

P. A. Lindberg

Report

Repeat Formation Tester (RFT)

WELL 34/10-11

Engineer: Jan Skagen

Date: 12/2-81

Abstracts

34/10-11 is the 10th well on the Delta-structure on the 34/10-block. This well was drilled to 2155 m RKB through Statfjord/Triassic formations. Two RFT-runs were completed as a part of the final logging program over the reservoir section.

Summary of the RFT-runs

The first RFT-run was done as an intermediate run while drilling through the top sections of the reservoir. Only a few pressure points were taken and is not included in this report.

The second RFT-run was completed as a part of the final logging program for the well. 20 pressure points in the hydrocarbon-zone and water zone plus two segregated samples in the hydrocarbon-zone were planned. 16 pressure points were obtained when the tool got stuck at 2115 m RKB. Several attempts to get free were done with maximum pull on line (5700 psi) with no success.

While being stuck a segregated sample was taken at 2115 m RKB (water-zone). The cable was then cut and the fishing operation started. Further RFT-runs were cancelled due to the risk of being stuck again (725 psi overbalance in hole).

Both chambers, after a successful fishing operation, were bled off offshore. The 1 gallon chamber had a pressure of 20 psi, containing some gas and mud filtrate/formation water. The 2 3/4 gallon chamber had a pressure of 700 psi at surface containing 4.8 cuft of gas plus mud filtrate / formation water. Samples of the gas and liquid were taken and sent onshore for further analysis.

$$14.7 \times 4.8 = 4960 \cdot X \quad X = \underline{\underline{0.01 \text{ cuft}}} \Rightarrow .15 \text{ cuft / bbl}$$

Sample analysis

These sample analysis were done offshore by the mud engineers and are rough data.

| <u>Mud filtrate</u> | <u>2 3/4 gallon chamber</u> | <u>1 gallon chamber</u> | |
|---------------------|-----------------------------|-------------------------|-------|
| pH: | 11.0 | 7.0 | 6.8 |
| Tot hardness: | 1000 | 5500 | 5700 |
| Ca ++: | 300 | 1400 | 1500 |
| Mg ++: | | 720 | 780 |
| Cl- : | 1700 | 25000 | 25000 |

Baroid gas cromatograph of gas from the 2 3/4 gallon chamber:

Methane: 7 - 7.5 %, 40000 ppm
C₂⁺: 0.1 %
CO₂: 0 %
H₂ - check negative

Both chambers had 100 % recovery.

RFT pressure points
34/10-11 STATFJORD fm

DEPTH
(m RKB)

Gradient:
0.655 gm/cc
(0.284 psi/ft)

o/w/c
(from logs)

1900

1950

2000

2050

2100

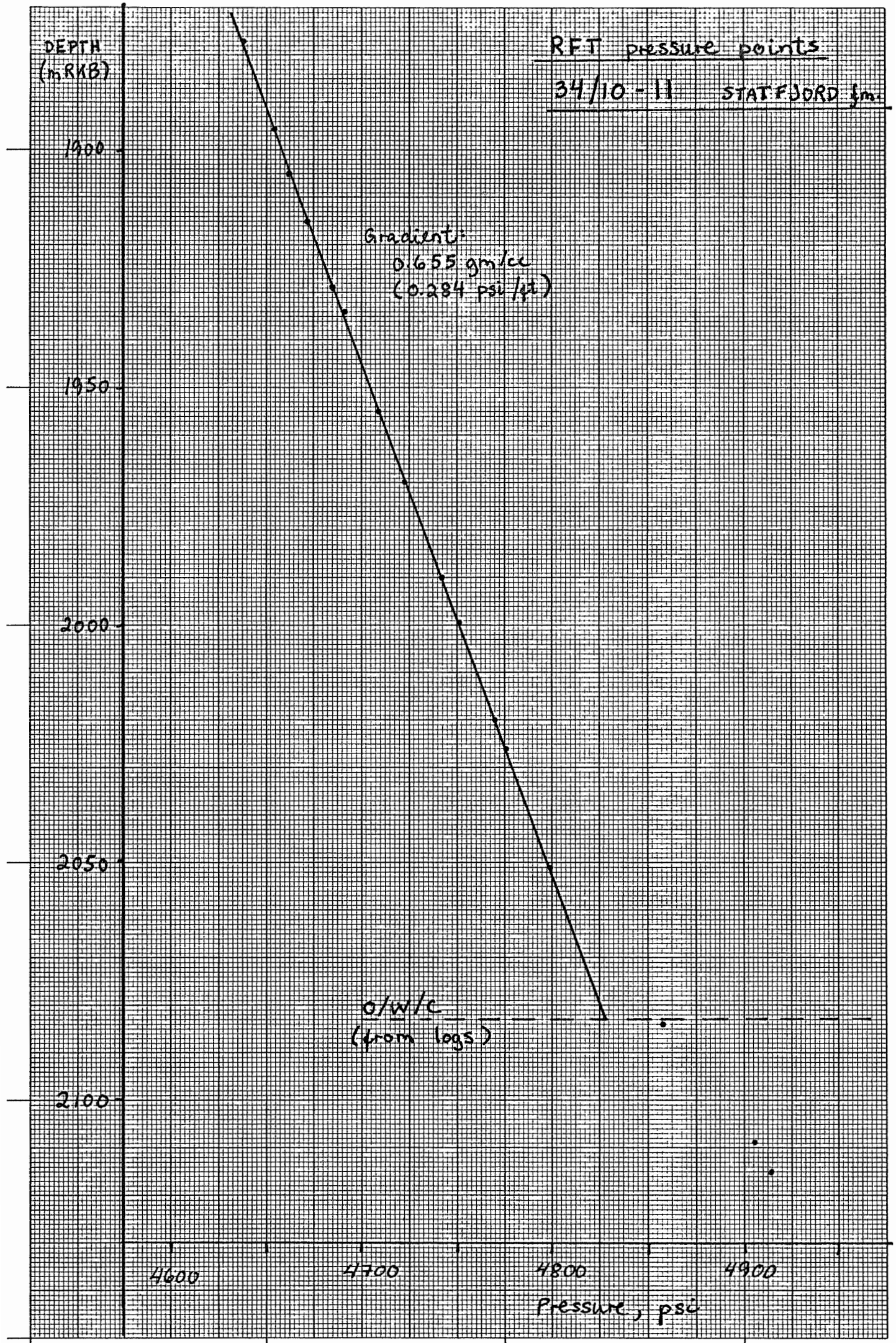
4600

4700

4800

4900

Pressure, psi



PRETEST RECORDED DATA

WELL: 34/10-11

DATE: 01.02.81

RUN NO.: 1

Max. rec. temp.: 162°F

| Test No | Depth mRKB | Log hydr.pr. before/after test psi | Cor. hydr.pr. before test psi, gm/cc | Draw down psi | Build up time sec. | Log pretest pressure psi | Cor.pretest pressure psi/gm/cc | Cor.hydr.pr. after test psi, gm/cc | Remarks |
|---------|---------------|--|--|---------------------|--------------------------|--------------------------------|--------------------------------------|--|--------------------|
| 1 | 1870 | 4959 / 4959 | 4994 / 1.878 | - | - | tight | - | 4994 / 1.878 | |
| 2 | 1877 | 4978 / 4979 | 5013 / 1.878 | .30 | 21 | 4605 | 4638 / 1.738 | 5014 / 1.878 | |
| 3 | 1895.5 | 5026 / 5031 | 5061 / 1.878 | 1 | N.A. | 4621 | 4654 / 1.727 | 5066 / 2.879 | |
| 4 | 1905 | 5049 / 5051 | 5084 / 1.877 | 7 | N.A. | 4629 | 4662 / 1.721 | 5086 / 1.878 | |
| 5 | 1915 | 5076 / 5074 | 5111 / 1.877 | 47 | 21 | 4638 | 4672 / 1.716 | 5109 / 1.876 | |
| 6 | 1929 | 5113 / 5114 | 5148 / 1.877 | 274 | 21 | 4651 | 4685 / 1.708 | 5149 / 1.877 | |
| 7 | 1934 | 5129 / 5128 | 5164 / 1.878 | 111 | 21 | 4657 | 4691 / 1.706 | 5163 / 1.878 | |
| 8 | 1955 | 5182 / 5183 | 5217 / 1.877 | 14 | N.A. | 4675 | 4709 / 1.694 | 5218 / 1.877 | |
| 9 | 1970 | 5222 / 5219 | 5257 / 1.877 | 2 | N.A. | 4689 | 4723 / 1.686 | 5254 / 1.876 | |
| 10 | 1990 | 5275 / 5272 | 5310 / 1.876 | 500 | 21 | 4708 | 4742 / 1.676 | 5307 / 1.875 | |
| 11 | 1999.5 | 5300 / 5297 | 5335 / 1.876 | 21 | N.A. | 4717 | 4751 / 1.671 | 5332 / 1.875 | |
| 12 | 2020 | 5353 / 5352 | 5388 / 1.876 | 18 | N.A. | 4736 | 4770 / 1.661 | 5387 / 1.876 | |
| 13 | 2026 | 5370 / 5369 | 5405 / 1.876 | 214 | 21 | 4742 | 4776 / 1.658 | 5404 / 1.876 | |
| 14 | 2035 | 5384 / 5394 | 5429 / 1.876 | - | - | tight | - | 5429 / 1.876 | |
| 15 | 2051 | 5435 / 5436 | 5470 / 1.876 | 1573 | 21 | 4765 | 4799 / 1.645 | 5471 / 1.876 | |
| 16 | 2084 | 5522 / 5523 | 5557 / 1.875 | 42 | 21 | 4824 | 4858 / 1.639 | 5558 / 1.876 | |
| 17 | 2109 | 5587 / 5585 | 5622 / 1.875 | 1896 | N.A. | 4872 | 4906 / 1.636 | 5620 / 1.874 | Partly plugging |
| 18 | 2115 | 5605 / 5604 | 5640 / 1.875 | 1896 | N.A. | 4880 | 4914 / 1.634 | 5639 / 1.875 | |
| 19 | 2115 | 5601 / 5602 | 5636 / 1.874 | 67 | N.A. | 4879 | 4913 / 1.634 | 5637 / 1.874 | Sampling |

