LACUSTRINE CYCLES OF THE JURASSIC EAST BERLIN FORMATION, HARTFORD BASIN, NEWARK SUPERGROUP: UNDER-FILLED OR BALANCE-FILLED LAKES?

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Abstract

The Jurassic East Berlin Formation of the Hartford Basin is a sedimentary unit of limited exposure in New England. The depositional environments are interpreted as lacustrine, playa, and alluvial, though have only been exposed in the southern region of the basin and cannot be extrapolated across the rift because of faulting and subsidence. Rare, dispersed evaporites are evidence for balance-filled or under-filled conditions in East Berlin lakes. However, these thin evaporites may be the product of closed surficial flow with open groundwater hydrology, which has yet to be studied in ancient lacustrine environments. Therefore, the purpose of this research is to (a) describe the facies distribution and thickness of the entire East Berlin in the unexposed central region of the basin and (b) use biomarker and other geochemical analyses on each East Berlin lake to supplement ongoing research to identify balance-filled or under-filled lake types. A sedimentologic and stratigraphic analysis of the entire formation will be performed for the first time to develop facies descriptions. Samples of black shale deposits from the lake cycles in the entire East Berlin Formation will also be collected to confirm or deny the balance-filled or under-filled interpretations hypothesized here. The objective of the research is to compare the geochemistry and hydrocarbon potential of the East Berlin lakes to those in the overlying Portland Formation to understand the evolution of lakes through time in a rift punctuated by tholeiitic basalt flow events.

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