

PICEANCE VLY NAD 83

RU 33-06S-094W

RWF 342-33 Pad

RMV 78-34 - Slot 11

Wellbore #1

Plan: Plan #4 11May11 kjs

Standard Planning Report - Geographic

11 May, 2011

Williams
Planning Report - Geographic

Database:	Compass R5000 WIN AUTH	Local Co-ordinate Reference:	Well RMV 78-34 - Slot 11
Company:	PICEANCE VLY NAD 83	TVD Reference:	KELLY BUSHING @ 5354.0usft (H&P (24' RKB) kjs)
Project:	RU 33-06S-094W	MD Reference:	KELLY BUSHING @ 5354.0usft (H&P (24' RKB) kjs)
Site:	RWF 342-33 Pad	North Reference:	True
Well:	RMV 78-34	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #4 11May11 kjs		

Project	RU 33-06S-094W, Garfield County, CO, WC 21-03S-094W		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	Colorado Central Zone		Using geodetic scale factor

Site	RWF 342-33 Pad		
Site Position:		Northing:	1,610,412.00 usft
From:	Map	Easting:	2,326,256.90 usft
Position Uncertainty:	0.0 usft	Slot Radius:	13.200 in
		Latitude:	39° 29' 6.184 N
		Longitude:	107° 53' 14.518 W
		Grid Convergence:	-1.506 °

Well	RMV 78-34 - Slot 11		
Well Position	+N/-S	0.0 usft	Northing:
	+E/-W	0.0 usft	Easting:
Position Uncertainty	0.0 usft		Wellhead Elevation:
			Latitude:
			Longitude:
			Ground Level:

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2005-10	12/5/2008	10.608	65.829	52,543

Design	Plan #4 11May11 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	78.73

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	
1,107.7	29.63	78.73	1,064.3	48.8	244.9	3.00	3.00	0.00	78.735	
3,555.0	29.63	78.73	3,191.5	285.2	1,431.6	0.00	0.00	0.00	0.000	
5,530.4	0.00	0.00	5,080.0	382.7	1,921.5	1.50	-1.50	0.00	180.000	
5,630.4	0.00	0.00	5,180.0	382.7	1,921.5	0.00	0.00	0.00	0.000	Top Gas (25' Radius)
8,030.4	0.00	0.00	7,580.0	382.7	1,921.5	0.00	0.00	0.00	0.000	

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Wellbore:	Wellbore #1		
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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	1,610,413.10	2,326,316.50	39° 29' 6.210 N	107° 53' 13.759 W	
120.0	0.00	0.00	120.0	0.0	0.0	1,610,413.10	2,326,316.50	39° 29' 6.210 N	107° 53' 13.759 W	
Start Build 3.00										
1,107.7	29.63	78.73	1,064.3	48.8	244.9	1,610,455.43	2,326,562.64	39° 29' 6.692 N	107° 53' 10.634 W	
Hold 29.63 Inclination										
1,258.0	29.63	78.73	1,194.9	63.3	317.8	1,610,468.03	2,326,635.87	39° 29' 6.835 N	107° 53' 9.705 W	
9 5/8"										
1,574.5	29.63	78.73	1,470.0	93.9	471.3	1,610,494.55	2,326,790.07	39° 29' 7.138 N	107° 53' 7.748 W	
Top of "G" Sand										
1,689.5	29.63	78.73	1,570.0	105.0	527.1	1,610,504.19	2,326,846.12	39° 29' 7.247 N	107° 53' 7.036 W	
Base of "G" Sand										
3,555.0	29.63	78.73	3,191.5	285.2	1,431.6	1,610,660.53	2,327,755.03	39° 29' 9.028 N	107° 52' 55.499 W	
Start Drop -1.50										
4,320.2	18.15	78.73	3,890.0	345.6	1,735.1	1,610,712.97	2,328,059.96	39° 29' 9.625 N	107° 52' 51.629 W	
Mesaverde										
5,530.4	0.00	0.00	5,080.0	382.7	1,921.5	1,610,745.20	2,328,247.30	39° 29' 9.992 N	107° 52' 49.251 W	
Vertical										
5,630.4	0.00	0.00	5,180.0	382.7	1,921.5	1,610,745.20	2,328,247.30	39° 29' 9.992 N	107° 52' 49.251 W	
Top Gas - Approx. Top Gas										
6,995.4	0.00	0.00	6,545.0	382.7	1,921.5	1,610,745.20	2,328,247.30	39° 29' 9.992 N	107° 52' 49.251 W	
Cameo										
7,715.4	0.00	0.00	7,265.0	382.7	1,921.5	1,610,745.20	2,328,247.30	39° 29' 9.992 N	107° 52' 49.251 W	
Coal D										
7,830.4	0.00	0.00	7,380.0	382.7	1,921.5	1,610,745.20	2,328,247.30	39° 29' 9.992 N	107° 52' 49.251 W	
Base L. Cameo Pay										
7,880.4	0.00	0.00	7,430.0	382.7	1,921.5	1,610,745.20	2,328,247.30	39° 29' 9.992 N	107° 52' 49.251 W	
Rollins SS										
8,030.4	0.00	0.00	7,580.0	382.7	1,921.5	1,610,745.20	2,328,247.30	39° 29' 9.992 N	107° 52' 49.251 W	
TD at 8030.4 - TD										

Design Targets										
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude	
Top Gas (25' Radius) Rf	0.00	0.00	5,180.0	382.7	1,921.5	1,610,745.20	2,328,247.30	39° 29' 9.992 N	107° 52' 49.251 W	
- hit/miss target										
- Shape										
- plan hits target center										
- Circle (radius 25.0)										

Casing Points					
Measured Depth (usft)	Vertical Depth (usft)	Name		Casing Diameter (in)	Hole Diameter (in)
1,258.0	1,194.9	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 (°)	
1,574.5	1,470.0	Top of "G" Sand				
1,689.5	1,570.0	Base of "G" Sand				
4,320.2	3,890.0	Mesaverde				
5,630.4	5,180.0	Approx. Top Gas				
6,995.4	6,545.0	Cameo				
7,715.4	7,265.0	Coal D				
7,830.4	7,380.0	Base L. Cameo Pay				
7,880.4	7,430.0	Rollins SS				
8,030.4	7,580.0	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	
1,107.7	1,064.3	48.8	244.9	Hold 29.63 Inclination	
3,555.0	3,191.5	285.2	1,431.6	Start Drop -1.50	
5,530.4	5,080.0	382.7	1,921.5	Vertical	
5,630.4	5,180.0	382.7	1,921.5	Top Gas	
8,030.4	7,580.0	382.7	1,921.5	TD at 8030.4	