

New Evidence for Oil Source Rocks in the Peel Region, Yukon Territory

Tammy Allen*

Yukon Geological Survey, Whitehorse, YK
tammy.allen@gov.yk.ca

Tiffani Fraser

Yukon Geological Survey, Whitehorse, YK, Canada

and

Kirk Osadetz

Geological Survey of Canada, Calgary, AB, Canada

Summary

Previous petroleum resource assessments of the north Yukon's Peel region have suggested that gas is the most prospective hydrocarbon resource in the area with little to no potential for oil. Recent field investigations have identified the presence of oil-stained sandstone and shale inferred to have originated from two different sources.

Biomarker analyses of solvent extracts have concluded that two compositionally distinct oil families are present in the region. Eight samples were submitted including one sandstone from the Cretaceous Martin House Formation, six samples of sandstone from the Upper Devonian to Carboniferous Tuttle Formation and one sample of the Ford Lake Shale. Oil biomarkers of the Martin House sample are distinct from all other samples submitted and compositional traces suggest a Lower? Cretaceous or younger marine source for the sample from the Martin House. All remaining samples, although variable lightly to moderately biodegraded, appear to be stained by oil originating from a different source than the Cretaceous. These samples appear to all belong to the same oil family. Of these, the most pristine composition is represented from the extract of a petroleum stain in a potential Upper Paleozoic marine source rock.