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Deep crustal models across the entire Vøring Margin – from wide-angle (OBS) data.

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The mid-Norwegian volcanic margins has been covered by more than 9.000 km regional 2D Ocean Bottom Seismograph (OBS) profiles during several extensive surveys performed the last decade. The experiments have been conducted as cooperative efforts between the University of Bergen, Hokkaido University, NPD, Statoil, Norsk Hydro and Total. The most recent survey was conducted in 2003 and included data across the Trøndelag Platform. The main purpose with applying this method is its ability to map structures below the extrusives and intrusives related to the Late Cretaceous-Early Tertiary rifting phase, that lead to continental break-up in Early Eocene. The OBS-data have provided significant new insight on the thickness and extent of volcanic flows and intrusions in the sedimentary layers, the continent-ocean transition, the depth to crystalline basement, the lower crust and Moho. The modelling of the OBS horizontal components with regard to S-waves has contributed with lithological constraints, both for the sedimentary strata and the crystalline crust. The lower crustal Vp/Vs-ratio is consistent with a mixture of mafic intrusions (underplating) and older continental remnants, but for most of the area it is not consistent with serpentinized peridotite. It is found that the lower crustal intrusions are not present beneath the Trøndelag Platform, and that the landward extent of the layer strongly correlates with the presence of crustal barriers (lineaments), of which one is newly discovered based on the OBS-data. The landward extent of the magmatic lower crustal layer decreases stepwise northeastwards in the Vøring Basin, closely related to the Gleipne-, Surt- and Bivrost Lineaments. Evidence for an interplay between active and passive rifting components are found on regional and local scales on the margin. The active compo-

nent is evident through the decrease in magmatism with increased distance from the Icelandic Plume, and the passive component is documented through the fact that all found crustal lineaments to a certain degree acted as barriers to magma emplacement. A strong link is also observed between the location of Cenozoic contractional domes and deeper high-velocity structures, which may act as rigid blocks during compression. It is proposed that the existence and trend of these deeper structures, subject to mild NW-SE compression, is the most important factor controlling the formation, spatial distribution and trend of the domes. Structures in the high-velocity lower crust seem to be the single most important element with this respect.