

Shehata et al. (2023) analyze the Abu Madi Formation, identifying eight facies types within sandstone, siltstone, shale and mudstone. Sequence stratigraphic analysis reveals two depositional sequences within the formation. Petrophysical assessment indicates that favorable gas intervals are found in the sandstones of the lowstand systems tract (shale content: 4–22%, effective porosity: 12–27%, and water saturation: 20–63%), outperforming the highstand and transgressive systems tracts. Four reservoir rock types are identified within the lowstand system tract sandstones: trough/planar cross-bedded sandstones (Type 1), parallel-laminated sandstones (Type 2), massive sandstones (Type 3) – the best reservoir with high porosity and permeability – and ripple cross laminated sandstone/siltstones (Type 4) – the poorest reservoir type