

## **MARI GAS FIELD: THE HABIB RAHI LIMESTONE RESERVOIR**

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The Mari structure is located in the central Indus basin, of the Thar slope platform which slopes gently westwards. Basinward, the shelf gives way to abrupt down warps, represented by features such as the Karachi, Sui-Sulaiman, and Bannu-Soan troughs from south to north. Post-Jurassic sediments represent great thickness on these troughs, but these sediments thin gradually up onto the shelf. On the western edge of the Indus basin, major deformation is associated with the Himalayan orogeny, which formed an arcuate axial fold belt.

East of the axial belt is a broad area of exposed fold structures which gradually diminish in intensity towards the shelf edge. It is in these more gentle structures that the early gas fields were formed, including the Sui and Zin fields. Further east of the fold belt ranges are the alluvial plains, which cover the sloping shelf. Surveys over the alluvial plains have revealed gravity highs, the most prominent being the Khairpur high. This gentle arch extends for 200 miles in an approximately north-south direction. The Mari structure is tectonically similar to the Khairpur high, but it is not as prominent nor as extensive.

Gas accumulations found in the frontal part of the fold belt occur in the Sui Main or Sui Upper limestones of Lower Eocene age. However, further east at Mari, gas has been found in the Habib Rahi Limestone of the Middle to Upper Eocene Kirthar Formation. It is widespread over the western part of the Indus basin but absent in most of the wells drilled in the southern part of the Thar slope platform.

The Kirthar Formation exhibits three distinct lithologic units: an upper limestone, commonly called the Pirkoh limestone; a middle shale unit called the Pirkoh shale; and lower limestone called the Habib Rahi or Lower Kirthar limestone. These units can be correlated across the field area. This paper presents a case history of Mari Gas Field where Habib Rahi Limestone of Eocene age is the main reservoir. The case study includes the Exploration, Field Development, Reservoir Engineering, Production Engineering, Future Performance and Compression.