

Reservoirs, Petroleum Systems and Exploration Challenges in the Intermontane Basins of British Columbia

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Abstract

The Intermontane basins of British Columbia, cover ~160,000 square kilometers and contain >500,000 cubic kilometers of stratified successions. Fourteen wells have been drilled, of which seven are unique tests. Eight wells were cored and no samples are available for three wells. For a variety of reasons the wells do not test all of the prospective reservoirs and many are drilled in unfavourable diagenetic facies (i.e. high thermal maturity).

Cores, samples, tests and log interpretations indicate both potential reservoirs and petroleum shows. Gas flowed on test from the Nazko c-95-E/93-B-11 well in Nechako basin and a Bowser basin well, Ritchie a-003-J/104-A-06, has a porous sandstone interval containing either gas or fresh water. Recent investigations have substantiated that large areas are not prospective, however, it is also recognized that the pattern of sedimentation, deformation and thermal maturity is complicated and that there are domains of lower thermal maturity, potential reservoir and effective petroleum

systems within this vast region. Some the best potential reservoirs have been observed in outcrop only.

The search for suitable reservoir has become one of the key activities for the identification of petroleum potential. The challenge is to find regions of suitable geological history, which preserve petroleum potential and prospectivity. In addition, it is important to explore the roles of tectonics and diagenesis on reservoir preservation and enhancement in these predominantly lithic and volcanic successions. By employing analogies based upon Japanese petroleum fields and deep (>5 km) American petroleum provinces we propose reservoir models for the Intermontane Belt.