

Analysis of well data to design side-tracks in structurally complex areas: case studies from the Monkman Triassic playtrend, NE. British Columbia

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The Monkman area lies within the foothills of the Canadian Rocky Mt. in NE. British Columbia between the Alberta border and Williston Lake. The area is topographically difficult and structurally complex with a number of detachments within the section that create tectono-stratigraphic units with distinct structural styles. The traps are primarily folds within the Triassic carbonates that have detached from either anhydrite rich layers within the middle Triassic or shale dominated layers within the lower Triassic. The structural style of the primary target zone is interpreted from limited outcrop exposures, wireline logs and detailed dip data provided by imaging tools.

Wells drilled in the area have, in some cases, required side-tracks for a variety of reasons. These reasons include; (1) becoming stuck in the highly strained Fernie shales above the primary target that can sluff into the well bore, (2) missing the main structure, usually off the front or northeast, and penetrating the steeply dipping beds of Fernie shale, (3) missing the sweet spot of the reservoir, thought to be the highly fractured hinge zone of the fold, and encountering the Triassic porous zones in either the steep forelimb or the shallow dipping backlimb. Side-track wells of the last type are usually drilled in order to significantly enhance the well deliverability. A series of case studies have been compiled to illustrate the methodology used to fine tune the target for a side-track well and to show the results of such side-tracked wells.