

PICEANCE VLY NAD 83

PA 04-07S-095W

GV 80-4 Pad

PA 514-4 - Slot B2

Wellbore #1

Plan: Plan #3 10Aug10 kjs

Standard Planning Report - Geographic

10 August, 2010

Williams
Planning Report - Geographic

Database:	Compass R5000 WIN AUTH	Local Co-ordinate Reference:	Well PA 514-4 - Slot B2
Company:	PICEANCE VLY NAD 83	TVD Reference:	KELLY BUSHING @ 5612.0usft (Nabors SSD (26' RKB) kjs)
Project:	PA 04-07S-095W	MD Reference:	KELLY BUSHING @ 5612.0usft (Nabors SSD (26' RKB) kjs)
Site:	GV 80-4 Pad	North Reference:	True
Well:	PA 514-4	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #3 10Aug10 kjs		

Project	PA 04-07S-095W, Garfield County, CO, 04-07S-095W		
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	GV 80-4 Pad		
Site Position:		Northing:	1,603,479.50 usft
From:	Map	Easting:	2,292,316.70 usft
Position Uncertainty:	0.0 usft	Slot Radius:	13.200 in
		Latitude:	39° 27' 48.655 N
		Longitude:	108° 0' 24.818 W
		Grid Convergence:	-1.581 °

Well	PA 514-4 - Slot B2		
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	11/7/2007	10.799	65.815	52,618

Design	Plan #3 10Aug10 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	211.85

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	
815.7	24.35	210.39	794.9	-125.6	-73.7	3.50	3.50	0.00	210.394	
3,326.2	24.35	210.39	3,082.2	-1,018.4	-597.4	0.00	0.00	0.00	0.000	
4,949.5	0.00	0.00	4,657.0	-1,311.5	-769.2	1.50	-1.50	0.00	180.000	
5,049.5	0.00	0.00	4,757.0	-1,311.5	-769.2	0.00	0.00	0.00	0.000	Top Gas (25' Radius)
7,199.5	0.00	0.00	6,907.0	-1,311.5	-769.2	0.00	0.00	0.00	0.000	

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Well:	PA 514-4	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #3 10Aug10 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	1,603,428.90	2,292,333.50	39° 27' 48.159 N	108° 0' 24.586 W	
120.0	0.00	0.00	120.0	0.0	0.0	1,603,428.90	2,292,333.50	39° 27' 48.159 N	108° 0' 24.586 W	
Start Build 3.50										
815.7	24.35	210.39	794.9	-125.6	-73.7	1,603,305.38	2,292,256.40	39° 27' 46.918 N	108° 0' 25.525 W	
Hold 24.35 Inclination										
866.0	24.35	210.39	840.8	-143.5	-84.2	1,603,287.79	2,292,245.41	39° 27' 46.741 N	108° 0' 25.659 W	
9 5/8"										
1,729.0	24.35	210.39	1,627.0	-450.4	-264.2	1,602,985.98	2,292,057.01	39° 27' 43.708 N	108° 0' 27.954 W	
Top of "G" Sand										
1,838.8	24.35	210.39	1,727.0	-489.4	-287.1	1,602,947.59	2,292,033.05	39° 27' 43.322 N	108° 0' 28.246 W	
Base of "G" Sand										
3,326.2	24.35	210.39	3,082.2	-1,018.4	-597.4	1,602,427.39	2,291,708.31	39° 27' 38.094 N	108° 0' 32.202 W	
Start Drop -1.50										
3,948.0	15.02	210.39	3,667.0	-1,198.9	-703.2	1,602,249.91	2,291,597.52	39° 27' 36.310 N	108° 0' 33.552 W	
Mesaverde										
4,949.5	0.00	0.00	4,657.0	-1,311.5	-769.2	1,602,139.20	2,291,528.40	39° 27' 35.198 N	108° 0' 34.393 W	
Vertical										
5,049.5	0.00	0.00	4,757.0	-1,311.5	-769.2	1,602,139.20	2,291,528.40	39° 27' 35.198 N	108° 0' 34.393 W	
Top Gas - Approx. Top Gas										
6,154.5	0.00	0.00	5,862.0	-1,311.5	-769.2	1,602,139.20	2,291,528.40	39° 27' 35.198 N	108° 0' 34.393 W	
Cameo Coals										
7,049.5	0.00	0.00	6,757.0	-1,311.5	-769.2	1,602,139.20	2,291,528.40	39° 27' 35.198 N	108° 0' 34.393 W	
Rollins SS										
7,199.5	0.00	0.00	6,907.0	-1,311.5	-769.2	1,602,139.20	2,291,528.40	39° 27' 35.198 N	108° 0' 34.393 W	
TD at 7199.5 - 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) P/ - plan hits target center - Circle (radius 25.0)	0.00	0.00	4,757.0	-1,311.5	-769.2	1,602,139.20	2,291,528.40	39° 27' 35.198 N	108° 0' 34.393 W	

Casing Points						
Measured Depth (usft)	Vertical Depth (usft)	Name			Casing Diameter (in)	Hole Diameter (in)
866.0	840.8	9 5/8"			9.625	12.250

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Formations						
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
1,729.0	1,627.0	Top of "G" Sand				
1,838.8	1,727.0	Base of "G" Sand				
3,948.0	3,667.0	Mesaverde				
5,049.5	4,757.0	Approx. Top Gas				
6,154.5	5,862.0	Cameo Coals				
7,049.5	6,757.0	Rollins SS				
7,199.5	6,907.0	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	
815.7	794.9	-125.6	-73.7	Hold 24.35 Inclination	
3,326.2	3,082.2	-1,018.4	-597.4	Start Drop -1.50	
4,949.5	4,657.0	-1,311.5	-769.2	Vertical	
5,049.5	4,757.0	-1,311.5	-769.2	Top Gas	
7,199.5	6,907.0	-1,311.5	-769.2	TD at 7199.5	