

# **Early to Late Cretaceous Eastern Shelf Margin of the Arabian Platform, UAE - New Insights Using Biostratigraphy and Microfacies Mapping in the Northern Emirates**

Andrew Knox<sup>1</sup>, Gareth Smith<sup>1</sup>, Callum Thurley<sup>2</sup>, Donald Neil Stewart<sup>2</sup>, Silvia Ortiz<sup>1</sup>, Francisca Rosa<sup>1</sup>

<sup>1</sup>PetroStrat

<sup>2</sup>Sharjah National Oil Company

## **Abstract**

Sharjah National Oil Corporation's (SNOC) Mahani-01 well drilled in 2019 was the first gas condensate discovery in Sharjah in the last 37 years. Located in the frontal thrust area of the Oman Mountains, the Early Cretaceous Thamama and Wasia Groups are overlaid by the Late Cretaceous Aruma Group, which is typically highly thrust and structurally complex making identification of drilling targets from seismic imaging challenging. As an integrated biostratigraphy and sedimentology study, we combined a significant review of legacy biostratigraphic data from across the region with new analyses from wells and outcrops, including the newly acquired data from the Mahani-01 discovery. The key aims of the study were to use an integrated microfacies approach to generate time-equivalent depositional maps of the Thamama Group and to further constrain the development of the eastern shelf margin throughout the Early Cretaceous. This was with a view to ascertain the implications on reservoir quality in eastern Sharjah. The results of which are now being used in conjunction with seismic interpretation to better understand the distribution of reservoir facies and reduce uncertainty for future well planning and field development. The microfacies analysis and regional mapping successfully identified a north south trending shelf margin which prograded from east to west from Valanginian to Aptian times. The results of this study indicate that shelf edge, high energy rudist shoals, which are present in outcrop at Al Khatt, Ras al Khaimah are likely to be present in the eastern regions of Sharjah, forming the eastern rim to the Arabian Carbonate Platform. To the west of this, back reef and lagoonal microfacies dominate, from which much of the present-day production is derived within the gas-condensate fields of the Northern Emirates.