

PICEANCE VLY NAD 83

RU 31-06S-094W

RWF 13-31 Pad

RWF 424-31 - Slot A6

Wellbore #1

Plan: Plan #2 09Apr10 kjs

Standard Planning Report - Geographic

12 April, 2010

Williams
Planning Report - Geographic

Database:	Compass R5000 WIN AUTH	Local Co-ordinate Reference:	Well RWF 424-31 - Slot A6
Company:	PICEANCE VLY NAD 83	TVD Reference:	KB H&P @ 5382.0usft (H&P)
Project:	RU 31-06S-094W	MD Reference:	KB H&P @ 5382.0usft (H&P)
Site:	RWF 13-31 Pad	North Reference:	True
Well:	RWF 424-31	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #2 09Apr10 kjs		

Project	RU 31-06S-094W, 31-06S-094W		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	Colorado Central Zone		

Site		RWF 13-31 Pad			
Site Position:		Northing:	1,608,890.20 usft	Latitude:	39° 28' 47.650 N
From:	Map	Easting:	2,312,921.60 usft	Longitude:	107° 56' 4.027 W
Position Uncertainty:	0.0 usft	Slot Radius:	13.200 in	Grid Convergence:	-1.535 °

Well	RWF 424-31 - Slot A6					
Well Position	+N/-S	0.0 usft	Northing:	1,608,907.87 usft	Latitude:	39° 28' 47.834 N
	+E/-W	0.0 usft	Easting:	2,312,954.68 usft	Longitude:	107° 56' 3.612 W
Position Uncertainty		0.0 usft	Wellhead Elevation:		Ground Level:	5,358.0 usft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF200510	11/24/2008	10.632	65.816	52,537

Design	Plan #2 09Apr10 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	142.91	

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	
1,066.4	33.13	142.91	1,014.6	-212.2	160.4	3.50	3.50	0.00	142.914	
3,621.8	33.13	142.91	3,154.6	-1,326.2	1,002.5	0.00	0.00	0.00	0.000	
5,830.1	0.00	0.00	5,242.0	-1,821.4	1,376.8	1.50	-1.50	0.00	180.000	Top Gas (25' Radius)
8,380.1	0.00	0.00	7,792.0	-1,821.4	1,376.8	0.00	0.00	0.00	0.000	

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Site:	RWF 13-31 Pad	North Reference:	True
Well:	RWF 424-31	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #2 09Apr10 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	1,608,907.87	2,312,954.68	39° 28' 47.834 N	107° 56' 3.612 W	
120.0	0.00	0.00	120.0	0.0	0.0	1,608,907.87	2,312,954.68	39° 28' 47.834 N	107° 56' 3.612 W	
Start Build 3.50										
1,066.4	33.13	142.91	1,014.6	-212.2	160.4	1,608,691.41	2,313,109.36	39° 28' 45.736 N	107° 56' 1.566 W	
Hold 33.12 Inclination										
2,132.0	33.13	142.91	1,907.0	-676.8	511.6	1,608,217.63	2,313,447.93	39° 28' 41.145 N	107° 55' 57.087 W	
Top of "G" Sand										
2,251.4	33.13	142.91	2,007.0	-728.8	550.9	1,608,164.54	2,313,485.87	39° 28' 40.630 N	107° 55' 56.586 W	
Base of "G" Sand										
2,370.8	33.13	142.91	2,107.0	-780.9	590.3	1,608,111.45	2,313,523.81	39° 28' 40.116 N	107° 55' 56.084 W	
9 5/8"										
3,621.8	33.13	142.91	3,154.6	-1,326.2	1,002.5	1,607,555.27	2,313,921.27	39° 28' 34.726 N	107° 55' 50.827 W	
Start Drop -1.50										
4,768.5	15.92	142.91	4,194.0	-1,704.5	1,288.4	1,607,169.45	2,314,196.98	39° 28' 30.987 N	107° 55' 47.180 W	
Mesaverde										
5,830.1	0.00	0.00	5,242.0	-1,821.4	1,376.8	1,607,050.20	2,314,282.20	39° 28' 29.831 N	107° 55' 46.053 W	
Top Gas - Approx. Top Gas										
7,245.1	0.00	0.00	6,657.0	-1,821.4	1,376.8	1,607,050.20	2,314,282.20	39° 28' 29.831 N	107° 55' 46.053 W	
Cameo Coals										
8,055.1	0.00	0.00	7,467.0	-1,821.4	1,376.8	1,607,050.20	2,314,282.20	39° 28' 29.831 N	107° 55' 46.053 W	
Coal D										
8,125.1	0.00	0.00	7,537.0	-1,821.4	1,376.8	1,607,050.20	2,314,282.20	39° 28' 29.831 N	107° 55' 46.053 W	
Base L. Cameo Pay										
8,230.1	0.00	0.00	7,642.0	-1,821.4	1,376.8	1,607,050.20	2,314,282.20	39° 28' 29.831 N	107° 55' 46.053 W	
Rollins SS										
8,380.1	0.00	0.00	7,792.0	-1,821.4	1,376.8	1,607,050.20	2,314,282.20	39° 28' 29.831 N	107° 55' 46.053 W	
TD at 8380.1 - TD										

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) R1	0.00	0.00	5,242.0	-1,821.4	1,376.8	1,607,050.20	2,314,282.20	39° 28' 29.831 N	107° 55' 46.053 W	
- plan hits target center										
- Circle (radius 25.0)										

Casing Points							Casing Diameter (in)	Hole Diameter (in)
Measured Depth (usft)	Vertical Depth (usft)	Name						
2,370.8	2,107.0	9 5/8"					9.625	12.250

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Wellbore:	Wellbore #1		
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Formations						
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
2,132.0	1,907.0	Top of "G" Sand				
2,251.4	2,007.0	Base of "G" Sand				
4,768.5	4,194.0	Mesaverde				
5,830.1	5,242.0	Approx. Top Gas				
7,245.1	6,657.0	Cameo Coals				
8,055.1	7,467.0	Coal D				
8,125.1	7,537.0	Base L. Cameo Pay				
8,230.1	7,642.0	Rollins SS				
8,380.1	7,792.0	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	
1,066.4	1,014.6	-212.2	160.4	Hold 33.12 Inclination	
3,621.8	3,154.6	-1,326.2	1,002.5	Start Drop -1.50	
5,830.1	5,242.0	-1,821.4	1,376.8	Top Gas	
8,380.1	7,792.0	-1,821.4	1,376.8	TD at 8380.1	