Un-Proven Plays in Middle Indus Basin

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Abstract

The recent integrated regional sequence stratigraphic study confirmed the long-known interpretation of the early to mid-Cretaceous successions as representing a transition from shallow to deep marine rocks during the progradation of sedimentary wedges. During deposition, the effects of the Kandra palaeo-high were significant with deposits effectively ponding against it as progradation continued to infill accommodation. The main gas fields in this succession are developed in the shallow-marine sands at the top of this wedge. The basinal turbidite sandstones and/or lowstand delta sands have the potential to provide underexplored or new exploration opportunities. Deposition under different 3rd order cycles of sea-level change had a profound influence on the regional development of reservoirs with the main fields occurring in transgressive/regressive sandstones sealed by the overlying shales.

This study revealed that sub-regional variations in subsidence occurred across the Middle Indus Basin and had significant influences on sedimentation. This is represented by the creation of smaller depo-centres that either (i) created anomalous thicknesses of shallow-marine rocks or (ii) created deeper basins containing locally preserved turbidites. It is highly likely that the majority of these fairways are fully exploited with the potential for significant petroleum accumulations (to the west of the current fields) being extremely limited. Therefore, it is anticipated that any new reserves in the Middle Indus Basin will be represented in unproven plays.

These unproven plays include turbidites and Low- stand deposits. The turbidites occur within or near to the base of the Sembar Formation and as a consequence, reservoir effectiveness represents an intermediate risk due to depth of burial. In addition to this, due to the limited number of well penetration.

The regional development of these sandstones is yet to be demonstrated.

Based on the evaluation of Cretaceous gas plays in the Middle Indus Basin, it is recommended that less time is devoted to exploring the established play as these less likely to have a significant lateral extent to the west. In contrast, some of the deeper plays may have untapped potential e.g. turbidites and lowstand deposits. These require more work to reduce the risk associated with them.