

Denne rapport  
tilhører



**L&U DOK. SENTER**

L. NR. 30285320020

KODE Well 31/2-3 nr 29

Returneres etter bruk

Reservoir Fluid Study  
For  
Norske Shell Exploration & Production  
North Sea, Norway  
Well: 31/2-3

**CORE LABORATORIES UK LTD.**  
*Petroleum Reservoir Engineering*  
**ABERDEEN, SCOTLAND**

Reservoir Fluid Study  
For  
Norske Shell Exploration & Production  
North Sea, Norway  
Well: 31/2-3

**CORE LABORATORIES UK LTD.**

*Petroleum Reservoir Engineering*

**ABERDEEN, SCOTLAND**

5th January, 1981

Norske Shell Exploration & Production,  
Damsle Ferusuei 43,  
P.O. Box 10,  
40-33 Forus,  
Stavanger,  
Norway.

Attention: Mr. Dave Jolly

Subject: Reservoir Fluid Study  
Well: 31/2-3  
North Sea, Norway  
Our File Number: RFLA 80090

Gentlemen,

On 7th May, 1980, an RFT subsurface fluid sample was collected during testing on the subject well and forwarded to our Aberdeen laboratory on 14th May, 1980, for use in a reservoir fluid study. In accordance with analyses requirements, the tests were performed and the results presented in this report.

The hydrocarbon composition through hexanes of the subsurface fluid was determined by low temperature fractional distillation. Due to the nature of the fluid we were unable to determine the hydrocarbon composition of the heptanes plus through eicosanes, by high temperature fractional distillation and consequently high temperature chromatography was utilized. The results of these tests in terms of both mol percent and weight percent through eicosanes plus are presented on page two.

The subsurface reservoir fluid was examined in a visual cell at the reservoir temperature of 122°F and found to exhibit a retrograde dew point at 1753 psig for RFT 4.1. The pressure-volume relations of the reservoir fluid are shown on page three.

The wellstream composition was used to calculate the cumulative stock tank liquid and sales gas recovery using normal temperature two-stage separation. Also calculated are the plant liquid products on the primary and second stage gas separator gases. The total plant products in the wellstream are also shown on this page. All recoveries are based on a one MMSCF of original reservoir fluid. It must be remembered in applying these data that the recoveries are based on 100 percent plant efficiency. These results are presented on page four.

Continued/...

**CORE LABORATORIES UK LTD.**

*Petroleum Reservoir Engineering*

**ABERDEEN, SCOTLAND**

Norske Shell Exploration & Production

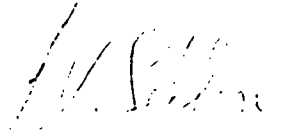
Continued/...

Page Two

In view of these results, the reservoir fluid would usually be considered a dry gas system. Consequently, we would normally not perform a "step-wise" equilibrium (constant volume) depletion to simulate wellstream production below the dew point. We will retain the samples in our laboratory pending further instructions from Norske Shell Exploration & Production.

It has been a pleasure to be of service to Norske Shell Exploration & Production. Should any questions arise concerning the data presented in this report, please do not hesitate to contact us.

Very truly yours,  
Core Laboratories U.K. Ltd.,



LKS/HG  
15 cc addressee

L. K. Sebborn,  
Laboratory Manager - RFL

**CORE LABORATORIES UK LTD.**  
*Petroleum Reservoir Engineering*  
**ABERDEEN, SCOTLAND**

Page 1 of 4

File RFLA 80090

Company Norske Shell Date Sampled 7th May, 1980  
 Well 31/2-3 RFT 4.1 County North Sea  
 Field \_\_\_\_\_ State Norway

**FORMATION CHARACTERISTICS**

Formation Name \_\_\_\_\_  
 Date First Well Completed \_\_\_\_\_, 19\_\_\_\_  
 Original Reservoir Pressure \_\_\_\_\_ PSIG @ \_\_\_\_\_ Ft.  
 Original Produced Gas-Liquid Ratio \_\_\_\_\_ SCF/Bbl  
     Production Rate \_\_\_\_\_ Bbl/Day  
     Separator Pressure and Temperature \_\_\_\_\_ PSIG \_\_\_\_\_ ° F.  
     Oil Gravity at 60°F. \_\_\_\_\_ ° API  
 Datum \_\_\_\_\_ Ft. Subsea  
 Original Gas Cap \_\_\_\_\_

**WELL CHARACTERISTICS**

Elevation \_\_\_\_\_ Ft.  
 Total Depth \_\_\_\_\_ Ft.  
 Producing Interval \_\_\_\_\_ Ft.  
 Tubing Size and Depth \_\_\_\_\_ In. to \_\_\_\_\_ Ft.  
 Productivity Index \_\_\_\_\_ Bbl/D/PSI @ \_\_\_\_\_ Bbl/Day  
 Last Reservoir Pressure 2246 PSIG @ 1433 m  
     Date \_\_\_\_\_, 19\_\_\_\_  
     Reservoir Temperature 122 ° F. @ \_\_\_\_\_ Ft.\*  
     Status of Well \_\_\_\_\_  
     Pressure Gauge \_\_\_\_\_  
 Normal Production Rate \_\_\_\_\_ Bbl/Day  
     Gas-Oil Ratio \_\_\_\_\_ SCF/Bbl  
     Separator Pressure and Temperature \_\_\_\_\_ PSIG \_\_\_\_\_ ° F.  
     Base Pressure \_\_\_\_\_ PSIA  
 Well Making Water \_\_\_\_\_ % Cut

**SAMPLING CONDITIONS**

Sampled at 1433 m  
 Status of Well \_\_\_\_\_  
     Gas-Oil Ratio \_\_\_\_\_ SCF/Bbl  
     Separator Pressure and Temperature \_\_\_\_\_ PSIG \_\_\_\_\_ ° F.  
     Tubing Pressure \_\_\_\_\_ PSIG  
     Casing Pressure \_\_\_\_\_ PSIG  
 Sampled by Schlumberger  
 Type Sampler RFT

REMARKS: \* Requested analysis temperature

Cylinder Number: SS 591



**CORE LABORATORIES UK LTD.**  
*Petroleum Reservoir Engineering*  
**ABERDEEN, SCOTLAND**

Page ..... 4 ..... of ..... 4 .....

File ..... RFLA 80090 .....

Well ..... 31/2-3 .....

CALCULATED RECOVERY PER MMSCF OF ORIGINAL FLUID

Wellstream MSCF 1000

Normal Temperature Separation\*

Stock Tank liquid - Barrels	2.98
Primary Separator Gas - MSCF	996.16
Second Stage Gas - MSCF	1.13
Stock Tank Gas - MSCF	0.65

Total Plant Products in  
Primary Separator Gas - Gallons\*\*

Propane	52
Butanes (Total)	16
Pentanes Plus	43

Total Plant Products in  
Second Stage Gas - Gallons\*\*

Propane	0.08
Butanes (Total)	0.02
Pentanes Plus	0.04

Total Plant Products in  
Wellstream - Gallons\*\*

Propane	52
Butanes (Total)	16
Pentanes Plus	175

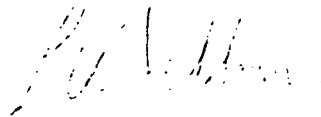
\* Recovery Bases: Primary separation at 1250 psig and 40°F  
Second stage at 500 psig and 40°F  
Stock Tank at 0 psig and 27°F

\*\* Recovery assumes 100% plant efficiency

**CORE LABORATORIES UK LTD.**  
*Petroleum Reservoir Engineering*  
**ABERDEEN, SCOTLAND**

Norske Shell Exploration & Production  
RFLA 80090

Core Laboratories U.K. Ltd.,  
Reservoir Fluid Analysis,



L. K. Sebborn,  
Laboratory Manager - RFL