



The Kettla Member - an overview from the Faroe-Shetland Basin

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The North Atlantic Igneous Province (NAIP) is covering large areas of the Faroese Continental Shelf (FSC) and the Faroe-Shetland basin today. Although understanding of these Paleogene aged basalts is increasing, the early stages of the volcanic systems forming the basalts are not yet fully understood.

The Kettla Member, which is one of the oldest known volcanoclastic units of the NAIP, is a geographically wide spread partly siliciclastic partly volcanoclastic unit in the Faroe Shetland Basin. It is believed to pass northwards, eastwards and southwards into mudstones and has a characteristically low GR response (25-30 API Units) which correlates well throughout the Basin.

Based on literature research, data and reports from drillings, supported by distribution maps based on 3D seismic data from the Judd Basin (the study area) which is located within the Faroe-Shetland, this study suggest provenance areas for the Kettla Member. By looking at thickness variations, composition and reworked stage of the material it is possible to try and understand the sedimentary pathways and the processes controlling them during the initial stages of volcanism in the area.

The Kettla member is 147 meters thick in Well 6004/8a-1 and consists primarily of coarse grained volcanoclastics and tuffs. Minor amounts of tuffaceous claystone and coal were also found within the unit in the well. In Well 6004/12-1z the thickness of the member is 89 meters and consists of varies volcanoclastic lithologies, e.g. coarse and poorly-sorted volcanoclastic sandstones and siltstones. In Well 6004/17-1 the thickness of the member is 68.5 meters and comprised of e.g. coarse and well-rounded volcanic sand.

The coarse and mostly poorly sorted volcanoclastic material (high energy facies) found in the wells indicates a proximal source while the thickness variations indicate the source to be to the NW of the Judd Basin.

There is thus evidence of extrusive volcanism northwest of the Judd basin, i.e. towards the Faroe Islands, in the earliest Thanetian, which predates (some of the) published ages of the oldest volcanics drilled onshore Faroe Islands.