Origin and Correlation of Erosional Surfaces within the Middle Triassic Halfway Formation, West-Central Alberta

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Abstract
The sequence stratigraphic significance of erosion surfaces seen within the Middle Triassic Halfway Formation have been the subject of debate. Previously conducted and ongoing studies on the Halfway Formation, each concentrating on separate regions, have documented multiple erosion surfaces within the formation. The sequence stratigraphic significance and lateral extent of these surfaces has yet to be fully understood.

Detailed core logging of the Halfway Formation in the Elmworth region has uncovered two distinct erosional surfaces approximately half a metre apart in elevation. These surfaces are present in the lower portion of the Halfway Formation and seem to be represented by variable or inconsistent physical characteristics. Over a short distance these surfaces are seen to be expressed as marine hardgrounds, marine firmgrounds, scours, and lags. This presentation will differentiate between a marine hardground and firmground, and display these variable surfaces from select core.

The full lateral extent of these surfaces has yet to be determined, but initial findings suggest they may be regional in extent, and consequently have sequence stratigraphic significance. On the other hand, if these surfaces are local in extent, then interpretation of these surfaces would demand specific focus on localized tectonics, chemical processes, and bathymetry. As well, if these surfaces are localized, then the origin and distribution of these surfaces in several diverse geographic locals, may lead to the erroneous conclusion that these surfaces are unconformities of basin-wide extent.