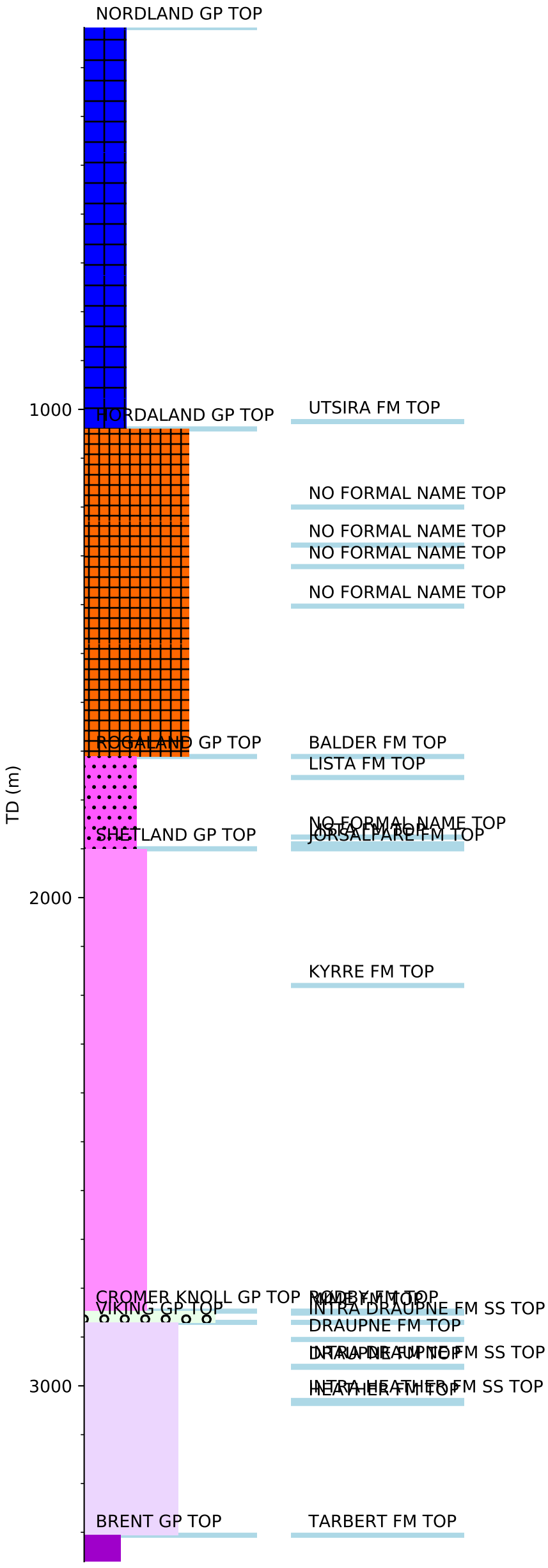
Groups

Formation Tops



Wellbore History

GENERAL

Exploration well 34/7-21 A is a sidetrack to well 34/7-21 which found oil in three different sands in the Late Jurassic - Early Cretaceous succession. No OWC was found. The primary purpose of the sidetrack was to test the extension of these discoveries and to prove possible OWC(s). A secondary objective was to test the presence of sandstones, and possible hydrocarbons, within the Late Cretaceous in which a thin sandstone interval was proved oil-bearing in well 34/7-21.

OPERATIONS AND RESULTS

Well 34/7-21A was kicked off from 1798 m in the vertical well on 16 December 1992. The well was deviated and penetrated the top reservoir 585 m west of the vertical well. It was drilled with the semi-submersible installation Treasure Saga to TD at 3360 m (2874 m TVD), 37 metres TVD into the Brent Group. Initial problems with steering the drill string resulted in a kick-off in the wrong direction. The well was turned around and lined up to the correct azimuth. The drill string got mechanically stuck three times in the interval 2465 m to 2571 m, but came free within short time. The string also got stuck at 2998 m when running in the hole after waiting on weather. The hole apparently deteriorated with time. The TD caliper log showed severe washouts of the hole, up to a maximum of 22". Waiting on weather for about 17 days was seen to be a major cause of the severe washouts. The washouts and hence increased amounts of cuttings, possibly explain the problems with the hole packing off and the string becoming stuck. Due to the hole angle and the bad hole condition logging operations were troublesome and time consuming, with many of the logs being run on drill pipe. The sidetrack was drilled with a KCl mud all through. The KCl levels were high and in addition glycol was introduced to inhibit the formation, but without the wanted effect as proved by the severe washout.

The Base Cretaceous Unconformity was penetrated at 2870 m. A 3 m thick sandstone interval just below the Base Cretaceous Unconformity, an Intra-Draupne Sand, 25 m thick TVD, was interpreted from logs to contain movable hydrocarbons. Good oil shows were observed in the more silty/shaly laminated part of the unit below. This sandstone was found in pressure communication with the upper Intra-Draupne Sand tested in well 34/7-21. Deeper down in the Draupne Formation at 2960 m a second Intra-Draupne Sand thin sandstone interval was found hydrocarbon-bearing. Hydrocarbons were in addition proved in a 2 m thick sandstone interval at the top of the Heather Formation. The three hydrocarbon intervals were separated and not in pressure communication. No OWC could be established from the pressure measurements, but both formation water and oil were sampled in the main reservoir sand (2870.0-2875.0 m, 2575.0-2578.0 m TVD), indicating proximity to an OWC. In addition to live oil in the Late Jurassic shows were reported in siltstone/sandstone laminae intermittently in the interval 2335 - 2811, as well as in siltstone/sandstone laminae in the Heather Formation below the oil bearing sands. The Brent Formation proved to be water-bearing.

Four cores were cut within the interval 2847-2911 m from the Late Cretaceous Rødby Formation and 6 m into the Draupne Formation A fifth core was cut in a shaly part of the Draupne Formation in the interval 2943-2954 m. A total of 75 metres were cut, of which 69.5 metres were recovered (93%). A total of 8 runs were made with the FMT of which 4 were regarded as successful. Fluid samples were taken at 3035.5 m / 2670.4 m TVD (oil and gas), 2872.5 m / 2577 m TVD (water), 2874 m / 2577.7 m TVD (gas and filtrate), and at 2873.5 m / 2577.3 m TVD (oil, gas, and filtrate) The well was permanently abandoned on 12 February 1993 as an oil appraisal.

TESTING

The sidetrack well 34/7-21 A was not tested.

LITHOSTRATIGRAPHY & HISTORY FOR WELL: 34/7-21 A