



+N/-S  
0.0

+E/-W  
0.0

Northing  
1782424.70

Easting  
2197461.00

Latitude  
39° 56' 48.683 N

Longitude  
108° 21' 45.614 W

Slot  
B9

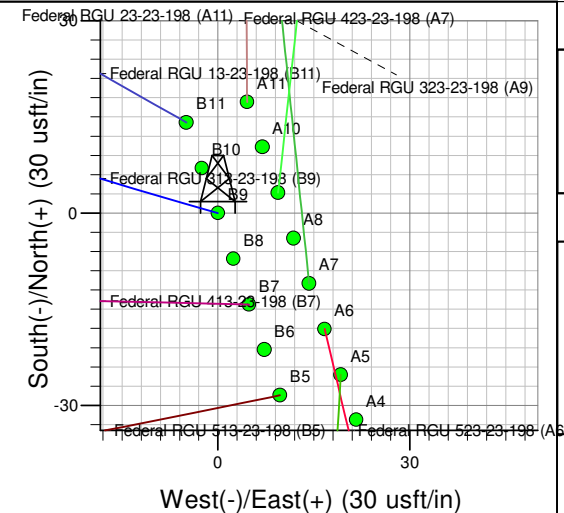
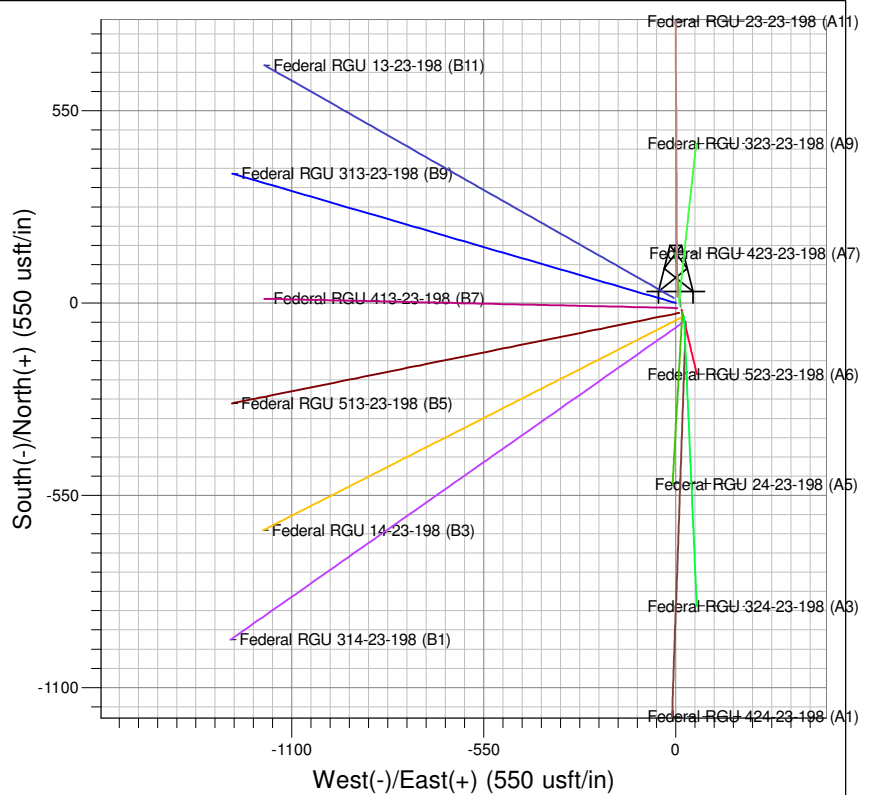
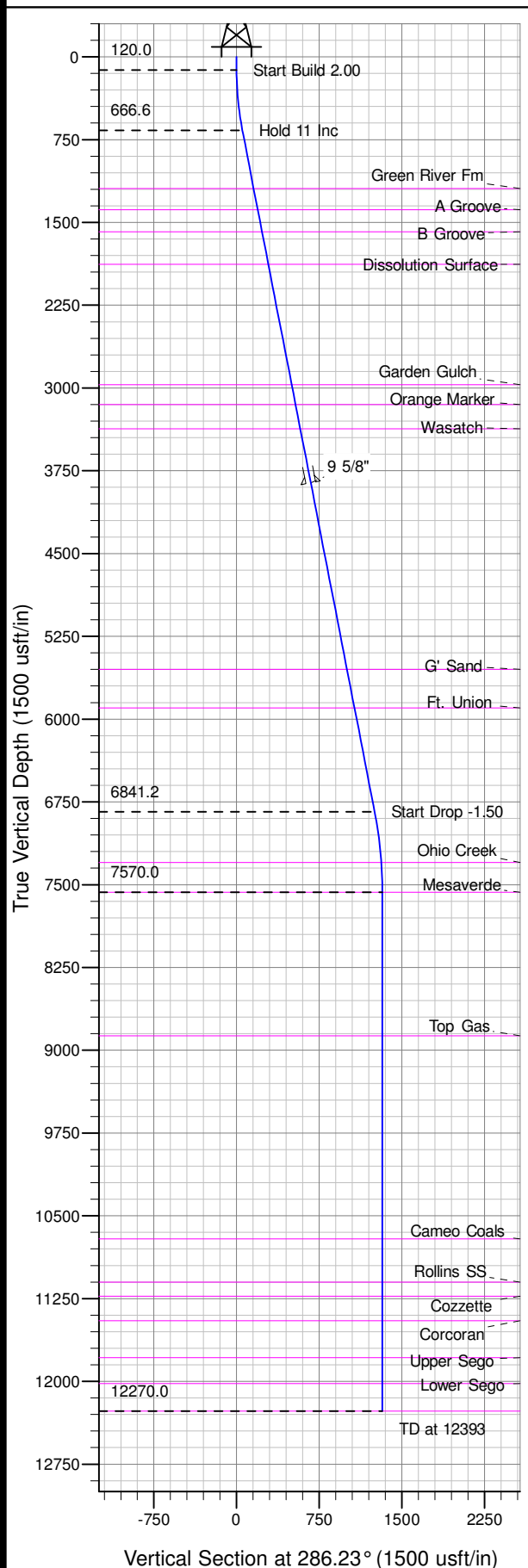
Well Name: Federal RGU 313-23-198

Surface Location: RGU 23-23-198 Pad

North American Datum 1983 , US State Plane 1983 , Colorado Central Zone

Ground Elevation: 6542.0

KELLY BUSHING @ 6570.0usft (Frontier 11 (28' RKB) jib)



Project: RG 23-01S-098W  
Site: RGU 23-23-198 Pad  
Well: Federal RGU 313-23-198  
Plan #1 10may10 jib

Azimuths to True North  
Magnetic North: 10.72°  
Magnetic Field  
Strength: 52552.7snT  
Dip Angle: 66.07°  
Date: 5/10/2010  
Model: IGRF2010

SECTION DETAILS										
Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect	Target
1	0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.000	0.0	
2	120.0	0.00	0.00	120.0	0.0	0.0	0.00	0.000	0.0	
3	670.0	11.00	286.23	666.6	14.7	-50.5	2.00	286.234	52.6	
4	6960.1	11.00	286.23	6841.2	350.2	-1202.9	0.00	0.000	1252.9	
5	7693.4	0.00	0.00	7570.0	369.9	-1270.3	1.50	180.000	1323.0	Mesaverde (25' Radius) Federal RGU 313-23-198
6	12393.4	0.00	0.00	12270.0	369.9	-1270.3	0.00	0.000	1323.0	

ANNOTATIONS										
	TVD	MD	Inc	Azi	+N/-S	+E/-W	VSect	Departure	Annotation	
	120.0	120.0	0.00	0.00	0.0	0.0	0.0	0.0	Start Build 2.00	
	666.6	670.0	11.00	286.23	14.7	-50.5	52.6	52.6	Hold 11 Inc	
	6841.2	6960.1	11.00	286.23	350.2	-1202.9	1252.9	1252.9	Start Drop -1.50	
	7570.0	7693.4	0.00	0.00	369.9	-1270.3	1323.0	1323.0	Vertical	
	12270.0	12393.4	0.00	0.00	369.9	-1270.3	1323.0	1323.0	TD at 12393	

# **PICEANCE HL NAD 83**

**RG 23-01S-098W**

**RGU 23-23-198 Pad**

**Federal RGU 313-23-198 - Slot B9**

**Wellbore #1**

**Plan: Plan #1 10may10 jjb**

## **Standard Planning Report - Geographic**

**13 July, 2010**

**Williams**  
Planning Report - Geographic

<b>Database:</b>	Compass R5000 WIN AUTH	<b>Local Co-ordinate Reference:</b>	Well Federal RGU 313-23-198 (B9) - Slot B9
<b>Company:</b>	PICEANCE HL NAD 83	<b>TVD Reference:</b>	KELLY BUSHING @ 6570.0usft (Frontier 11 (28' RKB) jjb)
<b>Project:</b>	RG 23-01S-098W	<b>MD Reference:</b>	KELLY BUSHING @ 6570.0usft (Frontier 11 (28' RKB) jjb)
<b>Site:</b>	RGU 23-23-198 Pad	<b>North Reference:</b>	True
<b>Well:</b>	Federal RGU 313-23-198	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Plan #1 10may10 jjb		

<b>Project</b>	RG 23-01S-098W, Rio Blanco 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		

<b>Site</b>	RGU 23-23-198 Pad		
<b>Site Position:</b>		<b>Northing:</b>	1,782,441.90 usft
<b>From:</b>	Map	<b>Easting:</b>	2,197,466.10 usft
<b>Position Uncertainty:</b>	0.0 usft	<b>Slot Radius:</b>	13.200 in
		<b>Latitude:</b>	39° 56' 48.855 N
		<b>Longitude:</b>	108° 21' 45.556 W
		<b>Grid Convergence:</b>	-1.805 °

<b>Well</b>	Federal RGU 313-23-198 - Slot B9		
<b>Well Position</b>	<b>+N/-S</b>	0.0 usft	<b>Northing:</b> 1,782,424.70 usft
	<b>+E/-W</b>	0.0 usft	<b>Easting:</b> 2,197,461.00 usft
<b>Position Uncertainty</b>	0.0 usft	<b>Wellhead Elevation:</b>	<b>Latitude:</b> 39° 56' 48.683 N
			<b>Longitude:</b> 108° 21' 45.614 W
			<b>Ground Level:</b> 6,542.0 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	5/10/2010	10.718	66.071	52,553

<b>Design</b>	Plan #1 10may10 jjb			
<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	286.23

<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	
670.0	11.00	286.23	666.6	14.7	-50.5	2.00	2.00	0.00	286.234	
6,960.1	11.00	286.23	6,841.2	350.2	-1,202.9	0.00	0.00	0.00	0.000	
7,693.4	0.00	0.00	7,570.0	369.9	-1,270.3	1.50	-1.50	0.00	180.000	Mesaverde (25' Radiu
12,393.4	0.00	0.00	12,270.0	369.9	-1,270.3	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 RGU 313-23-198 (B9) - Slot B9
<b>Company:</b>	PICEANCE HL NAD 83	<b>TVD Reference:</b>	KELLY BUSHING @ 6570.0usft (Frontier 11 (28' RKB) jjb)
<b>Project:</b>	RG 23-01S-098W	<b>MD Reference:</b>	KELLY BUSHING @ 6570.0usft (Frontier 11 (28' RKB) jjb)
<b>Site:</b>	RGU 23-23-198 Pad	<b>North Reference:</b>	True
<b>Well:</b>	Federal RGU 313-23-198	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Plan #1 10may10 jjb		

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	1,782,424.70	2,197,461.00	39° 56' 48.683 N	108° 21' 45.614 W
120.0	0.00	0.00	120.0	0.0	0.0	1,782,424.70	2,197,461.00	39° 56' 48.683 N	108° 21' 45.614 W
670.0	11.00	286.23	666.6	14.7	-50.5	1,782,441.00	2,197,410.95	39° 56' 48.829 N	108° 21' 46.263 W
6,960.1	11.00	286.23	6,841.2	350.2	-1,202.9	1,782,812.67	2,196,269.73	39° 56' 52.144 N	108° 22' 1.058 W
7,693.4	0.00	0.00	7,570.0	369.9	-1,270.3	1,782,834.40	2,196,203.00	39° 56' 52.338 N	108° 22' 1.924 W
12,393.4	0.00	0.00	12,270.0	369.9	-1,270.3	1,782,834.40	2,196,203.00	39° 56' 52.338 N	108° 22' 1.924 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	7,570.0	369.9	-1,270.3	1,782,834.40	2,196,203.00	39° 56' 52.338 N	108° 22' 1.924 W
- plan hits target center									
- Circle (radius 50.0)									
Mesaverde (25' Radius)	0.00	0.00	7,570.0	369.9	-1,270.3	1,782,834.40	2,196,203.00	39° 56' 52.338 N	108° 22' 1.924 W
- plan hits target center									
- Circle (radius 25.0)									

Casing Points					
Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (in)	Hole Diameter (in)	
3,924.0	3,860.8	9 5/8"	9.625	13.500	

**Williams**  
Planning Report - Geographic

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<b>Company:</b>	PICEANCE HL NAD 83	<b>TVD Reference:</b>	KELLY BUSHING @ 6570.0usft (Frontier 11 (28' RKB) jjb)
<b>Project:</b>	RG 23-01S-098W	<b>MD Reference:</b>	KELLY BUSHING @ 6570.0usft (Frontier 11 (28' RKB) jjb)
<b>Site:</b>	RGU 23-23-198 Pad	<b>North Reference:</b>	True
<b>Well:</b>	Federal RGU 313-23-198	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Plan #1 10may10 jjb		

Formations						
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
1,208.3	1,195.0	Green River Fm				
1,401.8	1,385.0	A Groove				
1,605.6	1,585.0	B Groove				
1,906.1	1,880.0	Dissolution Surface				
3,016.5	2,970.0	Garden Gulch				
3,199.9	3,150.0	Orange Marker				
3,424.0	3,370.0	Wasatch				
5,644.8	5,550.0	G' Sand				
6,001.3	5,900.0	Ft. Union				
7,423.2	7,300.0	Ohio Creek				
7,693.4	7,570.0	Mesaverde				
8,993.4	8,870.0	Top Gas				
10,833.4	10,710.0	Cameo Coals				
11,223.4	11,100.0	Rollins SS				
11,353.4	11,230.0	Cozzette				
11,573.4	11,450.0	Corcoran				
11,908.4	11,785.0	Upper Sego				
12,143.4	12,020.0	Lower Sego				
12,393.4	12,270.0	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	
670.0	666.6	14.7	-50.5	Hold 11 Inc	
6,960.1	6,841.2	350.2	-1,202.9	Start Drop -1.50	
7,693.4	7,570.0	369.9	-1,270.3	Vertical	
12,393.4	12,270.0	369.9	-1,270.3	TD at 12393	