1185315 New Opportunity Identification in a Mature Reservoir: Wara Formation, Wafra Field, Kuwait/Saudi Arabia Partitioned Zone

Gonzalez-Mieres, Ramon *1; Masarik, Cristina 1; Jamil, Farhan 1; Parvez, Nadeem 1; Buza, John 1 (1) Saudi Arabia/PZ, Chevron Upstream and Gas, Houston, TX.

The giant Wafra Field is the largest field in the Partition Zone (PZ) between Kuwait and Saudi Arabia. The Cretaceous Wara reservoir represents one of the most prolific producing zones in the PZ, producing more than 500 MMBbls of light (20 to 25 API) oil since its discovery in 1953.

The Wafra Wara reservoir is a Cretaceous sequence of channel sands (fluvial/tidal) that have locally complex vertical and a stacking patterns. These sands are interpreted to have been deposited in a tidally influenced lower delta plain depositional environment in a low angle ramp setting characterized by low accommodation space. The Wafra Field is a structural accumulation formed by a broad, low amplitude anticline with 4-way dip closure with some structural complexity at the reservoir level, consisting of normal faults with small displacements.

A comprehensive multidisciplinary study was performed to identify new infill wells and work-over opportunities within the most mature, central portion of the field to increase production and recovery. The multidisciplinary team reviewed all existing well data within the central area of the field to refine stratigraphic correlations, generate production attribute maps, and to understand the production history and current state of the reservoir. Detailed 3D seismic structure mapping and structural analyses were also performed to identify and refine low-throw faults, and to reconcile some of the stratigraphic implications of the well correlation and production mapping. Production and test data were analyzed utilizing various analytical techniques to predict initial rates and reserves for infill wells. Deterministic and probabilistic forecasts were generated using field and offset wells decline curve analysis (DCA). The comprehensive study resulted in the identification of numerous new well and workover opportunities. The group new well and workover candidates were ranked based on geological (water risk, secondary objectives, etc) and engineering criteria (IP and recovery) resulting in a prioritized queue of opportunities. Drilling results will be known by mid 2012.