

POSSIBLE SOURCES OF CRETACEOUS OILS AND OIL SANDS IN THE WESTERN CANADIAN BASIN

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Source rock potential of 60 core samples from the Basal Cretaceous, Ostracod, Joli Fou, Viking, Base of Fish Scales, Second White Specks, First White Specks, Cardium and Belly River Formations in Alberta and Saskatch-

ewan have been assessed. Source rock evaluations yielded poor to very good oil source rock ratings for these cores. The kerogen type is primarily a mixture of Type II (oil-prone) and Type III (gas-prone) with thermal maturities ranging from immature to moderately mature. A comparison of the geochemical parameters of eight oils from Cretaceous reservoirs and Cretaceous heavy oil sand samples from Athabasca and Cold Lake areas shows the following: The Late Cretaceous reservoir oils are very similar geochemically although one oil has been slightly biodegraded. Geochemical oil-source rock correlation suggests a Late Cretaceous source for these oils. Early Cretaceous reservoir oils have differences in their geochemical parameters, suggesting that these oils represent oil from different sources which could include Early or Late Cretaceous or Mississippian formations. Geochemical parameters of the oil sands are very similar and therefore suggest a similar source for the oil sands along with severe biodegradation. Geochemical correlation of the Cretaceous cores and heavy oil sand is poor suggesting that a Cretaceous source for these oil sands is unlikely.