**Structural Geology and Evolution of an Evaporite-Detached Normal Fault System: The Bremstein Fault System, Eastern Halten Terrace, Offshore Mid-Norway**

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Recent research into the tectono-stratigraphic evolution of rift basins has mainly focused on areas where evaporites have not influenced rift development. The presence of a ductile evaporite unit mechanically decouples sub-evaporite strata from cover strata. This influences fault array development in terms of fault initiation, propagation and linkage, which in turn influences syn-rift sedimentation. In this study we use 3D seismic and well data to constrain the Jurassic to Cretaceous evolution of the Bremstein Fault Complex (BFC), which delineates the eastern flank of the Halten Terrace, offshore Mid-Norway. Here, the structural style is influenced by the presence of two approx. 400 m thick Triassic (pre-rift) evaporite layers that are separated by an approx. 500 m thick unit of claystone.

Two dominant fault orientations are observed along the BFC: i) a NE-SW-striking, basement-involved, sub-evaporite fault system, thought to represent the reactivation of older Caledonide trends, and ii) a N-S-striking fault system restricted to the post-evaporite succession. The N-S striking faults terminate downwards into the upper evaporite layer and are associated with low-amplitude salt rollers in their footwalls. The degree of linkage between the sub-evaporite and cover faults ranges from hard-linked, through soft-linked, to completely decoupled. Syn-rift thickness distributions suggest that the NE-SW-striking hard-linked faults were the dominant structures in the cover during the Upper Jurassic, whereas the N-S-striking cover faults may be older, having been active throughout the Middle and Upper Jurassic. We suggest that this fault array evolution results from the rift-initiation development of relay ramps and fault-propagation folds below the lower evaporite unit. The resultant tilting of the evaporite leads to gravitational collapse of the cover stratigraphy, creating a system of decoupled normal faults above the evaporite units. Continued extension led to some of the NE-SW-striking, sub-evaporite faults propagating upward through the evaporite layer in the Upper Jurassic. Fault movement was then focussed on these structures during the late Jurassic rift climax phase. Hence, detachment of the BFC on evaporite units leads to structural style in the cover being strongly controlled by the configuration of the sub-evaporite fault array.