

3.2 **Shell's In Situ Conversion Process – Factors Affecting the Properties of Produced Shale Oil**

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The key subsurface variables that affect the characteristics of Colorado Green River shale oil produced from Shell's ICP technology are discussed. Compared to surface-retorted shale oil, ICP shale oil has higher API gravity, the absence of residuum, and lower amounts of aromatics, olefins and heteroatoms. Extensive laboratory and field pilot studies have shown that the major factors controlling the product quality are the heating rate, which controls the severity of the thermal cracking, and the pore pressure, which controls the degree of in situ hydrogen transfer. ICP oils produced from field pilots at different depths show that the lithostatic stress does not control the product quality. The refining aspects of the produced shale oil are discussed in a following paper.