

Detection and Analysis of Basement Structures and their Influence on Hydrocarbon Plays on Northeast British Columbia

Zeev Berger*

Image Interpretation Technologies inc., Calgary, Alberta, Canada

Zeev@iitech.ca

Abstract

Recent quality improvements in the free GSC magnetic data and new developments in magnetic filtering techniques allowed us to generate a cost-effective tectonic map over NEBC. We demonstrate the control of basement structures on hydrocarbon plays as well as identify new concepts for exploration in this region. The most important contribution of this study is to the emerging play of the Doig Formation. This study illustrates how Doig "incised valleys" appear to develop along the downthrown side of reactivated basement faults and uplifted basement horst blocks. The relationship between basement faults and Doig reservoir fairways can be demonstrated in (1) the Buick-Cache Creek Complex; (2) the Doe-Gordondale complex; and (3) the Wembley field.

In addition, the relationship between basement structures and other reservoirs can be illustrated with examples from (1) the Parkland-Doe complex for the Wabamun Formation, (2) the Blueberry-Kobes complex for the Debolt Formation; and (3) the Deep Boundary Lake Complex for the Kiskatinaw Formation.