

The Rollrock Section - the most comprehensive Jurassic-Cretaceous boundary section of the Canadian Arctic Islands

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The Sverdrup Basin of Arctic Canada contains strata of Late Palaeozoic to Mesozoic age. The Deer Bay Formation, a lithostratigraphic unit in the upper part of the Sverdrup Basin succession, is up to 970 m thick and generally considered to be of Tithonian to Late Valanginian age. The Rollrock Section on northern Ellesmere Island, NE Canadian Arctic, Nunavut, exposes more than 500 m of mud- and siltstones of the Deer Bay Formation. Despite being located beyond the depocentre of the basin, the section was previously identified as the most important Jurassic-Cretaceous boundary section of the Sverdrup Basin in terms of macrofossil evidence. We revisited the Rollrock Section in summer 2015, producing a detailed log. 345 mudstone samples were taken at 1.5 m intervals, for micropalaeontology, palynology and geochemistry. Preliminary results of our study are presented here.

The base of the mudstone succession is not exposed. At the top, the contact with the fluvial-deltaic sandstones of the overlying Isachsen Formation is gradational. Over much of the succession, supposedly cyclic intercalations of sideritic concretions were recorded. Macrofossils, particularly ammonites and bivalves of the genus *Buchia*, were found in nine of these concretion horizons. Only five fossiliferous horizons had previously been documented. The newly obtained fossils include the best-preserved dorsoplanitid ammonites ever collected from the Canadian Arctic, among them a giant, >40 cm-sized specimen.

The fossil assemblages provide evidence for Early (?), Middle and Late Volgian (= Tithonian to Early Berriasian) ages, corresponding to the *Buchia rugosa* to *B. unshensis* biozones. Unlike in the western part of the Canadian Arctic, no Valanginian ammonites or *Buchia keyserlingi* were found. However, horizons with glendonites in the higher part of the Rollrock Section are tentatively correlated with similar, well-dated horizons of Valanginian age on Ellef Ringnes Island. The higher part of the succession further contains abundant dropstones indicating a cold seasonal climate with floating ice during much of the latest Jurassic and earliest Cretaceous. Microfauna, palynomorphs, $\delta^{13}\text{C}$ isotope values and TOC need to be analysed, to assess the presence of a 'Berriasian hiatus', which was proposed for the eastern Sverdrup Basin in the literature. Integrating these data with ammonite and *Buchia* zones will result in a refined biostratigraphy for the Deer Bay Formation, and will lead to a better understanding of the palaeoecology and palaeoclimate of the Jurassic-Cretaceous boundary interval in the Arctic.