

Life in the Iapetus Ocean: insights from Paleozoic drill cores and thin sections, southeastern Baffin Island shelf, Canada

NIKOLE BINGHAM-KOSLOWSKI

Geological Survey of Canada (Atlantic), Bedford Institute of Oceanography, Dartmouth, Nova Scotia B2Y 4A2, Canada <Nikole.bingham-koslowski@canada.ca>

The pre-Mesozoic rift bedrock geology in the Davis Strait-Baffin Bay region is poorly constrained due to the paucity of subsurface samples. Six Paleozoic, seabed drill cores were recovered from the Southeastern Baffin Island Shelf during Geological Survey of Canada led research cruises in the 1970s (expeditions 75009-Phase 5 and 77027). These drill cores and their associated thin sections provide unique insights on the depositional environments that existed in the Iapetus Ocean during the Lower to Middle Ordovician. Fossils identified in drill core and thin sections represent a diverse, normal marine community and include bivalves, trilobites, crinoids, sponge spicules, gastropods, brachiopods, corals, cephalopods, dasycladacean green algae, ostracods, bryozoans, and radiolarians, as well as possible foraminifera, calcispheres, and tentaculites. Undifferentiated echinoderm and shell fragments are also common throughout the strata. The matrix is predominantly composed of fine-grained lime mud with bioturbation observed in four of the six drill cores. The drill cores exhibit absent to preferential to pervasive degrees of dolomitization, with the drill core from 75009-PHASE5 Old Station 4 displaying the greatest degree of alteration. Disseminated pyrite is found throughout the majority of the drill cores and thin sections, and the cores from 75009-PHASE5 Old Stations 8A and 8B contain finely macerated organic matter dispersed in the matrix. Based on observations from the drill cores and thin sections, the preliminary depositional milieus are interpreted to range from shallow, photic zone environments to deeper, open marine settings.