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**Structural geology and tectonics of the  
Albert Mines-Taylor Village area, Moncton subbasin,  
southeast New Brunswick**

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Current onshore petroleum exploration in southeast New Brunswick is focussing on an area straddling the Petitcodiac River around Albert Mines in the west and Taylor Village in the east. This area is structurally very complex and has been affected by a number of fault sets with long histories of movement and reactivation. A knowledge of timing of initiation, timing of reactivation and sense of the various phases of movement is clearly critical for local exploration efforts. This study is intended to provide better constraints on the structural and tectonic evolution of this area through detailed structural analysis of well-exposed localities and interpretation of previously available maps, core logs, and seismic reflection profiles. The study mainly concentrates on rocks of the Albert and Weldon formations of the Tournaisian-age Horton Group.

Recent interpretations of the tectonic evolution of the Moncton subbasin have emphasized the role of dextral transtension on northeast-trending fault zones followed by dextral transpression and basin inversion. However, detailed field observations and study of published geological maps of the area reveals that some northeast-trending faults exhibit sinistral movement, especially in the southern part of the study area. In the south of the area Windsor Group (Viséan) rocks show net sinistral displacements, while in the north they show net dextral displacements. Faults associated with the Boudreau fault zone near Boudreau Village show asymmetric folds, steps on slickensided surfaces, and drag folds indicative of sinistral movement. Conglomerates of the Hopewell Cape Formation (Mabou Group, Namurian) at Dennis Beach contain asymmetric clasts and drag folds indicating sinistral movement on the Dennis Beach fault, suggesting that sinistral movement in southeast New Brunswick may be post-Namurian in age. Northeast-trending faults are cut by a set of east-trending normal faults.

Thus a tectonic model for the study area is proposed where dextral movement on northeast-trending faults continues until after Windsor Group deposition. Northeast-trending faults in the south of the area are then reactivated as sinistral-transpressional structures, probably in post-Mabou times. Northeast-trending structures are then cut by east-trending normal faults which may be related to Mesozoic rifting and formation of the Atlantic Ocean. Local petroleum exploration should take into account the possibility of sinistral offsets of source and reservoir rocks, especially in the southern part of the study area.