
Unified Structural and Stratigraphic Model for Giant Field in ADCO

Yousuf S. Al-Mehairi¹, Sami Rassas², Ahmad Al-Shaikh², Ismail Al-Hosan², Suryanarayana Karri², Tawfiq A. Obeida², Lorraine Yearron³, and Steve Cannon³. (1) ADCO, Abu Dhabi, 270, United Arab Emirates, phone: +971506122358, fax: +97126675307, yalmehairy@adco.ae, (2) Abu Dhabi Company for Onshore Oil Operations (ADCO), P.O. Box 270, Abu Dhabi, United Arab Emirates, (3) ROXAR, 27 ST Georges Road, Wimbledon, London, United Kingdom

The Unified Modeling project was conducted in two phases with phase I being the construction of the structural and stratigraphic model of the three Bu Hasa reservoirs. The main objectives of phase I are:

- 1- Construct a consistent unified structural framework across all Bu Hasa reservoirs to avoid overlap between them since the existing models were built independently.
- 2- Incorporate revised seismic interpretation (surfaces and faults) based on seismic inversion.
- 3- Use of a common seismic depth conversion method and a single integrated interpretation for all three reservoirs.

During phase I, a consistent set of structural definition are used for all three reservoirs ensuring that no more structural overlap is observed between any surfaces. In addition to this, a unified 3D structural (surfaces and faults) and stratigraphic model and a common 3D grid for all three Bu Hasa reservoirs were also constructed.

In phase II, properties model was constructed for all three reservoirs. The main objectives of Phase II are:

Reservoir A: Build new refined facies and petrophysical properties model using the new petrophysical interpretation, build simulation 3D grid and upscale properties.

Reservoir B: Re-model facies and petrophysical properties, Build simulation 3D grid and upscale properties.

Reservoir C: Re-build facies and petrophysical properties model, incorporate Integrated I Dense Study (Thickness/distribution), incorporate new data from Full Field Petrophysical Study (FFPS), build simulation 3D grid and upscale properties.

This project has developed a methodology to integrate the lithofacies properties into the sequence stratigraphy framework. The seismic inversion (porosity cube) has also been used to constraint the modeling process.
