

Lower Cretaceous Biostratigraphy of Kilen and Peary Land, Wandel Sea Basin, North Greenland and Its Implications for Correlation With the Sverdrup Basin, Arctic Canada and Svalbard

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ABSTRACT

Recent fieldwork in northern Greenland has resulted in new biostratigraphic data constraining the age of the Lower Cretaceous succession of the remote Wandel Sea Basin. The Lower Cretaceous mudstone-dominated sediments of the Kilen area of Kronprins Christian Land are highly deformed and thermally altered resulting in the absence of organic-walled microfossils. New outcrop studies of the Galadriel Fjeld Formation which comprises open marine bioturbated shales and sandstones, however, have revealed microfossil (foraminifera) and macrofossil (bivalve) assemblages which for the first time allow accurate dating of this formation. The lower part of the Galadriel Fjeld Formation contains the foraminifera *Quadrinorina albertensis*, *Serovaina loetterlei*, *Saracenaria* sp. cf. *S. projectura* and *Conorboidea umiatensis* indicating a Late Aptian to earliest Albian age. This foraminifera assemblage is also found in dark marine mudstones of the Vitskøl Elv Formation, Peary Land further to the north west. Correlation is made with the *Q. albertensis* foraminifera assemblage found in mid-shelf to lower offshore fine grained sediments of the Lower Invincible Point Member of the Christopher Formation in the Sverdrup Basin. The presence of *Inoceramus cadottensis* and *Inoceramus* cf. *labiatiformis* indicates a middle to late Middle Albian age for the upper part of the Galadriel Fjeld Formation. The macrofossil data allow correlation with the shallow marine to offshore mudstones and sandstones of the Carolinefjellet Formation on Svalbard. The new multidisciplinary biostratigraphic data thus reveal a Late Aptian to Middle Albian age for the previously un-dated Galadriel Fjeld Formation. This allows direct correlation using microfossils and macrofossils with contemporaneous sediments of the Sverdrup Basin, northern Canada, and Svalbard and presents the potential for correlation with other Arctic hydrocarbon-prone offshore basins.