



+N/-S
0.0

+E/-W
0.0

Northing
1782367.30

Easting
2197478.60

Latitude
39° 56' 48.122 N

Longitude
108° 21' 45.365 W

Slot
B1

Well Name: Federal RGU 314-23-198

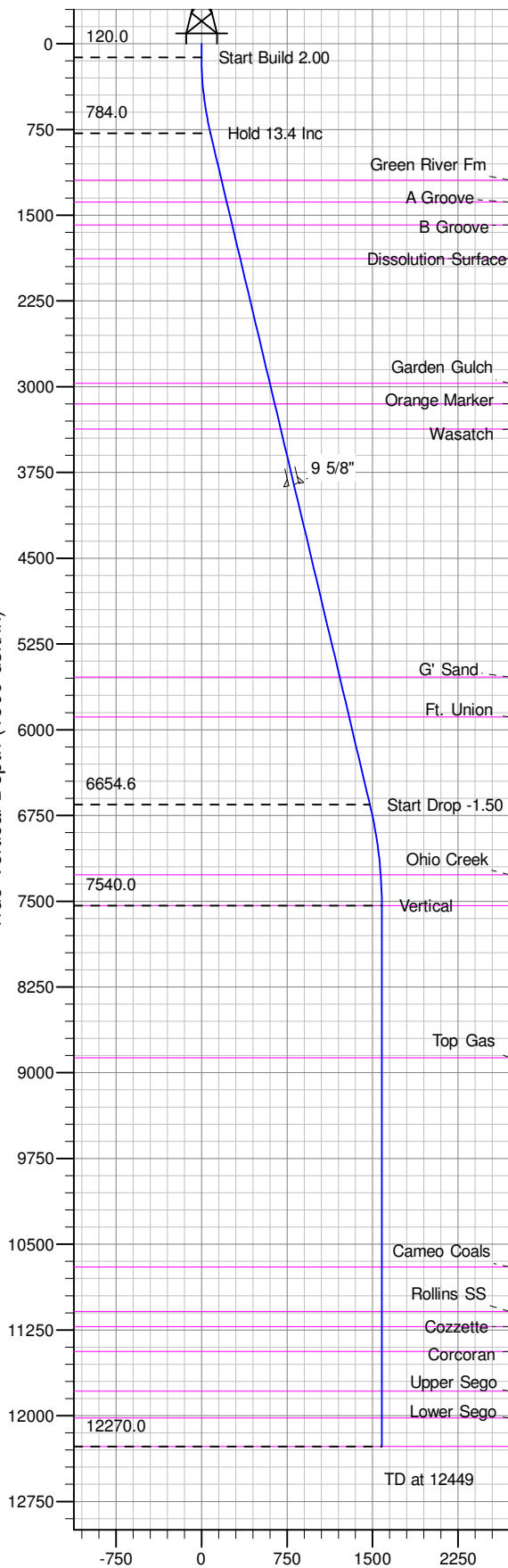
Surface Location: RGU 23-23-198 Pad

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

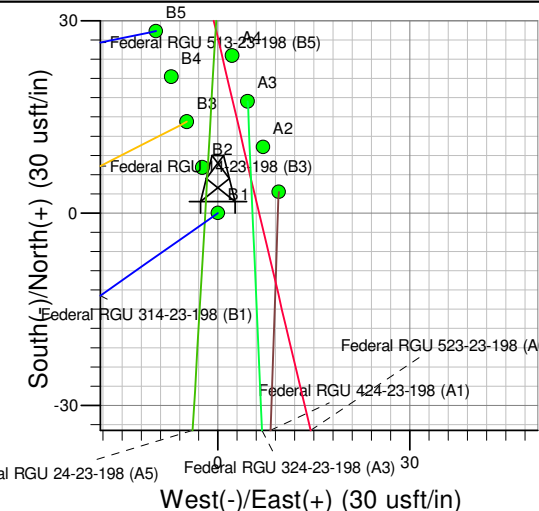
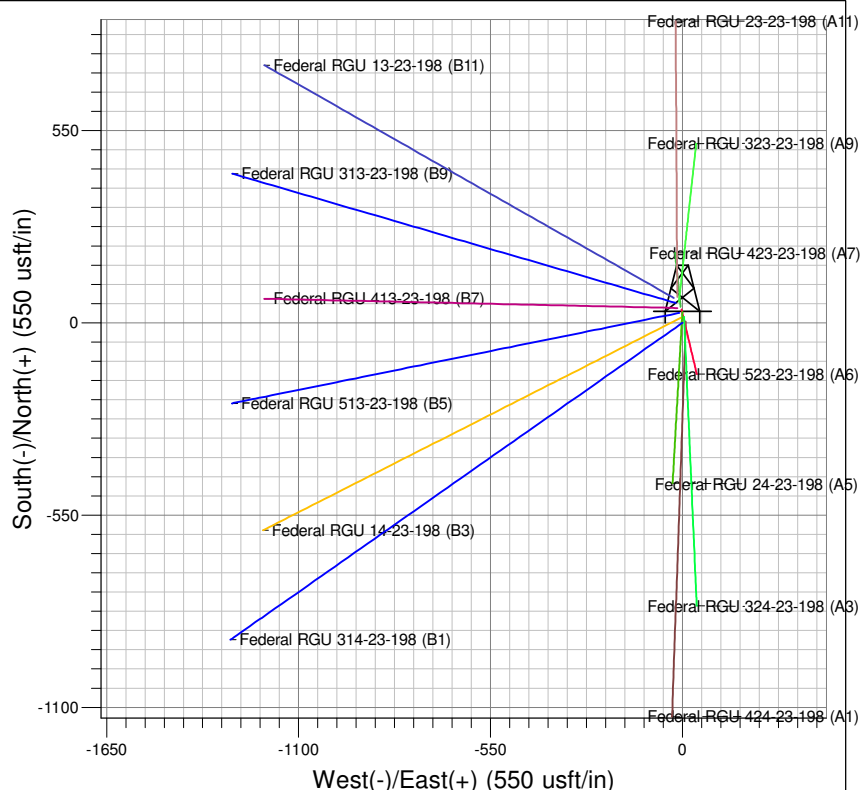
Ground Elevation: 6542.0

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

True Vertical Depth (1500 usft/in)



Vertical Section at 235.01° (1500 usft/in)



Project: RG 23-01S-098W
Site: RGU 23-23-198 Pad
Well: Federal RGU 314-23-198
Plan #1 10may10 jib

Azimuths to True North
Magnetic North: 10.72°
Magnetic Field
Strength: 52552.6snT
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	790.1	13.40	235.01	784.0	-44.7	-63.9	2.00	235.013	78.0	
4	6825.1	13.40	235.01	6654.6	-846.8	-1210.0	0.00	0.000	1476.8	
5	7718.6	0.00	0.00	7540.0	-906.5	-1295.2	1.50	180.000	1580.9	Mesaverde (25' Radius) Federal RGU 314-23-198
6	12448.6	0.00	0.00	12270.0	-906.5	-1295.2	0.00	0.000	1580.9	

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
784.0	790.1	13.40	235.01	-44.7	-63.9	78.0	78.0	Hold 13.4 Inc
6654.6	6825.1	13.40	235.01	-846.8	-1210.0	1476.8	1476.8	Start Drop -1.50
7540.0	7718.6	0.00	0.00	-906.5	-1295.2	1580.9	1580.9	Vertical
12270.0	12448.6	0.00	0.00	-906.5	-1295.2	1580.9	1580.9	TD at 12449

PICEANCE HL NAD 83

RG 23-01S-098W

RGU 23-23-198 Pad

Federal RGU 314-23-198 - Slot B1

Wellbore #1

Plan: Plan #1 10may10 jjb

Standard Planning Report - Geographic

13 July, 2010

Williams
Planning Report - Geographic

Database:	Compass R5000 WIN AUTH	Local Co-ordinate Reference:	Well Federal RGU 314-23-198 (B1) - Slot B1
Company:	PICEANCE HL NAD 83	TVD Reference:	KELLY BUSHING @ 6570.0usft (Frontier 11 (28' RKB) jjb)
Project:	RG 23-01S-098W	MD Reference:	KELLY BUSHING @ 6570.0usft (Frontier 11 (28' RKB) jjb)
Site:	RGU 23-23-198 Pad	North Reference:	True
Well:	Federal RGU 314-23-198	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 10may10 jjb		

Project	RG 23-01S-098W, Rio Blanco County, CO		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	Colorado Central Zone		

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

Well	Federal RGU 314-23-198 - Slot B1					
Well Position	+N/-S	0.0 usft	Northing:	1,782,367.30 usft	Latitude:	39° 56' 48.122 N
	+E/-W	0.0 usft	Easting:	2,197,478.60 usft	Longitude:	108° 21' 45.365 W
Position Uncertainty		0.0 usft	Wellhead Elevation:		Ground Level:	6,542.0 usft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	5/10/2010	10.718	66.071	52,553

Design	Plan #1 10may10 jjb			
Audit Notes:				
Version:	Phase:	PLAN	Tie On Depth:	0.0
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.0	0.0	0.0	235.01

Plan Sections										
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	
790.1	13.40	235.01	784.0	-44.7	-63.9	2.00	2.00	0.00	235.013	
6,825.1	13.40	235.01	6,654.6	-846.8	-1,210.0	0.00	0.00	0.00	0.000	
7,718.6	0.00	0.00	7,540.0	-906.5	-1,295.2	1.50	-1.50	0.00	180.000	Mesaverde (25' Radiu
12,448.6	0.00	0.00	12,270.0	-906.5	-1,295.2	0.00	0.00	0.00	0.000	

Williams
Planning Report - Geographic

Database:	Compass R5000 WIN AUTH	Local Co-ordinate Reference:	Well Federal RGU 314-23-198 (B1) - Slot B1
Company:	PICEANCE HL NAD 83	TVD Reference:	KELLY BUSHING @ 6570.0usft (Frontier 11 (28' RKB) jjb)
Project:	RG 23-01S-098W	MD Reference:	KELLY BUSHING @ 6570.0usft (Frontier 11 (28' RKB) jjb)
Site:	RGU 23-23-198 Pad	North Reference:	True
Well:	Federal RGU 314-23-198	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	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	1,782,367.30	2,197,478.60	39° 56' 48.122 N	108° 21' 45.365 W
120.0	0.00	0.00	120.0	0.0	0.0	1,782,367.30	2,197,478.60	39° 56' 48.122 N	108° 21' 45.365 W
790.1	13.40	235.01	784.0	-44.7	-63.9	1,782,324.60	2,197,413.30	39° 56' 47.680 N	108° 21' 46.186 W
6,825.1	13.40	235.01	6,654.6	-846.8	-1,210.0	1,781,559.03	2,196,242.56	39° 56' 39.753 N	108° 22' 0.899 W
7,718.6	0.00	0.00	7,540.0	-906.5	-1,295.2	1,781,502.10	2,196,155.50	39° 56' 39.164 N	108° 22' 1.993 W
12,448.6	0.00	0.00	12,270.0	-906.5	-1,295.2	1,781,502.10	2,196,155.50	39° 56' 39.164 N	108° 22' 1.993 W

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 (50' Radius) - plan hits target center - Circle (radius 50.0)	0.00	0.00	7,540.0	-906.5	-1,295.2	1,781,502.10	2,196,155.50	39° 56' 39.164 N	108° 22' 1.993 W
Mesaverde (25' Radius) - plan hits target center - Circle (radius 25.0)	0.00	0.00	7,540.0	-906.5	-1,295.2	1,781,502.10	2,196,155.50	39° 56' 39.164 N	108° 22' 1.993 W

Casing Points					
Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (in)	Hole Diameter (in)	
3,949.0	3,856.9	9 5/8"	9.625	13.500	

Williams
Planning Report - Geographic

Database:	Compass R5000 WIN AUTH	Local Co-ordinate Reference:	Well Federal RGU 314-23-198 (B1) - Slot B1
Company:	PICEANCE HL NAD 83	TVD Reference:	KELLY BUSHING @ 6570.0usft (Frontier 11 (28' RKB) jjb)
Project:	RG 23-01S-098W	MD Reference:	KELLY BUSHING @ 6570.0usft (Frontier 11 (28' RKB) jjb)
Site:	RGU 23-23-198 Pad	North Reference:	True
Well:	Federal RGU 314-23-198	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 10may10 jjb		

Formations						
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
1,212.6	1,195.0	Green River Fm				
1,407.9	1,385.0	A Groove				
1,613.5	1,585.0	B Groove				
1,916.8	1,880.0	Dissolution Surface				
3,037.3	2,970.0	Garden Gulch				
3,222.3	3,150.0	Orange Marker				
3,448.5	3,370.0	Wasatch				
5,679.2	5,540.0	G' Sand				
6,039.0	5,890.0	Ft. Union				
7,448.3	7,270.0	Ohio Creek				
7,718.6	7,540.0	Mesaverde				
9,048.6	8,870.0	Top Gas				
10,878.6	10,700.0	Cameo Coals				
11,268.6	11,090.0	Rollins SS				
11,398.6	11,220.0	Cozzette				
11,618.6	11,440.0	Corcoran				
11,963.6	11,785.0	Upper Sego				
12,198.6	12,020.0	Lower Sego				
12,448.6	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	
790.1	784.0	-44.7	-63.9	Hold 13.4 Inc	
6,825.1	6,654.6	-846.8	-1,210.0	Start Drop -1.50	
7,718.6	7,540.0	-906.5	-1,295.2	Vertical	
12,448.6	12,270.0	-906.5	-1,295.2	TD at 12449	