Evolution and petroleum potential of the Appalachian thrust front, western Newfoundland

Seismic, magnetic, gravity and mapping data, in western Newfoundland, both onshore and offshore, reveal a thrust front that has been tested by recent drilling. The thrust front displays substantial along-strike variations. PEEP-supported research in 2010-2012 documented major north-south variability in the sedimentation and subsidence history of the foreland basin, suggesting that structures along the thrust front formed diachronously, with consequences for reservoir development and hydrocarbon migration. The Parsons Pond thrust has been demonstrated to have significant potential in the north, possibly running offshore at Portland Creek.

The proposed research will focus on the following objectives:

1) Map northward continuation of Parsons Pond Thrust onshore and offshore;

2) Model the 3-D Structure beneath the Parsons Pond area, combining field and seismic data;

3) Prepare Isopach maps and provenance analysis of foreland basin sedimentary successions;

4) Prepare kinematic models of fault reactivation history at the thrust front.