

PICEANCE HL NAD 83

RG 24-01S-098W

RGU 31-24-198 Pad

Federal RGU 331-24-198 - Slot B4

Wellbore #1

Plan: Plan #1 09Jan09 kjs

Standard Planning Report - Geographic

06 April, 2010

Williams
Planning Report - Geographic

Database:	Compass R5000 WIN AUTH	Local Co-ordinate Reference:	Well Federal RGU 331-24-198 (B4) - Slot B4
Company:	PICEANCE HL NAD 83	TVD Reference:	KELLY BUSHING @ 6565.0usft (Cyclone 29 (21' RKB) jib)
Project:	RG 24-01S-098W	MD Reference:	KELLY BUSHING @ 6565.0usft (Cyclone 29 (21' RKB) jib)
Site:	RGU 31-24-198 Pad	North Reference:	True
Well:	Federal RGU 331-24-198	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 09Jan09 kjs		

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 331-24-198 - Slot B4					
Well Position	+N/-S	0.0 usft	Northing:	1,784,376.10 usft	Latitude:	39° 57' 9.974 N
	+E/-W	0.0 usft	Easting:	2,203,964.20 usft	Longitude:	108° 20' 22.942 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	1/9/2009	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	352.42

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	
130.0	0.00	0.00	130.0	0.0	0.0	0.00	0.00	0.00	0.000	
458.2	6.56	352.42	457.4	18.6	-2.5	2.00	2.00	0.00	352.423	
7,495.3	6.56	352.42	7,448.4	815.9	-108.5	0.00	0.00	0.00	0.000	
7,932.8	0.00	0.00	7,885.0	840.7	-111.8	1.50	-1.50	0.00	180.000	Mesaverde (25' Radiu
12,792.8	0.00	0.00	12,745.0	840.7	-111.8	0.00	0.00	0.00	0.000	

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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	1,784,376.10	2,203,964.20	39° 57' 9.974 N	108° 20' 22.942 W
130.0	0.00	0.00	130.0	0.0	0.0	1,784,376.10	2,203,964.20	39° 57' 9.974 N	108° 20' 22.942 W
458.2	6.56	352.42	457.4	18.6	-2.5	1,784,394.78	2,203,962.31	39° 57' 10.158 N	108° 20' 22.974 W
7,495.3	6.56	352.42	7,448.4	815.9	-108.5	1,785,195.00	2,203,881.22	39° 57' 18.037 N	108° 20' 24.336 W
7,932.8	0.00	0.00	7,885.0	840.7	-111.8	1,785,219.90	2,203,878.70	39° 57' 18.282 N	108° 20' 24.378 W
12,792.8	0.00	0.00	12,745.0	840.7	-111.8	1,785,219.90	2,203,878.70	39° 57' 18.282 N	108° 20' 24.378 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	0.00	7,885.0	840.7	-111.8	1,785,219.90	2,203,878.70	39° 57' 18.282 N	108° 20' 24.378 W
- plan hits target center									
- Circle (radius 25.0)									
Mesaverde (50' Radius)	0.00	0.00	7,885.0	840.7	-111.8	1,785,219.90	2,203,878.70	39° 57' 18.282 N	108° 20' 24.378 W
- plan hits target center									
- Circle (radius 50.0)									

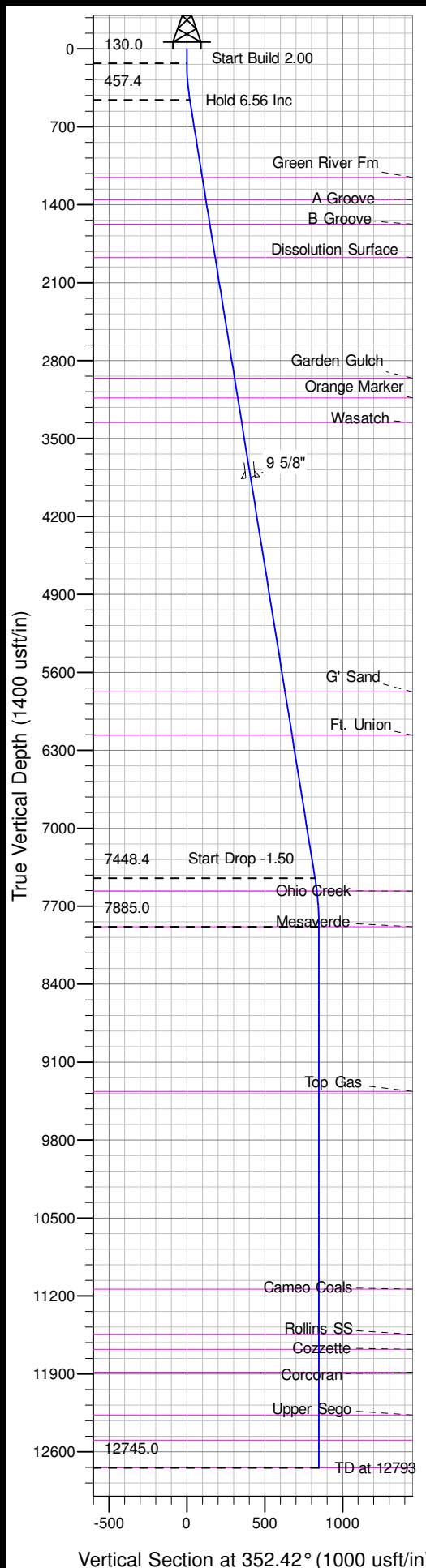
Casing Points					
Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (in)	Hole Diameter (in)	
3,875.0	3,851.9	9 5/8"	9.625	13.500	

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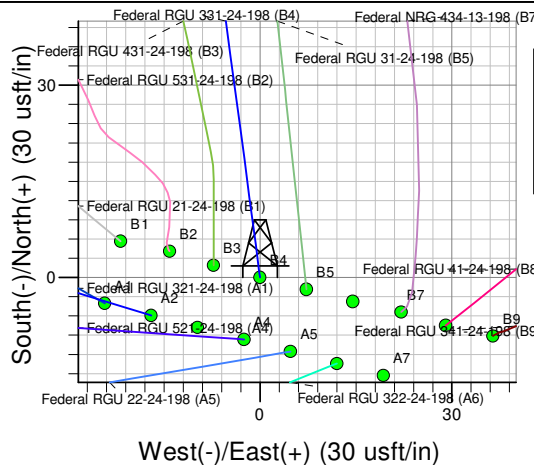
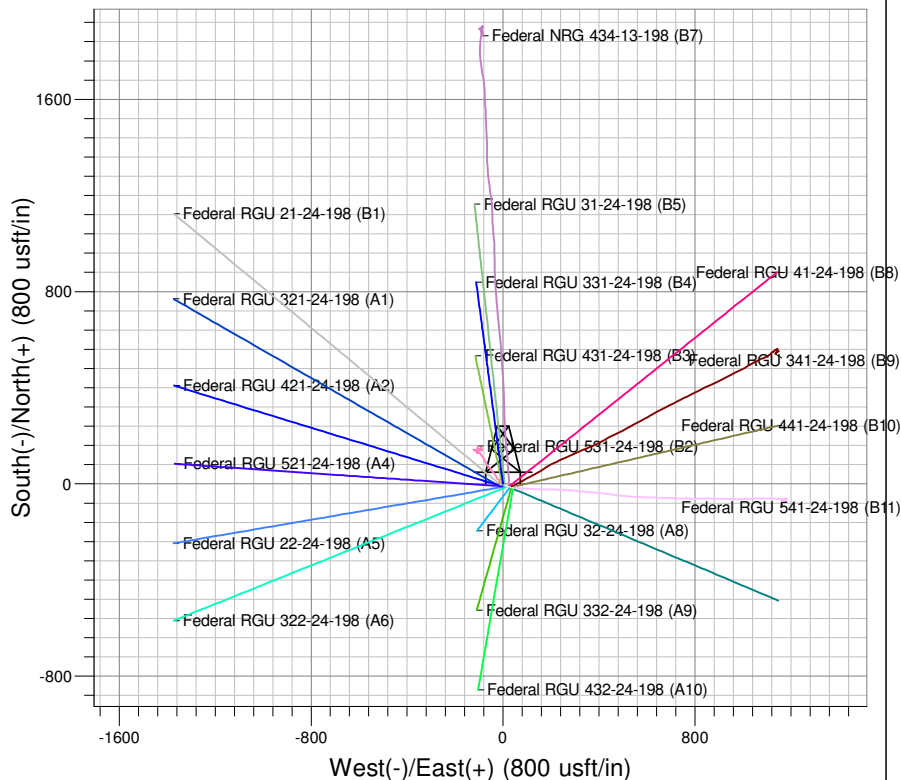
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Wellbore:	Wellbore #1		
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Formations						
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
1,160.3	1,155.0	Green River Fm		0.000		
1,361.6	1,355.0	A Groove		0.000		
1,583.1	1,575.0	B Groove		0.000		
1,885.1	1,875.0	Dissolution Surface		0.000		
2,977.2	2,960.0	Garden Gulch		0.000		
3,153.4	3,135.0	Orange Marker		0.000		
3,374.8	3,355.0	Wasatch		0.000		
5,810.8	5,775.0	G' Sand		0.000		
6,203.4	6,165.0	Ft. Union		0.000		
7,612.4	7,565.0	Ohio Creek		0.000		
7,932.8	7,885.0	Mesaverde		0.000		
9,412.8	9,365.0	Top Gas		0.000		
11,187.8	11,140.0	Cameo Coals		0.000		
11,592.8	11,545.0	Rollins SS		0.000		
11,727.8	11,680.0	Cozzette		0.000		
11,932.8	11,885.0	Corcoran		0.000		
12,317.8	12,270.0	Upper Sego		0.000		
12,542.8	12,495.0	Lower Sego		0.000		
12,792.8	12,745.0	TD		0.000		

Plan Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates			
		+N/-S (usft)	+E/-W (usft)	Comment	
130.0	130.0	0.0	0.0	Start Build 2.00	
458.2	457.4	18.6	-2.5	Hold 6.56 Inc	
7,495.3	7,448.4	815.9	-108.5	Start Drop -1.50	
7,932.8	7,885.0	840.7	-111.8	Vertical	
12,792.8	12,745.0	840.7	-111.8	TD at 12793	



Well Name: Federal RGU 331-24-198
 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 Latitude Longitude Slot
 0.0 0.0 1784376.10 2203964.20 39° 57' 9.974 N 108° 20' 22.942 W B4
 Cyclone 29 (21' RKB) KJLLY BUSHING @ 6565.0usft (Cyclone 29 (21' RKB) jib)



Project: RG 24-01S-098W
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Azimuths to True North
 Magnetic North: 10.86°
 Magnetic Field
 Strength: 52718.1snT
 Dip Angle: 66.13°
 Date: 1/9/2009
 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	
130.0	0.00	0.00	130.0	0.0	0.0	0.00	0.000	0.0	
458.2	6.56	352.42	457.4	18.6	-2.5	2.00	352.423	18.8	
7495.3	6.56	352.42	7448.4	815.9	-108.5	0.00	0.000	823.1	
7932.8	0.00	0.00	7885.0	840.7	-111.8	1.50	180.000	848.1	Mesaverde (25' Radius) Federal RGU 331-24-198
2792.8	0.00	0.00	12745.0	840.7	-111.8	0.00	0.000	848.1	

TVD	MD	Inc	Azi	+N/-S	+E/-W	VSect	Departure	Annotation
130.0	130.0	0.00	0.00	0.0	0.0	0.0	0.0	Start Build 2.00
457.4	458.2	6.56	352.42	18.6	-2.5	18.8	18.8	Hold 6.56 Inc
7448.4	7495.3	6.56	352.42	815.9	-108.5	823.1	823.1	Start Drop -1.50
7885.0	7932.8	0.00	0.00	840.7	-111.8	848.1	848.1	Vertical
12745.0	12792.8	0.00	0.00	840.7	-111.8	848.1	848.1	TD at 12793