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Sequence Stratigraphy of the Burgan and Mauddud Formations (Lower Cretaceous, Kuwait): Reservoir Distribution and Quality in a Carbonate-Clastic Transition

Integrated sequence stratigraphic and biostratigraphic analyses indicate that the traditional lithostratigraphic Burgan-Mauddud contact is time-transgressive. Our improved understanding of this relationship is critical to the prediction of reservoir facies and regional-scale mapping. The Lower Cretaceous Burgan and Mauddud formations together form two second-order composite sequences. The oldest composite sequence consists of the lowstand, transgressive and highstand sequence sets of the Burgan Formation. The Burgan Formation is characterized by tide-influenced, marginal-marine deposits in northeast Kuwait that grade into more fluvial-dominated, continental strata to the southwest. The lowstand sequence set of the uppermost Burgan Formation and the transgressive and highstand sequence set of the overlying Mauddud Formation form a second composite sequence. These deposits are sand- and mud-prone in south-southwest Kuwait and are carbonate-prone in north-northeast Kuwait. A major, second-order marine flooding surface at the top of the Burgan Formation in northern Kuwait is a regional chronostratigraphic boundary and can be correlated throughout the country.

The Mauddud composite sequence is subdivided into seven high frequency depositional sequences. The lower Mauddud transgressive sequence set displays a lateral change in lithology from limestone in north Kuwait to siliciclastic deposits in the south, interfingering with what has traditionally been identified as the Burgan Formation. The upper Mauddud highstand sequence set is carbonate-prone and thins southward due to depositional thinning and significant post-depositional erosion at the contact with the Wara Shale.