

# **PICEANCE VLY NAD 83**

**RU 32-06S-094W**

**RWF 44-32 Pad**

**RWF 434-32 - Slot A7**

**Wellbore #1**

**Plan: Plan #1 13Aug09 kjs**

## **Standard Planning Report - Geographic**

**09 October, 2009**

# Williams Production RMT Company

## Planning Report - Geographic

|                  |                     |                                     |  |
|------------------|---------------------|-------------------------------------|--|
| <b>Database:</b> | EDMDB_COMPASS       | <b>Local Co-ordinate Reference:</b> | Well RWF 434-32 - Slot A7                    |
| <b>Company:</b>  | PICEANCE VLY NAD 83 | <b>TVD Reference:</b>               | KELLY BUSHING @ 6036.0ft (H&P (24' RKB) kjs) |
| <b>Project:</b>  | RU 32-06S-094W      | <b>MD Reference:</b>                | KELLY BUSHING @ 6036.0ft (H&P (24' RKB) kjs) |
| <b>Site:</b>     | RWF 44-32 Pad       | <b>North Reference:</b>             | True   |
| <b>Well:</b>     | RWF 434-32          | <b>Survey Calculation Method:</b>   | Minimum Curvature                            |
| <b>Wellbore:</b> | Wellbore #1         |                                     |  |
| <b>Design:</b>   | Plan #1 13Aug09 kjs |                                     |  |

|                    |                                     |                      |                             |
|--------------------|-------------------------------------|----------------------|-----------------------------|
| <b>Project</b>     | RU 32-06S-094W, Garfield County, CO |                      |                             |
| <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               |                      | Using geodetic scale factor |

|                              |               |                          |                   |
|------------------------------|---------------|--------------------------|-------------------|
| <b>Site</b>                  | RWF 44-32 Pad |                          |                   |
| <b>Site Position:</b>        |               | <b>Northing:</b>         | 1,607,842.20 ft   |
| <b>From:</b>                 | Map           | <b>Easting:</b>          | 2,321,025.20 ft   |
| <b>Position Uncertainty:</b> | 0.0 ft        | <b>Slot Radius:</b>      | "                 |
|                              |               | <b>Latitude:</b>         | 39° 28' 39.429 N  |
|                              |               | <b>Longitude:</b>        | 107° 54' 20.357 W |
|                              |               | <b>Grid Convergence:</b> | -1.52 °           |

|                             |                      |                            |                   |
|-----------------------------|----------------------|----------------------------|-------------------|
| <b>Well</b>                 | RWF 434-32 - Slot A7 |                            |                   |
| <b>Well Position</b>        | <b>+N/-S</b>         | 0.0 ft                     | <b>Northing:</b>  |
|                             | <b>+E/-W</b>         | 0.0 ft                     | <b>Easting:</b>   |
| <b>Position Uncertainty</b> | 0.0 ft               | <b>Wellhead Elevation:</b> | ft                |
|                             |                      | <b>Latitude:</b>           | 39° 28' 38.989 N  |
|                             |                      | <b>Longitude:</b>          | 107° 54' 20.280 W |
|                             |                      | <b>Ground Level:</b>       | 6,012.0 ft        |

|                  |                   |                    |                            |                          |                                |
|------------------|-------------------|--------------------|----------------------------|--------------------------|--------------------------------|
| <b>Wellbore</b>  | Wellbore #1       |                    |                            |                          |                                |
| <b>Magnetics</b> | <b>Model Name</b> | <b>Sample Date</b> | <b>Declination<br/>(°)</b> | <b>Dip Angle<br/>(°)</b> | <b>Field Strength<br/>(nT)</b> |
|                  | IGRF2005-10       | 8/13/2009          | 10.53                      | 65.80                    | 52,513                         |

|                          |                                  |                       |                       |                          |
|--------------------------|----------------------------------|-----------------------|-----------------------|--------------------------|
| <b>Design</b>            | Plan #1 13Aug09 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)<br/>(ft)</b> | <b>+N/-S<br/>(ft)</b> | <b>+E/-W<br/>(ft)</b> | <b>Direction<br/>(°)</b> |
|                          | 0.0                              | 0.0                   | 0.0                   | 265.15                   |

| <b>Plan Sections</b>      |                    |                |                           |               |               |                             |                            |                           |            |                      |
|---------------------------|--------------------|----------------|---------------------------|---------------|---------------|-----------------------------|----------------------------|---------------------------|------------|----------------------|
| Measured<br>Depth<br>(ft) | Inclination<br>(°) | Azimuth<br>(°) | Vertical<br>Depth<br>(ft) | +N/-S<br>(ft) | +E/-W<br>(ft) | Dogleg<br>Rate<br>(°/100ft) | Build<br>Rate<br>(°/100ft) | Turn<br>Rate<br>(°/100ft) | TFO<br>(°) | Target               |
| 0.0                       | 0.00               | 0.00           | 0.0                       | 0.0           | 0.0           | 0.00                        | 0.00                       | 0.00                      | 0.00       |                      |
| 120.0                     | 0.00               | 0.00           | 120.0                     | 0.0           | 0.0           | 0.00                        | 0.00                       | 0.00                      | 0.00       |                      |
| 453.3                     | 10.00              | 265.15         | 451.6                     | -2.5          | -28.9         | 3.00                        | 3.00                       | 0.00                      | 265.15     |                      |
| 2,929.3                   | 10.00              | 265.15         | 2,890.0                   | -38.8         | -457.3        | 0.00                        | 0.00                       | 0.00                      | 0.00       |                      |
| 3,029.9                   | 13.52              | 265.14         | 2,988.4                   | -40.5         | -477.7        | 3.50                        | 3.50                       | 0.00                      | 0.00       |                      |
| 5,253.3                   | 13.52              | 265.14         | 5,150.3                   | -84.5         | -995.7        | 0.00                        | 0.00                       | 0.00                      | 0.00       |                      |
| 5,929.3                   | 0.00               | 0.00           | 5,820.0                   | -91.3         | -1,074.8      | 2.00                        | -2.00                      | 0.00                      | 180.00     | Top Gas (25' Radius) |
| 8,479.3                   | 0.00               | 0.00           | 8,370.0                   | -91.3         | -1,074.8      | 0.00                        | 0.00                       | 0.00                      | 0.00       |                      |

# Williams Production RMT Company

## Planning Report - Geographic

|                  |                     |                                     |  |
|------------------|---------------------|-------------------------------------|--|
| <b>Database:</b> | EDMDB_COMPASS       | <b>Local Co-ordinate Reference:</b> | Well RWF 434-32 - Slot A7                    |
| <b>Company:</b>  | PICEANCE VLY NAD 83 | <b>TVD Reference:</b>               | KELLY BUSHING @ 6036.0ft (H&P (24' RKB) kjs) |
| <b>Project:</b>  | RU 32-06S-094W      | <b>MD Reference:</b>                | KELLY BUSHING @ 6036.0ft (H&P (24' RKB) kjs) |
| <b>Site:</b>     | RWF 44-32 Pad       | <b>North Reference:</b>             | True   |
| <b>Well:</b>     | RWF 434-32          | <b>Survey Calculation Method:</b>   | Minimum Curvature                            |
| <b>Wellbore:</b> | Wellbore #1         |                                     |  |
| <b>Design:</b>   | Plan #1 13Aug09 kjs |                                     |  |

| Planned Survey       |                 |             |                     |            |            |                   |                  |                  |                   |
|----------------------|-----------------|-------------|---------------------|------------|------------|-------------------|------------------|------------------|-------------------|
| Measured Depth (ft)  | Inclination (°) | Azimuth (°) | Vertical Depth (ft) | +N/-S (ft) | +E/-W (ft) | Map Northing (ft) | Map Easting (ft) | Latitude         | Longitude         |
| 0.0                  | 0.00            | 0.00        | 0.0                 | 0.0        | 0.0        | 1,607,797.46      | 2,321,030.05     | 39° 28' 38.989 N | 107° 54' 20.280 W |
| 120.0                | 0.00            | 0.00        | 120.0               | 0.0        | 0.0        | 1,607,797.46      | 2,321,030.05     | 39° 28' 38.989 N | 107° 54' 20.280 W |
| 453.3                | 10.00           | 265.15      | 451.6               | -2.5       | -28.9      | 1,607,795.78      | 2,321,001.08     | 39° 28' 38.964 N | 107° 54' 20.649 W |
| 1,111.7              | 10.00           | 265.15      | 1,100.0             | -12.1      | -142.8     | 1,607,789.13      | 2,320,886.96     | 39° 28' 38.869 N | 107° 54' 22.101 W |
| 9 5/8"               |                 |             |                     |            |            |                   |                  |                  |                   |
| 2,421.6              | 10.00           | 265.15      | 2,390.0             | -31.4      | -369.5     | 1,607,775.91      | 2,320,659.89     | 39° 28' 38.679 N | 107° 54' 24.992 W |
| Top of "G" Sand      |                 |             |                     |            |            |                   |                  |                  |                   |
| 2,523.1              | 10.00           | 265.15      | 2,490.0             | -32.8      | -387.0     | 1,607,774.88      | 2,320,642.29     | 39° 28' 38.664 N | 107° 54' 25.216 W |
| Base of "G" Sand     |                 |             |                     |            |            |                   |                  |                  |                   |
| 2,929.3              | 10.00           | 265.15      | 2,890.0             | -38.8      | -457.3     | 1,607,770.78      | 2,320,571.88     | 39° 28' 38.605 N | 107° 54' 26.112 W |
| 3,029.9              | 13.52           | 265.14      | 2,988.4             | -40.5      | -477.7     | 1,607,769.59      | 2,320,551.42     | 39° 28' 38.588 N | 107° 54' 26.372 W |
| 4,821.1              | 13.52           | 265.14      | 4,730.0             | -76.0      | -895.0     | 1,607,745.21      | 2,320,133.42     | 39° 28' 38.238 N | 107° 54' 31.693 W |
| Mesaverde            |                 |             |                     |            |            |                   |                  |                  |                   |
| 5,253.3              | 13.52           | 265.14      | 5,150.3             | -84.5      | -995.7     | 1,607,739.32      | 2,320,032.54     | 39° 28' 38.153 N | 107° 54' 32.977 W |
| 5,929.3              | 0.00            | 0.00        | 5,820.0             | -91.3      | -1,074.8   | 1,607,734.70      | 2,319,953.30     | 39° 28' 38.087 N | 107° 54' 33.986 W |
| Approx. Top Gas      |                 |             |                     |            |            |                   |                  |                  |                   |
| 7,329.3              | 0.00            | 0.00        | 7,220.0             | -91.3      | -1,074.8   | 1,607,734.70      | 2,319,953.30     | 39° 28' 38.087 N | 107° 54' 33.986 W |
| Cameo Coals          |                 |             |                     |            |            |                   |                  |                  |                   |
| 8,139.3              | 0.00            | 0.00        | 8,030.0             | -91.3      | -1,074.8   | 1,607,734.70      | 2,319,953.30     | 39° 28' 38.087 N | 107° 54' 33.986 W |
| Coal D               |                 |             |                     |            |            |                   |                  |                  |                   |
| 8,279.3              | 0.00            | 0.00        | 8,170.0             | -91.3      | -1,074.8   | 1,607,734.70      | 2,319,953.30     | 39° 28' 38.087 N | 107° 54' 33.986 W |
| Base Lower Cameo Pay |                 |             |                     |            |            |                   |                  |                  |                   |
| 8,329.3              | 0.00            | 0.00        | 8,220.0             | -91.3      | -1,074.8   | 1,607,734.70      | 2,319,953.30     | 39° 28' 38.087 N | 107° 54' 33.986 W |
| Rollins              |                 |             |                     |            |            |                   |                  |                  |                   |
| 8,479.3              | 0.00            | 0.00        | 8,370.0             | -91.3      | -1,074.8   | 1,607,734.70      | 2,319,953.30     | 39° 28' 38.087 N | 107° 54' 33.986 W |

| Targets                 |               |              |          |            |            |               |              |                  |                   |
|-------------------------|---------------|--------------|----------|------------|------------|---------------|--------------|------------------|-------------------|
| Target Name             | Dip Angle (°) | Dip Dir. (°) | TVD (ft) | +N/-S (ft) | +E/-W (ft) | Northing (ft) | Easting (ft) | Latitude         | Longitude         |
| - hit/miss target       |               |              |          |            |            |               |              |                  |                   |
| - Shape                 |               |              |          |            |            |               |              |                  |                   |
| Top Gas (25' Radius) R1 | 0.00          | 0.00         | 5,820.0  | -91.3      | -1,074.8   | 1,607,734.70  | 2,319,953.30 | 39° 28' 38.087 N | 107° 54' 33.986 W |
| - plan hits target      |               |              |          |            |            |               |              |                  |                   |
| - Circle (radius 25.0)  |               |              |          |            |            |               |              |                  |                   |

| Casing Points       |                     |        |                     |                   |  |
|---------------------|---------------------|--------|---------------------|-------------------|--|
| Measured Depth (ft) | Vertical Depth (ft) | Name   | Casing Diameter (") | Hole Diameter (") |  |
| 1,111.7             | 1,100.0             | 9 5/8" | 9-5/8               | 12-1/4            |  |

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|                  |                     |                                     |  |
|------------------|---------------------|-------------------------------------|--|
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| <b>Company:</b>  | PICEANCE VLY NAD 83 | <b>TVD Reference:</b>               | KELLY BUSHING @ 6036.0ft (H&P (24' RKB) kjs) |
| <b>Project:</b>  | RU 32-06S-094W      | <b>MD Reference:</b>                | KELLY BUSHING @ 6036.0ft (H&P (24' RKB) kjs) |
| <b>Site:</b>     | RWF 44-32 Pad       | <b>North Reference:</b>             | True   |
| <b>Well:</b>     | RWF 434-32          | <b>Survey Calculation Method:</b>   | Minimum Curvature                            |
| <b>Wellbore:</b> | Wellbore #1         |                                     |  |
| <b>Design:</b>   | Plan #1 13Aug09 kjs |                                     |  |

| Formations          |                     |                      |           |         |                   |  |
|---------------------|---------------------|----------------------|-----------|---------|-------------------|--|
| Measured Depth (ft) | Vertical Depth (ft) | Name                 | Lithology | Dip (°) | Dip Direction (°) |  |
| 2,421.6             | 2,390.00            | Top of "G" Sand      |           |         |                   |  |
| 2,523.1             | 2,490.00            | Base of "G" Sand     |           |         |                   |  |
| 4,821.1             | 4,730.00            | Mesaverde            |           |         |                   |  |
| 5,929.3             | 5,820.00            | Approx. Top Gas      |           |         |                   |  |
| 7,329.3             | 7,220.00            | Cameo Coals          |           |         |                   |  |
| 8,139.3             | 8,030.00            | Coal D               |           |         |                   |  |
| 8,279.3             | 8,170.00            | Base Lower Cameo Pay |           |         |                   |  |
| 8,329.3             | 8,220.00            | Rollins              |           |         |                   |  |
| 8,479.3             | 8,370.00            | TD                   |           | 0.00    |                   |  |

| Plan Annotations    |                     |                   |            |                        |  |
|---------------------|---------------------|-------------------|------------|------------------------|--|
| Measured Depth (ft) | Vertical Depth (ft) | Local Coordinates |            |                        |  |
|                     |                     | +N/-S (ft)        | +E/-W (ft) | Comment                |  |
| 120.0               | 120.0               | 0.0               | 0.0        | Start Build 3.00       |  |
| 453.3               | 451.6               | -2.5              | -28.9      | Hold 10.00 Inclination |  |
| 2,929.3             | 2,890.0             | -38.8             | -457.3     | Start Build 3.50       |  |
| 3,029.9             | 2,988.4             | -40.5             | -477.7     | Hold 13.52 Inclination |  |
| 5,253.3             | 5,150.3             | -84.5             | -995.7     | Start Drop -2.00       |  |
| 5,929.3             | 5,820.0             | -91.3             | -1,074.8   | Top Gas                |  |
| 8,479.3             | 8,370.0             | -91.3             | -1,074.8   | TD at 8479.3           |  |