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Gravity Anomalies, Faults and Gas Fields

Abandoned natural gas fields exist along the southern and southwestern periphery of the Tug Hill Plateau, an elevated physiographic sub-province located east of Lake Ontario and bordering the Grenvillian basement in New York State. The Tug Hill Plateau is inferred to be an uplifted-fault-bounded block which if correct might account for the existence of those gas fields. Because of the paucity of exposed bedrock, ground-based gravity surveys were conducted in the vicinity of three gas fields to help ascertain whether or not the physiographic limits of the Tug Hill Plateau are surficial expressions of deeply related faults. Surrounding and including the Sandy Creek-Lacona and Pulaski gas fields, gravity data were recorded at 176 stations which cover four 7.5 minute quadrangles. In the area encompassing the Camden field, 122 measurements were made in six 7.5 minute quadrangles. Station spacing varied from 1 to 2 kilometers. Within the area of the Sandy Creek and Pulaski fields the physiographic boundary of the plateau is oriented north-south, whereas in the Camden area it is oriented north-west. These trends in both areas are reflected in the contoured Bouguer gravity data. In addition, the west-northwest trending Salmon River Valley, inferred to be a fault, cuts across Pulaski field and is also evidenced in the gravity contours. The foregoing, therefore, lends credence to the fault interpretations. Also, gravity and magnetic traverses were conducted across faults in the Trenton-Black River Group in the Tug Hill Plateau. Gravity and magnetic anomalies across the faults are interpreted as indicating faults in the Trenton-Black River are controlled by faulting in the Precambrian basement.