

PICEANCE VLY NAD 83

PA 28-06S-095W

PA 11-28 Pad

PA 441-29 - Slot C2

Wellbore #1

Plan: Plan #4 19Nov10 kjs

Standard Planning Report - Geographic

15 December, 2010

Williams
Planning Report - Geographic

Database:	Compass R5000 WIN AUTH	Local Co-ordinate Reference:	Well PA 441-29 - Slot C2
Company:	PICEANCE VLY NAD 83	TVD Reference:	KELLY BUSHING @ 5991.0usft (Nabors 574 (26' RKB) kjs)
Project:	PA 28-06S-095W	MD Reference:	KELLY BUSHING @ 5991.0usft (Nabors 574 (26' RKB) kjs)
Site:	PA 11-28 Pad	North Reference:	True
Well:	PA 441-29	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #4 19Nov10 kjs		

Project	PA 28-06S-095W, Garfield County, CO, 28-06S-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	PA 11-28 Pad		
Site Position:		Northing:	1,617,373.30 usft
From:	Map	Easting:	2,291,369.70 usft
Position Uncertainty:	0.0 usft	Slot Radius:	0.000 in
		Latitude:	39° 30' 5.665 N
		Longitude:	108° 0' 41.786 W
		Grid Convergence:	-1.584 °

Well	PA 441-29 - Slot C2		
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	12/3/2007	10.797	65.844	52,628

Design	Plan #4 19Nov10 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	238.06

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	
253.3	4.00	35.00	253.2	3.8	2.7	3.00	3.00	0.00	35.000	
705.6	9.79	237.54	703.8	-3.9	-20.8	3.00	1.28	-34.82	-163.877	
5,343.0	9.79	237.54	5,273.7	-427.1	-686.0	0.00	0.00	0.00	0.000	
5,995.5	0.00	0.00	5,923.0	-457.0	-732.9	1.50	-1.50	0.00	180.000	
8,245.5	0.00	0.00	8,173.0	-457.0	-732.9	0.00	0.00	0.00	0.000	TD / PBHL PA 441-29

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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	1,617,379.00	2,291,348.40	39° 30' 5.716 N	108° 0' 42.059 W	
120.0	0.00	0.00	120.0	0.0	0.0	1,617,379.00	2,291,348.40	39° 30' 5.716 N	108° 0' 42.059 W	
Start Build 3.00										
253.3	4.00	35.00	253.2	3.8	2.7	1,617,382.73	2,291,351.17	39° 30' 5.753 N	108° 0' 42.025 W	
Begin 3/100 Build & Turn										
705.6	9.79	237.54	703.8	-3.9	-20.8	1,617,375.63	2,291,327.47	39° 30' 5.677 N	108° 0' 42.325 W	
Hold 9.79 Inclination										
2,511.1	9.79	237.54	2,483.0	-168.7	-279.8	1,617,218.11	2,291,064.06	39° 30' 4.048 N	108° 0' 45.629 W	
Top of "G" Sand										
2,612.6	9.79	237.54	2,583.0	-178.0	-294.3	1,617,209.25	2,291,049.26	39° 30' 3.957 N	108° 0' 45.814 W	
Base of "G" Sand										
2,714.1	9.79	237.54	2,683.0	-187.2	-308.9	1,617,200.40	2,291,034.45	39° 30' 3.865 N	108° 0' 46.000 W	
9 5/8"										
4,692.9	9.79	237.54	4,633.0	-367.8	-592.7	1,617,027.75	2,290,745.76	39° 30' 2.081 N	108° 0' 49.621 W	
Mesaverde										
5,343.0	9.79	237.54	5,273.7	-427.1	-686.0	1,616,971.03	2,290,650.92	39° 30' 1.494 N	108° 0' 50.810 W	
Start Drop -1.50										
5,995.5	0.00	0.00	5,923.0	-457.0	-732.9	1,616,942.50	2,290,603.20	39° 30' 1.200 N	108° 0' 51.409 W	
Vertical										
6,095.5	0.00	0.00	6,023.0	-457.0	-732.9	1,616,942.50	2,290,603.20	39° 30' 1.200 N	108° 0' 51.409 W	
Top Gas - Approx. Top Gas										
7,390.5	0.00	0.00	7,318.0	-457.0	-732.9	1,616,942.50	2,290,603.20	39° 30' 1.200 N	108° 0' 51.409 W	
Cameo Coals										
8,095.5	0.00	0.00	8,023.0	-457.0	-732.9	1,616,942.50	2,290,603.20	39° 30' 1.200 N	108° 0' 51.409 W	
Rollins SS										
8,245.5	0.00	0.00	8,173.0	-457.0	-732.9	1,616,942.50	2,290,603.20	39° 30' 1.200 N	108° 0' 51.409 W	
TD at 8245.5 - 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	6,023.0	-457.0	-732.9	1,616,942.50	2,290,603.20	39° 30' 1.200 N	108° 0' 51.409 W	
TD / PBHL PA 441-29 - plan hits target center - Point	0.00	0.00	8,173.0	-457.0	-732.9	1,616,942.50	2,290,603.20	39° 30' 1.200 N	108° 0' 51.409 W	

Casing Points					
Measured Depth (usft)	Vertical Depth (usft)	Name		Casing Diameter (in)	Hole Diameter (in)
2,714.1	2,683.0	9 5/8"		9.625	12.250

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Wellbore:	Wellbore #1		
Design:	Plan #4 19Nov10 kjs		

Formations						
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
2,511.1	2,483.0	Top of "G" Sand				
2,612.6	2,583.0	Base of "G" Sand				
4,692.9	4,633.0	Mesaverde				
6,095.5	6,023.0	Approx. Top Gas				
7,390.5	7,318.0	Cameo Coals				
8,095.5	8,023.0	Rollins SS				
8,245.5	8,173.0	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	
253.3	253.2	3.8	2.7	Begin 3/100 Build & Turn	
705.6	703.8	-3.9	-20.8	Hold 9.79 Inclination	
5,343.0	5,273.7	-427.1	-686.0	Start Drop -1.50	
5,995.5	5,923.0	-457.0	-732.9	Vertical	
6,095.5	6,023.0	-457.0	-732.9	Top Gas	
8,245.5	8,173.0	-457.0	-732.9	TD at 8245.5	