ELF AQUITAINE NORGE A/S
Exploration Division
ref.No.: 311D/79/01-R
PV/sb

FINAL GEOLOGICAL REPORT

Well 30/7-7

(Norsk Hydro operator)

Authors: P.VERDIER
K.KIRKEMO

Stavanger, July 1979

LIST OF CONTENTS

I PERTINENT DATA

II GEOLOGICAL DATA AND RESULTS

1. Objectives and results
2. Lithology
3. Stratigraphical data
4. Preliminary structural results
5. Hydrocarbon shows
6. Coring

III PETROLEUM RESULTS

1. Reservoirs
2. Fluids and pressures

IV CONCLUSIONS

LIST OF PLATES

1. Situation map
2. Seismic map - deep pre-M2 event
3. Seismic map - M2
4. Composite log 1/500
5. Well summary 1/5.000
6. Core No. 1 - description
7. Sidewall core description
8. DST 1 - pressure diagram

I PERTINENT DATA

1. Summary of Well Data

Area:	Licence 040 - block 30/7
Well:	30/7-7, exploration
Operator:	Norsk Hydro Produksjon A/S
Seismic line:	752 712
Shot point:	565
Location:	60° 16' 19,3" N
	02° 16' 07,3" E
RKB elevation (to MSL):	25 m
Water depth:	135 m RKB
Rig:	Treasure Seeker
Contractor:	W. Wilhelmsen
Mud logging:	Exploration Logging
Well spudded:	December 16th 1978
At TD:	May 30th 1979
TD driller:	5127 m RKB
TD logger:	5127 m RKB
Well completed:	July 1st 1979

2. Status

Plugged and abandoned. Hydrocarbon shows in the Jurassic.

II GEOLOGICAL DATA AND RESULTS

1. Objectives and Results

The well 30/7-7 was drilled between December 16th 1978 and May 30th 1979 with the rig Treasure Seeker. It reached TD at 5127 m in black to brownish

black shales with traces of red brown siltstone probably of Lower Jurassic age.

The main objective of the well was to test the SE prospect on the 30/7 block. No Middle Jurassic sandstones were encountered. Lower Jurassic sandstones were penetrated between 4735 and 4763 m and between 4884 and 4975 m. There were no significant hydrocarbon shows in the Jurassic.

2. Lithology

The lithology is completed from ditch cuttings descriptions. All depths in RKB.

135 - 184 m:	Sample returns to sea bed.
184 - 302 m:	Claystone, soft, medium to dark grey, slightly calcareous, occasionally sandy or silty, abundant bivalve fragments, traces of rock fragments.
302 - 800 m:	Sand, clear, very fine to medium, occasionally very fine and coarse, predominantly rounded to subrounded but also subrounded to angular. Traces to abundant shell fragments, traces of lignite, glauconite and rock fragments.
800 - 1047 m:	Sand, clear, opaque, very fine to very coarse, well rounded to subrounded, occasionally angular. Poorly sorted. Traces of glauconite. Traces to abundant shell fragments. Minor interbeds of: Siltstone, pale brownish grey, soft to fine, sandy. Traces of mica and glauconite. Clay, pale brownish grey and medium dark grey. Soft, sticky, slightly calcareous. Traces of lignite, black,fine to moderately hard. Traces of pyrite.

1047 - 1355 m: Major alternations of sand as above and:
Clay, greenish brown, soft, sticky. Silty, occasionally sandy, slightly calcareous. Traces of sand, clear, opaque, very fine to fine, occasionally medium, rounded to subrounded, weak calcitic cement. Traces of siltstone, dusky brown, soft to fine, occasionally sandy, carbonaceous, glauconite, in part calcareous. Traces of limestone, white to pale brown, chalky.

1355 - 2151 m: Clay, as above, micromicaceous, grading to claystone. Interbeds of siltstone, dusky brown to dusky yellow brown, firm, occasional glauconite, micromicaceous, calcareous. Traces of sandstone. Stringers of limestone, white, light grey and light yellow orange, fine to moderately hard, chalky or microcrystalline.

2151 - 2187 m: Shale, dusky green, firm, subfissile, micromicaceous, noncalcareous. Traces of tuff, light grey, fine.

2187 - 2320 m: Sandstone, light greenish white, very fine, occasionally grading to siltstone, friable to hard, subangular to angular, calcitic cement and matrix moderately sorted, occasionally pyritic, poor visible porosity. Interbeds of shale, dusky green, firm, subfissile, micromicaceous, noncalcareous. Traces of tuff, light to medium grey, fine. Stringers of limestone.

2320 - 2531 m: Shale, greenish grey to dark greenish grey and green black, firm, blocky, subfissile, slightly micromicaceous, noncalcareous. Stringers of sandstone, clear, occasionally greenish white, fine to medium, occasionally coarse to very coarse, friable, subrounded, calcareous cement, poorly to moderately sorted poor to fair porosity. Stringers of limestone/dolomite, white to light brown, hard microcrystalline, traces of pyrite.

2531 - 2631 m: Limestone, white, pink, buff, hard to firm, occasionally chalky, traces of glauconite. Interbeds of shale, dark to olive green, firm, subfissile. Traces of sandstone, white, fine to medium, subrounded, calcitic cement, moderately sorted. Traces of siltstone, brownish grey, slightly glauconitic.

2631 - 2965 m: Shale, variegated grey, greenish and brown colours, firm to moderately hard, occasionally grading to soft, occasionally silty, traces of pyrite. Interbeds of clay/claystone, medium grey with minor amounts of silt. Stringers of limestone/dolomite, light brownish, microcrystalline. Minor amounts of marl, brownish red.

2965 - 3510 m: Clay/claystone, light to medium grey, occasionally yellow brownish, occasionally calcareous, grading to marl. Minor interbeds of shale, medium to dark grey. Stringers of limestone and dolomite, pink, yellow and brown. Increasingly marly with interbeds of limestone towards bottom of interval.

3510 - 3878 m: Predominantly marl, olive grey to yellowish brown, occasionally light grey, soft to firm, occasionally silty. Localized important interbeds of shale, claystone and limestone, common stringers of limestone, minor occurrences of sandstone and siltstone:
Shale, light to dark grey, firm to hard, noncalcareous, finely diseminated pyrite, micromicaceous, occasionally carbonaceous. Claystone light to medium grey, occasionally brownish, soft to firm, slightly calcareous to calcareous. Limestone, pale to dark yellowish brown, moderately hard, occasionally grading to soft, cryptocrystalline, occasionally argillaceous, sandy or dolomitic. Sandstone clear to milky, fine to medium, coarse. Siltstone, grey and light brown, firm, calcareous.

3878 - 4736 m: Dominantly shale, medium to dark grey, occasionally brownish or light grey, firm to hard, subfissile to very fissile, frequently micromicaceous, occasionally carbonaceous or calcareous, traces of pyrite. Abundant claystone, light to medium grey, soft, calcareous. Thin beds and stringers of limestone, light to dark brown, tan or red, firm to hard, brittle, cryptocrystalline, occasionally argillaceous or slightly dolomite. Locally thin beds of siltstone, light to dark grey, firm to moderately hard, calcareous, occasionally pyritic.

4736 - 4801 m: Sandstone, medium dark grey to light brown, moderately hard, fine occasionally medium, subangular, well sorted, hard, strongly cemented, siliceous and/or dolomitic cement, abundant mica. Interbeds of shale, dark grey to black, hard, carbonaceous, noncalcareous, micromicaceous, locally silty.

4801 - 4885 m: Shale, greyish black, moderately hard, subfissile, micromicaceous, silty, stingers of limestone, light grey, moderately hard, microcrystalline.

4885 - 4975 m: Sandstone, clear, light grey to brown, fine to coarse, subangular to subrounded, loose, poorly cemented, occasionally hard with silica and calcite cement, poorly sorted. Thin interbeds of shale.

4975 - 5127 m: Dominantly shale, interbeds of claystone and sandstone, minor stringers of limestone. Chale, black to brownish black, occasionally redish brown, hard, fissile, occasionally silty, in parts calcareous, micromicaceous, or carbonaceous, traces of pyrite. Claystone, light to dark grey, traces of brickred, occasionally silty, occasionally calcareous. Sandstone, clear, white or light brown, medium to coarse, subangular, moderately sorted, loose, hard when silica cemented, poor visual porosity. Limestone, dark brown, hard, microcrystalline.

Below 5060 m: Traces of siltstone, brownish red, moderately hard, blocky, slightly to non calcareous.

3. Stratigraphical Data

Only provisional stratigraphical data are available. They have been provided by the Boussens Laboratory from some sidewall cores requested by EAN and from some widely spaced samples. All results presented are subject to changes.

Stratigraphical Unit	RKB	Thickness
	134 m	
Pleistocene - Pliocene		436 m
	570 m	
Upper-Mid Miocene		210 m
	780 m	
Early Miocene-Oligocene		600 m
	1380 m	
Early Oligocene-Eocene		760 m
	2140 m	
Paleocene		390 m
	2530 m	
Maastrichtian		185 m
	2715 m	
Campanian		760 m
	3475 m	
Turonian		240 m
	3715 m	
Cenomian-Albian		164 m
	3879 m	
Volgian		10 m
	3889 m	
Kimmeridgian		45 m
	3934 m	
Oxfordian-Callovian		632 m
	4566 m	
Lower Jurassic		≥561 m
	5127 m TD	

4. Preliminary Structural Results

HDT results have been analysed by using the stereographic methods; main dips for some intervals are as follows:

- Maastrichtian - Turonian Section (2683 - 3634 m)
  Dips orientated between N56 and N88, are evolving between 4° S and 12° S-SE.

- Cenomanian - Late Albian Section (3634 - 3879 m)
  The results are widely scattered. NS and WE minor axis are given by point to point evaluation. These axis and evaluation can be related either to carbonaceous sedimentary structures or to minor faults.

- Jurassic Section (Kimmeridgian - Toarcian) (3879 - 4788 m)
  The statistical main dip orientated N 10 (N 160 to N 22) are evovling between 1° E and 14° E-NE to 15° E-SE. The dsitribution of the main dip is very regular. No valuable structural axis is apparent. The 4788 - 5127 m section has not been logged.

5. Hydrocarbon Shows

- Gas Shows

  Gas shows are listed in table I. Major shows appear in the interval 3502 to 3930 m (Turonian limestones) and 4723 to 4886 m (Lower Jurassic, calcareous sands).

- Oil Shows and Fluorescence

  2315 - 2320 m on sandstone: traces of light brown stain, golden fluorescence, fast streaming light yellow cut.

  2805 - 2813 m on siltstone: dark yellowish brown stain, light yellow fluorescence, white slowly streaming cut.

  3709 - 3730 m in limestone: traces of slow, white, streaming cut. Hydrocarbon fluorescence masked by mineral fluorescence.

  3908 - 3912 m in shale: no fluorescence, uniform, weak dull yellow crush-cut and light yellow residue.

Table I

GAS SHOWS

Interval (m)	Average reading %	Significant peaks % (depth)	Shape of total gas curve	Gases present	Comments
184 - 2105	< 0,5		smooth	C1	
2105 - 2760	0,3	0,6	smooth	C1, C2, C3 and tr. C4 at peaks	First occurence of C2 at 2105
2760 - 3080		10 - 56	irregular	C1, C2, C3, nC4, iC4	
3080 - 3502	0,4	1,8 (lower part)		C1, C2, C3, tr. of nC4 and iC4	
3502 - 3790	2	11 (3778 m)	General increase downwards, irregular curve		
3790 - 3880	0,4		smooth		
3880		17	sharp peak	C1, C2, discontinuously C3, tr. of iC4 and nC4 at peaks	Kimmeridge clay formation
3880 - 3930	2		irregular		
3930		16	sharp peak		
3930 - 4004	1,5		Generally decreasing		
4004 - 4085	0,5 incr. to 4		Generally increasing		
4085 - 4155	4 decr. to 1		Generally decreasing		
4155 - 4294	1,2		smooth		
4294 - 4506	2	5 (4302, 4332)	smooth		
4506 - 4723	1	2 to 2,5	smooth	C1, C2, tr. C3 at peaks	

continued

Table I (continued)

GAS SHOWS

Interval (m)	Average reading %	Significant peaks % (depth)	Shape of total gas curve	Gases present	Comments
4723 - 4798	Background 0,2	25 (4738,5) 15 (4740) 7,8 (4774) 3,4 (4796)	Generally smooth and low with sharp peaks	C1, C2, traces of C3 at peaks	Corresponds to Lower Jurassic sands (4736 to 4801 m)
4798 - 4886	0,2 incr. to 0,6		Smooth, generally increasing		
4886 - 4930	Background 0,6	10,4 17 17,4 (4886 - 4891) 3,3 (4892) 4,2 (4910) 4,5 (4916)	Sharp peaks on low background	C1, discontinuously C2, traces of C3 at higher readings	Corresponds to Lower Jurassic sands (4885 to 4975 m)
4930 - 5127 (TD)	0,2	never exceeds 0,7	Smooth	C1, traces of C2	

6. Coring

- Conventional Coring

One conventional core was cut from 4758 m to 4766,4 m (recovery 96%). The core consisted of 7,15 m fine to very fine sandstone with 1,25 m of shale at the base. Core description in plate 7.

- Sidewall Coring

A total of 4 runs of sidewall cores were made, in the 12 1/4" phase and 5 in the 8 3/8" phase.

In the 8 3/8" phase 24 SWCs were requested by EAN from the interval 4520 to 4801 m for their own use. Presentlyavailable core descriptions are presented in plate 7.

III PETROLEUM RESULTS

1. Reservoirs

- Lower Tertiary Reservoirs

Sandstone levels have been encountered below 2187 m. They are interbedded with shales. They are mainly developed between 2216 and 2320 m.

The main petrophysical parameters are:

net pay:	48 m (cut-off 30 API GR)
average porosity:	30 to 35%
shows:	0,1 - 0,5%, C1 - C4 (MW = 1.14)
	waterbearing

- Cretaceous Reservoirs

Some calcareous levels in the Maastrichtian limestones between 2531 and 2575 m can be considered as reservoirs.

net pay:
average porosity: 20 to 25%
shows: 0.1 - 0.4%, Cl - C4 (MW = 1.14)

Limestone stringers in the Turonian calcareous section from 3520 m down to 3720 m showed fluorescences.

net pay: very poor
average porosity: 15 to 20%
shows: 0.2 - 20%, Cl - C4 (MW = 1.75)
waterbearing

- Jurassic Reservoirs

Only provisional stratigraphical data are available. Two sandstone levels, Liassic in age, are present:

Upper Sandstone: 4735 - 4797 m

gross pay: 63 m
net pay: 15 to 16 m
average porosity: 16.6%
average Sw from log: 50%
average permeability (core 1): 0.1 md
shows: 1 to 15%, Cl - C4 (MW = 2.11)

Lower Sandstone: 4884 - 4975 m

gross pay: 91 m
net pay: 42 m
average porosity: 15%
average Sw from log: 50%
no permeability measurements
shows: 0,1 - 17%, Cl - C3 occasionally C4
(MW = 2.11)

2. Fluids and Pressures

A drill stem test (DST No. 1) was performed on the upper sandstone (4735 - 4797 m). The lower sandstone has not been tested due to the broken drill string (fish between 4807 m and 5127 m).

The provisional data and results are as follows:

- Perforated intervals (RKB depths):

  4763,00 - 4751,10 m
  4752,00 - 4742,80 m
  4743,75 - 4735,00 m
  4763,00 - 4754,00 m
  4743,00 - 4735,00 m
  Packer set at 4725 m

- Formation pressure

  A schematic pressure diagram is included (plate 8). No valuable or definitive formation pressure is available from this curve. Three possibilities exist:

  - The extrapolated pressure between points C and D during the first flow is around 9000 psi (or 632,79 kg/cm^2). The equivalent gradient is 1,34. This value is not consistent with the recorded gas shows during drilling with a 2,11 mud. This figure means that the interval was drilled out with a 0,77 overbalanced mud weight. This point is showing the weakness of this value.

  - Another figure for the formation pressure is the 13.831 psi value, given by point B, which represents the bleed off after introducing the string in the packer. The equivalent gradient for a 13.831 psi (972,46 kg/cm^2) pressure is 2,06 which is close to the computed pore pressure.

  - A third figure is given by taking in account the 207 bars shut in wellhead pressure and the 486 kg/cm^2) water cushion pressure. This gives an approximate formation pressure of 701 kg/cm^2 (or 9971 psi) or a 1,48 sg gradient.

- Fluids

  An approximate volume of 12 m^3 of effluent has been recovered in about 4 hours. During the reverse circulation no gas flow occurred, only gas bubbles were observed. The composition of these bubbles is:

10% CO_2 77,4% C1 9,4% C2 1,8% C3 1,2% C3 1,2% 1C4 1,2% nC4

No change in the water cushion salinity has been noticed. This point could indicate that no formation water has been recovered.

No other tests were performed. The tested level is considered as tight and probably water bearing.

IV CONCLUSIONS

The objective of the well was to test possible sandstone reservoirs of jurassic age, which were predicted to occur in a large structure (150 km^2 at the Kimmerian unconformity) located on the eastern flank of the Viking basin.

No major hydrocarbon accumulation has been displayed. One DST has been performed on a sandstone interval, unfortunately neither valuable effluent nor formation pressure have been proved by this test.

From the provisional data it is evident that the geology of the area has to be reconsidered taking into account:

1. Lack of Mid Jurassic (Bajocian - Bathonian) sandstones corresponding to the Brent formation

2. Development below the Kimmerian unconformity of a 856 m shaly section during the Pliensbachian to Kimmeridgian times.

Generally new types of environments have to be considered.

POSITION MAP

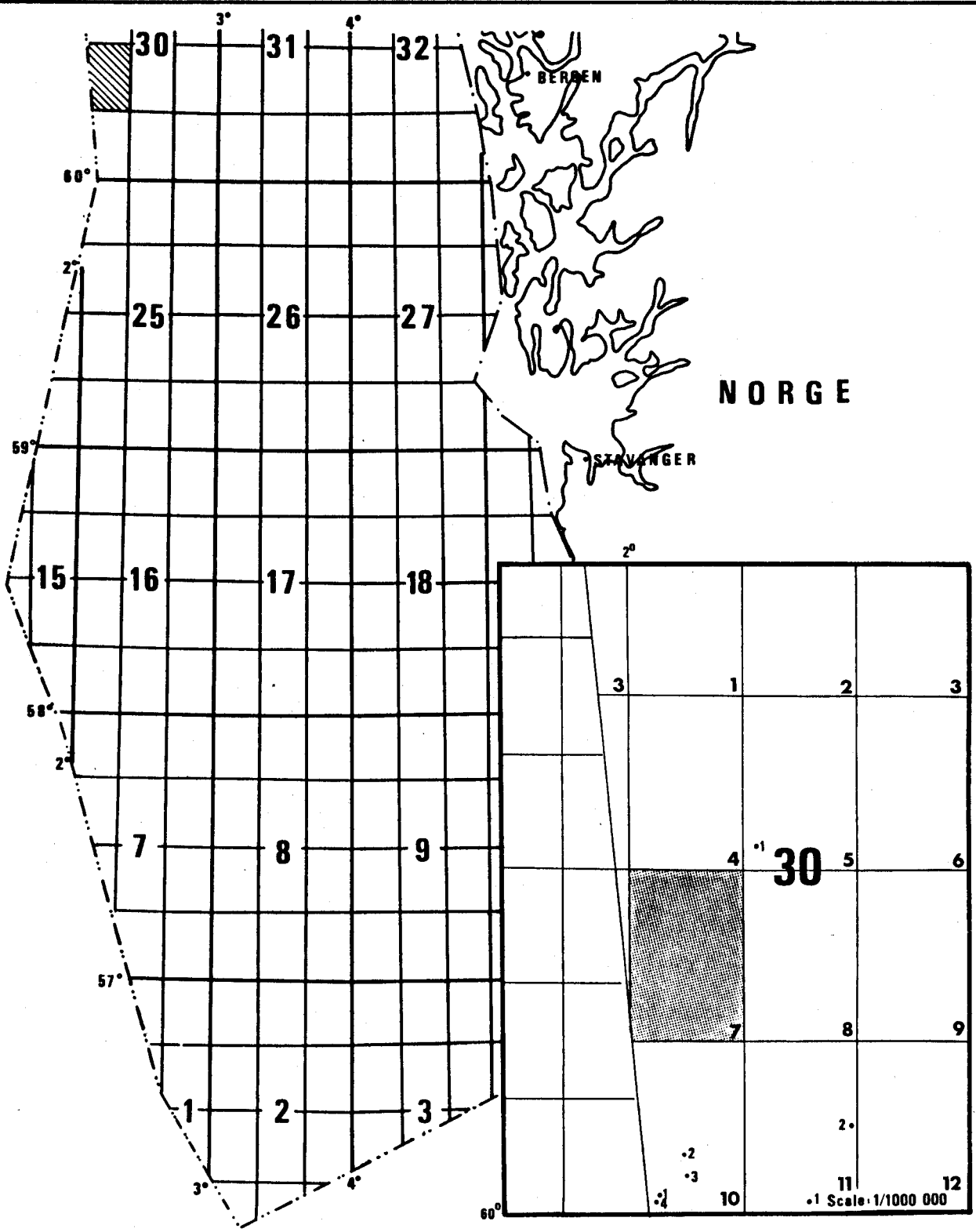
BLOCK : 30/7

WELL : 30/7-7

OWNER : Norsk Hydro Prod. a.s

Scale: 1/2500000

Date: 08.79



EXPLORATION DIVISION

PL.1

30/7-3
30/7-7
30/7 / 30/8
30/10 / 30/11
1:4.000.000
DATA QUALITY OF DEEP EVENT
PL. 2
Norsk Hydro
BLOCK 30/7 & 10 11
STRUCTURE TIME MAP
DEEP PRE-M2 EVENT
BASED ON UNMIGRATED 1977 752 SEISMIC SURVE
269
Scale 100000

30/7
30/8
30/10
30/11
30/7-7
1:4.000000
PL. 3
Norsk Hydro
2693
Scale 1:100000

Operator: **30/77** Well No.

COMPOSITE LOG

BP
30/7-2

scale 1:500

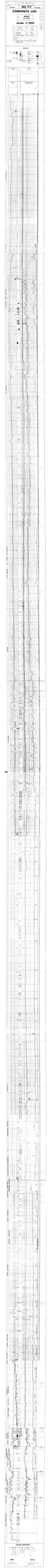
Drilling Contractor	Rig Type	Rig No.
Spud Date	Completed	Total Depth
Log Measured From	Above Perm. Datum	Elev. Perm. Datum
Permanent Datum	Elev. K.B.	Elev. D.F.
Elev. G.L.	Date	Run No.
Depth Driller	Depth Logger	Bottom Log Interval
Top Log Interval	Casing Driller	Casing Logger
Bit Size	Type Fluid in Hole	Density
Viscosity	pH	Fluid Loss
Source of Sample	Rm @ Meas. Temp.	Rmf @ Meas. Temp.
Rmc @ Meas. Temp.	Rm @ BHT	Time Since Circ.
Max. Rec. Temp.	Equip. Location	Recorded By
Witnessed By		

LEGEND

Casing Shoe	Core
Lost Circulation	Drill Stem Test
Cement Plug	Perforation
Fish	Bridge Plug
Junk	Cement Bond Log
Fluid Sample	Formation Test
Mud Log	Dipmeter
Sidewall Core	Production Test

Casing Record			
Size	Weight	Grade	Depth

Mud Record			
Type	Density	Viscosity	Depth



Casing Shoe Depths	
MD	TVD

Formation Tops		
	MD	TVD

Comments

WELL SUMMARY

Coord X: 60°16'193"N Y: 02°16'073"E	ground: - 109m	Spudded: 16.12.78	Well 30/7-7
Line: 752 - 712 SP: 565	RKB: 25m	Started drilling: 18.12.78	
Depths datum: RKB		At T.D: 27.05.79	Country NORWAY
Rig: TREASURE SEEKER		Completed: 01.07.79	
Stopped in: LOWER LIASSIC		TD Driller: 5127m T.D. Logger:	
OPERATOR NORSK HYDRO		LICENCE 040 OWNED BY PETRONORD	

TARGETS

Jurassic reservoirs

RESULTS

Hydrocarbon shows in two intervals 4735 - 4797
4889 - 4975

CASINGS

30" : 184m
20" : 764m
13 3/8" : 2681m
9 5/8" : 3877m
7" 4500m

CORES

	CST 1	
	CST 2	
	CST3	
K1	4758-4766,5	96%
	CST 4	0
	5	2/24
	6	8/21
	7	11/24
	8	0/24
	9	0/24

SHOWS

1500-2750: Traces 0,2% C1-C3
2760-2860: 2→56% C1-C4
2860-3200: 1-0,4% C1-C4
3200-3818: 1-5%
3878-4578: 1-15%
4737-4795: 0.1-15% C1-C4
4795-4884: 0.3% C1-C3
4884-4925: 1-17% C1-C4
4925-5127: 0.3% C1-C3

LOGS

ISF-Sonic	764-2681m	1	FDC/CNL	769-2681m	1
	2679-3675m	2		2670-3834m	2
	3589-3686m	3		3873-4509m	3
	3874-4509m	4		4494-4920,5	4
	4500-4696m	5		4700-5047	5
	4495-4917m	6	HDT	2677-3889m	1
	4700-5046m	7		3874-4509m	2
				4500-4803m	3
			DLL/MSFL	4700-5042m	1
				4700-4802,5	2

TESTS

DST1	4735 - 4763 FP=? 90 bbl of water 125 g/l		

Checked P.Verdier
Date 01.07.79

Z RKB −25 m
Z Ground or Sea bottom +109 m

Well: 30/7-7

Depths	Litho-section	Formations	Stages	Shows	Descriptions. Obs.
					25m
100					
					134m
		30° 184m	PLIO. — PLEISTOCENE		Cly, m-dk,gry,soft sticky, sl. calc.
200					Sd.lse,clr-lt gry, m-crs, subrond, mod srt. w/shell frags w/intbd of clay abundt glauco. and mica.
300 1000					
400					
500					
					570m
600 2000			U.-M. MIOCENE		
700		20° 764m			780m Sd, lse clr qtz,vt-m occ c-vc, poor mod srt, subrnd w/tr glaucon.-shells w/lignite blk
800					
900 3000		Lignitic Series	EARLY MIOCENE		
1000					
1100					1168m

Depths	Litho-section	Formations	Stages	Descriptions. Obs.
1200 4000		Brown Clays Group	OLIGOCENE	Cly, dk gy brn,sft,stky occ silty,sl calc. w/min.ss a/a w/traces of slst and lst.
1300				
				1380m
1400				
1500 5000			OLIGOCENE TO EOCENE	
1600				Cly gd to Clyst,dk grn gy, soft, fm, blky subfis w/interbd of slst and lst.
1700				
1800 6000				Interbd clyst and sh, dusky, gr to brn gy occ micromic, non calc w/tr of lst/dol.
1900			MIDDLE EOCENE	
2000				
2100 7000				2140m
		TUFF		Sh. dusky grn w/tr of tuff, lt gy, occ. purple, firm.
2200			PALEOCENE	Sst, w-lt gy, f-crse, subang mod.strd. and Sh olve grey a/a
2300				

Z: RKB - 25m
Z: Ground or Sea bottom +109m

Well: 30/7-7

Depths E	Litho-section	Formations	Stages	Shows	Descriptions. Obs.
2400			PALEOCENE		Sh olv gy, fm,subfis, sl micromic intbd w/sst
8000					
2500					2519m Sh,dk grn gy,occ 2530m rd brn,firm,subf.
2600			MAESTR.		Lst,wh pink,,hd,occ fm-occ chky and Sh,dk gy firm,subfiss.
		13 3/8" 2681m			
2700					2715m Sh md gy olv gy,sl.calc. occ pyr.
9000					w/tr of lst a/a intbd w/cly. and marl rd, rd br lt gy, sft
2800				▲	2835m
				▲	Sh. mdkgy. firm
2900					2922m
			CAMPANIAN		Clv/clyst, lt-m gy, sft, stky, fm. sl-v. calc. marl lt gy,sft,sticky.
3000					
10000					strgs Dol/lmst,lt brn, pale microxline.
3100					
3200					
3300					
11000					
3400					
					3475m
3500					

Depths E	Litho-section	Formations	Stages	Shows	Descriptions. Obs.
3500			TURONIAN	▲	intbds Lmst,pale dk yel brn,mod.hd-hd,crypto xln,sl.arg.,occ.v.arg. and Mrl,olv gy,firm, occ.sft,slty.
3600				▲	
12000				▲	
3700				▲	3715 Mrl,lt br,beige,md hd to sft. Lmst,beige br,hd,sl.dol. crypt-xmicroxl.
3800		9 5/8" 3874 m	CENOM.		Sh,strg,calc.,dk,gy,slty.
			ALB.		3879m
					3889m
3900			KIMM.	▲	Sh,dk gy to blk,pyr,mod. hd w/abdt calcit,loc. w/abdt pyrite.
13000			OXFORD.		3934m
4000					
4100					
4200			CALLOVIAN nj5b		Sh,dk gy,blk,dk brn. hd.sft,subfis-spltry sl,calc.-slty to v.slty Tr of slst
14000					
4300					
4400		7" 4500m			
4500					
					4566m
15000			TOARCIAN		
4600					

2% to 16% C1-C4
3% C1-C4
1% to 2/5% C1-C4
3% to 1.5% C1-C4
1% to 2% C1-C4

Depths E ↓ - ↓	Litho-section	Formations	Stages	Shows	Descriptions. Obs.
4700			RHAET/HETTANG-SINEM.-PLIENSBACIAN - TOARC.	0.2 C1 - C4 0.3 C1 /12	
		K1		C1 - C4 /16	4736 SSt,m dk gy,v.f f, subang mod.hd,w.srted strgly cmt,silic/calc/ dolom.
4800				0.4 C1 /C3	4791 SH,dk gy,hd fiss.carb tr.sltst
16000 4900				0.1 C3 /0.3 C1 /17 % C1	4885 SST,clr,lt gy brn, f-crs,subang-subrnd, lse and pr cmted,hd w/sil.calc.cmt,pr srt.
				0.2 C3	4975
5000				0.4 % C1	SH,bl-br bl,dk brn,hd sil.slty
					Clyst,lt-md gy,rd br W/SST , f-m.
5100				0.1 %	5127 m T.D
17000 5200					

Z: RKB +25

Z: Ground or Sea bottom +109

Well: 30/7-7

CORE DESCRIPTION

CUT: 9 m
RECOVERED: 8 m 96 %
LOSS: 0.6 m

COMPANY:
WELL Nº: 30/7-7
CORE Nº: 1

DATE: 10th may 1979
DEPTHS: 4758.0 – 4767.0

HYCALOG CM1-P

DEPTHS	% Co/Co	PERM	POROS	SHOWS	DIPS	LOG	DESCIPTION
							4758
4758.3	1/0	.1	17.9	NO FLUOS. NO CUT	NO DIP VISIBLE	M	SANDSTONE MEDIUM DARK GREY - HARD LOC.MD HD FINE MORE V.FINE, SUBANGULAR - ANGULAR WELL SORTED TO VERY WELL SRT - STRONGLY CEMENTED - QUARTZ CMT. VERY MICACEOUS - POOR TO FAIR VISUAL POROSITY.
		.1	18.3				
	1/0						
		.05	13.4				
4759.3		.15	17.8			M	
		.15	17.2				
	7/0	.11	18.8				MM VERTICAL FISSURES W/CALCITE AND CARBON
4760.3		.16	19.6			M	
		.12	17.5			M	
	1/0						
		.09	17.7				
4761.3	46/1						
		.05	11.5			M	SANDSTONE MD DK GY - HD V.HD - FINE ANGULAR - FAIRLY TO WELL SORTED STG. CMTED - QTZ. CALC. CMT - V MIC. POOR VISUAL POROSITY
	44/2	.02	7.7				
		.03	9.3			M	
4762.3							
		.06	14.5				
		.08	16.6			M	
	36/2						
4763.3		.14	18.3				
		.11	16.8				
						M	
		.08	13				
		.03	10.5				
4764.3	40/2						
		.03	7.5			M	
		.03	6.2				
	42/1				25°		4765.15
4765.3							SHALE DARK GREY - BLACK, HARD, CARBONACEOUS. NON CALCAREOUS M MICAC. W/BLACK FRAGMENTS - LOC. SILTY
		.15	11.7				
	0/0						
		.08	3.4				
4766.3							4766.4
		.03	6.6				
4767							

P.V. 30-05-79

SIDE WALL CORES DESCRIPTION

WELL : 30/7-7	RUN N° :
LICENCE :	PAGE N°:
	DATE : 01.03.1979

SERVICE COMPANY:
ASKED: 13
RECOVERED: 9
SHOT : 13
LOST : 3
FULL BULLET : 9

- tr : trace - M : medium - G : good

N°	DEPTHS	REC	LITHOLOGY	Fluorescence	CUT
1	3884,5	60	SH dkgy, ind. calc to str. calc w/ tr of calcite cryst and powdered		
2	3883	40	Calcite wh cryst, sparitic, up to 30% SH dkgy a/a		
3	3880	40	SH dkgy, ind. mic mic, strgly calc. w/calcite v.small cryst. and powdered		
4	3879	-	LOST		
5	3875	-	LOST		
6	3868,5	65	SH, ltgy (lt br.gy) fm to sft, calc		
7	3852	75	SH, dkgy fm-sft, mic mic strgly calc - Mrl		
8	3811,5	50	Mrl, ltgy, fm-sft, w/tr of Lst pale yl br. cryptox in small parts w/tr of glauconite.		
9	3715	50	Mrl, md ltgy, fm-sft		
10	3703,5	65	EMPTY		
11	3697	65	Mrl, ltgy, granular aspects w/calcite.		
12	3677	65	Clyst, mdgy, fm-sft, non calc. to prly calc.		
13	3626		LOST		

elf norge - EXPLORATION

SIDE WALL CORES DESCRIPTION

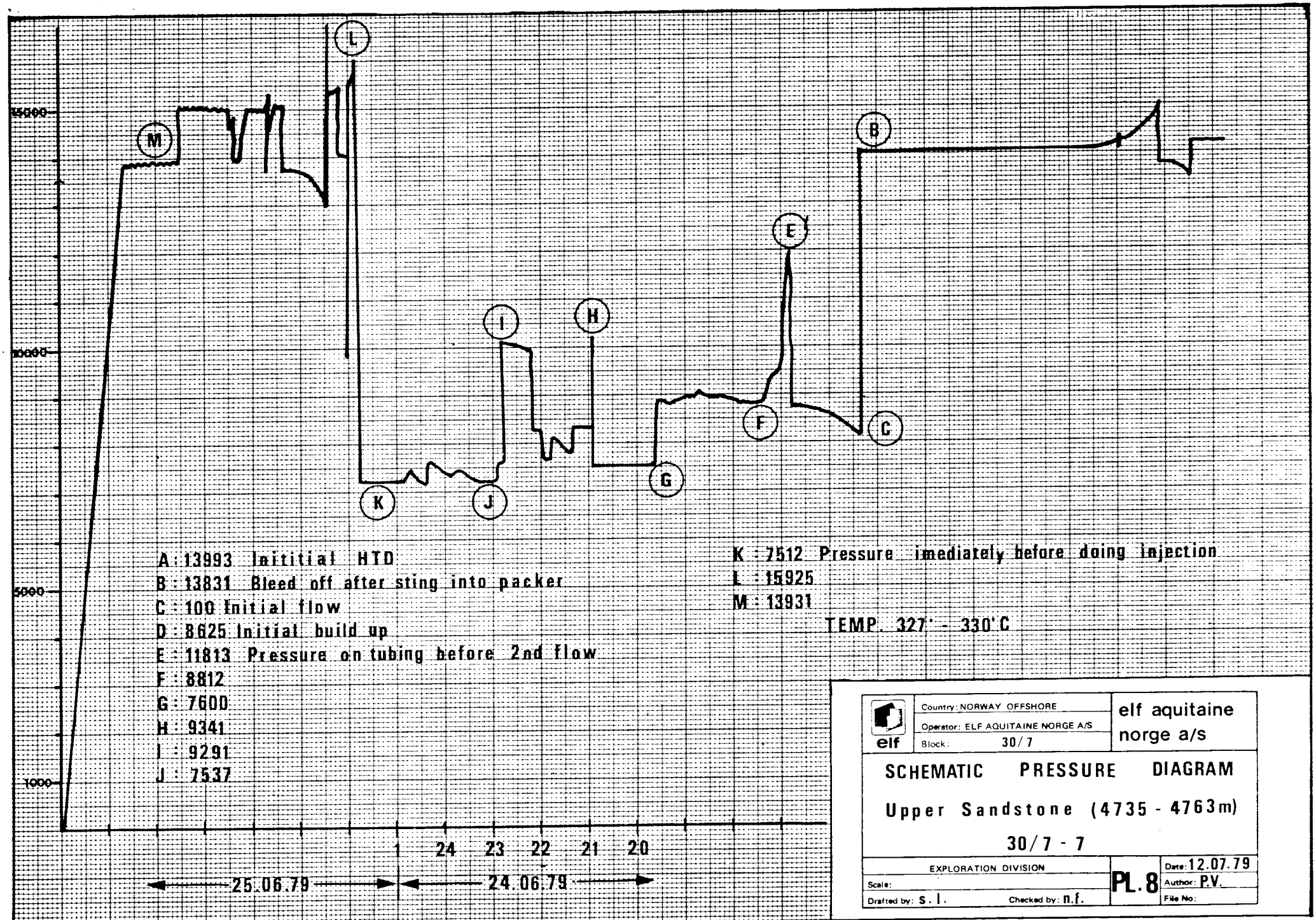
WELL : 30/7-7	RUN N° :
LICENCE : 040	PAGE N°:
	DATE :

SERVICE COMPANY:
ASKED:
RECOVERED:
SHOT :
LOST :
FULL BULLET :

- tr : trace - M : medium - G : good

N°	DEPTHS m	REC	LITHOLOGY	Fluorescence				CUT
	4520	2cm	SH, gy bl, sft-fm, m mic					
	4540	1cm	SH, m-dkgy, h, subfis, m mic, pyr.					
	4570	1cm	SH, dk gy, sft-fm.					
	4585	1cm	SH, m gy, fm.					
	4615	1,5cm	SH, m gy, sft-fm, m mic.					
	4704	0,5cm	SH, m - ltgy, h, - fm, fis, m mic					
	4720	1cm	SH, m - dkgy, sft-fm, subfis, pyr.					
	4740	1,5cm	SD, brn, vf-slt, sft.					
	4744	0,5cm	SD, dk brn, f, argillaceous, pyr.					
	4750	1,5cm	As above					
	4775	1cm	CLYST, m gy, hd-fm, pyr.					
	4804	1cm	SH, m - dk gy, fm, m mic.					

Plate 7 continued


Pressure P.S.I.
15000
10000
5000
1000
time in hrs.
1
24
23
22
21
20
25.06.79
24.06.79
A
B
C
D
E
F
G
H
I
J
K
L
M
A : 13993 Inititial HTD
B : 13831 Bleed off after sting into packer
C : 100 Initial flow
D : 8625 Initial build up
E : 11813 Pressure on tubing before 2nd flow
F : 8812
G : 7600
H : 9341
I : 9291
J : 7537
K : 7512 Pressure imediately before doing injection
L : 15925
M : 13931
TEMP. 327° - 330°C
elf
Country: NORWAY OFFSHORE
Operator: ELF AQUITAINE NORGE A/S
Block: 30/7
elf aquitaine norge a/s
SCHEMATIC PRESSURE DIAGRAM
Upper Sandstone (4735 - 4763m)
30/7 - 7
EXPLORATION DIVISION
Scale:
Drafted by: S. I.
Checked by: n.f.
PL. 8
Date: 12.07.79
Author: P.V.
File No: