

Stratigraphic Analysis of the “Missing” Swan River Formation (Lower Cretaceous), Southwestern Manitoba

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ABSTRACT

The Swan River Formation (Albian) is somewhat of an enigma in southwestern Manitoba, as some studies have mapped an extensive area of missing Swan River Formation. The missing strata defines a west to east trending “hole” that extends over 13,000 km², from its tapered western end in Townships 9-10 Range 29W1, to its widest extent in Townships 10-22 Ranges 8W1-15W1, towards the east. This hole cuts obliquely across the NW-SE oriented structural contour trend on the top of the Swan River Formation. The main objective of this study is to critically examine the western half of this hole.

Seven cross sections were constructed through an interval that included the top of the Mississippian (Lodgepole and Mission Canyon formations), Triassic-Jurassic (Amaranth, Reston, Melita and Waskada formations), and the Lower Cretaceous (Swan River and Ashville formations) strata. Five of these cross sections straddle the western edge of the hole, while the other two sections cut across the central and eastern zones.

Early results of this work cast doubt on the presence of a hole. Observations include the following: (i) most erosional topography on top of the Mississippian was smoothed out following the deposition of the Lower Amaranth (i.e. thick Lower Amaranth in paleo-lows, thin over paleo-highs), (ii) the lower to middle part of the Jurassic to Lower Cretaceous interval shows a consistent thickness trend across the study area, and (iii) the upper part of the Jurassic to Lower Cretaceous interval becomes thicker and sandier towards the southwest. The latter has been interpreted to record a facies change from coastal plain into shallow marine deposits.