

^{39}Ar - ^{40}Ar Geochronology Of The Bow Island Formation – Implications For Regional Correlation Of Events In The Late Albian To Cenomanian Interval: Granum-Keho-Retlaw-Stirling Gas Pools, Southern Alberta

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ABSTRACT

The Bow Island Formation of southern Alberta overlies Mannville Group sediments, and is disconformably overlain by black shales of the Westgate Fmn. The Bow Island has been divided into three informal lithostratigraphic units: the 'lower Bow Island' consists of stacked sandstone/mudstone, shelf-shoreface parasequences; the 'middle Bow Island' comprises sandstones, mudstones and paleosols of coastal plain origin; and the 'upper Bow Island' is composed of transgressive marginal-marine sandstones, mudstones, and conglomerates. Bentonites up to 40 cm in thickness are found in each of the Bow Island units, and samples were taken from cores within Lethbridge-area gas pools (6-18W4 northwest to 11-26W4).

Newly-obtained argon-argon radiometric ages from sanidine feldspars, having average error margins of 0.3%, provide the following ages: 101.70 Myrs for the 'lower' Bow Island Fmn, 100.48 Myrs for the 'middle' Bow Island, 98.90 Myrs for the 'upper' Bow Island, and 98.20 Myrs for the lower Westgate marine shales (below the Fish Scales Zone marker beds). These data: 1. strongly tie into radiometric dates obtained from the Fort à La Corne, Saskatchewan kimberlite swarm ~700 km to the east (suggesting these eruptions may be closely linked to the source of ashes found in the study area), 2. are approximately coeval to emplacement of the Crowsnest Volcanics (providing age constraints on the base of overlying Blackstone Fmn shales of the Alberta Foothills), and 3. support an age of 99.2 Myrs for the Albian-Cenomanian boundary in the Western Canada Sedimentary Basin (following ages published elsewhere from Cretaceous marine strata of the Western Interior).