NORGE A/S
EXPLORATION DEPARTMENT

WELL FILE

FINAL GEOLOGICAL REPORT

25/1-5

September 1975

1. PERTINENT DATA

1.1 General Data

Licence:	029 (Petronord)
Operator:	Elf Norge A/S
Rig:	Deep Sea Driller
Contractors:	Deep Sea Drilling Co.
	Mud logging: Geoservices
Location:	Geographic: 02° 06' 36.99" E
	59° 52' 27,92" N
	Seismic: SP 73 F9 SP 305
Waterdepth	- 104 m
RKB	+ 25 m

1.2 Drilling and Operation Time Table

24.07.75	Rig moves to location
24.-26.07.75	Run anchors
27.07.75	Drilling in 36" down to 176 m; set 30" casing at 176 m
28.07.75	Drilling in 26" down to 464 m
29.-31.07.75	Set 20" casing at 453 m; set 20 BOP stack
01.-03.08.75	Drilling in 17 1/2" down to 1042 m
03.-06.08.75	Set 13 3/8" casing at 1028 m; set 13 3/8 BOP stack
07.-10.08.75	Drilling in 12 1/4" down to 1914 m
10.08.75	Cut core No. 1: 1914 m - 1923 m; 100% recovery
11.08.75	Reaming to 1923 m; preparing hole for SPE
12.-13.08.75	Conditioning hole for SPE
14.-15.08.75	SPE logging: IES; FDC-CNL, DLL, ML-MLL, BHC-GR, CBL-GR, HDT, SWC 1, 2, 3, 4
16.-17.08.75	Set 9 5/8" at 1908 m
18.08.75	Drilling in 8 1/2" down to 1928 m
	Cut core No. 2: 1928 - 1937 m; 50% recovery

19.08.75	Drilling in 8 1/2" down to 1953 m
	Clean hole; SPE: IES, FDC-CNL, BHC-GR, CBL
20.-21.08.75	Clean hole; Run 3 1/2" tubing for production test No. 1
22.-31.08.75	Production test No. 1
01.-03.09.75	Recovering testing devices
03.-06.09.75	Drilling in 8 1/2" down to 2257 m 2259?/2263
07.09.75	SPE logs: BHC-GR, IES, CNL-FDC, ML-MLL, DLL, HDT, Velocity survey
08.-09.09.75	FIT No. 1, 2, 3, 4; SWC 5
09.-12.09.75	Set bridge plug, cut casing
12.09.75	Abandoned well, moves off location

1.3 Status

Plugged and abandoned after testing the gas-bearing Eocene sand.

27/2 5 31 6/9 6

II GEOLOGICAL DATA AND RESULTS

2.1 Objectives

25/1-5 was located on the south east flank of the main Frigg structure about 2.25 km from the discovery well 25/1-1.

As a delineation well, it had to precise:

- the top of the Frigg sand (s.l.)
- the quality of the upper part of the reservoir

Furthermore one test had to be conducted on the gas reservoir in order to check the screen especially designed and processed for future production.

2.2 Stratigraphical and Structural Results

2.2.1 Stratigraphical Data

Lithology is given in the enclosed composite log and resumed on the "fiche 1/5000" as the stratigraphy which is inferred from correlations with the surrounding wells.

The following table takes into account only the main lithology and stratigraphy units encountered

STRATIGRAPHICAL UNITS	LITHOLOGICAL UNITS
Pleistocene to Miocene (633 m)	Lignitic series (633 m)
760^{+} m	760^{+} m
Oligocene (515 m)	Brown clays group (1547 m)
1275^{+} m	
Upper Middle Eocene (630 m)	
1907^{+} m	1907^{+} m
Lower Eocene (107 m)	Frigg sand (s.l.) (275 m) 1913
2014^{+} m	(or Frigg formation or Upper Sand shale group)
Paleocene (> 259 m)	2182^{+} m
TD 2263^{+} m	Tuff member

NB: all SPE depths $^{+}$ have to be moved up 4 m

The limit eocene sand/eocene shale has to be set at 1907^{+} m and the massive friable reservoir sand at 1913^{+} m.
The interval 1907^{+} - 1913^{+} consists of very tight glauconitic sandy limestone/sandstone interbedded with shale and is considered as a "transition zone".

Frigg formation is mostly sandy, sand bars with rare calcareous cemented levels more than 20 m thick separated by shale levels:

- total thickness 275 m
- net sand/sandstone 225 m
- sand/shale ratio 4.5

The upper limit of the tuff member is situated at 2182^{+} m since the first tuff on cuttings is seen around 2250 m. This limit inferred from correlations has to be confirmed by further laboratory studies.

2.2.2 Structural Results

Discrepancies about the seismic marker C1 between the different prognosis were great.

Sonic break is unequivocal and located at 1907^{+} i.e. 1903 m (- 1878 m).

2.3 Reservoir Results

Two cores were cut on the Frigg sand in order to precise the facies and the reservoir characteristics over the interval to be tested.

Frigg sand is grey/beige coloured, fine to medium grained, fair sorted with scattered coarse grains, unconsolidated, muscovite being abundant locally.

Average porosity is ranging around 30.5.

2.4 Shows and Fluids

Shows

First significant gas increase in drilling was recorded at 1908 m. Sand on cores showed a gas bearing facies, i.e. dry outlook, faint direct yellow fluo but strong cut.

Gas ground began to decrease below 1970 m till becoming nil after 2010 m.

Strong direct fluo on cuttings and side wall cores was observed from 1970 m to 2010 m.

Fluids

Production test was conducted over the interval 1930^{+} - 1943^{+} m. Amaximum flow of 967.300 m^3/day was measured through a choke 74/64".

Interpretation of the electrical logs gives the following results:

- top of Frigg formation:	1907^{+} m
- top of gas bearing sand:	1913^{+} m
- gas/oil interface:	1976^{+} m
- oil/transition zone interface:	1982^{+} m
- transition zone/water interface:	1987^{+} m
- average gas saturation:	93.5
- maximum oil saturation:	84
- Rw	0.067 (60 g/l)

4 FITs were carried out successfully on gas and oil sections and transferred under PVT conditions.

C O N C L U S I O N

All the objectives of the well 25/1-5 were reached.
Results confirm the good characteristics of the gas reservoir and the thinness of the so called transition zone on the east edge of the structure. They will improve the drawing of the C1 map and the appreciation of the Frigg reserves.

Y. GALY

POSITION MAP

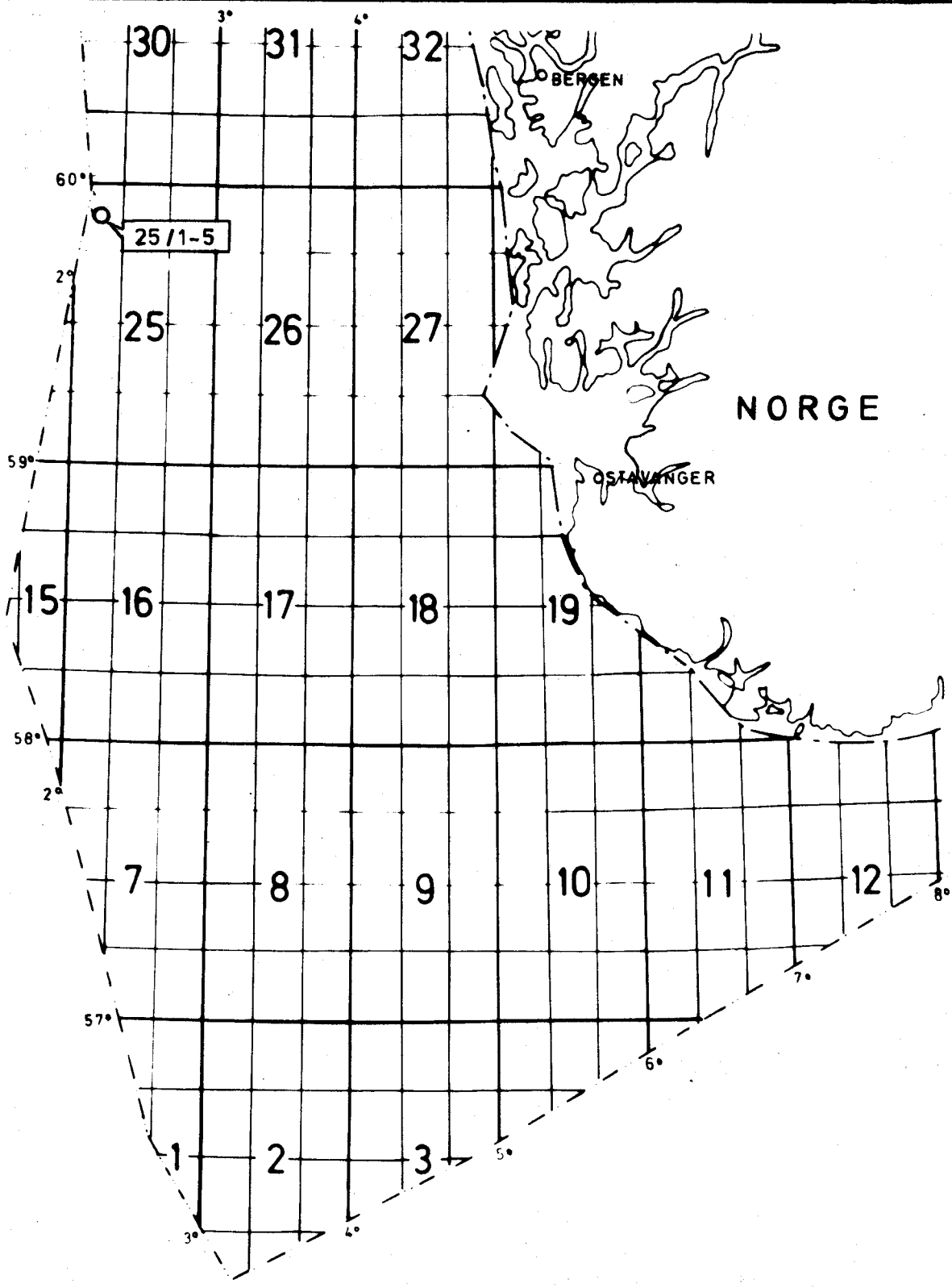
WELL : 25/1-5

COUNTRY : NORWAY OFFSHORE

COORDINATES: X : 02° 06' 36,99"E

Y : 59° 52' 27,92"N

Scale : 1/2500.000



EXPLORATION

Coord x 02° 06' 36,99"E z ground - 104 m
y 59° 52' 27,92"N z RKB + 25 m
SP 73 F9-305
Depths datum R.K.B.
Rig Deep Sea Driller
Stopped in Paleocene

Spudded 24.07.75
Started drilling 26.07.75
At TD 06.09.75
Completed 12.09.75
TD Driller 2259 m TD Logger 2263 m

Well 25/1-5
Country Norway

OPERATOR ELF NORGE A/S
LISENCE 029 OWNED BY PETRONORD

TARGETS

Frigg sand (lower Eocene)

RESULTS

Top of Frigg sand at 1907m
gas /oil = 1976 m
oil water=1987 m (oil transition zone 1982-1987m)

CASINGS

30 "	at	176 m
20 "	"	453 m
13 3/8"	"	1028m
9 5/8"	"	1908m

CORES

K 1	1914 - 1923	100%
K 2	1928 - 1937	50%

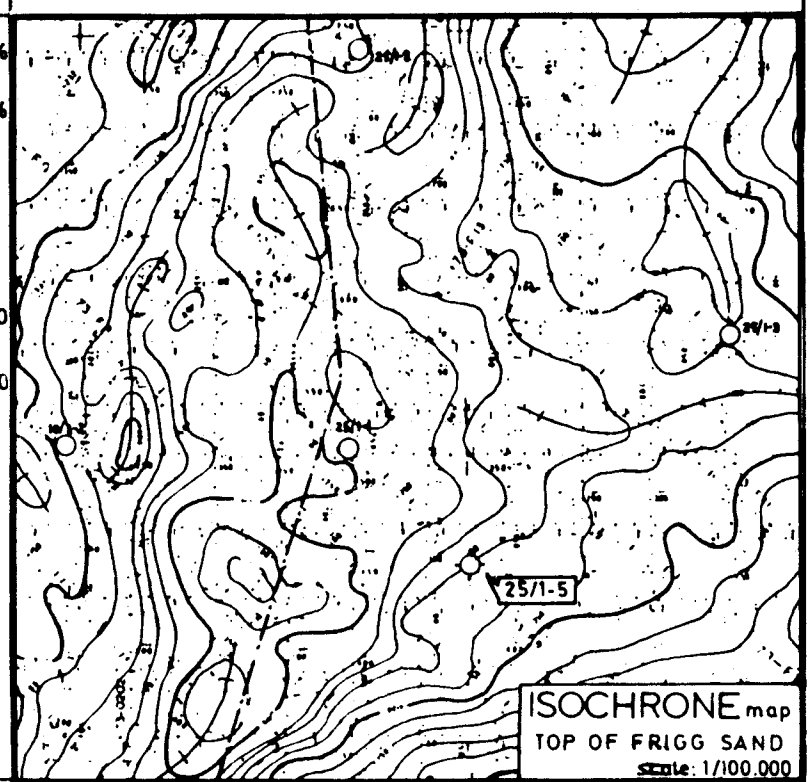
SHOWS

Core N° 1
Direct - rare yellow spots
Cut - faint yellow

Core N° 2
Direct - overall yellow increasing intensity towards base
Cut - 1928-32 faint yellow
1931-1932,50 fairly strong yellow fluo.

☼ △ btw. 1912 - 1976
● btw. 1976 - 1980
▲ down to 1908

SWC1	1902 - 1047		46/50
SWC2			
SWC3			
SWC4			
SWC5	2259	1941	24/30



TESTS

Prod. test	1926 / 1940	Choke 1" ☼ 890000 m³/j SIP = 2833 psi
FIT 1 1979,6	0,5 ● 9,5	filtrate
FIT 2 1981	0,3 ● 9,7	filtrate
FIT 3 1937	9,7 ☼ 0,3	filtrate
FIT 4 1945,5	9,8 ☼ 0,2	filtrate

LOGS

IES	1025 -	1918	1
CNL / FDC	1700 -	1916	1
DLL	1700 -	1907	1
MLMLL	1700 -	1908	1
BHC.GR	1025 -	1909	1
CBL	1025 -	270	1
HDT	1025 -	1905	1

tensiometer with DLL MLMLL

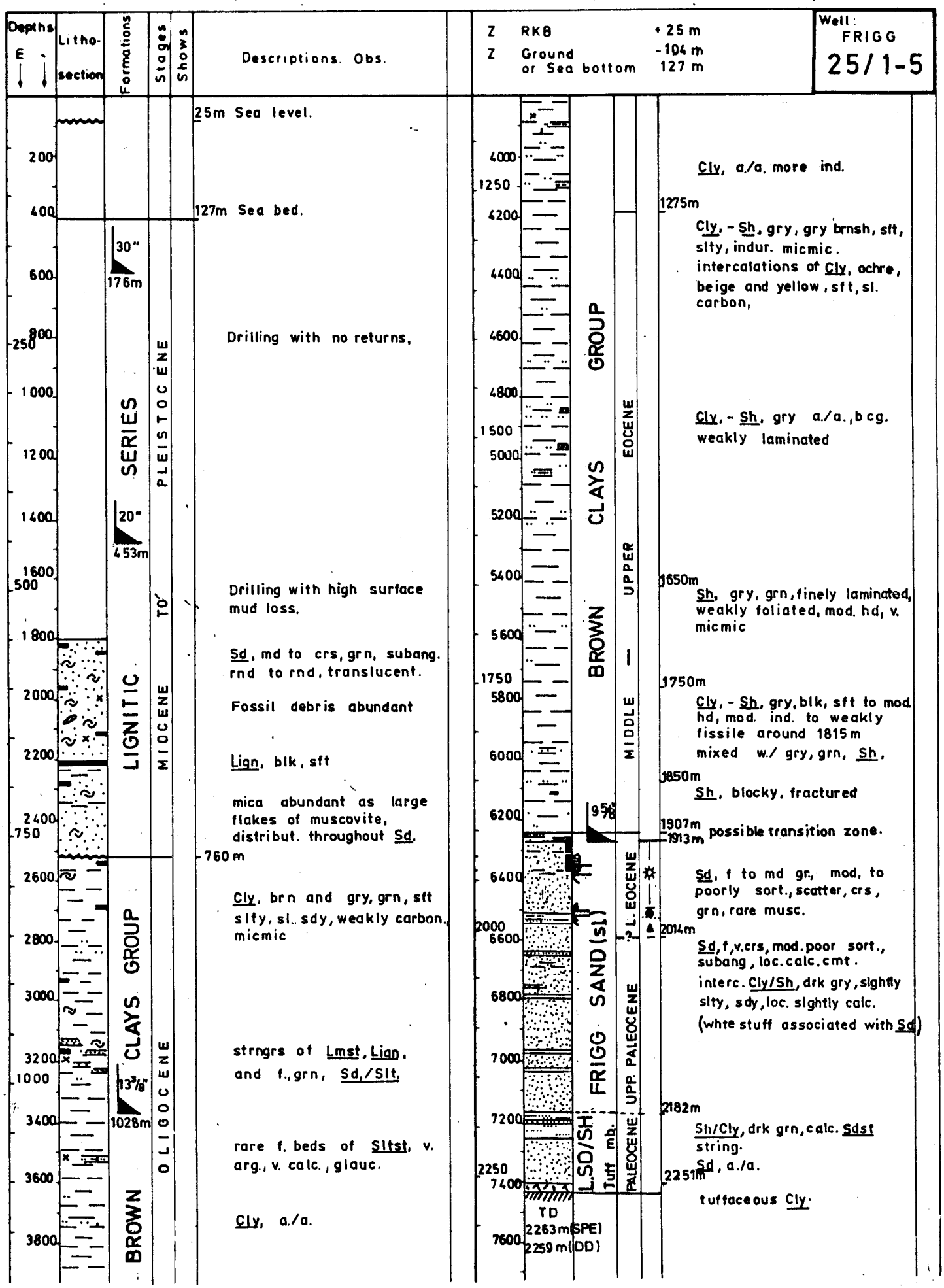
IES	1960 -	1913	2
BHC.GR	1960 -	1913	2
CNL FDC	1960 -	1913	2
CBL	1909 -	1000	2
IES	2263 -	1913	3
BHCGR	2263 -	1850	3
CNL / FDC	2263 -	1850	3
MLMLL	2263 -	1912	2
DLL	2260 -	1913	2
HDT SSL	2263 -	1913	2

INTERPRETATION,

1/ STRATIGRAPHY INFERRED FROM CORRELATIONS WITH NEARBY WELLS

2/ ALL SCHLUMBERGER DEPTHS HAVE TO BE CORRECTED OF - 4 m.

Checked 22.09.75
By Y.GALY


Depths
Litho-section
Formations
Stages
Shows
Descriptions. Obs.
Z RKB +25 m
Z Ground or Sea bottom -104 m 127 m
Well FRIGG 25/1-5
25m Sea level.
127m Sea bed.
30"
176m
20"
453m
13 3/8"
1028m
9 5/8"
760 m
1907m
1913m
2014m
2182m
2251m
TD
2263m(SPE)
2259m(DD)
PLEISTOCENE
TO
MIOCENE
OLIGOCENE
LIGNITIC SERIES
BROWN CLAYS GROUP
FRIGG SAND(sl)
LSD/SH
Tuff mb.
BROWN CLAYS GROUP
EOCENE
MIDDLE
UPPER
L. EOCENE
UPP. PALEOCENE
PALEOCENE
Drilling with no returns,
Drilling with high surface mud loss.
Sd, md to crs, grn, subang. rnd to rnd, translucent.
Fossil debris abundant
Lign, blk, sft
mica abundant as large flakes of muscovite, distribut. throughout Sd.
Cly, brn and gry, grn, sft slty, sl. sdy, weakly carbon., micmic
strngrs of Lmst, Lign, and f., grn, Sd, /Slt,
rare f. beds of Sltst, v. arg., v. calc., glauc.
Cly, a./a.
Cly, a./a. more ind.
Cly, - Sh, gry, gry brnsh, sft, slty, indur. micmic. intercalations of Cly, ochre, beige and yellow, sft, sl. carbon,
Cly, - Sh, gry a./a., bcg. weakly laminated
Sh, gry, grn, finely laminated, weakly foliated, mod. hd, v. micmic
Cly, - Sh, gry, blk, sft to mod. hd, mod. ind. to weakly fissile around 1815 m mixed w./ gry, grn, Sh,
Sh, blocky, fractured
possible transition zone.
Sd, f to md gr., mod, to poorly sort., scatter, crs, grn, rare musc.
Sd, f, v.crs, mod. poor sort., subang, loc. calc. cmt. interc. Cly/Sh, drk gry, slghtly slty, sdy, loc. slghtly calc. (whte stuff associated with Sd)
Sh/Cly, drk grn, calc. Sdst string.
Sd, a./a.
tuffaceous Cly.

CORE DESCRIPTION

CUT: 9m
RECOVERED: 4.5m 50 %
LOSS: 4.5m

COMPANY: ELF NORGE
WELL N°: 25/1-5
CORE N°: 2

DATE: 01.08.75
DEPTHS: 1928-1937

DEPTHS	% CO_3Ca	PERM	POROS	SHOWS	DIPS	LOG	DESCIPTION
1928		V. GOOD TO EXCELLENT	V. GOOD TO EXCELLENT	OVERALL YELLOW FLUO (DIRECT) FAINT YELLOW INC. TO STRONG YELLOW AT BASE			sand: grey beige, fn. gn. to med. gn., sub. ang., fairly well sorted, v. poorly consolidated, rare plates of mica, sl. argillaceous matrix.
1929							
1930							
1931							shale: dark grey (greenish), mod. hard, v. micro-micaceous, mod. fissile, finely laminated & sl. foliated. current bedding structures seen between interlaminating shale, silt and sand beds.
1932							
1933							
1934							
1935							
1936							
1937							

CORE DESCRIPTION

CUT: 9 m
RECOVERED: 9 m 100 %
LOSS: 0 m

COMPANY: ELF NORGE
WELL N°: 25/1-5
CORE N°: 1

DATE: 10.08.75
DEPTHS: 1914-1923 m

DEPTHS	% CaCo	PERM	POROS	SHOWS	DIPS	LOG	DESCIPTION
1914		EXCELLENT	EXCELLENT	HYDROCARBON SMELL – DIRECT FLUO = RARE YELLOW POINTS – CUT = FAINT YELLOW			
1915							
1916							
1917							
1918							
1919							
1920							
1921							
1922							
1923							

1914 - 1914,10 m

shale: grey, soft, silty pyritic with nodules of limestone, mudstone, dark brownish, argillaceous, very hard.

beneath 1914,10 m

sand: poor consolidated, fine, medium, moderate/poorly sorted with scattered, coarse rounded quartz, micas. lignitic inclusion, rare greenish minerals. no visible sedimentary structure.

below 1920 m

sand as above with lignitic and bitumen inclusions (at 1920 faint brownish cut)

sand slightly consolidated protected by aluminium paper parafin

SIDE WALL CORES DESCRIPTION

WELL : FRIGG 25/1-5	RUN N° 1
LICENCE :	PAGE N° 1
	DATE : 15.08.75

SERVICE COMPANY:	SPE
ASKED:	30
RECOVERED:	3
SHOT :	3
LOST :	0
FULL BULLET :	3

tr : trace - M : medium - G : good

N°	DEPTHS	REC	LITHOLOGY	Fluorescence	CUT
1	1902	60	shale: grey, sl. to mod. silty, soft, weakly laminated, on broken surface patches of silt & v. f. gn. sand, beige		
2	1901	60	shale: grey and green-grey, soft, sl. silty, v. weakly fissile		
3	1899	60	shale: grey black, soft, weakly fissile, foliated, crumbly		
4	1897,5		Misfire recovered Run 2 No. 1 sample		
5	1897,5		Misfire		
			RUN NOT COMPLETED DUE TO NON FUNCTIONAL IGNITORS IN CST TOOL		

SIDE WALL CORES DESCRIPTION

WELL : FRIGG 25/1-5	RUN N° : 2	SERVICE COMPANY : SPE	
LICENCE :	PAGE N° : 1	ASKED :	30
	DATE : 15.08.75	RECOVERED :	13
		SHOT :	13
		LOST :	0
		FULL BULLET :	12

tr : trace - M : medium - G : good

N°	DEPTHS	REC mm	LITHOLOGY	Fluorescence	CUT
1	1897,5	60	shale: dk. grey (greenish) mod. hd., blocky to weakly fissile, micromicaceous, sl. silty. at bottom surface, blocks of shale		
			in matrix of silt., and v. f. gn. sand, beige .		
2	1894,5	60	shale: grey (greenish) soft to mod. hd., weakly fissile, foliated, at bottom surface broken shale blocks in matrix of		
			beige silt. and f. gn. sand		
3	1892	60	shale: dk. grey (greenish), soft, micromicaceous, sl. silty with lenses (v. small) of silt and f. gn. sand, beige plates		
			of mica, fossiliferous		
4	1888,5	60	shale: grey (greenish), soft to mod, hd., weakly fissile, foliated		
5	1885,5	60	shale: dk. grey (greenish), soft to mod. hd., micromicaceous, v. weakly fissile to blocky, rare small lenses of silt.,		
			f. gn. sand		
6	1881,5	40	shale: grey greenish, mod. hd., to hd., blocky, fractured, traces of silt. and f. gn. sand in argillaceous weakly cal .		
			matrix		
7	1877,5	60	shale: grey (blue-grey), soft to mod. hd., v. weakly fissile to blocky. lens of dolomite beige brown, hard, v. argillaceous		
8	1874,5	60	shale: grey (blue-grey), soft, v. micromicaceous, blocky, trapped laminae and lenses of silt, v. f. gn. sand, f. gn. of		
			lingnite, sl. calc.		
9	1872	60	shale: grey bluish, soft, blocky to weakly fissile, v. micro-micaceous. v. small lenses of sand f. gn., beige, f. gn. of		
			lignite, sl. calc.		
10	1868		misfire recovered on No. 11 sample		
11	1868	60	shale: dark grey, soft to mod. hd., friable, weakly fissile, foliated, with cross cutting planes of fissure. laminae		
			of silt, v. arg., beige		

SIDE WALL CORES DESCRIPTION

WELL : FRIGG 25/1-5	RUN N° : 2	SERVICE COMPANY : SPE	
LICENCE :	PAGE N°: 2	ASKED : 30	
	DATE : 15.08.75	RECOVERED : 13	
		SHOT : 13	
		LOST : 0	
		FULL BULLET : 12	

tr : trace - M : medium - G : good

N°	DEPTHS	REC mm	LITHOLOGY	Fluorescence	CUT
12	1866		misfire recovered on No. 13 sample		
13	1866	60	shale: grey black, soft to mod. hd., blocky, v. micromicaceous		
14	1859	60	clay: grey, soft, with band of shale: grey, mod. hd., flakey weakly fissile, mod. micromicaceous, sl. silty, sl. sandy		
15	1858		shale: grey black, soft, v. weakly fissile, sl. foliated, v. micromicaceous, blocky fracture, crumbly. lens of white clay,		
			v. silty.		
16	1850		misfire recovered on run 3 No. 2 sample		
17	1850		misfire		
			RUN NOT COMPLETED DUE TO NON FUNCTIONAL IGNITORS IN TOOL		

SIDE WALL CORES DESCRIPTION

WELL : FRIGG 25/1-5	RUN N° : 3	SERVICE COMPANY : SPE	
LICENCE :	PAGE N° : 1	ASKED : 30	
	DATE : 15.08.75	RECOVERED : 9	
		SHOT : 10	
		LOST : 1	
		FULL BULLET : 4	

tr : trace - M : medium - G : good

N°	DEPTHS	REC	LITHOLOGY	Fluorescence CUT
1	1850		misfire recovered on No. 2 sample	
2	1850	60	shale: grey black, soft to mod. hd., v. weakly fissile, blocky v. micromicaceous	
3	1835	60	shale: grey and gy. green interflocullated, soft to mod. hd., blocky, micromicaceous, some silt between fracture planes	
4	1815		misfire recovered on No. 5 sample	
5	1815	60	shale/claystone: grey and gy. green interflocullated clay around fragments of dark grey shale. one nodule of yellow clay,	
			some silt	
6	1790	X	lost	
7	1754		misfire recovered on No. 8 sample	
8	1754	55	shale: grey greenish, soft to mod. hd., v. micromicaceous, blocky. at bottom surface v. finely laminated, silt between	
			irregular fracture planes.	
9	1731	55	shale: grey greenish, mod. hd. to hd., weakly laminated, sl. foliated, v.micromicaceous, small lens of sand v. fn. gn. to	
			silt, plates of mica.	
10	1700		misfire recovered on No. 11 sample	
11	1700	50	shale: gy. green, mod. hd., micromicaceous, mod. silty, weakly laminated, blocky, tr. of sand v. f. gn. to silt between	
			fracture cracks.	
12	1660	60	shale: mod. hd., grey green, v. micromicaceous, finely laminated, weakly foliated, nodule of ochre brown clay, silt on surface,	
			v. sl. calc.	
13	1630		misfire recovered on No. 14 sample	

SIDE WALL CORES DESCRIPTION

WELL :	FRIGG 25/1-5
LICENCE :	
RUN N° :	3
PAGE N°:	2
DATE :	15.08.75

SERVICE COMPANY:	SPE
ASKED:	30
RECOVERED:	9
SHOT :	10
LOST :	1
FULL BULLET :	4

tr : trace - M : medium - G : good

N°	DEPTHS	REC	LITHOLOGY	Fluorescence	CUT
14	1630	50	clay-shale: dark grey, soft to mod. hd., v. micromicaceous, blocky crumbly, bottom surface covered with sand f. gn., glauconite. 30% of sample clay, soft, ochre, sl. silty, and mod. carbonated.		
15	1600	55	clay-shale: grey soft, v. micromicaceous, weakly laminated, weakly fissile sl. foliated, v. wkly. calc., 5% of sample ochre brown clay, tr. of f. gn. sand.		
16	1570		misfire		
17	1570		misfire		
			RUN NOT COMPLETED DUE TO LOST INSULATION IN FEEDER LINE 1 OF GST TOOL		

SIDE WALL CORES DESCRIPTION

WELL : FRIGG 25/1-5	RUN N° : 4	SERVICE COMPANY :	SPE
LICENCE :	PAGE N° : 1	ASKED :	26
	DATE : 15.08.75	RECOVERED :	21
		SHOT :	26
		LOST :	3
		FULL BULLET :	8

tr : trace - M : medium - G : good

N°	DEPTHS	REC mm	LITHOLOGY	Fluorescence		CUT
1	1845	60	shale: grey black, mod. hd., blocky to weakly fissile, sl. foliated. on bottom surface silt, beige, v. arg., mod carbonated			
9			matrix.			
2	1825	60	shale: dark grey, mod. hd., blocky, thin lens of sand fn. gn. to med. gn. 15% sample sand fn. gn. arg. matrix.			
3	1790	55	clay-shale: grey black, soft to mod. hd., blocky, lenses of silt beige, arg. matrix. some rare crs. gns. of sand.			
4	1590	60	clay-shale: dark grey, soft to mod. hd., indurated, lens of silt, v. arg. matrix, rare sand med. gns. nodule of clay red			
			brown soft			
5	1540	60	clay: grey, soft, micromicaceous, fine lens of silt, traces of ochre coloured clay.			
6	1510	55	clay: grey, soft, locally v. silty, v. micromicaceous, on bottom surface silt to v. f. gn. sand, plates of mica,			
			nodule of pyrite			
7	1487,5		misfire recovered on No. 8 sample			
8	1487,5	65	clay-shale: grey, soft, loc. mod. hd., loc. mod. to v. silty, weakly developed fissility and layer structures. nodule of pyrite			
9	1455	55	clay-shale: grey, soft, laminated, mod. dev. fissility. fossil worm burrow			
10	1425	50	clay: grey brownish, soft, loc. v. silty, v. micromicaceous,			
11	1400	X	lost			
12	1370	60	clay-shale: grey, soft, loc. mod. silty, sl. micromicaceous, nodule of ochre red clay, rare mica plates.			
13	1341	60	clay-shale: grey, soft, mod. to v. silty, indurated, fine silt lens.			
14	1305	55	clay-shale: grey, soft to mod. hd., well indurated, weakly blocky, mod. micromicaceous, mod. silty, fossiliferous			
15	1287	X	lost			

SIDE WALL CORES DESCRIPTION

WELL : FRIGG 25/1-5	RUN N° : 4
LICENCE :	PAGE N°: 2
	DATE : 15.08.75

SERVICE COMPANY:	SPE
ASKED:	26
RECOVERED:	21
SHOT :	26
LOST :	3
FULL BULLET :	8

tr : trace - M : medium - G : good

N°	DEPTHS	REC mm	LITHOLOGY	Fluorescence	CUT
16	1250	50	clay-shale: grey brownish, soft to mod. hd., mod. silty, mod. micromicaceous, v. weakly dev. fissility. small lenses of silt.		
17	1218	50	clay-shale: grey brownish, soft, v. silty, some v. crs. sand gns., mod. micromicaceous		
18	1185	60	clay: grey brownish, soft, mod. to v. silty, v. micromicaceous mod. calcareous.		
19	1170	50	siltstone: grey, soft, loc. v. argillaceous, sl. to mod. sandy, sl. calcareous matrix, abundant fn. gn. rounded glauconite grains		
20	1140	55	clay: grey brownish, soft, v. silty, sl. sandy, mod. calcareous, v. micromicaceous		
21	1115		misfire recovered on No. 22 sample		
22	1115	20	clay: grey, soft, poor sample		
23	1096	10	clay: grey, soft, poor sample		
24	1071	55	siltstone: grey brownish, soft, loc. v. argillaceous, sl. sandy, v. calcareous matrix, micromicaceous, fossiliferous (poorly preserved) few glauconite grains.		
25	1045	X	lost		
26	1047	55	clay: grey brownish, soft, v. silty, v. micromicaceous and clay beige brown, soft, mod. to v. calcareous		

SIDE WALL CORES DESCRIPTION

WELL : 25/1-5	RUN N° : 5	SERVICE COMPANY: SPE	
LICENCE :	PAGE N°: 1	ASKED:	30
	DATE : 09.09.75	RECOVERED:	24
		SHOT :	29
		LOST :	5
		FULL BULLET :	24

tr : trace - M : medium - G : good

N°	DEPTHS	REC	LITHOLOGY	Fluorescence / CUT
1	2259	45	tuffaceous clay: grey-green, friable crumbly texture, pigmented green & black, some fine green ang. fragments, non calc.	
2	2257	45	tuffaceous clay: grey-green, friable crumbly texture, pigmented dark green & black, some scattered clumps of sand, beige, med. gn., non calc.	
3	2254,5	50	clay: grey-beige, friable crumbly texture, mod. to v. silty, sl. sandy, v. sl. calc.	
4	2252		sand: translucent, fn. to crs. gn. mainly med. gn. mod. well sorted, v. poorly consolidated, excellent Φ rare patches of clay, yellow ochre & dark grey	
5	2251,5	X	lost	
6	2229,5	30	clay-shale: grey, blocky cross cutting fracture planes, mod. hd., to friable, non calc., v. sl. silty	
7	2200,5	35	clay-shale: interlaminated dk. gy. and green grey, mod. hd., blocky cross cutting fracture planes, sl. fissile, sl. micromica-ceous, sl. silty	
8	2199,5	45	clay: grey-green soft, plastic, sl. silty, v. sl. calc. with intercalation of shale; dk. grey, hd., mod. fissile	
9	2192,5	65	shale: dk. grey brownish & partly greenish, soft to mod. hd., finely fissile, loc. v. silty, mod. sandy, microfault structures, v. sl. calc.	
10	2183	45	sand: grey beige to greenish, v. fn. gn. to fn. gn., well sorted, white arg. matrix, poorly consolidated, soft, good Φ, rarely glauconitic, v. sl. calc.	
11	2162,5	X	misfire	
12	2161,5	45	shale: dk. gy., mod. hd., weakly fissile, alternating with beds of sand; gy. greenish, v. f. to med. gn., soft, poorly consoli-dated, white arg. matrix, v. sl. calc.	

SIDE WALL CORES DESCRIPTION

WELL : 25/1-5	RUN N° : 5
LICENCE :	PAGE N°: 2
	DATE : 09.09.75

SERVICE COMPANY: SPE	
ASKED:	30
RECOVERED:	24
SHOT :	29
LOST :	5
FULL BULLET :	24

tr : trace - M : medium - G : good

N°	DEPTHS	REC	LITHOLOGY	Fluorescence	CUT
13	2140,5	50	shale & clay shale: khaki green, mod. hd., sl.-mod. sandy, sl.-mod. silty, rarely micromicaceous, in part clay grey soft, plastic, non calc.		
14	2135	65	sandstone: grey, abundant argillaceous grey & white matrix, v. fn. to f. gn., well sorted, mod. well consolidated, sl. micromicaceous, fair ϕ mod, hd., and clay dk. grey, soft, v. sandy, v. silty, with veins of sand, clay/sst boundary across sample		
15	2121,1	X	lost		
16	2111,6	35	sand: translucent, white, v. fn. to med. gn., mainly med. gn., well sorted, v. poorly consolidated, sl. arg. white matrix, rare green & brown shale inclusions		
17	2103	X	lost		
18	2066,5	55	sand: translucent, v. fn. to med. gn. mainly med. gn., well sorted, v. poorly consolidated, sl. arg. white matrix, v. friable, inclusions of clay grey, plastic, v. good ϕ		
19	2065,5	X	lost		
20	2029,5	65	clay: grey-green, soft, v. sandy, sl. to v. silty, mod. micromicaceous, v. finely laminated graded bedding, v. sl. calc.		
21	2028,5	55	siltstone: grey-greenish, mod. hd., friable, v. arg., mod. sandy, sl. micromicaceous		
22	2027	50	sandstone: grey-green, mod. hd., friable, v. arg., v. silty, v. fn. gn., mod. well consolidated, faint bedding structures, v. sl. calc.		
23	2018,5	55	sand: translucent, fn. to med. gn., well sorted, poorly consolidated, v. arg. grey-green matrix, v. good ϕ, rare mica plates		
24	2015	X	lost		
25	1992,5	60	sand: translucent, v. fn. to med. gn., mainly fn. gn., well sorted, mod. well consolidated, grey-green arg. matrix, faint		

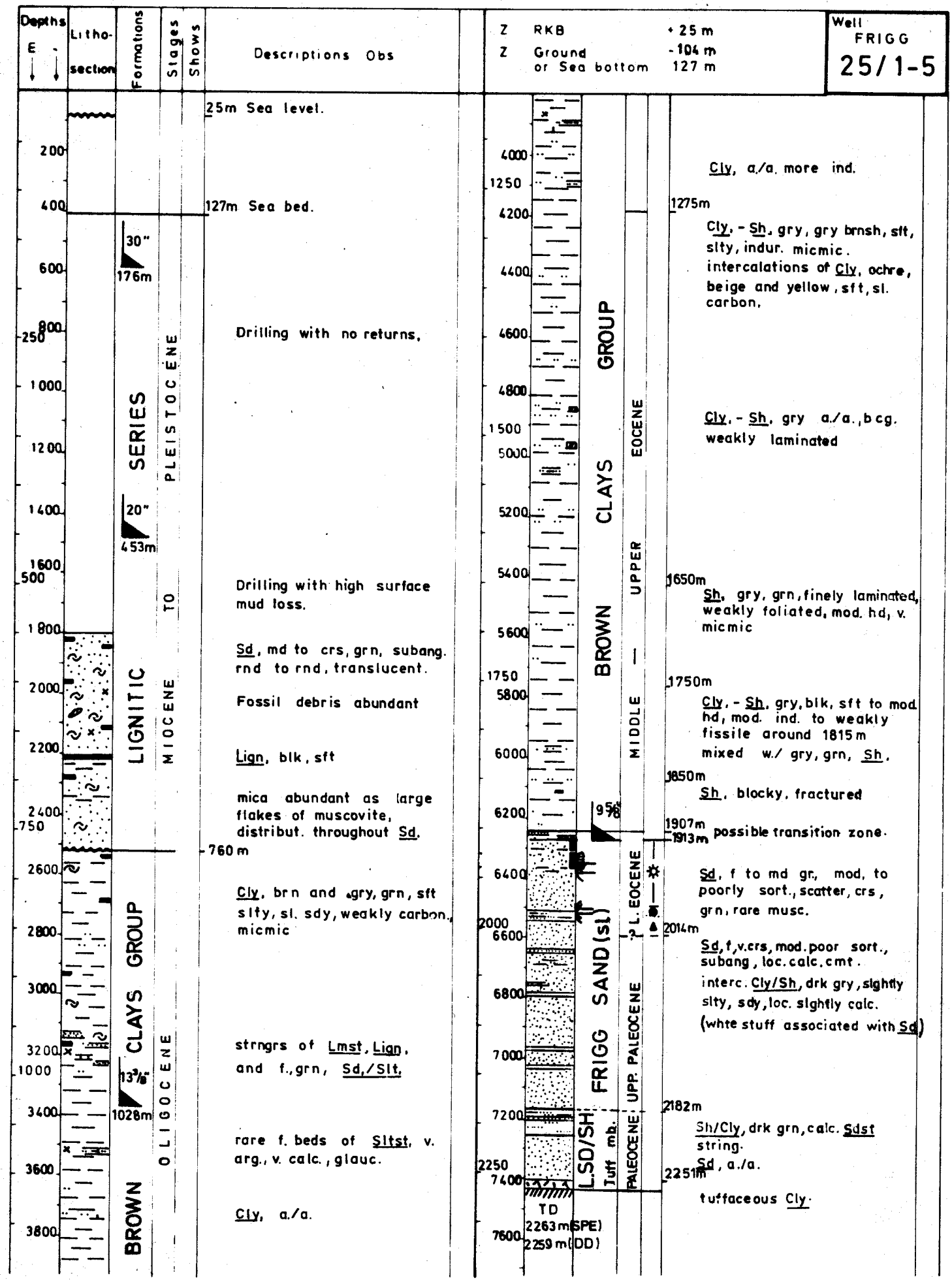
SIDE WALL CORES DESCRIPTION

WELL : 25/1-5	RUN N° : 5
LICENCE :	PAGE N°: 3
	DATE : 09.09.75

SERVICE COMPANY:	SPE
ASKED:	30
RECOVERED:	24
SHOT :	29
LOST :	5
FULL BULLET :	24

tr : trace - M : medium - G : good

N°	DEPTHS	REC	LITHOLOGY	Fluorescence / CUT
			laminated, graded bedding structures	
26	1991,5	60	claystone: dark grey (greenish), hd., v. silty, sl. sandy, mod./v. micromicaceous, non calc.	
27	1988,5	40	clay: dk. grey, soft, v. silty, mod. sandy, with intercalation of sand; translucent, v. fn. gn., soft, friable, beige arg.	
			matrix, specks of lignite	
28	1985	45	sand: translucent gns., impregnated yellow with oil, fn. gn., well sorted, v. poorly consolidated, v. friable, v. good Φ.	
			sl. arg. matrix, fine clay bands	
29	1983,5	55	clay-shale: green, med. hd., v. weakly fissile, v. sandy. interbeds of lst./calcite, translucent, microxine, hd. and clay	
			ochre yellow & grey, v. soft, plastic	
30	1941	30	clay-shale: dk. gy., greenish, mod. hd., v. weakly fissile, v. silty, sl.-mod. sandy, faint laminated bedding, fine band	
			dolomitic clay	


Depths
Litho-section
Formations
Stages
Shows
Descriptions
Obs
Z RKB +25 m
Z Ground or Sea bottom -104 m 127 m
Well FRIGG 25/1-5
25m Sea level.
127m Sea bed.
30"
176m
Drilling with no returns,
20"
453m
Drilling with high surface mud loss.
Sd, md to crs, grn, subang. rnd to rnd, translucent.
Fossil debris abundant
Lign, blk, sft
mica abundant as large flakes of muscovite, distribut. throughout Sd.
760 m
Cly, brn and gry, grn, sft silty, sl. sdy, weakly carbon., micmic
strngrs of Lmst, Lign, and f., grn, Sd,/Slt,
13 3/8"
1028m
rare f. beds of Sltst, v. arg., v. calc., glauc.
Cly, a./a.
LIGNITIC SERIES
BROWN CLAYS GROUP
PLEISTOCENE TO MIOCENE
OLIGOCENE
Cly, a./a. more ind.
1275m
Cly. - Sh. gry, gry brnsh, sft, silty, indur. micmic. intercalations of Cly, ochre, beige and yellow, sft, sl. carbon.
Cly. - Sh. gry a./a., bcg. weakly laminated
1650m
Sh. gry, grn, finely laminated, weakly foliated, mod. hd, v. micmic
1750m
Cly. - Sh. gry, blk, sft to mod hd, mod. ind. to weakly fissile around 1815 m mixed w./ gry, grn, Sh.
1850m
Sh. blocky, fractured
95/8"
1907m
1913m possible transition zone.
Sd, f to md gr., mod. to poorly sort., scatter, crs, grn, rare musc.
2014m
Sd, f, v.crs, mod. poor sort., subang, loc. calc. cmt.
interc. Cly/Sh, drk gry, slghtly silty, sdy, loc. slghtly calc.
(white stuff associated with Sd)
2182m
Sh/Cly, drk grn, calc. Sdst string.
Sd, a./a.
2251m
tuffaceous Cly.
TD
2263m (SPE)
2259m (DD)
BROWN CLAYS GROUP
UPPER — MIDDLE EOCENE
?L. EOCENE
FRIGG SAND (sl)
UPP. PALEOCENE
LSD/SH Tuff mb.
PALEOCENE

Coord x 02° 06' 36,99"E z ground - 104 m
y 59° 52' 27,92"N z RKB + 25 m
SP 73 F9-305
Depths datum R.K.B.
Rig Deep Sea Driller
Stopped in Paleocene

Spudded 24.07.75
Started drilling 26.07.75
At TD 06.09.75
Completed 12.09.75
TD Driller 2259 m TD Logger 2263 m

Well 25/1-5
Country Norway

OPERATOR ELF NORGE A/S

LISENCE 029 OWNED BY PETRONORD

TARGETS

Frigg sand (lower Eocene)

RESULTS

Top of Frigg sand at 1907m
gas /oil = 1976 m
oil water = 1987 m (oil transition zone 1982-1987m)

CASINGS

30"	at	176 m
20"	"	453 m
13 3/8"	"	1028 m
9 5/8"	"	1908 m

CORES

K 1	1914 - 1923	100%
K 2	1928 - 1937	50%

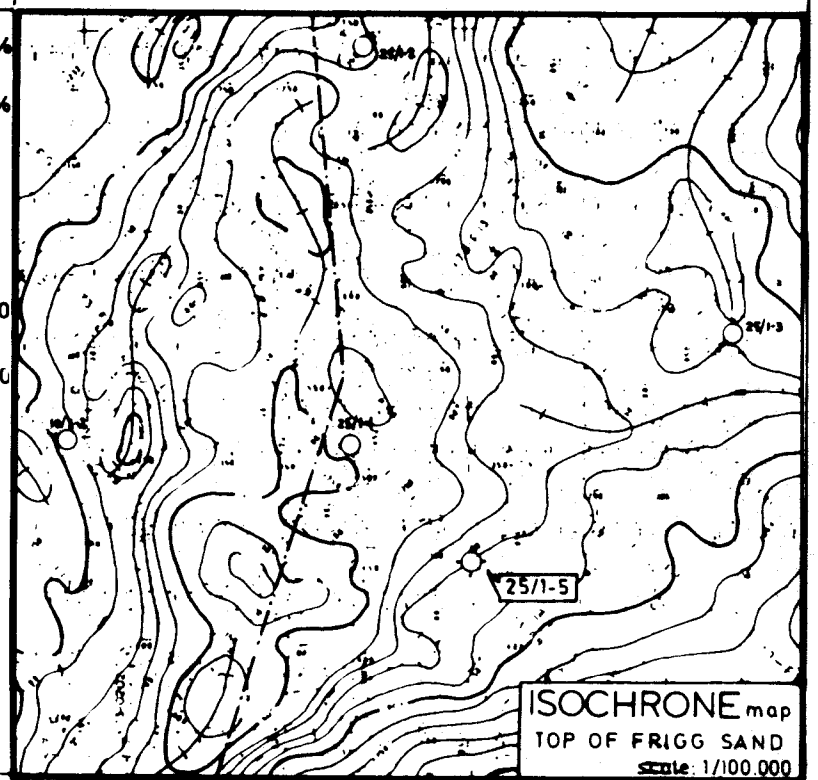
SWC1 SWC2 SWC3 SWC4	1902 - 1047		46/50
SWC5	2259	1941	24/30

SHOWS

Core N° 1
Direct - rare yellow spots
Cut - faint yellow

Core N° 2
Direct - overall yellow increasing intensity towards base
Cut - 1928-32 faint yellow
1931 - 1932,50 fairly strong yellow fluo.

☼ △ btw. 1912 - 1976
● btw. 1976 - 1980
▲ down to 1908



TESTS

Prod. test	1926,8 - 1940	Choke 1" ☼ 890000 m³/j SIP = 2833 psi
FIT 1 1979,6	0,5 ● 9,5	filtrate
FIT 2 1981	0,3 ● 9,7	filtrate
FIT 3 1937	9,7 ☼ 0,3	filtrate
FIT 4 1945,5	9,8 ☼ 0,2	filtrate

LOGS

IES	1025 -	1918	1
CNL / FDC	1700 -	1916	1
DLL	1700 -	1907	1
MLMLL	1700 -	1908	1
BHC.GR	1025 -	1909	1
CBL	1025 -	270	1
HDT	1025 -	1905	1
tensiometer with DLL MLMLL			
IES	1960 -	1913	2
BHC.GR	1960 -	1913	2
CNL FDC	1960 -	1913	2
CBL	1909 -	1000	2
IES	2263 -	1913	3
BHCGR	2263 -	1850	3
CNL / FDC	2263 -	1850	3
MLMLL	2263 -	1912	2
DLL	2260 -	1913	2
HDT	2263 -	1913	2
SSL			

INTERPRETATION

1/ STRATIGRAPHY INFERRED FROM CORRELATIONS WITH NEARBY WELLS

2/ ALL SCHLUMBERGER DEPTHS HAVE TO BE CORRECTED OF - 4 m.

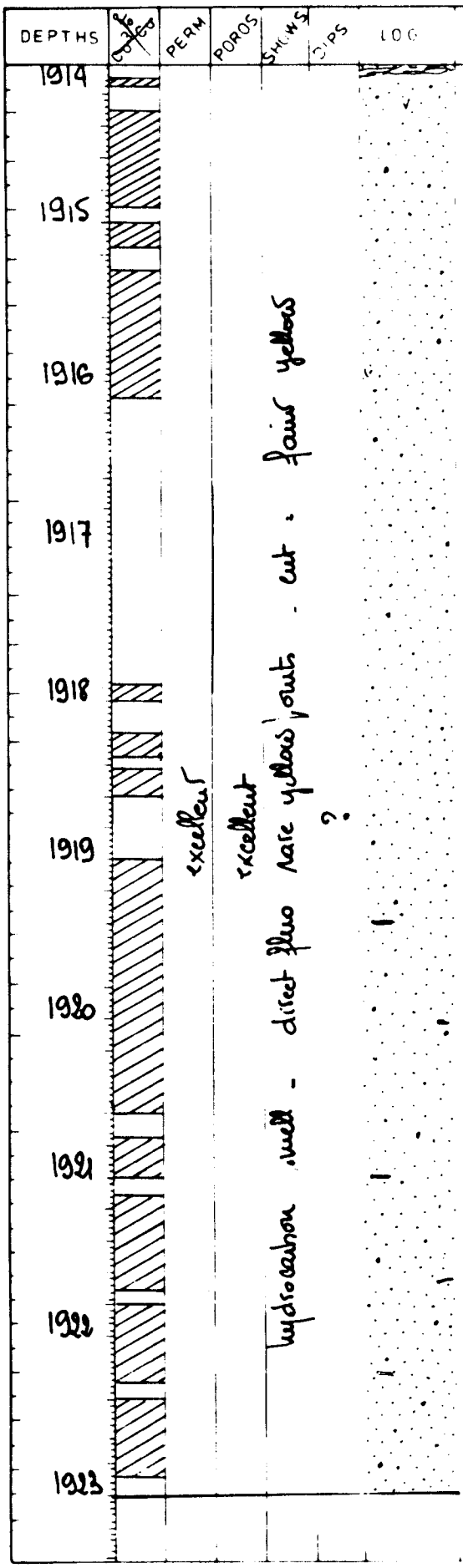
Checked 22.09.75
By Y.GALY

CORE DESCRIPTION

CUT 9 m
RECOVERED 9 m 100 %
LOSS 0 m

COMPANY ELF NORGE
WELL N° 25/1.5
CORE N° 1

DATE 10.08.75
DEPTHS 1914-1923



DESCRIPTION

1914 - 1914,10 m. Shale gray soft silty pyrite with nodules of limestone mudstone dark brownish argillaceous very hard.

beneath 1914,10 m Sand poor consolidated fine medium moderate/poor sorted with scattered coarse rounded fluorite micas. lignitic inclusions ~~or~~ green minerals no visible sedimentary structure.

below 1920 m

Sand as above with lignitic and bituminous inclusions

(at 1920 faint brownish cut)

▨ Sand slightly consolidated protected by aluminium paper and paraffin

CORE DESCRIPTION

CUT: 9 m
RECOVERED: 4 1/2 m 50 %
LOSS: 4 1/2 m

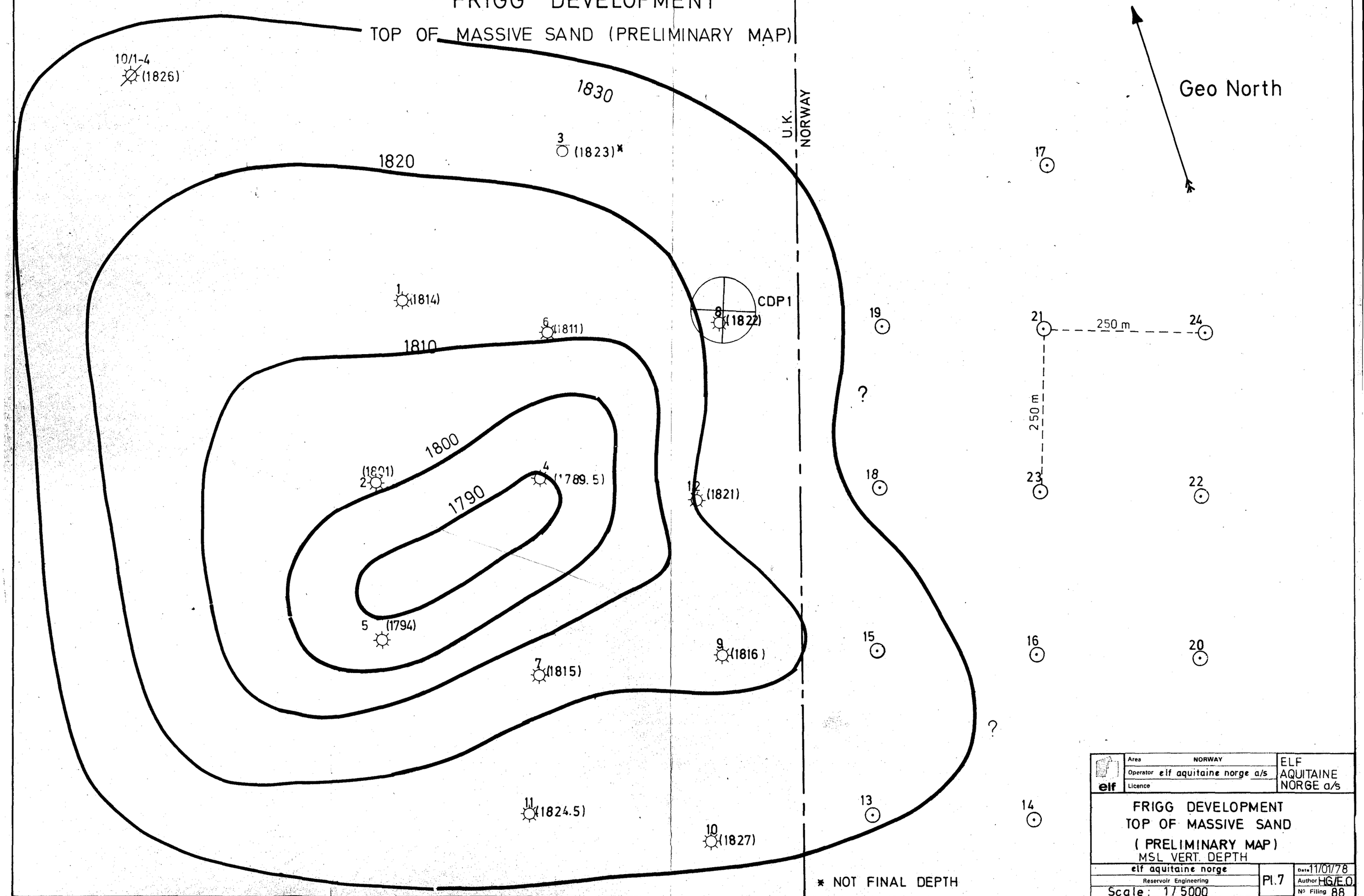
COMPANY: ELF NORGE
WELL N°: 25/1-15
CORE N°: 2

DATE: 1.8.75
DEPTHS: 1928 – 1937

DEPTHS	% Co_3Co	PERM	POROS	SHOWS	DIPS	LOG	DESCIPTION
1928		V. Good To EXCELLENT	V. GOOD To EXCELLENT	Overall yellow flwo. (direct) faint yellow inc to strong yellow at base.			Sand: grey beige, fn. gn to med gn., sub ang., fairly well sorted, v. poorly consolidated, rare plates of mica, sl. argillaceous matrix,
1929							
1930							
1931							Shale: dark grey (greenish), mod hard, v. micromicaceous, mod. fissile, finely laminated & sl. foliated. Current bedding structures seen between interlaminating shale, silt and sand beds.
1932							
1933							
1934							
1935							
1936							
1937							

FRIGG DEVELOPMENT

TOP OF MASSIVE SAND (PRELIMINARY MAP)



* NOT FINAL DEPTH

elf	Area NORWAY	ELF AQUITAINE NORGE a/s
	Operator elf aquitaine norge a/s	
	Licence	

FRIGG DEVELOPMENT
TOP OF MASSIVE SAND
(PRELIMINARY MAP)
MSL VERT. DEPTH

elf aquitaine norge	Pl.7	Date 11/01/78
Reservoir Engineering		Author HG/E.O
Scale : 1/5000		N° Filing 88