

# **PICEANCE HL NAD 83**

**RG 24-01S-098W**

**RGU 31-24-198 Pad**

**Federal RGU 22-24-198 - Slot A5**

**Wellbore #1**

**Plan: Plan #1 09Jan09 kjs**

## **Standard Planning Report - Geographic**

**06 April, 2010**

**Williams**  
Planning Report - Geographic

|                  |                        |                                     |   |
|------------------|------------------------|-------------------------------------|---|
| <b>Database:</b> | Compass R5000 WIN AUTH | <b>Local Co-ordinate Reference:</b> | Well Federal RGU 22-24-198 (A5) - Slot A5             |
| <b>Company:</b>  | PICEANCE HL NAD 83     | <b>TVD Reference:</b>               | KELLY BUSHING @ 6565.0usft (Cyclone 29 (21' rkb) jjb) |
| <b>Project:</b>  | RG 24-01S-098W         | <b>MD Reference:</b>                | KELLY BUSHING @ 6565.0usft (Cyclone 29 (21' rkb) jjb) |
| <b>Site:</b>     | RGU 31-24-198 Pad      | <b>North Reference:</b>             | True  |
| <b>Well:</b>     | Federal RGU 22-24-198  | <b>Survey Calculation Method:</b>   | Minimum Curvature                                     |
| <b>Wellbore:</b> | Wellbore #1            |                                     |   |
| <b>Design:</b>   | Plan #1 09Jan09 kjs    |                                     |   |

|                    |   |                      |                |
|--------------------|---|----------------------|----------------|
| <b>Project</b>     | RG 24-01S-098W, Rio Blanco County, CO, RG 24-01S-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                                 |                      |                |

|                       |          |                   |                   |                   |                   |
|-----------------------|----------|-------------------|-------------------|-------------------|-------------------|
| 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 22-24-198 - Slot A5 |          |                     |                   |               |                   |
| Well Position        | +N/-S                           | 0.0 usft | Northing:           | 1,784,364.40 usft | Latitude:     | 39° 57' 9.860 N   |
|                      | +E/-W                           | 0.0 usft | Easting:            | 2,203,968.60 usft | Longitude:    | 108° 20' 22.881 W |
| Position Uncertainty |                                 | 0.0 usft | Wellhead Elevation: |                   | Ground Level: | 6,544.0 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> |
|                  | IGRF200510        | 1/8/2009           | 10.862                 | 66.126               | 52,718                     |

|                          |                                |                     |                      |                      |
|--------------------------|--------------------------------|---------------------|----------------------|----------------------|
| <b>Design</b>            | Plan #1 09Jan09 kjs            |                     |                      |                      |
| <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                  | 260.31               |

| <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   |                      |
| 682.0                 | 11.24           | 260.31      | 678.4                 | -9.2         | -54.2        | 2.00                    | 2.00                   | 0.00                  | 260.310 |                      |
| 7,199.0               | 11.24           | 260.31      | 7,070.4               | -223.1       | -1,306.4     | 0.00                    | 0.00                   | 0.00                  | 0.000   |                      |
| 7,948.4               | 0.00            | 0.00        | 7,815.0               | -235.4       | -1,378.6     | 1.50                    | -1.50                  | 0.00                  | 180.000 | Mesaverde (25' Radiu |
| 12,848.4              | 0.00            | 0.00        | 12,715.0              | -235.4       | -1,378.6     | 0.00                    | 0.00                   | 0.00                  | 0.000   |                      |

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|                  |                        |                                     |   |
|------------------|------------------------|-------------------------------------|---|
| <b>Database:</b> | Compass R5000 WIN AUTH | <b>Local Co-ordinate Reference:</b> | Well Federal RGU 22-24-198 (A5) - Slot A5             |
| <b>Company:</b>  | PICEANCE HL NAD 83     | <b>TVD Reference:</b>               | KELLY BUSHING @ 6565.0usft (Cyclone 29 (21' rkb) jjb) |
| <b>Project:</b>  | RG 24-01S-098W         | <b>MD Reference:</b>                | KELLY BUSHING @ 6565.0usft (Cyclone 29 (21' rkb) jjb) |
| <b>Site:</b>     | RGU 31-24-198 Pad      | <b>North Reference:</b>             | True  |
| <b>Well:</b>     | Federal RGU 22-24-198  | <b>Survey Calculation Method:</b>   | Minimum Curvature                                     |
| <b>Wellbore:</b> | Wellbore #1            |                                     |   |
| <b>Design:</b>   | 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          | 1,784,364.40        | 2,203,968.60       | 39° 57' 9.860 N | 108° 20' 22.881 W |
| 120.0                 | 0.00            | 0.00        | 120.0                 | 0.0          | 0.0          | 1,784,364.40        | 2,203,968.60       | 39° 57' 9.860 N | 108° 20' 22.881 W |
| 682.0                 | 11.24           | 260.31      | 678.4                 | -9.2         | -54.2        | 1,784,356.85        | 2,203,914.17       | 39° 57' 9.768 N | 108° 20' 23.577 W |
| 7,199.0               | 11.24           | 260.31      | 7,070.4               | -223.1       | -1,306.4     | 1,784,182.27        | 2,202,655.88       | 39° 57' 7.655 N | 108° 20' 39.655 W |
| 7,948.4               | 0.00            | 0.00        | 7,815.0               | -235.4       | -1,378.6     | 1,784,172.20        | 2,202,583.30       | 39° 57' 7.533 N | 108° 20' 40.583 W |
| 12,848.4              | 0.00            | 0.00        | 12,715.0              | -235.4       | -1,378.6     | 1,784,172.20        | 2,202,583.30       | 39° 57' 7.533 N | 108° 20' 40.583 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         | 7,815.0    | -235.4       | -1,378.6     | 1,784,172.20    | 2,202,583.30   | 39° 57' 7.533 N | 108° 20' 40.583 W |
| - plan hits target center |               |              |            |              |              |                 |                |                 |                   |
| - Circle (radius 25.0)    |               |              |            |              |              |                 |                |                 |                   |
| Mesaverde (50' Radius)    | 0.00          | 0.00         | 7,815.0    | -235.4       | -1,378.6     | 1,784,172.20    | 2,202,583.30   | 39° 57' 7.533 N | 108° 20' 40.583 W |
| - plan hits target center |               |              |            |              |              |                 |                |                 |                   |
| - Circle (radius 50.0)    |               |              |            |              |              |                 |                |                 |                   |

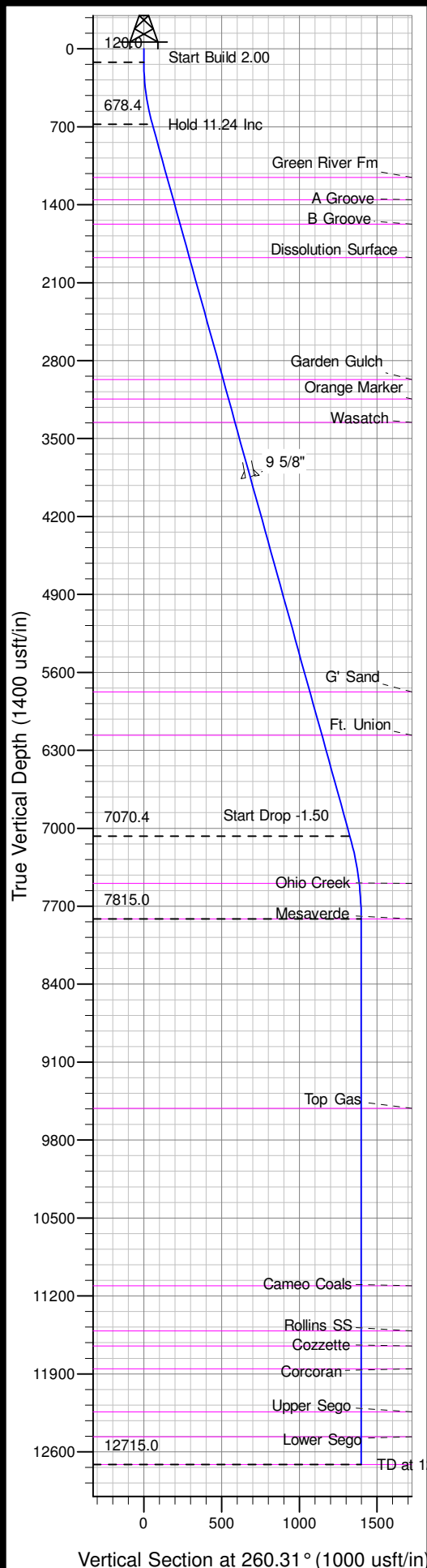
| Casing Points         |                       |        |                      |                    |  |
|-----------------------|-----------------------|--------|----------------------|--------------------|--|
| Measured Depth (usft) | Vertical Depth (usft) | Name   | Casing Diameter (in) | Hole Diameter (in) |  |
| 3,911.0               | 3,845.5               | 9 5/8" | 9.625                | 13.500             |  |

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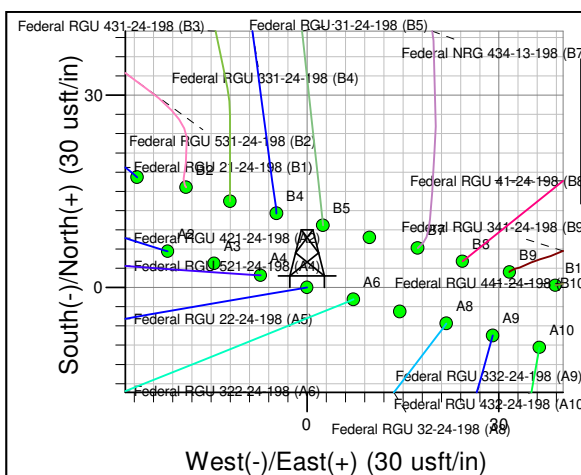
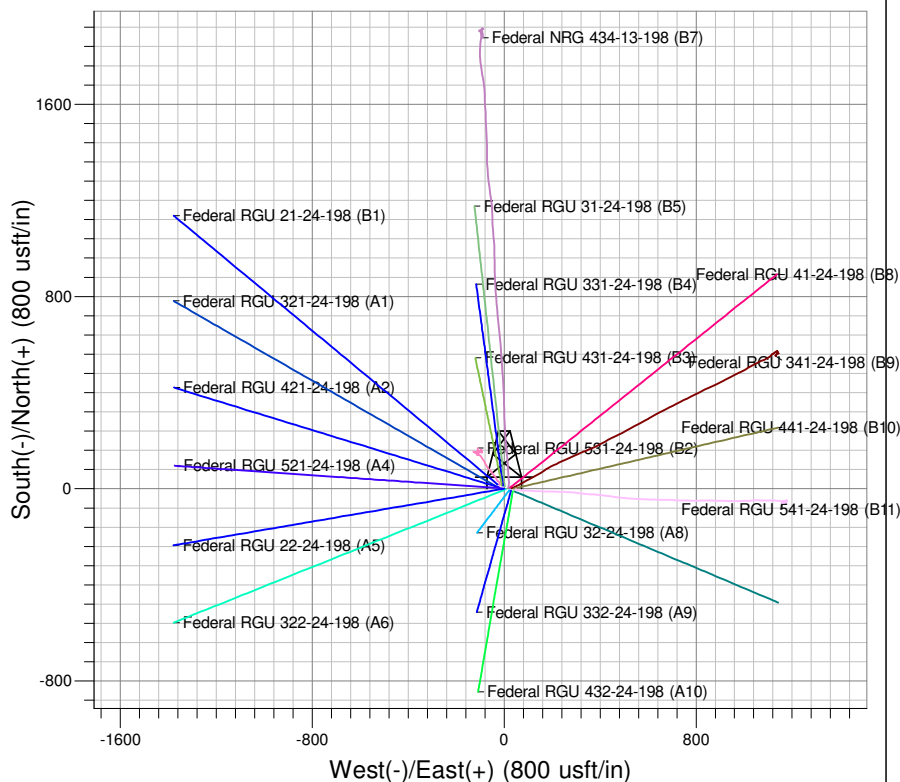
|                  |                        |                                     |   |
|------------------|------------------------|-------------------------------------|---|
| <b>Database:</b> | Compass R5000 WIN AUTH | <b>Local Co-ordinate Reference:</b> | Well Federal RGU 22-24-198 (A5) - Slot A5             |
| <b>Company:</b>  | PICEANCE HL NAD 83     | <b>TVD Reference:</b>               | KELLY BUSHING @ 6565.0usft (Cyclone 29 (21' rkb) jjb) |
| <b>Project:</b>  | RG 24-01S-098W         | <b>MD Reference:</b>                | KELLY BUSHING @ 6565.0usft (Cyclone 29 (21' rkb) jjb) |
| <b>Site:</b>     | RGU 31-24-198 Pad      | <b>North Reference:</b>             | True  |
| <b>Well:</b>     | Federal RGU 22-24-198  | <b>Survey Calculation Method:</b>   | Minimum Curvature                                     |
| <b>Wellbore:</b> | Wellbore #1            |                                     |   |
| <b>Design:</b>   | Plan #1 09Jan09 kjs    |                                     |   |

| Formations            |                       |                     |           |         |                   |  |
|-----------------------|-----------------------|---------------------|-----------|---------|-------------------|--|
| Measured Depth (usft) | Vertical Depth (usft) | Name                | Lithology | Dip (°) | Dip Direction (°) |  |
| 1,167.9               | 1,155.0               | Green River Fm      |           |         |                   |  |
| 1,371.8               | 1,355.0               | A Groove            |           |         |                   |  |
| 1,596.1               | 1,575.0               | B Groove            |           |         |                   |  |
| 1,902.0               | 1,875.0               | Dissolution Surface |           |         |                   |  |
| 3,018.4               | 2,970.0               | Garden Gulch        |           |         |                   |  |
| 3,196.8               | 3,145.0               | Orange Marker       |           |         |                   |  |
| 3,410.9               | 3,355.0               | Wasatch             |           |         |                   |  |
| 5,878.3               | 5,775.0               | G' Sand             |           |         |                   |  |
| 6,275.9               | 6,165.0               | Ft. Union           |           |         |                   |  |
| 7,628.0               | 7,495.0               | Ohio Creek          |           |         |                   |  |
| 7,948.4               | 7,815.0               | Mesaverde           |           |         |                   |  |
| 9,648.4               | 9,515.0               | Top Gas             |           |         |                   |  |
| 11,243.4              | 11,110.0              | Cameo Coals         |           |         |                   |  |
| 11,648.4              | 11,515.0              | Rollins SS          |           |         |                   |  |
| 11,783.4              | 11,650.0              | Cozzette            |           |         |                   |  |
| 11,988.4              | 11,855.0              | Corcoran            |           |         |                   |  |
| 12,373.4              | 12,240.0              | Upper Sego          |           |         |                   |  |
| 12,598.4              | 12,465.0              | Lower Sego          |           |         |                   |  |
| 12,848.4              | 12,715.0              | TD                  |           | 0.000   |                   |  |

| 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 |
| 682.0                 | 678.4                 | -9.2              | -54.2        | Hold 11.24 Inc   |
| 7,199.0               | 7,070.4               | -223.1            | -1,306.4     | Start Drop -1.50 |
| 7,948.4               | 7,815.0               | -235.4            | -1,378.6     | Vertical         |
| 12,848.4              | 12,715.0              | -235.4            | -1,378.6     | TD at 12848      |



Well Name: Federal RGU 22-24-198  
 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 1784364.40 2203968.60 39° 57' 9.860 N 108° 20' 22.881 W A5  
 Cyclone 29 (21' rkb) jfb BUSHING @ 6565.0usft (Cyclone 29 (21' rkb) jfb)



Project: RG 24-01S-098W  
 Site: RGU 31-24-198 Pad  
 Well: Federal RGU 22-24-198  
 Plan: Plan #1 09Jan09 kjs

Azimuths to True North  
 Magnetic North: 10.86°  
 Magnetic Field  
 Strength: 52718.3nT  
 Dip Angle: 66.13°  
 Date: 1/8/2009  
 Model: IGRF200510

#### SECTION DETAILS

| MD      | Inc   | Azi    | TVD     | +N/-S  | +E/-W   | Dleg | TFace   | V Sect | Target                                       |
|---------|-------|--------|---------|--------|---------|------|---------|--------|--|
| 0.0     | 0.00  | 0.00   | 0.0     | 0.0    | 0.0     | 0.00 | 0.000   | 0.0    |  |
| 120.0   | 0.00  | 0.00   | 120.0   | 0.0    | 0.0     | 0.00 | 0.000   | 0.0    |  |
| 682.0   | 11.24 | 260.31 | 678.4   | -9.2   | -54.2   | 2.00 | 260.310 | 55.0   |  |
| 7199.0  | 11.24 | 260.31 | 7070.4  | -223.1 | -1306.4 | 0.00 | 0.000   | 1325.3 |  |
| 7948.4  | 0.00  | 0.00   | 7815.0  | -235.4 | -1378.6 | 1.50 | 180.000 | 1398.6 | Mesaverde (25' Radius) Federal RGU 22-24-198 |
| 12848.4 | 0.00  | 0.00   | 12715.0 | -235.4 | -1378.6 | 0.00 | 0.000   | 1398.6 |  |

| TVD     | MD      | Inc   | Azi    | +N/-S  | +E/-W   | V Sect | Departure | Annotation       |
|---------|---------|-------|--------|--------|---------|--------|-----------|------------------|
| 120.0   | 120.0   | 0.00  | 0.00   | 0.0    | 0.0     | 0.0    | 0.0       | Start Build 2.00 |
| 678.4   | 682.0   | 11.24 | 260.31 | -9.2   | -54.2   | 55.0   | 55.0      | Hold 11.24 Inc   |
| 7070.4  | 7199.0  | 11.24 | 260.31 | -223.1 | -1306.4 | 1325.3 | 1325.3    | Start Drop -1.50 |
| 7815.0  | 7948.4  | 0.00  | 0.00   | -235.4 | -1378.6 | 1398.6 | 1398.6    | Vertical         |
| 12715.0 | 12848.4 | 0.00  | 0.00   | -235.4 | -1378.6 | 1398.6 | 1398.6    | TD at 12848      |