

# Incipient Salt-Rafting along the Northern Margin of the Zechstein Basin: A case study from Northeastern Germany

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## ABSTRACT

We present new structural models from the northern margin of the Permian Zechstein Basin in NE Germany. The data shows evidence of incipient salt-rafting. Main purpose was to improve the structural model and reduce exploration risks. This basin has been intensely studied, however, to date no detailed interpretation of a salt-raft at the northern margin has been shown. We show a detailed interpretation of an incipient salt-raft, as well as kinematic restorations. Deep-seated structures interact with shallow, low-angle thrusting, detached near the base of the Na2 evaporites. The local-scale structural configuration represents an incipient salt-raft, based on geometric observations, kinematics and comparison with other salt basins (Angola, Brazil). Subtle thinning of the Buntsandstein interval across the crest of the salt-pillow indicates the presence of a subtle salt-pillow at Buntsandstein times, before the main Keuper extension. Restoration supports the hypothesis of a near-base Na2 detachment, into which the main listric fault soles out. We suggest that the Alpine inversion caused the sub-salt fault-blocks to uplift in a “piston-like” manner, along pre-existing high-angle rift-faults, which triggered Na2-salt remobilization, consequently reactivating salt-rafting in the overburden. Our findings have implications for hydrocarbon exploration, regarding timing, migration pathways and trap configurations.