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Timing and formation of structural highs in the eastern part of the northern Norwegian Barents Sea

Mattingsdal, R.[1], Høy, T.[2], Simonstad, E.[2] and Sanchez-Borque, J.[2]

[1]Norwegian Petroleum Directorate, Harstad, Norway, email: rune.mattingsdal@npd.no
[2]Norwegian Petroleum Directorate, Stavanger, Norway

During 2012, 2013 and 2014, the Norwegian Petroleum Directorate acquired nearly 33 000 km of 2D-seismic data in the northern part of the Norwegian Barents Sea, an area not open for petroleum activity. Amongst others, this new seismic data has made it possible to fully map the northern part of the area that formerly had overlapping claims with Russia. These new datasets are of much better quality than existing vintage seismic data. Even though processing issues are still not fully resolved in all areas, the data allow us to better understand the geological history in the northern Norwegian Barents Sea.

We focus on the timing and formation of structural highs in the areas on and surrounding the Kong Karl platform east of approximately 28°E, north of 74°30'N and south of 79°N. This area includes, amongst others, the large anticlines around Storbanken southeast of Kong Karls Land and the Sentralbanken high north of the Bjarmeland Platform.

The Kong Karl platform has been a stable platform since Carboniferous times, but is today dominated by gentle NNE-SSW trending domes/anticlines. The Jurassic sequence is shallow or eroded on most of the platform and subcrops towards most of the domes/anticlines. Some have previously interpreted the formation of the domes/anticlines to have taken place later than the Early Cretaceous [1], while others have interpreted the highs to have been exposed to compression and inversion in the Late Jurassic [2]. The quality of the new seismic datasets has made it possible to focus on the shallow Late Jurassic to Early Cretaceous interval in order to reveal the initial timing of individual domes/anticlines/highs.

Thinning and onlap/pinch-out of units towards structural highs are observed, and erosion on some of the highs is evidenced by deposition of small wedges around the highs, allowing us to update the interpretation of their timing. The geological events responsible for the formation of the highs are not fully understood, but we also try to look at their relation to underlying Paleozoic structures.

References:

[1] Gabrielsen R et al. (1990) NPD-Bulletin 6: 47 pages

[2] Grogan P et al. (1999) In: *Petroleum Geology of Northwest Europe*: Geological Society, London, 247-259