DESERIE THE SEDIMENTOLOGY OF THE CHELMSFORD FORMATION PROVIDE EVIDENCE FOR A METEORITE IMPACT ORIGIN OF THE SUDBURY STRUCTURE? D. G. F. Long, Department of Geology, Laurentian University, Sudbury, Ontario P3E 2C6, Canada.

The post-"event" fill of the Paleoproterozoic Sudbury Basin consists of at least 600 m of deep-water mudrocks of the Onwatin Formation, overlain by 850 m of lithic-arkosic muddy sandstones in the Chelmsford Formation. While mudrocks of the Onwatin reflect deposition in a deep-water, anoxic setting, there is no clear evidence of local breccias, conglomerates, or sand bodies to support the concept that the basin was protected by the steep walls of an impact crater. Carbonates in the basal, Vermillion Member are of sedimentary exhalitive origin and were not derived from a shallow marine shelf. Turbidites in the Chelmsford Formation show no evidence of centripetal fill as might be expected from a restricted, circular basin.

While the presence of minor sandstone-filled fractures in parts of the Chelmsford Formation suggests the presence of north- or south-directed paleoslopes, no evidence is seen to support the existence of subbasins or a central uplift within the Sudbury Basin. While tilt-corrected paleocurrent orientations are ambiguous, due to postdepositional shortening of strata during cleavage development, strain correction of the observations makes little difference to the net, south-southwest-directed paleoflow.