

# **PICEANCE VLY NAD 83**

**PA 20-06S-095W**

**DOE 1-W-20 Pad**

**PA 521-29 - Slot B10**

**Wellbore #1**

**Plan: Plan #2 01Oct10 kjs**

## **Standard Planning Report - Geographic**

**18 November, 2010**

**Williams**  
Planning Report - Geographic

<b>Database:</b>	Compass R5000 WIN AUTH	<b>Local Co-ordinate Reference:</b>	Well PA 521-29 - Slot B10
<b>Company:</b>	PICEANCE VLY NAD 83	<b>TVD Reference:</b>	KELLYBUSHING @ 6256.0usft (SSD 577 (26' RKB) kjs)
<b>Project:</b>	PA 20-06S-095W	<b>MD Reference:</b>	KELLYBUSHING @ 6256.0usft (SSD 577 (26' RKB) kjs)
<b>Site:</b>	DOE 1-W-20 Pad	<b>North Reference:</b>	True
<b>Well:</b>	PA 521-29	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Plan #2 01Oct10 kjs		

<b>Project</b>	PA 20-06S-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		

Site		DOE 1-W-20 Pad			
Site Position:		Northing:	1,618,275.70 usft	Latitude:	39° 30' 14.005 N
From:	Map	Easting:	2,289,265.87 usft	Longitude:	108° 1' 8.935 W
Position Uncertainty:	0.0 usft	Slot Radius:	13.200 in	Grid Convergence:	-1.589 °

Well	PA 521-29 - Slot B10					
Well Position	+N/-S	0.0 usft	Northing:	1,618,271.80 usft	Latitude:	39° 30' 13.969 N
	+E/-W	0.0 usft	Easting:	2,289,275.10 usft	Longitude:	108° 1' 8.816 W
Position Uncertainty		0.0 usft	Wellhead Elevation:		Ground Level:	6,230.0 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	4/22/2010	10.511	65.772	52,365

<b>Design</b>	Plan #2 01Oct10 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	223.11

<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	
140.0	0.00	0.00	140.0	0.0	0.0	0.00	0.00	0.00	0.000	
490.0	7.00	190.00	489.1	-21.0	-3.7	2.00	2.00	0.00	190.000	
767.7	9.68	224.46	764.0	-54.4	-23.0	2.00	0.97	12.41	79.565	
5,577.7	9.68	224.46	5,505.5	-631.9	-589.7	0.00	0.00	0.00	0.000	
6,223.3	0.00	0.00	6,148.0	-670.7	-627.8	1.50	-1.50	0.00	180.000	
8,473.3	0.00	0.00	8,398.0	-670.7	-627.8	0.00	0.00	0.00	0.000	

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<b>Site:</b>	DOE 1-W-20 Pad	<b>North Reference:</b>	True
<b>Well:</b>	PA 521-29	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Plan #2 01Oct10 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	1,618,271.80	2,289,275.10	39° 30' 13.969 N	108° 1' 8.816 W	
140.0	0.00	0.00	140.0	0.0	0.0	1,618,271.80	2,289,275.10	39° 30' 13.969 N	108° 1' 8.816 W	
Start Build 2.00										
490.0	7.00	190.00	489.1	-21.0	-3.7	1,618,250.88	2,289,270.81	39° 30' 13.761 N	108° 1' 8.863 W	
Begin 2°/100 Build & Turn										
767.7	9.68	224.46	764.0	-54.4	-23.0	1,618,218.07	2,289,250.58	39° 30' 13.432 N	108° 1' 9.109 W	
Hold 9.68 Inclination										
2,799.6	9.68	224.46	2,767.0	-298.3	-262.4	1,617,980.84	2,289,004.51	39° 30' 11.020 N	108° 1' 12.164 W	
Top of "G" Sand										
2,901.1	9.68	224.46	2,867.0	-310.5	-274.4	1,617,969.00	2,288,992.23	39° 30' 10.900 N	108° 1' 12.316 W	
Base of "G" Sand										
3,002.5	9.68	224.46	2,967.0	-322.7	-286.3	1,617,957.16	2,288,979.94	39° 30' 10.780 N	108° 1' 12.469 W	
9 5/8"										
4,946.2	9.68	224.46	4,883.0	-556.1	-515.3	1,617,730.24	2,288,744.56	39° 30' 8.473 N	108° 1' 15.390 W	
Mesaverde										
5,577.7	9.68	224.46	5,505.5	-631.9	-589.7	1,617,656.51	2,288,668.09	39° 30' 7.724 N	108° 1' 16.340 W	
Start Drop -1.50										
6,223.3	0.00	0.00	6,148.0	-670.7	-627.8	1,617,618.74	2,288,628.90	39° 30' 7.340 N	108° 1' 16.826 W	
Vertical										
6,323.3	0.00	0.00	6,248.0	-670.7	-627.8	1,617,618.74	2,288,628.90	39° 30' 7.340 N	108° 1' 16.826 W	
Top Gas - Approx. Top Gas										
7,643.3	0.00	0.00	7,568.0	-670.7	-627.8	1,617,618.74	2,288,628.90	39° 30' 7.340 N	108° 1' 16.826 W	
Cameo Coals										
8,323.3	0.00	0.00	8,248.0	-670.7	-627.8	1,617,618.74	2,288,628.90	39° 30' 7.340 N	108° 1' 16.826 W	
Rollins SS										
8,473.3	0.00	0.00	8,398.0	-670.7	-627.8	1,617,618.74	2,288,628.90	39° 30' 7.340 N	108° 1' 16.826 W	
TD at 8473.3 - 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	6,248.0	-670.7	-627.8	1,617,618.80	2,288,628.90	39° 30' 7.340 N	108° 1' 16.826 W	
- plan misses target center by 0.1usft at 6323.3usft MD (6248.0 TVD, -670.7 N, -627.8 E)										
- Circle (radius 25.0)										
TD / PBHL PA 521-29	0.00	0.00	8,398.0	-670.7	-627.8	1,617,618.80	2,288,628.90	39° 30' 7.340 N	108° 1' 16.826 W	
- plan misses target center by 0.1usft at 8473.3usft MD (8398.0 TVD, -670.7 N, -627.8 E)										
- Point										

Casing Points					
Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (in)	Hole Diameter (in)	
3,002.5	2,967.0	9 5/8"	9.625	12.250	

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<b>Well:</b>	PA 521-29	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Plan #2 01Oct10 kjs		

Formations						
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
2,799.6	2,767.0	Top of "G" Sand				
2,901.1	2,867.0	Base of "G" Sand				
4,946.2	4,883.0	Mesaverde				
6,323.3	6,248.0	Approx. Top Gas				
7,643.3	7,568.0	Cameo Coals				
8,323.3	8,248.0	Rollins SS				
8,473.3	8,398.0	TD				

Plan Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates			
		+N/-S (usft)	+E/-W (usft)	Comment	
140.0	140.0	0.0	0.0	Start Build 2.00	
490.0	489.1	-21.0	-3.7	Begin 2°/100 Build & Turn	
767.7	764.0	-54.4	-23.0	Hold 9.68 Inclination	
5,577.7	5,505.5	-631.9	-589.7	Start Drop -1.50	
6,223.3	6,148.0	-670.7	-627.8	Vertical	
6,323.3	6,248.0	-670.7	-627.8	Top Gas	
8,473.3	8,398.0	-670.7	-627.8	TD at 8473.3	