

TVD	MD	Inc	Azi	+N/-S	+E/-W	Vsect	Departure	Annotation
120.0	120.0	0.00	0.00	0.0	0.0	0.0	0.0	Start Build 2.50
713.2	720.0	15.00	139.34	-59.2	50.9	78.1	78.1	Hold 15.00 Incination
2100.0	2155.8	15.00	139.34	-341.1	293.0	449.7	449.7	Start Build 3.00
2403.2	2478.5	24.68	139.34	-424.1	364.3	559.1	559.1	Hold 24.68 Incination
4372.4	4647.7	24.68	139.34	-110.0	954.0	1484.1	1484.1	Start Drop -2.00
5567.0	5700.0	0.00	139.34	-129.0	1106.4	1725.8	1725.8	Top at 5567.0
5568.7	5879.8	0.00	0.00	-1309.2	1124.5	1725.8	1725.8	Vertical
7720.0	8031.1	0.00	0.00	-1309.2	1124.5	1725.8	1725.8	TD at 8031.1

PICEANCE VLY NAD 83

RU 34-06S-094W

RMV 83-34 Pad

RWF 41-3 - Slot A2-1

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 41-3 - Slot A2-1
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 41-3	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
From:	Map	Easting:	2,330,648.70 usft
Position Uncertainty:	0.0 usft	Slot Radius:	0.000 in
		Latitude:	39° 28' 34.035 N
		Longitude:	107° 52' 17.399 W
		Grid Convergence:	-1.496 °

Well	RWF 41-3 - Slot A2-1		
Well Position	+N/-S	0.0 usft	Northing: 1,607,123.10 usft
	+E/-W	0.0 usft	Easting: 2,330,725.20 usft
Position Uncertainty	0.0 usft	Wellhead Elevation:	Ground Level: 5,626.0 usft
		Latitude:	39° 28' 34.845 N
		Longitude:	107° 52' 16.450 W

Wellbore	Wellbore #1		
Magnetics	Model Name	Sample Date	Declination (°)
	IGRF2010	4/14/2010	10.445
			Dip Angle (°)
			65.778
			Field Strength (nT)
			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)
	0.0	0.0	0.0
			Direction (°)
			139.34

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	
720.0	15.00	139.34	713.2	-59.2	50.9	2.50	2.50	0.00	139.340	
2,155.8	15.00	139.34	2,100.0	-341.1	293.0	0.00	0.00	0.00	0.000	
2,478.5	24.68	139.34	2,403.2	-424.1	364.3	3.00	3.00	0.00	0.000	
4,645.7	24.68	139.34	4,372.4	-1,110.6	954.0	0.00	0.00	0.00	0.000	
5,479.8	8.00	139.34	5,170.0	-1,288.0	1,106.4	2.00	-2.00	0.00	180.000	Top Gas (25' Radius)
5,879.8	0.00	0.00	5,568.7	-1,309.2	1,124.5	2.00	-2.00	0.00	180.000	
8,031.1	0.00	0.00	7,720.0	-1,309.2	1,124.5	0.00	0.00	0.00	0.000	

Williams
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 41-3	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	1,607,123.10	2,330,725.20	39° 28' 34.845 N	107° 52' 16.450 W
120.0	0.00	0.00	120.0	0.0	0.0	1,607,123.10	2,330,725.20	39° 28' 34.845 N	107° 52' 16.450 W
Start Build 2.50									
720.0	15.00	139.34	713.2	-59.2	50.9	1,607,062.55	2,330,774.52	39° 28' 34.259 N	107° 52' 15.801 W
Hold 15.00 Inclination									
1,120.5	15.00	139.34	1,100.0	-137.9	118.4	1,606,982.19	2,330,839.98	39° 28' 33.482 N	107° 52' 14.940 W
9 5/8"									
1,638.1	15.00	139.34	1,600.0	-239.5	205.7	1,606,878.32	2,330,924.58	39° 28' 32.478 N	107° 52' 13.827 W
Top of "G" Sand									
1,741.6	15.00	139.34	1,700.0	-259.8	223.2	1,606,857.54	2,330,941.51	39° 28' 32.277 N	107° 52' 13.604 W
Base of "G" Sand									
2,155.8	15.00	139.34	2,100.0	-341.1	293.0	1,606,774.45	2,331,009.19	39° 28' 31.473 N	107° 52' 12.713 W
Start Build 3.00									
2,478.5	24.68	139.34	2,403.2	-424.1	364.3	1,606,689.62	2,331,078.29	39° 28' 30.653 N	107° 52' 11.804 W
Hold 24.68 Inclination									
4,301.9	24.68	139.34	4,060.0	-1,001.7	860.4	1,606,099.32	2,331,559.17	39° 28' 24.945 N	107° 52' 5.477 W
Mesaverde									
4,645.7	24.68	139.34	4,372.4	-1,110.6	954.0	1,605,988.01	2,331,649.84	39° 28' 23.868 N	107° 52' 4.284 W
Start Drop -2.00									
5,479.8	8.00	139.34	5,170.0	-1,288.0	1,106.4	1,605,806.71	2,331,797.54	39° 28' 22.115 N	107° 52' 2.341 W
Top Gas - Approx. Top Gas									
5,879.8	0.00	0.00	5,568.7	-1,309.2	1,124.5	1,605,785.09	2,331,815.15	39° 28' 21.906 N	107° 52' 2.110 W
Vertical									
7,031.1	0.00	0.00	6,720.0	-1,309.2	1,124.5	1,605,785.09	2,331,815.15	39° 28' 21.906 N	107° 52' 2.110 W
Cameo Coals									
7,701.1	0.00	0.00	7,390.0	-1,309.2	1,124.5	1,605,785.09	2,331,815.15	39° 28' 21.906 N	107° 52' 2.110 W
Coal D									
7,801.1	0.00	0.00	7,490.0	-1,309.2	1,124.5	1,605,785.09	2,331,815.15	39° 28' 21.906 N	107° 52' 2.110 W
Base L. Cameo Pay									
7,881.1	0.00	0.00	7,570.0	-1,309.2	1,124.5	1,605,785.09	2,331,815.15	39° 28' 21.906 N	107° 52' 2.110 W
Rollins SS									
8,031.1	0.00	0.00	7,720.0	-1,309.2	1,124.5	1,605,785.09	2,331,815.15	39° 28' 21.906 N	107° 52' 2.110 W
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	5,170.0	-1,297.6	1,114.5	1,605,796.90	2,331,805.40	39° 28' 22.020 N	107° 52' 2.238 W
- plan misses target center by 12.5usft at 5480.7usft MD (5170.9 TVD, -1288.1 N, 1106.5 E)									
- Circle (radius 25.0)									

Casing Points				
Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (in)	Hole Diameter (in)
1,120.5	1,100.0	9 5/8"	9.625	12.250

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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 41-3	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #1 14Apr10 JMS		

Formations						
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Direction (°)	
1,638.1	1,600.0	Top of "G" Sand				
1,741.6	1,700.0	Base of "G" Sand				
4,301.9	4,060.0	Mesaverde				
5,479.8	5,170.0	Approx. Top Gas				
7,031.1	6,720.0	Cameo Coals				
7,701.1	7,390.0	Coal D				
7,801.1	7,490.0	Base L. Cameo Pay				
7,881.1	7,570.0	Rollins SS				
8,031.1	7,720.0	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 2.50	
720.0	713.2	-59.2	50.9	Hold 15.00 Inclination	
2,155.8	2,100.0	-341.1	293.0	Start Build 3.00	
2,478.5	2,403.2	-424.1	364.3	Hold 24.68 Inclination	
4,645.7	4,372.4	-1,110.6	954.0	Start Drop -2.00	
5,479.8	5,170.0	-1,288.0	1,106.4	Top Gas	
5,879.8	5,568.7	-1,309.2	1,124.5	Vertical	
8,031.1	7,720.0	-1,309.2	1,124.5	TD at 8031.1	