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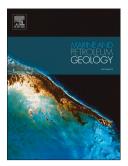
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DIAGENETIC HISTORY AND RESERVOIR PROPERTIES OF THE CENOMANIAN-TURONIAN CARBONATES IN SOUTHWESTERN IRAN AND THE PERSIAN GULF

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ABSTRACT

Shallow-marine carbonates of the mid-Cretaceous Sarvak Formation are important reservoir rocks in southern Iran and the Persian Gulf region. These carbonates were deposited on the margin of the Arabian Plate and rest on the Kazhdumi Formation, which is one of the major hydrocarbon source rocks in the region. The top of the Sarvak Formation coincides with the regional Turonian unconformity. Most of the observed diagenetic features are genetically related to meteoric waters entering the Sarvak Formation during Cenomanian-Turonian and mid-Turonian uplift and the subsequent paleoexposure.

Integration of field and petrographic studies and isotope geochemistry reveals the history of a variety of diagenetic processes, which include dissolution and development of secondary porosity which enhance reservoir properties of the Upper Sarvak carbonates. Various types of calcite cements were identified as the main cause for porosity loss in these carbonates. Their diagenetic environment is discussed using the geochemical data acquired as part of the present study.

The $\delta^{18}O$ and $\delta^{13}C$ values (-12.3 to -0.6 ‰ and -5.8 to 3.6‰ VPDB, respectively) of the cements indicate precipitation from marine, meteoric and/or mixed meteoric-marine fluids. Some drusy calcite cements exhibit $\delta^{18}O$ and $\delta^{13}C$ values (-5.1 and 0.8

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