

## **Regional Geoscience Studies and Petroleum Potential, Peel Plateau and Plain, Northern Mackenzie Corridor**

Leanne Pyle\*

Geological Survey of Canada, Sidney, British Columbia, Canada  
lpyle@nrcan.gc.ca

Adrienne Jones and Len Gal

Northwest Territories Geoscience Office, Yellowknife, Northwest Territories, Canada

and

Grant Abbott

Yukon Geological Survey, Whitehorse, Yukon, Canada

### **Abstract**

In 2005, reconnaissance field work was carried out in Peel Plateau and Plain (Peel Region), a prospective petroleum province that lies along the northern Mackenzie Corridor and straddles the Northwest Territories/Yukon border. Subsurface data comes from more than 70 exploratory wells in Peel Region, yet the geological history is poorly understood. New knowledge is necessary to stimulate petroleum exploration, industry investment, and economic development for the benefit of Northerners. The four-year project aims to improve knowledge of regional geology, including stratigraphy and correlation, depositional and tectonic histories, basin evolution, and petroleum potential. Field work will continue in the summer of 2006. The study is a collaboration among the Geological Survey of Canada, Northwest Territories Geoscience Office, Yukon Geological Survey, universities, industry, and northern communities.

Reconnaissance of regional geology and petroleum potential included surveying river exposures in Peel Region and ridge sections along deformation fronts that flank the western and southern edge of Peel Plateau (Richardson and Mackenzie mountains, respectively). Exposures along the Dempster Highway, which transects the northwestern corner of Peel Plateau, were also examined. Potential source rocks from several units (Cambrian to Cretaceous) were sampled for Rock-Eval/total organic carbon (TOC) pyrolysis. Preliminary results indicate excellent original source rock potential of the Canol and Hare Indian formations. Conodont samples provide new biostratigraphic ages and assessment of conodont colour alteration index for the Ordovician to Devonian carbonate platform succession. Data compilation for petroleum resource assessments will include new information from field studies in stratigraphy, sedimentology, paleontology, structure, and organic geochemistry.