NORSK HYDRO a.s

FINAL REPORT

WELL 30/7-5

LICENCE 040

NORWAY

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PREFACE

Licence 040 was awarded the Statoil/Petronord group in March 1975 with Norsk Hydro Produksjon a.s as operator. The licence includes the blocks 29/9 and 30/7 on the Norwegian Continental Shelf.

The group consists of the following companies:

Den norske stats oljeseslskap a.s - Statoil	50 per cent
Elf Norge A/S	19.2 per cent
Total Marine Norsk A/S	14.4 per cent
Aquitaine Norge A/S	9.6 per cent
Norsk Hydro Produksjon a.s	6.8 per cent

The well 30/7-5 was drilled by Norsk Hydro Produksjon a.s on behalf of the Statoil/Petronord group.

SUMMARY

The well 30/7-5 was a replacement of the well 30/7-4 which was lost due to "twist off" of the drill pipe.

The main objective of the well was to test possible middle and lower Jurassic sandstones (Brent and Statfjord formations).
Secondary objectives were possible lower Cretaceous carbonate development, and possible upper Jurassic sandstones.

The well 30/7-5 was spudded with the "Polyglomar Driller" on February 5, 1977. Later, when running the 20" casing, the string parted and 18 joints of casing were left in the hole. Attempt to catch the fish failed and the well was finally abandoned on February 13, 1977. A location map is shown in fig. 1 page iii and a summary of the well data is presented in table 1 page iv. The total cost of this well was N kr 4.621,000,-.

LOCATION OF WELL 30/7 - 5

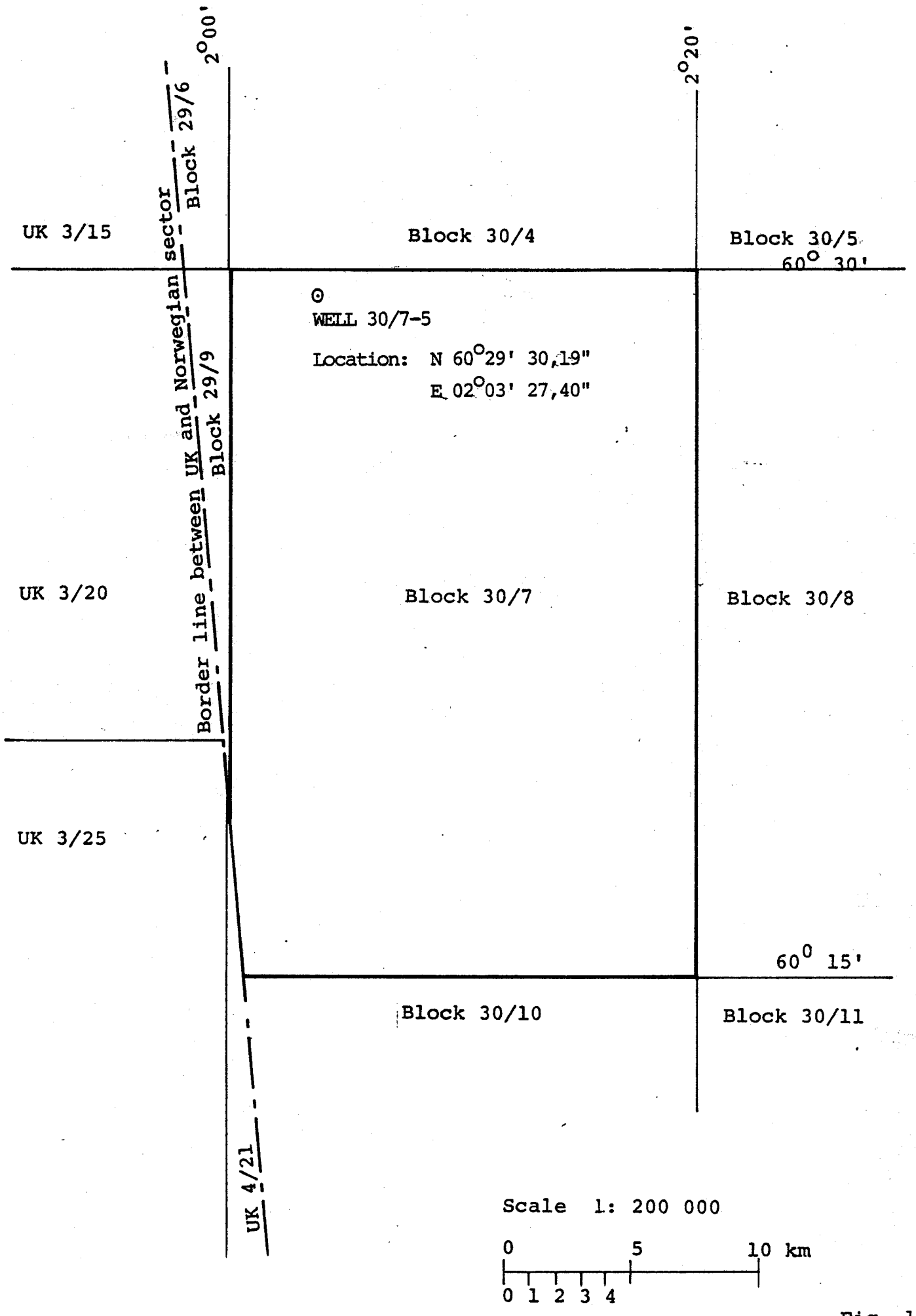

Fig. 1

TABLE 1

Summary of well data

Location		60°29'30,19" N 02°03'27,40" E
Operator		Norsk Hydro Produksjon a.s
Rig		Polyglomar Driller
Contractor		Rasmussen Global Marine Ltd
RKB elevation (to MSL)		24 m
Water depth		116,5 m
Spudded		Feb. 6, 1977
Abandoned		Feb. 14, 1977
Well program		
	Hole diameter:	36" to 190 m 26" to 805 m
	Casing record:	30" set at 190 m

SECTION A

OPERATIONS

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LOCATION SURVEY

A location survey was carried out by A/S Geoteam using Side Scanning Sonar, Sparker/Boomer and Echo Sounder, as outlined in " Final Well Report, well 30/7-4 ". For positioning satellite navigation was used. Their report concluded that the bottom was flat with no major obstruction on the sea bed. The water depth was reported to average 116,5 m.

2. POSITIONING AND ANCHORING OF RIG

The spud in position with reference to the European Datum 1950 was:

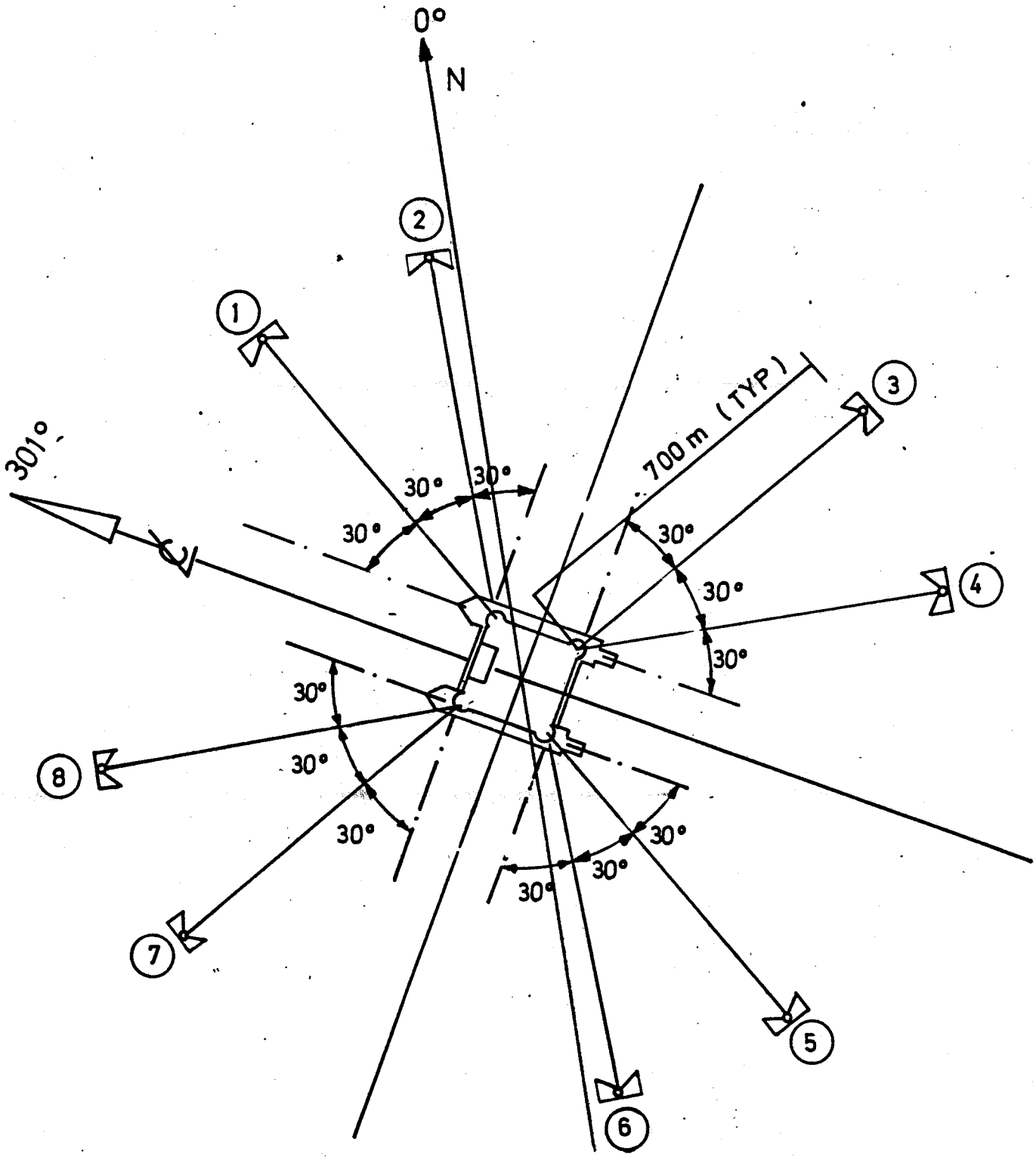
60° 29' 30.19" N
02° 03' 27.40" E

The rig was moved over to its new location by regulating the length of the anchor chains.

Fig. A1 shows the anchor pattern and the result of the anchor tension test is found in the table A1.

Mooring Line Pattern

Polyglomar Driller
Well 30/7 - 5
(FWD Pilot House End)



Heading : 301°

Well coordinates : 60° 29' 30,19" N
02° 03' 27,40" E

Water depth (MSL) : 116,5 m

TABLE A.1

Anchor tensioning, well 30/7-5

Anchor No.	Anchor tension test
1	275 000 lbs
2	290 000 "
3	260 000 "
4	275 000 "
5	275 000 "
6	275 000 "
7	310 000 "
8	275 000 "

3. RESUME OF OPERATIONS

3.1 Summary

The well 30/7-5 was spudded February 5, 1977. The 36" hole was drilled to 190 m with return to the sea floor. 30" casing was set with shoe at 190 m and cemented back to the sea floor.

The 26" hole was then drilled with 17½" bit and 26" under-reamer. This part was drilled with the riser connected and return of mud to the surface.

When running the 20" casing the string parted and 18 joints of 133 lbs/ft K55 casing was left in the hole. Attempt to catch the fish was not successful and the hole was given up.

Two cement plugs were set and the 30" casing was shot off at 145 m RKB.

Final abandonment was on February 13, 1977.

3.2 Activity Report

Total time on location was 202 hrs. (8,42 days).
The time distribution is presented in Table A.2 and fig. A.2.

A total of 48,75 hrs was spent on drilling. This is 24,1% of the total time while tripping and deviation survey accounted for 9,7%.
(All deviation surveys are listed in Table A.3)

A total of 31,8% of the time was used for running and cementing casing which also includes the time spent for running the seal assemblies and drilling out cement. The time spent on fishing for the 18 joints of casing was 13,9% of the total time.

TABLE A-2

TIME DISTRIBUTION - WELL 30/7-5

Item	Operations	Drilling Operations Hours	Plugging and Abandoning Hours	TOTAL TIME	
				Hours	% of Total Time
1	Under way	5,5		5,5	2,7
2	Mooring	-		-	
3	Drilling	48,75		48,75	24,1
4	Tripping-Surveying	19,5		19,5	9,7
5	Circulating	5,5		5,5	2,7
6	Running/cementing/casing	64,25		64,25	31,8
7	Formation evaluation	-			
8	Subsea equipment	2,5		2,5	1,2
9	Lost time - DRLG equip.	8,75		8,75	4,3
10	" " Subsea equip.	2,0		2,0	1
11	" " Fishing	28		28	13,9
12	" " Hole problems	-			
13	" " Mooring system	-			
14	" " W O weather	-			
15	" " W O equip.	-			
16	" " W O orders	-			
17	" " Completion equip.				
18	" " Other	7,25		7,25	3,6
19	Plug and Abandon	-	10	10	5
20	Total	192	10	202	100

TIME DISTRIBUTION WELL 30/7-5

TOTAL TIME : 202 HRS (8.42 DAYS)

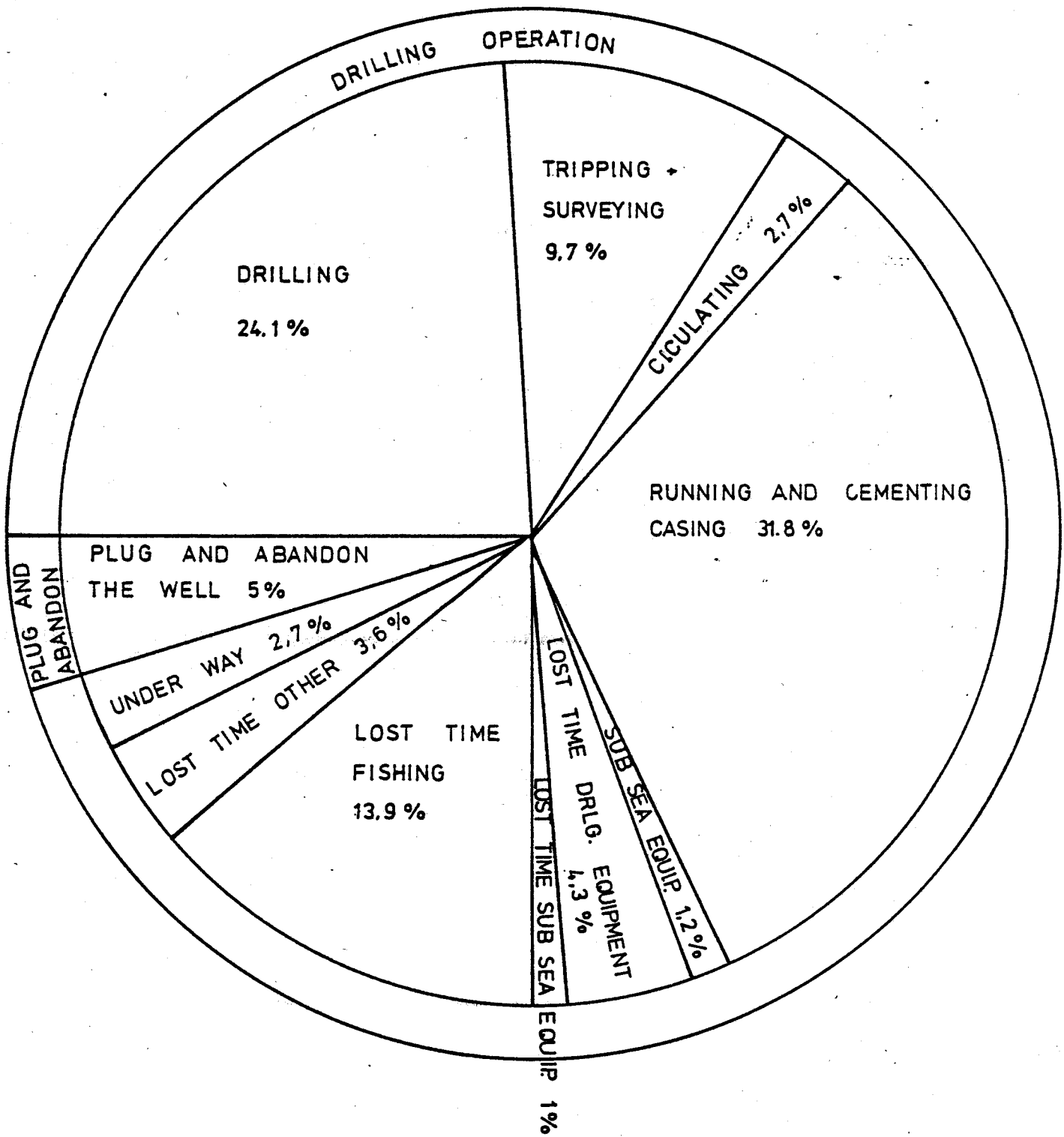


Fig. A 2

TABLE A.3

HOLE DEVIATION

Depth	Deviation deg.	Asimuth
190 m	1/2°	S-74-E
229 m	1°	N-58-E
314 m	3/4°	S-17-E
409 m	1/2°	S-85-E
504 m	1/2°	
600 m	1 1/4°	
641 m		
724 m	1/4°	
804 m	1/2°	N-30-W

3.3 Diary Report

Well 30/7-4 was officially abandoned at 12.00 hrs. February 5. The rig was moved about 150 ft in direction 073 deg to start a new spud in.

February 6

Picked up the 30" casing and stinger and hung off on base plate. Made up BHA and RIH. Tagged sea bed at 140 m. Drilled 36" hole from 140.5 m to 190 m and POOH to run 30" casing. Hooked up guide lines to base plate and ran in water. Retrieved 30" running tool from casing head and put on a 10 ft pup joint. Made up the 30" wellhead.
When permanent guide base was lowered to water, to fill the 30" casing,the joint above the running tool came loose. The structure was then pulled back and secured on the beams in the moon pool. The running tool was backed out and a 10 ft pup joint added to the running string.
Set 30" casing at 190 m.

February 7

Cemented the 30" casing, released the running tool and POOH. Rigged up pin connector, riser and slip joint and installed tensioners on the slip joint. Made up new BHA and function tested the underreamer. RIH and drilled from 182 m to 185 m.

February 8

Drilled 26" hole from 185 m to 479 m. Circulated and ran survey at 229 m, 314 m and 409 m. Circulated to clean the well at 345 m.

February 9

Drilled 26" hole from 479 m to 614 m. Circulated and ran survey at 504 m, 600 m and 641 m. Circulated to clean hole

before POOH. Made up BHA and found outer shoulder of 9-½" DC face galled. Laid down all 9-½" DC and made up 9 x 8" DC and BHA.
Changed solonoid- and Omstead valves on heave compensator.

February 10

RIH and broke circulation. Drilled from 641 m to 805 m. Circulated and ran survey at 742 m and 805 m. Displaced 26" hole with gel water. Pumped slug and POOH to 30" wellhead.
Repaired and serviced the heave compensator.

February 11

Worked on heave compensator. Displaced riser with sea water and washed wellhead. Observed water level in riser for flow 15 min. No flow observed.
POOH and layed down underreamer, stabilizer and monel collar. Rigged to pull riser. Removed flowline and fill-line, unlocked pin connector, dressed down slip joint and pulled riser. Moved rotary table and rig floor and pulled pin connector and ball joint. Moved rotary table back in place. Picked up 20" wellhead, made up stinger, 10 ft pup joint, plug and running tool..... Made up BHA. Rigged guide frame and TV. Ran in and stabbed through 30" wellhead. RIH with 26" bit to check condition of hole. No fill. POOH. Rigged up and ran 20" casing filling every 2nd joint.

February 12

When running the 20" casing the string parted. Pulled out 13 joints of casing and laid down. 218 m casing were left in the hole.
Made up BHA consisting of spear, xo, jars, xo, 6 x 8" DC, accellerator, xo, 6 x 5" H.W. DP, and RIH. Top of fish at 589 m . Did not tag fish at this point. RIH two more stands

of drill pipe. Got resistance at 645, m.

February 13

POOH. One slip segment was missing on the spear. Made up 5 m drill pipe with x-over bent to cover 24" radius.
RIH to top of fish 585 m. Attempt to stab into fish negative. POOH with spear. Stop ring was broken, one slip segment lost and 81 cm was broken off the tail pipe. Laid down fishing tools and made up drill pipe to RIH and cement at 585 m. Set cement plug from 585 m to 535 m. POOH to 230 m. Set cement plug from 230 m to 160 m. POOH to 160 m and washed with sea water. Pulled up to 138 m and washed wellhead. POOH. Rigged explosives and ran charge on sandline. Set off charge and parted 30" casing at 145 m (RKB).
Made up retriving tool and pulled base plate. Moved the rig 50 m in direction 190° to spud in for the well 30/7-6.

Drilling progress for the well 30/7-5 is shown in fig. A.3.

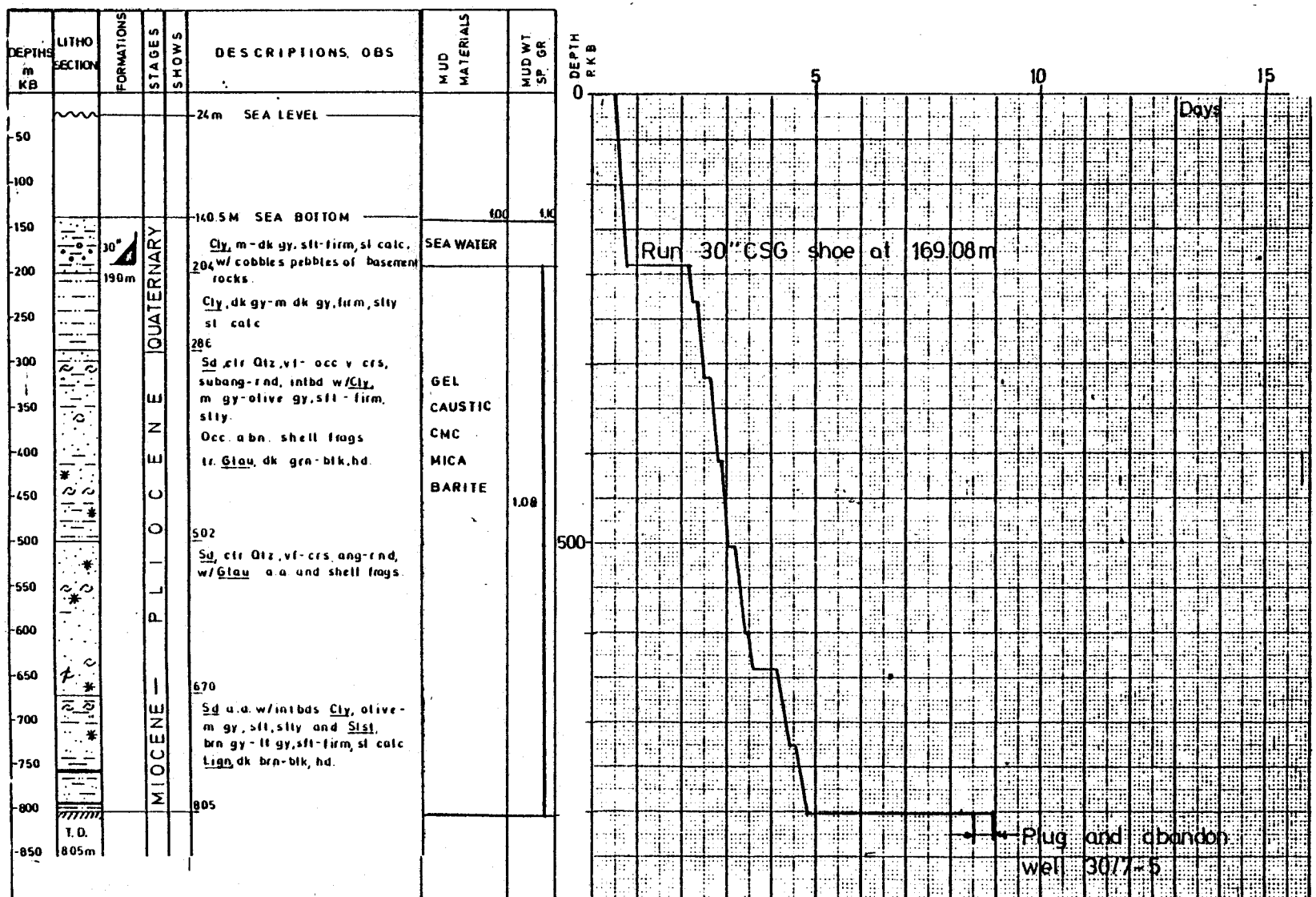
DRILLING PROGRESS, WELL 30/7-5

Operator: Norsk Hydro
Coordinates: 60° 29' 30.19" N
02° 03' 27.40" E

Spud in: February 5, 1977
Well compl: February 13, 1977
Rig: Polyglomar Driller

Water depth: 116
RKB to MSL: 24
RKB to Sea Bed: 140.

Fig. A-3



4. ABANDONMENT OF THE WELL

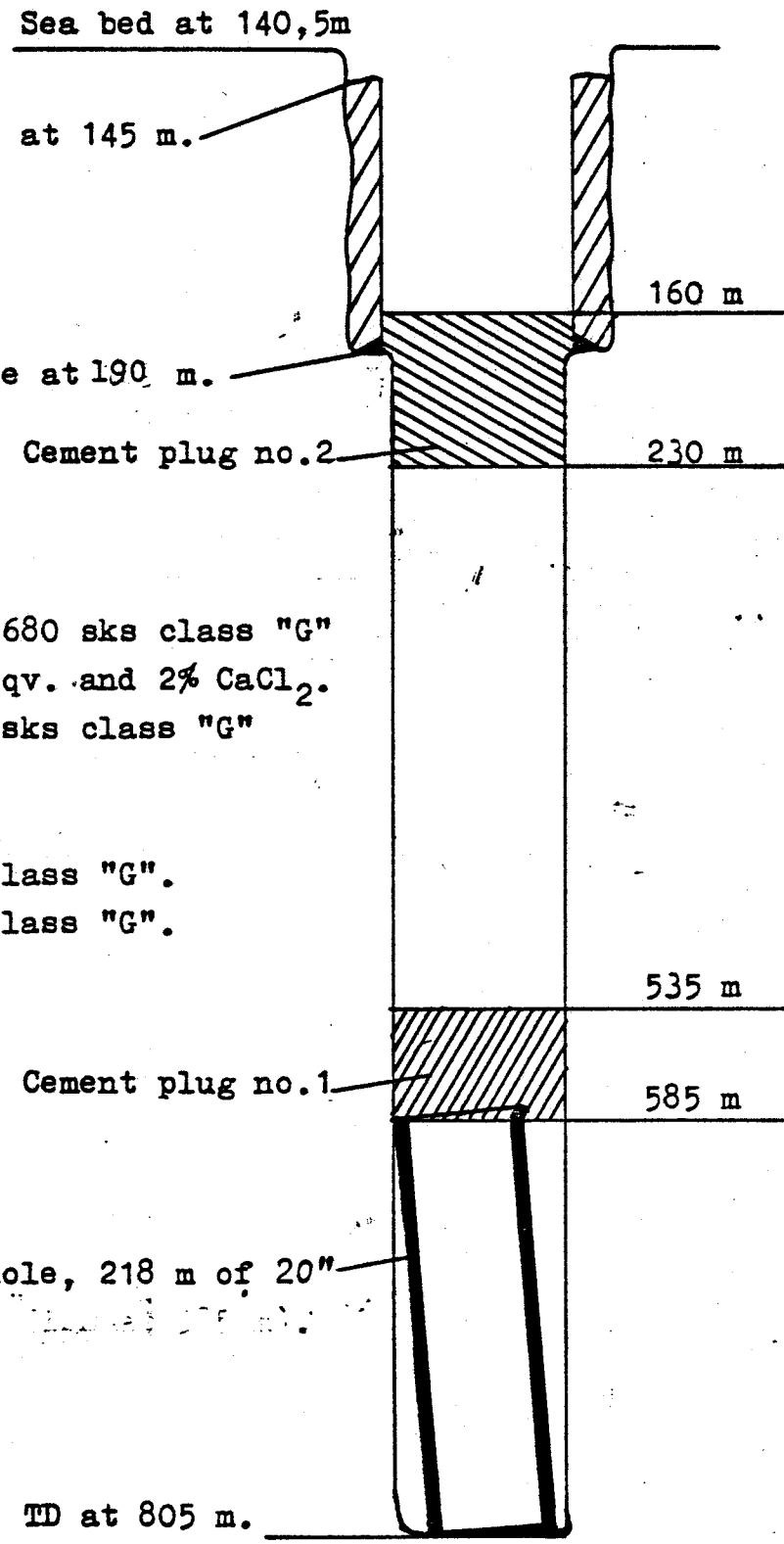
The abandonment program is shown in fig. A.4.

Two cement plugs were set. The first one from 585 m to 535 m with 530 sks class "G" cement and the second one from 230 m to 160 m with 770 sks class "G" cement.

The 30" casing was blasted off 4,5 m below mud line. (145 m RKB).

A complete sea floor inspection of the area will be carried out after completion of well 30/7-6.

ABANDONMENT OF WELL 30/7-5



Cementing:

30" casing: Lead slurry - 680 sks class "G" with 12% gel eqv. and 2% $CaCl_2$.
Tail in - 300 sks class "G" with 2% $CaCl_2$.

Cement plug no.1: 530 sks class "G".
Cement plug no.2: 770 sks class "G".

Fig. A.4

5. MATERIALS REPORT

5.1 Casing and Wellhead

A Vetco wellhead system was employed. The 36" hole was drilled without any guidance system. The 30" casing was run with 4-post guide base. The riser was run and latched to the 30" housing with the pin connector before drilling the 26" hole.

The following casings were run:

Size	Grade	Weight lbs/ft	Setting depth(m)
30"	B	1½" wall thicknes	190
20"	K-55	133	-

The 20" casing parted when it was run in the hole and 218 m (18 joints) were left in the hole.

5.2 Drill Bit Record

The 36" hole was drilled with a 26" pilot bit and a 36" hole opener.

The 26" hole section was drilled with a 17½" pilot bit and a 26" underreamer.

For complete bit record, see table A.4.

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BIT RECORD TABLE A4

COUNTY	FIELD	STATE	SECTION	TWNSHIP	RANGE	LOCATION	WELL NO.
NORTH SEA	30/7-5	NORWAY				30/7	5

CONTRACTOR	RIG NO.	OPERATOR	TOOLPUSHER	SALESMAN
RGML		NORSK HYDRO		

SPUD	UNDER SURF.	UNDER INTER.	SET SAND ST.	REACHED T.D.	PUMP NO. 1 LINER	PUMP NO. 2 LINER	PUMP POWER	TYPE MUD

DRILL PIPE SIZE	TYPE	O.D.	TOOL JOINTS	NUMBER	O.D.	I.D.	LENGTH	DRILL COLLARS	DRAWWORKS POWER

NO.	SIZE	MAKE	TYPE	JET 32ND IN	SERIAL	DEPTH OUT	M FEET	HOURS	FT/HR	ACCUM DRLG. HRS.	WT. 1000 LBS.	R P M	VERT DEV.	PUMP PRESS	PUMP OPERATION	SPM 1	SPM 2	MUD WT.	MUD VIS.	MUD W.L.	DULL. COND. T	DULL. COND. B	DULL. COND. G	DULL. COND. OTHER	FORMATION REMARKS
1RR	26"	TSK	63/3-T	3x22	263-S	190	50	6	8.3	6	5/10	80	1/4°	200	P	40	40	SEA	WATER						
	36"	SERVCO	HO																		(1	1	I	ON 41")	
2	17½	REED	Y-13-J	3x22	526033	641	460	33½	13.7	39½	5/18	130	1°	2000		90	90				2	5	IN		
	26"	SERVCO	U.R.	15.000	SERIES																2	8	IN		
3	17½	REED	Y-11-J	3x22	727762	805	164	12¾	12.9	52¼	5/10	130	1½°	2150		90	90				1	4	FM		
	26"	SERVCO	U.R.	15.000	SERIES																2	8	IN		
4	26"	HUGHES	OSC3AJ	3x22	JD098	805	—	—	—	—	—	—	—	—		—	—				1	1	IN	WIPER TRIP.	

5.3 Mud Report

36" hole:

The 36" hole was drilled with sea water with return to sea bed. The hole was displaced with 400 bbls gel before running the 30" casing.
The cement in the 30" casing was drilled out with sea water.

26" hole:

The 26" hole was drilled with a gel sea water mud system. Before running the 20" casing the hole was displaced with gel mud. Mud weight 1.09, visc. 40 sec./qt.

A summary of the mud properties is shown in table A.4.

TABLE A - 5

MUD SUMMARY - WELL 30/7-5

MUD SYSTEM - SEAWATER GEL

Depth m	W.t. Sp.gr.	Funn. Visc.	P.V. CP	Y.P lb/100 ft^2	Gelstr. lb/100 ft^2	Ph	Water loss	Cake 32nd in.	Pm	Pf/Mf	Cloride ppm	Calsium ppm	Sand %	Solids %	Oil %	Water %	Meth blue
190	1,08	40	7	39	5/10	11	NC	3	-	2,7/-	5000	150	Tr	3	-	97	-
220	1,07	43	6	39	5/12	11	NC	2	-	1,81/-	6000	200	Tr	3	-	97	-
410	1,09	35	13	9	5/11	9	NC	1	-	Tr/-	13000	400	9	4	-	87	-
559	1,09	40	20	8	4/9	9	NC	2	-	Tr/-	12000	400	7	4	-	89	-
641	1,08	40	19	8	4/10	9	NC	2		Tr/-	13000	400	16	4	-	80	-
666	1,09	35	19	8	3/6	9,5	NC	3		.2/-	10000	240	7	4	-	89	-
780	1,08	35	12	23	12/18	9,5	NC	2		Tr/-	8000	160	4	4	-	92	-

5.4 Cement Report

The 30" casing was cemented with 680 sks of Norcem class "G" cement with returns to the sea floor.

The lead slurry consisted of:

380 sks Norcem class "G" cement
12% gel equivalent
2% $CaCl_2$

and the tail slurry consisted of:

300 sks Norcem class "G" cement
2% $CaCl_2$

5.5 Cost Report Well 30/7-5

The well was drilled to TD at 805 m, plugged and abandoned. A cost report as of April 30, 1977 is found in table A.6. These costs are considered preliminary because some of the items may be updated later.

TABLE A.6

Amounts in 10000 N. kr.

Misc. services rel. to rig pos.	
Locationing	100
Pilots, harbour fees, misc.	33
Sub total, positioning	133
Drilling rig	
Rig contract	1.693
Reimbursables	-
Sub total, drilling rig	1.693
Supplies	
Drill bits	27
Coring equipment	0
Drilling tools	0
Casing and casing eq.	788
Mud products	315
Cement	75
Wellhead eq.	78
Fuel and greases	126
Miscellaneous	5
Sub total, supplies	1414
Services and tool rentals	
Helicopter	130
Supply boats/stand-by ship	379
Mud engineering	7
Mud logging	40
Cementing	18
Logging	41
Velocity services	-
Fishing	-
Fishing tool rentals	-

	Amounts in 1000 N. kr.	
Cutting and tool rentals	-	
Coring	-	
Test tool rentals	15	
Diving	107	
Radioservices	4	
Catering	8	
Miscellaneous services	17	
Sub total services and tool rentals	766	
Costs related to operation		
Mobilisation	115	
Repair cost	94	
Insurance	42	
Base	93	
Laboratory studies	9	
Onshore services	128	
Drilling Supervision	49	
Geological supervision	9	
Exploration assistance	6	
Sub total related costs	615	
Total cost of well		4.621

SECTION B

GEOLOGY

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1. OBJECTIVES

After abandonment of well 30/7-4, 30/7-5 was spudded on the same location intending to test the same objectives.

The main objective was to test possible middle and lower Jurassic sandstones (Brent and Statfjord formations). Secondary objectives were possible lower Cretaceous carbonate development, and possible upper Jurassic sandstones.

2. RESULTS

None of the objectives were tested due to abandonment of the hole at 805 m; 18 joints of 20" casing were lost and abandoned in the hole.

3. STRATIGRAPHY

SYSTEM	SERIES/STAGE	INTERVAL m(RKB)	THICKNESS (M)
Quaternary	Early Pleistocene	140·5 - 286	145·5
Tertiary	Miocene-Pliocene	286 - 805	519

The stratigraphic division is based on results obtained by the Continental Shelf Institute (IKU), from samples taken in the subsequent well 30/7-6. Divisions are based on biostratigraphy, and almost exclusively depending on identification of foraminifera.
In addition, correlation of litho logs have been made with wells 30/7-4 and 6 and others nearby.

4. LITHOLOGY

I. Early Pleistocene

140·5 - 286 m

Note:
Between 141 m (sea bed) and 195 m, there were no sample returns and the lithology was interpreted from rate of penetration and samples found adhered to the bit and hole opener assembly.

140·5 - 164 m

Unconsolidated sand: clear quartz, very fine to medium, subangular to subrounded grains with glauconite, pyrite and shell fragments.
At around 165 m this breaks over to silty and sandy clays: medium to dark grey, soft and sticky, slightly calcareous and with some pebbles.

The base of this unit is defined by a thin glacial clay overlying a pebble and boulder bed; scour channels are known to truncate both, inferring their infra-glacial age. The overlying unconsolidated sands infill these channels and are post glacial to present day.

164 - 286 m

Clay and unconsolidated sands similar to above, with boulders and pebbles at the top, down-grading into more homogeneous silty clay below 204 m. The boulders and pebbles are an admixture of rolled granites, gneisses, schists and flints. The underlying clay is dark to medium grey, firm, sticky, silty, and slightly calcareous; it is interpreted as representing a glacial marine environment.

II. Miocene-Pliocene

286 - 805 m (Total Depth)

A mixed lithology comprising mainly unconsolidated sands with interbedded clays. Shell fragments are abundant at several horizons, the sand is frequently glauconitic and thin lignites occur at 387, 763 and 790-800 m.

The sand is generally clear, very fine to medium, and occasionally coarse grained, moderate to poorly sorted, and angular to rounded. The glauconite is generally nodular and dark green; occasionally there is mica. Macro-shell fragments are dominated by lamellibranchs, with occasional echinoids and gastropods; the dominating fauna, however, is foraminifera.

The interspersed clays are medium grey to olive, soft and sticky, occasionally becoming slightly more indurated and firm, with frequent intervals of silty clay. Occasional beds of silt occur, these being browngrey to light grey, soft and slightly calcareous.

5. HYDROCARBON SHOWS

No oil shows were encountered. Gas shows were small and never more than 2-2.5%. Only methane gas (C_1) was encountered. In general, gas was encountered as follows:

200 - 288 m - Trace to zero

288 - 520 m - Average of 0.5% with peaks correlating with sands at: 290 - 1.8%
330 - 1.8%
406 - 2.4%

520 - 778 m - Trace to zero

6. LOGGING

No logs were run in 30/7-5. Results of the log run in 30/7-4 have been duplicated for 30/7-5.

WELL SUMMARY

DEPTHS m KB	LITHO SECTION	FORMATIONS	STAGES	SHOWS	DESCRIPTIONS, OBS
					24m SEA LEVEL
50					
100					
150					140.5M SEA BOTTOM
		30° 190m	QUATERNARY		Cly, m-dk gy, sft-firm, sl calc,
200					204 w/ cobbles pebbles of basement rocks.
250					Cly, dk gy-m dk gy, firm, silty sl calc.
					286
300					Sd, clr Qtz, vf- occ. v crs, subang-rnd, intbd w/Cly, m gy-olive gy, sft-firm, silty.
350					Occ. abn. shell frags.
400					tr. Glau, dk grn-blk, hd.
450					
500			MIOCENE — PLIOCENE		502
					Sd, clr Qtz, vf-crs, ang-rnd, w/Glau a.a. and shell frags.
550					
600					
650					670
700					Sd a.a. w/intbds Cly, olive-m gy, sft, silty and Slst, brn gy-lt gy, sft-firm, sl calc
750					Lign, dk brn-blk, hd.
800					805
	T.D. 805m				
850					HOLE LOST DUE TO PARTING OF 20" CSG.
900					
950					
1000					
1050					
1100					
1150					
1200					
1250					

LOCATED ON LINE : 653805

N 60° 29' 30.19" SP : 150

E : 02° 03' 27.40"

WATER DEPTH : 116.5 m

WELL: 30/7-5

1300 1350 1400 1450 1500 1550 1600 1650 1700 1750 1800 1850 1900 1950 2000 2050 2100 2150 2200 2250 2300 2350 2400 2450