Ain Shams University

Faculty of Science

Geophysics Department

Reservoir Characterization of Thin Beds Within Miocene-Pliocene Sequence, West Manzala and Qantara, Onshore Nile Delta Utilizing Well logging Analysis and 3D Seismic Modeling

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Abstract

Miocene-Pliocene reservoir contributes the main gas production in onshore Nile Delta, Egypt, the paleo deposition environment distribution should be recognized and understand. Petrophysical analysis, seismic study was carried out at West Manzala and West Qantara area. The workflow combined seismic elastic properties, regional geological context, biostratigraphy and petrophysical reservoir properties in order to characterize the Miocene-Pliocene reservoir.

Wireline log analysis used to understand the petrophysical properties. Seismic interpretation was used to detect the subsurface structural and stratigraphic features. The results were collected together to build-up the reservoir static model.

Static model is representative tool to imagine the facies, petrophysical properties and structure of the study area. Such static model can support the detection of suitable places for hydrocarbon potential. Static model of Qawasim Formation in El Bassant area shows a combined trap formed of faulted 3 way dip closure with pinching out stratigraphic feature with Northeast- Southwest trend. Qawasim Formation consist of tidal dominated and fluvial dominated deposits, consequently , this study shows the Qawasim is composed of sand-shale intercalations with different types of sands (fluvial and tidal). Facies model is divided into 4 lithofacies description (shale, poor

quality sand, fair quality sand and good quality sand). The Qawasim sedimentation seems to be affected by growth faults which generate accommodation space leading to sediments accumulation around El Bassant area. The sequences were represented mainly by fluvial sediments. Qawasim modeling help to minimize the drilling risk by selecting the optimum location for new wells as structural and facies.

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