Well Elev)
<b>Project:</b>	PA 01-07S-095W	<b>MD Reference:</b>	WELL @ 6051.0usft (Original Well Elev)
<b>Site:</b>	GV 84-1 Pad - West Cellar	<b>North Reference:</b>	True
<b>Well:</b>	PA 433-2	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Design #1 22Mar11 kjs		

<b>Project</b>	PA 01-07S-095W. 01-07S-095W		
<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 84-1 Pad - West Cellar		
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<b>Site Position:</b>		<b>Northing:</b>	1,603,932.89 usft	<b>Latitude:</b>	39° 27' 57.156 N
<b>From:</b>	Map	<b>Easting:</b>	2,307,221.63 usft	<b>Longitude:</b>	107° 57' 14.990 W
<b>Position Uncertainty:</b>	0.0 usft	<b>Slot Radius:</b>	13.200 in	<b>Grid Convergence:</b>	-1.548 °

<b>Well</b>	PA 433-2 - Slot B7				
<b>Well Position</b>	+N/-S	0.0 usft	<b>Northing:</b>	1,603,985.30 usft	<b>Latitude:</b> 39° 27' 57.684 N
	+E/-W	0.0 usft	<b>Easting:</b>	2,307,257.80 usft	<b>Longitude:</b> 107° 57' 14.547 W
<b>Position Uncertainty</b>	0.0 usft		<b>Wellhead Elevation:</b>		<b>Ground Level:</b> 6,027.0 usft

<b>Wellbore</b>	Wellbore #1				
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Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	3/22/2011	10.360	65.729	52,262

<b>Design</b>	Design #1 22Mar11 kjs				
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<b>Audit Notes:</b>					
<b>Version:</b>		<b>Phase:</b>	PLAN	<b>Tie On Depth:</b>	0.0

Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.0	0.0	0.0	254.27

<b>Plan Sections</b>										
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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	
1,410.0	38.40	261.00	1,316.3	-64.6	-408.0	3.00	3.00	0.00	261.000	
3,510.0	38.40	261.00	2,962.1	-268.7	-1,696.4	0.00	0.00	0.00	0.000	
4,063.9	38.41	243.12	3,397.5	-373.7	-2,020.8	2.00	0.00	-3.23	-96.987	
4,630.2	38.41	243.12	3,841.2	-532.8	-2,334.6	0.00	0.00	0.00	0.000	
6,550.6	0.00	0.00	5,621.0	-813.0	-2,887.5	2.00	-2.00	0.00	180.000	Top Gas (25' radius) I
8,700.6	0.00	0.00	7,771.0	-813.0	-2,887.5	0.00	0.00	0.00	0.000	TD / PBHL PA 433-2

**Williams**  
Planning Report - Geographic

<b>Database:</b>	Compass R5000 WIN AUTH	<b>Local Co-ordinate Reference:</b>	Well PA 433-2 - Slot B7
<b>Company:</b>	PICEANCE VLY NAD 83	<b>TVD Reference:</b>	WELL @ 6051.0usft (Original Well Elev)
<b>Project:</b>	PA 01-07S-095W	<b>MD Reference:</b>	WELL @ 6051.0usft (Original Well Elev)
<b>Site:</b>	GV 84-1 Pad - West Cellar	<b>North Reference:</b>	True
<b>Well:</b>	PA 433-2	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Design #1 22Mar11 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	1,603,985.30	2,307,257.80	39° 27' 57.684 N	107° 57' 14.547 W
130.0	0.00	0.00	130.0	0.0	0.0	1,603,985.30	2,307,257.80	39° 27' 57.684 N	107° 57' 14.547 W
<b>Start Build 3.00</b>									
1,410.0	38.40	261.00	1,316.3	-64.6	-408.0	1,603,931.72	2,306,848.19	39° 27' 57.045 N	107° 57' 19.750 W
<b>Hold 38.40 Inclination</b>									
1,510.0	38.40	261.00	1,394.7	-74.3	-469.4	1,603,923.66	2,306,786.61	39° 27' 56.949 N	107° 57' 20.532 W
<b>9 5/8"</b>									
2,551.6	38.40	261.00	2,211.0	-175.6	-1,108.4	1,603,839.75	2,306,145.09	39° 27' 55.948 N	107° 57' 28.681 W
<b>Top of "G" Sand</b>									
2,679.2	38.40	261.00	2,311.0	-188.0	-1,186.7	1,603,829.47	2,306,066.50	39° 27' 55.826 N	107° 57' 29.679 W
<b>Base of "G" Sand</b>									
3,510.0	38.40	261.00	2,962.1	-268.7	-1,696.4	1,603,762.54	2,305,554.86	39° 27' 55.028 N	107° 57' 36.178 W
<b>Begin 2°/100 Turn</b>									
4,063.9	38.41	243.12	3,397.5	-373.7	-2,020.8	1,603,666.32	2,305,227.76	39° 27' 53.989 N	107° 57' 40.314 W
<b>Hold 38.41 Inclination</b>									
4,630.2	38.41	243.12	3,841.2	-532.8	-2,334.6	1,603,515.81	2,304,909.79	39° 27' 52.417 N	107° 57' 44.315 W
<b>Start Drop -2.00</b>									
5,223.6	26.54	243.12	4,341.0	-676.6	-2,618.3	1,603,379.74	2,304,622.32	39° 27' 50.996 N	107° 57' 47.932 W
<b>Mesaverde</b>									
6,550.6	0.00	0.00	5,621.0	-813.0	-2,887.5	1,603,250.60	2,304,349.50	39° 27' 49.647 N	107° 57' 51.365 W
<b>Top Gas - Approx. Top Gas</b>									
7,655.6	0.00	0.00	6,726.0	-813.0	-2,887.5	1,603,250.60	2,304,349.50	39° 27' 49.647 N	107° 57' 51.365 W
<b>Cameo Coals</b>									
8,550.6	0.00	0.00	7,621.0	-813.0	-2,887.5	1,603,250.60	2,304,349.50	39° 27' 49.647 N	107° 57' 51.365 W
<b>Rollins SS</b>									
8,700.6	0.00	0.00	7,771.0	-813.0	-2,887.5	1,603,250.60	2,304,349.50	39° 27' 49.647 N	107° 57' 51.365 W
<b>TD at 8700.6 - 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) PA	0.00	0.00	5,621.0	-813.0	-2,887.5	1,603,250.60	2,304,349.50	39° 27' 49.647 N	107° 57' 51.365 W
- plan hits target center									
- Circle (radius 25.0)									
TD / PBHL PA 433-2	0.00	0.00	7,771.0	-813.0	-2,887.5	1,603,250.60	2,304,349.50	39° 27' 49.647 N	107° 57' 51.365 W
- plan hits target center									
- Point									

**Casing Points**

Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (in)	Hole Diameter (in)
1,510.0	1,394.7	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 PA 433-2 - Slot 87
<b>Company:</b>	PICEANCE VLY NAD 83	<b>TVD Reference:</b>	WELL @ 6051.0usft (Original Well Elev)
<b>Project:</b>	PA 01-07S-095W	<b>MD Reference:</b>	WELL @ 6051.0usft (Original Well Elev)
<b>Site:</b>	GV 84-1 Pad - West Cellar	<b>North Reference:</b>	True
<b>Well:</b>	PA 433-2	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Design #1 22Mar11 kjs		

Formations					
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
2,551.6	2,211.0	Top of "G" Sand			
2,679.2	2,311.0	Base of "G" Sand			
5,223.6	4,341.0	Mesaverde			
6,550.6	5,621.0	Approx. Top Gas			
7,655.6	6,726.0	Cameo Coals			
8,550.6	7,621.0	Rollins SS			
8,700.6	7,771.0	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 3.00
1,410.0	1,316.3	-64.6	-408.0	Hold 38.40 Inclination
3,510.0	2,962.1	-268.7	-1,696.4	Begin 2°/100 Turn
4,063.9	3,397.5	-373.7	-2,020.8	Hold 38.41 Inclination
4,630.2	3,841.2	-532.8	-2,334.6	Start Drop -2.00
6,550.6	5,621.0	-813.0	-2,887.5	Top Gas
8,700.6	7,771.0	-813.0	-2,887.5	TD at 8700.6