Unified Structural and Stratigraphic Model for Giant Field in ADCO

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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.