

TVD	MD	In	Azi	+N/-S	+E/-W	Vs@Departure	Annotation
200.0	200.0	0.00	0.00	0.0	0.0	0.0	Start Build 2.50
598.0	600.0	10.00	255.00	-9.0	-33.6	29.9	Begin 2°/100 Turn
870.7	876.7	10.00	222.72	-32.9	-73.2	74.5	Hold 10.00 Inclination
2120.0	2145.3	10.00	222.72	-194.8	-222.6	294.8	Begin 1.5°/100 Build
2951.7	3014.7	23.04	222.72	-376.0	-390.0	541.4	Hold 23.04 Inclination
4215.0	4387.5	23.04	222.72	-770.7	-754.5	1078.6	Begin 1.5°/100 Drop
5710.0	5923.6	0.00	0.00	-994.6	-961.3	1383.2	Vertical
5810.0	6023.6	0.00	0.00	-994.6	-961.3	1383.2	Top Gas
8360.0	8573.6	0.00	0.00	-994.6	-961.3	1383.2	TD at 8573.6

PICEANCE VLY NAD 83

RU 14-06S-094W

RWF 22-14 Pad

RWF 323-14 - Slot A3

Wellbore #1

Plan: Design #1 29Jul10 kjs

Standard Planning Report - Geographic

08 September, 2010

Williams
Planning Report - Geographic

Database:	Compass R5000 WIN AUTH	Local Co-ordinate Reference:	Well RWF 323-14 - Slot A3
Company:	PICEANCE VLY NAD 83	TVD Reference:	KELLY BUSHING @ 5517.0usft ((24' KB) kjs)
Project:	RU 14-06S-094W	MD Reference:	KELLY BUSHING @ 5517.0usft ((24' KB) kjs)
Site:	RWF 22-14 Pad	North Reference:	True
Well:	RWF 323-14	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #1 29Jul10 kjs		

Project	RU 14-06S-094W, 14-06S-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 22-14 Pad			
Site Position:		Northing:	1,625,607.50 usft	Latitude:	39° 31' 38.656 N
From:	Map	Easting:	2,335,315.60 usft	Longitude:	107° 51' 24.041 W
Position Uncertainty:	0.0 usft	Slot Radius:	13.200 in	Grid Convergence:	-1.486 °

Well	RWF 323-14 - Slot A3					
Well Position	+N/-S	0.0 usft	Northing:	1,625,618.40 usft	Latitude:	39° 31' 38.761 N
	+E/-W	0.0 usft	Easting:	2,335,305.90 usft	Longitude:	107° 51' 24.169 W
Position Uncertainty		0.0 usft	Wellhead Elevation:		Ground Level:	5,493.0 usft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	7/29/2010	10.408	65.815	52,378

Design	Design #1 29Jul10 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	224.02

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	
200.0	0.00	0.00	200.0	0.0	0.0	0.00	0.00	0.00	0.000	
600.0	10.00	255.00	598.0	-9.0	-33.6	2.50	2.50	0.00	255.000	
876.7	10.00	222.72	870.7	-32.9	-73.2	2.00	0.00	-11.67	-105.900	
2,145.3	10.00	222.72	2,120.0	-194.8	-222.6	0.00	0.00	0.00	0.000	
3,014.7	23.04	222.72	2,951.7	-376.0	-390.0	1.50	1.50	0.00	0.003	
4,387.5	23.04	222.72	4,215.0	-770.7	-754.5	0.00	0.00	0.00	0.000	
5,923.6	0.00	0.00	5,710.0	-994.6	-961.3	1.50	-1.50	0.00	180.000	
8,573.6	0.00	0.00	8,360.0	-994.6	-961.3	0.00	0.00	0.00	0.000	TD / PBHL RWF 323-

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Project:	RU 14-06S-094W	MD Reference:	KELLY BUSHING @ 5517.0usft ((24' KB) kjs)
Site:	RWF 22-14 Pad	North Reference:	True
Well:	RWF 323-14	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #1 29Jul10 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	1,625,618.40	2,335,305.90	39° 31' 38.761 N	107° 51' 24.169 W
200.0	0.00	0.00	200.0	0.0	0.0	1,625,618.40	2,335,305.90	39° 31' 38.761 N	107° 51' 24.169 W
Start Build 2.50									
600.0	10.00	255.00	598.0	-9.0	-33.6	1,625,610.26	2,335,272.05	39° 31' 38.672 N	107° 51' 24.598 W
Begin 2°/100 Turn									
876.7	10.00	222.72	870.7	-32.9	-73.2	1,625,587.41	2,335,231.91	39° 31' 38.436 N	107° 51' 25.103 W
Hold 10.00 Inclination									
1,109.6	10.00	222.72	1,100.0	-62.6	-100.6	1,625,558.42	2,335,203.71	39° 31' 38.142 N	107° 51' 25.453 W
9 5/8"									
1,942.2	10.00	222.72	1,920.0	-168.8	-198.7	1,625,454.77	2,335,102.90	39° 31' 37.092 N	107° 51' 26.705 W
Top of "G" Sand									
2,043.8	10.00	222.72	2,020.0	-181.8	-210.7	1,625,442.13	2,335,090.60	39° 31' 36.964 N	107° 51' 26.857 W
Base of "G" Sand									
2,145.3	10.00	222.72	2,120.0	-194.8	-222.6	1,625,429.49	2,335,078.31	39° 31' 36.836 N	107° 51' 27.010 W
Begin 1.5°/100 Build									
3,014.7	23.04	222.72	2,951.7	-376.0	-390.0	1,625,252.66	2,334,906.30	39° 31' 35.045 N	107° 51' 29.146 W
Hold 23.04 Inclination									
4,387.5	23.04	222.72	4,215.0	-770.7	-754.5	1,624,867.53	2,334,531.67	39° 31' 31.143 N	107° 51' 33.798 W
Begin 1.5°/100 Drop									
4,724.0	17.99	222.72	4,530.0	-857.3	-834.5	1,624,783.02	2,334,449.47	39° 31' 30.287 N	107° 51' 34.819 W
Mesaverde									
5,923.6	0.00	0.00	5,710.0	-994.6	-961.3	1,624,649.10	2,334,319.20	39° 31' 28.931 N	107° 51' 36.436 W
Vertical									
6,023.6	0.00	0.00	5,810.0	-994.6	-961.3	1,624,649.10	2,334,319.20	39° 31' 28.931 N	107° 51' 36.436 W
Top Gas - Approx. Top Gas									
7,533.6	0.00	0.00	7,320.0	-994.6	-961.3	1,624,649.10	2,334,319.20	39° 31' 28.931 N	107° 51' 36.436 W
Cameo Coals									
8,308.6	0.00	0.00	8,095.0	-994.6	-961.3	1,624,649.10	2,334,319.20	39° 31' 28.931 N	107° 51' 36.436 W
Base L. Cameo Pay									
8,313.6	0.00	0.00	8,100.0	-994.6	-961.3	1,624,649.10	2,334,319.20	39° 31' 28.931 N	107° 51' 36.436 W
Coal D									
8,423.6	0.00	0.00	8,210.0	-994.6	-961.3	1,624,649.10	2,334,319.20	39° 31' 28.931 N	107° 51' 36.436 W
Rollins SS									
8,573.6	0.00	0.00	8,360.0	-994.6	-961.3	1,624,649.10	2,334,319.20	39° 31' 28.931 N	107° 51' 36.436 W
TD at 8573.6									

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	5,810.0	-994.6	-961.3	1,624,649.10	2,334,319.20	39° 31' 28.931 N	107° 51' 36.436 W
- plan hits target center									
- Circle (radius 25.0)									
TD / PBHL RWF 323-14	0.00	0.00	8,360.0	-994.6	-961.3	1,624,649.10	2,334,319.20	39° 31' 28.931 N	107° 51' 36.436 W
- plan hits target center									
- Point									

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Project:	RU 14-06S-094W	MD Reference:	KELLY BUSHING @ 5517.0usft ((24' KB) kjs)
Site:	RWF 22-14 Pad	North Reference:	True
Well:	RWF 323-14	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #1 29Jul10 kjs		

Casing Points				
Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (in)	Hole Diameter (in)
1,109.6	1,100.0	9 5/8"	9.625	12.250

Formations					
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
1,942.2	1,920.0	Top of "G" Sand			
2,043.8	2,020.0	Base of "G" Sand			
4,724.0	4,530.0	Mesaverde			
6,023.6	5,810.0	Approx. Top Gas			
7,533.6	7,320.0	Cameo Coals			
8,308.6	8,095.0	Base L. Cameo Pay			
8,313.6	8,100.0	Coal D			
8,423.6	8,210.0	Rollins SS			
8,573.6	8,360.0	TD			

Plan Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
200.0	200.0	0.0	0.0	Start Build 2.50
600.0	598.0	-9.0	-33.6	Begin 2°/100 Turn
876.7	870.7	-32.9	-73.2	Hold 10.00 Inclination
2,145.3	2,120.0	-194.8	-222.6	Begin 1.5°/100 Build
3,014.7	2,951.7	-376.0	-390.0	Hold 23.04 Inclination
4,387.5	4,215.0	-770.7	-754.5	Begin 1.5°/100 Drop
5,923.6	5,710.0	-994.6	-961.3	Vertical
6,023.6	5,810.0	-994.6	-961.3	Top Gas
8,573.6	8,360.0	-994.6	-961.3	TD at 8573.6