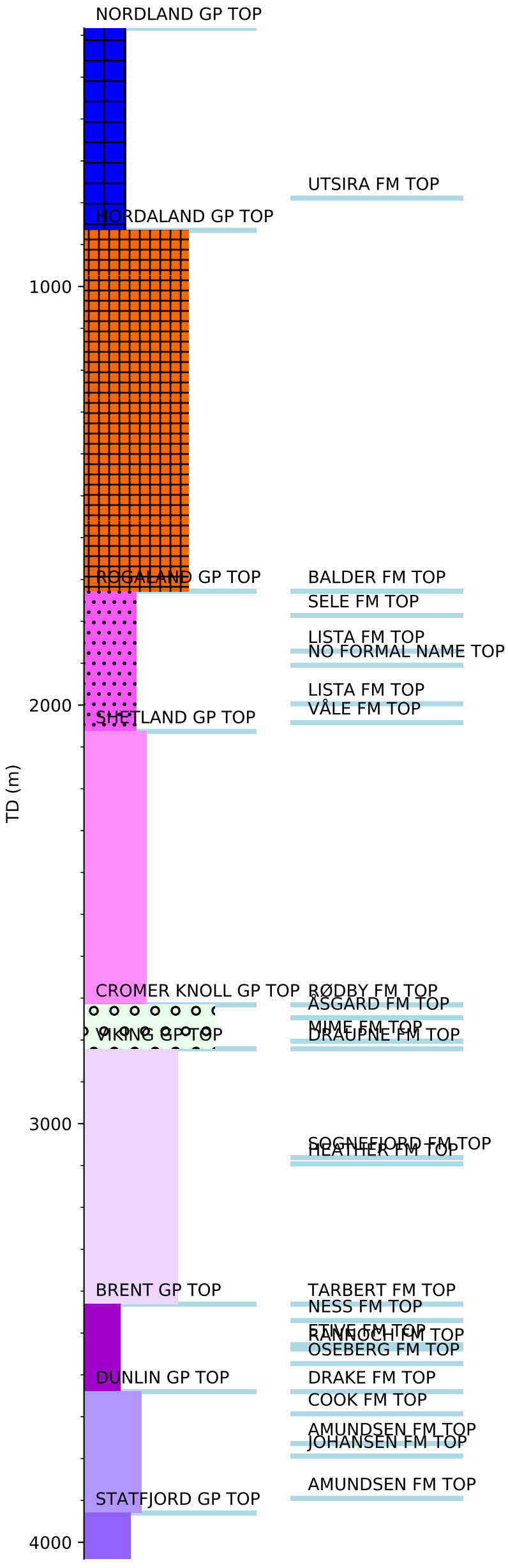

Wellbore History

GENERAL

Well 35/11-3 S was drilled on a location ca 20 km north-north-east of the Troll Field, and was designed to test multiple deltaic sands in the Middle Jurassic Brent Group. Early Eocene turbidites and Paleocene channel fill deposits were secondary objectives. Reservoir sands were expected in the Tarbert, Ness, Etive and Oseberg Formations. These were hydrocarbon bearing in the 35/11-2 well. The seismic anomaly at Middle Jurassic level was mapped with a 30.4 km3 closure, and the expected gross thickness was 220 m. The site survey showed no strong indications of shallow gas. It was, however, thought possible that sands in the intervals 479 - 497 m, and 573 - 634 m might be gas charged.

OPERATIONS AND RESULTS

Wildcat well 35/11-3 S was spudded with the semi-submersible installation Dyvi Stena on 27 June 1989 and drilled to TD at 4040 m in the Early Jurassic Statfjord Formation. The well was drilled deviated below 2100 m. Drilling proceeded without significant problems. However, the FMT sampling program for the Jurassic was curtailed when hole conditions deteriorated, and both the FMT tool and drill pipe became stuck during the final logging operation. The well was drilled with seawater and hi-vis pills down to 1010 m and with KCl/polymer mud from 1010 m to TD. No shallow gas was encountered.

No reservoir rocks were encountered in the Lower Eocene succession, but good sands were present in the Paleocene (Intra Lista sand). Top Draupne Formation shales came in at 2821 m. Then came the Sognefjord Formation at 3081 m and the Heather Formation at 3096 m. The well penetrated the Brent Group at 3431 m, 236 m deep to prognosis. Good quality sands were found in the Brent Group, but not as good as in the 35/11-2 well.

Gas levels throughout the Tertiary and Late Cretaceous were low. Oil shows with abundant free oil in the mud system were observed in limestones of the Early Cretaceous Rødby and Mime Formations and in sandstones of the Late Jurassic Sognefjord Formation. The sandstone units within the Middle Jurassic Brent Group were water wet with residual hydrocarbon shows. Petrophysical evaluation did not indicate hydrocarbons in the Cromer Knoll Group but did so in the Sognefjord Formation and, possibly, in the Brent Group. The evaluation and shows however, did not indicate significant hydrocarbons and did not warrant a test in any of the zones.

Excellent, highly oil prone, source rock was found in the Draupne Formation and good source rock was found in the Heather Formation. Both are capable of producing large quantities of petroleum, given sufficient maturity. In well position the Draupne Formation is early mature for petroleum generation, but probably has not expelled any hydrocarbons yet. The Heather Formation appears early to middle mature and may have expelled significant oil quantities in the lower section. Maturity indicators show a dramatic increase in thermal maturity at the base of the Draupne Formation. A similar break is indicated in today temperature gradient in the wire line BHT data.

Three conventional cores were cut: in the Intra Lista Sand, in the Sognefjord Formation, and in the Tarbert/Ness Formations of the Brent Group. FMT formation pressures were obtained in the Late Jurassic Sognefjord Formation and in the Brent and Dunlin Groups of the Middle and Early Jurassic. The valid pressure points showed a water gradient. Additionally, formation fluid samples were attempted in the Sognefjord Formation, but recovered only mud filtrate due to seal failures.

The well was permanently abandoned on 9 September 1989 as a dry hole with oil shows.

TESTING

No drill stem test was performed.

LITHOSTRATIGRAPHY & HISTORY FOR WELL: 35/11-3 S