The Lower Cretaceous Ratawi Formation is a target for increased production and ongoing exploration within the Partitioned Neutral Zone (PNZ). The Ratawi Formation consists of 3 members including: the Ratawi Oolite (base), the Ratawi Limestone and the Ratawi Shale (top). Deposition of the Ratawi Oolite and Ratawi Limestone occurred on a low-angle carbonate ramp roughly dipping to the east to northeast. Oil from the Ratawi reservoir is currently being produced from the South Umm Gudair, Wafra, and South Fuwaris fields. The purpose of this study is to better understand the reservoir heterogeneity of the Ratawi at both the regional and field scale to provide inputs for future development and exploration activities.

Based on seven cores and wireline log correlations, the Ratawi Oolite and Ratawi Limestone consist of four transgressive-regressive depositional sequences representing an overall progradational trend. Sequences 1 and 2, within the Ratawi Oolite, are dominated by lithofacies deposited in a high-energy grainstone shoal to open marine environment. These lithofacies include: argillaceous wackestone/packstone, fine-grained peloidal, skeletal grainstone/packstone, oolitic grainstone, coarse-grained skeletal grainstone and skeletal wackestone. Sequences 3 and 4 of the Ratawi Limestone, consist of lithofacies deposited in a low-energy, restricted inner ramp environment. Common lithofacies include: argillaceous lime mudstone and peloidal, skeletal wackestone/packstone.

Reservoir quality within the Ratawi Oolite varies from field to field and is a function of pore type. In the Wafra field, the producing interval within the Ratawi Oolite is dominated by well-connected, primary intergranular porosity. From a single Wafra well, core porosity ranges from 3 to 35% and core permeability ranges from 0.1 to 1000 mD. In South Fuwaris, the Ratawi Oolite consists of very poorly connected micro-porosity, as a result of equant calcite cement occluding primary porosity. Core porosity from a single South Fuwaris well ranges from 5 to 25% and core permeability ranges from 0.01 to 10 mD.
NO
FULL PAPER
AVAILABLE