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DIRECTION EXPLORATION
DIVISION RECHERCHES et APPLICATIONS en GEOLOGIE
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13 JUNI 1984/5

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/va

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OLJESTREKTORATET

2/1-4 WELL (NORWAY)

GEOCHEMICAL STUDY OF THE OIL (DST 2)

COMPARISON WITH THE 1/3-3 OIL (DST 3B)

u-322

P. CAILLEAUX

Boussens - May 1984

- 2 - S.I.D. BOUSSEMS
- 8 - ELF AQUILAINE NORGE
- 2 - EXPLOR. DIG EUROPE

DESTINATAIRES HORS DEX :

LISTE DE DIFFUSION

ABSTRACT

The main results of the analyses carried out on the DST 2 Oil Sample from 2/1-4 well (Norway) are as follows :

- this oil has the same upper Jurassic origin as the oils in the Southern area ;
- in comparison with the oil from 1/3-3 well (DST 3B), this oil is slightly less mature ;
- in conclusion these oils are not thought to come from the same oil accumulation.

5 pages
1 table
4 plates

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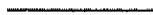


TABLE 1 - Geochemical data -

PLATE 1 - Location map

PLATE 2 - Pristane - Phytane diagram -

PLATE 3 - } Chromatograms -
PLATE 4 - }

Following ELF NORGE's request, one oil sample from 2/1-4 well (DST 2, Ula Formation) was analysed. The information requested was : "Do the 2/1-4 DST 2 oil and the 1/3-3 DST 3B oil come from the same oil accumulation ?" (Telex 09-01-84).

The same geochemical analyses were performed on the 2/1-4 sample as on the previously analysed 1/3-3 sample.

The gross composition of the oils and calculated indices are given in table 1, and the oils chromatograms of thermovaporized (C5-C15 range), saturated and aromatic (C15+) fractions are given on plates 3 and 4.

1 - ORIGIN

The difference between the genetical indices (isoprenoids ratios : Pristane/Phytane) calculated for the 1/3-3 and the 2/1-4 oil samples is as large as the difference between the Ekofisk oils* (see plate 2). Therefore all these oils are thought to come from an Upper Jurassic source rock (Kimmeridgian).

2 - MATURATION

The gross composition of the two oils are somewhat different, particularly the polar compound amount and the saturated HC/aromatic HC ratio.

This may be interpreted as an effect of different degrees of evolution, if the catagenetical indices are considered, like : nC7/dimethylcyclopentane ratio, isoprenoid/n-alkanes ratios (Pristane/nC17 and Phytane/nC18), methylphenantrene indices (MPI 1 and MPI 2), phenantrene ratio and hydrocarbons distribution (plates 3 and 4).

.../...

* GEO/LAB Bss n° 9/1845 RP - "Crude Ekofisk samples - Geochemical analysis - P. CAILLEAUX - November 1979 -

These data show the 2/1-4 oil to be less mature than the 1/3-3 oil.

Owing to the fact that these two oils exhibit different degrees of evolution they are not thought to belong to the same oil accumulation (answered by telex 13-01-84).

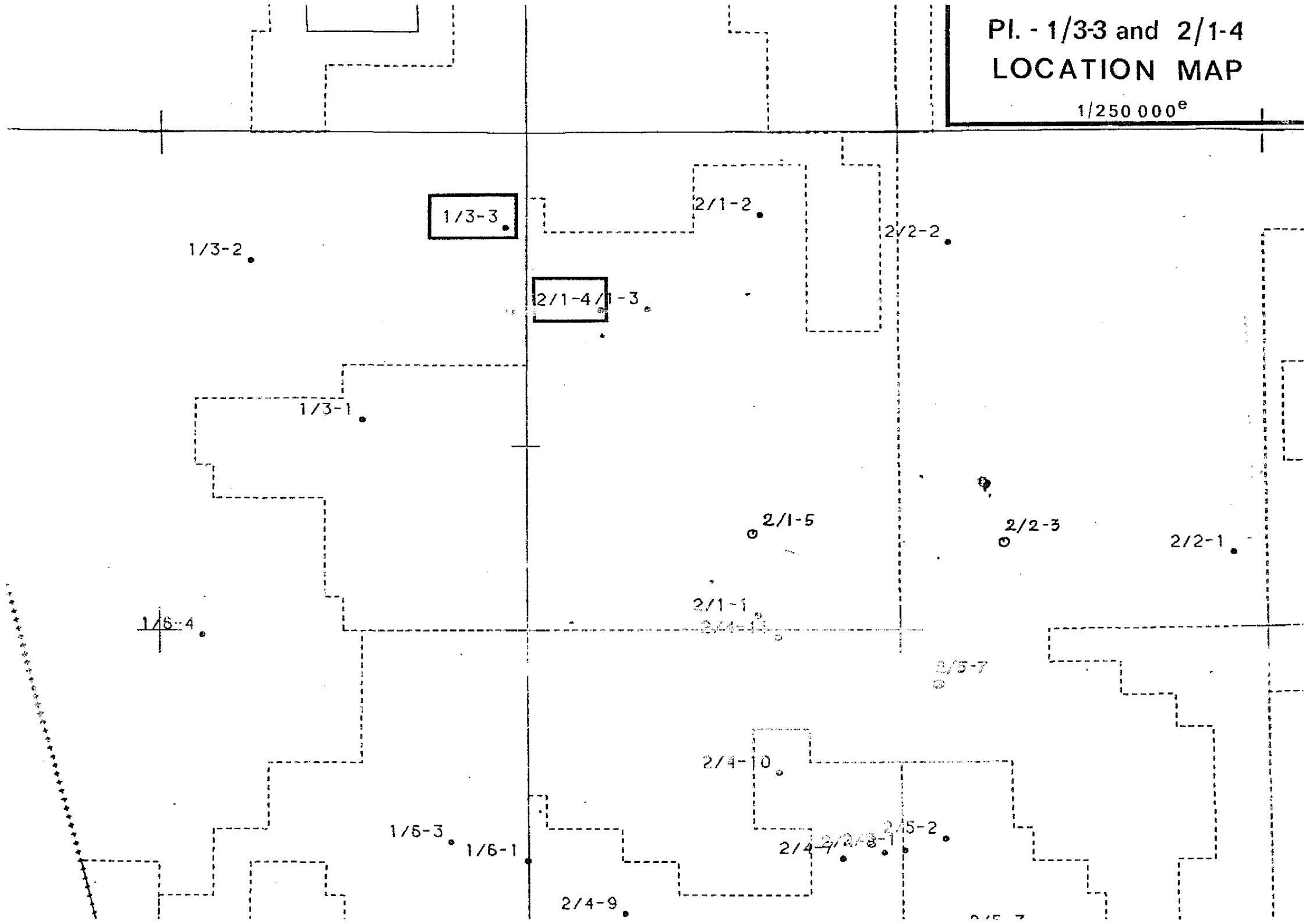
TABLE 1

GEOCHEMICAL DATA

		2/1-4	1/3-3
		DST 2	DST 3B
Composition of the total product	DISTILLATE	41,2	35,7
	POLAR COMPOUNDS	4,3	3,2
	SATURATED HC	38,6	46,8
	AROMATIC HC	15,8	14,3
	S/A	2,44	3,28
C5-C15	X1 = nC6/MCP	1,46	1,76
	X2 = nC7/DMCP	4,04	6,69
	Y1 = nC7/TOL	-	1,74
	Z1 = nC10/DMN	5,93	7,57
	Σ TV % TOTAL PRODUCT	24	28
	ALK % TV	30	35
C15+	ALK % SAT	24	15
	Pr/nC17 = A	0,61	0,48
	Ph/nC18 = B	0,58	0,35
	A/B	1,04	1,38
	Pr/Ph	1,16	1,44
	MPI 1	0,9	1,04
	MPI 2	0,9	1,1
	Phen. Ratio	0,95	1,2

Pl. - 1/3-3 and 2/1-4
LOCATION MAP

1/250 000^e



1/3-3

2/1-4/1-3

1/3-2

2/1-2

2/2-2

1/3-1

2/1-5

2/2-3

2/2-1

1/6-4

2/1-1

2/4-10

2/5-7

2/4-10

1/5-3

1/6-1

2/4-7

2/4-8

2/5-2

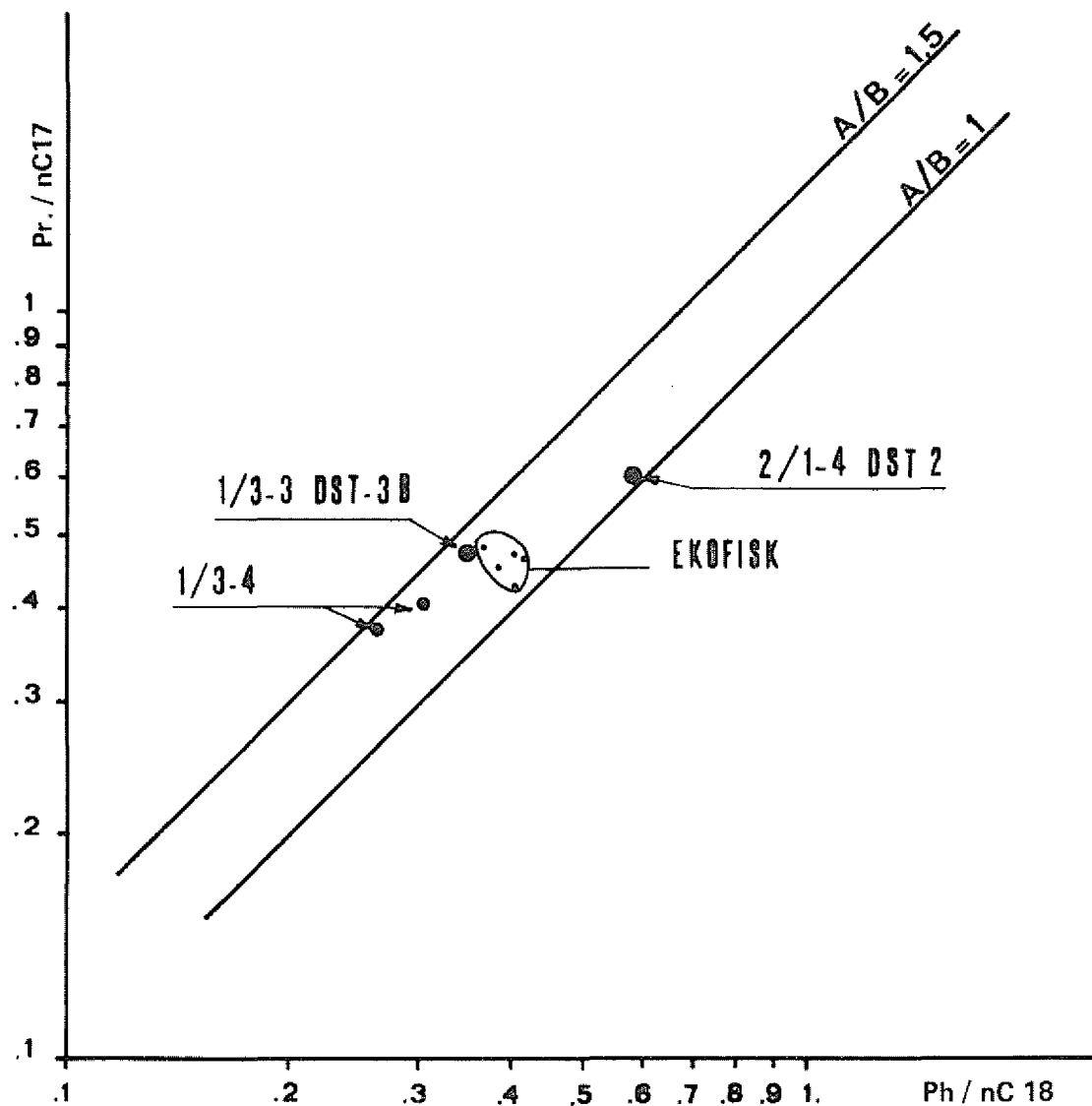
2/4-9

2/4-7

2/4-8

2/5-1

2/5-7

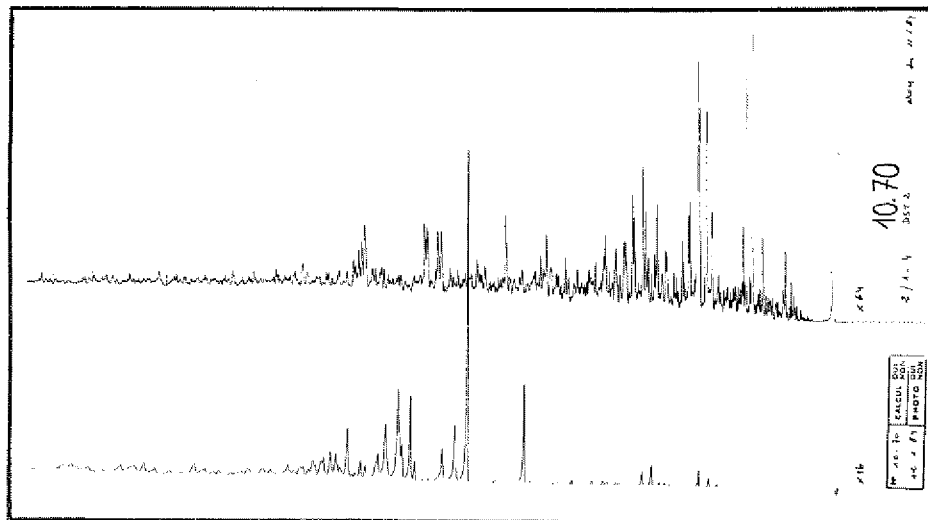


PI. 2 - 2 / 1 - 4 AND 1 / 3 - 3
 PRISTANE - PHYTANE DIAGRAM

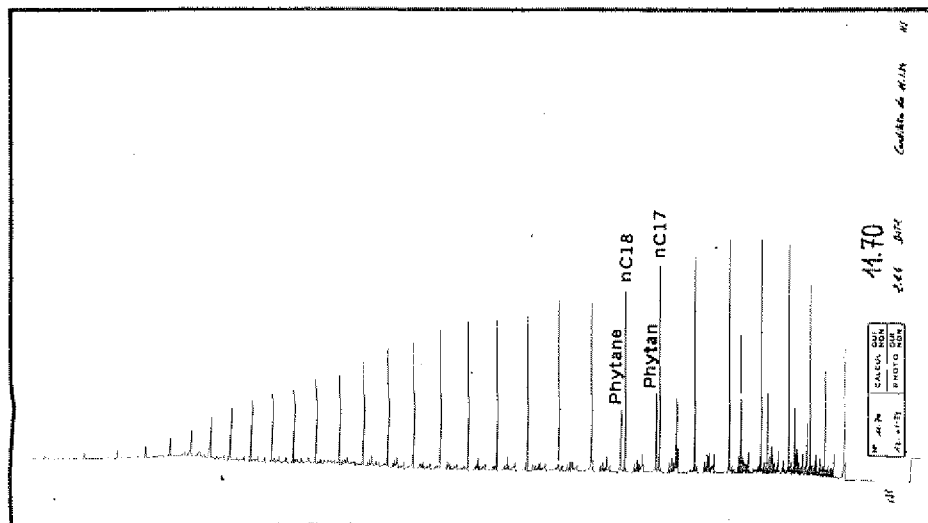
SNEA(P)

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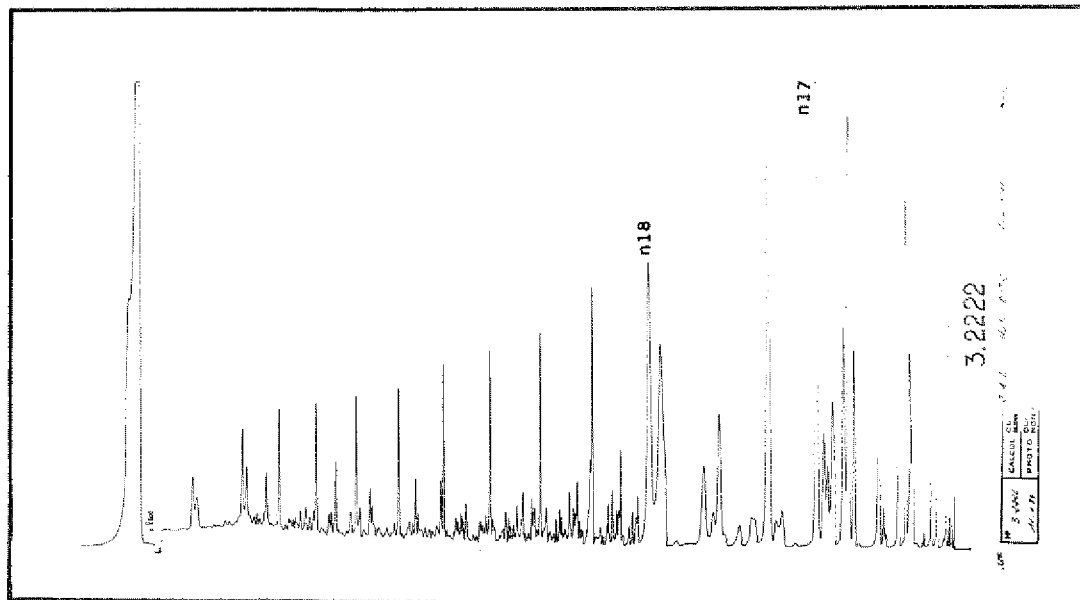
PAYS : NORWAY
 Country :
 SONDAGE : 2/1-4
 Well :



HC AROMATIQUES AROMATIC HC.



HC SATURES SATURATED HC.



HC THERMOVAPORISES THERMOVAPORIZED HC.

Huile Cote
 Oil Depth
 Identification DTS 2
 Formation Ula Fm.
 Age Up. Jurassic

Composition du produit total (%)
 Composition of total product

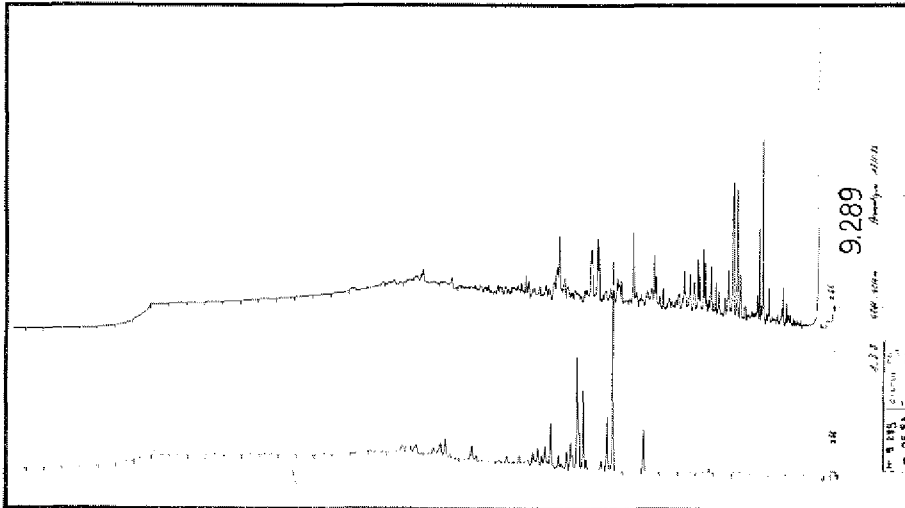
Asphaltènes Asphaltenes	As	:		
Résines Resins	R	:	4,3	
HC saturés Saturated HC	S	:	38,6	$\frac{S}{A} = 2,44$
HC aromatiques Aromatic HC	A	:	15,8	
Distillat Distillate	D	:	41,2	

SNEA (P)

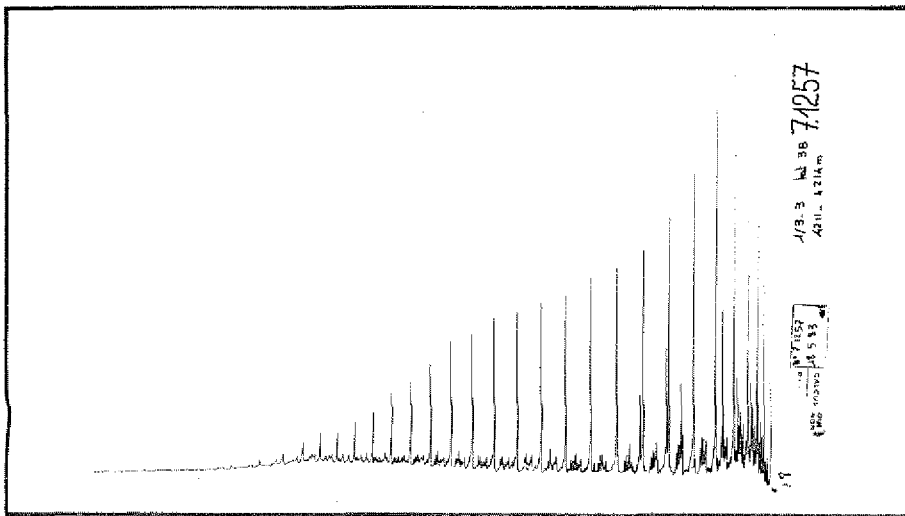
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PAYS : NORWAY
 Country :
 SONPAGE : 1/3-3
 Well :

Huile | Cote | 4211 - 4214 m
 Oil | Depth :
 Identification | DST 3B
 Identification :
 Formation | Ula Fm.
 Formation :
 Age | Up. Jurassic
 Age :



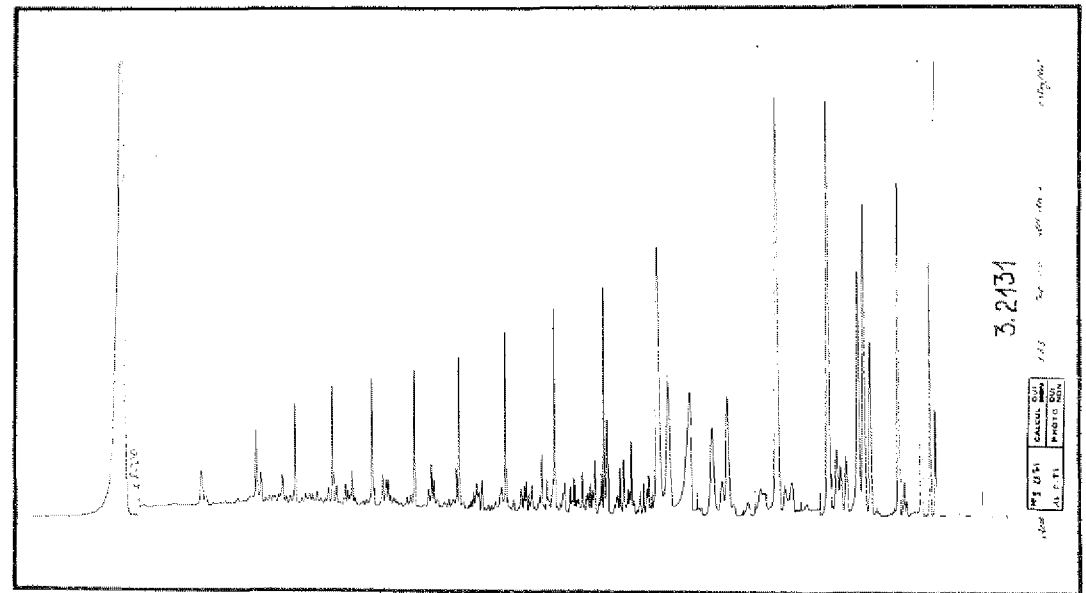
HC AROMATIQUES AROMATIC HC.



HC SATURES SATURATED HC.

Composition du produit total (%) Composition of total product

Asphaltènes Asphaltenes	As	:	} 3,2	$\frac{S}{A} = 3,28$
Résines Resins	R	:		
HC saturés Saturated HC	S	:	46,8	
HC aromatiques Aromatic HC	A	:	14,3	
Distillat Distillate	D	:	35,7	



HC THERMOVAPORISES THERMOVAPORIZED HC.