

3.2 **Laboratory simulation of in situ oil shale retorting conditions to assess product yield and composition**

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The Fischer Assay is the standard method for assessing oil shale production potential regarding yield of shale oil, gas, and water. Data from Fischer Assay is often used as a first approximation of generation potential even when the proposed retort process does not operate under comparable conditions. For example, most of the proposed in situ retort technologies currently under development operate at lower temperatures, higher pressures, and slower heating rates than the Fischer Assay. These in situ retorting processes are also known to generate higher quality oil products but with lower yields than the Fischer Assay. In this study, oil shale of the Mahogany zone of the Eocene Green River Formation from the Piceance Basin were retorted under conditions more like those proposed for in situ retorting in order to better quantify differences in oil yield and quality. Two different apparatus were used in these in situ simulation experiments; a Fischer Assay retort operating at a final soak temperature of 360°C and at near atmospheric pressure and a closed retort reactor operating at the same temperature but significantly higher pressures (600-800 psia). A key advantage of the closed retort system is the ease with which gas samples can be collected for compositional analysis. The differences in the generated products and residues from the different in situ simulations will be discussed and compared to those of the standard Fischer Assay. These pyrolysis schemes provide alternatives to the standard Fischer Assay and may be better for evaluating potential oil quality and yield for in situ retorting.