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Greenland sourced depositional systems of the Mid-Norwegian margin: implications for Late Cretaceous reservoir prediction

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An East Greenland provenance for sandstones in the outer parts of the Norwegian Sea is now well established (e.g. Kittilsen et al 1999, Morton & Grant 1998). The relatively deep Coniacian Lysing Formation and shallower Campanian Nise Formation have become major exploration targets, although the present understanding surrounding the regional palaeogeography remains less well constrained. Using pre-Atlantic break-up restorations of the East-Greenland-Norway rift system the construction of detailed gross depositional environment maps of potential Late Cretaceous reservoir intervals is presented for the mid Norway margin. These maps are used to illustrate the techniques that have been used to piece together the depositional systems which have been subsequently affected by rifting and emplacement of volcanic rocks.

Mapping is based on structural interpretation & sequence stratigraphic analysis of the East Greenland margin and the outer Norwegian margin, published outcrop studies from onshore East Greenland and sedimentological analysis of well data from the deep water of offshore mid-Norway. The maps highlight the challenge of understanding the detailed rift history and in particular the basin configuration prior to emplacement of large volumes of intrusive and extrusive volcanics.

Interpretation is integrated into an updated understanding of the structural framework of the Norwegian Sea, which includes a series of reconstructed paleobathymetric maps through the Cretaceous and Early Tertiary (Corfield *et al.* abstract submitted). In addition, a correlation of structural style from the Norwegian margin, Jan Mayen microcontinent and East Greenland margin has been carried out to produce a model of the evolving pre-rift basin and basin fill.

Analysis of seismic geometries and the sedimentary features described in core and in East Greenland outcrops has been used to refine the depositional model and to make further inferences on the basin geometry. Outcrop analogues of deep-water turbiditic systems are used in support of the models presented. As an independent means of validating the depositional model, data from Heavy Mineral/Provenance and from reworked fossil palynomorphs studies has been evaluated.