

PICEANCE VLY NAD 83

GV 34-06S-096W

GM 23-34 Pad

GM 424-34 - Slot A2

Wellbore #1

Plan: Plan #1 06Jul09 kjs

Standard Planning Report - Geographic

29 January, 2010

Williams
Planning Report - Geographic

Database:	Compass R5000 WIN AUTH	Local Co-ordinate Reference:	Well GM 424-34 - Slot A2
Company:	PICEANCE VLY NAD 83	TVD Reference:	KELLY BUSHING @ 5380.0usft (Cyclone 30 (23' RKB) kjs)
Project:	GV 34-06S-096W	MD Reference:	KELLY BUSHING @ 5380.0usft (Cyclone 30 (23' RKB) kjs)
Site:	GM 23-34 Pad	North Reference:	True
Well:	GM 424-34	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 06Jul09 kjs		

Project	GV 34-06S-096W		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	Colorado Central Zone		

Site		GM 23-34 Pad			
Site Position:		Northing:	1,609,695.00 usft	Latitude:	39° 28' 43.119 N
From:	Map	Easting:	2,267,298.20 usft	Longitude:	108° 5' 45.963 W
Position Uncertainty:	0.0 usft	Slot Radius:	13.200 in	Grid Convergence:	-1.637 °

Well	GM 424-34 - Slot A2					
Well Position	+N/-S	0.0 usft	Northing:	1,609,700.00 usft	Latitude:	39° 28' 43.160 N
	+E/-W	0.0 usft	Easting:	2,267,268.70 usft	Longitude:	108° 5' 46.341 W
Position Uncertainty		0.0 usft	Wellhead Elevation:		Ground Level:	5,357.0 usft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2005-10	7/6/2009	10.624	65.769	52,455

Design	Plan #1 06Jul09 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	206.75

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	
120.0	0.00	0.00	120.0	0.0	0.0	0.00	0.00	0.00	0.000	
262.9	5.00	150.00	262.7	-5.4	3.1	3.50	3.50	0.00	150.000	
868.2	23.44	207.84	848.6	-136.2	-40.4	3.50	3.05	9.56	68.746	
3,615.7	23.44	207.84	3,369.2	-1,102.8	-550.9	0.00	0.00	0.00	0.000	
4,787.9	0.00	0.00	4,509.0	-1,311.9	-661.4	2.00	-2.00	0.00	180.000	Top Gas (25' Radius)
6,687.9	0.00	0.00	6,409.0	-1,311.9	-661.4	0.00	0.00	0.00	0.000	TD / PBHL GM 424-3-

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Well:	GM 424-34	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 06Jul09 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	1,609,700.00	2,267,268.70	39° 28' 43.160 N	108° 5' 46.341 W	
120.0	0.00	0.00	120.0	0.0	0.0	1,609,700.00	2,267,268.70	39° 28' 43.160 N	108° 5' 46.341 W	
Start Build 3.50										
262.9	5.00	150.00	262.7	-5.4	3.1	1,609,694.51	2,267,271.66	39° 28' 43.106 N	108° 5' 46.301 W	
Begin 3.5°/100 Build & Turn										
868.2	23.44	207.84	848.6	-136.2	-40.4	1,609,564.99	2,267,224.39	39° 28' 41.813 N	108° 5' 46.857 W	
Hold 23.44 Inclination										
918.0	23.44	207.84	894.3	-153.7	-49.7	1,609,547.74	2,267,214.64	39° 28' 41.640 N	108° 5' 46.975 W	
9 5/8"										
1,740.7	23.44	207.84	1,649.0	-443.2	-202.5	1,609,262.80	2,267,053.58	39° 28' 38.780 N	108° 5' 48.924 W	
Top of "G" Sand										
1,849.7	23.44	207.84	1,749.0	-481.5	-222.8	1,609,225.05	2,267,032.24	39° 28' 38.401 N	108° 5' 49.182 W	
Base of "G" Sand										
3,560.9	23.44	207.84	3,319.0	-1,083.6	-540.8	1,608,632.34	2,266,697.20	39° 28' 32.450 N	108° 5' 53.237 W	
Mesaverde										
3,615.7	23.44	207.84	3,369.2	-1,102.8	-550.9	1,608,613.38	2,266,686.48	39° 28' 32.260 N	108° 5' 53.367 W	
Start Drop -2.00										
4,787.9	0.00	0.00	4,509.0	-1,311.9	-661.4	1,608,407.50	2,266,570.10	39° 28' 30.193 N	108° 5' 54.776 W	
Top Gas - Approx. Top Gas										
6,107.9	0.00	0.00	5,829.0	-1,311.9	-661.4	1,608,407.50	2,266,570.10	39° 28' 30.193 N	108° 5' 54.776 W	
Cameo Coals										
6,587.9	0.00	0.00	6,309.0	-1,311.9	-661.4	1,608,407.50	2,266,570.10	39° 28' 30.193 N	108° 5' 54.776 W	
Rollins SS										
6,687.9	0.00	0.00	6,409.0	-1,311.9	-661.4	1,608,407.50	2,266,570.10	39° 28' 30.193 N	108° 5' 54.776 W	
TD at 6687.9 - TD										

Design Targets										
Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude	
Top Gas (25' Radius) GI - plan hits target center - Circle (radius 25.0)	0.00	0.00	4,509.0	-1,311.9	-661.4	1,608,407.50	2,266,570.10	39° 28' 30.193 N	108° 5' 54.776 W	
TD / PBHL GM 424-34 - plan hits target center - Point	0.00	0.00	6,409.0	-1,311.9	-661.4	1,608,407.50	2,266,570.10	39° 28' 30.193 N	108° 5' 54.776 W	

Casing Points					
Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (in)	Hole Diameter (in)	
918.0	894.3	9 5/8"	9.625	12.250	

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Wellbore:	Wellbore #1		
Design:	Plan #1 06Jul09 kjs		

Formations						
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
1,740.7	1,649.0	Top of "G" Sand				
1,849.7	1,749.0	Base of "G" Sand				
3,560.9	3,319.0	Mesaverde				
4,787.9	4,509.0	Approx. Top Gas				
6,107.9	5,829.0	Cameo Coals				
6,587.9	6,309.0	Rollins SS				
6,687.9	6,409.0	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 3.50	
262.9	262.7	-5.4	3.1	Begin 3.5°/100 Build & Turn	
868.2	848.6	-136.2	-40.4	Hold 23.44 Inclination	
3,615.7	3,369.2	-1,102.8	-550.9	Start Drop -2.00	
4,787.9	4,509.0	-1,311.9	-661.4	Top Gas	
6,687.9	6,409.0	-1,311.9	-661.4	TD at 6687.9	