



New insights into the earliest Quaternary environments in the Central North Sea from 3D seismic

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In the past the transition between an unconformable surface in the south to a conformable horizon towards the north has made identification and mapping the base-Quaternary in the central North Sea difficult (Sejrup et al 1991; Gatliff et al 1994). However recent integration of biostratigraphy, pollen analysis, paleomagnetism and amino acid analysis in the Dutch and Danish sectors (Rasmussen et al 2005; Kuhlmann et al 2006) has allowed greater confidence in the correlation to the region 3D seismic datasets and thus has allowed the base-Quaternary to be mapped across the entire basin.

The base-Quaternary has been mapped using the PGS MegaSurvey dataset from wells in the Danish Sector along the initially unconformable horizon and down the delta front into the more conformable basin giving a high degree of confidence in the horizon pick. The revised base-Quaternary surface reaches a depth of 1248 ms TWT with an elongate basin shape which is significantly deeper than the traditionally mapped surface.

Using RMS amplitudes and other seismic attributes the revised base-Quaternary has been investigated along the horizon and in time slice to interpret the environments of the earliest Quaternary prior to the onset of glaciation. Combined with analysis of aligned elongate furrows over 10 km long, 100 m wide and 100 m deep suggest a deep marine environment in an almost enclosed basin with persistent strong NW-SE bottom currents in the deepest parts. Pockmarks were formed by the escape of shallow gas on the sides of a small delta in the eastern part of the basin. The progradation of large deltas from both the north and south into the basin make up the majority of the deposition of sediment into the basin.

Key Words: base-Quaternary; seismic interpretation; paleoenvironments

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