

# **PICEANCE HL NAD 83**

**RG 24-01S-098W**

**RGU 31-24-198 Pad**

**Federal RGU 21-24-198 - Slot B1**

**Wellbore #1**

**Plan: Plan #1 09Jan09 kjs**

## **Standard Planning Report - Geographic**

**06 April, 2010**

**Williams**  
Planning Report - Geographic

<b>Database:</b>	Compass R5000 WIN AUTH	<b>Local Co-ordinate Reference:</b>	Well Federal RGU 21-24-198 (B1) - Slot B1
<b>Company:</b>	PICEANCE HL NAD 83	<b>TVD Reference:</b>	KELLY BUSHING @ 6565.0usft (Cyclone 29 (21' RKB) jib)
<b>Project:</b>	RG 24-01S-098W	<b>MD Reference:</b>	KELLY BUSHING @ 6565.0usft (Cyclone 29 (21' RKB) jib)
<b>Site:</b>	RGU 31-24-198 Pad	<b>North Reference:</b>	True
<b>Well:</b>	Federal RGU 21-24-198	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Plan #1 09Jan09 kjs		

<b>Project</b>	RG 24-01S-098W, Rio Blanco County, CO, RG 24-01S-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		

Site		RGU 31-24-198 Pad				
Site Position:		Northing:	1,784,364.83 usft	Latitude:	39° 57' 9.910 N	
From:	Map	Easting:	2,204,117.18 usft	Longitude:	108° 20' 20.975 W	
Position Uncertainty:		0.0 usft	Slot Radius:	0.000 in	Grid Convergence:	-1.791 °

Well	Federal RGU 21-24-198 - Slot B1					
Well Position	+N/-S	0.0 usft	Northing:	1,784,382.40 usft	Latitude:	39° 57' 10.029 N
	+E/-W	0.0 usft	Easting:	2,203,942.60 usft	Longitude:	108° 20' 23.222 W
Position Uncertainty		0.0 usft	Wellhead Elevation:		Ground Level:	6,544.0 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>
	IGRF200510	1/8/2009	10.862	66.126	52,718

<b>Design</b>	Plan #1 09Jan09 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	309.64

<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	
837.9	14.36	309.64	830.4	57.1	-68.9	2.00	2.00	0.00	309.636	
7,069.9	14.36	309.64	6,867.8	1,042.9	-1,259.1	0.00	0.00	0.00	0.000	
8,027.1	0.00	0.00	7,815.0	1,119.0	-1,350.9	1.50	-1.50	0.00	180.000	Mesaverde (25' Radiu
12,927.1	0.00	0.00	12,715.0	1,119.0	-1,350.9	0.00	0.00	0.00	0.000	

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<b>Project:</b>	RG 24-01S-098W	<b>MD Reference:</b>	KELLY BUSHING @ 6565.0usft (Cyclone 29 (21' RKB) jjb)
<b>Site:</b>	RGU 31-24-198 Pad	<b>North Reference:</b>	True
<b>Well:</b>	Federal RGU 21-24-198	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Plan #1 09Jan09 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	1,784,382.40	2,203,942.60	39° 57' 10.029 N	108° 20' 23.222 W
120.0	0.00	0.00	120.0	0.0	0.0	1,784,382.40	2,203,942.60	39° 57' 10.029 N	108° 20' 23.222 W
837.9	14.36	309.64	830.4	57.1	-68.9	1,784,441.61	2,203,875.51	39° 57' 10.594 N	108° 20' 24.107 W
7,069.9	14.36	309.64	6,867.8	1,042.9	-1,259.1	1,785,464.16	2,202,716.76	39° 57' 20.335 N	108° 20' 39.389 W
8,027.1	0.00	0.00	7,815.0	1,119.0	-1,350.9	1,785,543.10	2,202,627.30	39° 57' 21.087 N	108° 20' 40.569 W
12,927.1	0.00	0.00	12,715.0	1,119.0	-1,350.9	1,785,543.10	2,202,627.30	39° 57' 21.087 N	108° 20' 40.569 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	7,815.0	1,119.0	-1,350.9	1,785,543.10	2,202,627.30	39° 57' 21.087 N	108° 20' 40.569 W
- plan hits target center									
- Circle (radius 50.0)									
Mesaverde (25' Radius)	0.00	0.00	7,815.0	1,119.0	-1,350.9	1,785,543.10	2,202,627.30	39° 57' 21.087 N	108° 20' 40.569 W
- plan hits target center									
- Circle (radius 25.0)									

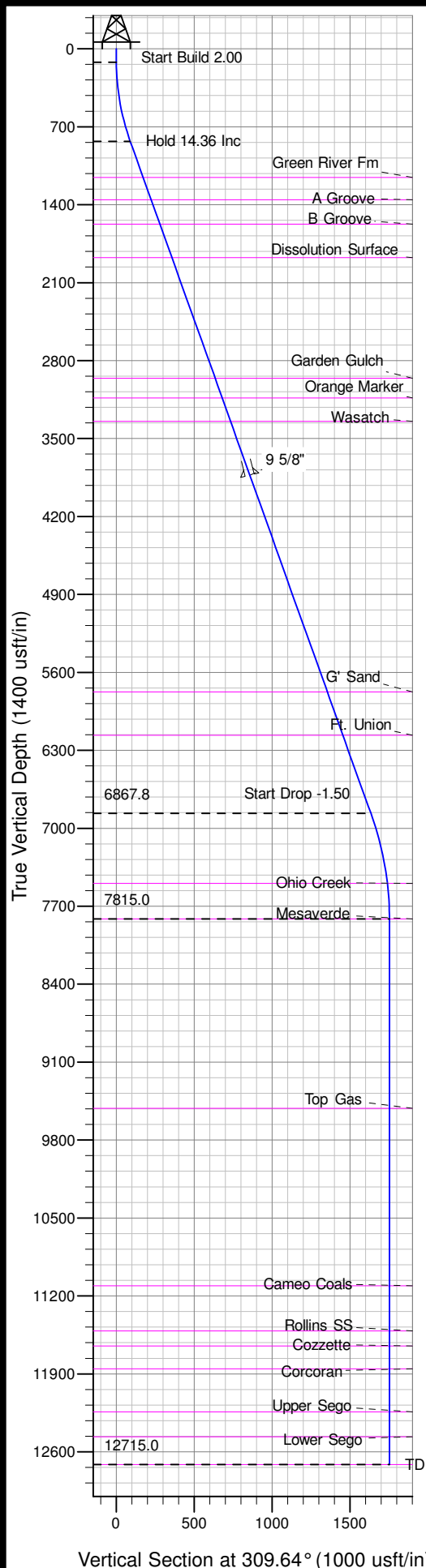
Casing Points					
Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (in)	Hole Diameter (in)	
3,934.0	3,829.8	9 5/8"	9.625	13.500	

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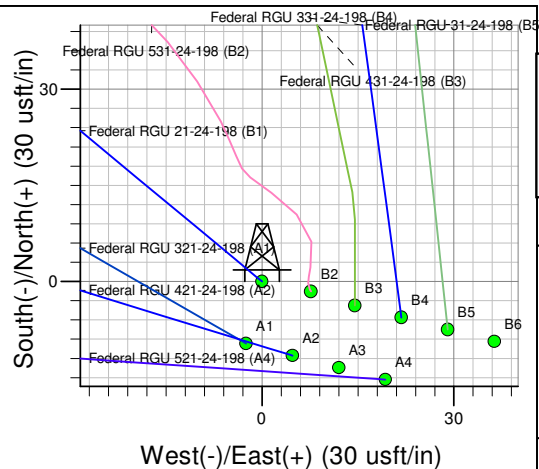
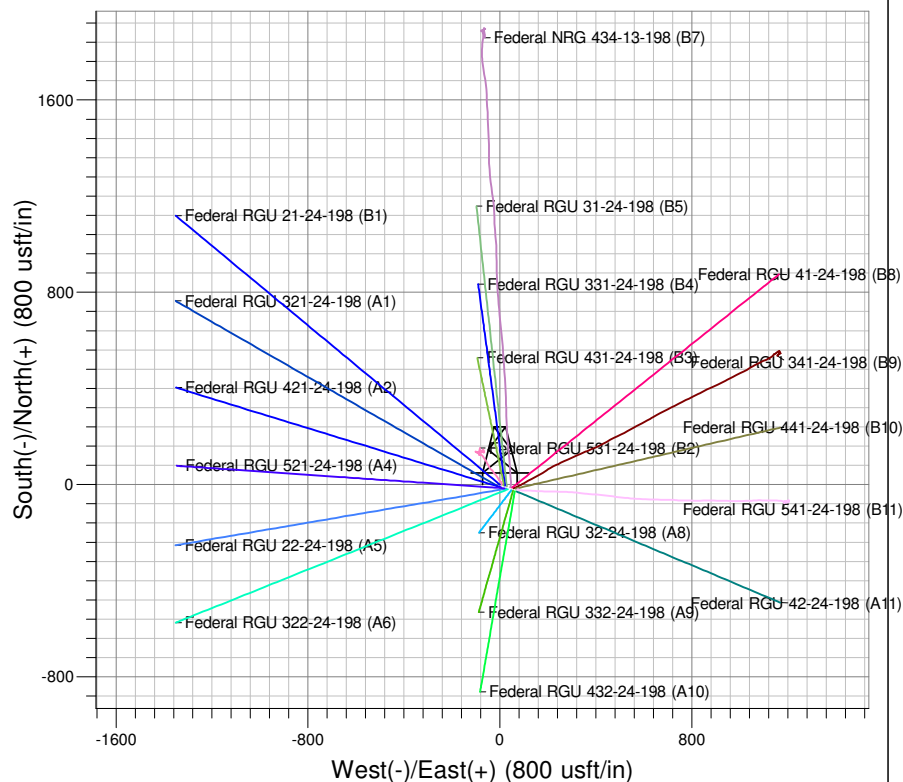
<b>Database:</b>	Compass R5000 WIN AUTH	<b>Local Co-ordinate Reference:</b>	Well Federal RGU 21-24-198 (B1) - Slot B1
<b>Company:</b>	PICEANCE HL NAD 83	<b>TVD Reference:</b>	KELLY BUSHING @ 6565.0usft (Cyclone 29 (21' RKB) jjb)
<b>Project:</b>	RG 24-01S-098W	<b>MD Reference:</b>	KELLY BUSHING @ 6565.0usft (Cyclone 29 (21' RKB) jjb)
<b>Site:</b>	RGU 31-24-198 Pad	<b>North Reference:</b>	True
<b>Well:</b>	Federal RGU 21-24-198	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Plan #1 09Jan09 kjs		

Formations						
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
1,173.0	1,155.0	Green River Fm				
1,379.4	1,355.0	A Groove				
1,606.5	1,575.0	B Groove				
1,916.2	1,875.0	Dissolution Surface				
3,036.2	2,960.0	Garden Gulch				
3,216.8	3,135.0	Orange Marker				
3,433.6	3,345.0	Wasatch				
5,941.9	5,775.0	G' Sand				
6,344.5	6,165.0	Ft. Union				
7,706.8	7,495.0	Ohio Creek				
8,027.1	7,815.0	Mesaverde				
9,727.1	9,515.0	Top Gas				
11,322.1	11,110.0	Cameo Coals				
11,727.1	11,515.0	Rollins SS				
11,862.1	11,650.0	Cozzette				
12,067.1	11,855.0	Corcoran				
12,452.1	12,240.0	Upper Sego				
12,677.1	12,465.0	Lower Sego				
12,927.1	12,715.0	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 2.00
837.9	830.4	57.1	-68.9	Hold 14.36 Inc
7,069.9	6,867.8	1,042.9	-1,259.1	Start Drop -1.50
8,027.1	7,815.0	1,119.0	-1,350.9	Vertical
12,927.1	12,715.0	1,119.0	-1,350.9	TD at 12927



Well Name: Federal RGU 21-24-198  
 Surface Location: RGU 31-24-198 Pad  
 North American Datum 1983 US State Plane 1983 Colorado Central Zone  
 Ground Elevation: 6544.0  
 +N/-S +E/-W Northing Easting Latitude Longitude Slot  
 0.0 0.0 1784382.40 2203942.60 39° 57' 10.029 N 108° 20' 23.222 W B1  
 Cyclone 29 (21' RKB) jib BUSHING @ 6565.0usft (Cyclone 29 (21' RKB) jib)



Project: RG 24-01S-098W  
 Site: RGU 31-24-198 Pad  
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Azimuths to True North  
 Magnetic North: 10.86°  
 Magnetic Field  
 Strength: 52718.4snT  
 Dip Angle: 66.13°  
 Date: 1/8/2009  
 Model: IGRF200510

#### SECTION DETAILS

MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	V Sect	Target
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.000	0.0	
120.0	0.00	0.00	120.0	0.0	0.0	0.00	0.000	0.0	
837.9	14.36	309.64	830.4	57.1	-68.9	2.00	309.636	89.5	
7069.9	14.36	309.64	6867.8	1042.9	-1259.1	0.00	0.000	1634.9	
8027.1	0.00	0.00	7815.0	1119.0	-1350.9	1.50	180.000	1754.2	Mesaverde (25' Radius) Federal RGU 21-24-198
2927.1	0.00	0.00	12715.0	1119.0	-1350.9	0.00	0.000	1754.2	

TVD	MD	Inc	Azi	+N/-S	+E/-W	V Sect	Departure	Annotation
120.0	120.0	0.00	0.00	0.0	0.0	0.0	0.0	Start Build 2.00
830.4	837.9	14.36	309.64	57.1	-68.9	89.5	89.5	Hold 14.36 Inc
6867.8	7069.9	14.36	309.64	1042.9	-1259.1	1634.9	1634.9	Start Drop -1.50
7815.0	8027.1	0.00	0.00	1119.0	-1350.9	1754.2	1754.2	Vertical
12715.0	12927.1	0.00	0.00	1119.0	-1350.9	1754.2	1754.2	TD at 12927