

7/11/79 (7)

**EUROPEAN REGION TECHNICAL CENTRE****REPORT No** CS-83-48

PARTIAL ROCK ANALYSIS

TRIASSIC

CLIENT- PHILLIPS, NORWAY

DATE- 15.8.83

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1. INFORMATION REQUESTED

Solubility in 15% HCL and 12-3 mud acid and scanning electron microscope study.

2. SAMPLES TESTED

Five sidewall rock samples were received in the lab. from depths of 15,010 ft, 15,168 ft, 15,340 ft, 15,686 ft and 15,703 ft from COD 7/11-7.

They were labelled for analysis purposes A,B,C,D and E respectively.

All chemicals used came from laboratory stock.



### 3. Chemical Characteristics

#### ACID SOLUBILITY

##### 1. Hydrochloric Acid Solubility Tests

###### i) Procedure

One gram of pulverised formation was placed in 100 mls of 15% hydrochloric acid for one hour at 150°F. The solution was then filtered, then weighed. The amount of hydrochloric acid soluble material was calculated and reported as a percentage by weight.

###### ii) Results

| <u>Sample</u> | <u>Percent Solubility</u><br><u>in 15% Hydrochloric Acid</u> |
|---------------|--|
| A             | 9.0  |
| B             | 8.0  |
| C             | 9.0  |
| D             | 7.0  |
| E             | 13.0   |

##### 2. Mud Acid (12% Hydrochloric, 3% Hydrofluoric Acid) Tests

###### i) Procedure

One gram of pulverised formation was placed in 15% hydrochloric acid for one hour at 150°F to remove any carbonates from the sample. This was done since calcium or magnesium fluoride precipitation could occur when hydrofluoric acid reacts with carbonate material.

The hydrochloric acid was then poured off and 100 mls of mud acid was added. After one hour at 150°F the solution was filtered and the residue dried and weighed.



### 3. Chemical Characteristics (contd)

The amount of mud acid soluble material was calculated and reported as a percent by weight.

#### ii) Results

| <u>Sample No.</u> | <u>Percent Solubility</u><br><u>in 12-3 Mud Acid</u> |
|-------------------|--|
| A                 | 45.0   |
| B                 | 47.0   |
| C                 | 54.0   |
| D                 | 56.0   |
| E                 | 62.0   |

#### 4. PETROGRAPHIC STUDY

The samples were all silty sandstones with the primary grains predominantly composed of quartz, with minor amounts of K-feldspar and mica. There were also clay coatings on some of the samples composed of chlorite and illite.

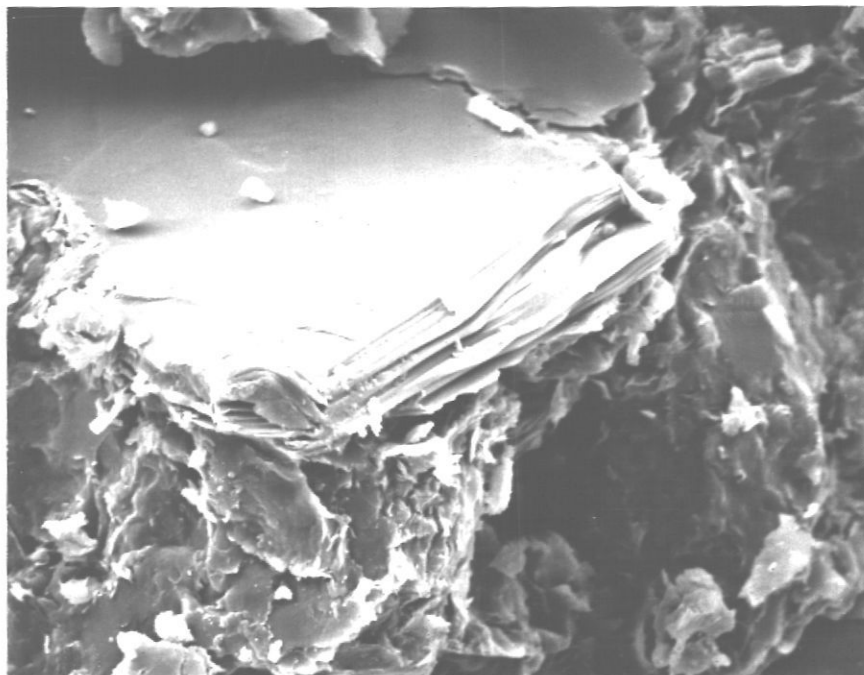
Pore space appeared to be very limited which suggests that permeability would be very low, although these properties could not be measured due to the nature of the samples received.

S.E.M. Observations

Core A Magnification x 160

Tightly packed quartz, K-feldspar and mica primary grains make up this sample.

S.E.M. Observations (contd)

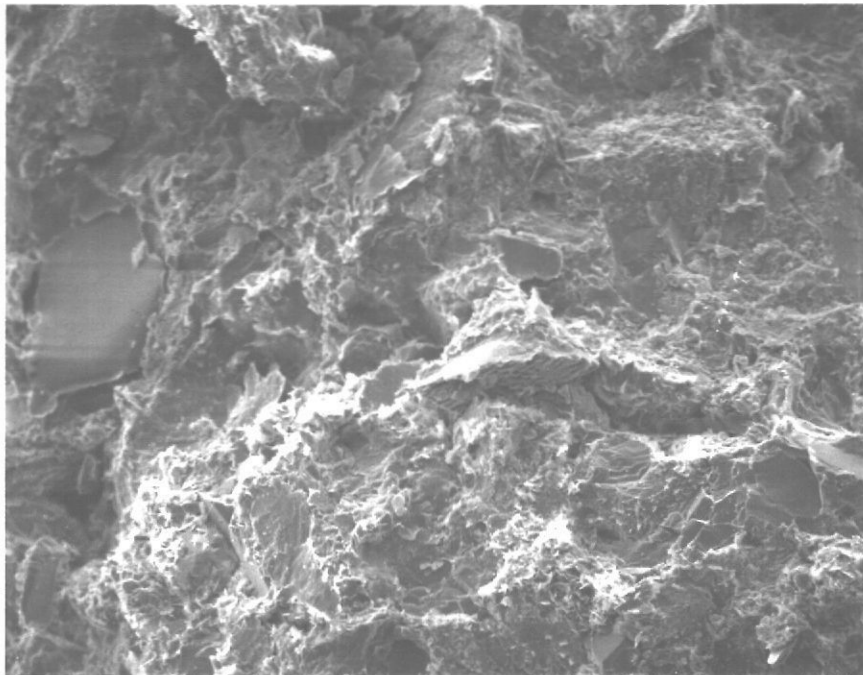


Core A Magnification x 1250

Platy mica grains



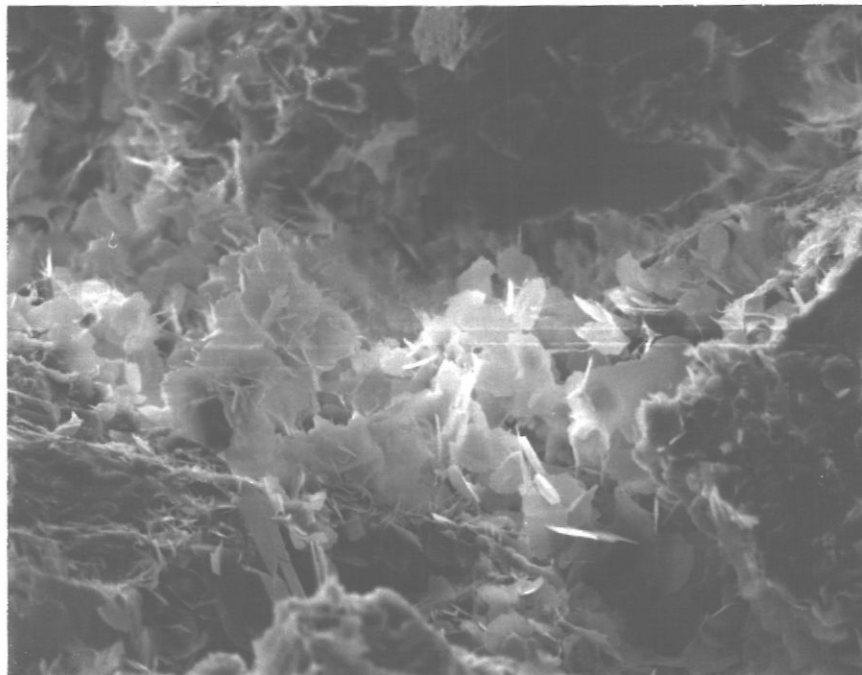
S.E.M. Observations (contd)



Core B Magnification x 160

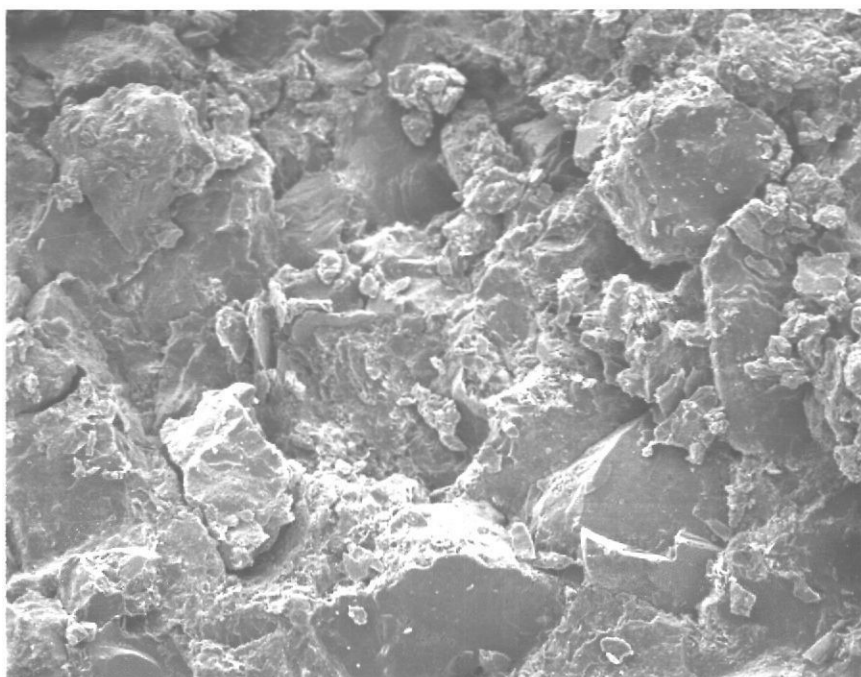
Quartz and K-feldspar form the bulk of the primary grains of this sample, with chlorite and illite clay coatings.

S.E.M. Observations (contd)



Core B Magnification x 640

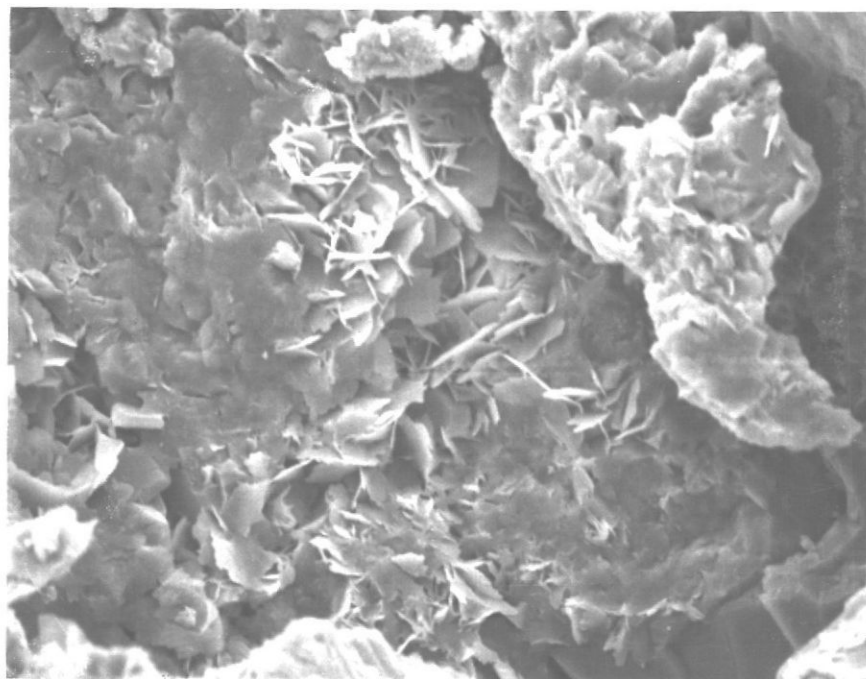
The clay mineral chlorite

S.E.M. Observations (contd)

Core C Magnification x 160

Quartz, K-feldspar and mica primary grains with chlorite and illite coatings.

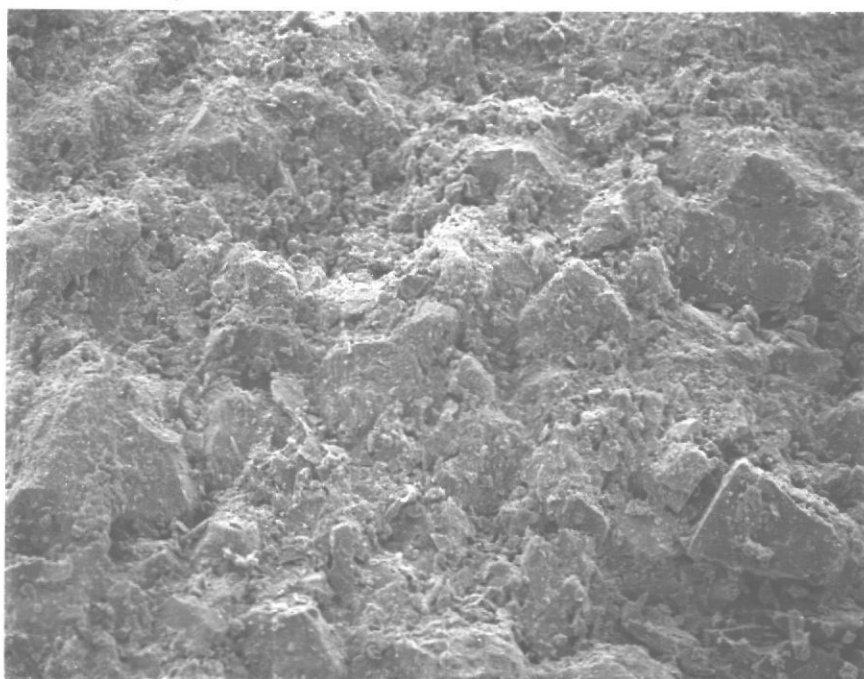
S.E.M. Observations (contd)



Core C Magnification x 1250

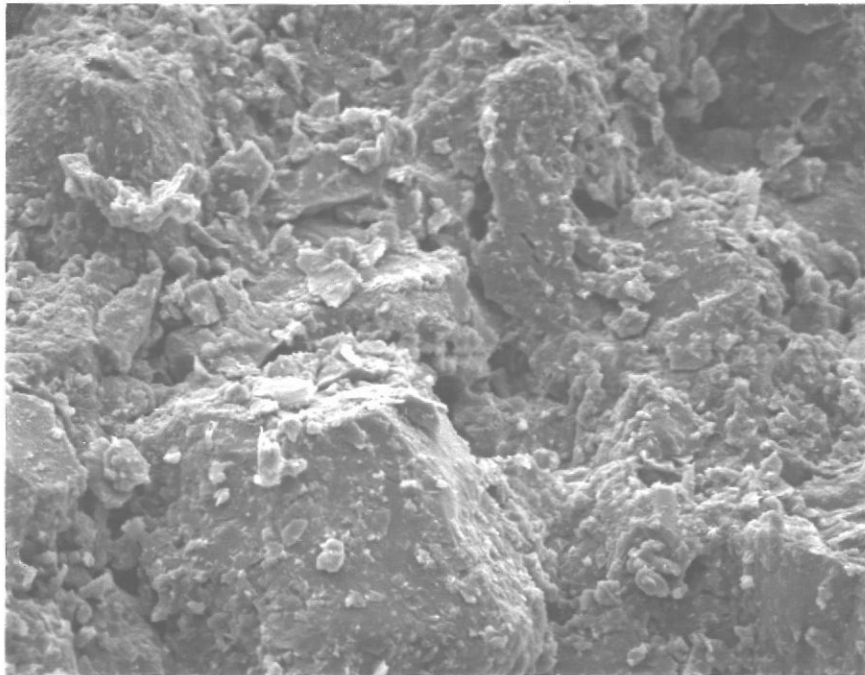
Chlorite

S.E.M. Observations (contd)



Core D Magnification x 160

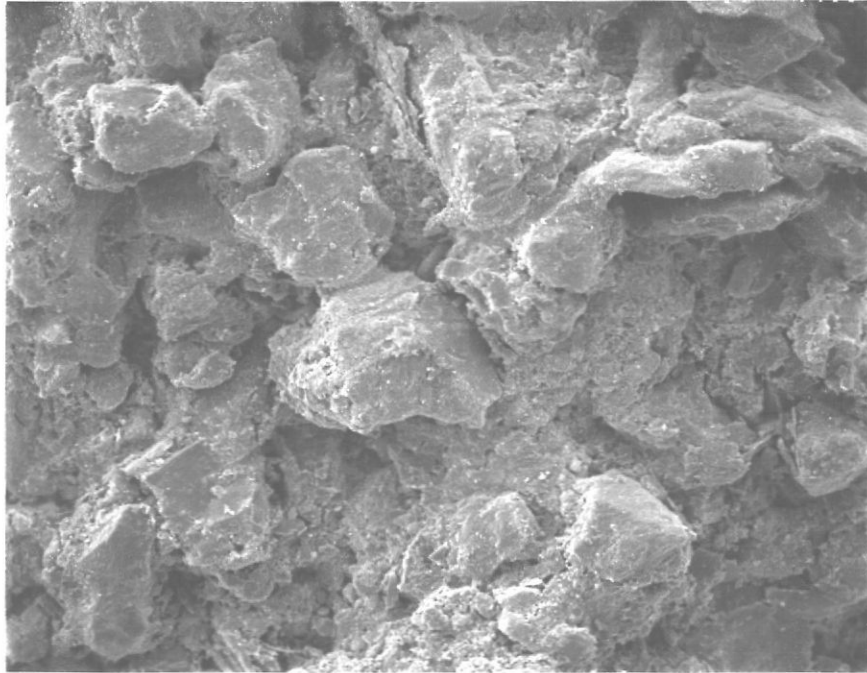
S.E.M. Observations (contd)



Core D Magnification x 640

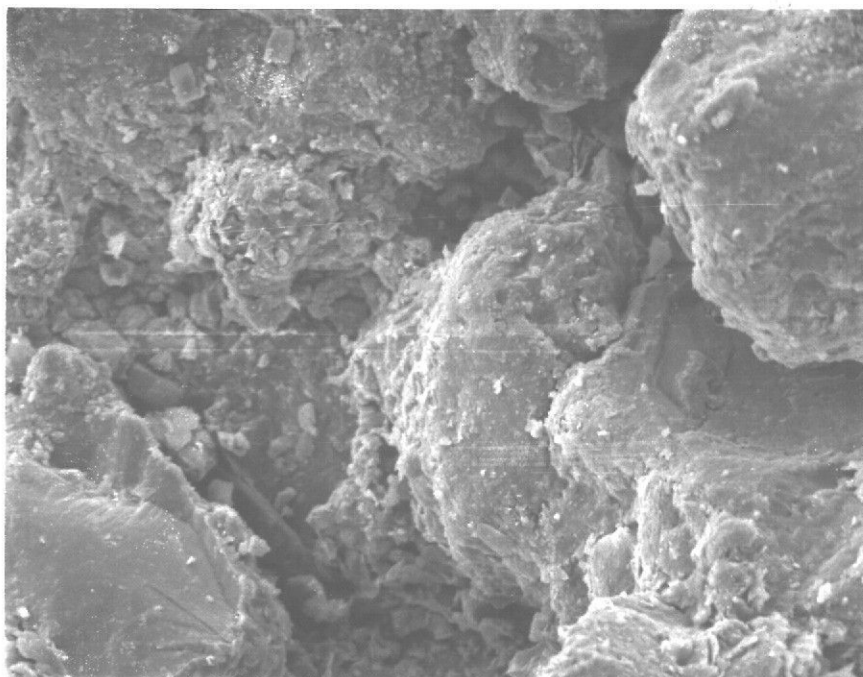
Photos 7 and 8 show the dominantly quartz primary grains with silt coatings.

S.E.M. Observations (contd)



Core E Magnification x 160

S.E.M. Observations (contd)



Core E Magnification x 640

Photos 9 and 10 show that sample E is very similar in form to sample D with quartz grains coated by silt.