**Marginal marine sedimentation in the Middle Jurassic Hugin Formation, Sigrun Discovery, Norwegian North Sea**

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The Middle Jurassic Vestland Group is a prolific reservoir in the South Viking Graben, Norwegian North Sea, for example in the Gudrun, Gina Krog and Sleipner Fields. The Vestland Group is divided into the non-marine Sleipner Formation and the largely marine Hugin Formation. The 15/3-11 Sigrun Appraisal well drilled by Equinor in 2018 proved over 100 m gross thickness of Hugin Formation reservoir and 100 m of core was collected from both hydrocarbon- and water-bearing reservoir sandstones of the Hugin and the upper Sleipner Formation. The Hugin Formation at Sigrun consists of interbedded sandstone reservoir units, interbedded with mudstones and/or coals – all deposited in marginal marine to shallow marine settings. The sandstone bodies are interpreted variously as tidal delta, tidal flat and inlet channel sandstones and are associated with low to high bioturbation intensities. Intervals with reduced bioturbation intensity and diversity are taken to indicate stressed conditions, while the presence of large infaunal trace fossils support the presence of normal salinity conditions and close proximity to an open marine environment. The mudstone units are interpreted as restricted bay or lagoon deposits and are associated with abundant bioclastic debris (oyster shoals) and a lack of bioturbation. The presence of rooted mudstones and coals at the top of the Sleipner and Hugin formations indicate the presence of terrestrial and coastal plain depositional environments during different periods. The integration of sedimentological, ichnological and palaeontological data has been key to understanding the depositional environments in the Sigrun area. These data support deposition of the Hugin Formation in a fully to partially restricted setting which is interpreted as a broad, barrier confined bay or estuary which has access to marine waters through inlet channels.