



+N/-S
0.0

+E/-W
0.0

Northing
1768867.20

Easting
2204753.40

Latitude
39° 54' 37.032 N

Longitude
108° 20' 6.600 W

Slot
B2

Well Name: Federal RGU 331-1-298

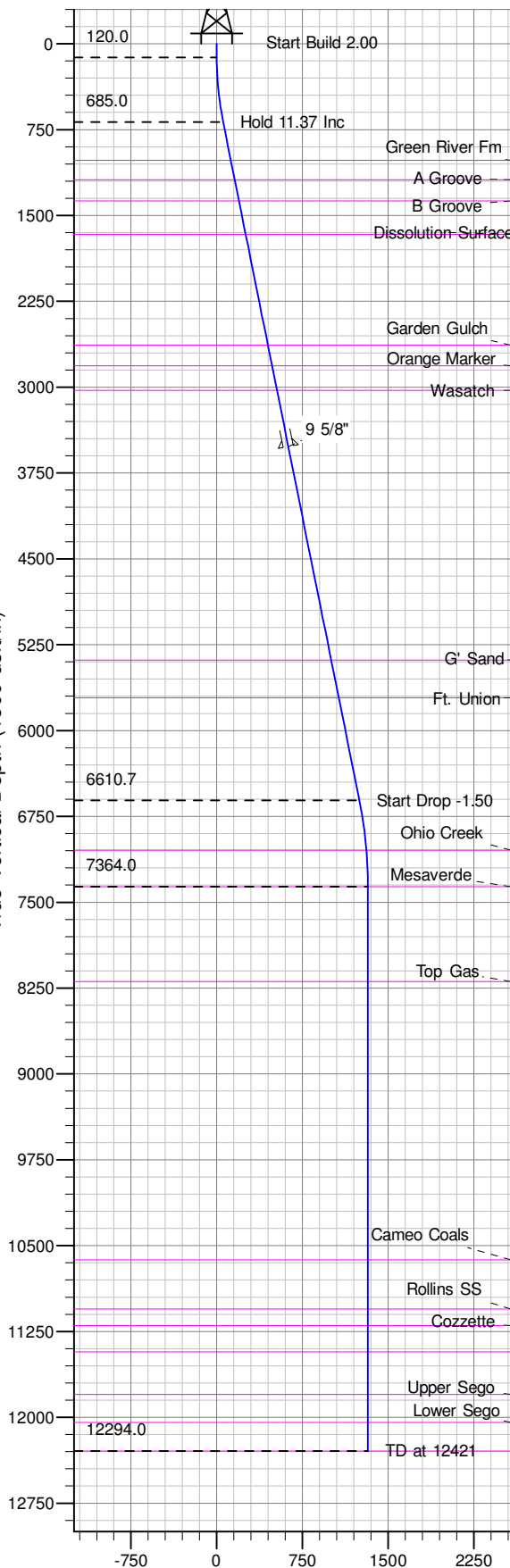
Surface Location: RGU 41-1-298 Pad

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

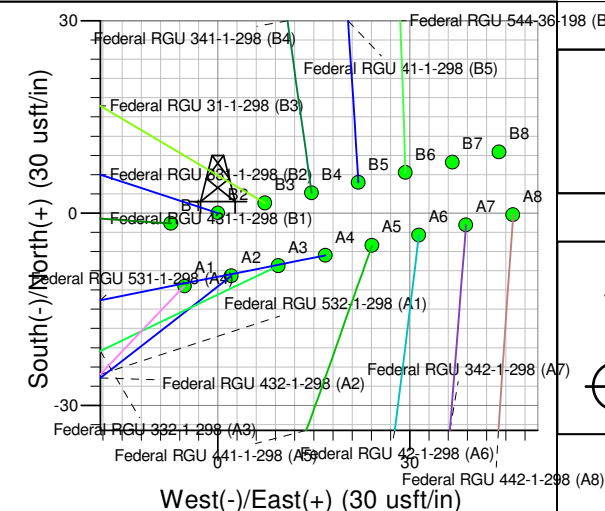
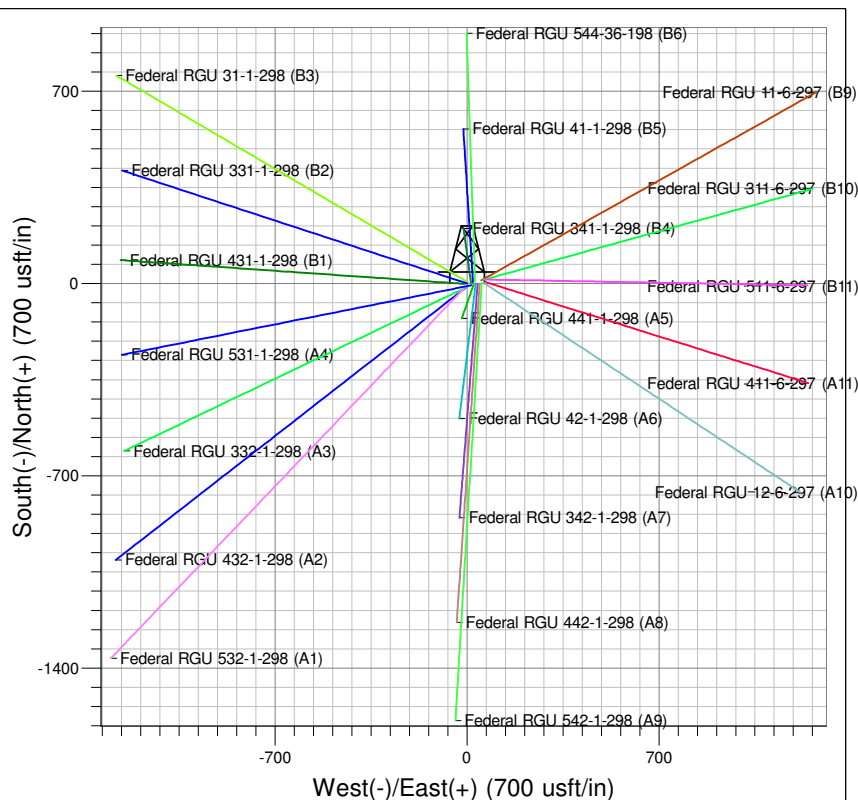
Ground Elevation: 6573.0

KELLY BUSHING @ 6594.0usft

True Vertical Depth (1500 usft/in)



Vertical Section at 288.10° (1500 usft/in)



Project: RG 01-02S-098W
Site: RGU 41-1-298 Pad
Well: Federal RGU 331-1-298
Plan #2 29Mar10 kjs

Azimuths to True North
Magnetic North: 10.56°
Magnetic Field
Strength: 52423.6snT
Dip Angle: 66.02°
Date: 6/22/2011
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	688.7	11.37	288.10	685.0	17.5	-53.5	2.00	288.101	56.3	
4	6733.2	11.37	288.10	6610.7	387.8	-1186.5	0.00	0.000	1248.3	
5	7491.4	0.00	0.00	7364.0	411.1	-1257.8	1.50	180.000	1323.3	Mesaverde (25' Radius) Federal RGU 331-1-298
6	12421.4	0.00	0.00	12294.0	411.1	-1257.8	0.00	0.000	1323.3	

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
685.0	688.7	11.37	288.10	17.5	-53.5	56.3	56.3	Hold 11.37 Inc
6610.7	6733.2	11.37	288.10	387.8	-1186.5	1248.3	1248.3	Start Drop -1.50
7364.0	7491.4	0.00	0.00	411.1	-1257.8	1323.3	1323.3	Vertical
12294.0	12421.4	0.00	0.00	411.1	-1257.8	1323.3	1323.3	TD at 12421

PICEANCE HL NAD 83

RG 01-02S-098W

RGU 41-1-298 Pad

Federal RGU 331-1-298 - Slot B2

Federal RGU 331-1-298

Plan: Plan #2 29Mar10 kjs

Standard Planning Report - Geographic

25 August, 2010

Williams
Planning Report - Geographic

Database:	Compass R5000 WIN AUTH	Local Co-ordinate Reference:	Well Federal RGU 331-1-298 (B2) - Slot B2
Company:	PICEANCE HL NAD 83	TVD Reference:	KELLY BUSHING @ 6594.0usft
Project:	RG 01-02S-098W	MD Reference:	KELLY BUSHING @ 6594.0usft
Site:	RGU 41-1-298 Pad	North Reference:	True
Well:	Federal RGU 331-1-298	Survey Calculation Method:	Minimum Curvature
Wellbore:	Federal RGU 331-1-298		
Design:	Plan #2 29Mar10 kjs		

Project	RG 01-02S-098W, Rio Blanco County, CO, RG 01-02S-098W		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	Colorado Central Zone		Using geodetic scale factor

Site		RGU 41-1-298 Pad			
Site Position:		Northing:	1,768,871.26 usft	Latitude:	39° 54' 37.079 N
From:	Map	Easting:	2,204,775.51 usft	Longitude:	108° 20' 6.318 W
Position Uncertainty:	0.0 usft	Slot Radius:	13.200 in	Grid Convergence:	-1.788 °

Well		Federal RGU 331-1-298 - Slot B2				
Well Position	+N/-S	0.0 usft	Northing:	1,768,867.20 usft	Latitude:	39° 54' 37.032 N
	+E/-W	0.0 usft	Easting:	2,204,753.40 usft	Longitude:	108° 20' 6.600 W
Position Uncertainty		0.0 usft	Wellhead Elevation:		Ground Level:	6,573.0 usft

Wellbore	Federal RGU 331-1-298				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	6/22/2011	10.556	66.016	52,424

Design	Plan #2 29Mar10 kjs			
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	288.10

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	
688.7	11.37	288.10	685.0	17.5	-53.5	2.00	2.00	0.00	288.101	
6,733.2	11.37	288.10	6,610.7	387.8	-1,186.5	0.00	0.00	0.00	0.000	
7,491.4	0.00	0.00	7,364.0	411.1	-1,257.8	1.50	-1.50	0.00	180.000	Mesaverde (25' Radiu
12,421.4	0.00	0.00	12,294.0	411.1	-1,257.8	0.00	0.00	0.00	0.000	

Williams
Planning Report - Geographic

Database:	Compass R5000 WIN AUTH	Local Co-ordinate Reference:	Well Federal RGU 331-1-298 (B2) - Slot B2
Company:	PICEANCE HL NAD 83	TVD Reference:	KELLY BUSHING @ 6594.0usft
Project:	RG 01-02S-098W	MD Reference:	KELLY BUSHING @ 6594.0usft
Site:	RGU 41-1-298 Pad	North Reference:	True
Well:	Federal RGU 331-1-298	Survey Calculation Method:	Minimum Curvature
Wellbore:	Federal RGU 331-1-298		
Design:	Plan #2 29Mar10 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	1,768,867.20	2,204,753.40	39° 54' 37.032 N	108° 20' 6.600 W
120.0	0.00	0.00	120.0	0.0	0.0	1,768,867.20	2,204,753.40	39° 54' 37.032 N	108° 20' 6.600 W
688.7	11.37	288.10	685.0	17.5	-53.5	1,768,886.34	2,204,700.49	39° 54' 37.205 N	108° 20' 7.286 W
6,733.2	11.37	288.10	6,610.7	387.8	-1,186.5	1,769,291.88	2,203,579.54	39° 54' 40.865 N	108° 20' 21.826 W
7,491.4	0.00	0.00	7,364.0	411.1	-1,257.8	1,769,317.40	2,203,509.00	39° 54' 41.095 N	108° 20' 22.741 W
12,421.4	0.00	0.00	12,294.0	411.1	-1,257.8	1,769,317.40	2,203,509.00	39° 54' 41.095 N	108° 20' 22.741 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	7,364.0	411.1	-1,257.8	1,769,317.40	2,203,509.00	39° 54' 41.095 N	108° 20' 22.741 W
Mesaverde (25' Radius) - plan hits target center - Circle (radius 25.0)	0.00	0.00	7,364.0	411.1	-1,257.8	1,769,317.40	2,203,509.00	39° 54' 41.095 N	108° 20' 22.741 W

Casing Points					
Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (in)	Hole Diameter (in)	
3,580.0	3,519.5	9 5/8"	9.625	13.500	

Williams
Planning Report - Geographic

Database:	Compass R5000 WIN AUTH	Local Co-ordinate Reference:	Well Federal RGU 331-1-298 (B2) - Slot B2
Company:	PICEANCE HL NAD 83	TVD Reference:	KELLY BUSHING @ 6594.0usft
Project:	RG 01-02S-098W	MD Reference:	KELLY BUSHING @ 6594.0usft
Site:	RGU 41-1-298 Pad	North Reference:	True
Well:	Federal RGU 331-1-298	Survey Calculation Method:	Minimum Curvature
Wellbore:	Federal RGU 331-1-298		
Design:	Plan #2 29Mar10 kjs		

Formations						
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
1,029.4	1,019.0	Green River Fm				
1,202.8	1,189.0	A Groove				
1,391.5	1,374.0	B Groove				
1,687.3	1,664.0	Dissolution Surface				
2,676.8	2,634.0	Garden Gulch				
2,860.4	2,814.0	Orange Marker				
3,079.7	3,029.0	Wasatch				
5,481.9	5,384.0	G' Sand				
5,818.5	5,714.0	Ft. Union				
7,171.0	7,044.0	Ohio Creek				
7,491.4	7,364.0	Mesaverde				
8,321.4	8,194.0	Top Gas				
10,751.4	10,624.0	Cameo Coals				
11,181.4	11,054.0	Rollins SS				
11,326.4	11,199.0	Cozzette				
11,556.4	11,429.0	Corcoran				
11,926.4	11,799.0	Upper Sego				
12,171.4	12,044.0	Lower Sego				
12,421.4	12,294.0	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	
688.7	685.0	17.5	-53.5	Hold 11.37 Inc	
6,733.2	6,610.7	387.8	-1,186.5	Start Drop -1.50	
7,491.4	7,364.0	411.1	-1,257.8	Vertical	
12,421.4	12,294.0	411.1	-1,257.8	TD at 12421	