PRE-LATE CRETACEOUS STRUCTURAL DEVELOPMENT OF THE DANISH CENTRAL TROUGH

Extended Abstract

O. Michelsen & T. E. Mogensen

Geologisk Institut, Aarhus Universitet, DK-8000 Århus C, Denmark.

The structural development of the Danish Central Trough area from the Carboniferous to the Early Cretaceous was studied to test how far back in geological time a graben development can be justified or proved by data.

The late Hercynian compression seems to have influenced the area. The presence of Rotliegende volcanics may be related to transtensional movements along a right lateral, northwest-southeast strike-slip fault system. The Zechstein, Triassic, and Early Jurassic times are regarded as stable tectonic periods, during which the Central Trough area may have acted as an interbasinal barrier.

The trough region, and adjacent areas, were uplifted in early Middle Jurassic times, and the subsequent erosion cut into the Lower Jurassic in the southeastern trough area and into the Upper Palaeozoic towards the north-northwest. A major halfgraben developed along the Coffee Soil Fault, bordering the Ringkøbing-Fyn High, and Middle Jurassic coarse-clastic sediments were deposited along this fault zone.

During the Late Jurassic, the Central Trough was broadened probably as a result of slow rifting, and minor individual halfgrabens developed during the Kimmeridgian (Feda and Gertrud Grabens) and Volgian (Grensen Nose and Outher Rough Basin). Starvation of the Søgne Basin and footwall uplift of the Mandal High took place late in the Late Jurassic. The Inge and Mads Highs seem to have been parts of the Mid North Sea High until this time.

During the Early Cretaceous, the depocentres generally moved westwards and the subsidence rates decreased. The tectonic regime changed and the first inversion tectonic event occurred in the Mid Hauterivian.

This abstract partly covers the structural geologic aspects of the paper entitled: "Pre-Cretaceous structural development of the Danish Central Trough and its implications for the distribution of Jurassic sands" presented by O. Michelsen, T. E. Mogensen, and J. A. Korstgård at the meeting on "Structural and tectonic modelling and its application to petroleum geology", Stavanger, Oct. 1989. The full text will be printed by Elsevier Science Publishers, Amsterdam.