SNEA (P)

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LABORATOIRE DE GOLOGIE DE BOUSSENS

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GEO/LAB Bss n° 7/1499 RP
/fr

16/3 - 2 WELL (Norway)

SEDIMENTOLOGICAL STUDY OF JURASSIC DEPOSITS

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Boussens - June 1977

LISTE DE DIFFUSION

DESTINATAIRES :

DISTRICT 2 - NORVEGE	22
DIRECTION EXPLORATION puis DIVISION OPERATIONS PARIS	1
DIVISION OPERATIONS PAU	1

CONTENTS

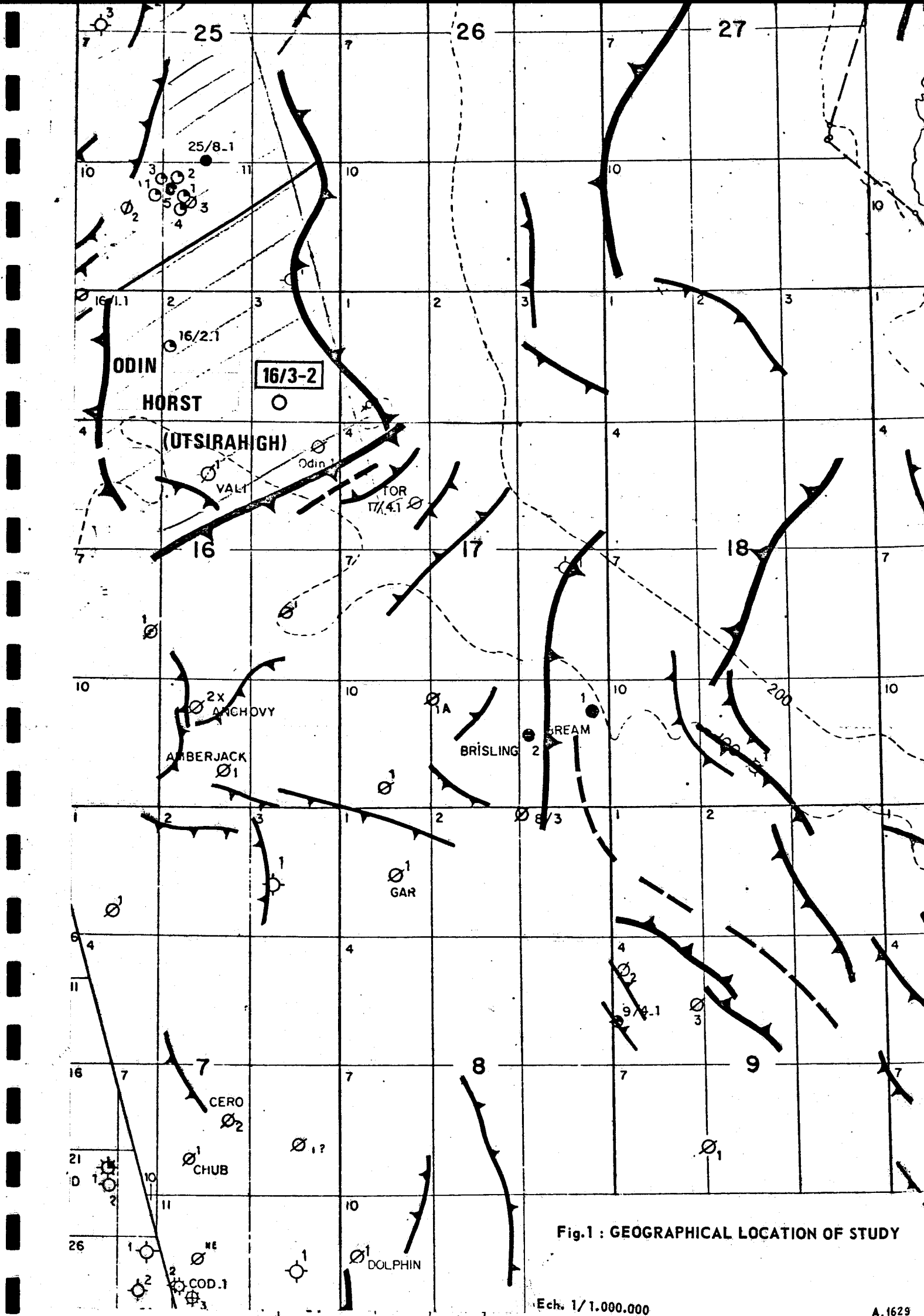

Fig.1 : GEOGRAPHICAL LOCATION OF STUDY

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1 - INTRODUCTION

The 16/3 - 2 well is located in the 16/3 Norway block (fig 1) in the southern part of the Odin horst (Utsira high).

The report summarizes the results of a lithostratigraphical analysis which has been carried out on the Jurassic from 1955 to 2019 m, with only a few samples, 13 sidewall samples and 3,3 meters of full size cores.

2 - ANALYTICAL RESULTS

2.1 - MINERALOGICAL RESULTS

clay mineral analysis by X Ray

In the brown kimmeridgian shales (Hot Shales) the predominant material is constituted by Smectite, except in the last basal sample where there is probably a diagenetic change from Smectite to Illite-Smectite.

In the conglomerate, kaolinite is predominant.

Major mineral analysis by X Ray

The most important fact is the abundance of feldspars (orthoclases and plagioclases) in the conglomerate (22 %), (= immature material).

2.2 - LITHOLOGICAL RESULTS

Jurassic deposits are very thin (60m) and the majority of them are probably absent (from Lias to Oxfordian).

. 1955 to 1975 m Brown shales : Brown, laminated shales with layers rich in organic matter (with abundant pollen spores) abundant pyrite, frequent to abundant phosphate debris (fish remains), thin levels of nodules of recrystallized calcite, local coarse recrystallized calcite.

. 1975 to 2015 m Coarse to conglomeratic sandstone : Coarse to conglomeratic, grey to dark green, subrounded to subangular grains of quartz, feldspars orthoclases and plagioclases), rock debris, chloritized large micas (biotite and muscovite), local coarse glauconitic grains with a poor, argillaceous, kaolinitic, chloritic, dolomitic, sparitic-calcitic cement.

.../...

Important intergranular posity (5 to 30 %).

. 2015 to 2019 m Granitic basement : Granite, grey to pink, with phenotopic crystals, feldspars, micas (biotite and muscovite).

The 2019-2015 interval represents the basement, the conglomerate 2015-1975 is at least in a part of kimmeridgian age (core n° 2 = 2 000 m).

The 1975-1955 m interval includes Portlandian and Kimmeridgian deposits.

3 - SEDIMENTOLOGICAL INTERPRETATION

Above the basement the conglomerate (2015-1975 m) has the characteristics of an immature material.

- abundance of lithic fragments
- great abundance of feldspars (orthoclases and plagioclases)
- abundance of micas (biotite and muscovite)
- abundance of continental microflora (but not exclusive)

but the occurrence of a marine microflora exclude a continental environment (fluviatile or alluvial fan).

This material is probably the result of a neighbouring weathering (or a submarine erosion) of the basement (16/5-1 and 16/2-1) on the Utsira high and its deposition in the sea very close to the area of that weathering (16/3-2 and 16/6-1).

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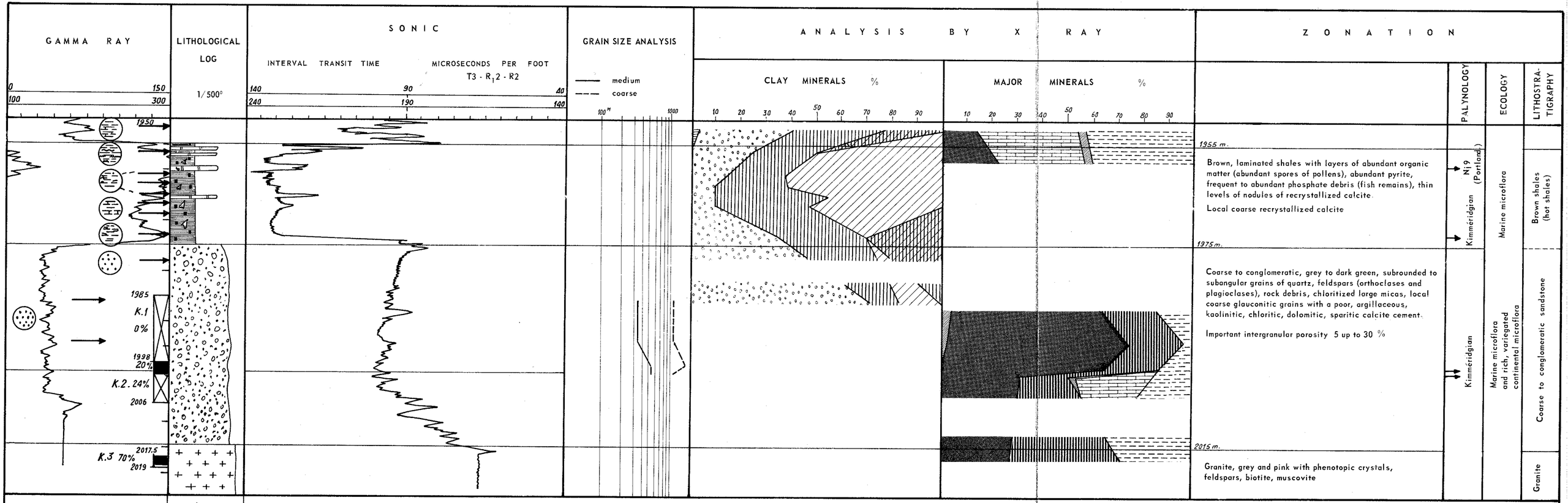
On the Utsira high there is only a poor chance of jurassic sands developing. The Conglomerate is a good reservoir but the burying with Kimmeridgian clays cannot be definite (lack of these clays in 16/2-1 and 16/5-1).

The study of jurassic deposits in the 16/3-2 well and their comparison with the other wells on the Utsira high indicate the general characteristics of this part of the jurassic basin :

- probable absence of Liassic, Middle Jurassic, Callovian, Oxfordian sediments;
- weathering or submarine (?) erosion of the basement in the western part and deposition of conglomerate in the eastern part of the high;
- absence of Kimmeridgian clays in the western part of the Utsira high (Odin horst).



elf

Secteur NORWAY

Opérateur NORSK HYDRO ELF

Permis ou Concession 007 BLOCK 16/3

PETRONORD

16/3-2 WELL

LITHOLOGICAL ANALYSIS OF JURASSIC DEPOSITS

Echelle 1/500

elf ENTREPRISE DE RECHERCHES ET D'ACTIVITES PETROLIERES

DIRECTION EXPLORATION

LABORATOIRE

PL.1

Date MAY 1977

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