

Micrite-Cored Carbonate Bioherms of Eastern Anticosti Island, Québec, Canada

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Abstract

At the eastern end of Anticosti Island, Québec, Canada, small, micrite-cored, carbonate bioherms of early Silurian (Llandovery, Aeronian) age are exposed. The bioherms are cored predominately by masses of lime mud with stromatactis and zebra structures which, in turn, are host to thriving communities of stalked crinoids, tabulate and rugose corals, stromatoporoids, and a host of microbes and benthic invertebrates. Typically, less than 20 metres in diameter and from two to three metres in height, these bioherms are intercalated with a considerable amount of thinly bedded, coarse-grained crinoid detritus. The bioherms occur sporadically throughout a ten metre thick stratigraphic horizon, which may represent a 'patch reef' complex nearly fifty kilometres in extent.

In the subsurface, buildups like these are commonly regarded as risky exploration targets, and rightly so, inadequate size is often coupled with low porosity and permeability conditions. Mud dominated carbonate buildups, however, are highly variable in dimension and the controls on their development are still poorly understood. They have the capacity to grow into large pinnacle reefs (e.g. the Leduc Formation "Golden Spike" oilfield) or coalesce into widespread mud banks (e.g. the Pekisko Formation mudmounds). Because the bioherms on Anticosti Island are not extensively dolomitized, depositional and diagenetic fabrics are well preserved, and as such make good candidates for further study. This study aims to improve our understanding of the bioherms by (1) developing the paleoecological story, (2) producing the first detailed geochemical, petrographical, and microfacies analysis, and (3) examining the possible role of gas clathrate hydrate evolution during early diagenesis.