

The Nechako Basin: New Insights into a Cordilleran Intermontane Basin

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The Nechako Basin, one of several large Intermontane Basins found along the Canadian Cordillera, covers some 70,000 km² and contains over 3000 m of Mesozoic and Cenozoic clastic sequences. These represent overlap successions deposited during and after accretion of volcano-sedimentary terranes along the western edge of North America. Jurassic and Cretaceous sequences are composed of marine and fluvial-deltaic clastics. Cenozoic sediments represent fluvial and possibly lacustrine environments. Mesozoic stratigraphy is locally dominated by volcanic and volcanoclastic material. Widespread Eocene volcanic sequences and Miocene age flood basalts mask most of the Mesozoic stratigraphy in the Nechako region.

These rocks underwent mid-Cretaceous compression and Late Cretaceous to Paleogene transcurrent faulting. Strike-slip structures locally produced extensional basins filled with Cenozoic clastic sequences.

Eight exploratory wells were drilled in the southern part of basin between 1960 and 1985. Correlation between wells is difficult due to facies changes, faulting and lack of stratigraphic control. Live oil and gas shows were encountered in several wells and porosity ranges from poor to good (15%). Initial subsurface source rock analysis suggests poor to moderate TOC values and a dominance of Type III kerogens.

New source rock analysis of correlative surface sections has recognized organic-rich Middle Jurassic horizons found around the fringes of the Nechako Basin area. These may underlie the Cretaceous strata intersected by the exploratory wells. New subsurface vitrinite reflectance data

indicates oil to dry gas maturation levels. Characterization of oil inclusions in core from several of the wells is underway. Current and new age data indicate that subsurface sequences are latest Jurassic to Cenozoic in age. Initial apatite fission track data indicates that basin uplift began in the Eocene.