

Implication of Salt on Fault Sealing

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Abstract

Introduction

Abu Dhabi offshore fields are rooted by salt pillows and faults are originally tectonic triggered salt movements. Salt related radial faults are dissected the cap rock and therefore both faults sealing capacity is important in delineating the trapping mechanisms. Salt invading the fault zones forming sealing and because the Abu Dhabi faults are principally strike slip in origin leading salt to invade laterally along bedding planes. This impact the trapping mechanism and prospects potentiality as relation to sealing timing is sometimes difficult to justify. So, trapping and sealing because of salt is not related to faults only but to bedding weak zones as well. Identifying charging must be before sealing of the faults and fluid flow through salt is found dependent on the salt types and dissolution.

Methodology

Characterizing the factors influencing salt sealing capacity is the main aim of this paper. These factors can be; residual evaporities along the fault zones, salt types and shale involvement; bedding planes conduits and deformation zones around the faults. In addition to the transtensional and transpressional zones between the faults segments. The main data used in this study were seismic interpretation, well logs, core and outcrop analogues.

Conclusion

Salt flow in the transtensional zones leading to movement downwards, while in transpressional leading to moving upwards. But the main factors is not only the mechanism but also the flow rate and the fault zone mechanical properties. The salt introduce a loading-rate dependency into fault movement deformation zone and affect the fault zone sealing capacity. Faulting reactivation events in Abu Dhabi after the Cambrian salt leading to sulphates transformation into anhydrites of brittle nature. This is the main reason, why salt in transtensional zones moving downwards. Investigating the salt surrounding the fault zones in transpressional and transtensional zones along with the salt types justifying this conclusion.

Novelty

Volume of salt invading the fault zones are the first to be calculated using Salt Sealing Analysis (SSA). This will impact exploration and field development plans.