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An Overview of Tight Gas Reservoirs in Saudi Arabia

M.J. Al-Mahmoud* (Saudi Aramco) & I. Al-Ghamdi (Saudi Aramco)

SUMMARY

Drilling for hydrocarbons in Saudi Arabia has resulted in substantial information on gas reservoirs, including their distribution in sedimentary basins and stratigraphic sequences. Core samples, wireline logs, and well test data show that the tight gas reservoirs exist mainly in the Paleozoic sequence at depths greater than 10,000 feet. These reservoirs consist mainly of clastic rocks and range in age from Cambrian to Permian. The source rock for the gas in these reservoirs is the organic-rich and regionally gas-mature Silurian Qusaiba hot shale. The cumulative thickness of the Paleozoic reservoirs varies throughout Saudi Arabia and is mainly controlled by the Hercynian orogeny. The Paleozoic reservoirs are generally characterized by low porosity and permeability. Gas production rates vary from a few thousand standard cubic feet of gas per day (scf/d) to more than 40 million scf/d, and water production is generally low. High production rates are associated with depositional and/or fracture-controlled sweet spots. The gas reservoirs are moderately over pressured with a trend of increasing the magnitude of over pressure with depth.

Abstract

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