

PICEANCE VLY NAD 83

RU 31-06S-094W

RWF 13-31 Pad

RWF 323-31 - Slot B10

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 323-31 - Slot B10
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 323-31	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 323-31 - Slot B10					
Well Position	+N/-S	0.0 usft	Northing:	1,608,930.82 usft	Latitude:	39° 28' 48.066 N
	+E/-W	0.0 usft	Easting:	2,312,976.42 usft	Longitude:	107° 56' 3.342 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	105.57	

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	
496.3	7.53	105.57	495.2	-6.6	23.8	2.00	2.00	0.00	105.567	
4,840.2	7.53	105.57	4,801.8	-159.3	571.8	0.00	0.00	0.00	0.000	
5,341.9	0.00	0.00	5,302.0	-168.1	603.5	1.50	-1.50	0.00	180.000	Top Gas (25' Radius)
7,891.9	0.00	0.00	7,852.0	-168.1	603.5	0.00	0.00	0.00	0.000	

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Site:	RWF 13-31 Pad	North Reference:	True
Well:	RWF 323-31	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	1,608,930.82	2,312,976.42	39° 28' 48.066 N	107° 56' 3.342 W	
120.0	0.00	0.00	120.0	0.0	0.0	1,608,930.82	2,312,976.42	39° 28' 48.066 N	107° 56' 3.342 W	
Start Build 2.00										
496.3	7.53	105.57	495.2	-6.6	23.8	1,608,923.57	2,313,000.01	39° 28' 48.001 N	107° 56' 3.039 W	
Hold 7.53 Inclination										
1,106.3	7.53	105.57	1,100.0	-28.1	100.7	1,608,900.07	2,313,076.37	39° 28' 47.789 N	107° 56' 2.058 W	
9 5/8"										
1,930.4	7.53	105.57	1,917.0	-57.0	204.7	1,608,868.34	2,313,179.53	39° 28' 47.503 N	107° 56' 0.732 W	
Top of "G" Sand										
2,031.3	7.53	105.57	2,017.0	-60.6	217.4	1,608,864.45	2,313,192.15	39° 28' 47.468 N	107° 56' 0.569 W	
Base of "G" Sand										
4,275.6	7.53	105.57	4,242.0	-139.4	500.6	1,608,778.02	2,313,473.08	39° 28' 46.688 N	107° 55' 56.958 W	
Mesaverde										
4,840.2	7.53	105.57	4,801.8	-159.3	571.8	1,608,756.27	2,313,543.76	39° 28' 46.492 N	107° 55' 56.050 W	
Start Drop -1.50										
5,341.9	0.00	0.00	5,302.0	-168.1	603.5	1,608,746.60	2,313,575.20	39° 28' 46.405 N	107° 55' 55.645 W	
Top Gas - Approx. Top Gas										
6,756.9	0.00	0.00	6,717.0	-168.1	603.5	1,608,746.60	2,313,575.20	39° 28' 46.405 N	107° 55' 55.645 W	
Cameo Coals										
7,581.9	0.00	0.00	7,542.0	-168.1	603.5	1,608,746.60	2,313,575.20	39° 28' 46.405 N	107° 55' 55.645 W	
Coal D										
7,651.9	0.00	0.00	7,612.0	-168.1	603.5	1,608,746.60	2,313,575.20	39° 28' 46.405 N	107° 55' 55.645 W	
Base L. Cameo Pay										
7,741.9	0.00	0.00	7,702.0	-168.1	603.5	1,608,746.60	2,313,575.20	39° 28' 46.405 N	107° 55' 55.645 W	
Rollins SS										
7,891.9	0.00	0.00	7,852.0	-168.1	603.5	1,608,746.60	2,313,575.20	39° 28' 46.405 N	107° 55' 55.645 W	
TD at 7891.9 - 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) R\	0.00	0.00	5,302.0	-168.1	603.5	1,608,746.60	2,313,575.20	39° 28' 46.405 N	107° 55' 55.645 W	
- plan hits target center										
- Circle (radius 25.0)										

Casing Points							Casing Diameter (in)	Hole Diameter (in)
Measured Depth (usft)	Vertical Depth (usft)	Name						
1,106.3	1,100.0	9 5/8"					9.625	12.250

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Formations						
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
1,930.4	1,917.0	Top of "G" Sand				
2,031.3	2,017.0	Base of "G" Sand				
4,275.6	4,242.0	Mesaverde				
5,341.9	5,302.0	Approx. Top Gas				
6,756.9	6,717.0	Cameo Coals				
7,581.9	7,542.0	Coal D				
7,651.9	7,612.0	Base L. Cameo Pay				
7,741.9	7,702.0	Rollins SS				
7,891.9	7,852.0	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 2.00	
496.3	495.2	-6.6	23.8	Hold 7.53 Inclination	
4,840.2	4,801.8	-159.3	571.8	Start Drop -1.50	
5,341.9	5,302.0	-168.1	603.5	Top Gas	
7,891.9	7,852.0	-168.1	603.5	TD at 7891.9	