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Initiation of Collision: tectonics and Sedimentation within the Suliaman Fold Belt, NW Pakistan

The British Gas operated Suliaman concession lay within the Suliaman fold and thrust belt of western Pakistan. This fold belt formed as part of the Himalayan orogeny as the Indian plate collided with Eurasia and associated plates. The concession lies in the Cretaceous/Palaeocene clastic fairway. The litho and chronostratigraphy of the intervals in this part of Pakistan are poorly defined. This uncertainty has led to problematic correlations and poorly constrained palaeogeographic depositional models for key reservoir units. As in many fold belts, one of the main challenges faced by the exploration team was the prediction of the sub-surface reservoir thickness and distribution. The volume of effective reservoir was a key uncertainty in the economic analysis as no wells or seismic were available within the block. Fieldwork focused upon the potential reservoir units (Cretaceous Mughal Kot/Fort Munro/Pab Formations and Palaeocene Ranikot Formation) defined from previous studies. Over 2000m of stratigraphy was measured enabling detailed depositional models to be constructed. The Upper Cretaceous system comprised a major progradational clastic succession of linked fluvial, shoreline, shelf, slope and basin floor depositional systems. Depositional trends were affected by incipient growth of major structural features, reflecting the early collision of the Indian and Arabian plates. As the collision continued, basin (and ultimately coastline) morphology changed, resulting in a change to the deltaic/tide dominated systems of the Ranikot Formation. When seismic was obtained across the block, initial seismic facies supported the depositional model developed from outcrop. Reservoir thickness, tested by Mirawah-1, was ultimately within 10% of prognosed.