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Reservoir Characterization of Emersion Surfaces and their Associated Diagenesis - Natih Formation, Cretaceous, Sultanate of Oman

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SUMMARY

The characterization of emersion surfaces in carbonates and their associated diagenesis could provide helpful tools for reservoir studies. Outcrops observations combined with data from oil fields should lead to predictive models of reservoir properties associated with emersion surfaces.

The Natih Formation constitutes the top of a thick succession of Cretaceous epeiric platform deposits. It is subdivided into three 3rd order sequences. These sequences are frequently capped by emersive horizons, which could be associated with incisions.

Detailed studies of the lateral distribution and chronology of diagenetic phases associated with emersion surfaces form the basis for the sedimentological and diagenetic model. The results emphasize the heterogeneous character of these surfaces from a microscopic to a regional scale. The diagenetic sequence and the characterization of fluids associated with petrophysical data constrain the modifications of reservoir quality, in relation with the geological context.

The complex interplays between the factors responsible for reservoirs properties could make difficult the recognition of exposure surfaces. That is why an integrated approach is needed to find predictable patterns for the detection of unconformities in carbonates.

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