

## **Play Fairway Analysis and Crs Mapping within a Sequence Stratigraphic Framework: Screening Tools for Geological Riskconstrained Exploration**

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In today's competitive and high risk exploration regimes, tools such as Common Risk Segment (CRS) mapping based on distinct play fairways within a sequence stratigraphic framework have increasingly become important for ranking the exploration acreage. Such a bottom-up approach also provides useful grounds on which to base the remaining prospectivity and accordingly commit to an appropriate exploration work program in such geological risk-constrained prospective fairways. The tool is seldom applied at individual play and part-play level in the Indus Basin and as a result has led to a high degree of exploration inefficiency reflected in the historical success rates and creaming curves.

We define Play as a regionally extensive reservoir-seal pair with a unique spatial and temporal arrangement conducive for hydrocarbon charge and retention within a hierarchical sequence stratigraphic framework. At a higher hierarchical level, the source and its maturity and hydrocarbon movement make a petroleum system effective so the plays within it can work. A workflow with the workstreams and tasks involved is presented and further elaborated through a case example of the Lower Cretaceous "Lower Goru" Play Fairway from the Lower and Middle Indus Platforms of Pakistan. The chronostratigraphic chart of the Cretaceous Goru megasequence has been reconstructed from regional well log correlations calibrated with geoseismic profiles. Such a Wheelertype diagram and wells' success/failure analyses allow the definition of sub-plays and part-plays that exist within a Lower Goru sequence. Facies maps and Gross Depositional Environment (GDE) maps are then drawn for a distinct reservoir-seal pair, in this case the Lower Goru 'Basal Sand' Sub-play. Key risking strategies have been discussed subsequently for building the CRS maps and a Composite CRS (CCRS) map for this sub-play.

These CRS and CCRS maps when studied together with the play's creaming curves, field size distributions (FSDs) and historical exploration success ratios show that a significant remaining or new potential exists. We argue that such individual play-focused maps should be prepared for all the plays in the country to streamline national E&P efforts as this is a crucial step for exploration in a country right from the early times of basin- or play-entry. Similarly, companies' new business development and commercial strategies should also be linked back to the high-graded exploration acreage using their own CCRS maps.