

# **PICEANCE HL NAD 83**

**RG 14-02S-098W**

**RG 23-14-298 Pad**

**Federal RG 324-14-298 - Slot A4**

**Wellbore #1**

**Plan: Plan #2 15Mar10 kjs**

## **Standard Planning Report - Geographic**

**02 April, 2010**

**Williams**  
Planning Report - Geographic

<b>Database:</b>	Compass R5000 WIN AUTH	<b>Local Co-ordinate Reference:</b>	Well Federal RG 324-14-298 (A4) - Slot A4
<b>Company:</b>	PICEANCE HL NAD 83	<b>TVD Reference:</b>	KELLY BUSHING @ 6621.0usft (Cyclone 29 (21' RKB) jib)
<b>Project:</b>	RG 14-02S-098W	<b>MD Reference:</b>	KELLY BUSHING @ 6621.0usft (Cyclone 29 (21' RKB) jib)
<b>Site:</b>	RG 23-14-298 Pad	<b>North Reference:</b>	True
<b>Well:</b>	Federal RG 324-14-298	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Plan #2 15Mar10 kjs		

<b>Project</b>	RG 14-02S-098W, Rio Blanco County, CO, RG 14-02S-098W		
<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		RG 23-14-298 Pad			
Site Position:		Northing:	1,755,786.50 usft	Latitude:	39° 52' 25.242 N
From:	Map	Easting:	2,196,402.80 usft	Longitude:	108° 21' 48.415 W
Position Uncertainty:	0.0 usft	Slot Radius:	13.200 in	Grid Convergence:	-1.806 °

Well	Federal RG 324-14-298 - Slot A4					
Well Position	+N/-S	0.0 usft	Northing:	1,755,768.20 usft	Latitude:	39° 52' 25.053 N
	+E/-W	0.0 usft	Easting:	2,196,377.10 usft	Longitude:	108° 21' 48.737 W
Position Uncertainty		0.0 usft	Wellhead Elevation:		Ground Level:	6,600.0 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>
	IGRF2005-10	7/16/2009	10.793	66.043	52,621

<b>Design</b>	Plan #2 15Mar10 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	135.38

<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	
218.6	1.97	135.38	218.6	-1.2	1.2	2.00	2.00	0.00	135.379	
6,353.2	1.97	135.38	6,349.5	-151.5	149.5	0.00	0.00	0.00	0.000	
6,484.7	0.00	0.00	6,481.0	-153.1	151.1	1.50	-1.50	0.00	180.000	Mesaverde (25' Radiu
10,904.7	0.00	0.00	10,901.0	-153.1	151.1	0.00	0.00	0.00	0.000	

**Williams**  
Planning Report - Geographic

<b>Database:</b>	Compass R5000 WIN AUTH	<b>Local Co-ordinate Reference:</b>	Well Federal RG 324-14-298 (A4) - Slot A4
<b>Company:</b>	PICEANCE HL NAD 83	<b>TVD Reference:</b>	KELLY BUSHING @ 6621.0usft (Cyclone 29 (21' RKB) jjb)
<b>Project:</b>	RG 14-02S-098W	<b>MD Reference:</b>	KELLY BUSHING @ 6621.0usft (Cyclone 29 (21' RKB) jjb)
<b>Site:</b>	RG 23-14-298 Pad	<b>North Reference:</b>	True
<b>Well:</b>	Federal RG 324-14-298	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Plan #2 15Mar10 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	1,755,768.20	2,196,377.10	39° 52' 25.053 N	108° 21' 48.737 W
120.0	0.00	0.00	120.0	0.0	0.0	1,755,768.20	2,196,377.10	39° 52' 25.053 N	108° 21' 48.737 W
218.6	1.97	135.38	218.6	-1.2	1.2	1,755,766.95	2,196,378.25	39° 52' 25.041 N	108° 21' 48.722 W
6,353.2	1.97	135.38	6,349.5	-151.5	149.5	1,755,612.06	2,196,521.76	39° 52' 23.556 N	108° 21' 46.820 W
6,484.7	0.00	0.00	6,481.0	-153.1	151.1	1,755,610.40	2,196,523.30	39° 52' 23.540 N	108° 21' 46.799 W
10,904.7	0.00	0.00	10,901.0	-153.1	151.1	1,755,610.40	2,196,523.30	39° 52' 23.540 N	108° 21' 46.799 W

Design Targets									
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
- hit/miss target									
- Shape									
Mesaverde (50' Radius)	0.00	0.00	6,481.0	-153.1	151.1	1,755,610.40	2,196,523.30	39° 52' 23.540 N	108° 21' 46.799 W
- plan hits target center									
- Circle (radius 50.0)									
Mesaverde (25' Radius)	0.00	0.00	6,481.0	-153.1	151.1	1,755,610.40	2,196,523.30	39° 52' 23.540 N	108° 21' 46.799 W
- plan hits target center									
- Circle (radius 25.0)									

Casing Points					
Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (in)	Hole Diameter (in)	
2,982.0	2,980.3	9 5/8"	9.625	14.750	

**Williams**  
Planning Report - Geographic

<b>Database:</b>	Compass R5000 WIN AUTH	<b>Local Co-ordinate Reference:</b>	Well Federal RG 324-14-298 (A4) - Slot A4
<b>Company:</b>	PICEANCE HL NAD 83	<b>TVD Reference:</b>	KELLY BUSHING @ 6621.0usft (Cyclone 29 (21' RKB) jjb)
<b>Project:</b>	RG 14-02S-098W	<b>MD Reference:</b>	KELLY BUSHING @ 6621.0usft (Cyclone 29 (21' RKB) jjb)
<b>Site:</b>	RG 23-14-298 Pad	<b>North Reference:</b>	True
<b>Well:</b>	Federal RG 324-14-298	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Plan #2 15Mar10 kjs		

Formations						
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
751.3	751.0	Green River		0.000		
891.4	891.0	A Groove		0.000		
1,076.5	1,076.0	B Groove		0.000		
1,391.7	1,391.0	Dissolution Surface		0.000		
2,087.1	2,086.0	Garden Gulch		0.000		
2,272.2	2,271.0	Orange Marker		0.000		
2,482.4	2,481.0	Wasatch		0.000		
4,373.5	4,371.0	G' Sand		0.000		
4,643.6	4,641.0	Ft. Union		0.000		
5,954.4	5,951.0	Ohio Creek		0.000		
6,484.7	6,481.0	Mesaverde		0.000		
7,184.7	7,181.0	Approx Top of Gas		0.000		
9,304.7	9,301.0	Cameo Coals		0.000		
9,704.7	9,701.0	Rollins SS		0.000		
9,834.7	9,831.0	Cozzette		0.000		
10,064.7	10,061.0	Corcoran		0.000		
10,409.7	10,406.0	Upper Sego		0.000		
10,654.7	10,651.0	Lower Sego		0.000		
10,904.7	10,901.0	TD		0.000		

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 2.00	
218.6	218.6	-1.2	1.2	Hold 1.97 Inc	
6,353.2	6,349.5	-151.5	149.5	Start Drop -1.50	
6,484.7	6,481.0	-153.1	151.1	Vertical	
10,904.7	10,901.0	-153.1	151.1	TD at 10905	