



Wellbore History

GENERAL

Well 2/7-3, was drilled on the southern compartment of the Eldfisk structure in the North Sea. The Eldfisk structure is a NNW-SSE trending partly salt-related anticlinal structure located between the Valhall and Embla fields to the south and the Ekofisk Field to the north. The primary objectives were to test the Danian Limestone, and the possibility of Jurassic sandstone development on the crest of the Eldfisk structure. Both objectives were expected to be ca 120 m thick. The Late Cretaceous carbonate, lower Cretaceous sandstones and Triassic sandstones were secondary objectives.

OPERATIONS AND RESULTS

Wildcat well 2/7-3 was spudded with the jack-up installation Orion on the 14 April 1972 and drilled to TD at 4359 m in the Permian Zechstein Group. Note that the Daily Report records Decca final fix as 56° 23' 01.7"N, 03° 14' 44.6"E, 60 meters off desired location, while other parts of the Completion Report seems to record the coordinates of the slightly different planned well location. The well was drilled with seawater and hi-vis sweeps down to 482 m, with gypsum-CMC lignosulphonate mud from 482 m to 3195 m, and with salt saturated gypsum-CMC lignosulphonate mud from 3195 m to TD. Between 482 m and TD diesel was added to the mud.

The Danian section was 90 m thick, highly fractured, and yielded commercial quantities of oil. Logs and two drill stem tests (DST 1 and DST 2) in the Late Cretaceous rocks indicated low porosity and permeability. One hundred and fifty gross meter of Jurassic sandstones was penetrated in the well. Log analysis indicated the sands are very shaly and silty. Three of the sidewall cores from this interval were described as hard, black shale and the fourth as a very calcareous sandstone. Although the logs showed high resistivities through this section and oil was present in the; mud pits while drilling this interval, tests indicated low permeability. No Early Cretaceous sandstones or Triassic sandstones were present in the well.

A total of 19 m core was cut in four cores from the interval 2851.1 m to 2901.4 m in the Shetland Group. No fluid samples were taken on wire line.

The well was permanently abandoned on 11 October 1972 as an oil discovery.

TESTING

A total of sixteen drill stem tests were attempted in the well; five in the Shetland Group and eleven in the Jurassic Farsund Formation and Haugesund Formation. The Eldfisk Formation was not tested. Ten of the Jurassic tests did not produce fluid to the surface. Representative data for the Shetland Group tests and the one in the Jurassic that produced oil are given here.

DST 1 tested the interval 2971.8 to 3002.3 m. The test produced total of 4.53 m3 of water and mud with 10% oil.

DST 2 tested the interval 2907.8 to 2938.3 m. The test flowed 64 Sm3 oil and 14800 Sm3 gas /day through a 32/64" choke. The GOR was 231 Sm3/Sm3 and the oil gravity was 29.9 °API.

DST 3 tested the interval 2883.4 to 2895.6 m. The test produced after acidizing 667 Sm3 oil and 135200 Sm3 gas /day through a 32/64" choke. The GOR was 202 Sm3/Sm3 and the oil gravity was 35.96 °API.

DST 4 tested the interval 2868.2 to 2877.3 m. The test produced after acidizing 227 Sm3 oil and 57200 Sm3 gas /day through a 28/64" choke. The GOR was 252 Sm3/Sm3 and the oil gravity was 36.75 °API.

DST 5 tested the interval 2805.7 to 2856 m. The test produced after acidizing 15 Sm3 oil and 123400 Sm3 gas /day through a 28/64" choke. The GOR was 243 Sm3/Sm3 and the oil gravity was 37.96 °API.

The interval 3502.2 to 3517.4 m (named Jurassic DST 11 in some well reports and DST 18 in other well reports) was the only interval in the Jurassic that produced oil. The flow rates declined through the flows. After acidizing and at the end of the second flow the well produced 58 Sm3 oil and 5300 Sm3 gas /day through a 24/64" choke. The GOR was 91 Sm3/Sm3 and the oil gravity was 27.4 °API.

LITHOSTRATIGRAPHY & HISTORY FOR WELL: 2/7-3