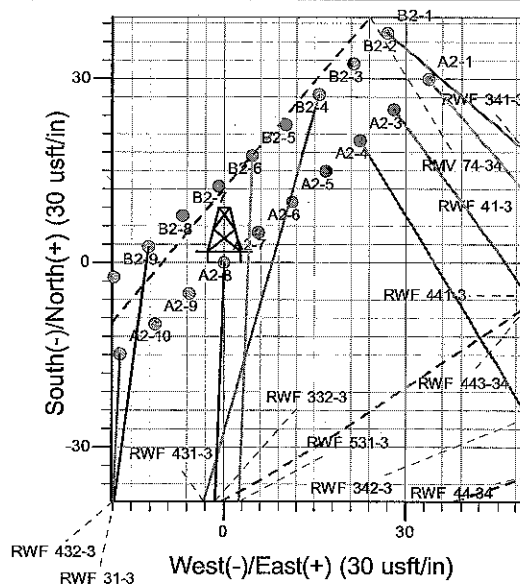
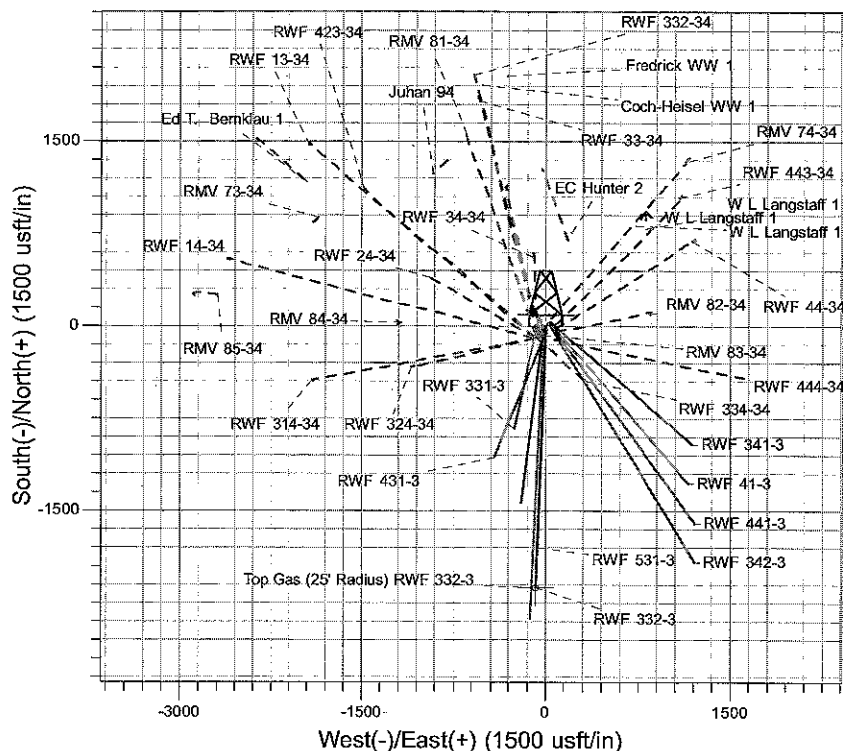
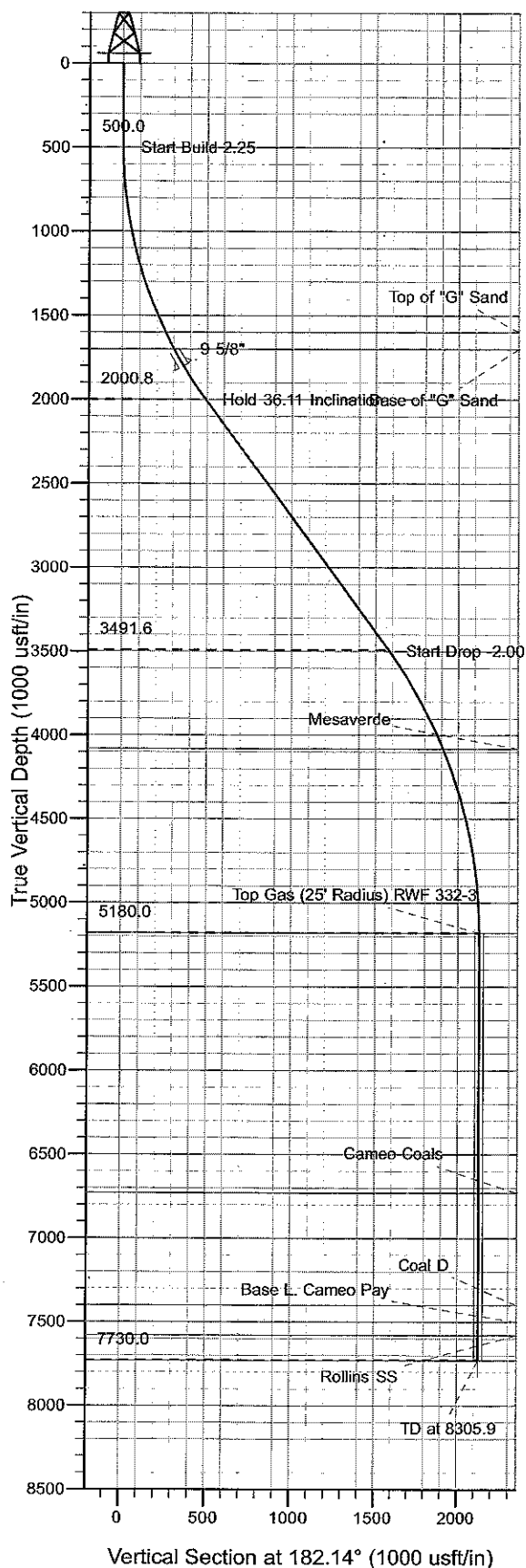




Well Name: RWF 332-3  
 Surface Location: RMV 83-34 Pad  
 North American Datum 1983 , US State Plane 1983, Colorado Central Zone  
 Ground Elevation: 5626.0  
 +N/-S 0.0 +E/-W 0.0 Northing 1607094.10 Easting 2330690.70 Latitude 39° 28' 34.549 N Longitude 107° 52' 16.880 W Slot A2-7  
 KELLY BUSHING @ 5650.0usft (H&P 24' KB JMS)



Project: RU 34-06S-094W  
 Site: RMV 83-34 Pad  
 Well: RWF 332-3  
 Design #1 14Apr10 JMS



Azimuths to True North  
 Magnetic North: 10.45°  
 Magnetic Field  
 Strength: 52376.8snT  
 Dip Angle: 65.78°  
 Date: 4/14/2010  
 Model: IGRF2010

#### ANNOTATIONS

TVD	MD	Inc	Azi	+N/-S	+E/-W	Vsect	Departure	Annotation
500.0	500.0	0.00	0.00	0.0	0.0	0.0	0.0	Start Build 2.25
2000.8	2105.0	36.11	182.14	-488.9	-18.2	489.3	489.3	Hold 36.11 Inclination
3491.6	3950.3	36.11	182.14	-1575.7	-58.7	1576.8	1576.8	Start Drop -2.00
5180.0	5755.9	0.00	0.00	-2125.8	-79.2	2127.3	2127.3	Top Gas
7730.0	8305.9	0.00	0.00	-2125.8	-79.2	2127.3	2127.3	TD at 8305.9

# **PICEANCE VLY NAD 83**

**RU 34-06S-094W**

**RMV 83-34 Pad**

**RWF 332-3 - Slot A2-7**

**Wellbore #1**

**Plan: Design #1 14Apr10 JMS**

## **Standard Planning Report - Geographic**

**29 April, 2010**

**Williams**  
Planning Report - Geographic

<b>Database:</b>	Compass R5000 WIN AUTH	<b>Local Co-ordinate Reference:</b>	Well RWF 332-3 - Slot A2-7
<b>Company:</b>	PICEANCE VLY NAD 83	<b>TVD Reference:</b>	KELLY BUSHING @ 5650.0usft (H&P 24' KB JMS)
<b>Project:</b>	RU 34-06S-094W	<b>MD Reference:</b>	KELLY BUSHING @ 5650.0usft (H&P 24' KB JMS)
<b>Site:</b>	RMV 83-34 Pad	<b>North Reference:</b>	True
<b>Well:</b>	RWF 332-3	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Design #1 14Apr10 JMS		

<b>Project</b>	RU 34-06S-094W, Garfield County, CO, 34-06S-094W		
<b>Map System:</b>	US State Plane 1983	<b>System Datum:</b>	Ground Level
<b>Geo Datum:</b>	North American Datum 1983		
<b>Map Zone:</b>	Colorado Central Zone		Using geodetic scale factor

<b>Site</b>	RMV 83-34 Pad			
<b>Site Position:</b>		<b>Northing:</b>	1,607,043.10 usft	<b>Latitude:</b> 39° 28' 34.035 N
<b>From:</b>	Map	<b>Easting:</b>	2,330,648.70 usft	<b>Longitude:</b> 107° 52' 17.399 W
<b>Position Uncertainty:</b>	0.0 usft	<b>Slot Radius:</b>	0.000 in	<b>Grid Convergence:</b> -1.496 °

<b>Well</b>	RWF 332-3 - Slot A2-7			
<b>Well Position</b>	+N/-S	0.0 usft	<b>Northing:</b> 1,607,094.10 usft	<b>Latitude:</b> 39° 28' 34.549 N
	+E/-W	0.0 usft	<b>Easting:</b> 2,330,690.70 usft	<b>Longitude:</b> 107° 52' 16.880 W
<b>Position Uncertainty</b>	0.0 usft	<b>Wellhead Elevation:</b>		<b>Ground Level:</b> 5,626.0 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	4/14/2010	10.445	65.778	52,377

<b>Design</b>	Design #1 14Apr10 JMS			
<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	182.14

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	
500.0	0.00	0.00	500.0	0.0	0.0	0.00	0.00	0.00	0.000	
2,105.0	36.11	182.14	2,000.8	-488.9	-18.2	2.25	2.25	0.00	182.135	
3,950.3	36.11	182.14	3,491.6	-1,575.7	-58.7	0.00	0.00	0.00	0.000	
5,755.9	0.00	0.00	5,180.0	-2,125.8	-79.2	2.00	-2.00	0.00	180.000	Top Gas (25' Radius)
8,305.9	0.00	0.00	7,730.0	-2,125.8	-79.2	0.00	0.00	0.00	0.000	TD / PBHL RWF 332-

# Williams

## Planning Report - Geographic

<b>Database:</b>	Compass R5000 WIN AUTH	<b>Local Co-ordinate Reference:</b>	Well RWF 332-3 - Slot A2-7
<b>Company:</b>	PICEANCE VLY NAD 83	<b>TVD Reference:</b>	KELLY BUSHING @ 5650.0usft (H&P 24' KB JMS)
<b>Project:</b>	RU 34-06S-094W	<b>MD Reference:</b>	KELLY BUSHING @ 5650.0usft (H&P 24' KB JMS)
<b>Site:</b>	RMV 83-34 Pad	<b>North Reference:</b>	True
<b>Well:</b>	RWF 332-3	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Design #1 14Apr10 JMS		

### 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	1,607,094.10	2,330,690.70	39° 28' 34.549 N	107° 52' 16.880 W
500.0	0.00	0.00	500.0	0.0	0.0	1,607,094.10	2,330,690.70	39° 28' 34.549 N	107° 52' 16.880 W
<b>Start Build 2.25</b>									
1,637.4	25.59	182.14	1,600.0	-249.7	-9.3	1,606,844.77	2,330,674.88	39° 28' 32.082 N	107° 52' 16.999 W
<b>Top of "G" Sand</b>									
1,749.5	28.11	182.14	1,700.0	-300.3	-11.2	1,606,794.24	2,330,671.68	39° 28' 31.582 N	107° 52' 17.023 W
<b>Base of "G" Sand</b>									
1,864.3	30.70	182.14	1,800.0	-356.6	-13.3	1,606,738.00	2,330,668.11	39° 28' 31.025 N	107° 52' 17.050 W
<b>9 5/8"</b>									
2,105.0	36.11	182.14	2,000.8	-488.9	-18.2	1,606,605.84	2,330,659.72	39° 28' 29.717 N	107° 52' 17.113 W
<b>Hold 36.11 Inclination</b>									
3,950.3	36.11	182.14	3,491.6	-1,575.7	-58.7	1,605,520.49	2,330,590.86	39° 28' 18.976 N	107° 52' 17.629 W
<b>Start Drop -2.00</b>									
4,626.9	22.58	182.14	4,080.0	-1,906.3	-71.1	1,605,190.35	2,330,569.91	39° 28' 15.709 N	107° 52' 17.786 W
<b>Mesaverde</b>									
5,755.9	0.00	0.00	5,180.0	-2,125.8	-79.2	1,604,971.20	2,330,556.00	39° 28' 13.540 N	107° 52' 17.891 W
<b>Top Gas - Approx. Top Gas</b>									
7,305.9	0.00	0.00	6,730.0	-2,125.8	-79.2	1,604,971.20	2,330,556.00	39° 28' 13.540 N	107° 52' 17.891 W
<b>Cameo Coals</b>									
7,975.9	0.00	0.00	7,400.0	-2,125.8	-79.2	1,604,971.20	2,330,556.00	39° 28' 13.540 N	107° 52' 17.891 W
<b>Coal D</b>									
8,075.9	0.00	0.00	7,500.0	-2,125.8	-79.2	1,604,971.20	2,330,556.00	39° 28' 13.540 N	107° 52' 17.891 W
<b>Base L. Cameo Pay</b>									
8,155.9	0.00	0.00	7,580.0	-2,125.8	-79.2	1,604,971.20	2,330,556.00	39° 28' 13.540 N	107° 52' 17.891 W
<b>Rollins SS</b>									
8,305.9	0.00	0.00	7,730.0	-2,125.8	-79.2	1,604,971.20	2,330,556.00	39° 28' 13.540 N	107° 52' 17.891 W
<b>TD at 8305.9</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) RL	0.00	0.00	5,180.0	-2,125.8	-79.2	1,604,971.20	2,330,556.00	39° 28' 13.540 N	107° 52' 17.891 W
- plan hits target center									
- Circle (radius 25.0)									
TD / PBHL RWF 332-3	0.00	0.00	7,730.0	-2,125.8	-79.2	1,604,971.20	2,330,556.00	39° 28' 13.540 N	107° 52' 17.891 W
- plan hits target center									
- Point									

### Casing Points

Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (in)	Hole Diameter (in)
1,864.3	1,800.0	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 RWF 332-3 - Slot A2-7
<b>Company:</b>	PICEANCE VLY NAD 83	<b>TVD Reference:</b>	KELLY BUSHING @ 5650.0usft (H&P 24' KB JMS)
<b>Project:</b>	RU 34-06S-094W	<b>MD Reference:</b>	KELLY BUSHING @ 5650.0usft (H&P 24' KB JMS)
<b>Site:</b>	RMV 83-34 Pad	<b>North Reference:</b>	True
<b>Well:</b>	RWF 332-3	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Design #1 14Apr10 JMS		

### Formations

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
1,637.4	1,600.0	Top of "G" Sand			
1,749.5	1,700.0	Base of "G" Sand			
4,626.9	4,080.0	Mesaverde			
5,755.9	5,180.0	Approx. Top Gas			
7,305.9	6,730.0	Cameo Coals			
7,975.9	7,400.0	Coal D			
8,075.9	7,500.0	Base L. Cameo Pay			
8,155.9	7,580.0	Rollins SS			
8,305.9	7,730.0	TD			

### Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
500.0	500.0	0.0	0.0	Start Build 2.25
2,105.0	2,000.8	-488.9	-18.2	Hold 36.11 Inclination
3,950.3	3,491.6	-1,575.7	-58.7	Start Drop -2.00
5,755.9	5,180.0	-2,125.8	-79.2	Top Gas
8,305.9	7,730.0	-2,125.8	-79.2	TD at 8305.9