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**Zarghun South: Unique Aspects of the Frontier Gas Discovery in Baluchistan (Pakistan)**

Zarghun South was spudded June 1998 to test Dunghan limestone (Palaeocene), Moro dolomites (Cretaceous) and Chiltan (Jurassic) limestones. Gas flowed after acidisation, at rates of 3.5, 8.3 and 17.7 mmcf/d respectively from the 3 zones. The Chiltan gas column is separate from Moro-Dunghan, indicating that the lower Cretaceous Sembar-Goru is a seal. The ultimate topseal is the Eocene Ghazij shale.

The Chiltan reservoir has low matrix microporosities, but is intensely fractured. The upper 50m of the unit is meteorically and thermally karsted. A ferruginous-bauxitic crust, up to 10m thick, covers top Chiltan and has significant porosities. The attenuated Cretaceous consists of 150m of shallow water sediments with numerous soil horizons. Spherulitic dolomites associated with one soil horizon complex of Campanian-Maastrichtian age, along with peritidal dolomites, form the Cretaceous reservoirs. These are intensely fractured and have significant matrix porosities. The Dunghan reservoir is an anomalously thin (100m) homogenous shelf carbonate with low matrix microporosities, but good fracture porosity.

The Zarghun South gas discovery is located along a late Cretaceous-Tertiary ramp anticline which has been superimposed upon a Jurassic-Cretaceous passive margin outer high. The presence of a pre-Tertiary structural high is a critical feature of the Zarghun South gas discovery as it ultimately affected the stratigraphy and sedimentology and provided a long-lived regional focus for hydrocarbon migration.