

# **PICEANCE VLY NAD 83**

**PA 29-06S-095W**

**DOE 3-W-29 Pad**

**PA 413-29 - Slot B8**

**Wellbore #1**

**Plan: Plan #2 27Jan10 kjs**

## **Standard Planning Report - Geographic**

**30 March, 2010**

**Williams**  
Planning Report - Geographic

<b>Database:</b>	Compass R5000 WIN AUTH	<b>Local Co-ordinate Reference:</b>	Well PA 413-29 - Slot B8
<b>Company:</b>	PICEANCE VLY NAD 83	<b>TVD Reference:</b>	WELL @ 5702.0usft (Nabors 577 (26') kjs)
<b>Project:</b>	PA 29-06S-095W	<b>MD Reference:</b>	WELL @ 5702.0usft (Nabors 577 (26') kjs)
<b>Site:</b>	DOE 3-W-29 Pad	<b>North Reference:</b>	True
<b>Well:</b>	PA 413-29	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Plan #2 27Jan10 kjs		

<b>Project</b>	PA 29-06S-095W, Garfield County, CO		
<b>Map System:</b>	US State Plane 1983	<b>System Datum:</b>	Mean Sea Level
<b>Geo Datum:</b>	North American Datum 1983		
<b>Map Zone:</b>	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 413-29 - Slot B8				
Well Position	+N/-S	0.0 usft	Northing:	1,613,226.33 usft	Latitude:	39° 29' 23.765 N
	+E/-W	0.0 usft	Easting:	2,287,975.59 usft	Longitude:	108° 1' 23.601 W
Position Uncertainty		0.0 usft	Wellhead Elevation:		Ground Level:	5,676.0 usft

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

<b>Design</b>	Plan #2 27Jan10 kjs			
<b>Audit Notes:</b>				
<b>Version:</b>	<b>Phase:</b>	PLAN	<b>Tie On Depth:</b>	0.0
<b>Vertical Section:</b>	<b>Depth From (TVD) (usft)</b>	<b>+N/-S (usft)</b>	<b>+E/-W (usft)</b>	<b>Direction (°)</b>
	0.0	0.0	0.0	315.34

<b>Plan Sections</b>										
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	
564.4	10.00	300.00	562.2	19.3	-33.5	2.25	2.25	0.00	300.000	
1,493.2	30.33	316.15	1,429.9	231.1	-268.4	2.25	2.19	1.74	23.198	
4,435.6	30.33	316.15	3,969.6	1,302.8	-1,297.8	0.00	0.00	0.00	0.000	
5,924.5	8.00	316.15	5,367.0	1,653.1	-1,634.3	1.50	-1.50	0.00	-179.999	Top Gas (25' Radius)
6,457.8	0.00	0.00	5,898.6	1,679.9	-1,660.0	1.50	-1.50	8.22	180.000	
8,076.2	0.00	0.00	7,517.0	1,679.9	-1,660.0	0.00	0.00	0.00	0.000	

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<b>Database:</b>	Compass R5000 WIN AUTH	<b>Local Co-ordinate Reference:</b>	Well PA 413-29 - Slot B8
<b>Company:</b>	PICEANCE VLY NAD 83	<b>TVD Reference:</b>	WELL @ 5702.0usft (Nabors 577 (26') kjs)
<b>Project:</b>	PA 29-06S-095W	<b>MD Reference:</b>	WELL @ 5702.0usft (Nabors 577 (26') kjs)
<b>Site:</b>	DOE 3-W-29 Pad	<b>North Reference:</b>	True
<b>Well:</b>	PA 413-29	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Plan #2 27Jan10 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	1,613,226.33	2,287,975.59	39° 29' 23.765 N	108° 1' 23.601 W	
120.0	0.00	0.00	120.0	0.0	0.0	1,613,226.33	2,287,975.59	39° 29' 23.765 N	108° 1' 23.601 W	
Start Build 2.25										
564.4	10.00	300.00	562.2	19.3	-33.5	1,613,246.60	2,287,942.64	39° 29' 23.956 N	108° 1' 24.029 W	
Begin 2.25°/100 Build & Turn										
1,493.2	30.33	316.15	1,429.9	231.1	-268.4	1,613,464.83	2,287,713.72	39° 29' 26.049 N	108° 1' 27.025 W	
Hold 30.33 Inclination										
2,121.2	30.33	316.15	1,972.0	459.9	-488.1	1,613,699.58	2,287,500.45	39° 29' 28.310 N	108° 1' 29.828 W	
Top of "G" Sand										
2,237.1	30.33	316.15	2,072.0	502.1	-528.7	1,613,742.89	2,287,461.10	39° 29' 28.727 N	108° 1' 30.345 W	
Base of "G" Sand										
2,352.9	30.33	316.15	2,172.0	544.3	-569.2	1,613,786.19	2,287,421.76	39° 29' 29.144 N	108° 1' 30.862 W	
9 5/8"										
4,435.6	30.33	316.15	3,969.6	1,302.8	-1,297.8	1,614,564.65	2,286,714.52	39° 29' 36.640 N	108° 1' 40.156 W	
Begin 1.5°/100 Drop										
4,513.3	29.17	316.15	4,037.0	1,330.6	-1,324.5	1,614,593.18	2,286,688.60	39° 29' 36.915 N	108° 1' 40.497 W	
Mesaverde										
5,924.5	8.00	316.15	5,367.0	1,653.1	-1,634.3	1,614,924.14	2,286,387.91	39° 29' 40.102 N	108° 1' 44.448 W	
Top Gas - Approx. Top Gas										
6,457.8	0.00	0.00	5,898.6	1,679.9	-1,660.0	1,614,951.65	2,286,362.91	39° 29' 40.367 N	108° 1' 44.777 W	
Vertical										
7,371.2	0.00	0.00	6,812.0	1,679.9	-1,660.0	1,614,951.65	2,286,362.91	39° 29' 40.367 N	108° 1' 44.777 W	
Cameo Coals										
7,926.2	0.00	0.00	7,367.0	1,679.9	-1,660.0	1,614,951.65	2,286,362.91	39° 29' 40.367 N	108° 1' 44.777 W	
Rollins SS										
8,076.2	0.00	0.00	7,517.0	1,679.9	-1,660.0	1,614,951.65	2,286,362.91	39° 29' 40.367 N	108° 1' 44.777 W	
TD at 8076.2 - 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/	0.00	0.00	5,367.0	1,667.1	-1,647.4	1,614,938.50	2,286,375.20	39° 29' 40.241 N	108° 1' 44.616 W	
- plan misses target center by 19.0usft at 5925.8usft MD (5368.3 TVD, 1653.3 N, -1634.4 E)										
- Circle (radius 25.0)										
Top Gas (25' Radius) P/	0.00	0.00	5,367.0	1,667.1	-1,647.4	1,614,938.50	2,286,375.20	39° 29' 40.241 N	108° 1' 44.616 W	
- plan misses target center by 19.0usft at 5925.8usft MD (5368.3 TVD, 1653.3 N, -1634.4 E)										
- Circle (radius 25.0)										
TD / PBHL PA 413-29	0.00	0.00	7,517.0	1,667.1	-1,647.4	1,614,938.50	2,286,375.20	39° 29' 40.241 N	108° 1' 44.616 W	
- plan misses target center by 18.0usft at 8076.2usft MD (7517.0 TVD, 1679.9 N, -1660.0 E)										
- Point										
TD / PBHL PA 413-29 (c	0.00	0.00	7,517.0	1,667.1	-1,647.4	1,614,938.50	2,286,375.20	39° 29' 40.241 N	108° 1' 44.616 W	
- plan misses target center by 18.0usft at 8076.2usft MD (7517.0 TVD, 1679.9 N, -1660.0 E)										
- Point										

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<b>Company:</b>	PICEANCE VLY NAD 83	<b>TVD Reference:</b>	WELL @ 5702.0usft (Nabors 577 (26') kjs)
<b>Project:</b>	PA 29-06S-095W	<b>MD Reference:</b>	WELL @ 5702.0usft (Nabors 577 (26') kjs)
<b>Site:</b>	DOE 3-W-29 Pad	<b>North Reference:</b>	True
<b>Well:</b>	PA 413-29	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Plan #2 27Jan10 kjs		

Casing Points					
Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (in)	Hole Diameter (in)	
2,352.9	2,172.0	9 5/8"	9.625	12.250	

Formations						
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
2,121.2	1,972.0	Top of "G" Sand				
2,237.1	2,072.0	Base of "G" Sand				
4,513.3	4,037.0	Mesaverde				
5,924.5	5,367.0	Approx. Top Gas				
7,371.2	6,812.0	Cameo Coals				
7,926.2	7,367.0	Rollins SS				
8,076.2	7,517.0	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 2.25	
564.4	562.2	19.3	-33.5	Begin 2.25°/100 Build & Turn	
1,493.2	1,429.9	231.1	-268.4	Hold 30.33 Inclination	
4,435.6	3,969.6	1,302.8	-1,297.8	Begin 1.5°/100 Drop	
5,924.5	5,367.0	1,653.1	-1,634.3	Top Gas	
6,457.8	5,898.6	1,679.9	-1,660.0	Vertical	
8,076.2	7,517.0	1,679.9	-1,660.0	TD at 8076.2	