

TVD	MD	Inc	Azi	+N/-S	+E/-W	V/Sec	Departure	Annotation
500.0	500.0	0.00	0.00	0.0	0.0	0.0	0.0	Start Build 2.00
749.7	750.0	5.00	195.98	-10.5	-3.0	10.8	10.9	Hold 5.00 Incination
2100.0	2105.5	5.00	195.98	-124.1	-35.5	128.4	129.0	Start DLS 3.00 TFO 8.145
2778.2	2813.6	26.20	202.66	-300.0	-105.0	317.6	318.3	Hold 26.20 Incination
3935.1	4103.0	26.20	202.66	-825.4	-324.3	886.8	887.6	Start Drop -2.00
5200.0	5413.1	0.00	0.00	-1097.0	-437.7	1181.2	1182.0	Top Gas
7750.0	7963.1	0.00	0.00	-1097.0	-437.7	1181.2	1182.0	TD at 7963.1

PICEANCE VLY NAD 83

RU 34-06S-094W

RMV 83-34 Pad

RWF 431-3 - Slot B2-3

Wellbore #1

Plan: Design #1 14Apr10 JMS

Standard Planning Report - Geographic

29 April, 2010

Williams
Planning Report - Geographic

Database:	Compass R5000 WIN AUTH	Local Co-ordinate Reference:	Well RWF 431-3 - Slot B2-3
Company:	PICEANCE VLY NAD 83	TVD Reference:	KELLY BUSHING @ 5650.0usft (H&P 24' KB JMS)
Project:	RU 34-06S-094W	MD Reference:	KELLY BUSHING @ 5650.0usft (H&P 24' KB JMS)
Site:	RMV 83-34 Pad	North Reference:	True
Well:	RWF 431-3	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #1 14Apr10 JMS		

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

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

Well	RWF 431-3 - Slot B2-3			
Well Position	+N/-S	0.0 usft	Northing: 1,607,121.10 usft	Latitude: 39° 28' 34.820 N
	+E/-W	0.0 usft	Easting: 2,330,707.20 usft	Longitude: 107° 52' 16.679 W
Position Uncertainty	0.0 usft	Wellhead Elevation:		Ground Level: 5,626.0 usft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	4/14/2010	10.445	65.778	52,377

Design	Design #1 14Apr10 JMS			
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	201.75

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	
750.0	5.00	195.98	749.7	-10.5	-3.0	2.00	2.00	0.00	195.980	
2,105.5	5.00	195.98	2,100.0	-124.1	-35.5	0.00	0.00	0.00	0.000	
2,813.6	26.20	202.66	2,778.2	-300.0	-105.0	3.00	2.99	0.94	8.145	
4,103.0	26.20	202.66	3,935.1	-825.4	-324.3	0.00	0.00	0.00	0.000	
5,413.1	0.00	0.00	5,200.0	-1,097.0	-437.7	2.00	-2.00	0.00	180.000	Top Gas (25' Radius)
7,963.1	0.00	0.00	7,750.0	-1,097.0	-437.7	0.00	0.00	0.00	0.000	TD / PBHL RWF 431-

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Project:	RU 34-06S-094W	MD Reference:	KELLY BUSHING @ 5650.0usft (H&P 24' KB JMS)
Site:	RMV 83-34 Pad	North Reference:	True
Well:	RWF 431-3	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	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	1,607,121.10	2,330,707.20	39° 28' 34.820 N	107° 52' 16.679 W
500.0	0.00	0.00	500.0	0.0	0.0	1,607,121.10	2,330,707.20	39° 28' 34.820 N	107° 52' 16.679 W
Start Build 2.00									
750.0	5.00	195.98	749.7	-10.5	-3.0	1,607,110.70	2,330,703.93	39° 28' 34.717 N	107° 52' 16.717 W
Hold 5.00 Inclination									
1,101.7	5.00	195.98	1,100.0	-39.9	-11.4	1,607,081.47	2,330,694.73	39° 28' 34.426 N	107° 52' 16.825 W
9.5/8"									
1,603.6	5.00	195.98	1,600.0	-82.0	-23.5	1,607,039.74	2,330,681.59	39° 28' 34.010 N	107° 52' 16.978 W
Top of "G" Sand									
1,703.9	5.00	195.98	1,700.0	-90.4	-25.9	1,607,031.40	2,330,678.96	39° 28' 33.927 N	107° 52' 17.009 W
Base of "G" Sand									
2,105.5	5.00	195.98	2,100.0	-124.1	-35.5	1,606,998.02	2,330,668.45	39° 28' 33.594 N	107° 52' 17.132 W
Start DLS 3.00 TFO 8.145									
2,813.6	26.20	202.66	2,778.2	-300.0	-105.0	1,606,823.95	2,330,594.38	39° 28' 31.855 N	107° 52' 18.018 W
Hold 26.20 Inclination									
4,103.0	26.20	202.66	3,935.1	-825.4	-324.3	1,606,304.48	2,330,361.44	39° 28' 26.663 N	107° 52' 20.815 W
Start Drop 2.00									
4,273.3	22.80	202.66	4,090.0	-890.5	-351.5	1,606,240.08	2,330,332.56	39° 28' 26.019 N	107° 52' 21.162 W
Mesaverde									
5,413.1	0.00	0.00	5,200.0	-1,097.0	-437.7	1,606,035.90	2,330,241.00	39° 28' 23.978 N	107° 52' 22.261 W
Top Gas - Approx. Top Gas									
6,973.1	0.00	0.00	6,760.0	-1,097.0	-437.7	1,606,035.90	2,330,241.00	39° 28' 23.978 N	107° 52' 22.261 W
Cameo Coals									
7,633.1	0.00	0.00	7,420.0	-1,097.0	-437.7	1,606,035.90	2,330,241.00	39° 28' 23.978 N	107° 52' 22.261 W
Coal D									
7,733.1	0.00	0.00	7,520.0	-1,097.0	-437.7	1,606,035.90	2,330,241.00	39° 28' 23.978 N	107° 52' 22.261 W
Base L. Cameo Pay									
7,813.1	0.00	0.00	7,600.0	-1,097.0	-437.7	1,606,035.90	2,330,241.00	39° 28' 23.978 N	107° 52' 22.261 W
Rollins SS									
7,963.1	0.00	0.00	7,750.0	-1,097.0	-437.7	1,606,035.90	2,330,241.00	39° 28' 23.978 N	107° 52' 22.261 W
TD at 7963.1 - 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	5,200.0	-1,097.0	-437.7	1,606,035.90	2,330,241.00	39° 28' 23.978 N	107° 52' 22.261 W
- plan hits target center									
- Circle (radius 25.0)									
TD / PBHL RWF 431-3	0.00	0.00	7,750.0	-1,097.0	-437.7	1,606,035.90	2,330,241.00	39° 28' 23.978 N	107° 52' 22.261 W
- plan hits target center									
- Point									

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Planning Report - Geographic

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Project:	RU 34-06S-094W	MD Reference:	KELLY BUSHING @ 5650.0usft (H&P 24' KB JMS)
Site:	RMV 83-34 Pad	North Reference:	True
Well:	RWF 431-3	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #1 14Apr10 JMS		

Casing Points

Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (in)	Hole Diameter (in)
1,101.7	1,100.0	9 5/8"	9.625	12.250

Formations

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
1,603.6	1,600.0	Top of "G" Sand			
1,703.9	1,700.0	Base of "G" Sand			
4,273.3	4,090.0	Mesaverde			
5,413.1	5,200.0	Approx. Top Gas			
6,973.1	6,760.0	Carneo Coals			
7,633.1	7,420.0	Coal D			
7,733.1	7,520.0	Base L. Carneo Pay			
7,813.1	7,600.0	Rollins SS			
7,963.1	7,750.0	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 2.00
750.0	749.7	-10.5	-3.0	Hold 5.00 Inclination
2,105.5	2,100.0	-124.1	-35.5	Start DLS 3.00 TFO 8.145
2,813.6	2,778.2	-300.0	-105.0	Hold 26.20 Inclination
4,103.0	3,935.1	-825.4	-324.3	Start Drop -2.00
5,413.1	5,200.0	-1,097.0	-437.7	Top Gas
7,963.1	7,750.0	-1,097.0	-437.7	TD at 7963.1