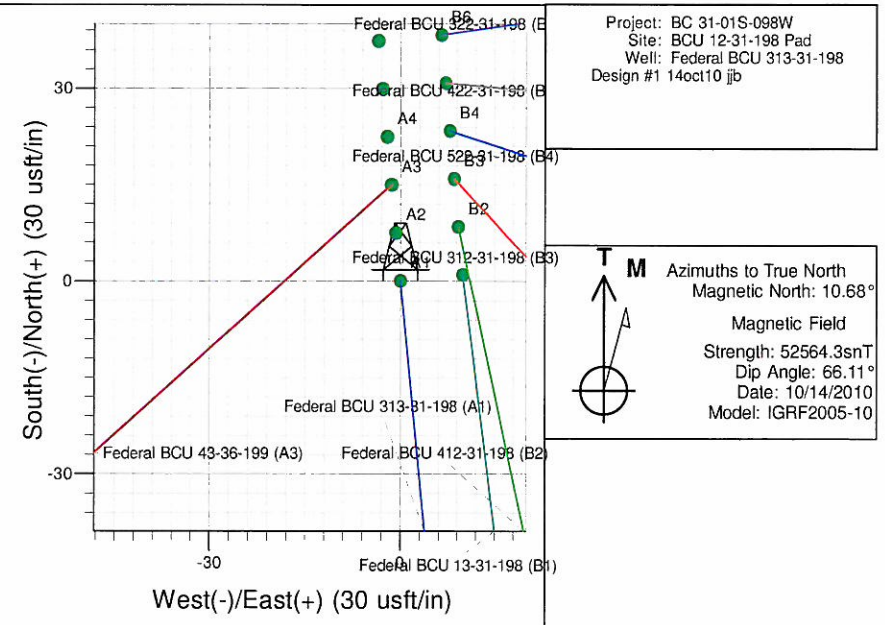
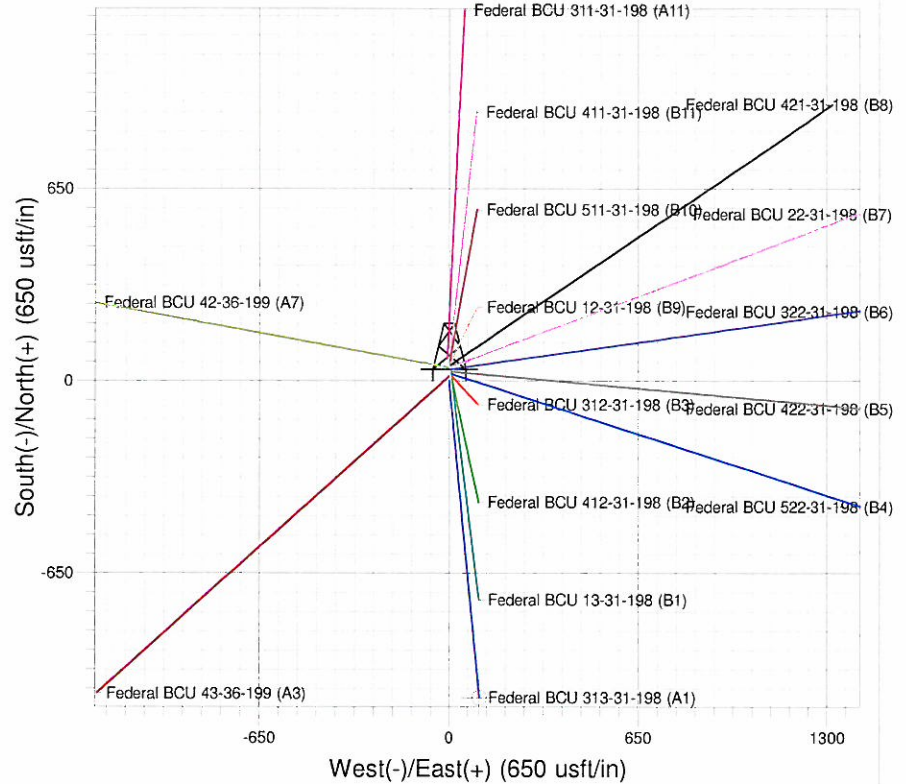
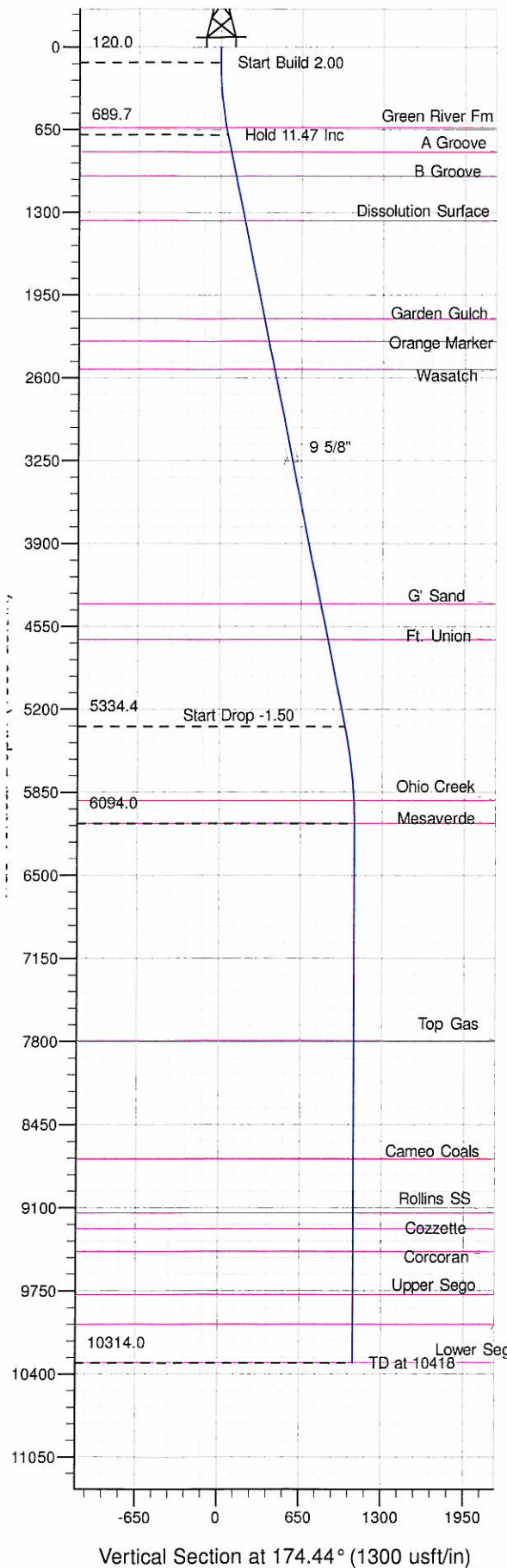




Surface Location: BCU 12-31-198 Pad  
 North American Datum 1983 , US State Plane 1983 , Colorado Central Zone  
 Ground Elevation: 6842.0  
 +N/-S 0.0 +E/-W 0.0 Northing 1807771.03 Easting 2176128.00 Latitude 40° 0' 52.290 N Longitude 108° 26' 29.903 W Slot A1  
 KELLY BUSHING @ 6864.0usft (Frontier 10 (22' RKB) jib)

BCU 313-31-198



#### 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
689.7	693.5	11.47	174.44	-57.0	5.5	57.2	57.2	Hold 11.47 Inc
5334.4	5432.9	11.47	174.44	-995.0	96.9	999.7	999.7	Start Drop -1.50
6094.0	6197.6	0.00	0.00	-1070.9	104.3	1076.0	1076.0	Vertical
10314.0	10417.6	0.00	0.00	-1070.9	104.3	1076.0	1076.0	TD at 10418

# **PICEANCE HL NAD 83**

**BC 31-01S-098W**

**BCU 12-31-198 Pad**

**Federal BCU 313-31-198 - Slot A1**

**Wellbore #1**

**Plan: Design #1 14oct10 jjb**

## **Standard Planning Report - Geographic**

**15 November, 2010**



**Williams**  
Planning Report - Geographic

<b>Database:</b>	Compass R5000 WIN AUTH	<b>Local Co-ordinate Reference:</b>	Well Federal BCU 313-31-198 (A1) - Slot A1
<b>Company:</b>	PICEANCE HL NAD 83	<b>TVD Reference:</b>	KELLY BUSHING @ 6864.0usft (Frontier 10 (22' RKB) jjb)
<b>Project:</b>	BC 31-01S-098W	<b>MD Reference:</b>	KELLY BUSHING @ 6864.0usft (Frontier 10 (22' RKB) jjb)
<b>Site:</b>	BCU 12-31-198 Pad	<b>North Reference:</b>	True
<b>Well:</b>	Federal BCU 313-31-198	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Design #1 14oct10 jjb		

<b>Project</b>	BC 31-01S-098W, Rio Blanco County, CO, BC 31-01S-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>	BCU 12-31-198 Pad		
<b>Site Position:</b>		<b>Northing:</b>	1,807,786.60 usft
<b>From:</b>	Map	<b>Easting:</b>	2,176,137.10 usft
<b>Position Uncertainty:</b>	0.0 usft	<b>Slot Radius:</b>	13.200 in
		<b>Latitude:</b>	40° 0' 52.447 N
		<b>Longitude:</b>	108° 26' 29.793 W
		<b>Grid Convergence:</b>	-1.855 °

<b>Well</b>	Federal BCU 313-31-198 - Slot A1		
<b>Well Position</b>	<b>+N/-S</b>	0.0 usft	<b>Northing:</b> 1,807,771.03 usft
	<b>+E/-W</b>	0.0 usft	<b>Easting:</b> 2,176,128.00 usft
<b>Position Uncertainty</b>	0.0 usft	<b>Wellhead Elevation:</b>	<b>Latitude:</b> 40° 0' 52.290 N
			<b>Longitude:</b> 108° 26' 29.903 W
			<b>Ground Level:</b> 6,842.0 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	10/14/2010	10.682	66.111	52,564

<b>Design</b>	Design #1 14oct10 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	174.44

<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	
693.5	11.47	174.44	689.7	-57.0	5.5	2.00	2.00	0.00	174.437	
5,432.9	11.47	174.44	5,334.4	-995.0	96.9	0.00	0.00	0.00	0.000	
6,197.6	0.00	0.00	6,094.0	-1,070.9	104.3	1.50	-1.50	0.00	180.000	Mesaverde (25' Radiu
10,417.6	0.00	0.00	10,314.0	-1,070.9	104.3	0.00	0.00	0.00	0.000	

**Williams**  
Planning Report - Geographic

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<b>Company:</b>	PICEANCE HL NAD 83	<b>TVD Reference:</b>	KELLY BUSHING @ 6864.0usft (Frontier 10 (22' RKB) jib)
<b>Project:</b>	BC 31-01S-098W	<b>MD Reference:</b>	KELLY BUSHING @ 6864.0usft (Frontier 10 (22' RKB) jib)
<b>Site:</b>	BCU 12-31-198 Pad	<b>North Reference:</b>	True
<b>Well:</b>	Federal BCU 313-31-198	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Design #1 14oct10 jib		

**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	1,807,771.03	2,176,128.00	40° 0' 52.290 N	108° 26' 29.903 W
120.0	0.00	0.00	120.0	0.0	0.0	1,807,771.03	2,176,128.00	40° 0' 52.290 N	108° 26' 29.903 W
693.5	11.47	174.44	689.7	-57.0	5.5	1,807,713.93	2,176,131.70	40° 0' 51.728 N	108° 26' 29.832 W
5,432.9	11.47	174.44	5,334.4	-995.0	96.9	1,806,773.34	2,176,192.66	40° 0' 42.457 N	108° 26' 28.658 W
6,197.6	0.00	0.00	6,094.0	-1,070.9	104.3	1,806,697.20	2,176,197.60	40° 0' 41.707 N	108° 26' 28.563 W
10,417.6	0.00	0.00	10,314.0	-1,070.9	104.3	1,806,697.20	2,176,197.60	40° 0' 41.707 N	108° 26' 28.563 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 (25' Radius)	0.00	358.14	6,094.0	-1,070.9	104.3	1,806,697.20	2,176,197.60	40° 0' 41.707 N	108° 26' 28.563 W
- plan hits target center									
- Circle (radius 25.0)									

**Casing Points**

Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (in)	Hole Diameter (in)
3,325.0	3,268.6	9 5/8"	9.625	13.500

**Formations**

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
636.8	634.0	Green River Fm			
830.6	824.0	A Groove			
1,024.4	1,014.0	B Groove			
1,381.6	1,364.0	Dissolution Surface			
2,167.3	2,134.0	Garden Gulch			
2,350.9	2,314.0	Orange Marker			
2,575.4	2,534.0	Wasatch			
4,452.9	4,374.0	G' Sand			
4,738.6	4,654.0	Ft. Union			
6,017.5	5,914.0	Ohio Creek			
6,197.6	6,094.0	Mesaverde			
7,897.6	7,794.0	Top Gas			
8,827.6	8,724.0	Cameo Coals			
9,247.6	9,144.0	Rollins SS			
9,372.6	9,269.0	Cozzette			
9,547.6	9,444.0	Corcoran			
9,887.6	9,784.0	Upper Sego			
10,117.6	10,014.0	Lower Sego			
10,417.6	10,314.0	TD		0.000	



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Planning Report - Geographic

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<b>Site:</b>	BCU 12-31-198 Pad	<b>North Reference:</b>	True
<b>Well:</b>	Federal BCU 313-31-198	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Design #1 14oct10 jib		

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
693.5	689.7	-57.0	5.5	Hold 11.47 Inc
5,432.9	5,334.4	-995.0	96.9	Start Drop -1.50
6,197.6	6,094.0	-1,070.9	104.3	Vertical
10,417.6	10,314.0	-1,070.9	104.3	TD at 10418