

PICEANCE VLY NAD 83

RU 31-06S-094W

RWF 34-31 Pad

RWF 434-31 - Slot B1

Wellbore #1

Plan: Design #1 18Feb10 kjs

Standard Planning Report - Geographic

05 May, 2010

Williams
Planning Report - Geographic

Database:	Compass R5000 WIN AUTH	Local Co-ordinate Reference:	Well RWF 434-31 - Slot B1
Company:	PICEANCE VLY NAD 83	TVD Reference:	WELL @ 5733.0usft (SSD 573 (26' KB) kjs)
Project:	RU 31-06S-094W	MD Reference:	WELL @ 5733.0usft (SSD 573 (26' KB) kjs)
Site:	RWF 34-31 Pad	North Reference:	True
Well:	RWF 434-31	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #1 18Feb10 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 34-31 Pad			
Site Position:		Northing:	1,607,154.40 usft	Latitude:	39° 28' 30.868 N
From:	Map	Easting:	2,314,309.20 usft	Longitude:	107° 55' 45.744 W
Position Uncertainty:	0.0 usft	Slot Radius:	13.200 in	Grid Convergence:	-1.532 °

Well	RWF 434-31 - Slot B1					
Well Position	+N/-S	0.0 usft	Northing:	1,607,104.39 usft	Latitude:	39° 28' 30.376 N
	+E/-W	0.0 usft	Easting:	2,314,319.17 usft	Longitude:	107° 55' 45.600 W
Position Uncertainty		0.0 usft	Wellhead Elevation:		Ground Level:	5,707.0 usft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	2/18/2010	10.490	65.770	52,383

Design	Design #1 18Feb10 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	95.62

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	
597.8	14.33	95.62	592.8	-5.8	59.2	3.00	3.00	0.00	95.618	
4,774.3	14.33	95.62	4,639.3	-107.0	1,088.2	0.00	0.00	0.00	0.000	
5,729.9	0.00	0.00	5,585.0	-118.7	1,206.5	1.50	-1.50	0.00	180.000	Top Gas (25' Radius)
8,279.9	0.00	0.00	8,135.0	-118.7	1,206.5	0.00	0.00	0.00	0.000	

Williams
Planning Report - Geographic

Database:	Compass R5000 WIN AUTH	Local Co-ordinate Reference:	Well RWF 434-31 - Slot B1
Company:	PICEANCE VLY NAD 83	TVD Reference:	WELL @ 5733.0usft (SSD 573 (26' KB) kjs)
Project:	RU 31-06S-094W	MD Reference:	WELL @ 5733.0usft (SSD 573 (26' KB) kjs)
Site:	RWF 34-31 Pad	North Reference:	True
Well:	RWF 434-31	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #1 18Feb10 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	1,607,104.39	2,314,319.17	39° 28' 30.376 N	107° 55' 45.600 W	
120.0	0.00	0.00	120.0	0.0	0.0	1,607,104.39	2,314,319.17	39° 28' 30.376 N	107° 55' 45.600 W	
Start Build 3.00										
597.8	14.33	95.62	592.8	-5.8	59.2	1,607,096.99	2,314,378.17	39° 28' 30.319 N	107° 55' 44.846 W	
Hold 14.33 Inclination										
1,121.3	14.33	95.62	1,100.0	-18.5	188.1	1,607,080.86	2,314,506.75	39° 28' 30.193 N	107° 55' 43.201 W	
9 5/8"										
2,277.3	14.33	95.62	2,220.0	-46.5	473.0	1,607,045.24	2,314,790.72	39° 28' 29.916 N	107° 55' 39.569 W	
Top of "G" Sand										
2,380.5	14.33	95.62	2,320.0	-49.0	498.4	1,607,042.06	2,314,816.07	39° 28' 29.892 N	107° 55' 39.244 W	
Base of "G" Sand										
4,677.0	14.33	95.62	4,545.0	-104.7	1,064.2	1,606,971.30	2,315,380.20	39° 28' 29.341 N	107° 55' 32.028 W	
Mesaverde										
4,774.3	14.33	95.62	4,639.3	-107.0	1,088.2	1,606,968.30	2,315,404.12	39° 28' 29.318 N	107° 55' 31.722 W	
Start Drop -1.50										
5,729.9	0.00	0.00	5,585.0	-118.7	1,206.5	1,606,953.50	2,315,522.10	39° 28' 29.203 N	107° 55' 30.213 W	
Top Gas - Approx. Top Gas										
7,164.9	0.00	0.00	7,020.0	-118.7	1,206.5	1,606,953.50	2,315,522.10	39° 28' 29.203 N	107° 55' 30.213 W	
Cameo Coals										
7,964.9	0.00	0.00	7,820.0	-118.7	1,206.5	1,606,953.50	2,315,522.10	39° 28' 29.203 N	107° 55' 30.213 W	
Coal D										
8,034.9	0.00	0.00	7,890.0	-118.7	1,206.5	1,606,953.50	2,315,522.10	39° 28' 29.203 N	107° 55' 30.213 W	
Base L. Cameo Pay										
8,129.9	0.00	0.00	7,985.0	-118.7	1,206.5	1,606,953.50	2,315,522.10	39° 28' 29.203 N	107° 55' 30.213 W	
Rollins SS										
8,279.9	0.00	0.00	8,135.0	-118.7	1,206.5	1,606,953.50	2,315,522.10	39° 28' 29.203 N	107° 55' 30.213 W	
TD at 8279.9 - 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) R1	0.00	0.00	5,585.0	-118.7	1,206.5	1,606,953.50	2,315,522.10	39° 28' 29.203 N	107° 55' 30.213 W	
- plan hits target center										
- Circle (radius 25.0)										

Casing Points							Casing Diameter (in)	Hole Diameter (in)
Measured Depth (usft)	Vertical Depth (usft)	Name						
1,121.3	1,100.0	9 5/8"					9.625	12.250

Williams
Planning Report - Geographic

Database:	Compass R5000 WIN AUTH	Local Co-ordinate Reference:	Well RWF 434-31 - Slot B1
Company:	PICEANCE VLY NAD 83	TVD Reference:	WELL @ 5733.0usft (SSD 573 (26' KB) kjs)
Project:	RU 31-06S-094W	MD Reference:	WELL @ 5733.0usft (SSD 573 (26' KB) kjs)
Site:	RWF 34-31 Pad	North Reference:	True
Well:	RWF 434-31	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #1 18Feb10 kjs		

Formations						
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
2,277.3	2,220.0	Top of "G" Sand				
2,380.5	2,320.0	Base of "G" Sand				
4,677.0	4,545.0	Mesaverde				
5,729.9	5,585.0	Approx. Top Gas				
7,164.9	7,020.0	Cameo Coals				
7,964.9	7,820.0	Coal D				
8,034.9	7,890.0	Base L. Cameo Pay				
8,129.9	7,985.0	Rollins SS				
8,279.9	8,135.0	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 3.00	
597.8	592.8	-5.8	59.2	Hold 14.33 Inclination	
4,774.3	4,639.3	-107.0	1,088.2	Start Drop -1.50	
5,729.9	5,585.0	-118.7	1,206.5	Top Gas	
8,279.9	8,135.0	-118.7	1,206.5	TD at 8279.9	