

## **Seismic-Based Tectonostratigraphy in Carbonate Mounds Detection**

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### **ABSTRACT**

Tectonostratigraphic analysis east of the Qatar Arch using 3D seismic interpretation, calibrated with borehole data, has enabled prediction of depositional facies and reservoir architecture, and identified areas with significant potential for hydrocarbon exploration, within the mid-Cretaceous Mauddud and Mishrif members of the Wasia Formation.

Based on seismic sequence stratigraphy and facies interpretation, in conjunction with structural restoration, architectural patterns have been identified of complex carbonate mounds formed in a back-shelf setting. The carbonate mound architecture of both Mauddud and Mishrif members exhibits discontinuous, high-amplitude reflectors, truncation of clinoforms and seaward-dipping reflection patterns. These discontinuous and continuous high-amplitude seismic reflectors are interpreted to be erosional surfaces and maximum flooding surfaces (MFS), respectively. The truncations are interpreted as onlap surfaces and seaward-dipping reflectors are interpreted as down-lap surfaces. Structural restoration has revealed syndepositional, paleo-highs interpreted as carbonate mounds. These features are being used to identify and explore for potential hydrocarbon plays.