PICEANCE HL NAD 83

RG 24-01S-098W
RGU 31-24-198 Pad
Federal RGU 421-24-198 - Slot A2

Wellbore #1

Plan: Plan #1 09Jan09 kjs

Standard Planning Report - Geographic

06 April, 2010

Database:	Compass R5000 WIN AUTH	**Local Co-ordinate Reference:**	Well Federal RGU 421-24-198 (A2) - Slot A2
Company:	PICEANCE HL NAD 83	**TVD Reference:**	KELLY BUSHING @ 6565.0usft (Cyclone 29 (21' RKB) jjb)
Project:	RG 24-01S-098W	**MD Reference:**	KELLY BUSHING @ 6565.0usft (Cyclone 29 (21' RKB) jjb)
Site:	RGU 31-24-198 Pad	**North Reference:**	True
Well:	Federal RGU 421-24-198	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Wellbore #1		
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Project RG 24-01S-098W, Rio Blanco County, CO, RG 24-01S-098W

Map System:	US State Plane 1983	**System Datum:**	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	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 421-24-198 - Slot A2

Well Position	**+N/-S**	0.0 usft	**Northing:**	1,784,370.70 usft	**Latitude:**	39° 57' 9.915 N
	+E/-W	0.0 usft	**Easting:**	2,203,947.00 usft	**Longitude:**	108° 20' 23.161 W
Position Uncertainty		0.0 usft	**Wellhead Elevation:**		**Ground Level:**	6,544.0 usft

Wellbore Wellbore #1

Magnetics	**Model Name**	**Sample Date**	**Declination (°)**	**Dip Angle (°)**	**Field Strength (nT)**
	IGRF200510	1/8/2009	10.862	66.126	52,718

Design Plan #1 09Jan09 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	287.03

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	
150.0	0.00	0.00	150.0	0.0	0.0	0.00	0.00	0.00	0.000	
722.1	11.44	287.03	718.3	16.7	-54.4	2.00	2.00	0.00	287.034	
7,189.6	11.44	287.03	7,057.2	392.5	-1,281.2	0.00	0.00	0.00	0.000	
7,952.4	0.00	0.00	7,815.0	414.8	-1,353.8	1.50	-1.50	0.00	180.000	Mesaverde (25' Radiu
12,852.4	0.00	0.00	12,715.0	414.8	-1,353.8	0.00	0.00	0.00	0.000	

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Project:	RG 24-01S-098W	**MD Reference:**	KELLY BUSHING @ 6565.0usft (Cyclone 29 (21' RKB) jjb)
Site:	RGU 31-24-198 Pad	**North Reference:**	True
Well:	Federal RGU 421-24-198	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	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	1,784,370.70	2,203,947.00	39° 57' 9.915 N	108° 20' 23.161 W
150.0	0.00	0.00	150.0	0.0	0.0	1,784,370.70	2,203,947.00	39° 57' 9.915 N	108° 20' 23.161 W
722.1	11.44	287.03	718.3	16.7	-54.4	1,784,389.07	2,203,893.10	39° 57' 10.080 N	108° 20' 23.860 W
7,189.6	11.44	287.03	7,057.2	392.5	-1,281.2	1,784,803.10	2,202,678.66	39° 57' 13.794 N	108° 20' 39.612 W
7,952.4	0.00	0.00	7,815.0	414.8	-1,353.8	1,784,827.60	2,202,606.80	39° 57' 14.014 N	108° 20' 40.545 W
12,852.4	0.00	0.00	12,715.0	414.8	-1,353.8	1,784,827.60	2,202,606.80	39° 57' 14.014 N	108° 20' 40.545 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 (25' Radius) - plan hits target center - Circle (radius 25.0)	0.00	0.00	7,815.0	414.8	-1,353.8	1,784,827.60	2,202,606.80	39° 57' 14.014 N	108° 20' 40.545 W
Mesaverde (50' Radius) - plan hits target center - Circle (radius 50.0)	0.00	0.00	7,815.0	414.8	-1,353.8	1,784,827.60	2,202,606.80	39° 57' 14.014 N	108° 20' 40.545 W

Casing Points

Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (in)	Hole Diameter (in)
3,912.0	3,844.8	9 5/8"	9.625	13.500

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Project:	RG 24-01S-098W	**MD Reference:**	KELLY BUSHING @ 6565.0usft (Cyclone 29 (21' RKB) jjb)
Site:	RGU 31-24-198 Pad	**North Reference:**	True
Well:	Federal RGU 421-24-198	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 09Jan09 kjs		

Formations

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
1,167.7	1,155.0	Green River Fm			
1,371.7	1,355.0	A Groove			
1,596.2	1,575.0	B Groove			
1,902.3	1,875.0	Dissolution Surface			
3,019.5	2,970.0	Garden Gulch			
3,198.0	3,145.0	Orange Marker			
3,412.3	3,355.0	Wasatch			
5,881.3	5,775.0	G' Sand			
6,279.3	6,165.0	Ft. Union			
7,632.0	7,495.0	Ohio Creek			
7,952.4	7,815.0	Mesaverde			
9,652.4	9,515.0	Top Gas			
11,247.4	11,110.0	Cameo Coals			
11,652.4	11,515.0	Rollins SS			
11,787.4	11,650.0	Cozzette			
11,992.4	11,855.0	Corcoran			
12,377.4	12,240.0	Upper Sego			
12,602.4	12,465.0	Lower Sego			
12,852.4	12,715.0	TD		0.000	

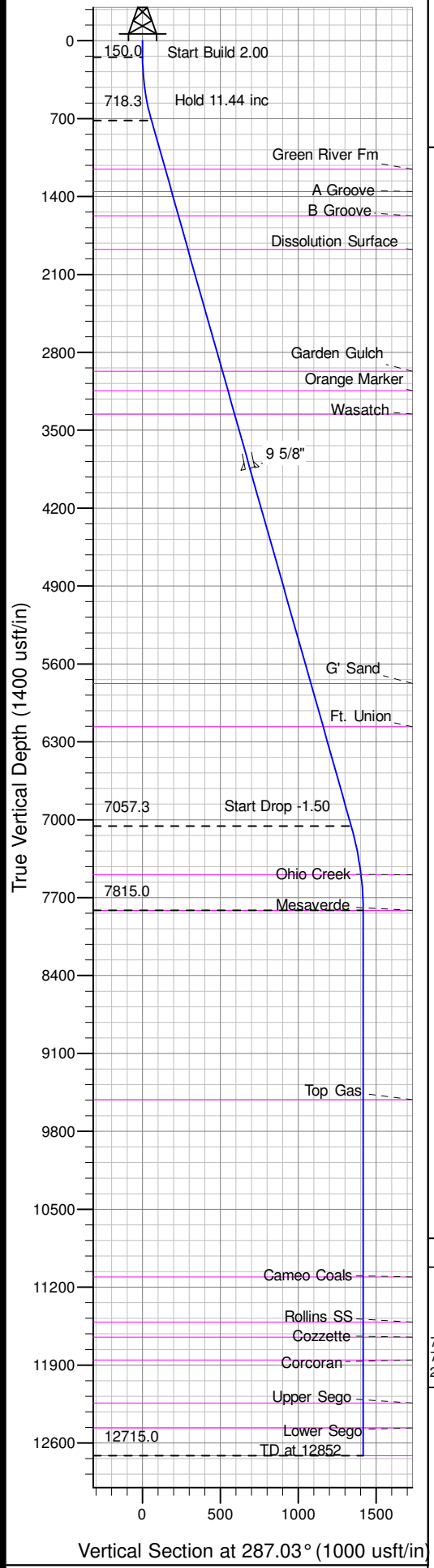
Plan Annotations

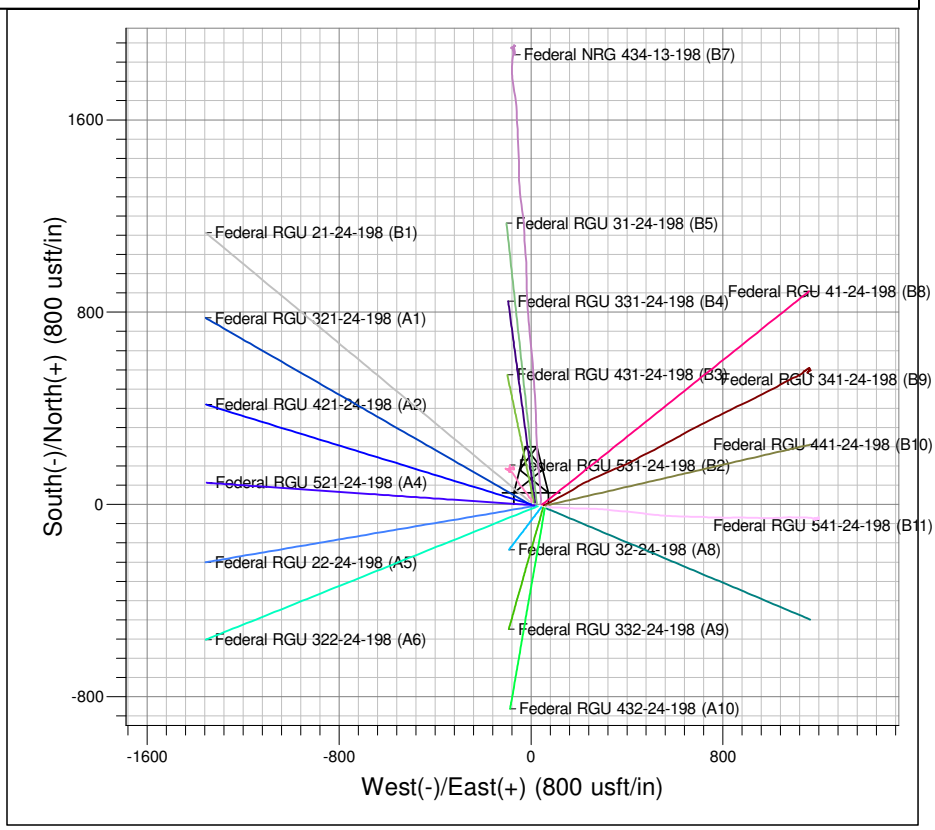
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates +N/-S (usft)	Local Coordinates +E/-W (usft)	Comment
150.0	150.0	0.0	0.0	Start Build 2.00
722.1	718.3	16.7	-54.4	Hold 11.44 inc
7,189.6	7,057.3	392.6	-1,281.2	Start Drop -1.50
7,952.4	7,815.0	414.8	-1,353.8	Vertical
12,852.4	12,715.0	414.8	-1,353.8	TD at 12852

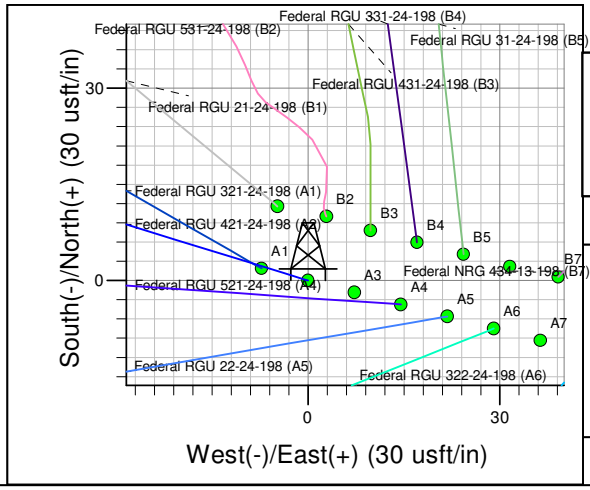
Well Name: Federal RGU 421-24-198
Surface Location: RGU 31-24-198 Pad
North American Datum 1983 , US State Plane 1983 Colorado Central Zone
Ground Elevation: 6544.0

+N/-S	+E/-W	Northing	Easting	Latittude	Longitude	Slot
0.0	0.0	1784370.70	2203947.00	39° 57' 9.915 N	108° 20' 23.161 W	A2

Cyclone 29 (21' RKB) KELLY BUSHING @ 6565.0usft (Cyclone 29 (21' RKB) jjb)







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: 52718.3snT
Dip Angle: 66.13°
Date: 1/8/2009
Model: IGRF200510

SECTION DETAILS

MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect	Target
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.000	0.0	
150.0	0.00	0.00	150.0	0.0	0.0	0.00	0.000	0.0	
722.1	11.44	287.03	718.3	16.7	-54.4	2.00	287.034	56.9	
7189.6	11.44	287.03	7057.2	392.5	-1281.2	0.00	0.000	1340.0	
7952.4	0.00	0.00	7815.0	414.8	-1353.8	1.50	180.000	1415.9	Mesaverde (25' Radius) Federal RGU 421-24-198
2852.4	0.00	0.00	12715.0	414.8	-1353.8	0.00	0.000	1415.9	

TVD	MD	Inc	Azi	+N/-S	+E/-W	VSect	Departure	Annotation
150.0	150.0	0.00	0.00	0.0	0.0	0.0	0.0	Start Build 2.00
718.3	722.1	11.44	287.03	16.7	-54.4	56.9	56.9	Hold 11.44 inc
7057.3	7189.6	11.44	287.03	392.6	-1281.2	1340.0	1340.0	Start Drop -1.50
7815.0	7952.4	0.00	287.03	414.8	-1353.8	1415.9	1415.9	Vertical
12715.0	12852.4	0.00	0.00	414.8	-1353.8	1415.9	1415.9	TD at 12852