

# **PICEANCE HL NAD 83**

**RG 25-01S-098W**

**RGU 24-25-198 Pad**

**Federal RGU 321-36-198 - Slot B9**

**Federal RGU 321-36-198**

**Plan: Plan #2 28Mar11 kjs**

## **Standard Planning Report - Geographic**

**28 March, 2011**

**Williams**  
Planning Report - Geographic

<b>Database:</b>	Compass R5000 WIN AUTH	<b>Local Co-ordinate Reference:</b>	Well Federal RGU 321-36-198 - Slot B9
<b>Company:</b>	PICEANCE HL NAD 83	<b>TVD Reference:</b>	KELLY BUSHING @ 6707.0usft (Frontier 10 (22' RKB) kjs)
<b>Project:</b>	RG 25-01S-098W	<b>MD Reference:</b>	KELLY BUSHING @ 6707.0usft (Frontier 10 (22' RKB) kjs)
<b>Site:</b>	RGU 24-25-198 Pad	<b>North Reference:</b>	True
<b>Well:</b>	Federal RGU 321-36-198	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Federal RGU 321-36-198		
<b>Design:</b>	Plan #2 28Mar11 kjs		

<b>Project</b>	RG 25-01S-098W, Rio Blanco County, CO, RG 25-01S-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

<b>Site</b>	RGU 24-25-198 Pad		
<b>Site Position:</b>		<b>Northing:</b>	1,775,437.60 usft
<b>From:</b>	Map	<b>Easting:</b>	2,201,845.00 usft
<b>Position Uncertainty:</b>	0.0 usft	<b>Slot Radius:</b>	0.000 in
		<b>Latitude:</b>	39° 55' 41.031 N
		<b>Longitude:</b>	108° 20' 46.545 W
		<b>Grid Convergence:</b>	-1.795 °

Well	Federal RGU 321-36-198 - Slot B9					
Well Position	+N/-S	0.0 usft	Northing:	1,775,404.30 usft	Latitude:	39° 55' 40.702 N
	+E/-W	0.0 usft	Easting:	2,201,843.00 usft	Longitude:	108° 20' 46.557 W
Position Uncertainty		0.0 usft	Wellhead Elevation:		Ground Level:	6,685.0 usft

<b>Wellbore</b>	Federal RGU 321-36-198				
<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	3/21/2007	11.099	66.150	52,878

<b>Design</b>	Plan #2 28Mar11 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	139.20

<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	
422.2	6.04	139.20	421.6	-12.1	10.4	2.00	2.00	0.00	139.202	
7,243.3	6.04	139.20	7,204.8	-555.7	479.7	0.00	0.00	0.00	0.000	
7,646.2	0.00	0.00	7,607.0	-571.8	493.5	1.50	-1.50	0.00	180.000	
7,746.2	0.00	0.00	7,707.0	-571.8	493.5	0.00	0.00	0.00	0.000	Mesaverde (25' Radiu
12,656.2	0.00	0.00	12,617.0	-571.8	493.5	0.00	0.00	0.00	0.000	

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Planning Report - Geographic

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<b>Company:</b>	PICEANCE HL NAD 83	<b>TVD Reference:</b>	KELLY BUSHING @ 6707.0usft (Frontier 10 (22' RKB) kjs)
<b>Project:</b>	RG 25-01S-098W	<b>MD Reference:</b>	KELLY BUSHING @ 6707.0usft (Frontier 10 (22' RKB) kjs)
<b>Site:</b>	RGU 24-25-198 Pad	<b>North Reference:</b>	True
<b>Well:</b>	Federal RGU 321-36-198	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Federal RGU 321-36-198		
<b>Design:</b>	Plan #2 28Mar11 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	1,775,404.30	2,201,843.00	39° 55' 40.702 N	108° 20' 46.557 W	
120.0	0.00	0.00	120.0	0.0	0.0	1,775,404.30	2,201,843.00	39° 55' 40.702 N	108° 20' 46.557 W	
<b>Start Build 2.00</b>										
422.2	6.04	139.20	421.6	-12.1	10.4	1,775,391.93	2,201,853.02	39° 55' 40.583 N	108° 20' 46.423 W	
<b>Hold 6.04 Inclination</b>										
1,292.4	6.04	139.20	1,287.0	-81.4	70.3	1,775,320.72	2,201,910.69	39° 55' 39.897 N	108° 20' 45.655 W	
<b>Green River Fm</b>										
1,468.4	6.04	139.20	1,462.0	-95.4	82.4	1,775,306.32	2,201,922.35	39° 55' 39.759 N	108° 20' 45.500 W	
<b>A Groove</b>										
1,674.5	6.04	139.20	1,667.0	-111.9	96.6	1,775,289.46	2,201,936.01	39° 55' 39.596 N	108° 20' 45.318 W	
<b>B Groove</b>										
1,966.1	6.04	139.20	1,957.0	-135.1	116.6	1,775,265.59	2,201,955.33	39° 55' 39.367 N	108° 20' 45.060 W	
<b>Dissolution Surface</b>										
3,017.0	6.04	139.20	3,002.0	-218.9	188.9	1,775,179.61	2,202,024.97	39° 55' 38.539 N	108° 20' 44.132 W	
<b>Garden Gulch</b>										
3,193.0	6.04	139.20	3,177.0	-232.9	201.0	1,775,165.21	2,202,036.63	39° 55' 38.400 N	108° 20' 43.977 W	
<b>Orange Marker</b>										
3,404.1	6.04	139.20	3,387.0	-249.7	215.5	1,775,147.93	2,202,050.63	39° 55' 38.234 N	108° 20' 43.790 W	
<b>Wasatch</b>										
3,904.0	6.04	139.20	3,884.1	-289.6	249.9	1,775,107.03	2,202,083.75	39° 55' 37.840 N	108° 20' 43.349 W	
<b>9 5/8"</b>										
5,732.1	6.04	139.20	5,702.0	-435.3	375.7	1,774,957.45	2,202,204.89	39° 55' 36.400 N	108° 20' 41.735 W	
<b>G' Sand</b>										
6,079.0	6.04	139.20	6,047.0	-462.9	399.6	1,774,929.07	2,202,227.88	39° 55' 36.127 N	108° 20' 41.428 W	
<b>Ft. Union</b>										
7,243.3	6.04	139.20	7,204.8	-555.7	479.7	1,774,833.80	2,202,305.04	39° 55' 35.210 N	108° 20' 40.400 W	
<b>Start Drop -1.50</b>										
7,496.2	2.25	139.20	7,457.0	-569.6	491.6	1,774,819.59	2,202,316.54	39° 55' 35.073 N	108° 20' 40.247 W	
<b>Ohio Creek</b>										
7,646.2	0.00	0.00	7,607.0	-571.8	493.5	1,774,817.30	2,202,318.40	39° 55' 35.051 N	108° 20' 40.222 W	
<b>Vertical</b>										
7,746.2	0.00	0.00	7,707.0	-571.8	493.5	1,774,817.30	2,202,318.40	39° 55' 35.051 N	108° 20' 40.222 W	
<b>Mesaverde - Mesaverde</b>										
9,346.2	0.00	0.00	9,307.0	-571.8	493.5	1,774,817.30	2,202,318.40	39° 55' 35.051 N	108° 20' 40.222 W	
<b>Top Gas</b>										
10,881.2	0.00	0.00	10,842.0	-571.8	493.5	1,774,817.30	2,202,318.40	39° 55' 35.051 N	108° 20' 40.222 W	
<b>Cameo Coals</b>										
11,426.2	0.00	0.00	11,387.0	-571.8	493.5	1,774,817.30	2,202,318.40	39° 55' 35.051 N	108° 20' 40.222 W	
<b>Rollins SS</b>										
11,561.2	0.00	0.00	11,522.0	-571.8	493.5	1,774,817.30	2,202,318.40	39° 55' 35.051 N	108° 20' 40.222 W	
<b>Cozzette</b>										
11,776.2	0.00	0.00	11,737.0	-571.8	493.5	1,774,817.30	2,202,318.40	39° 55' 35.051 N	108° 20' 40.222 W	
<b>Corcoran</b>										
12,176.2	0.00	0.00	12,137.0	-571.8	493.5	1,774,817.30	2,202,318.40	39° 55' 35.051 N	108° 20' 40.222 W	
<b>Upper Sego</b>										
12,406.2	0.00	0.00	12,367.0	-571.8	493.5	1,774,817.30	2,202,318.40	39° 55' 35.051 N	108° 20' 40.222 W	
<b>Lower Sego</b>										
12,656.2	0.00	0.00	12,617.0	-571.8	493.5	1,774,817.30	2,202,318.40	39° 55' 35.051 N	108° 20' 40.222 W	
<b>TD at 12656.2 - TD</b>										

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Planning Report - Geographic

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<b>Project:</b>	RG 25-01S-098W	<b>MD Reference:</b>	KELLY BUSHING @ 6707.0usft (Frontier 10 (22' RKB) kjs)
<b>Site:</b>	RGU 24-25-198 Pad	<b>North Reference:</b>	True
<b>Well:</b>	Federal RGU 321-36-198	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Federal RGU 321-36-198		
<b>Design:</b>	Plan #2 28Mar11 kjs		

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
Mesaverde (25' Radius) - plan hits target center - Circle (radius 25.0)	0.00	0.00	7,707.0	-571.8	493.5	1,774,817.30	2,202,318.40	39° 55' 35.051 N	108° 20' 40.222 W

Casing Points					
Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (in)	Hole Diameter (in)	
3,904.0	3,884.1	9 5/8"	9.625	12.250	

Formations						
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
1,292.4	1,287.0	Green River Fm				
1,468.4	1,462.0	A Groove				
1,674.5	1,667.0	B Groove				
1,966.1	1,957.0	Dissolution Surface				
3,017.0	3,002.0	Garden Gulch				
3,193.0	3,177.0	Orange Marker				
3,404.1	3,387.0	Wasatch				
5,732.1	5,702.0	G' Sand				
6,079.0	6,047.0	Ft. Union				
7,496.2	7,457.0	Ohio Creek				
7,746.2	7,707.0	Mesaverde				
9,346.2	9,307.0	Top Gas				
10,881.2	10,842.0	Cameo Coals				
11,426.2	11,387.0	Rollins SS				
11,561.2	11,522.0	Cozzette				
11,776.2	11,737.0	Corcoran				
12,176.2	12,137.0	Upper Sego				
12,406.2	12,367.0	Lower Sego				
12,656.2	12,617.0	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	
422.2	421.6	-12.1	10.4	Hold 6.04 Inclination	
7,243.3	7,204.8	-555.7	479.7	Start Drop -1.50	
7,646.2	7,607.0	-571.8	493.5	Vertical	
7,746.2	7,707.0	-571.8	493.5	Mesaverde	
12,656.2	12,617.0	-571.8	493.5	TD at 12656.2	