

Southern Nechako Basin: Preliminary Apatite Fission Track Thermochronology and its Bearing on Petroleum Prospectivity

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Abstract

The Nechako Intermontane Basin is located in central British Columbia and contains Jurassic?, Cretaceous and Tertiary sedimentary and volcanic rocks. Stratigraphic sequences within the southern part of the basin share many similarities with marine and fluvial sedimentary and volcanic rocks of the Tyaughton-Methow Basin exposed within the Chilcotin Ranges. The southern part of the Nechako Basin was the focus of intermittent petroleum exploration between 1960 and 1985. Although high quality reservoir and source beds have not yet been demonstrated in this region, several gas and oil shows have been documented, suggesting the presence of a petroleum system.

In 2002, the BC Ministry of Energy, Mines and Petroleum Resources began a re-examination of this area in hopes of obtaining new information which could shed light on the ultimate petroleum potential of this large area. During the summer of 2005, numerous surface samples were obtained from the southern part of the basin for the purpose of low temperature thermochronology via apatite fission track analysis. Economic basement, clastic sedimentary rocks and overlying volcanics were sampled. In addition, subsurface samples were acquired from several of the petroleum wells penetrating the basin. The integration of surface and subsurface apatite fission track thermochronology will improve definition of the petroleum prospectivity of this area. This new information is part of a larger effort towards obtaining baseline data (paleogeothermometry, biostratigraphy, etc) that can be utilized within basin modeling exercises.