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Chemostratigraphy of Triassic successions on the southern Barents Sea Shelf – preliminary results from XRF Core Scanning.

Sigrun Maret Kvendbø Hegstad¹, Juha Ahokas², Matthias Forwick¹, and Sten-Andreas Grundvåg³

¹Department of Geosciences, UiT The Arctic University of Norway, Tromsø, Norway

²Aker BP ASA, Harstad, Norway

³Research Centre for Arctic Petroleum Exploration (ARCEX); Department of Geosciences, UiT The Arctic University of Norway, Tromsø, Norway.

The Barents Sea Shelf on the north-western corner of the Eurasian plate has a complex geological history, comprising large-scale processes controlled by plate movements, climatic variations and changing depositional environments. During the last decades, as the search for hydrocarbons within the area gained increased interest, Triassic sequences have been the target of comprehensive investigations. In our project, we test the potential of improving the correlation of Triassic strata using X-ray fluorescence (XRF) core scanning of siliciclastic drill cores.

XRF core scanning is a frequently used method on soft sediment cores, e.g. within marine geology and palaeo-climate studies. However, the applicability of this method on drill cores from exploration wells from the hydrocarbon industry has not been tested so far. We use this method to establish geochemical stratigraphic parameters, as well as to contribute to the identification of provenances, reconstruct palaeo-environments, and support the correlation of drill cores. This provides a novel, fast, inexpensive, and non-destructive method to be applied in hydrocarbon exploration, as well as in studies of lithified siliciclastic sediments in general.

Triassic intervals from 24 shallow drill cores from the southern Barents Sea (Finnmark Platform, Nordkapp Basin, Svalis Dome, Maud Basin and Bjarmeland Platform) provide the basis for this study. The cores have previously been comprehensively studied and described by IKU (the Norwegian Continental Shelf Institute; today SINTEF Petroleum Research), and studies of provenance and palaeo-environment have also been performed (e.g. Vigran et al., 1986). This data makes it possible to compare the geochemical units established in this study with other stratigraphic information.

We present preliminary results of establishing geochemical units from XRF core scanning, and the use of these for correlation within known stratigraphic frameworks and between geographic areas, as well as to increase the understanding of changes in provenance and palaeo-environments within these successions in the Barents Sea.

References:

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