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NORSK HYDRO A.S

FINAL WELL REPORT

WELL 30/6-12

LICENSE 053

**NORSK HYDRO BORESEKTOREN  
INFORMASJONSTJENESTEN**

**REGISTER**

**DISTRIBUSJONSLISTE FOR  
"FINAL WELL REPORT" OG "COMPLETION LOG"  
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Distribuert til:	Report	Completion Log		Dato
		Papir	Sepia	
<b>NORSK HYDRO</b>				
Arkiv, Sa	2	2	1	
Arkiv, Sd	1	1	1	
Arkiv, Be	2	2	1	
Arkiv, Ha				
S. I. Leivestad	1	1	<del>1</del>	
Operasjonskontor, Sa	1	1	<del>1</del>	
Operasjonskontor, Be	1	1	<del>1</del>	
Operasjonskontor, Ha			<del>1</del>	
Utforskningsleder og prosjektgruppe (for sirkulasjon)	1	1	<del>1</del>	
<b>OLJEDIREKTORATET</b>	2	2	1	
<b>PARTNERE</b>	(2)	(2)	(1)	
Statoil	2	2	1	
Mobil	2	2	1	
Elf	2	2	1	
Total	2	2	1	
Saga	2	2	1	
<b>Ekstra</b>	4	4	-	
<b>Sum</b>	25	25	9	

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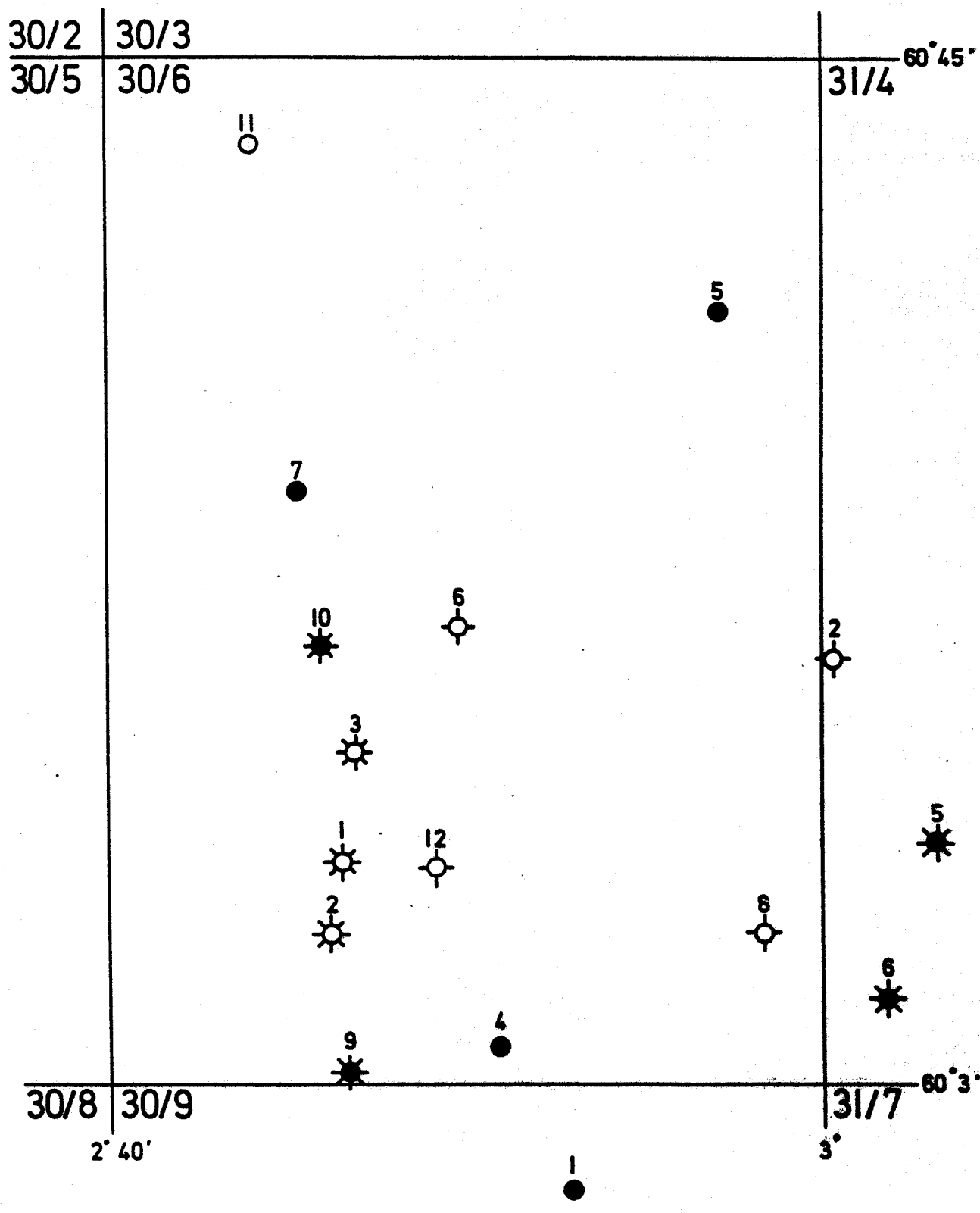
PREFACE

Licence 053 was awarded the Statoil/Elf/Hydro/Mobil/Saga/Total in 1979 with Norsk Hydro Produksjon a.s as operator. The license includes the block 30/6 on Norwegian Continental shelf.


The group consists of the following companies:

Den Norske Stats Oljeselskap	50,00%
Elf	13,33%
Norsk Hydro Produksjon a.s	12,50%
Mobil	10,00%
Saga	7,50%
Total	6,67%

The well 30/6-12 was drilled by Norsk Hydro Produksjon a.s on behalf of this group.



SCALE 1:150 000

 <b>Norask Hydro</b> Drilling Department	<b>LOCATION MAP</b> <b>WELL 30/6-12</b>	Gr. no.: 2	Fig.: 3
		Date: 13.10.83. Sign: TK/SF	Dwg. no.: 76

SUMMARY OF WELL DATA

Location:	60° 33' 15,59" N
	02° 49' 23,31" E
UTM:	6713319,5 m N
	490300,3 m E
Operator:	Norsk Hydro Produksjon a.s
Rig:	Treasure Seeker
Contractor:	Wilhelm Wilhelmsen
RKB elevation (to MSL):	25 m
Water depth:	104 m
Start of operation:	February 17, 1983
Well spudded:	February 20, 1983
Well tested:	-
Well permanently abandoned:	March 9, 1983
TD (driller):	615 m
Formation at TD:	-
Status:	Permanently abandoned

Well program

Hole record:	36" to 218 m
	26" to 615 m
Casing record:	30" sat at 216 m
	20" sat at 600 m

All depths are given with reference to RKB.

**SECTION A**  
**GEOLOGY**

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APPENDIX 1: Well summary  
                  Geological well summary



## 1.0 OBJECTIVES

The well 30/6-12 was drilled in a downflank position on the Alpha block east of well 30/6-1. The Alpha structure is an elongated, N-S trending fault block within the 30/6 and 30/9 blocks. The structure dips gently towards the east forming a half graben.

In view of the results from the earlier wells on 30/6 Alpha the operator felt that a further appraisal well was required to resolve the uncertainties concerning the geological model for the Alpha structure, and bearing in mind the implications the geological model (sand thickness, sand quality etc.) has for the reservoir, a well with an oil-bearing Etive was considered desirable. The main objectives were therefore:

1. To confirm the reserves of hydrocarbons.
2. To define and refine the geological model for the Alpha structure.
3. To ascertain details of reservoir properties and fluid properties from the lower part of the oil zone.
4. To confirm the current mapping and structural interpretation.
5. To obtain a satisfactory spread of well data points.
6. To obtain core from the Brent Group.
7. To do a water injection test in the oil zone.

The well was planned to be drilled 50m into the Drake Formation to a total depth of 2764+50m.

2. RESULTS

No hydrocarbon bearing intervals were encountered by the 30/6-12 well.

The well was only drilled to a total depth of 615m in sediments of Pliocene age and was stopped due to technical problems.

After having set the 20" casing at 600m, the BOP stack parted from the submarine riser and damaged wellhead after falling off while running the submarine riser.

The 30/6-12 well was after this incident, plugged and abandoned and respudded as 30/6-13 in a distance of 36m to the south west from the 30/6-12 location.

A full evaluation of the 30/6-13 well is given in the report:

Norsk Hydro a.s.  
FINAL WELL REPORT  
WELL 30/6-13  
LICENSE 053

3. STRATIGRAPHY

The biostratigraphic evaluation of the 30/6-12 well is based upon Robertson Research International Limited's biostratigraphical report on the 30/6-13 well.

The material for the analysis in the interval covered by the 30/6-12 well was ditch cutting samples.

The first analysis was at 230m in sediments of Pleistocene age. Top Pliocene was encountered at 350m and the well reached a total depth of 615m RKB in sediments of this age.

A full evaluation of the biostratigraphy of the 30/6-13 well can be found in the above mentioned stratigraphical report.



Norsk Hydro

Oslo Norway

WELL: 30/6-12

NOT TO SCALE

WELL REF: K B

ELEVATION: K B 25m

ALL DEPTH IN METERS (m)

CHRONOSTRATIGRAPHY

LITHOSTRATIGRAPHY

SYSTEM	SERIES / STAGE	DEPTH	THICKNESS	GROUP	FORMATION / MEMBER
	SEA BED	129 m			
QUATERNARY	TOP NOT SEEN	230 m	221 m	NORDLAND GROUP	
	PLEISTOCENE	350 m			
TERTIARY	PLIOCENE				
		Drillers T.D. 615m Loggers TD 614m			

#### 4. LITHOSTRATIGRAPHY

This summary is compiled predominantly from ditch cuttings descriptions. Wireline logs were used for assistance in the lithological interpretation. No sidewall cores or conventional cores are available in the interval covered by the 30/6-12 well.

##### 4.1 QUARERNARY (129-350m)

###### NORLAND GROUP (129-350m)

129-218m  
-----

Drilled 36" hole with returns to seabed.

218-350m  
-----

The lithology in this interval is composed mainly of medium gray to olive gray, soft, sticky, locally silty and non to slightly calcareous clays. The clay is locally very sandy, with clear to occasionally milky, fine to very coarse quartz grains developed as thin laminations and stringers. Occasionally very thin stringers of white, hard and crypto crystalline limestones occur.

Shell fragments and rock fragments are locally abundant.

This interval is Pleistocene in age.

4.2 TERTIARY (350-615m)

NORDLAND GROUP (350-615)

350-615m  
-----

Lithologically this interval is a continuation of the overlying unit, but higher velocities on the sonic log shows a higher degree of compaction.

This unit is Pliocene in age and was laid down in a marine, inner shelf environment.

5. HYDROCARBON SHOWS

Evaluation of hydrocarbon shows was carried out in a conventional manner. Below 218m a complete hydrocarbon total gas detector (50 units = 1%) was operational together with a gas chromatograph for automatic and continuous gas analysis, recorded as ppm by volume of C1 through C5.'

Hydrocarbon shows from ditch cuttings were evaluated according to Norsk Hydro's geologist's well site manual.

5.1 GAS RECORD

-----

218-615m  
-----

Between 0.02 and 0.24% methane (C<sub>1</sub>) was recorded through this interval which consisted of clays with occasional stringers of limestone and lenses of sand.

5.2 OIL STAIN AND FLUORESCENCE

No shows were reported from this well.

6. CORING

No sidewall cores or conventional cores were taken in this well.

7. WIRE LINE LOGGING

An ISF/LSS was run in the 17½" pilot hole from 615m to 216m. A GR log was recorded from 216m to 129m (sea floor).

8. SPECIAL STUDIES

No biostratigraphic report was written from this well. But the biostratigraphic evaluation of this well is based upon the report:

NORSK HYDRO 30/6-13 Norwegian North Sea Well  
Biostratigraphy of the interval  
230m-2780m T.D.

APPENDIX 1  
WELL SUMMARY  
GEOLOGICAL WELL SUMMARY



# WELL SUMMARY

Coord: 60°33'15,59"N UTM: 6 713 319,5mN 02°49'23,31"E 490 300,3mE Line: 703 127 SP:490 Zone: 31,3°E R: Treasure Seeker Water depth: 104m (MSL) Stopped in: Pliocene	On location: February 18, 1983 Spudded: February 19, 1983 At T.D.: February 23, 1983 Completed: March 9, 1983 T.D. Driller: 615m T.D. Logger: 614m Wireline logging: Schlum Mudlogger: ExLog	<b>WELL</b> <b>30/6-12</b> <hr/> <b>COUNTRY</b> <b>Norway</b>
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OPERATOR Norsk Hydro a.s.	LICENCE 053	OWNED BYNH/Statoil/Saga/Elf/Total/Mobil
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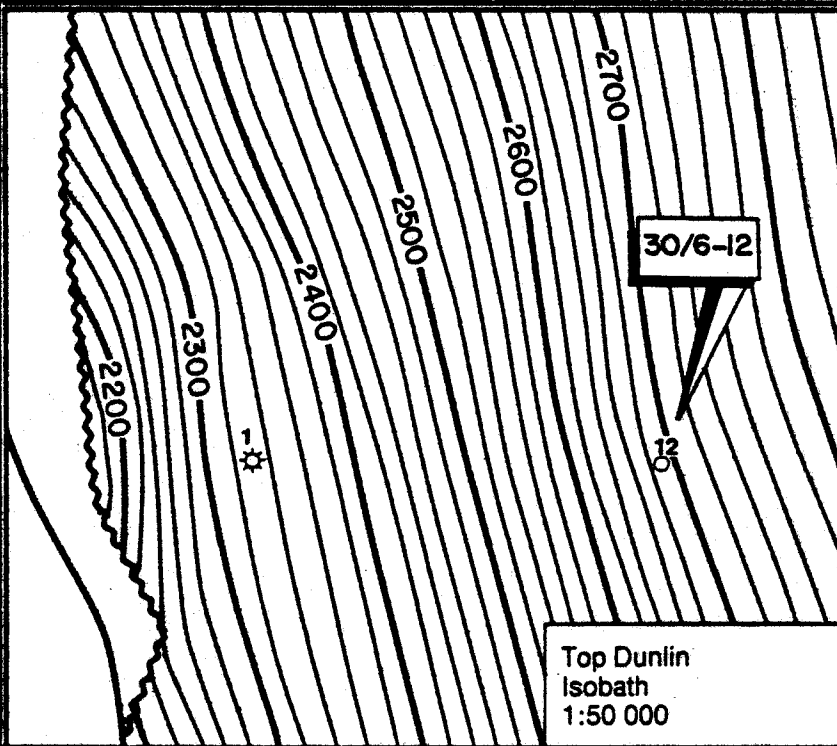
<b>TARGETS</b>	Brent Group Sandstones
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**RESULTS**

Well was plugged and abandoned due to damage on well head, and respudded as 30/6-13.

<b>CASING</b>	<b>CORES</b>
30" at 216m 20" at 601m	

<b>GAS RECORD</b>	<b>CST</b>
216- 615m: 0,02-0,24%C1	



<b>LOGS</b>	<b>OIL SHOWS</b>
-------------	------------------

ISF/LSS GR/SP	131- 614m	1	
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No shows were reported from this well



**SECTION B**

**OPERATIONS**

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1. LOCATION SURVEY

The site survey for the 30/6-12 location was performed by A.S. Geoteam during February 1983.

The coordinates for the well were given as:

Lat: 60° 33' 15,3" N

Long: 02° 49' 22,7" E

which was the centre of the survey area of 3,4 x 3,4 km.

A Simrad EA echo-sounder was utilized for bathymetric mapping. For detailed sea floor investigation, the EG & G dual channel side scan sonar was run simultaneous with an echosounder.

The seabed was relatively smooth with a general slope towards the NNE with a mean gradient of 0,15%.

For mapping the shallow sub-bottom conditions and the deeper geological conditions, an Ore Penetration Echosounder and a Huntec Deep-towed Boomer was used.

The interpretation of these surveys showed some indications of sand gravell with pebbles and cobbles. There was also some signs of trapped gas, but these reflectors could also be caused by lithology changes.

The water depth on the location is 104 m.

## 2. POSITIONING AND ANCHORING OF THE RIG

The location for the well 30/6-12 was defined as shot point 490, on seismic line 703 12 7. The well was to be spudded within a circle of radius 50 m centered on the planned coordinates using Syledis navigation system.

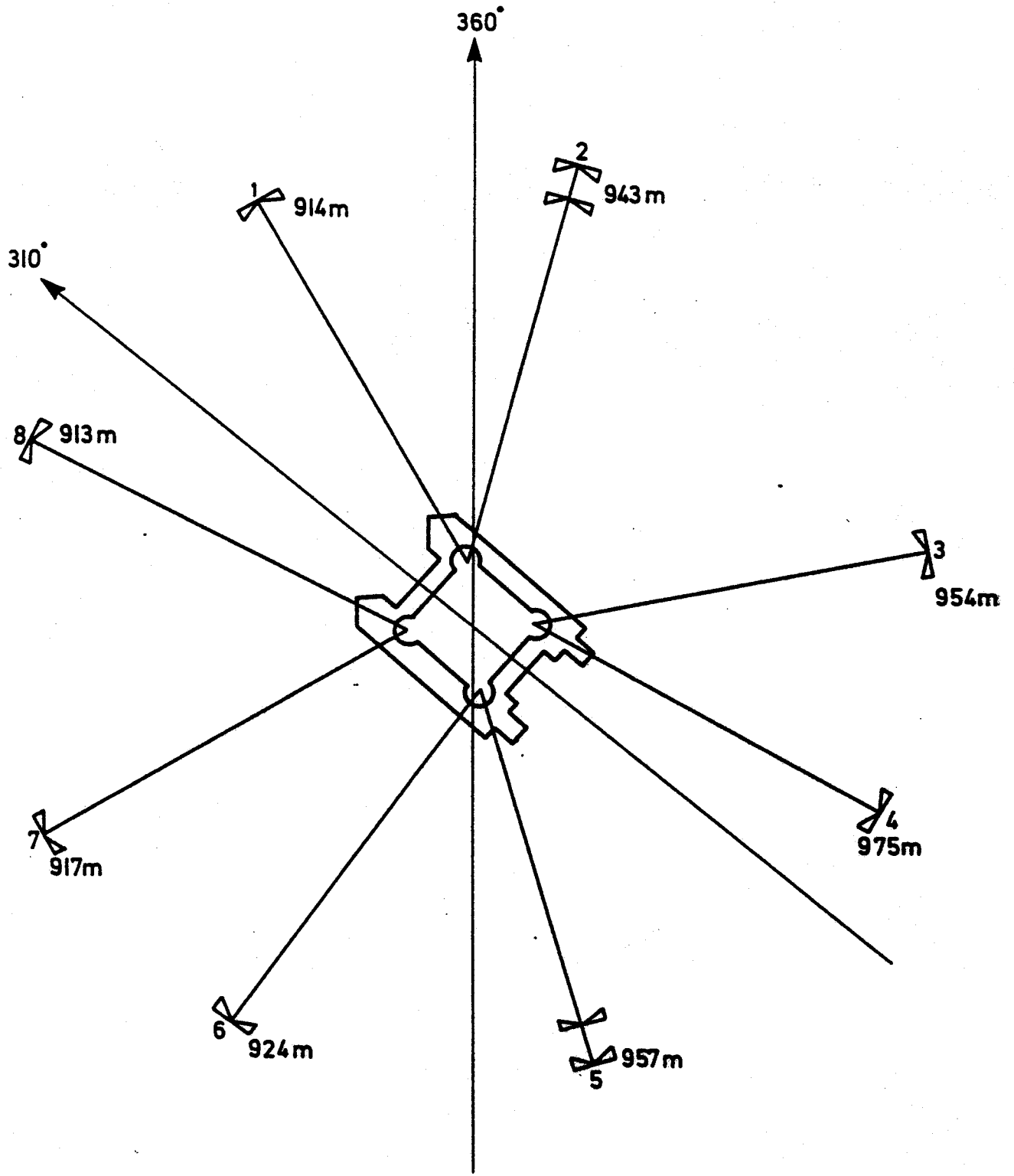
The equipment onboard the rig for navigation was Syledis, and a satellite navigation system was used to establish the final coordinates.

Final position of the well 30/6-12 was:

Lat: 60° 33' 15,59" N


Long: 02° 49' 23,31" E

The rig was heading 310°, with eight anchors. Tension tested the anchors up to 780 kN, and due to problems with anchors 2 and 5, piggy back anchors had to be run. The mooring line pattern is showed in fig. B-1.



HEADING: 310°

WELL COORDINATES 60° 33' 15,59"N  
02° 49' 23,31"E

 <b>Norsk Hydro</b> Drilling Department	<b>MOORING LINE PATTERN</b> <b>TREASURE SEEKER</b> WELL 30/6 - 12	Gr. no.: 2	Fig.: B-1
		Date: 14.03.83. Sign: JPL/SF	Dwg. no.: 87

### 3. OPERATION SUMMARY

#### 3.1 Summary

Treasure Seeker left Bergen after repair at 17.30 hrs on February 17, and reached the 30/6-12 location at 08.30 hrs on February 18. The well was spudded at 11.45 hrs on February 20, after anchor handling for 34,5 hrs and working on the temporary guide base for 12 hrs.

A 36" hole was drilled to 217 m, and the 30" casing was landed and cemented with the shoe at 216 m. After having run the riser a 17 1/2" pilot hole was drilled to 615 m. ISF/LSS/GR/SP logs were run, and the pilot hole was underreamed to 26". The hole was conditioned before the riser was displaced to sea water. After observing the well to be stable the riser was pulled. A wiper trip was made with a 26" bit before the casing was landed with the shoe at 600 m and cemented back to the seabed.

During the landing operation of the BOP on the well head, the ball joint parted, and the BOP fell down on the wellhead. The wellhead was so badly damaged that the well had to be abandoned in accordance with fig. B-3.



## Weekly drilling report

Week 7	Weeks Progress 0	Report no. 1-2-3-4	Page - 6 -	of
Area North Sea		Well 30/6-12	Rig T. Seeker	

Casing	Size						
	Setting depth (m)						

Date	Depth (m) Progress (m)	Pore Press grad (r.d.)	Mud Dens grad (r.d.)	Detailed operation
17.02.				In transit from Bergen to location 30/6-12.
18.02.				On location 30/6-12, and started anchor handling. Made up the running tool for the temporary guide base, and installed beacon and bullseye. Ran the temporary guide base below the moonpool, and installed the T.V. guide line frame. Placed the permanent guide base on the 18 3/4" stack, and moved all bottom hole assembly handling tools to the rig floor. Steam cleaned the stack.
19.02.				Continued anchor handling. Had problems testing anchors no. 2 and 5, and had to run piggy back anchors on both. Landed the temporary guide base, but had to retrieve beacon no. 2, due to failure of same.
20.02.	218		1,03	Picked up the bottom hole assembly, and sat same back into the derrick while changing out the beacon. Had to orient the temporary guide base, and while doing this beacon no. 2 stopped sending. The beacon was retrieved by Scorpio. Tagged the seabed with a 36" bit at 129 m RKB, spudded, and drilled the 36" hole to 217 m. Ran a survey and made a wiper trip. Had no drag.

## Weekly drilling report

Week 8	Weeks Progress 1	Report no. 5-6-7-8	Page - 7 -	of
Area North Sea		Well 30/6-12	Rig T. Seeker	

Casing	Size	30"				
	Setting depth (m)	216				

Date	Depth (m) Progress (m)	Pore Press grad (r.d.)	Mud Dens grad (r.d.)	Detailed operation
21.02.	220		1.05	Ran back to the bottom, and had no drag. Pumped high viscous mud, and pulled out of the hole. Made up the 30" casing, and ran into the hole with same. Could not get pass 214 m with the casing, and had to pull out of the hole. Made up the 36" bit, and tagged a bridge at 213 m. Reamed down to 217 m, and drilled to 220 m. Pumped high viscous mud, and made a wiper trip. Had no fill. Pulled out of the hole, and ran the 30" casing, and cemented the same with the shoe at 216 m.
22.02.	220		1.05	Continued to cement the 30" casing. Released the running tool, and washed the well head area. Ran into the hole to grout the 30" casing, but was unable to locate the funnel on the temporary guide base. Pulled out of the hole and laid down the tubing. Rigged up the ball joint, and ran the 21" riser. Installed the diverter, and ran into the hole with bit no. 2 + new bottom hole assembly.
23.02.	615	1.04	1.05	Tagged the cement at 209 m, and drilled the 17 1/2" pilot hole from 220 m to 550 m. Circulated with the trip tank pump, and checked for mud losses. Continued drilling to 615 m. Circulated bottom up and spotted a 100 barrels high viscous slug. Due to mud losses it was decided to set the 20" casing at 615 m.
24.02	615	1.04	1.05	Displaced the riser with seawater, and pumped 700 barrels high viscous mud. Dropped the multishot, and pulled out of the hole. Rigged up Schlumberger and ran the following logs: ISF, LSS, GR, SP. Could not get pass 480 m with the logs, and had to pull out of the hole. Ran into the hole with bit no. 2.

# Weekly drilling report

Week <b>4</b>	Weeks Progress <b>1</b>	Report no. <b>9</b>	Page <b>- 8 -</b>	of
Area <b>North Sea</b>		Well <b>30/6-12</b>	Rig <b>T. Seeker</b>	

Casing	Size	<b>30"</b>				
	Setting depth (m)	<b>216</b>				

Date	Depth (m) Progress (m)	Pore Press grad (r.d.)	Mud Dens grad (r.d.)	Detailed operation
25.02.	615	1.04	1.05	<p>Had no drag. Circulated and pumped a high viscous pill, and pulled out of the hole. Rigged up Schlumberger, and the same logs as before. Picked up the underreamer, and underreamed the 17 1/2" hole to 26" from 209 m to 228 m.</p> <p>Continued underreaming to 615 m, and pumped high viscous mud on every second singles. Pumped slug, and pulled out of the hole, and observed the well. Rigged up and pulled the riser.</p>

## Weekly drilling report

Week 8	Weeks Progress 1	Report no. 10-11	Page - 9 -	of
Area North Sea		Well 30/6-12	Rig T. Seeker	

Casing	Size	30"	20"				
	Setting depth (m)	216	600				

Date	Depth (m) Progress (m)	Pore Press grad (r.d.)	Mud Dens grad (r.d.)	Detailed operation
26.02.	600	1.04	1.05	Picked up the 20" well head, and racked same into the derrick. Ran into the hole with the 26" bit, reamed and washed to bottom. Pumped high viscous mud, and pulled out of the hole. Rigged up, and ran the 20" casing, cemented same with the shoe at 600 m.
27.02.	600	1.04	1.05	Continued to cement the casing. Released the running tool, and laid down the cement head. Picked up the balljoint and sat the BOP on the spider beams. Latched on the lower marine riser package, and function tested same. Ran the BOP, testing the kill and choke line every second stand. Tried to land the BOP, but had no success. Waited on the weather.

## Weekly drilling report

Week	Weeks Progress	Report no.	Page	of
9	2	12-13-14-15-16-17-18	- 10 -	
Area	Well		Rig	
North Sea	30/6-12		T. Seeker	

Casing	Size	30"	20"			
	Setting depth (m)	216	600			

Date	Depth (m) Progress (m)	Pore Press grad (r.d.)	Mud Dens grad (r.d.)	Detailed operation
28.02.	600	1.04	1.05	Waiting on weather. Attempted to land BOP stack. Negativ. Experienced a sudden drop on the weight indicator, indicating that the BOP stack was lost. Rigged down kill, choke and booster lines and pulled the riser. Found that the ball joint had parted at the retainer ring. Made up the sub sea TV on drill pipe and ran it down to the seabed. Found the BOP stack laying on its side over guide Post No. 3.
01.03.	600	1.04	1.05	Waited on the diving vessel to recover the 18 3/4" BOP stack. Surveyed the BOP with Scorpio and the rig camera and found that it was possible to attached slings to all 4 guide posts. Made up, and ran down with slings and shackle assembly to above the wellhead.
02.03.	600	1.04	1.05	Moved the rig to position the recovery assembly near upper annular. Waited on the diving vessel. Pulled out the recovery assembly. Diving vessel arrived on location, but had to wait on the weather.
03.03.	600	1.04	1.05	Waiting on the weather to recover the BOP.
04.03.	600	1.04	1.05	Continued to wait on the weather. The diving vessel had to go to Bergen due to failure in the D.P. system.
05.03.	600	1.04	1.05	Waiting on the weather. The diving vessel back on location, but the D.P. system was still not functioning. Ran into the sea with the recovery assembly, and inspected the seabed with Scorpio. Waited on the diving vessel.
06.03.	600	1.04	1.05	Waiting on the diving vessel to repair the D.P. system. Waiting on weather.

## Weekly drilling report

Week 10	Weeks Progress 3	Report no. 19-20-21	Page - 11 -	of
Area North Sea		Well 30/6-12	Rig T. Seeker	

Casing	Size	30"	20"				
	Setting depth (m)	216	600				

Date	Depth (m) Progress (m)	Pore Press grad (r.d.)	Mud Dens grad (r.d.)	Detailed operation
07.03.	600	1.04	1.05	Continued to wait on the weather. Jumped Scorpio to inspect the recovery assembly and the BOP. Moved the rig, and jumped the divers. The divers attached the slings to the BOP. Unable to attach sling no. 4 satisfactorily, and decided therefore to make a 3 point lift. Recovered the divers, and lifted the stack. Landed same on the spider beams, and started to work on the stack.
08.03.	PBD 180	1.04	1.05	Continued working on the stack. Ran into the hole with open ended drill pipe to 380 m, and sat a balanced cement plug. Pulled out of the hole, and continued to work on the BOP, while waiting on equipment to cut off the well head.
09.03	PBD 180			Waited on equipment to cut off the well head. Made up the charges, and ran into the hole with same, and cut the casing. Made up the spear assembly, and retrieved the well head. Laid out the permanent guide base, temporary guide base and the well head. Jumped Scorpio, and performed a seabed survey. The well 30/6-12 was plugged and abandoned, and the rig was moved over to location 30/6-13.

### 3.3 Time Distribution

The total time spent to move the rig to location, drill and to permanently abandon the well 30/6-12 was 20,25 days (486 hrs).

The time distribution is shown in table B-1 and fig. B-2.

The operations can be devided as follows:

1.	Drilling of well to T.D.:	215,25 hrs
2.	Formation evaluation:	8,00 hrs
3.	Lost time:	237,25 hrs
4.	Plugging and abandonment:	22,50 hrs
5.	Mics.:	1,00 hrs

TABLE B-1

## TIME BREAK DOWN

		HOURS	%
1.	Rig move	15	3,09
2.	Positioning and mooring	14.5	2,98
3.	Drilling	29,75	6,12
4.	Tripping	24,25	4,99
5.	Surveying	1	0,21
6.	Conditioning mud	11	2,26
7.	Reaming	18	3,70
8.	Slipping and cutting drilling line	0,5	0,10
9.	Sub sea equipment handling	56	11,52
10.	Testing of equipment		
11.	Running and cementing casing	44,25	9,15
12.	Formation evaluation	8	1,65
13.	Drills		
14.	Lost time: Drilling equipment	2	0,41
15.	Lost time: Sub sea equipment	191,50	39,50
16.	Lost time: Fishing		
17.	Lost time: Hole problem		
18.	Lost time: Mooring system	19	3,91
19.	Lost time: WoW	14,25	2,93
20.	Lost time: Wo equipment	12,50	2,57
21.	Lost time: Woo		
22.	Plugging and abandonment:	22,50	4,68
23.	Mics.	1	0,21
	Sub total	485	100,00
		<u>= 20 days 5 hours</u>	





TABLE B-2

HOLE DEVIATION

DEPTH m	INCLINATION DEGREES	DIRECTION DEGREES
216	1	171
306	1/2	176
364	1/4	119
450	1/4	141
535	1/4	116
574	1/3	161
611	1/3	22

4. PERMANENT ABANDONMENT OF THE WELL

The abandonment is shown in fig. B-3, and was carried out as follows:

Top cement plug

A 200 m top cement plug was set from 380 m to 180 m.

Casing/well head removal

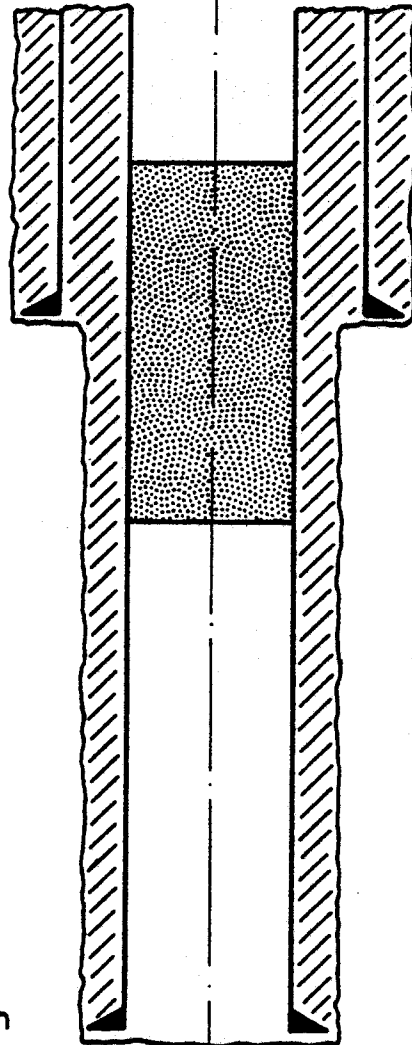
Casing size	Cutting depth (RKB)
20"	134
30"	134

SEA BED AT 129m


20" AND 30" CSG SHOT OFF  
AT 134m

TOP PLUG FROM 380m TO 180m

30" CSG SHOE AT 216m



20" CSG SHOE AT 600m  
T.D. AT 615m

 Norsk Hydro Drilling Department	PERMANENT ABANDONMENT WELL 30/6-12	Gr. no.: 2	Fig.: B-3
		Date: 4.8.83	Dwg. no.: 89
		Sign: RW / SF	

5. MATERIALS REPORT

5.1 Casing and Wellhead

A Vetco 690 bar WP well head system was used, and the 30" and 20" casing strings were set as shown in table B-3.

Table B-3

CASING COMPOSITION

SIZE	GRADE	WEIGHT (lbs/ft)	LENGTH (m)	THREADS	SETTING DEPTH (m)
30"	B	310	75,51	ATD-RB	216
20"	K-55	133	7+12 <sup>1)</sup>	ATD/BUTT	600
	K-55	133	309	BUTT	600
	X-52	133	12	BUTT/LS	600
	X-52	133	132	LS	600

1) Housing + x/o





5.2 Bottom hole assembly

<u>BIT NO.</u>	<u>BIT SIZE</u>	<u>BOTTOM HOLE ASSEMBLY</u>
1	36"	BIT BIT SUB - STAB - MONEL - STAB - 5x9 1/2" DC - x/o - 3x8" DC - x/o - 4xHWDP
2	17 1/2"	BIT - BIT SUB - MONEL - 1x9 1/2" DC - STAB 4x9 1/2" DC - x/o - 3x8" DC - x/o - 15xHWDP
2 RR	17 1/2"	Same as for bit no. 2
3	17 1/2"	BIT - UNDER REAMER - BIT SUB - MONEL - 1x9 1/2" DC - STAB - 4x9 1/2" DC - x/o - 3x8" DC - x/o - 1xHWDP
4	26"	BIT - BIT SUB - MONEL - 5x9 1/2" DC - x/o - 3x8"DC - STAB - 12xHWDP



### 5.3 Mud Report

#### 36" hole, 30" casing

The 36" hole was drilled to 220 m, using seawater, and a high viscosity spud mud was pumped on every connection to clean the hole. The 30" casing was made up to be run, but failed to get pass 213 m. A wiper trip was made, and a high viscous mud was placed in the hole. The 30" casing was the run, and cemented with no problems, with the shoe at 216 m.

Material used in this section were: Magcogel, Caustic, Soda Ash and Lime.

#### 26" hole, 20" casing

The riser was run before the 17 1/2" pilot hole was drilled. The 17 1/2" pilot hole was drilled to 615 m using a seawater gel mud. At approximately 346 m severe losses of returns were experienced, and a great amount of new mud had to be built. The hole was underreamed to 26" without any problems. Prior to running the 20" casing, the hole was reamed from 471 m to 615 m. The hole was displaced with a high viscous gel mud, and the 20" casing was run and cemented with the shoe at 600 m without any problems.

Material used in this section were: Magcogel, Caustic, Soda Ash, Lime, XC-Polymer.

5.4 Cement Reports

30" casing

The 30" casing was set at 216 m and cemented to sea bed.

<u>SLURRY</u>	<u>COMPOSITION</u>	<u>TOTAL USED</u>
<u>LEAD SLURRY</u>		
CLASS "G" CEMENT		26 ton
YIELD	1,096 m <sup>3</sup> /ton	
SEA WATER	0,634 m <sup>3</sup> /ton	16,5 m <sup>3</sup>
ECONOLITE	0,158 m <sup>3</sup> /ton	4,1 m <sup>3</sup>
CAUSTIC	9,35 kg/ton	243 kg
DENSITY	1,68 r.d.	
THICKENING TIME	3:30 hrs min at 7° (45°F)	
<u>SPACER SLURRY</u>		
CLASS "G" CEMENT		6,4 ton
YIELD	0,797 m <sup>3</sup> /ton	
SEA WATER	0,479 m <sup>3</sup> /ton	3,07 m <sup>3</sup>
CAUSTIC	0,72 kg/ton	4,6 kg
DENSITY	1,87 r.d.	
THICKENING TIME	4:30 hrs min at 7° (45°F)	
<u>TAIL IN SLURRY (4% CaCl<sub>2</sub>)</u>		
CLASS "G" CEMENT		22,71 ton
YIELD	0,83 m <sup>3</sup> /ton	
CaCl <sub>2</sub>	0,096 m <sup>3</sup> /ton	2,17 m <sup>3</sup>
SEA WATER	0,418 m <sup>3</sup> /ton	9,5 m <sup>3</sup>
DENSITY	1,87 r.d.	
THICKENING TIME	6:35 hrs min at 7° (45°F)	

20" casing

The 20" casing was sat at 600 m, and cemented to sea bed.

<u>SLURRY</u>	<u>COMPOSITION</u>	<u>TOTAL USED</u>
<u>LEAD SLURRY</u>		
CLASS "G" CEMENT		83,32 ton
YIELD	1,660 m <sup>3</sup> /ton	
SEA WATER	1,309 m <sup>3</sup> /ton	109,06 m <sup>3</sup>
ECONOLITE	0,0539 m <sup>3</sup> /ton	4,49 m <sup>3</sup>
DENSITY	1,44 r.d.	
THICKENING TIME	8:00 hrs min at 31° (88°F)	

<u>TAIL IN SLURRY</u>		
CLASS "G" CEMENT		16,51 ton
YIELD	0,770 m <sup>3</sup> /ton	
SEA WATER	0,452 m <sup>3</sup> /ton	7,47 m <sup>3</sup>
DENSITY	1,9 r.d.	
THICKENING TIME	3:46 hrs min at 31°C (88°F)	

ABANDONMENTS PLUGS

TOP PLUG

<u>SLURRY</u>	<u>COMPOSITION</u>	<u>TOTAL USED</u>
CLASS "G" CEMENT		46,8 ton
YIELD	0,76 m <sup>3</sup> /ton	
SEA WATER	0,441 m <sup>3</sup> /ton	20,6 ton <sup>W</sup>
DENSITY	1,92 r.d.	

6. Total cost report

Item Cost in 1000 NKR  
Drilling

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Location expences:

Site survey	500
Resurvey	
Locationing	200
Locationing clean up	

Rig:

Rig contract	7.360
Reimbursables	100

Supplies:

Bits	230
Coring equipment	
Drilling tools	310
Fishing tools	
Casing	1.490
Casing equipment	100
Mud products	620
Cement	400
Wellheads	800
Fuel and greases	1.350
Miscellaneous	300

Services:

Helicopter and charter	250
Supply and standby ships	1.650
Mud engineering	90

Item	Cost in 1000 NKR Drilling
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Mud logging	200
Cementing	190
Logging	440
Casing services	70
Casing cutting	150
Tubular inspection	10
Coring	-
Testing	-
Test tool rentals	105
Diving	100
Radioservice	40
Meteorological service	10
Catering	10
Miscellaneous	100

**Operators cost:**

Mobilization cost	5
Rig modification 1980	150
Repair Cost	305
Insurance	200
Mod. T. Seeker Oct 1980	375
Base	300
Onshore drilling supervision	305
Onshore geological supervision	60
Offshore drilling supervision	400
Offshore geological supervision	100
Exploration assistance	-
Miscellaneous	-
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<b>TOTAL</b>	<b>19.000</b>
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# Norsk Hydro

## DRILLING PROGRESS, WELL 30/6-12

Oslo - Norway

OPERATOR : NORSK HYDRO A/S

SPUD IN : 20.02.1983

WATER DEPTH : 104 m

COORDINATES : 60° 33' 15.59" N

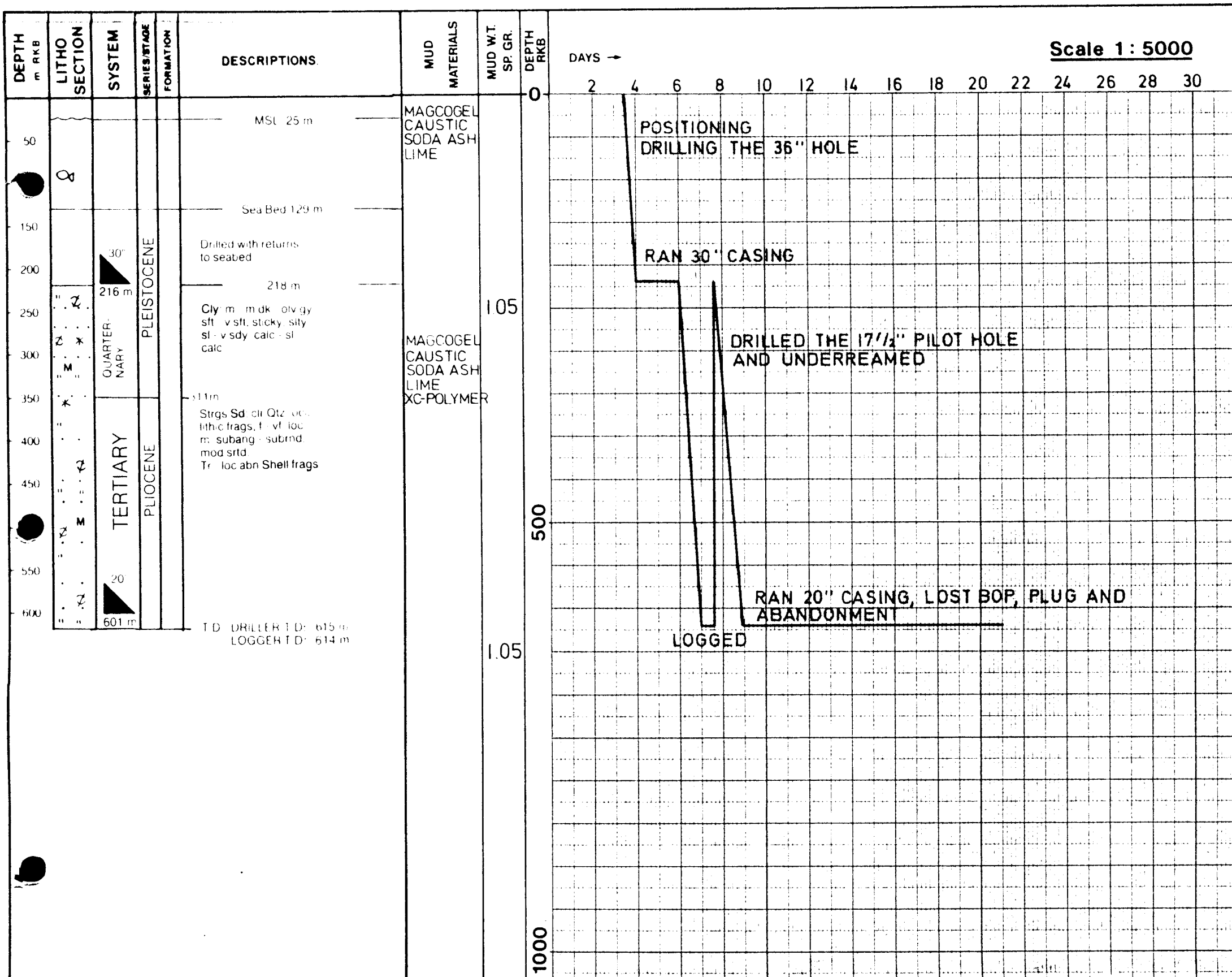
WELL COMPL.: 9.03.1983

RKB to MSL : 25 m

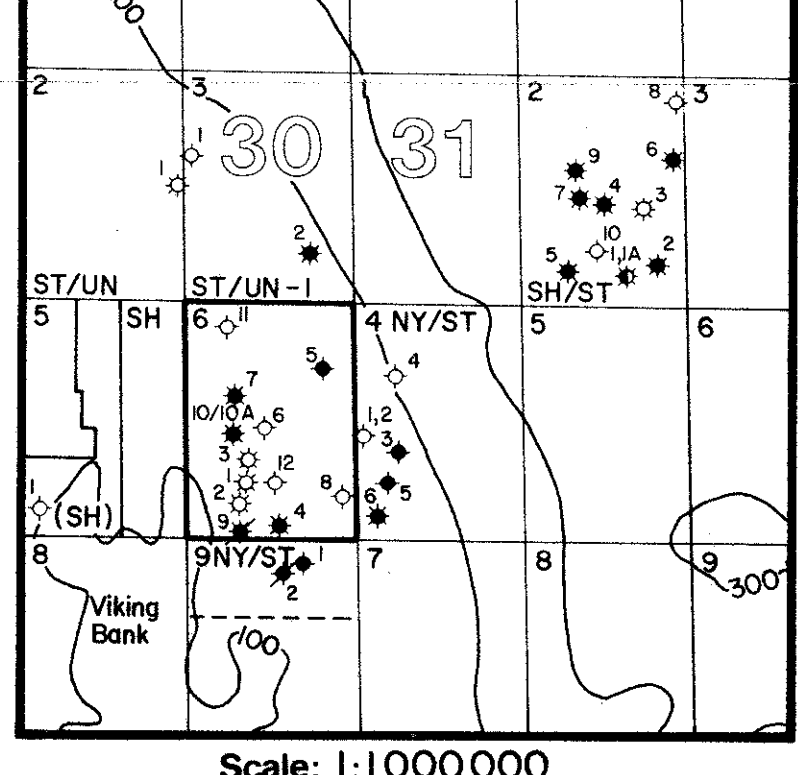
: 02° 49' 23.31"E

RIG : TREASURE SEEKER

RKB to SEABED: 129 m



T.D. DRILLER I.D.: 615 m  
LOGGER I.D.: 614 m



Scale: 1:1,000,000  
 Coordinates: 60°33'15,59"N  
 02°49'23,31"E  
 Elevation K B: 25m  
 Water Depth: 104m (MSL)  
 Total Depth (Driller): 615m  
 Total Depth (Logger): 614m  
 Formation at Total Depth: Pliocene

Country: Norway  
 Licence: 053  
 Owners: Norsk Hydro/Statoil/Saga/Elf/Total/Mobil  
 Field: Oseberg

Date Spudded: February 19, 1983  
 Reached Total Depth: February 23, 1983  
 Completed: March 9, 1983  
 Well Status: Plug and abandoned due to damage on well head.

Rig: Treasure Seeker  
 Contractor: W. Wilhelmson  
 Mudlogging Company: Exploration Logging  
 Geologists: Henderson, Janzon

Prepared by: Jan H. Skogen  
 Date: November 22, 1983

Casing Records: 30" at 216m  
 20" at 600m

Comments: Well was plugged and abandoned due to damage on well head, and respudded as 30/6-13.

**Logs Run**

ISF/SONIC	FDC/CNL	HDT			
ISF/LSS/GR/SP 1. 131-614 m					

**Legend**

CONGLOMERATE	SHALE	CHALK	ANHYDRITE	SANDY VERY SANDY SLIGHTLY	Carbonaceous mat
SAND/SANDSTONE	LIMESTONE	MARL/MARLSTONE	SALT	SILTY VERY SILTY SLIGHTLY	Chert
SILT/SILTSTONE	DOLOMITE	COAL/LIGNITE	GYPSUM	SILTY SILTY SLIGHTLY	Glauconite
CLAY	DOLOMITIC LIMESTONE	TUFF	IGNEOUS EXTR./INTR.	ARGILLACEOUS	Mica
CLAYSTONE	CALCAREOUS DOLOMITE				Pyrite

Hydrocarbon Shows:  
 Oil stain  
 Fluorescence  
 Visible cut  
 Fluorescence cut  
 Gas Shows

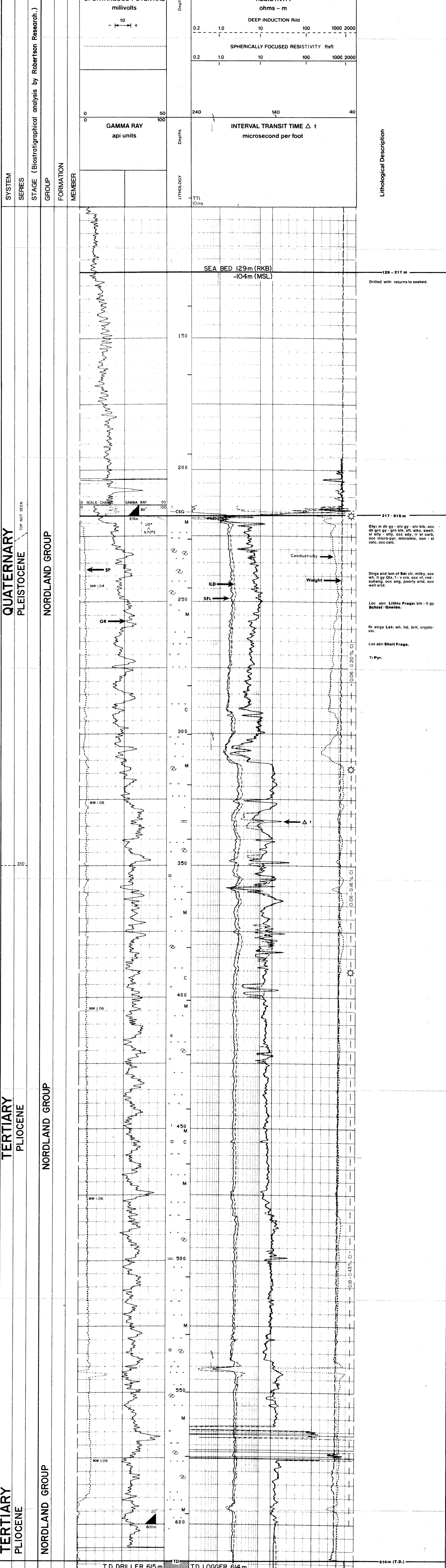
Casing Shoe  
 Deviation  
 Dipmeter results

Core Interval (No recovery)  
 Side Wall Core (No recovery)

Perforated Interval  
 Cement Interval  
 Plug Interval

DST  
 Through casing  
 Open hole  
 Re-Run  
 RFT/FIT

One way time from Velocity survey (depth m K.B.)  
 eg. 3603 m: 1450 s



SYSTEM	QUATERNARY				
SERIES	PLEISTOCENE				
STAGE					
GROUP	NORLAND GROUP				
FORMATION					
MEMBER					

0.0	GR (GAPI)	100.0
-80.00	SP (MV)	20.00
240.0	DIL (US/F)	40.00
240.0	DT (US/F)	40.00
0.2000	ILD (DHMM)	2000.0
0.2000	SFLU (DHMM)	2000.0