



statoil

title

Quality control of
routine core analysis
6407/1-2
STATOIL

EXPLORATION & PRODUCTION
LABORATORY

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Den norske stats oljeselskap a.s



Classification

Requested by

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Subtitle

Measurement of He-porosity, gas permeability and calculation of grain density

Co-workers

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Summary

A routine core analysis test was performed on core samples from well 6407/1-2. The samples were previously tested by Geco A/S. As an independent check, Prolab tested 10 horizontal samples to verify Geco's data. Our findings are:

Permeability results show good agreement, except for samples 132, 133.

Porosity results show good agreement.

Introduction

The main purpose of this work was to check routine core data done by Geco A/S. 10 horizontal plugs from well 6407/1-2 were chosen for this check.

Experimental 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 determine the gas permeability for each sample using a minimum of 3 different values of mean pressure. Plotting K against $\frac{1}{P_m}$ and fitting by least squares to the data gives a correlation factor close to 1. Equivalent liquid permeability K_L is found by reading K value at $\frac{1}{P_m} = 0$.

Results / Discussion

The results are given in table 1.

Permeability results show good agreement except for samples 132, 133. Having in mind the low porosity values for these two samples, we believe that Geco A/S have done something wrong.

Geco's porosity data compare well with the values found by Prolab. The differences can be explained by the inaccuracy measuring the grain volume of the samples.

Routine core data measured by Prolab and Geco A/S.

Plug no	Depth	Permeability (mD)		Helium porosity (%)		Grain density (g/cc)	
		Prolab	Geco A/S (Klinkenberg Corr.)	Prolab	Geco A/S	Prolab	Geco A/S
11	3664.75	5.0	4.9	16.5	16.3	2.68	2.66
24	69.10	2.6	2.5	13.1	13.4	2.67	2.66
64	83.60	8.4	8.2	14.3	14.6	2.64	2.64
72	86.45	3.4	2.6	11.5	11.6	2.70	2.69
76	88.05	605	615	16.6	16.8	2.64	2.64
95	94.35	26.2	26	14.8	14.9	2.66	2.64
122	3704.30	35.9	40	13.3	13.7	2.65	2.65
132	07.70	1.2	97	7.3	7.3	2.66	2.66
133	08.00	.50	35	6.4	6.3	2.67	2.66
147	12.75	396	384	15.5	16.2	2.65	2.65