

PICEANCE VLY NAD 83

PA 04-07S-095W

GV 80-4 Pad

PA 44-5 - Slot A4

Wellbore #1

Plan: Plan #2 26Apr10 kjs

Standard Planning Report - Geographic

10 August, 2010

Williams
Planning Report - Geographic

Database:	Compass R5000 WIN AUTH	Local Co-ordinate Reference:	Well PA 44-5 - Slot A4
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 44-5	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #2 26Apr10 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	Latitude:	39° 27' 48.655 N
From:	Map	Easting:	2,292,316.70 usft	Longitude:	108° 0' 24.818 W
Position Uncertainty:	0.0 usft	Slot Radius:	13.200 in	Grid Convergence:	-1.581 °

Well	PA 44-5 - Slot A4					
Well Position	+N/-S	0.0 usft	Northing:	1,603,446.90 usft	Latitude:	39° 27' 48.338 N
	+E/-W	0.0 usft	Easting:	2,292,334.70 usft	Longitude:	108° 0' 24.577 W
Position Uncertainty		0.0 usft	Wellhead Elevation:		Ground Level:	5,586.0 usft

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 #2 26Apr10 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	256.43

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	
153.3	0.50	100.00	153.3	0.0	0.1	1.50	1.50	0.00	100.000	
500.0	0.50	100.00	500.0	-0.6	3.1	0.00	0.00	0.00	0.000	
849.7	10.00	269.51	848.0	-1.1	-25.8	3.00	2.72	48.47	170.000	
1,834.8	39.18	255.76	1,734.6	-80.1	-421.8	3.00	2.96	-1.40	-17.730	
3,637.5	39.18	255.76	3,131.9	-360.4	-1,525.7	0.00	0.00	0.00	0.000	
5,421.7	3.50	255.76	4,767.0	-517.6	-2,144.9	2.00	-2.00	0.00	180.000	Top Gas (25' Radius)
5,596.7	0.00	0.00	4,941.9	-518.9	-2,150.1	2.00	-2.00	0.00	180.000	
7,571.8	0.00	0.00	6,917.0	-518.9	-2,150.1	0.00	0.00	0.00	0.000	

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Wellbore:	Wellbore #1		
Design:	Plan #2 26Apr10 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	1,603,446.90	2,292,334.70	39° 27' 48.338 N	108° 0' 24.577 W	
120.0	0.00	0.00	120.0	0.0	0.0	1,603,446.90	2,292,334.70	39° 27' 48.338 N	108° 0' 24.577 W	
Start Nudge 1.50										
153.3	0.50	100.00	153.3	0.0	0.1	1,603,446.87	2,292,334.84	39° 27' 48.337 N	108° 0' 24.575 W	
Hold 0.50 Inclination										
500.0	0.50	100.00	500.0	-0.6	3.1	1,603,446.26	2,292,337.81	39° 27' 48.332 N	108° 0' 24.537 W	
Begin 3°/100 Build & Turn										
849.7	10.00	269.51	848.0	-1.1	-25.8	1,603,446.53	2,292,308.86	39° 27' 48.327 N	108° 0' 24.906 W	
Begin 3°/100 Turn										
1,718.2	35.70	256.26	1,642.0	-63.0	-353.0	1,603,393.68	2,291,980.13	39° 27' 47.715 N	108° 0' 29.078 W	
Top of "G" Sand										
1,834.8	39.18	255.76	1,734.6	-80.1	-421.8	1,603,378.43	2,291,910.90	39° 27' 47.546 N	108° 0' 29.955 W	
Hold 39.18 Inclination										
1,844.4	39.18	255.76	1,742.0	-81.6	-427.6	1,603,377.10	2,291,905.00	39° 27' 47.531 N	108° 0' 30.029 W	
Base of "G" Sand										
1,885.0	39.18	255.76	1,773.5	-87.9	-452.5	1,603,371.47	2,291,879.95	39° 27' 47.468 N	108° 0' 30.347 W	
9 5/8"										
3,637.5	39.18	255.76	3,131.9	-360.4	-1,525.7	1,603,128.77	2,290,799.70	39° 27' 44.775 N	108° 0' 44.030 W	
Begin 2°/100 Drop										
4,292.2	26.09	255.76	3,682.0	-447.1	-1,867.2	1,603,051.54	2,290,455.97	39° 27' 43.919 N	108° 0' 48.384 W	
Mesaverde										
5,421.7	3.50	255.76	4,767.0	-517.6	-2,144.9	1,602,988.72	2,290,176.38	39° 27' 43.221 N	108° 0' 51.925 W	
Top Gas - Approx. Top Gas										
5,596.7	0.00	0.00	4,941.9	-518.9	-2,150.1	1,602,987.55	2,290,171.17	39° 27' 43.208 N	108° 0' 51.991 W	
Vertical										
6,636.8	0.00	0.00	5,982.0	-518.9	-2,150.1	1,602,987.55	2,290,171.17	39° 27' 43.208 N	108° 0' 51.991 W	
Cameo Coals										
7,421.8	0.00	0.00	6,767.0	-518.9	-2,150.1	1,602,987.55	2,290,171.17	39° 27' 43.208 N	108° 0' 51.991 W	
Rollins SS										
7,571.8	0.00	0.00	6,917.0	-518.9	-2,150.1	1,602,987.55	2,290,171.17	39° 27' 43.208 N	108° 0' 51.991 W	
TD at 7571.8 - 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) P/	0.00	0.00	4,767.0	-520.8	-2,158.3	1,602,985.90	2,290,162.90	39° 27' 43.190 N	108° 0' 52.096 W	
- plan misses target center by 13.8usft at 5422.1usft MD (4767.4 TVD, -517.6 N, -2145.0 E)										
- Circle (radius 25.0)										
TD / PBHL PA 44-5	0.00	0.00	6,917.0	-520.8	-2,158.3	1,602,985.90	2,290,162.90	39° 27' 43.190 N	108° 0' 52.096 W	
- plan misses target center by 8.4usft at 7571.8usft MD (6917.0 TVD, -518.9 N, -2150.1 E)										
- Point										

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Project:	PA 04-07S-095W	MD Reference:	KELLY BUSHING @ 5612.0usft (Nabors SSD (26' RKB) kjs)
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Wellbore:	Wellbore #1		
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Casing Points					
Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (in)	Hole Diameter (in)	
1,885.0	1,773.5	9 5/8"	9.625	12.250	

Formations						
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
1,718.2	1,642.0	Top of "G" Sand				
1,844.4	1,742.0	Base of "G" Sand				
4,292.2	3,682.0	Mesaverde				
5,421.7	4,767.0	Approx. Top Gas				
6,636.8	5,982.0	Cameo Coals				
7,421.8	6,767.0	Rollins SS				
7,571.8	6,917.0	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 Nudge 1.50	
153.3	153.3	0.0	0.1	Hold 0.50 Inclination	
500.0	500.0	-0.6	3.1	Begin 3°/100 Build & Turn	
849.7	848.0	-1.1	-25.8	Begin 3°/100 Turn	
1,834.8	1,734.6	-80.1	-421.8	Hold 39.18 Inclination	
3,637.5	3,131.9	-360.4	-1,525.7	Begin 2°/100 Drop	
5,421.7	4,767.0	-517.6	-2,144.9	Top Gas	
5,596.7	4,941.9	-518.9	-2,150.1	Vertical	
7,571.8	6,917.0	-518.9	-2,150.1	TD at 7571.8	