
Onset of Overpressures and Their Relationship with Depth, Stratigraphy and Tectonic Settings in Kuwait

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Onset of overpressures is encountered within Valanginian Ratawi Shale Formation in most of onshore Kuwait. However, in the northeastern part of the country, overpressures are experienced in the Lowermost part of Barremian Zubair Formation. Ratawi shale records the initiation of clastics influx after a predominantly carbonate sedimentation of Early Cretaceous and has a thickness ranging between 350' to 425'. The onset of over-pressuring is primarily related to static loading (overburden) and originates out of compaction of predominantly shaly sections of Ratawi sand/shale sequence in north, where expelled water entrapped in discontinuous sand stringers of the formation gets over-pressured. A similar phenomenon is also noticed in the Lower Zubair interval. Furthermore, it is observed that the magnitude of Ratawi pore pressure relates to the reservoir thickness and size within the formation. Generally increase in pressures appears to be gradual; onset is below 9000' and rarely relates to tectonic settings. This understanding is helpful in predicting reservoir pressures and, therefore, for smooth drilling operations and in selecting exploration targets.
