# statoil

Title

Quality control of
routine core analysis
6406/3-1


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**Requested by**

Jon Hanstveit, LET - BERGEN

**Subtitle**

Measurement of gas permeability, helium porosity
and calculation of grain density

**Co-workers**

**Title**

## Quality control of
## routine core analysis
## 6406/3-1

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| Prepared | | Approved | |
|---|---|---|---|
| 1/11-84 | Arnt H. Gulbrandsen | 1/11 | Kåre Sørheim |

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## Summary

A routine core analysis test was performed on core samples
from well 6406/3-1.  The samples were previously tested by
Geco A/S, Bergen.  As an independent check, Lab tested 10
horizontal samples to verify Geco's data.
Our findings are:

Concerning permeability, good agreement except for samples
15, 156.
Porosity results show good agreement except for sample 15,
70, 164.

## Introduction

The main purpose of this work was to check routine core data
done by Geco A/S, Bergen.  10 horisontal plugs from well
6406/3-1 were chosen for this check.

## Expeimental procedures

Porosity measurements were made using Boyles Law helium
injection method.  The permeabilities were determined using
dry nitrogen, and a sealing pressure of 15 bar was applied.
The Klinkenberg effect was measured by the determination of
the gas permeability for each sample using a minimum of 3
different values of mean pressure.  Plotting K against $\frac{1}{Pm}$ and
fitting by the least squares method to the data gives a
correlation factor close to 1.  Equivalent liquid
permeability $K_L$ is found by reading K value at $\frac{1}{Pm} = 0$.

## Results/Discussion

The results are given in table 1.
Permeability results show more or less good agreement with
the data given by Geco A/S, except for samples 15 and 156.
Having in mind the low porosity values for these samples, Lab
believe permeabilities given by Geco A/S are too high.  Geco
should recheck these plugs.
Geco's porosity data compare well with values found by Lab,
except for the samples 15, 70, 164.  Generally speaking, a
difference in $\pm$ .5 porosity units is acceptable comparing
porosity data run by different Lab's.

Routine core data measured by Lab and Geco A/S, Bergen.

| Pl.no. | Depth (m) | Permeability (mD) | | Helium | Porosity (%) | Grain density | |
| --- | --- | --- | --- | --- | --- | --- | --- |
| | | Lab. Klinkenberg. corr | GECO A/S | Lab. | GECO A/S | Lab. | GECO A/S (g/cc) |
| 1 | 3783.20 | 1795 | 1573 | 24.5 | 24.8 | 2.66 | 2.65 |
| 15 | 88.00 | .09 | 25 | 2.5 | 3.2 | 2.69 | 2.70 |
| 16 | 88.30 | 4.7 | 4.1 | 7.6 | 8.0 | 2.72 | 2.73 |
| 40 | 97.00 | 2133 | 2103 | 19.6 | 20.0 | 2.64 | 2.64 |
| 60 | 3804.00 | 790 | 734 | 17.9 | 18.2 | 2.64 | 2.65 |
| 70 | 07.65 | 228 | 181 | 15.2 | 15.9 | 2.66 | 2.67 |
| 110 | 23.00 | 426 | 414 | 19.8 | 20.0 | 2.65 | 2.65 |
| 135 | 31.30 | 64 | 59.1 | 13.3 | 13.7 | 2.68 | 2.69 |
| 156 | 38.65 | .03 | 28 | 1.2 | 1.1 | 2.68 | 2.68 |
| 164 | 41.30 | 26.2 | 22.5 | 11.9 | 11.9 | 2.66 | 2.66 |