



**Wellbore History**

**GENERAL**

Well 2/4-5 (named 2/4-4X by operator Phillips) was drilled to appraise the northern segment of the 2/4-2 Ekofisk discovery. The Ekofisk discovery is located in the Central Trough in the southern Norwegian North Sea and its structure is an anticline, uplifted by halokinetic movements of Permian salt. The objective of well 2/4-4 was to test the Tertiary and the top of the Late Cretaceous. Planned total depth was 11000 ft (3352 m).

The well is Type Well for the Ekofisk Formation.

**OPERATIONS AND RESULTS**

Well 2/4-5 was spudded with the semi-submersible installation Neptune 7 on 21 June 1970 and drilled to TD at 3320 m in the Late Cretaceous Tor Formation. The well was drilled with seawater and hi-vis mud down to 585 m, with seawater/lignosulphonate mud from 585 to 3217 m, and with seawater/drill-aid mud from 3217 m to TD. Below 584 m 2 - 5 % diesel was added to the mud.

The Danian Chalk (Ekofisk Formation) was encountered at 3037 m and the Maastrichtian chalk (Tor Formation) was encountered at 3164 m. Both formations were hydrocarbon bearing. A total of 86.2 m core was recovered in 12 cores in the interval 3094 to 3206 m in the Ekofisk and Tor Formations. No fluid samples were taken on wire line.

The well was permanently abandoned on 27 August 1970 as an oil appraisal.

**TESTING**

Five zones in the Ekofisk and Tor Formations were perforated for testing.

DST 1 and DST 1A tested the intervals 3164 -3203 m and 3177 - 3186 m in the Tor Formation, respectively. DST 1 produced at maximum 165795 Sm3 gas and 701 Sm3 oil /day on a 24/64" choke. The GOR was 236 Sm3/Sm3; the oil gravity was 37.3 deg API. The reservoir temperature in the DST1 zone was reported to be 129.4 deg C. DST 1A was conducted with smaller choke sizes and gave somewhat lower rates than in DST 1, but fluid properties were similar.

DST 2 tested the interval 3106 -3143 m in the Ekofisk Formation, but was discontinued for weather conditions. DST 2A tested the same interval and flowed 112020 Sm3 gas and 486 Sm3 oil of 37 deg API gravity through a 50/64" choke and, after acidization, 113410 Sm3 gas and 480 Sm3 oil of 37.1 deg API gravity through a 21/64" choke. The GOR before and after acidization was 231 and 236 Sm3/Sm3, respectively. The reservoir temperature in the DST 2A zone was reported to be 125.6 deg C.

DST 3 should test the interval 3088 - 3094 m in the Ekofisk Formation, but was a failure.

DST 4 tested the interval 3042 - 3075 m in the Ekofisk Formation. It flowed 18240 Sm3 gas and 58 Sm3 oil of 37.5 deg API gravity through a 24/64" choke. The GOR was 313 Sm3/Sm3. After acidization, it flowed 92115 Sm3 gas and 411 Sm3 oil of 37.3 deg API gravity with the same choke size. The GOR was 224 Sm3/Sm3. The reservoir temperature in the DST 4 zone was reported to be 125.6 deg C.

**LITHOSTRATIGRAPHY & HISTORY FOR WELL: 2/4-5**