

PICEANCE VLY NAD 83

PA 29-06S-095W

DOE 3-W-29 Pad

PA 12-29 - Slot B10

Wellbore #1

Plan: Plan #2 26Jan10 kjs

Standard Planning Report - Geographic

23 March, 2010

Williams
Planning Report - Geographic

Database:	Compass R5000 WIN AUTH	Local Co-ordinate Reference:	Well PA 12-29 - Slot B10
Company:	PICEANCE VLY NAD 83	TVD Reference:	WELL @ 5702.0usft (Nabors 577 (26') kjs)
Project:	PA 29-06S-095W	MD Reference:	WELL @ 5702.0usft (Nabors 577 (26') kjs)
Site:	DOE 3-W-29 Pad	North Reference:	True
Well:	PA 12-29	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #2 26Jan10 kjs		

Project	PA 29-06S-095W, Garfield County, CO		
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	DOE 3-W-29 Pad				
Site Position:		Northing:	1,613,247.00 usft	Latitude:	39° 29' 23.965 N
From:	Map	Easting:	2,287,962.20 usft	Longitude:	108° 1' 23.779 W
Position Uncertainty:	0.0 usft	Slot Radius:	13.200 in	Grid Convergence:	-1.591 °

Well	PA 12-29 - Slot B10					
Well Position	+N/-S	0.0 usft	Northing:	1,613,234.52 usft	Latitude:	39° 29' 23.842 N
	+E/-W	0.0 usft	Easting:	2,287,962.30 usft	Longitude:	108° 1' 23.774 W
Position Uncertainty		0.0 usft	Wellhead Elevation:		Ground Level:	5,676.0 usft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination	Dip Angle	Field Strength
	IGRF2010	2/3/2009	(°)	(°)	(nT)
			10.666	65.794	52,486

Design	Plan #2 26Jan10 kjs			
Audit Notes:				
Version:	Phase:	PLAN	Tie On Depth:	0.0
Vertical Section:	Depth From (TVD)	+N/-S	+E/-W	Direction
	(usft)	(usft)	(usft)	(°)
	0.0	0.0	0.0	321.37

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	
1,490.9	35.64	321.37	1,404.2	322.5	-257.7	2.60	2.60	0.00	321.371	
4,871.3	35.64	321.37	4,151.2	1,861.4	-1,487.5	0.00	0.00	0.00	0.000	
6,253.5	8.00	321.37	5,422.0	2,259.0	-1,805.2	2.00	-2.00	0.00	180.000	Top Gas (25' Radius)
6,653.5	0.00	0.00	5,820.7	2,280.7	-1,822.6	2.00	-2.00	9.66	180.000	
8,404.8	0.00	0.00	7,572.0	2,280.7	-1,822.6	0.00	0.00	0.00	0.000	

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Site:	DOE 3-W-29 Pad	North Reference:	True
Well:	PA 12-29	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #2 26Jan10 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	1,613,234.52	2,287,962.30	39° 29' 23.842 N	108° 1' 23.774 W	
120.0	0.00	0.00	120.0	0.0	0.0	1,613,234.52	2,287,962.30	39° 29' 23.842 N	108° 1' 23.774 W	
Start Build 2.60										
1,490.9	35.64	321.37	1,404.2	322.5	-257.7	1,613,564.08	2,287,713.63	39° 29' 27.030 N	108° 1' 27.061 W	
Hold 35.64 Inclination										
2,208.1	35.64	321.37	1,987.0	649.0	-518.6	1,613,897.67	2,287,461.91	39° 29' 30.256 N	108° 1' 30.389 W	
Top of "G" Sand										
2,331.2	35.64	321.37	2,087.0	705.0	-563.4	1,613,954.91	2,287,418.72	39° 29' 30.810 N	108° 1' 30.960 W	
Base of "G" Sand										
2,454.2	35.64	321.37	2,187.0	761.1	-608.2	1,614,012.15	2,287,375.52	39° 29' 31.364 N	108° 1' 31.531 W	
9 5/8"										
4,779.9	35.64	321.37	4,077.0	1,819.9	-1,454.3	1,615,094.00	2,286,559.19	39° 29' 41.828 N	108° 1' 42.325 W	
Mesaverde										
4,871.3	35.64	321.37	4,151.2	1,861.4	-1,487.5	1,615,136.49	2,286,527.13	39° 29' 42.239 N	108° 1' 42.748 W	
Start Drop -2.00										
6,253.5	8.00	321.37	5,422.0	2,259.0	-1,805.2	1,615,542.66	2,286,220.65	39° 29' 46.167 N	108° 1' 46.801 W	
Top Gas - Approx. Top Gas										
6,653.5	0.00	0.00	5,820.7	2,280.7	-1,822.6	1,615,564.91	2,286,203.86	39° 29' 46.382 N	108° 1' 47.023 W	
Vertical										
7,704.8	0.00	0.00	6,872.0	2,280.7	-1,822.6	1,615,564.91	2,286,203.86	39° 29' 46.382 N	108° 1' 47.023 W	
Cameo Coals										
8,254.8	0.00	0.00	7,422.0	2,280.7	-1,822.6	1,615,564.91	2,286,203.86	39° 29' 46.382 N	108° 1' 47.023 W	
Rollins SS										
8,404.8	0.00	0.00	7,572.0	2,280.7	-1,822.6	1,615,564.91	2,286,203.86	39° 29' 46.382 N	108° 1' 47.023 W	
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	5,422.0	2,275.1	-1,817.7	1,615,559.10	2,286,208.60	39° 29' 46.326 N	108° 1' 46.960 W	
- hit/miss target										
- Shape										
- plan misses target center by 20.2usft at 6254.9usft MD (5423.4 TVD, 2259.1 N, -1805.3 E)										
- Circle (radius 25.0)										

Casing Points						
Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (in)	Hole Diameter (in)		
2,454.2	2,187.0	9 5/8"	9.625	12.250		

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Formations						
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
2,208.1	1,987.0	Top of "G" Sand				
2,331.2	2,087.0	Base of "G" Sand				
4,779.9	4,077.0	Mesaverde				
6,253.5	5,422.0	Approx. Top Gas				
7,704.8	6,872.0	Cameo Coals				
8,254.8	7,422.0	Rollins SS				
8,404.8	7,572.0	TD		0.000		

Plan Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment	
		+N/-S (usft)	+E/-W (usft)		
120.0	120.0	0.0	0.0	Start Build 2.60	
1,490.9	1,404.2	322.5	-257.7	Hold 35.64 Inclination	
4,871.3	4,151.2	1,861.4	-1,487.5	Start Drop -2.00	
6,253.5	5,422.0	2,259.0	-1,805.2	Top Gas	
6,653.5	5,820.7	2,280.7	-1,822.6	Vertical	
8,404.8	7,572.0	2,280.7	-1,822.6	TD at 8404.8	