

# **PICEANCE VLY NAD 83**

**RU 32-06S-094W**

**RWF 11-32 Pad**

**RWF 322-32 - Slot A10**

**Wellbore #1**

**Plan: Design #1 08Jun11 kjs**

## **Standard Planning Report - Geographic**

**27 July, 2011**

**Williams**  
Planning Report - Geographic

<b>Database:</b>	Compass R5000 WIN AUTH	<b>Local Co-ordinate Reference:</b>	Well RWF 322-32 - Slot A10
<b>Company:</b>	PICEANCE VLY NAD 83	<b>TVD Reference:</b>	KELLY BUSHING @ 5565.0usft (SSD 573 (26' RKB) kjs)
<b>Project:</b>	RU 32-06S-094W	<b>MD Reference:</b>	KELLY BUSHING @ 5565.0usft (SSD 573 (26' RKB) kjs)
<b>Site:</b>	RWF 11-32 Pad	<b>North Reference:</b>	True
<b>Well:</b>	RWF 322-32	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Design #1 08Jun11 kjs		

<b>Project</b>	RU 32-06S-094W, Garfield County, CO		
<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

Site		RWF 11-32 Pad			
Site Position:		Northing:	1,610,858.10 usft	Latitude:	39° 29' 8.495 N
From:	Map	Eastng:	2,318,234.00 usft	Longitude:	107° 54' 56.965 W
Position Uncertainty:	0.0 usft	Slot Radius:	13.200 in	Grid Convergence:	-1.524 °

Well	RWF 322-32 - Slot A10					
Well Position	+N/-S	0.0 usft	Northing:	1,610,867.40 usft	Latitude:	39° 29' 8.595 N
	+E/-W	0.0 usft	Eastng:	2,318,265.10 usft	Longitude:	107° 54' 56.571 W
Position Uncertainty		0.0 usft	Wellhead Elevation:		Ground Level:	5,539.0 usft

<b>Wellbore</b>	Wellbore #1			
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Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	6/6/2011	10.319	65.746	52,261

<b>Design</b>	Design #1 08Jun11 kjs			
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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	150.46

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	
404.4	8.53	150.46	403.3	-18.4	10.4	3.00	3.00	0.00	150.465	
4,944.6	8.53	150.46	4,893.3	-604.4	342.5	0.00	0.00	0.00	0.000	
5,513.4	0.00	0.00	5,460.0	-641.2	363.3	1.50	-1.50	0.00	180.000	
5,613.4	0.00	0.00	5,560.0	-641.2	363.3	0.00	0.00	0.00	0.000	Top Gas (25' Radius)
8,013.4	0.00	0.00	7,960.0	-641.2	363.3	0.00	0.00	0.00	0.000	

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Planning Report - Geographic

<b>Database:</b>	Compass R5000 WIN AUTH	<b>Local Co-ordinate Reference:</b>	Well RWF 322-32 - Slo1 A10
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<b>Well:</b>	RWF 322-32	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Design #1 08Jun11 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	1,610,867.40	2,318,265.10	39° 29' 8.595 N	107° 54' 56.571 W
120.0	0.00	0.00	120.0	0.0	0.0	1,610,867.40	2,318,265.10	39° 29' 8.595 N	107° 54' 56.571 W
<b>Start Build 3.00</b>									
404.4	8.53	150.46	403.3	-18.4	10.4	1,610,848.74	2,318,275.03	39° 29' 8.413 N	107° 54' 56.438 W
<b>Hold 8.53 Inclination</b>									
1,108.8	8.53	150.46	1,100.0	-109.3	61.9	1,610,756.48	2,318,324.11	39° 29' 7.515 N	107° 54' 55.781 W
<b>9 5/8"</b>									
2,013.9	8.53	150.46	1,995.0	-226.1	128.1	1,610,637.95	2,318,387.16	39° 29' 6.360 N	107° 54' 54.937 W
<b>Top of "G" Sand</b>									
2,115.0	8.53	150.46	2,095.0	-239.2	135.5	1,610,624.70	2,318,394.21	39° 29' 6.231 N	107° 54' 54.843 W
<b>Base of "G" Sand</b>									
4,420.5	8.53	150.46	4,375.0	-536.8	304.1	1,610,322.76	2,318,554.83	39° 29' 3.290 N	107° 54' 52.692 W
<b>Mesaverde</b>									
4,944.6	8.53	150.46	4,893.3	-604.4	342.5	1,610,254.11	2,318,591.35	39° 29' 2.621 N	107° 54' 52.203 W
<b>Start Drop -1.50</b>									
5,513.4	0.00	0.00	5,460.0	-641.2	363.3	1,610,216.80	2,318,611.20	39° 29' 2.258 N	107° 54' 51.938 W
<b>Vertical</b>									
5,613.4	0.00	0.00	5,560.0	-641.2	363.3	1,610,216.80	2,318,611.20	39° 29' 2.258 N	107° 54' 51.938 W
<b>Top Gas - Approx. Top Gas - Top Gas (25' Radius) RWF 322-32</b>									
6,918.4	0.00	0.00	6,865.0	-641.2	363.3	1,610,216.80	2,318,611.20	39° 29' 2.258 N	107° 54' 51.938 W
<b>Cameo</b>									
7,698.4	0.00	0.00	7,645.0	-641.2	363.3	1,610,216.80	2,318,611.20	39° 29' 2.258 N	107° 54' 51.938 W
<b>Coal D</b>									
7,863.4	0.00	0.00	7,810.0	-641.2	363.3	1,610,216.80	2,318,611.20	39° 29' 2.258 N	107° 54' 51.938 W
<b>Rollins SS</b>									
8,013.4	0.00	0.00	7,960.0	-641.2	363.3	1,610,216.80	2,318,611.20	39° 29' 2.258 N	107° 54' 51.938 W
<b>TD at 8013.4 - TD</b>									

**Design Targets**

Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
Top Gas (25' Radius) R1 - plan hits target center - Circle (radius 25.0)	0.00	0.00	5,560.0	-641.2	363.3	1,610,216.80	2,318,611.20	39° 29' 2.258 N	107° 54' 51.938 W

**Casing Points**

Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (in)	Hole Diameter (in)
1,108.8	1,100.0	9 5/8"	9.625	12.250

**Williams**  
Planning Report - Geographic

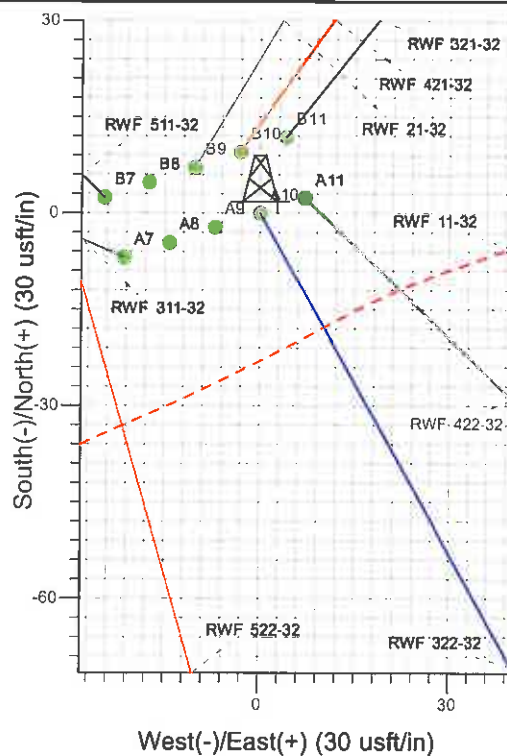
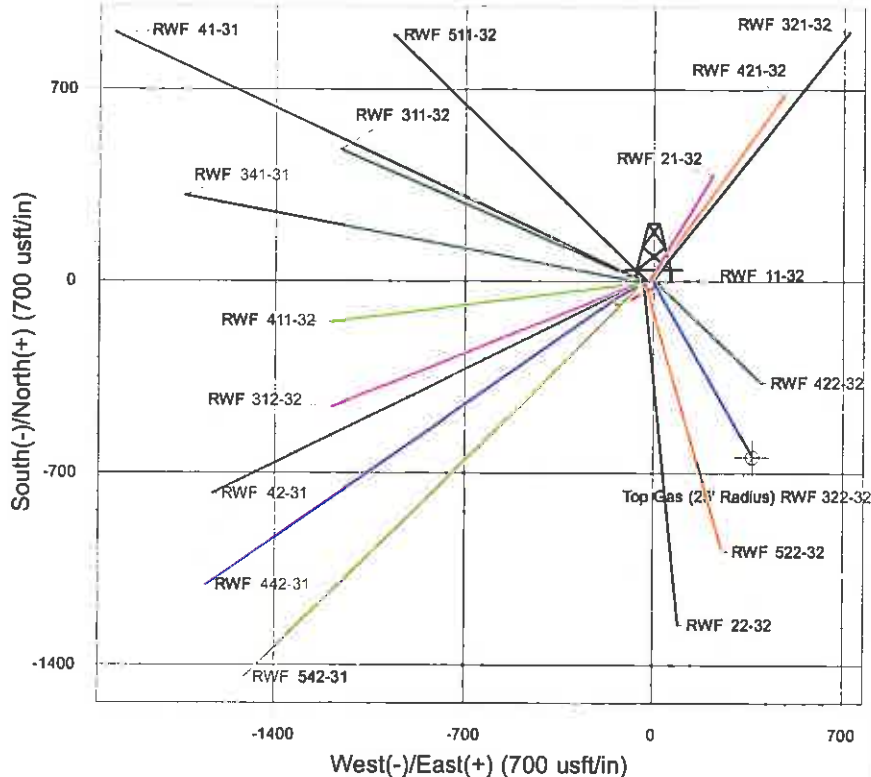
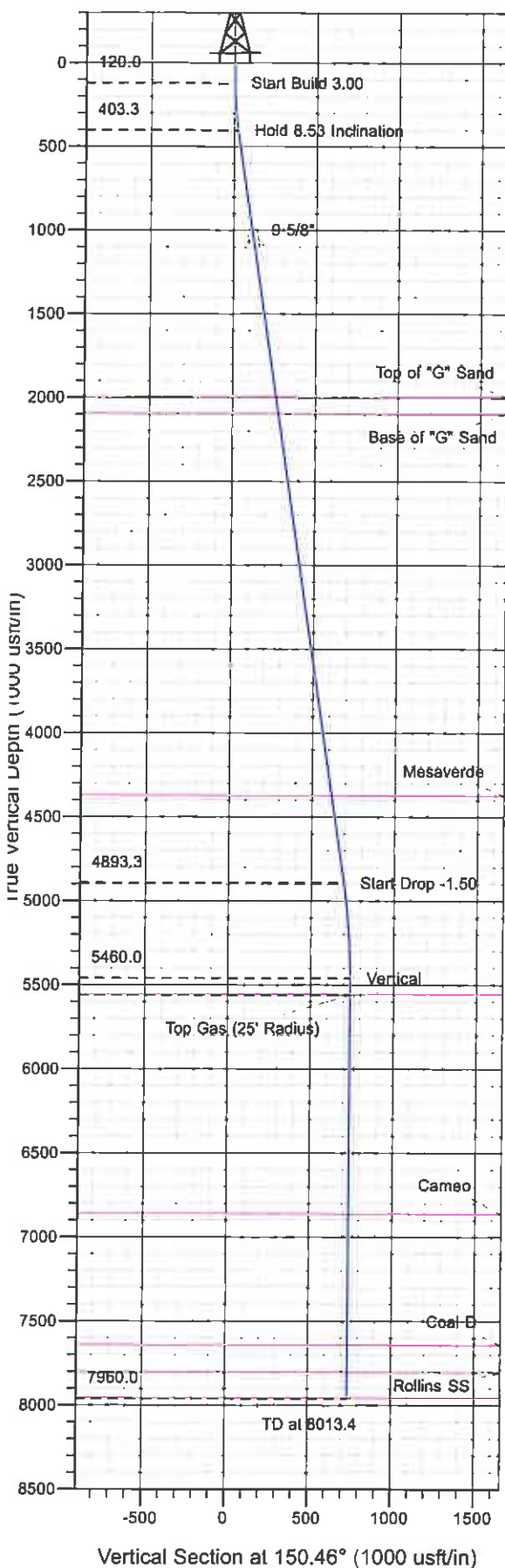
<b>Database:</b>	Compass R5000 WIN AUTH	<b>Local Co-ordinate Reference:</b>	Well RWF 322-32 - Slot A10
<b>Company:</b>	PICEANCE VLY NAD 83	<b>TVD Reference:</b>	KELLY BUSHING @ 5565.0usft (SSD 573 (26' RKB) kjs)
<b>Project:</b>	RU 32-06S-094W	<b>MD Reference:</b>	KELLY BUSHING @ 5565.0usft (SSD 573 (26' RKB) kjs)
<b>Site:</b>	RWF 11-32 Pad	<b>North Reference:</b>	True
<b>Well:</b>	RWF 322-32	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Design #1 08Jun11 kjs		

Formations					
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (")	Dip Direction (")
2,013.9	1,995.0	Top of "G" Sand			
2,115.0	2,095.0	Base of "G" Sand			
4,420.5	4,375.0	Mesaverde			
5,613.4	5,560.0	Approx. Top Gas			
6,918.4	6,865.0	Cameo			
7,698.4	7,645.0	Coal D			
7,863.4	7,810.0	Rollins SS			
8,013.4	7,960.0	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 3.00
404.4	403.3	-18.4	10.4	Hold 8.53 Inclination
4,944.6	4,893.3	-604.4	342.5	Start Drop -1.50
5,513.4	5,460.0	-641.2	363.3	Vertical
5,613.4	5,560.0	-641.2	363.3	Top Gas
8,013.4	7,960.0	-641.2	363.3	TD at 8013.4



Surface Location: RWF 11-32 Pad  
 North American Datum 1983 , US State Plane 1983 , Colorado Central Zone  
 Ground Elevation: 5539.0  
 Northing 1610867.40 Easting 2318265.10 Latitude 39° 29' 8.595 N Longitude 107° 54' 56.571 W Slot A10  
 KELLY BUSHING @ 5565.0usft (SSD 573 (26' RKB) kjs)



Project: RU 32-06S-094W  
 Site: RWF 11-32 Pad  
 Well: RWF 322-32  
 Design #1 08Jun11 kjs



Azimuths to True North  
 Magnetic North: 10.32°  
 Magnetic Field  
 Strength: 52261.0snT  
 Dip Angle: 65.75°  
 Date: 6/6/2011  
 Model: IGRF2010

#### ANNOTATIONS

TVD	MD	Inc	Azi	+N/-S	+E/-W	VSed	Departure	Annotation
120.0	120.0	0.00	0.00	0.0	0.0	0.0	0.0	Start Build 3.00
403.3	404.4	8.53	150.46	-18.4	10.4	21.1	21.1	Hold 8.53 Inclination
4893.3	4944.6	8.53	150.46	-604.4	342.5	694.7	694.7	Start Drop -1.50
5460.0	5513.4	0.00	0.00	-641.2	363.3	737.0	737.0	Vertical
5560.0	5613.4	0.00	0.00	-641.2	363.3	737.0	737.0	Top Gas
7960.0	8013.4	0.00	0.00	-641.2	363.3	737.0	737.0	TD at 8013.4