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30 JAN. 1987
REGISTRERT
OLJEDIREKTORATET

NORSK HYDRO A.S

FINAL WELL REPORT

WELL 30/6-20

LICENCE 053

01880

sn, BEn/SAN

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PREFACE

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

The group consists of the following companies:

Den Norske Stats Oljeselskap :	56.40%
Norsk Hydro Produksjon a.s :	12.25%
Elf Aquitaine :	10.66%
Mobil Exploration Norway Inc.:	8.00%
Saga Petroleum A/S :	7.35%
Total Marine :	5.34%

The well 30/6-20 was drilled by Norsk Hydro produksjon a.s
on behalf of the group.

((((ooo) Norsk Hydro	General information		..Date..
	Well: 30/6-20	System : Boredata Sandnes Field: OSEBERG Structure: LAMBDA	19861015

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Lic: 053 Country: NOR

LOCATION Coordinates Surface-----> Target----->
 UTM N (m): 6720920.8 | 6720920.8
 UTM E (m): 483862.7 | 483862.7
 Geographical N : 60dg37'20.52" | 60dg37'20.52"
 Geographical E : 02dg42'18.52" | 02dg42'18.52"

Water depth :111 m
 Formation at TD :Statfjord Formation

Operator :HYDRO 12.25%
 Partners, :STATOIL 56.4%, MOBIL 8.0%
 (interests) :ELF AQUITAINE 10.66%,
 :SAGA 7.35%, TOTAL 5.34%

RIG name :Treasure Scout
 RIG contractor :WILHELM WILHELMSSEN
 MUD contractor :PROMUD
 CEMENT contractor :DOWELL SCHLUMBERGER
 EL.LOGG contractor :SCHLUMBERGER
 MUD LOGG contractor :EXPLORATION LOGGING
 Other contractors:NOR CASING

Total depth (m RKB) : Measured Vertical

 3046m 3046m
 Rotary Table elevation : 23m

TIME SUMMARY Spudding date:19860310 Abandonment date:860413

Operations:	Moving	Drilling	Form.eval	Prod.test	PlugAband	Downtime	Comple
Hours :	36	503	58	0	38	234	0
Days :	1.5	21.0	2.4	.0	1.6	9.7	.0
% of total:	4	58	7	0	4	27	0
TOTAL :	868hrs		36days				

Hole and Casing record

Hole	Depth(m)	Casing	Depth(m)
36	222	30	222
26	620	20	603
17 1/2	1629	13 3/8	1611
12 1/4	3046		

Well status :Perm. abandoned.
 :
 :

SECTION A

GEOLOGY

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 APPENDIX 3: Well summary
 Geological well summary
 RFT results

1. OBJECTIVES

The 30/6-20 was drilled on the Lambda structure which is located on the western part of block 30/6.

Lambda, Alpha North, Theta and Theta South are all rotated faultblocks with Jurassic sequence dipping towards the east-northwest. The faults separating these structures were assumed to be small and without sealing capacity.

The target for well 30/6-20 was the Statfjord Formation updip of the 30/6-16 well (Theta).

To the south and east the structures are bounded by faults and to the west the Statfjord Formation is truncated by the Base Cretaceous Unconformity.

The objectives was to:

- prove hydrocarbons in the Statfjord Formation
- drill on a location which left a minimum of reserves updip of the well in the Statfjord Fm.
- improve out stratigraphical and structural knowledge of the area
- acquire input for further exploration activity in block 30/6.

The borehole was planned drilled to a total depth (T.D.) at 3025 ± 100 mRKB, approximately 40 m into the Triassic Hegre Group.

2. RESULTS

No hydrocarbonbearing reservoirs were encountered by the well. Shows seen in limestone and dolomite stringers in the Tertiary and the Cretaceous were considered uninteresting.

The Cook Formation was not a target for this well. However, the seismic reflector which was interpreted as the top Statfjord Formation proved to represent the Cook Formation. This implies that the fault bounding the structure to the east has a larger throw than first assumed.

The Cook Formation (2747-2792 mRKB) is composed of sandstones which are predominantly medium grained, loose to moderately hard, locally silica cemented, in part with clay matrix and traces of pyrite and mica. The Cook Formation is waterbearing with a net sand of 33.8 m and an average porosity (\emptyset) of 18%. (The net sand cut off criteria were $\emptyset < 12\%$, and $V_{sh} > 50\%$).

2914 2023

The Statfjord Formation (2937-3046 m T.D.) was also found waterbearing. The interval comprises a sequence of sandstones with interbeds of claystones and locally coal beds. The sandstones are generally very fine to pebbly, predominantly medium to coarse and poorly to moderately sorted.

The net sand was calculated on logs to 68.3 m with an average porosity of 19%.

RFT pressure measurements were recorded, three in the Cook Formation and seven in the Statfjord Formation. The RFT data indicate pressure communication between the two formations, and a watergradient of 1.02 g/cc (1.45 psi/m) was obtained. No fluid samples were taken.

Details on the RFT measurements can be found in Appendix 3.

Conventional cores were not taken. Sidewall cores were taken over the interval 2267-3037 m (Montrose Grup - Statfjord Formation).

Production tests were not performed in the well.

The well was drilled to a total depth of 3046 mRKB, 109 m into the Statfjord Formation.

3. STRATIGRAPHY

The biostratigraphical evaluation of this well was carried out by Robertson Research Int. Ltd., Wales UK. Basic materials were ditch cuttings and sidewall cores.

The interval down to 620 m was drilled with returns to seabed and logged with MWD.

The first analysis were carried out on clays assigned to the Nordland Group, dated Pliocene. Sands were encountered at approximately 670 m but the top Utsira Formation, which is generally of Miocene age, is placed at 705 m based on correlation to adjacent wells. The Hordaland Group was encountered at 922 m. The Hordaland Group is composed of claystones with significant sand intervals between 1195 m to 1402 m and 1564 m down to 1670 m. These sands are of Oligocene and Upper Eocene age.

The Upper Paleocene Balder Formation was encountered at 1984 m. The Sele-Lista Formations boundary is uncertain but is here placed by correlation to other wells at 2150 m.

Montrose Group sediments of Lower Paleocene age was penetrated from 2267-2284 m.

Top Cretaceous is established at 2282 m but the top Shetland Group is placed at 2284 m extending down to 2265 m. The paleo dating indicates the Cretaceous/Jurassic boundary at 2265.5 m from sidewall core.

The interval from 2265.5 m down to 2673 m is dated Middle Jurassic, Lower Bajocian. The section is made up of claystones with a sandstone bed immediately below the Base Cretaceous Unconformity. It is, however, a distinct possibility that these strata represent redeposited Middle Jurassic sediments.

The Lower Jurassic Drake Formation, dated Lower–Upper Toarcian extends from 2673 m down to 2747 m. The Cook Formation, which is a section composed of well developed sandstones was penetrated from 2747 m to 2792 m and assigned to the Upper Pliensbachian. The Amundsen Formation, from 2792 m down to 2937 m, is dated Sinemurian to Upper Pliensbachian. The Statfjord Formation was encountered at 2937 m and is of Hettangian to Sinemurian age.

The well was drilled to T.D. at 3046 mRKB, driller's depth, 109 meters into the Statfjord Formation.

The chrono–lithostratigraphy is summarized in the diagram on page 8.



Norsk Hydro

Bergen Norway

WELL : 30/6-20

DEPTH REF K B

ELEVATION K B 23m

NOT TO SCALE
ALL DEPTH IN METERS (m)

CHRONOSTRATIGRAPHY				LITHOSTRATIGRAPHY		
SYSTEM	SERIES / STAGE	DEPTH	THICKNESS	GROUP	FORMATION / MEMBER	
QUAT	SEA BED	134m				
	Biostatigraphical analysis carried out from 630 m.	?				
	PLIOCENE	690m			705m	
	MIOCENE	930m	200m	NORDLAND GROUP	UTSIRA FM. 922m.	
	OLIGOCENE	1560m	630m	HORDALAND GROUP		
	UPPER EOCENE	1680m	340m			
	MIDDLE LOWER EOCENE	1945m	45m			
	LOWER EOCENE	1995m	50m			
	TERTIARY	UPPER PALEOCENE	2255m	330m	ROGALAND GROUP	BALDER FM. 2068m SELE FM. 2150m LISTA FM. 2267m
		LOWER PALEOCENE	2282m	17m	MONTROSE GROUP	MAUREEN FM. Eq 2284m
		UPPER	UPPERMOST MAAS.	2292m	10m	SHETLAND GROUP
UPPER MAASTRICHTIAN			2352m	60m		
LOWER MAAS.			2370m	108m		
UPPER CAMPANIAN			2460m			
LOWER CAMPANIAN			2666.5m	206.5m		
JURASSIC		MIDDLE	2673m	6.5m	DUNLIN GROUP	UNASSIGNED UNIT 2673m
		UPPER MIDDLE TOARCIAN	2707m	34m		DRAKE FM. 2747m
		LOWER TOARCIAN	2740m	33m		COOK FM. 2792m
	LOWER	UPPER PLIENSCHACHIAN	2805m	65m		
		LOWER PLIENSCHACHIAN		132m	AMUNDSEN FM. 2937m	
		? SINEMURIAN	2937m			
		? SINEMURIAN		109m	STATFJORD FM. 3046m	
	HETTANGIAN					
	DRILLERS T.D.: 3046 mRKB			LOGGERS T.D.: 3045.5 mRKB		

4. LITHOSTRATIGRAPHY

This summary is based predominantly on ditch cuttings descriptions. Wireline logs were used for assistance in lithological interpretation and to place formation boundaries. Sidewall cores were available from Lower Paleocene and down to T.D. in the Statfjord Formation.

The interval from seabed at 134 m and down to 620 m was drilled with returns to seabed. The interval was logged only with MWD.

4.1 QUATERNARY (134- ca 330 m)

NORDLAND GROUP (134-922 m)

134-330 m

The interval was drilled with returns to seabed.

Based on log correlations to adjacent wells the Quaternary/Tertiary boundary can be placed at approximately 330 m.

Ditch cuttings were not available for lithological descriptions or paleodating.

4.2 TERTIARY (ca 330-2282 m)

NORDLAND GROUP cont.

330-620 m

The interval was drilled with returns to seabed.

620-705 m

The predominant lithology in this interval is dark to medium gray clays. They are soft, occasionally firm, sticky and plastic. The clays are very sandy and silty. Throughout the interval stringers of sands occur which are composed of clear quartz which is predominantly very fine to fine grained.

The grains are subangular to subrounded, and moderately sorted. Traces of forams occurs together with shell-fragments.

The age of the interval is Pliocene down to 690 m and Miocene below. The depositional environment of this interval is marine inner shelf.

Utsira Formation (705-922 m)

The dominant lithology of the Utsira Formation is sands, but some dark gray to medium dark gray clays in thin beds occur throughout the formation. The clays are soft, sticky, in part very silty and calcareous.

The sands consist mainly of clear, occasionally light gray and medium gray quartz grains, with local lithic fragments. The size of the grains are dominantly very fine to very coarse. The grains are rounded to subangular. The sands are dominantly loose occasionally calcareous cemented, and is commonly bimodally sorted.

Mica, glauconite and shell fragments occur throughout the formation.

Some rare traces of white, soft, crypto crystalline limestones occur.

The Utsira Formation is of Miocene age (690-930 m), and was deposited in a marine, inner to outer shelf environment.

HORDALAND GROUP (922-1984 M)

922-1049 m

This interval consists of olive gray to brown gray, occasional yellow green clays with stringers of sandstones.

The clays are soft and silty. They contains traces of pyrite, forams, glauconite and shell fragments, and are slightly calcareous.

The sandstones generally resemble the sandstones in the Utsira Formation.

The age of the interval is Oligocene (930-1560 m). This interval was deposited in a marine, outer shelf to upper bathyal shallowing to outer shelf environment.

1049-1195 m

This interval of the Hordaland Group consists of claystones with silty and sandy intervals.

The claystones are dusky yellow brown to olive black. Generally the claystones are soft becoming firm in lower parts, and are silty to locally very silty grading to siltstones. They are also in parts very fine sandy, and non calcareous. The claystones are locally glauconitic and generally micromicaceous.

The interval is of Oligocene age, laid down in a marine, outer shelf to upper bathyal environment.

1195-1402 m

This sequence of the Hordaland Group consists mostly of unconsolidated sands with two major intervals of claystones.

The sands consist of clear quartz grains which are dominantly medium to fine in size. The grains are subangular to subrounded and moderately to well sorted. The sands are argillaceous.

Locally developed are light gray to brown gray sandstones with clear to milky quartz grains which are very fine in size. The grains are subangular to subrounded and moderately sorted. The sandstones are hard to very hard, silica cemented, locally argillaceous, glauconitic with no visible porosity.

The claystones are dusky yellow brown to olive black, soft to moderately hard, blocky and non calcareous. The claystones are occasionally very silty and very fine sandy.

This interval is Oligocene in age. The sediments were laid down in a marine, outer shelf to upper bathyal shallowing to outer shelf environment.

1402-1564 m

This part of the Hordaland Group consists of claystones with stringers of dolomites.

The claystones are predominantly brown black to olive black, dusky yellow to dark green gray. They are firm to moderately hard, blocky, silty, occasionally very fine sandy and non calcareous. The claystones are occasionally micromicaceous with traces of carbonaceous material.

The dolomites generally are pale yellow brown. They are firm to moderately hard, blocky and platy, in part sucrosic and argillaceous.

The age of the interval is Oligocene, and from 1560 m of Upper Eocene age. Depositional environment was marine, outer shelf to upper bathyal shallowing to outer shelf.

1564-1670 m

This interval consists of sandstones with stringers of claystones/shales.

The sandstones are light gray to olive gray with general clear quartz grains, which are very fine to medium predominantly fine in size. The grains are subangular to subrounded, moderately to well sorted.

When consolidated, the sandstones are hard with calcareous cement (especially the interval 1602-1625 m). The sandstones also contains traces of pyrite, glauconite and mica. When consolidated there is no to poor visible porosity.

The claystones/shales intervals are green black to black in colour. They are firm to moderately hard, angular, locally platy and subfissile, micromicaceous, in part glauconitic and non calcareous.

The age of this interval is Upper Eocene (1500-1680 m). It was laid down in a marine environment, outer shelf to upper bathyal.

1670-1920 m

The colours of the claystones, which dominate this interval, are dark green gray, olive gray, olive black, green black. They are generally firm to moderately hard, blocky slightly silty, non-calcareous, locally, glauconitic and micropyrritic.

The dolomite stringers of this interval are dark brown to pale yellowish brown in colour. They are soft, locally brittle, blocky, in part platy and slightly argillaceous.

The age of this interval is Middle-Lower Eocene (1680-1945 m). The sediments were laid down in a marine environment, outer shelf to upper bathyal.

1920-1984 m

This lowermost part of the Hordaland Group consists of claystones with some thin stringers of dolomites.

The characteristic colour is moderate brown to grayish brown. The claystones are firm to moderately hard, blocky and non to slightly calcareous. Also present are claystones which have a dark green gray, medium blue gray, dark gray colour. They are firm to moderately hard, blocky locally platy, partly glauconitic, occasionally with traces of pyrite, and they are non to moderately calcareous.

The dolomites are pale yellow brown to dark yellow brown. They are hard, brittle, blocky, micro- to cryptocrystalline.

The sequence is Lower(?) to Middle Eocene and Lower Eocene (1945-1995 m) in age. It was laid down in a marine, outer shelf to upper bathyal environment.

ROGALAND GROUP (1984-2267 M)

Balder Formation (1984-2068 m)

The Balder Formation comprises predominantly claystones, which occasionally are tuffaceous, with rare stringers of dolomites and sandstones.

The claystones are olive gray to dark gray, medium blue gray, soft to moderately hard, blocky and occasionally platy. They are locally slightly silty, micromicaceous, non to moderately calcareous. Also associated are sandstones medium light gray, friable to loose, argillaceous and silty.

The dolomite stringers are dark yellowish brown, hard blocky, micro to cryptocrystalline.

The Balder Formation is of Upper Paleocene (1995-2255 m) age.

The depositional environment was marine, outer shelf to upper bathyal.

Sele Formation (2068-2150 m)

This formation is made up by claystones with stringers of limestones.

The colour of the claystones are olive black to brown, black becoming green gray. They are firm to moderately hard, blocky in part silty and non calcareous. Traces of micromica and glauconite are seen. Locally they are carbonaceous.

The few limestones stringers that are developed are light gray to light green gray. They are soft to hard, blocky locally platy, chalky, locally argillaceous and glauconitic, micro crystalline to cryptocrystalline and occasionally grading into dolomites.

The Sele Formation is of Upper Paleocene age. The environment of deposition is the same as for the Balder Formation.

Lista Formation (2150-2267 m)

The Lista Formation very much resembles the overlaying Sele Formation and consists of claystones with stringers of limestones and dolomites.

The colour of the claystones are predominantly medium dark to dark gray, but traces of moderate brown to dark green gray claystones also occur. They are soft to moderately hard, in part silty, locally glauconitic and in part calcareous.

The limestones stringers are very light gray, friable to moderately hard, blocky and partly surcrosic. They are generally slightly argillaceous and microcrystalline.

The dolomites are dark yellow brown in colour, generally hard, brittle, blocky and slightly argillaceous.

Lista Formation is of Upper Paleocene and Lower Paleocene (2255-2282 m) age. The depositional environment is as above.

MONTROSE GROUP (2267-2284 M)

Maureen Formation equivalent (2267-2284 m)

The Maureen Formation equivalent consists of claystones, generally similar to those of the Lista Formation, however, increasingly calcareous towards base.

The age of this formation is Lower Paleocene. It was laid down in a marine, outer shelf environment.

4.3 CRETACEOUS (2282-2665.5 M)

UPPER CRETACEOUS (2282-2665.5 M)

SHETLAND GROUP (2282-2265 M)

Claystones are the predominant lithologies of the Shetland Group. Stringers and beds of limestones occur throughout the interval, best developed at the very upper part. Rarely developed are also stringers of dolomites, siltstones and sandstones.

The claystones are dark gray to medium dark gray, dark greenish gray and olive gray of colour. They are moderately hard to soft, slightly silty, in part micromicaceous and non to locally moderately calcareous.

The limestones are described as pale yellowish brown, white and very light to light gray. They are generally soft to firm but locally also moderately hard, slightly argillaceous, occasionally pyritic and cryptocrystalline.

The dolomites are dark to dusky yellowish brown, very hard, brittle and crypto- to microcrystalline.

The siltstones are light olive gray and brownish black of colour. They are soft, slightly sandy, argillaceous, micromicaceous and non calcareous.

The sandstones, which are very rarely occurring consist of very fine quartz grains. They are silty, loose, with moderate to well sorting.

The age of the Shetland Group is Upper-most Maastrichtian (2282-2292 m), Upper Maastrichtian (2292-2352 m), Lower Maastrichtian (2352-2370 m), Upper Campanian (2370-2460 m) and Lower Campanian (2460-2665.5 m)

The depositional environment is interpreted as being marine, outer shelf to upper bathyal.

The boundaries to the overlying Tertiary strata and the underlying Jurassic sediments are of unconformable nature.

4.4 JURASSIC (2665.5-3046 M T.D.)

MIDDLE JURASSIC (2665.5-2673 M)

UNASSIGNED UNIT (2665-2673 M)

The interval between 2665.5 m and 2673 m has been dated Middle Jurassic, Lower Bajocian. The unit comprises claystones with an approximately 2 m thick sandstone bed on top.

The sandstones are described as composed of clear quartz which are fine to coarse grained but predominantly medium in size. They are subangular to subrounded, moderately sorted, loose and slightly micaceous.

The claystones are black to brownish black, partly shiny, moderately hard to firm, subfissile, carbonaceous and non calcareous.

Its close association of the Base Cretaceous Unconformity and the general seismic and geological knowledge of the area indicate that this unit could represent redeposited Middle Jurassic sediments rather than being part of the Brent Group.

The depositional environment is interpreted as marine, inner shelf with evidence of deltaic conditions.

The boundaries to the Shetland group above and the Drake Formation below are clearly defined by log breaks and lithology change.

LOWER JURASSIC (2673-3046 M T.D.)

DUNLIN GROUP (2673-2937 M)

Drake Formation (2673-2747 m)

The Drake Formation makes up a sequence of claystones with locally stringers of siltstones and dolomites developed throughout.

The claystones are described as olive gray and light to dark greenish gray of colour. They are moderately hard to firm, locally hard, blocky to subfissile, occasionally sticky, silty and micaceous. The claystones are pyritic and contain locally carbonaceous material and are generally non calcareous. They are locally grading to siltstones.

The siltstones proper are light olive gray, very soft, slightly sandy, very argillaceous and non calcareous.

The dolomites are dark yellowish brown, very hard, brittle and cryptocrystalline.

The age of the Drake Formation is Middle-Upper Toarcian (2673-2702 m), Lower Toarcian (2702-2740 m) and Upper Pliensbachian from 2740 m.

The depositional environment is marine, inner shelf.

Cook Formation (2747-2792 m)

The Cook Formation appear on the gamma log with a blocky character with a coarsening upward trend over the lowermost twelve meters. The sequence is made up of sandstones.

The sandstones are composed of translucent to clear quart grains which are medium in size. Rarely a brownish stain is seen on the grains. They are subangular to subrounded, generally loose but locally moderately hard and friable and silica cemented. They contain in part an argillaceous matix and are locally micaceous and pyritic.

This interval is of Upper Pliensbachian (2740-2805 m) age.

The sandstones were laid down in a marine, inner shelf environment.

Amundsen Formation (2792-2937 m)

Distinct log breaks define the top and base of this interval which is assigned to the Amundsen Formation.

The section comprises claystones with stringers of limestones, dolomites, sandstones and siltstones developed throughout.

The claystones are olive gray, dark greenish gray and light to medium gray. They are soft to moderately hard, silty, in part sandy, locally micromicaceous and carbonaceous and non to partly calcareous.

The limestones are described as white brittle and cryptocrystalline.

The dolomites are pale-dusky yellowish brown, very hard and cryptocrystalline.

The sandstones are composed of light gray to translucent quartz which are very fine to occasionally medium grained, hard to locally loose, subangular to subrounded, and locally they contain argillaceous matrix.

The siltstones are brownish black, soft and carbonaceous.

This interval is dated Upper Pliensbachian and Lower Pliensbachian to ? Sinemurian (2805-2937 m).

The environment of deposition is thought to represent marine, inner shelf conditions.

Statfjord Formation (2937-3046 m)

The top of the Statfjord Formation is defined by clear log breaks.

The part of the formation that was penetrated by this well comprises sandstones with some interbeds of claystones and minor coal beds.

The sandstones are composed of light gray, clear and milky quartz and traces of feldspar grains and are very fine to very coarse and locally pebbly, the predominant grain sizes being medium to coarse. They are subangular to subrounded poorly to moderately sorted and contain locally kaoline matrix, and locally dolomitic and calcareous cement. Mica, pyrite and coal fragments are commonly seen.

The claystones are light gray, olive gray and dark greenish gray, soft to moderately hard, blocky, silty and locally carbonaceous and micromicaceous. They are non calcareous.

The coals are black, in part shiny, moderately hard, brittle and locally grade to coaly shale.

The age of the Statfjord Formation is Sinemurian to ? Hettangian (2937-T.D.).

The environment of deposition is interpreted as non marine, Lacustrine-fluviatile to marginal marine.

The well was drilled to a total depth of 3046 mRKB and was terminated 109 m in to the Statfjord Formation.

5. HYDROCARBON SHOWS

The evaluation of hydrocarbon shows at the well site was performed in a conventional manner. Below 623 m a complete hydrocarbon total gas detector (50 u = 1%) was operational together with a gas chromatograph for automatic and continuous gas analysis, recorded as ppm volume of C1 through C5.

Hydrocarbon shows on ditch cuttings were evaluated according to Norsk Hydro's "Wellsite Geologist Manual".

5.1 GAS RECORD

620-922 m

This interval contains clays and sands of the Hordaland Group including the complete Utsira Formation. The gas readings vary from 0.01-0.4% C1 (methane). The mudweight was kept at 1.15-1.16 rd.

922-1670 m

Comprising mainly sands and minor clays, this interval of the Hordaland Group shows only traces of methane. The mudweight was increased from 1.15-1.20 rd at 1340 m and from 1.20-1.38 rd from 1600-1630 m.

1670-1984 m

This section represents the lower parts of the Hordaland Group. The lithology is dominated by clays with rare limestone stringers. Gas readings range between 0.01-0.18% C1 with occasional C2 and C3 (ethane, propane). The mudweight was kept constant at 1.38 rd.

1984-2267 m

The gas readings of this interval range from 0.03-0.48% C1-iC4, NC4 (isobutane, normal butane) with occasional C5 (pentane). The section comprises the Rogaland Group including the Balder, Sele and Lista Formation. The lithology consists of claystones with rare stringers of limestones and rare tuffs in the Balder Formation. The mudweight was 1.38 rd.

2267-2370 m

This interval comprises the Maastrichian parts of the Shetland Group together with the Montrose Group of lower Paleocene. The lithology consists of claystoens with in part frequent limestone beds and stringers. The gas readings ranges from 0.12-0.28% C1-C5. The mudweight was kept at 1.38 rd.

2370-2617 m

The Campanian parts of the Shetland Group is represented in this section. The lithology consists of claystones with minor to rare limestone, dolomite and sandstone stringers. The gas readings vary from 0.03-0.44% C1-C3 with occasional C4-C5. The mudweight was 1.38 rd.

2617-2630 m

This section comprises the lowermost parts of the Campanian Shetland Group. The lithology is silty claystones with rare sandstone stringers. The gas readings ranged from 0.33-0.73% C1-C4 with traces of C5. The mudweight was 1.38 rd.

2630-2747 m

This interval comprises the silty claystones with rare sand stringers of the Drake Formation. The gas readings ranged from 0.07-0.37% C1-C3 and locally C4-C5. The mudweight was constant at 1.38 rd.

2747-2792 m

The sands of the Cook Formation showed gas readings from 0.08-1.92% C1-C5. The mudweight was kept at 1.38 rd.

2792-2830 m

This interval covers the upper part of the Amundsen Formation. The lithology is dominated by claystones with stringers of limestones, dolomites, sandstones and siltstones. The gas readings ranged from 0.22-0.32% C1-C5 at a mudweight of 1.38 rd.

2830-2937 m

The gas readings in this interval ranged from 0.26-0.74% C1-C3 with occasional C4 and C5. The section represents the remaining part of the Amundsen Formation with mainly the same lithology as the section above. The mudweight was 1.38 rd.

2937-3046 m (TD)

This section comprises sandstones with beds of claystones and coal of the Statfjord Formation. The gas readings range from 0.12-0.78% C1-C5, and the mudweight was 1.38-1.39 rd.

5.2 OIL STAIN AND FLUORESCENCE

1990-2150 m

Shows are reported locally on claystones in this Tertiary section. The shows are described as trace to 50% moderately strong bright yellow orange fluorescence, with pale yellow brown visible cut and moderate to instant streaming bright yellow brown to brown fluorescence cut. A moderate yellow brown to orange fluorescent residue is also reported.

2150-2190 m

In this interval shows are reported from thin sandstones and dolomite/limestone stringers. The sediments show a dark brown oil stain and a bright yellow white fluorescence with a fast streaming brown visible cut and an instantly streaming yellow white fluorescent cut. The residue is dark brown and has a dull yellow orange brown fluorescence.

2284-2310 m

This interval contains limestone beds with brown oil stain, light brown visible cut and slow to moderately streaming bright white yellow fluorescent cut. Also reported was a brown visible residue with a yellow orange fluorescence.

2530-2590 m

This interval locally carries shows on limestone stringers. The stringers shows traces of patchy brown oil stain with a light brown visible cut and a slow to moderate streaming bright white yellow fluorescent cut, a brown visible residue and yellow orange fluorescent residue.

2600-2610 m

Poor shows from carbonaceous claystones are reported from this interval. Traces of slow to fast streaming bright yellow white fluorescence cut and locally a brown visible cut with a brown residue are reported from this interval.

2700-2710 m

Poor shows on siltstone stringers are reported from this interval. They show a dark brown oil stain with a weak dull yellow fluorescence, a fast streaming bright yellow fluorescence cut and a dark brown visible cut.

2747-2792 m

The sandstone of the Cook Formation locally carries shows. Traces of a dark brown oil stain with a bright yellow fluorescence with a non to very slow streaming bright yellow white fluorescence cut, but no visible cut. Also there is no visible residue but a bright yellow white fluorescent residue.

6. CORES

6.1 CONVENTIONAL CORES

No conventional cores were taken in this well.

6.2 SIDEWALL CORES

One sidewallcore run was performed in this well. A total of 23 sidewall cores were recovered out of 30 asked for. The sidewall core samples are collected for the interval 2267 m in the Montrose Group down to 3037 m in the Statfjord Formation.

Detailed sidewall core descriptions can be found in Appendix 2.

7. WIRELINE LOGGING

The following is a summary of wireline logs run in the 30/6-20 well and provides the dates, logged intervals and run number of each log.

LOG	DATE	LOGGED INTERVAL	RUN NO.
DIL/LSS/GR	26/27.04.86	605-1597.7 M	1A
"	09.04.86	1611-3045 M	2B
LDL/CAL/GR	27.03.86	605-1597.8 M	1A
LDL/CNL/CAL/GR	09.04.86	1611-3038 M	2B
SHDT	10/11.04.86	2220-3036 M	2A
RFT	09.04.86	2765.5-3022.5 M	2A
VSP	10.04.86	928-3040 M	2A
CBL/VDL	11.04.86	300-770 M	2A
CST	11.04.86	2267-3037 M	2A

8. SPECIAL STUDIES

The biostratigraphic evaluation of this well was carried out by Robertson Research Int. Ltd. Wales, UK. The results are contained in the report:

Norsk Hydro 30/6-20
Norwegian North Sea Well
Biostratigraphy of the interval
630 m - 3046 m T.D.

Results of Log evaluation and RFT measurements are presented in the report:

Formation Evaluation Report
Well 30/6-20

APPENDIX I
CORE DESCRIPTIONS

Conventional cores were not taken in the well.

APPENDIX 2

SIDEWALL CORE DESCRIPTIONS



SIDE WALL CORES DESCRIPTION		SERVICE COMPANY Schlumb.
		ASKED 30
WELL: 30/6-20		SHOT: 28
LICENCE: 053		LOST: 4
RUN N°: 2A		EMPTY: 1
PAGE N°: 1 of 2		SAMPLES RECOVERED 23
DATE: 11.04.86		Misfires: 2
		GEOLOGIST: Sæther/Nilsen

tr : trace - M : medium - G : good

N°	DEPTHS m	REC cm	LITHOLOGY	Fluorescence	
				IRMG	CUT
1	3037	4.0	Chyst: dk gy-brn blk, frm, noncalc, micromic, sl carb.		
2	3008	3.5	Chyst: dk gy-brn blk, frm, noncalc, tr micromic.		
3	2992	2.5	Set: v lt gy, trnsi-clr Qtz, f-crs, pred f-m, tr v crs, subang-subrnd, mod srted, fri, v sl calc, wh cly mtb, mic, tr pyr, tr carb lam, no-pr vis por.		
4	2983	1.5	Slst: lt olv gy, frm-mod hd, blk, sl dol, sl micromic, sl carb, v sdy, arg.		
5	2977	3.0	Chyst: dk gy-brn blk, mod-loc hd, subfis, noncalc, slty, micromic.		
6	2932	3.5	lam Chyst and Set: Chyst a/a, Set: wh-v lt gy, trnsi-clr Qtz, vf-f, subang-subrnd, w srted, noncalc, wh cly mtb.		
7	2800	-	Empty		
8	2740	2.5	Chyst: dk gy-brn blk, frm-mod hd, blk-subfis, noncalc, v micromic, v slty.		
9	2715	2.0	Chyst: dk gy-brn blk, frm-mod hd, soluble, noncalc, v sdy grdg Set , arg, micromic-mic, tr carb, rr chlor.		
10	2695	3.0	Slst: dk gy-brn blk, frm-moc hd-loc hd, blk, soluble, noncalc, micromic, sdy, v arg, rr chlor.		
11	2687	3.0	Chyst: dk gy-brn blk, sft-frm, noncalc, slty, sl sdy.		
12	2678	3.0	Chyst: dk gy-brn blk, sft-frm, noncalc, slty, sl sdy, tr carb.		
13	2673	3.0	Chyst: dk gy-brn blk, sft-loc frm, noncalc, slty, tr carb.		
14	2669	0.5	Chyst: pl yel brn-brn gy, mod hd, loc sft-frm, blk, noncalc, sl slty, tr micromic, com pyr, rr carb.		
15	2666.5	0.1	Set: v lt gy, trnsi-clr Qtz, f-crs, tr v crs, pred f-m, ang-subrnd, pr srted, fri-lse, abn wh cly mtb.		
16	2663.5	2.0	Chyst: dk gy-olv blk, sft, hom, sl calc.		
17	2657	1.5	Chyst: dk gy-olv blk, sft-loc mod hd, blk-subfis, v sl-loc mod calc, micromic, tr slty, rr carb.		



SIDE WALL CORES DESCRIPTION		SERVICE COMPANY Schlumb.
		ASKED 30
WELL: 30/6-20		SHOT: 28
		LOST: 4
LICENCE: 053		EMPTY: 1
		SAMPLES RECOVERED 23
RUN N°: 2A		Misfires: 2
PAGE N°: 2 of 2		GEOLOGIST:
DATE: 11.04.86		Sæther/Nilsen

tr : trace - M : medium - G : good

N°	DEPTHS	REC	LITHOLOGY	Fluorescence	
				TR	CUT
18	2645	3.0	Clst: dk gy-olv blk, sft-loc mod hd, biky-subfis, sl calc, tr micromic, tr carb.		
19	2487	-	- Lost		
20	2484	-	- Lost		
21	2473.5	-	- Misfire		
22	2453	-	- Lost		
23	2443	2.0	Clst: dk gy-olv blk, sft-frm, biky, v calc, tr sity, sl micromic, tr carb.		
24	2435	2.5	Clst: dk gy-olv blk, mod hd-loc frm, sl calc, sl sity, micromic.		
25	2370	3.0	Clst: dk gy-olv blk, mod hd-frm, biky-subfis, v calc, sl sity, sl micromic, tr carb.		
26	2337	-	- Misfire		
27	2295	-	- Lost		
28	2283	2.5	Clst: gy brn, mod hd, biky-subfis, v calc, sl sity, micromic.		
29	2274	2.5	Clst: mot dk grn gy/dk gy, mod hd, mod-v calc, tr sity, micromic, tr carb.		
30	2267	3.0	Clst: dk gy, hd, biky-subfis, mod-v calc, sity, micromic, pyr, tr carb.		

APPENDIX 3

WELL SUMMARY
GEOLOGICAL WELL SUMMARY
RFT RESULTS

WELL SUMMARY

Coord: 60°37'20.52"N UTM: 6.720.920,8 mN
 02°42'18.52"E 483.862,7 mE
 Zone: 31
 Line: NH 82-290 SP: 325
 Rig: Treasure Scout
 Waterdepth: 111 m MSL
 Stopped in: Statfjord Fm.

On location: March 10th, 1986
 Spudded: March 10th, 1986
 At T.D.: April 8th, 1986
 Completed: April 13th, 1986
 T.D. Driller: 3046 m RKB
 T.D. Logger: 3045.5 m RKB
 Wireline Logging: Schlumberger
 Mudlogging: Exploration Logging

WELL
30/6-20
COUNTRY
Norway

OPERATOR NORSK HYDRO

LICENCE 053

OWNED BY NH/Statoil/Saga/Elf/Mobil/Tota

TARGETS

Primary: Statfjord Fm.

RESULTS

No hydrocarbon bearing reservoir was encountered by the well.

Cook Fm :	Statfjord Fm :
2747-2792m	2937-3046mTD
net sand : 33.8m	net sand : 68.3m
Ø _{av} : 18%	Ø _{av} : 19%

CASING

30" 222 m
 20" 603 m
 13 3/8" 1611 m

CORES

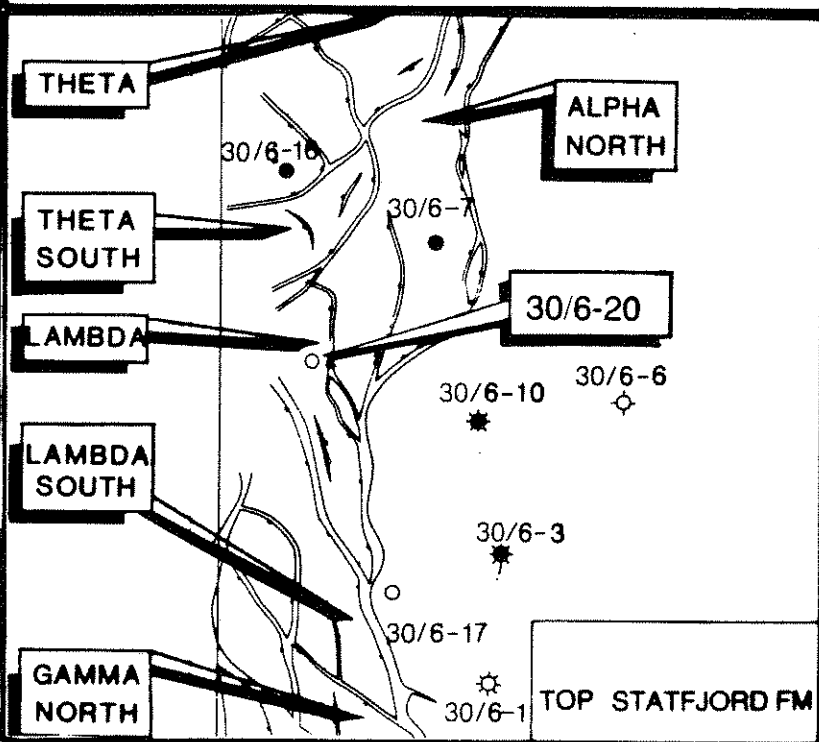
No core was taken in the well.

GAS RECORD

From depth (m)	Gas %:	Comp
620	0.01-0.4	C ₁
922	tr	C ₁
1670	0.01-0.18	C ₁ , occ C ₂ C ₃
1984	0.03-0.48	C ₁ -iC ₄ Loc C ₄ C ₅
2267	0.12-0.28	C ₁ -C ₅
2370	0.03-0.44	C ₁ -C ₃ , occ iC ₄ -C ₅
2617	0.33-0.73	C ₁ -trC ₅
2630	0.07-0.37	C ₁ -C ₃ , occ C ₄ -C ₅
2747	0.08-1.92	→
2792	0.22-0.32	C ₁ -C ₅
2830	0.26-0.74	C ₁ -C ₃ , occ iC ₄ -C ₅
2937	0.12-0.78	C ₁ -C ₅
3046 (T.D.)		

CST

2A 2267-3037 m (asked/rec.: 30/23)



LOGS

MWD	222-603	
DIL/LSS/GR	605-1597.7	1A
	1611-3045	2B
LDL/GR/CAL	605-1597.8	1A
LDL/CNL/		
CAL/GR	1611-3038	2B
CBL/VUL	300-770	2A
RFT	2765.5-3022.5	2A
SHDT	2220-3036	3A
VSP	928 - 3040	2A

OIL SHOWS

1990-2150m on Clyst
 Tr- 50%mod strong-bri yel org flu, pl yel brn vis cut, mod-inat strmg bri yel wh flu cut, strong yel brn-brn vis read, mod yel brn-org flu read.

2150-2190m on Set and Del
 dk brn oil stn, bri yel wh flu, fast strmg brn vis cut, inst strmg, yel wh flu cut, dk brn vis read, dull yel org brn flu read.

2284-2310m on Lat
 brn oil stn, lt brn vis cut, slo-mod strmg bri wh yel flu cut, brn vis read, yel org flu read

2530-2590m on Lat
 tr ptchy brn oil stn, lt brn vis cut, slo-mod strmg bri wh yel flu cut, brn vis read, yel org flu read.

2600-2610m on carb clyst
 Tr skr-faat strmg bri yel wh flu cut, loc brn vis cut, brn read.

2700-2710m on Slet
 dk brn oil stn, wk dull yel flu, faat strmg bri yel flu cut, dk brn vis cut dk brn vis cut

2747-2792m on Set
 Tr dk brn oil stn, bri yel flu, non v slo strmg bri yel wh flu cut, no vis cut, no vis read, bri yel wh flu read

GEOLOGICAL WELL SUMMARY

DEPTH m RKB	LITHO SECTION	SYSTEM	SERIES/STAGE	FORMATION	DESCRIPTIONS	SHOWS	LOCATED ON 60°37'20.52"N 02°42'18.52"E WATER DEPTH 111 mMSL	LINE NH 82-290 SP 325	WELL 30/6-20				
50		QUATERNARY	PLOCENE	NORDLAND GP	23 mRKB								
100													
150							SEABED 134 m						
200								30° 222 m					
250													
300													
350								Drilled with returns to seabed (lithology from MWD)					
400													
450													
500													
550		TERTIARY	MIOCENE	UTSIRA FM									
600													
650								Cly: dk-m dk gy, sft, occ frm, silty, tr vf sdy.					
700							705 m	Sd: clr Qtz, vf, occ f, also crs-m, subrnd-subang, mod srted, lse, tr glau, shellfrags, forams.					
750								Clyst: stky, sdy-v sdy, non-sl calc					
800													
850													
900													
950							922 m	Ch: brn gy- olv gy-dk brn gy, bcm dusky yel brn-olv blk, sft-frm, silty, vf sdy, non-sl calc, tr: glau, shellfrags.					
1000													
1050		OLIGOCENE	HORDALAND GP										
1100							Clyst/Cly: dusky yel brn-olv blk, frm, occ mod hd, pt sft, silty-v silty, grad						
1150							Sst: loc vf sdy, occ tr glau, tr micro mic, non calc.						
1200							Sd: clr Qtz, pred m-f, subang-subrnd, loc fros, pr srted.						
1250							Intbd Clyst/Cly. Loc Sst.						
				TERTIARY	UPPER EOCENE	HORDALAND GROUP							
		CRETACEOUS	UPPER CAMP.	SHELTLAND GP									

Sd: clr Qtz, crs-vf, pred m-f, subrnd-subang, occ fros, lse, pr srted.

Tr **Sst**

Clyst: brn blk-olv blk, sft-mod hd, pred frm, blk, sl-v silty, micromic, non calc.

Tr **Dol**

Clyst: dusky yel brn-grn blk, else a/a.

13 3/8"

Sd: clr Qtz, vf-m, subrnd-subang, mod srted, lse. Tr: glau, pyr, mica

1611

Occ **Sst**.

Sd: clr Qtz, m, rnd, lse v w srted, rr-corn arg glau mtb.

Clyst: dk grn gy, mnr olv gy-olv blk, frm-mod hd, occ sft, blk, subpty, tr glau, sl silty, non calc.

Tr **Dol:** dk yel brn, pl yel brn, hd, brit, blk-pty, micro-cryptoxin.

1984 m

Clyst/Mrt: olv gy-dk yel brn, sft-frm, silty, sl-mod calc.

Tuff: lt-m gy, dk grn gy, spkid blk/wh, frm-fri, silty, non-occ v calc.

206 m

Clyst: olv blk-dk gy-brn blk, mod brn, pred frm, mod hd, sl silty, occ mod calc.

Tr **Lst/Dol.**

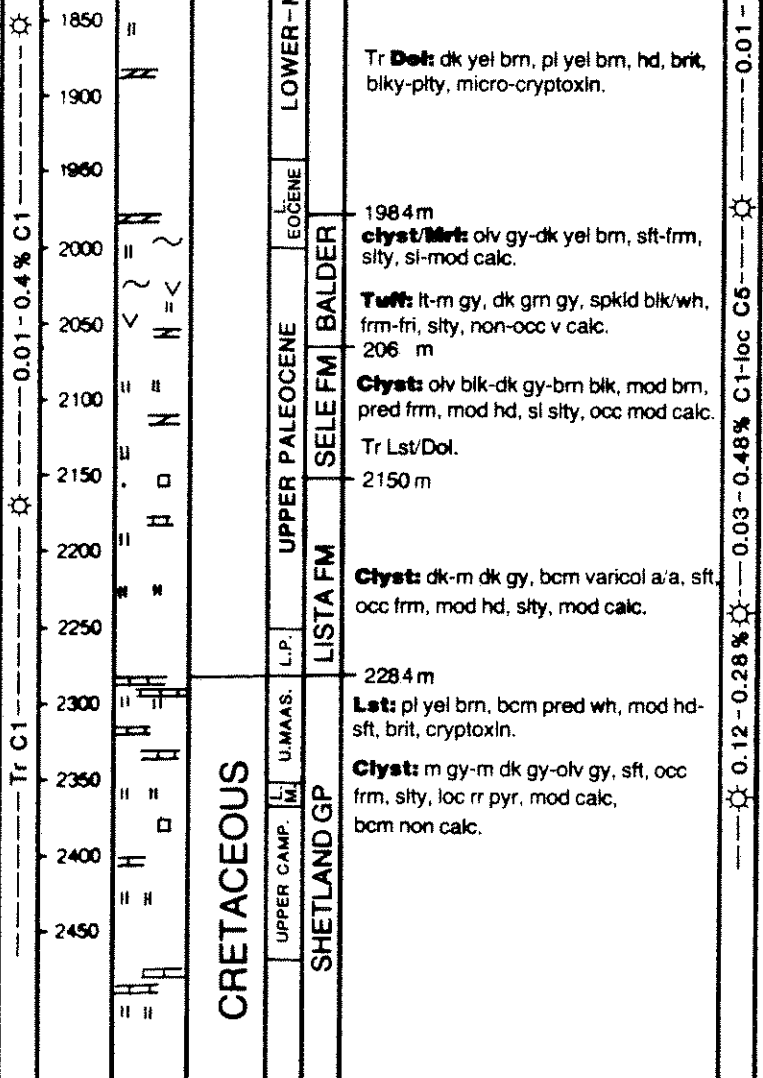
2150 m

Clyst: dk-m dk gy, bcm varicol a/a, sft, occ frm, mod hd, silty, mod calc.

2284 m

Lst: pl yel brn, bcm pred wh, mod hd-sft, brit, cryptoxin.

Clyst: m gy-m dk gy-olv gy, sft, occ frm, silty, loc rr pyr, mod calc, bcm non calc.



Tr C1 --- 0.01 - 0.18% C1-OCC C2, C3 --- 0.03 - 0.48% C1-loc C5 --- 0.12 - 0.28% --- Tr C1

RFT RESULTS – PRESSURES

WELL 30/6-20

RUN NO/ TEST NO	DEPTH MRKB	IHP psia (bara)	FP psia (bara)	FHP psia (bara)	REMARKS
--------------------	---------------	--------------------	-------------------	--------------------	---------

COOK FORMATION (2747 – 2792 m)

2A/1	2756,5	5455 (376,1)	4714,3 (325,1)	5455 (376,1)	V. good perm. poss. plugging
2	2763,0	5468 (377)	4724,3 (325,7)	5467 (377)	good perm.
3	2771,0	5483,1 (378,1)	4735,8 (326,5)	5482,8 (378)	V.good perm.

STATFJORD FORMATION (2937 m – 3046 m T.D.)

2A/4	2945,5	5825,7 (401,7)	4992,3 (344,2)	5824,2 (401,6)	poor perm. poss. plugg.
5	2955,5	5844,8 (403)	5005,7 (345,1)	5844,7 (403)	good perm.
6	2972,5	5877,7 (405,3)	5028,6 (346,7)	5876,3 (403)	V.good perm.
7	2986,5	5905,8 (407,2)	5050,2 (348,2)	5903,8 (407,1)	V.good perm.
8	3003,0	5937,4 (409,4)	5074,2 (349,9)	5935,6 (409,3)	good perm.
9	3016,0	5958,5 (410,8)	5088,2 (350,8)	5958,9 (410,9)	V.good perm.
10	3022,5	5973,5 (411,9)	5102,5 (351,8)	5975,8 (412)	V.good perm.

Note: All pressures recorded with HP-gauge.

SECTION B

OPERATIONS

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1. LOCATION SURVEY

The site survey for the 30/6-20 location was performed by Geoteam and completed on 14 January 1986.

The coordinates for the well were given as:

Latitude: 60°37'20.6"N
Longitude: 02°42'18.10"E

The well was located on the seismic line NH 82-290.

Water depth: 111 m LAT.

Sub-seabed geology according to the survey

All depths refer to RKB (MD)

- 0-134 m : Water column (elevation: 23 m)
- 134-143 m: Fine grained sand
- 143-163 m: Stiff clays
- 163-198 m: Fine grained sand
- 198-363 m: Stiff clays
- 363-368 m: Sand
- 368-403 m: Clays with occasionally developed beds of sand.
- 403-693 m: Silty clays.

Seabed hazards

No seabed hazards was expected or occurred. At the well location the water depth was 111 m. The sea bed slope was negligible according to the survey.

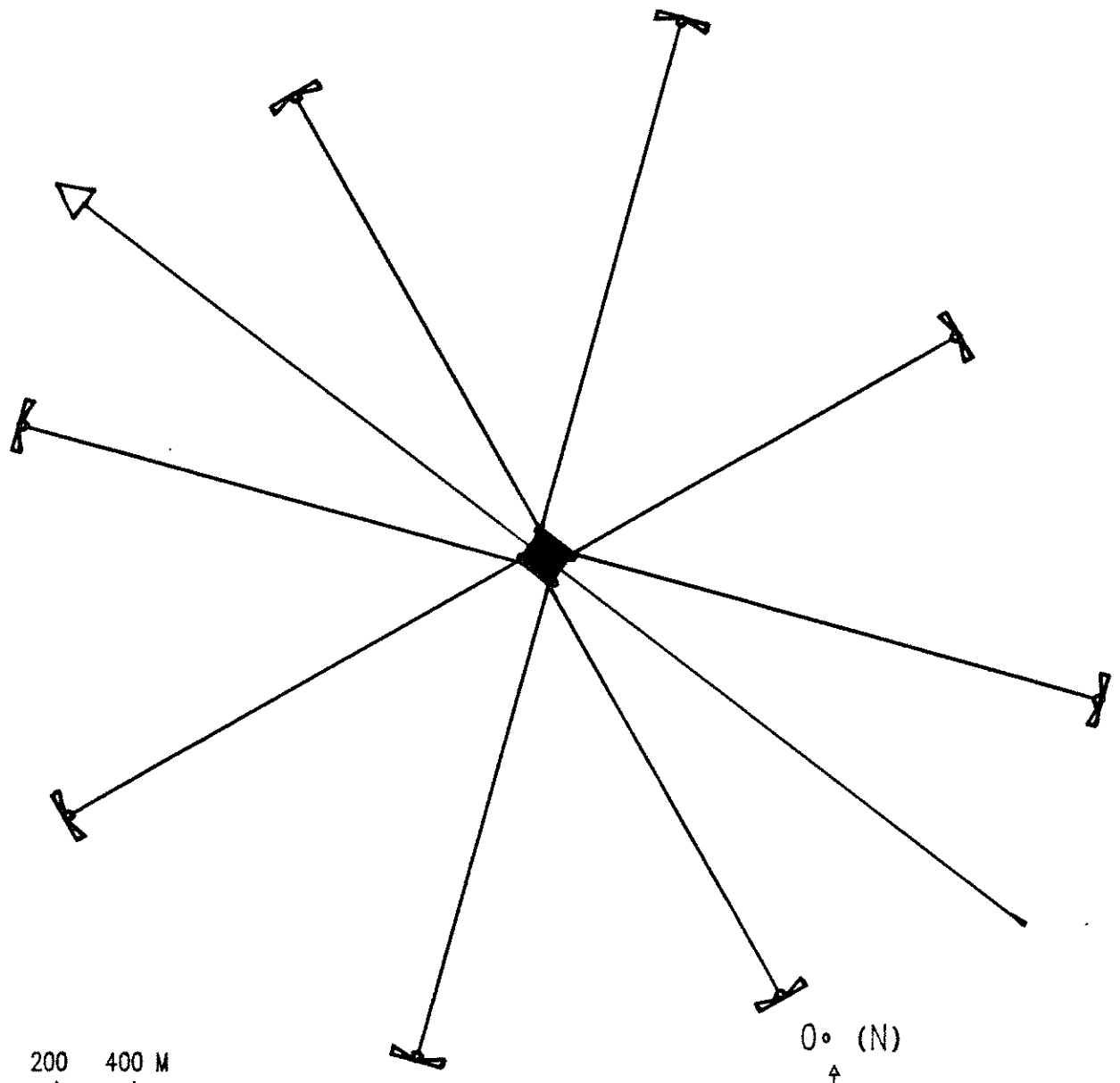
Sub-seabed hazards

A sand layer at 363 m was assumed to contain gas. A thin gas bearing sand was penetrated at this depth on the 30/6-7 well, but no problems occurred when drilling through the zone. Based on this well and other wells in the Oseberg area, no problems due to shallow gas was expected in the 30/6-20 well.

Two sandstringers were found from 353-354.5 m and from 360-361 m. They did not contain any gas.

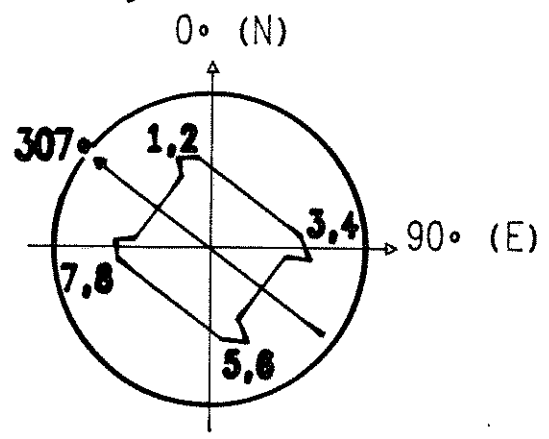
Further the lithology was as expected and no problems occurred when drilling through the surveyed section.

22 SEP 1986 12:17 PM BY SDRILL4



0 200 400 M

ANCHOR NO	DIRECTION DEGREES	LENGTH METERS
1	330	1277
2	15	1352
3	60	1128
4	105	1402
5	150	1207
6	195	1254
7	240	1320
8	285	1315



Norsk Hydro
Drilling Department

Date:19860922

MOORING LINE PATTERN

TREASURE SCOUT

30/6-20

FIG.
B-1

NORSK HYDRO

3. OPERATION RESUME

3.1 Summary drilling

Treasure Scout arrived the 30/6-20 location March 10, 1986.

36" hole section

The well was spudded 3 March 1986 at 1940 hrs. The 36" hole was then drilled down to 222 m and the 30" casing was landed with shoe at 222 m and cemented back to the seabed.

26" hole section

A 12 1/4" pilot hole was drilled down to 620 m and continuously logged with MWD gamma ray and resistivity log.

The pilot hole was then opened up to 26" by using a two step hole opener (12 1/4" x 17 1/2" x 26") down to 617 m. Prior to run the casing, the hole was displaced to 1.15 rd mud. But because of bad weather, it was necessary to wait 75 hrs to run the 20" casing. The 20" casing was there after run and landed with the shoe at 603 m and cemented back to the sea bed.

The BOP stack was then run and tested prior to drilling out of the 20" casing.

17 1/2" section

The 17 1/2" hole was drilled down to 623 m where the lower marine riser package had to be disconnected due to bad weather. The total time lost due to waiting on weather was 74 hrs.

A leak-off test to 1.75 rd equivalent mudweight was then performed at 623 m and the hole was drilled down to 1606 m without further problems.

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At this depth, the hole was logged with DIL/LSS/GR/SP and LDL/GR/CAL. Then the 17 1/2" hole was thereafter drilled down to 1629 m which was the total depth for this section.

The 17 1/2" section was drilled with a KCl/polymer mud system. The mud weight was gradually increased from 1.15 rd to 1.25 rd.

The 13 3/8" casing was landed with the shoe at 1611 m and cemented back to 440 m (based upon the CBL log).

12 1/4" section

Prior to drill out of the 13 3/8" casing, the mud weight was increased to 1.38 rd.

The 12 1/4" hole was then drilled down to 1632 m where a leak off test was performed, but was not able to get leak-off with 135 bar surface pressure (equivalent to 2.25 rd). The hole was then drilled down to the total depth of 3046 m, and logged with the following logs.

Run no 1:	DIL/LSS/GR
Run no 2:	LDT/CNL/GR
Run no 3:	RFT
Run no 4:	VSP
Run no 5:	SHDT/GR
Run no 6:	CST
Run no 7:	CBL/VDL/GR

The hole was then plugged back and permanently abandoned as described in chapter 4 and fig B-3.

Treasure Scout left the 30/6-20 location on April 13, 1986 at 1600 hrs.

		Daily report			..Date..	
((((ooo)		System : Boredata Sandnes			19860923	
Norsk Hydro		Well: 30/6-20				
Casing Size (in):		30	20	13 3/8		
Setting depth (m):		222	603	1611		
Report number	Mid depth (m)	EST.PORE PRESSURE (SG)	Mud dens. (SG)	Stop time	Short Summary	
1	0	1.03	1.03	12:00 24:00	Rig in transit to the location. Rig in transit to the location.	
2	0	1.03	1.03	24:00	Waited on the weather prior to enter the location.	
3	193	1.03	1.03	04:00 10:00 19:00 19:30 24:00	Waited on the weather to move in to the new location. Moved the rig to the location. Dropped anchor no.4 at 10:50 hrs. The rig was on the location at 11:15 hrs. Made up bit and hole opener. Tagged the bottom at 134 m. Spudded in at 19:40 hrs. Drilled 36" hole from 134 m to 193 m.	
4	222	1.03	1.03	02:30 04:00 04:30 06:00 07:30 15:30 16:30 18:00 20:00 21:30 24:00	Continued to drill 36" hole from 193 m to 222 m. Circulated and pumped high viscous mud. Made a wiper trip to the seabed. Ran in the hole and pumped high viscous mud and circulated. Ran a singleshot survey. Picked up the kelly and washed from 116 m to 222 m. Circulated to clean out the hole. Displaced the hole with mud. Dropped a survey and pulled out of the hole. Rigged up and ran the 30" casing. Circulated to conditon the hole. Cemented the 30" casing. Backed out the running tool. Washed the wellhead and pulled out of the hole. Laid down bit, 36" hole opener and MWD-tool. Made up bit no. 2 and ran in the hole. Installed 4-armed guide.	
5	500	1.03	1.03	01:30 02:30 03:00 07:00 07:30 24:00	Made up the 12 1/4" pilot hole assembly and ran in the hole. Tagged the cement at 215 m. Drilled out cement from 215 m to 222 m. Circulated the hole clean. Waited on the weather. Drilled out through the 30" casing shoe at 222 m. Drilled 12 1/4" pilot hole to 500 m. While drilling into the sand zone, the	

((((ooo)	D a i l y r e p o r t			..Date..	
	System : Boredata Sandnes			19860923	
Norsk	Casing Size (in):	Well: 30/6-20	30	20	13 3/8
Hydro	Setting depth (m):		222	603	1611

Report number	Mid depth (m)	EST.PORE PRESSURE (SG)	Mud dens. (SG)	Stop time	Short Summary
					well was observed at the seabed with the subsea TV and the remote operation vessel.
6	620	1.03	1.03	05:00	Drilled 12 1/4" pilot hole from 500 m to 620 m.
				06:00	Circulated the hole clean and dropped a survey.
				07:30	Pulled out of the hole, retrieved the survey and laid down the MWD-tool
				08:00	Made up 12 1/4" bit and 26" hole opener.
				10:00	Made up 18 3/4" housing to the running tool and installed the cement plugs.
				12:00	Ran in the hole with the 26" hole opener and tagged the top of the cement at 215 m.
				24:00	Opened up 12 1/4" pilot hole to 26" from 215 m to 500 m.
7	620	1.03	1.03	06:00	Opened up 12 1/4" pilot hole to 26" from 500 m to 617 m.
				07:30	Circulated the hole clean.
				08:30	Made a wiper trip to the 30" casing shoe.
				09:00	Displaced the hole to 1.15 rd mud.
				09:30	Pulled out of the hole to 150 m.
				24:00	Waited on the weather.
8	620	1.03	1.03	24:00	Waited on the weather.
9	620	1.03	1.03	24:00	Waited on the weather.
10	620	1.03	1.03	12:00	Waited on the weather.
				12:30	Ran in the hole to 617 m.
				14:00	Pumped high viscous mud and circulated it out with sea water. Displaced the hole to 1.15 rd mud.
				16:30	Pulled out of the hole and washed the wellhead on the way out.
				17:30	Made up the cement head on the cement kelly and sat the same back in the derrick.
				24:00	Rigged up and ran the 20" casing.
11	620	1.03	1.03	00:30	Ran and landed the 20" casing in the 30" housing. Pulltested to 225 kN.
				06:00	Circulated, mixed and pumped cement and displaced with sea water.

((((ooo)		Daily report			..Date..
		System : Boredata Sandnes			19860923
		Well: 30/6-20			
Norsk	Casing Size (in):	30	20	13 3/8	
Hydro	Setting depth (m):	222	603	1611	

Report number	Mid depth (m)	EST.PORE PRESSURE (SG)	Mud dens. (SG)	Stop time	Short Summary
				08:00	Pulled out of the hole with the running tool. Washed the wellhead on the way out
				09:30	Rigged up to run the BOP. Picked up 2 joints of riser.
				22:00	Waited on the weather to run the BOP due to storm warning.
				24:00	Prepared to run the BOP.
12	620	1.03	1.15	03:30	Prepared to run the BOP.
				09:30	Ran and landed the BOP, pulltested and tested the kill and choke lines. Installed the diverter element and rigged down the BOP handling equipment.
				16:30	Made up the universal BOP test tool and ran in the hole. Attempted to test the BOP without success. Found a leak in the test tool and repaired the same. Was still not able to test the BOP. Found a leak in the choke manifold. Repaired this
				22:30	Tested the BOP to Norsk Hydro's specifications and function tested the acoustic system.
				23:00	Ran in the hole and sat the 18 3/4" seat protector.
				24:00	Pressure tested the surface equipment to N.H.'s specifications.
13	623	1.03	1.15	00:30	Continued with pressure testing the surface equipment.
				05:30	Laid down the 26" bottom hole assembly equipment and made up the 17 1/2" bottom hole assembly. Pressure tested the surface equipment while running in the hole.
				11:00	Drilled the float, the cement and the shoe from 590 m to 603 m. Washed and cleaned from 603 m to 620 m.
				11:30	Drilled 17 1/2" hole from 620 m to 623 m and pumped 1.15 rd mud while drilling.
				12:00	Displaced the kill and choke lines to 1.15 rd mud from TD to the wellhead.
				13:30	Pulled out 7 stands and installed the hang-off assembly. Ran in the hole and hung off the wellhead due to bad weather.
				24:00	Waited on the weather. Disconnected the lower marine riser package at 16:30 hrs.

((((ooo)		D a i l y r e p o r t				..Date..
Norsk Hydro		System : Boredata Sandnes				19860923
		Well: 30/6-20				
		Casing Size (in):	30	20	13 3/8	
		Setting depth (m):	222	603	1611	
Report number	Mid depth (m)	EST.PORE PRESSURE (SG)	Mud dens. (SG)	Stop time	Short Summary	
14	623	1.03	1.15	16:00	Waited on the weather. Attempted to land the lower marine riser package without success. Too much heave and movement of the riser.	
				21:00	Waited on the weather. Attempted to land the lower marine riser package on a second attempt without success. Guideline no. 2 and no. 4 broke. Pulled the ROV and the sub sea TV for repair.	
				24:00	Repaired the sub sea TV frame. Started to repair the the ROV.	
15	623	1.03	1.15	04:30	Waited on the weather while repairing the ROV.	
				06:30	Waited on the weather. Launched the ROV and attempted to locate guideline no.4 without success. Pulled the ROV out of the water.	
				24:00	Waited on the weather. Rebuilt the sub sea TV frame and ran the same on guideline no. 1 and 3. Launched the ROV and re-stabbed guideline no. 4.	
16	710	1.03	1.15	12:00	Waited on the weather. Re-stabbed guideline no. 2-	
				14:00	Landed the lower marine riser package and pulltested.	
				16:30	Ran in the hole and retrieved the hang-off assembly and pressure tested the lower marine riser.	
				17:00	Picked up the kelly. Broke and laid down the cement head.	
				18:00	Ran in the hole to the 20" casing shoe. Displaced the hole 1.15 rd mud.	
				18:30	Performed a leak off test to 1.75 rd.	
				24:00	Ran in the hole to 623 m and drilled 17 1/2" hole to 710 m.	
17	1160	1.03	1.15	14:00	Drilled 17 1/2" hole from 710 m to 997 m	
				14:30	Circulated.	
				16:00	Made a wiper trip to the 20" casing shoe.	
				24:00	Continued to drill 17 1/2" hole from 997 m to 1160 m.	
18	1396	1.03	1.20	03:00	Continued to drill 17 1/2" hole from 1160 m to 1222 m.	
				04:00	Circulated the bottom up.	

((((ooo)		Daily report			..Date..
		System : Boredata Sandnes			19860923
		Well: 30/6-20			
Norsk	Casing Size (in):	30	20	13 3/8	
Hydro	Setting depth (m):	222	603	1611	

Report number	Mid depth (m)	EST.PORE PRESSURE (SG)	Mud dens. (SG)	Stop time	Short Summary
				05:00	Pulled out to the 20" casing shoe. Had tight spots from 1150 m to 1000 m.
				05:30	Slipped the drilling line.
				08:00	Continued with pulling out of the hole. Laid down drill pipe.
				10:30	Made up 13 3/8" cement plugs to the torque multiplier and picked up the 13 3/8" casing hanger.
				11:00	Picked up the cement kelly and made up the cement head.
				13:30	Made up bit no. 5 and ran in the hole to 1185 m.
				14:30	Reamed from 1185 m to 1222 m.
				24:00	Drilled 17 1/2" hole from 1222 m to 1396 m.
19	1606	1.10	1.20	13:00	Drilled 17 1/2" hole from 1396 m to 1606 m.
				16:00	Pulled out of the hole to the 20" casing shoe. Had tight spots from 1586 m to 1174 m.
				19:00	Ran in the hole. Washed and reamed from 1174 m to 1190 m and from 1577 m to 1606 m.
				20:30	Circulated the bottom up.
				23:00	Pulled out of the hole.
				24:00	Ran DIL/LSS/GR/SP.
20	1606	1.08	1.23	06:30	Ran DIL/LSS/GR/SP (run no. 1). Ran LDL/GR/CAL (run no. 2).
				07:30	Picked up 13 3/8" casing hanger from the derrick and serviced the same.
				10:00	Ran in the hole with bit to 1576 m. Washed and reamed to the bottom.
				24:00	Drilled 17 1/2" hole from 1606 m to 1625 m. Had a drilling break at 1624 m. Flow checked - ok. Rised the mud weight to 1.23 rd while drilling.
21	1629	1.08	1.25	01:00	Circulated bottoms up.
				03:30	Made a wiper trip to the 20" casing shoe
				05:00	Drilled from 1625 m to 1629 m. Rised the mud weight to 1.25 rd.
				07:00	Circulated and cleaned the hole.
				09:30	Pulled out of the hole.
				11:30	Retrieved the wear bushing. Washed the wellhead and the BOP.
				12:30	Rigged up to run the 13 3/8" casing.

(((ooo)		D a i l y r e p o r t			..Date..
		System : Boredata Sandnes			19860923
		Well: 30/6-20			
Norsk	Casing Size (in):	30	20	13 3/8	
Hydro	Setting depth (m):	222	603	1611	

Report number	Mid depth (m)	EST.PORE PRESSURE (SG)	Mud dens. (SG)	Stop time	Short Summary
				24:00	Ran the 13 3/8" casing.
22	1629	1.08	1.25	02:00	Ran and landed the 13 3/8" casing.
				08:00	Circulated the casing volume. Mixed and pumped the cement as per program and pressure tested the casing to 231 bar/10 min.
				12:00	Made up the seal assembly and attempted to test without success. Tested the seal assembly. Retorqued the seal assembly and sat the wear bushing.
				18:00	Tested the BOP and function tested the acoustic system.
				19:00	Tested the kelly valves and the kelly hose.
				19:30	Serviced the cement kelly.
				21:30	Laid down the 17 1/2" bottom hole assembly.
				24:00	Picked up the 12 1/4" bottom hole assembly and ran in the hole.
23	1790	1.11	1.38	00:30	Tested the shear rams against the casing to 227 bar/10 min.
				04:00	Continued to pick up the 12 1/4" bottom hole assembly and ran in the hole.
				09:30	Drilled the float, the cement and the shoe from 1586 m to 1611 m. Raised the mud weight to 1.38 rd while drilling. Cleaned the rathole from 1614 m to 1629 m.
				10:00	Drilled 12 1/4" hole from 1629 m to 1632 m.
				11:00	Circulated and cleaned the hole.
				12:00	Tried to perform a leak off test. Not able to get a leak off equivalent to 2.25 rd mud weight.
				24:00	Drilled from 1632 m to 1790 m.
24	2008	1.17	1.38	03:30	Drilled from 1790 m to 1856 m.
				04:00	Circulated bottoms up.
				04:30	Dropped the survey.
				05:00	Pulled out of the hole to the 13 3/8" casing shoe. Had tight spots from 1810 m to 1611 m.
				06:00	Cut and slip the drilling line.
				09:30	Pulled out of the hole and retrieved the survey. Laid down the near bit stabilizer.

((((ooo)		D a i l y r e p o r t			..Date..
		System : Boredata Sandnes			19860923
		Well: 30/6-20			
Norsk	Casing Size (in):	30	20	13 3/8	
Hydro	Setting depth (m):	222	603	1611	

Report number	Mid depth (m)	EST.PORE PRESSURE (SG)	Mud dens. (SG)	Stop time	Short Summary
					12:00 Ran in the hole. 16:00 Drilled from 1856 m to 1931 m. 17:00 Circulated. 17:30 Dropped the survey. Made a wiper trip to the 13 3/8" casing shoe. 18:00 Retrieved the survey which was misrunned 18:30 Ran in the hole. 19:00 Circulated. 20:00 Ran a survey. 24:00 Drilled to 2008 m.
25	2266	1.24	1.38		01:30 Circulated and ran a survey which was misrunned. 03:00 Drilled 12 1/4" hole from 2008 m to 2036 m. 03:30 Circulated and dropped a survey. 04:00 Made a wipertrip to 1887 m. 04:30 Retrieved the survey and ran back in the hole. 10:00 Drilled 12 1/4" hole from 2036 m to 2132 m. 11:00 Circulated and dropped a survey. 11:30 Made a wipertrip to 2010 m. Had tight spots from 2106 m to 2040 m. 12:00 Retrieved the survey and ran back in the hole. 19:00 Drilled 12 1/4" hole from 2132 m to 2237 m. 19:30 Circulated and dropped a survey. 20:00 Made a wipertrip to 2092 m. The maximum overpull was 311 kN. 20:30 Retrieved the survey and ran back in the hole. 24:00 Drilled 12 1/4" hole from 2237 m to 2266 m.
26	2336	1.35	1.38		11:00 Drilled 12 1/4" hole from 2266 m to 2336 m. 11:30 Circulated and dropped a survey. 15:30 Pulled out of the hole. 17:30 Serviced and tested the MWD-tool. The tool was not working properly. 18:30 Ran back in the hole to 800 m. 19:00 Tested the MWD-tool. Got a failure in the Exlog unit. 19:30 Ran in the hole to 1409 m and tested the MWD-tool. The tool worked ok. 20:00 Continued to run in the hole.

((((ooo)		D a i l y r e p o r t			..Date.. 19860923
		System : Boredata Sandnes			
		Well: 30/6-20			
Norsk	Casing Size (in):	30	20	13 3/8	
Hydro	Setting depth (m):	222	603	1611	

Report number	Mid depth (m)	EST.PORE PRESSURE (SG)	Mud dens. (SG)	Stop time	Short Summary
				22:00	Washed and reamed.
				23:30	Drilled 12 1/4" hole from 2334 m to 2336 m.
				24:00	Pulled out of the hole.
27	2493	1.35	1.39	00:30	Continued with pulling.
				01:00	Slipped the drilling line.
				02:30	Pulled out of the hole.
				03:30	Ran back in the hole with bit no. 10.
				04:00	A hose burst on the racking arm. Rigged up to run in the hole manual.
				05:30	Continued to run in the hole manually.
				06:30	Washed and reamed to the bottom. Had 6 m fill. Worked the junk basket.
				24:00	Drilled 12 1/4" hole from 2336 m to 2497 m.
28	2594	1.35	1.38	07:00	Drilled 12 1/4" hole from 2493 m to 2530 m.
				10:00	Circulated and pulled out of the hole.
				13:00	Ran back in the hole with new bottom hole assembly. Washed and reamed from 2475 m to 2530 m.
				24:00	Drilled 12 1/4" hole from 2530 m to 2594 m. Had a drilling break from 2574 m to 2575 m and flow checked. The well was stable.
29	2702	1.35	1.38	20:00	Drilled 12 1/4" hole from 2594 m to 2702 m.
				20:30	Took MWD survey.
				23:30	Pulled out of the hole.
				24:00	Ran back in the hole with bit no. 12.
30	2837	1.35	1.39	00:30	Continued running in the hole.
				01:30	Repaired a leak on the water cooling system for the draw-work brake.
				03:30	Continued running in the hole to 2682 m.
				04:00	Washed and reamed from 2682 m to 2702 m.
				11:00	Drilled 12 1/4" hole from 2702 m to 2749 m.
				12:30	Circulated bottoms up for samples.
				22:30	Drilled from 2749 m to 2837 m.
				23:00	Dropped a survey.
				24:00	Pulled out of the hole.
31	2958	1.21	1.39	00:30	Pulled out of the hole to 845 m.
				01:30	Slipped and cut the drilling line and

((((ooo)		Daily report			..Date..
		System : Boredata Sandnes			19860923
		Well: 30/6-20			
Norsk	Casing Size (in):	30	20	13 3/8	
Hydro	Setting depth (m):	222	603	1611	

Report number	Mid depth (m)	EST.PORE PRESSURE (SG)	Mud dens. (SG)	Stop time	Short Summary
					retrieved the survey. 03:00 Continued pulling out of the hole. 06:00 Ran back in the hole with wit no. 13. 21:00 Drilled 12 1/4" hole from 2837 m to 2942 m. 22:30 Circulated bottoms up for samples. 24:00 Drilled 12 1/4" hole from 2942 m to 2958 m.
32	3046	1.21	1.39		03:30 Continued with drilling 12 1/4" hole from 2958 m to 2982 m. 05:30 Circulated the bottom up. 06:00 Dropped a survey. 09:00 Pulled out of the hole. 09:30 Laid out the junk sub and picked up bit no. 14. 11:30 Ran back in the hole to 1585 m. 13:00 Continued running in the hole to 2963 m. 13:30 Washed and reamed from 2963 m to 2982 m. 18:30 Drilled 12 1/4" hole from 2982 m to 3046 m. 20:00 Circulated the bottom up. 23:00 Pulled out of the hole. 23:30 Laid down the monel and the MWD tool. 24:00 Rigged up for logging.
33	3046	1.21	1.39		12:30 Rigged up and ran the following logs: DIL/LSS/GR. In 0015 hrs, out 0610 hrs. LDT/CNL/GR. In 0745 hrs, out 1230 hrs. The hole was tight at 2630 m. 13:30 Rigged down the logging equipment. 18:00 Ran in the hole to 2630 m. Picked up the kelly and washed and reamed from 2630 m to 2640 m. Laid down the kelly and continued running in the hole to 3030 m. 19:00 Picked up the kelly and washed and reamed from 3030 m to 3046 m. 21:00 Circulated the bottom up. 24:00 Pulled out of the hole.
34	3046	1.21	1.39	24:00	Ran RFT pretests. Ran VSP survey. Ran SHDT/GR. In 22:30 hrs.
35	1533	1.03	1.39	08:30	Ran following logs: SHDT/GR, CST (shot 30, lost 4 and misfired 2) and

((((ooo)	Daily report			..Date..
	System : Boredata Sandnes			19860923
Norsk	Casing Size (in):	30	20	13 3/8
Hydro	Setting depth (m):	222	603	1611

Report number	Mid depth (m)	EST.PORE PRESSURE (SG)	Mud dens. (SG)	Stop time	Short Summary
					CBL/VD1/GR.
				09:00	Rigged down the logging equipment.
				09:30	Slipped and cut the drill line.
				12:30	Ran in the hole with 5" open ended drillpipe to 3046 m
				13:00	Hooked up the surface lines and pressure tested them. Broke the circulation.
				14:00	Set abandonment plug no. 1 from 3046 m to 2883 m.
				14:30	Pulled out of the hole to 2836 m.
				15:30	Set abandonment plug no. 2 from 2836 m to 2640 m.
				16:30	Pulled out of the hole to 1720 m.
				17:00	Pumped and displaced a high viscous mud pill on the bottom. Pulled out of the hole to 1661 m.
				18:00	Set abandonment plug no. 3 from 1661 m to 1511 m.
				19:00	Pulled out of the hole to 1375 m. Reverse circulated the drillpipe contents. Got no cement returns.
				21:30	Pulled out of the hole.
				23:00	Waited on the cement.
				24:00	Ran in the hole with 5" open ended drillpipe.
36	139	1.03	1.03	01:30	Continued to run in the hole with 5" open ended drillpipe. Tagged the top of the cement at 1533 m.
				04:00	Pulled out of the hole.
				05:00	Ran in the hole and retrieved the wear bushing.
				06:30	Ran in the hole and backed out the seal assembly.
				09:30	Picked up the 13 3/8" cutting assembly and ran in the hole. Cut the casing at 337 m with the upper annular closed. There was no sign of any pressure.
				12:00	Picked up the 13 3/8" spear assembly and ran in the hole. Recovered the cut casing.
				14:30	Ran in the hole with 5" open ended drillpipe to 339 m. Set abandonment plug no. 4.
				16:00	Displaced the riser to seawater. Jet the wellhead and the BOP and flushed the choke and kill lines. Laid down the drillpipe.

((((ooo)		D a i l y r e p o r t				..Date..
		System : Boredata Sandnes				19860923
		Well: 30/6-20				
Norsk	Casing Size (in):	30	20	13 3/8		
Hydro	Setting depth (m):	222	603	1611		

Report number	Mid depth (m)	EST.PORE PRESSURE (SG)	Mud dens. (SG)	Stop time	Short Summary
				20:00	Pulled the BOP's.
				22:00	Cleaned, inspected and greased the LMR connection. Replaced the VX ring.
				22:30	Rigged down the BOP handling equipment.
				24:00	Made up the assembly for blowing the 20"/30" casing.
37	139	1.03	1.03	01:00	Recoverd the beacon from the permanent guide base.
				03:00	Rigged up and ran 25 kg explosive charge and blew 30" and 20" casing at 5 m below the seabed.
				07:00	Made up the spear assembly. Stabbed into and pulled out of the hole with the 18 3/4" housing.
				16:00	Anchor handling. Last anchor bolstered at 16:00 hrs.

3.3 Time distribution

The total time used to move the rig to the location, drill the well and permanently plug and abandon the well 30/6-20 was 36.2 days.

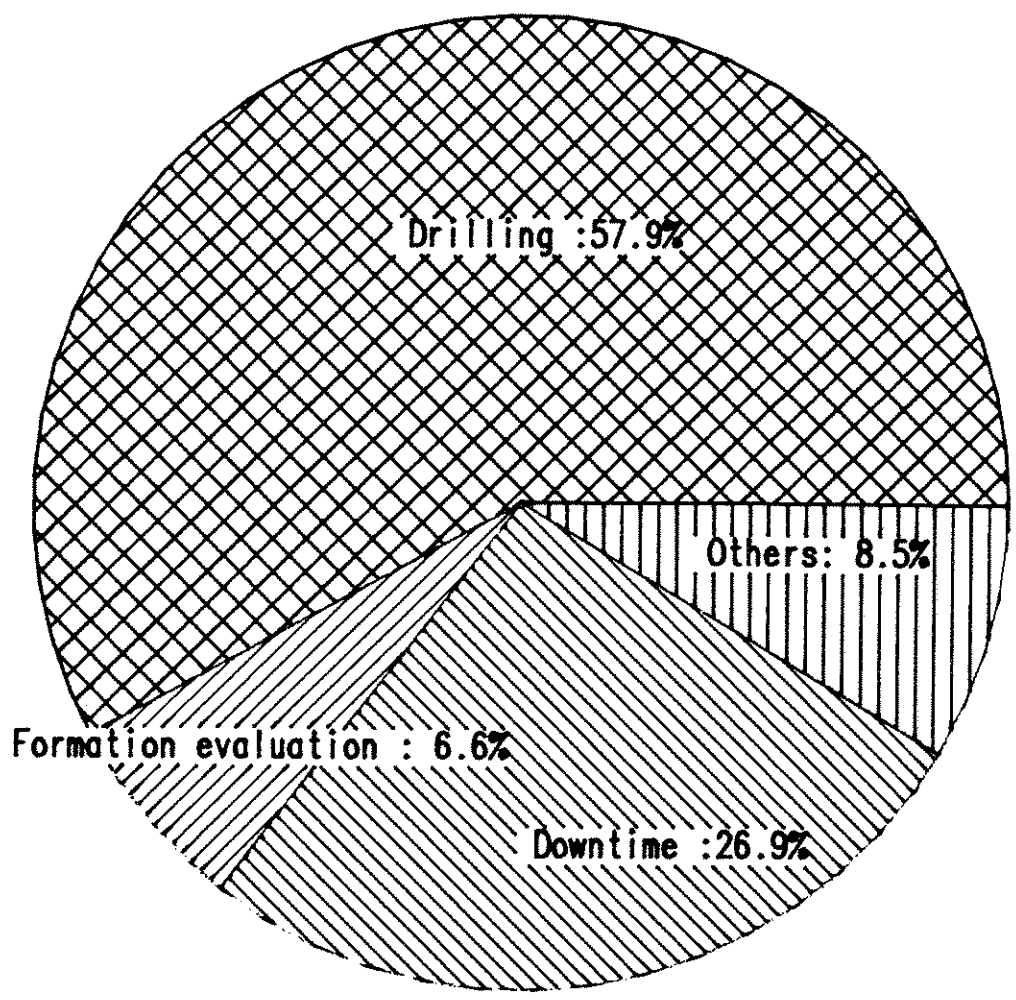
The time distribution is shown in table B-1 and fig B-2.

The operations can be broken down into the following main groups:

-	Moving and positioning of the rig:	1.50
-	Drilling the well to TD :	20.96
-	Formation evaluation :	2.40
-	Downtime :	9.73
-	Plug and abandonment :	1.58

((((ooo)		Time distribution				..Date..
Norsk Hydro		System : Boredata Sandnes Well: 30/6-20 Rig name: Treasure Scout Phase : All phases				19860829
Operations	Hrs	%	Hrs	%	Subtotal	
Rig moving.....						
Rig moving	: 18.0	2.07				
Mooring	: 18.0	2.07				
Sum			36.00	4.15	36.00	
Drilling.....						
Drilling	: 249.0	28.69				
Opening hole	: 18.0	2.07				
Tripping	: 85.5	9.85				
Circ. and cond. hole and mud	: 13.0	1.50				
Formation leak off test	: 2.5	.29				
Surveying	: 8.0	.92				
Sub sea equipment handling	: 23.0	2.65				
BOP testing/activities	: 12.0	1.38				
Other equipment testing	: 3.0	.35				
Running casing	: 71.0	8.18				
Primary cementing	: 14.5	1.67				
Slip and cut drilling line	: 3.5	.40				
Sum			503.00	57.95	539.00	
Formation evaluation.....						
Circulating for samples	: 3.0	.35				
Logging	: 54.5	6.28				
Sum			57.50	6.62	596.50	
Production testing.....						
Sum00	.00	596.50	
Plug and abandonment.....						
Tripping	: 12.0	1.38				
Circ and cond mud/hole	: 1.0	.12				
Cement plug	: 8.0	.92				
Cutting	: 6.5	.75				
Equipment recovery	: 9.0	1.04				
Other	: 1.5	.17				
Sum			38.00	4.38	634.50	
Downtime.....						
Reaming	: 11.0	1.27				
Wiper trip	: 12.5	1.44				
Waiting on weather	: 196.0	22.58				
Sub sea equipment repair	: 10.0	1.15				
Drilling equipment repair	: 1.5	.17				
Formation eval equip repair	: 2.5	.29				
Sum			233.50	26.90	868.00	
Completion.....						
Sum00	.00	868.00	
Reported time (100.00 % of well total			868.00 hours) :		868.00	

29 AUG '86 10:52 AM BY SDHILL4



TIME REPORTED (HRS) 868 OF TOTAL: 868

<u>TOTAL OTHERS</u>	<u>8.5 %</u>
Rig moving	: 4.1 %
Plug and abandonment	: 4.4 %



Norsk Hydro
Drilling Department

Date:19860829

TIME DISTRIBUTION

WELL: 30/6-20

FIG.
B-2

NORSK JHO

((((ooo)		H o l e d e v i a t i o n					..Date..	
Norsk Hydro		Well: 30/6-20		System : Boredata Sandnes		19860904		
				Proposed direction (deg): 0				
Measured Depth (m)	Incli- nation (deg)	Dir- ection (deg)	Surveytool	Vert. Depth (m)	Coordinates North (m)	East (m)	Vert. Section (m)	Dogleg Severity deg/30m
130.0	0.30	99.00	MWD	130.0	-0.05	0.34	0.1	0.07
142.0	0.70	160.00	MWD	142.0	-0.13	0.39	0.1	1.53
151.0	0.20	165.00	MWD	151.0	-0.19	0.42	0.2	1.67
161.0	0.40	78.00	MWD	161.0	-0.20	0.45	0.2	1.31
170.0	0.40	58.00	MWD	170.0	-0.18	0.51	0.2	0.46
179.0	0.60	268.00	MWD	179.0	-0.17	0.49	0.2	3.22
187.0	0.50	125.00	MWD	187.0	-0.19	0.48	0.2	3.91
197.0	0.60	55.00	MWD	197.0	-0.18	0.56	0.2	1.91
206.0	0.60	165.00	MWD	206.0	-0.20	0.61	0.2	3.28
214.0	0.50	200.00	Singleshot	214.0	-0.27	0.61	0.3	1.29
216.0	0.80	164.00	MWD	216.0	-0.30	0.61	0.3	7.39
236.0	0.90	177.00	MWD	236.0	-0.59	0.65	0.6	0.32
266.0	0.40	233.00	MWD	266.0	-0.88	0.58	0.9	0.75
295.0	0.50	105.00	MWD	295.0	-0.98	0.62	1.0	0.84
324.0	0.90	359.00	MWD	324.0	-0.78	0.74	0.8	1.18
372.0	0.50	359.00	MWD	372.0	-0.20	0.73	0.2	0.25
400.0	0.40	125.00	MWD	400.0	-0.13	0.81	0.1	0.86
606.0	0.25	234.00	MWD	606.0	-0.81	1.03	0.8	0.08
620.0	0.25	306.00	Singleshot	620.0	-0.81	0.99	0.8	0.63
638.0	0.30	75.00	MWD	638.0	-0.77	1.00	0.8	0.83
658.0	0.40	300.00	MWD	658.0	-0.72	0.99	0.7	0.97
755.0	0.44	41.00	MWD	755.0	-0.27	0.94	0.3	0.20
861.0	0.66	189.00	MWD	861.0	-0.57	1.11	0.6	0.30
946.0	0.38	201.00	MWD	946.0	-1.32	0.93	1.3	0.11
993.0	0.15	52.00	MWD	993.0	-1.42	0.93	1.4	0.33
1098.0	0.28	97.00	MWD	1098.0	-1.37	1.29	1.4	0.06
1204.0	0.77	130.00	MWD	1204.0	-1.86	2.09	1.9	0.16
1299.0	0.87	175.00	MWD	1299.0	-2.99	2.64	3.0	0.20
1395.0	0.48	200.00	MWD	1395.0	-4.09	2.57	4.1	0.15
1502.0	1.09	128.00	MWD	1501.9	-5.14	3.22	5.1	0.29
1602.0	1.30	91.00	MWD	1601.9	-5.75	5.10	5.7	0.24
1621.0	1.56	100.00	MWD	1620.9	-5.79	5.57	5.8	0.54
1658.0	2.20	112.00	MWD	1657.9	-6.15	6.73	6.1	0.61
1688.0	1.60	133.00	MWD	1687.9	-6.65	7.57	6.6	0.91
1736.0	2.40	107.00	MWD	1735.9	-7.40	9.02	7.4	0.74
1784.0	3.30	114.00	MWD	1783.8	-8.26	11.24	8.3	0.60
1832.0	5.10	111.00	MWD	1831.7	-9.58	14.50	9.6	1.13
1843.0	5.13	122.00	Singleshot	1842.6	-10.02	15.37	10.0	2.67
1851.0	5.50	130.00	MWD	1850.6	-10.45	15.97	10.5	3.10
1911.0	4.40	126.00	Singleshot	1910.4	-13.66	20.03	13.7	0.58

((((ooo) Norsk Hydro	H o l e d e v i a t i o n		..Date.. 19860904
	Well: 30/6-20	System : Boredata Sandnes Proposed direction (deg): 0	
			11

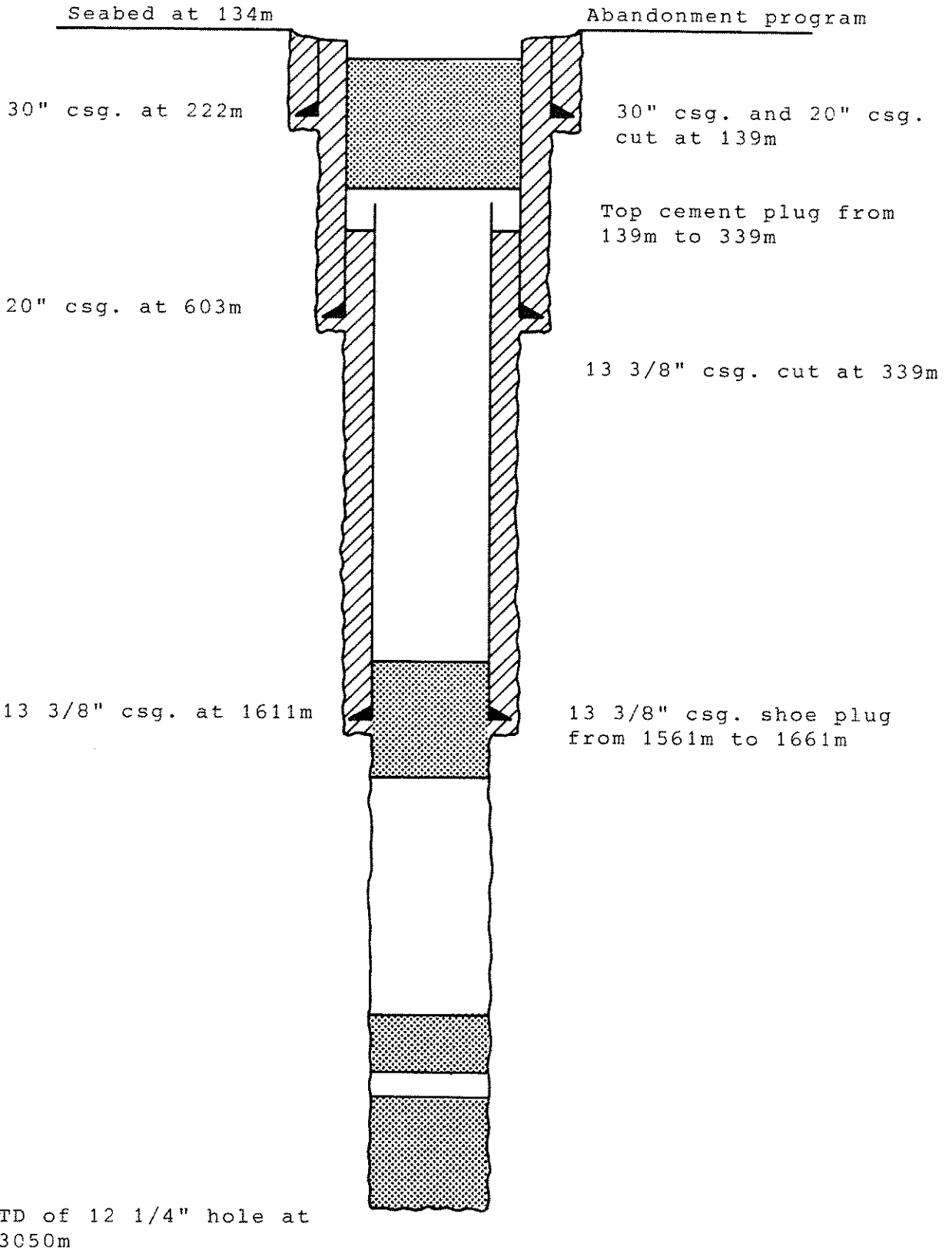
Measured Depth (m)	Inclination (deg)	Direction (deg)	Surveytool	Vert. Depth (m)	Coordinates North (m)	East (m)	Vert. Section (m)	Dogleg Severity deg/30m
1931.0	4.90	125.00	MWD	1930.3	-14.60	21.35	14.6	0.76
1972.0	4.20	105.00	MWD	1971.2	-15.99	24.24	16.0	1.26
2000.0	3.50	102.00	MWD	1999.1	-16.43	26.06	16.4	0.78
2021.0	3.00	115.00	Singleshot	2020.1	-16.80	27.19	16.8	1.27
2037.0	2.80	107.00	MWD	2036.1	-17.09	27.94	17.1	0.85
2075.0	2.20	105.00	MWD	2074.0	-17.55	29.53	17.5	0.48
2117.0	2.00	132.00	Singleshot	2116.0	-18.25	30.86	18.2	0.71
2152.0	2.40	97.00	MWD	2151.0	-18.75	32.04	18.7	1.18
2223.0	1.10	107.00	Singleshot	2221.9	-19.13	34.17	19.1	0.56
2228.0	1.50	98.00	MWD	2226.9	-19.15	34.28	19.1	2.69
2305.0	1.10	126.00	MWD	2303.9	-19.72	35.87	19.7	0.29
2334.0	1.00	165.00	Singleshot	2332.9	-20.13	36.16	20.1	0.73
2360.0	1.09	128.00	MWD	2358.9	-20.50	36.42	20.5	0.77
2455.0	2.04	142.00	MWD	2453.9	-22.39	38.17	22.4	0.32
2504.0	1.80	138.00	MWD	2502.8	-23.65	39.22	23.7	0.17
2525.0	1.50	137.00	MWD	2523.8	-24.10	39.63	24.1	0.43
2577.0	1.50	83.00	MWD	2575.8	-24.51	40.77	24.5	0.79
2626.0	1.05	97.00	MWD	2624.8	-24.49	41.85	24.5	0.33
2675.0	1.10	117.00	MWD	2673.8	-24.76	42.72	24.8	0.23
2697.0	0.70	96.00	MWD	2695.8	-24.87	43.04	24.9	0.70
2962.0	1.50	140.00	Singleshot	2960.7	-27.69	46.88	27.7	0.13
2969.0	1.50	140.00	MWD	2967.7	-27.83	47.00	27.8	0.00

4. PERMANENT ABANDONMENT OF THE WELL

The permanent abandonment program is shown in fig B-3 and was carried out in the following way.

1. Set cement plug no 1 in 12 1/4" hole from 3046 m to 2883 m.
2. Set cement plug no 2 in 12 1/4" hole from 2836 m to 2692 m.
3. Set cement plug no 3 in the 13 3/8" casing shoe from 1661 m to 1561 m.
4. Cut the 13 3/8" casing at 337 m with the upper annular closed and retrieved the casing.
5. Set a 200 m balanced cement plug from 339 m to 139 m.
6. Cut 30" and 20" casing at 139 m with explosives and retrieved both casings, 18 3/4" wellhead and permanent guide base.

ALL DEPTHS REFER TO RKB



 Norsk Hydro Drilling Department	WELL STATUS AFTER PERMANENT ABANDONMENT OF WELL 30/6-20	Gr. no.: 3	Fig.: B-3
		Date:	Dwg. no.: 20
		Sign:	

5. PORE PRESSURE; FORMATION INTEGRITY, OVERBURDEN GRADIENT AND FORMATION TEMPERATURE

5.1 Pore pressure

The pore pressure in well 30/6-20 is estimated, taking into consideration the Dc-exponent, the Sonic-log, the litho-Density-Log, the gas readings and the RFT-logs. Main emphasis have been put on the Dc-exponent, the Sonic-log and the RFT-logs. The pore pressure has been calculated using the equivalent-depth-method, and all depths are in mTVD with reference to RKB, unless stated otherwise.

Seabed (134 m) to approx. 1500 m

Both the Dc-exponent and the Sonic-log indicates normal comaction, i.e. a normal pore pressure of 1.03 rd down to approx. 1500 m.

1500 m to top of Cretaceous (2284 m)

The Dc-exponent and the Sonic-log shows a divergence from the normal trend, indicating that the pore pressure starts to increase from approx. 1500 m. This is backed up by a slight reduction in recorded formation density. The pore pressure is increasing gradually through the Eocene and Paleocene and is estimated to 1.30 rd at approx. 2260 m.

2284 m to top of Jurassic (2664 m)

All parametres indicate that the pore pressure is constant at 1.30 rd through the Cretaceous (2284 m-2264 m).

2664 m to T.D. (3045 mTVD)

The pore pressure is believed to decrease down to the top of the Cook Fm. at 2746 m. RFT-logs shows a pore pressure of 1.20 rd at 2755 m, decreasing to 1.86 rd at 3021 m.

5.2 Formation integrity

In well 30/6-20 there were performed 2 Formation-Integrity-Tests (F.I.T.) with the following results. All depths are in mTVD with reference to RKB.

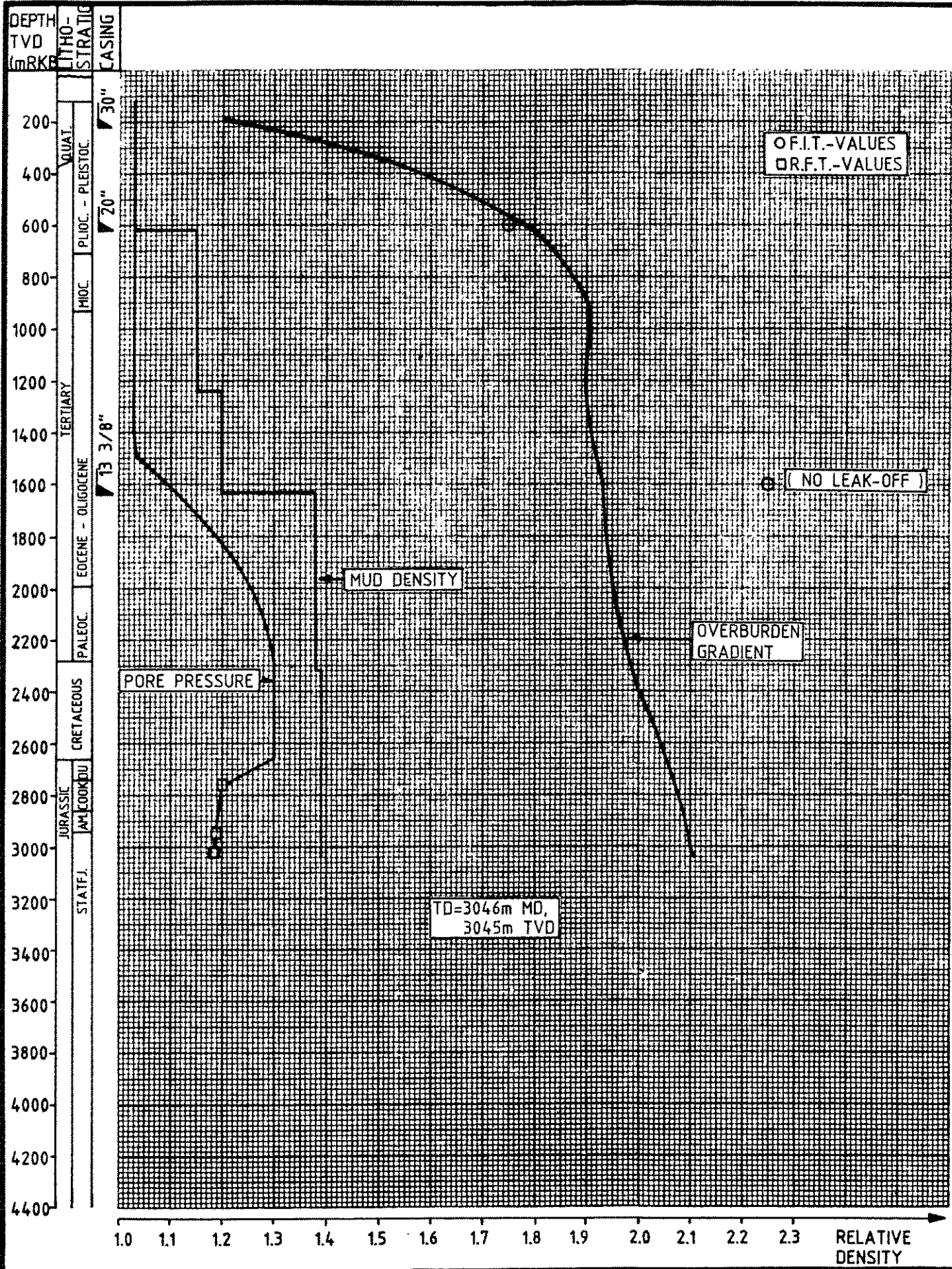
Depth (mTVD)	F.I.T. (rd)	Remarks
602	1.75	
1611	2.25	No leak-off

5.3 Overburden gradient

The overburden gradient in well 30/6-20 is calculated from the Litho-Density-Log.

5.4 Formation temperature

The maximum recorded temperatures obtained during electric logging have been converted to bottom hole static temperatures (B.H.S.T.) by using the Horner-plot technique. The average temperature gradient is 40°C/1000 m, this is based on DST-data obtained from the other wells in the Oseberg area. The reason why the data-points from 30/6-20 don't plot on the temperature curve, is most likely caused by the limitations of the Horner-plot technique.



Norsk Hydro
Drilling Department

**PORE PRESSURE, MUD DENSITY
FORMATION INTEGRITY AND
OVERBURDEN GRADIENT
WELL 30/6-20**

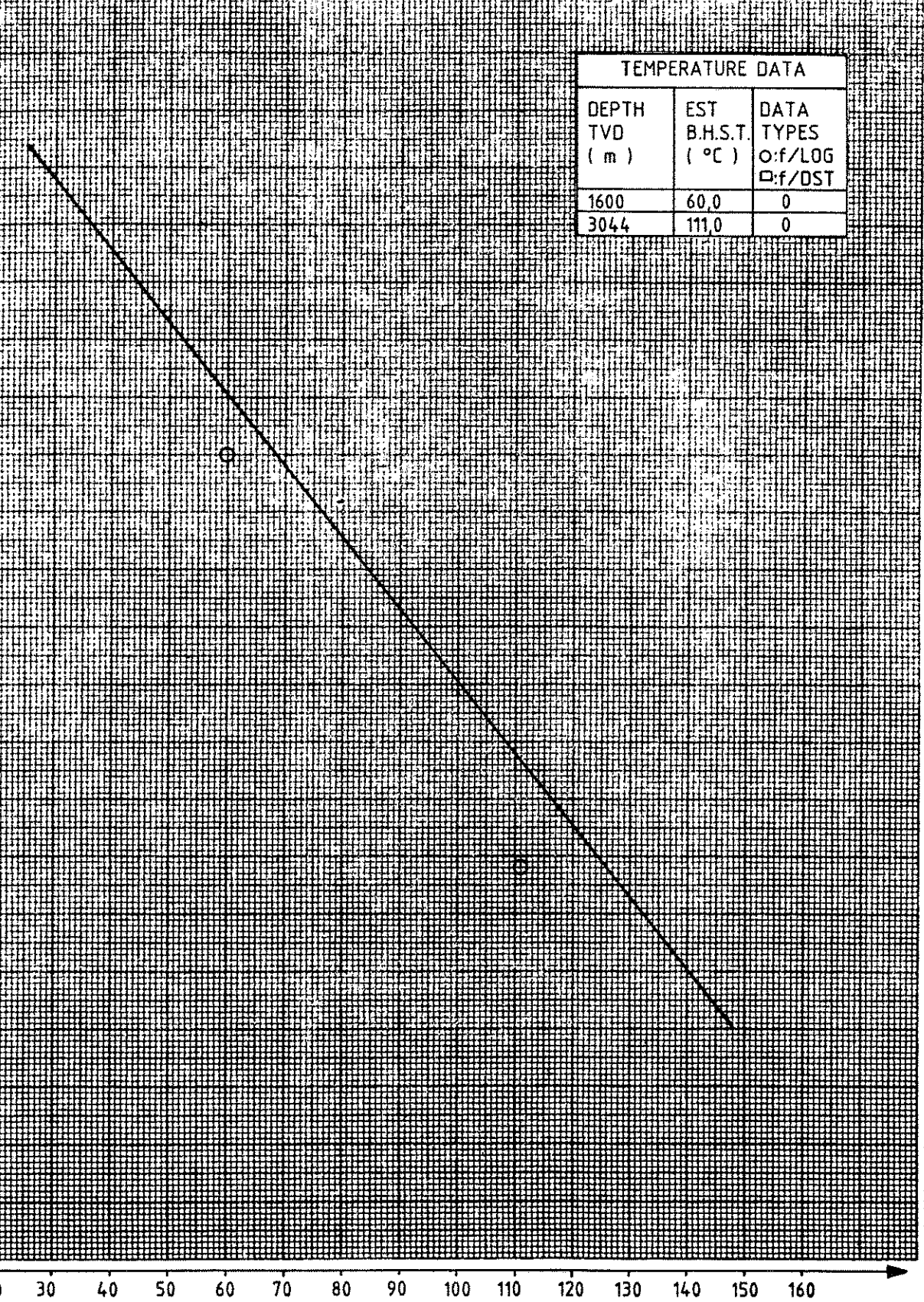
Gr. no.: 3
Date: 01.10.86
Sign: BDI/

Fig.: B-4
Dwg. no.: 34

DEPTH TVD (mRKB)

LITHO-STRATIGRAPHIC CASING

200 QUAT. 30"
 400 PLIOC.-PLEISTOC. 20"
 600
 800 MIDC.
 1000 TERTIARY
 1200
 1400 13 3/8"
 1600 EOCENE - OLIIGOCENE
 1800
 2000 PALEOC.
 2200
 2400 CRETACEOUS
 2600
 2800 JURASSIC STATEJ. AM COON DU
 3000
 3200
 3400
 3600
 3800
 4000
 4200
 4400



DEPTH TVD (m)	EST B.H.S.T. (°C)	DATA TYPES
1600	60,0	0
3044	111,0	0

ESTIMATED FORMATION TEMPERATURE °C

Norsk Hydro
 Drilling Department

TEMPERATURE PROFILE
 WELL 30/6-20

Gr. no.: 3	Fig.: B-5
Date: 01.10.86	Dwg. no.: 35
Sign: BDI/	

P o r e p r e s s u r e						..Date..
(((19861001
(ooo)						
System : Boredata Sandnes						
Well: 30/6-20						
Norsk Seabed at: 134 mRKB						
Hydro Total depth: 3046 m,MD,RKB						
Vertical depth (m)	Pore pressure from soniclog (SG)	Pore pressure from DC-exp. (SG)	RFT/FMT (SG)	Most probable pore pressure (SG)	Actual mud density used (SG)	
134				1.03	1.03	
200				1.03	1.03	
400				1.03	1.03	
620	1.03			1.03	1.15	
800	1.03	1.03		1.03	1.15	
1000	1.03	1.03		1.03	1.15	
1200	1.03	1.03		1.03	1.15	
1250	1.03	1.03		1.03	1.20	
1400	1.03	1.03		1.03	1.20	
1500	1.05	1.03		1.03	1.20	
1560	1.05	1.08		1.05	1.20	
1630	1.09	1.10		1.09	1.38	
1700	1.13	1.10		1.13	1.38	
1800	1.18	1.15		1.18	1.38	
1900	1.23	1.20		1.23	1.38	
2000	1.26	1.21		1.26	1.38	
2100	1.28	1.21		1.28	1.38	
2200	1.29	1.25		1.29	1.38	
2280	1.30	1.30		1.30	1.38	
2330	1.30	1.30		1.30	1.39	
2660	1.30	1.30		1.30	1.39	
2755			1.20	1.20	1.39	
2770			1.20	1.20	1.39	
2944			1.19	1.19	1.39	
3021			1.18	1.18	1.39	
3045				1.18	1.39	

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|          |          F o r m a t i o n   i n t e g r i t y          |          ..Date..
|  ((     |-----|          |          |          |          |          |
| (ooo)   |          |          |          |          |          |          |
|-----|          |          |          |          |          |          |
| Well: 30/6-20
| Norsk   | Seabed at: 134 mRKB
| Hydro   | Total depth: 3046 m,MD,RKB
=====

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Casing depth (m)	Open hole depth	Formation integrity strenght (SG)
603	623	1.75
1611	1629	2.25

6. MATERIALS REPORT

- 6.1 Main consumption casing and wellhead
- 6.2 Main consumption cement and additives
- 6.3 Bottom hole assembly
- 6.4 Mud report
- 6.5 Cement report

01880

sn,BEn/SAN

((((ooo)	M a i n c o n s u m p t i o n s	..Date..
Norsk Hydro	System : Boredata Sandnes Well: 30/6-20 Wellhead: McEvoy Z-1	19860904
		5

C a s i n g				
size (in)	grade	weight kg/m	threads type	length (m)
30	B		LYNX	90
20	X56	18.388	LS	471
13 3/8	N-80	9.9546	BUTT	1477

((((ooo)	M a i n c o n s u m p t i o n s	..Date.. 19860904
Norsk Hydro	System : Boredata Sandnes Well: 30/6-20 Cement contractor: DOWELL SCHLUMBERGER	

5

Casing size (in)	Additive name	Total used (l)
30		
Spacer		0
Lead-	Cement	10476
	Seawater	246609
	D111	23179
	D77	1148
Tail-	Cement	7937
	Seawater	118000
	D77	11100
Flush		0
20		
Spacer		0
Lead-	Cement	27467
	Seawater	1119482
	D75	38398
Tail-	Cement	3124
	Seawater	43699
	D77	1750
Flush		0
13 3/8		
Spacer		0
Lead-	Cement	20737
		543985
	D75	17401
	D81	10000
Tail-	Cement	6232
		87501
	D81	400
Flush		0

Bit record										Date..		Date..						
System : Boredata Sandnes										19860905		19860905						
Well: 30/6-20										4		4						
BIT NUMBER	SIZE (in)	Manu- fact- urer	Trade Name	Serial number	IADC Code	Nozzles diameter (./32")	BHA no.	Depth out (m)	Bit meter (m)	Drill time (hrs)	Rot. hours (hrs)	ROP (m/h)	Rotation min/max (rpm)	Total bit revel.	Weight min/max (KN)	Flow min/max (m3/h)	Wear T B G Other	Remarks
1	17 1/2	HTC	X3A		114	16 16 16	1	222	88	5.1	17.3	60/80		12904	245/	1 1		
2	36	Grant		VDO06	114	16 16 16 16	1	222	88	7.0	12.6	60/80		82995	238/	4 2 0		
3	12 1/4	HTC	X3A		114	20 20 20	2	620	398	23	18.8	21.2	60/115		/60			
4	12 1/4	Smith	SDS	XB1773	114		3	617	617	0								
5	26	Grant			114		3	617	398	18.0	15.1	26.4	90/105	75125	45/58	/248	2	
6	17 1/2	HTC	X3A	269WL	114	24 24 24	4	1222	605	22.3	27.1	110/115		140176	60/130	/238	4 2 13	Cmt+form
7	17 1/2	Smith	SDS	XB9309	114	24 22 22 16	5	1606	384	17.9	21.5	90/130		123681	90/180	/221	6 2 6	
8	17 1/2	HTC	XDG	607TL	135	13 13 13	6	1629	23	31.5	14.9	1.5	90/110	76871	134/170	/221	6 2 3	
9	12 1/4	HTC	X3A	499LL	114	13 13 13	7	1856	227	16.0	11.9	19.1	60/135	86383	50/120	/123	5 5 2	Cem+form
10	12 1/4	Smith	SDS	XB1481	114	13 13 13	8	2334	478	36.5	30.5	15.7	60/180	244753	50/180	/123	5 6 0	Clyst
11	12 1/4	Reed	MP-110	26243		13 13 13	9	2336	2	1.5	1.5	1.3	60/180	15146	9/222	/129		Ream43m, Cl
12	12 1/4	Smith	SDGH	XB0003	135	13 13 13	10	2530	194	21.1	9.2	120/150		162946	50/220	/123	6 8 0	Clyst/L.st
13	12 1/4	HTC	XDV	370LL	215	13 13 13	11	2702	172	27.2	6.3	110/150		88/267	/120	6 7 0	Slst/clst	
14	12 1/4	Smith	SDGH	XB9626	135	13 13 13	12	2837	135	14.8	9.1	110/140		109528	53/289	/119	7 8 0	S.st/clyst
15	12 1/4	HTC	XDG	039RL	135	13 13 13	13	2982	145	20.0	17.5	8.3	105/140	123247	195/220	/120	6 8 0	S.st/clyst
16	12 1/4	HTC	XDG	036RL	135	14 14 14	14	3044	62	5.0	4.6	13.5	110/170	36031	100/270		3 4 2	S.st/clyst

((((ooo)	Bottom hole assembly		..Date..
	System : Boredata Sandnes		19860905
Norsk Hydro	Well: 30/6-20		
			7

BHA no.:1 Item:no./name/OD,in/length,m Depth interval MD,m: 134-222

1	Bit	17 1/2	.42	7	DC Steel	9 1/2	36.42
2	Hole Opener	36	1.70	8	X-over		.64
3	Bit Sub		1.42	9	DC Steel	8	53.92
4	MWD		9.62	10	X-over		1.20
5	X-over		.50	11	Other		1.50
6	Nonmag collar		8.79	12	HWDP	5	63.56

BHA no.:2 Item:no./name/OD,in/length,m Depth interval MD,m: 215-620

1	Bit	12 1/4	.30	6	DC Steel	8	53.92
2	MWD		10.87	7	Jar	8	11.72
3	Nonmag collar		8.39	8	DC Steel	8	18.20
4	DC Steel	8	9.06	9	X-over		1.20
5	Steel stab	12 1/4	1.55	10	HWDP	5	109.53

BHA no.:3 Item:no./name/OD,in/length,m Depth interval MD,m: 215-618

1	Bit	12 1/4	.30	7	Nonmag collar	8	8.39
2	Hole Opener	26	1.92	8	DC Steel	8	62.98
3	Bit Sub		1.42	9	Jar	8	11.72
4	Nonmag collar	9 1/2	8.79	10	DC Steel	8	18.20
5	DC Steel	9 1/2	36.42	11	X-over		1.20
6	X-over		1.23	12	HWDP	5	109.30

BHA no.:4 Item:no./name/OD,in/length,m Depth interval MD,m: 620-1222

1	Bit	17 1/2	.42	8	X-over		1.23
2	Bit Sub		1.42	9	DC Steel	8	53.92
3	MWD		9.60	10	Jar	8	11.72
4	Other		.50	11	DC Steel	8	18.20
5	Nonmag collar		8.79	12	X-over		1.20
6	Steel stab	17 1/2	2.48	13	HWDP	5	136.63
7	DC Steel	9 1/2	36.42				

BHA no.:5 Item:no./name/OD,in/length,m Depth interval MD,m:1222-1606

1	Bit	17 1/2	.42	8	X-over		1.23
2	Bit Sub		1.42	9	DC Steel	8	53.92
3	MWD		9.60	10	Jar	8	11.72
4	Other		.50	11	DC Steel	8	18.20
5	Nonmag collar		8.79	12	X-over		1.20
6	Steel stab	17 1/2	2.48	13	HWDP	5	136.63
7	DC Steel	9 1/2	36.42				

BHA no.:6 Item:no./name/OD,in/length,m Depth interval MD,m:1606-1629

1	Bit	17 1/2	.42	8	X-over		1.23
2	Bit Sub		1.42	9	DC Steel	8	53.92
3	MWD		9.60	10	Jar	8	11.72
4	Other		.50	11	DC Steel	8	18.20

((((ooo)	Bottom hole assembly		..Date..
	System : Boredata Sandnes		19860905
Norsk Hydro	Well: 30/6-20		7

5	Nonmag collar		8.79	12	X-over		1.20
6	Steel stab	17 1/2	2.48	13	HWDP	5	136.63
7	DC Steel	9 1/2	36.42				

BHA no.:7 Item:no./name/OD,in/length,m Depth interval MD,m:1629-1856

1	Bit	12 1/4	.30	7	Steel stab	12 1/4	1.55
2	Nearbit stab	12 1/4	1.54	8	DC Steel	8	107.85
3	MWD		10.94	9	Jar	8	11.72
4	Nonmag collar		8.39	10	DC Steel	8	35.85
5	Steel stab	12 1/4	1.97	11	X-over		1.20
6	DC Steel	8	26.52	12	HWDP	5	136.63

BHA no.:8 Item:no./name/OD,in/length,m Depth interval MD,m:1856-2334

1	Bit	12 1/4	.30	7	DC Steel	8	107.85
2	MWD		10.94	8	Jar	8	11.72
3	Nonmag collar		8.39	9	DC Steel	8	35.85
4	Steel stab	12 1/4	1.97	10	X-over		1.20
5	DC Steel	8	26.52	11	HWDP	5	136.63
6	Steel stab	12 1/4	1.55				

BHA no.:9 Item:no./name/OD,in/length,m Depth interval MD,m:2334-2336

1	Bit	12 1/4	.45	7	DC Steel	8	107.85
2	MWD		9.61	8	Jar	8	11.72
3	Nonmag collar		8.39	9	DC Steel	8	35.85
4	Steel stab	12 1/4	1.97	10	X-over		1.20
5	DC Steel	8	26.52	11	HWDP	5	136.63
6	Steel stab	12 1/4	1.55				

BHA no.:10 Item:no./name/OD,in/length,m Depth interval MD,m:2336-2530

1	Bit	12 1/4	.30	7	Steel stab	12 1/4	1.55
2	Junksub		1.09	8	DC Steel	8	107.85
3	MWD		10.95	9	Jar	8	11.72
4	Nonmag collar		8.39	10	DC Steel	8	35.85
5	Steel stab	12 1/4	1.97	11	X-over		1.20
6	DC Steel	8	26.52	12	HWDP	5	136.63

BHA no.:11 Item:no./name/OD,in/length,m Depth interval MD,m:2530-2702

1	Bit	12 1/4	.30	7	Steel stab	12 1/4	1.55
2	Junksub		1.09	8	DC Steel	8	134.42
3	MWD		10.95	9	Jar	8	11.72
4	Nonmag collar		8.39	10	DC Steel	8	35.85
5	Steel stab	12 1/4	1.97	11	X-over		1.20
6	DC Steel	8	26.52	12	HWDP	5	136.63

BHA no.:12 Item:no./name/OD,in/length,m Depth interval MD,m:2702-2837

1	Bit	12 1/4	.30	7	Steel stab	12 1/4	1.55
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((((ooo) Norsk Hydro	B o t t o m h o l e a s s e m b l y		..Date.. 19860905	
	Well: 30/6-20		System : Boredata Sandnes	
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2	Junksub		1.09	8	DC Steel	8	134.42
3	MWD		10.95	9	Jar	8	11.72
4	Nonmag collar		8.39	10	DC Steel	8	35.85
5	Steel stab	12 1/4	1.97	11	X-over		1.20
6	DC Steel	8	26.52	12	HWDP	5	136.63

BHA no.:13 Item:no./name/OD,in/length,m Depth interval MD,m:2837-2982

1	Bit	12 1/4	.30	7	Steel stab	12 1/4	1.55
2	Junksub		1.09	8	DC Steel	8	134.42
3	MWD		10.95	9	Jar	8	11.72
4	Nonmag collar		8.39	10	DC Steel	8	35.85
5	Steel stab	12 1/4	1.97	11	X-over		1.20
6	DC Steel	8	26.52	12	HWDP	5	136.63

BHA no.:14 Item:no./name/OD,in/length,m Depth interval MD,m:2982-3044

1	Bit	12 1/4	.30	7	DC Steel	8	134.42
2	MWD		10.95	8	Jar	8	11.72
3	Nonmag collar		8.39	9	DC Steel	8	35.85
4	Steel stab	12 1/4	1.97	10	X-over		1.20
5	DC Steel	8	26.52	11	HWDP	5	136.63
6	Steel stab	12 1/4	1.55				

6.4 Mud report

36" hole

Drilled from 134 to 223 m, using seawater and viscous pills. Cleaned the hole on every connection with 5-7 m³ viscous sweeps. Pulled out of hole and ran and cemented the 30" casing.

Materials used in this section: Barite, Bentonite, Caustic Soda, Lime, Milpolymer 302.

26" hole

Drilled out of 30" casing shoe and drilled 12 1/4" pilot hole to 620 m. Pulled out and started to open hole to 26". Pumped high viscosity pills on every third connection until 500 m, then pumped high viscosity pills on every second connection. Displaced the 1.03 sg mud in the hole with 1.15 sg mud. Ran and cemented the 20" casing.

Materials used in this section: Barite, Bentonite, Caustic Soda, Lime, Milpolymer 302.

17 1/2" hole

Drilled out the casing shoe, and cement in the rathole with seawater to 620 m. Displaced the hole to KCl/polymer mud and disconnected riser to wait on weather. Connected riser back and continued to drill ahead to 702 m. Mud was lost on the shakers due to inadequate shearing of the mud as well as rig movement. Continued drilling 17 1/2" hole and performed a wipertrip at 997 m with some tight spots. Drilled ahead to 1389 m and increased the mudweight to 1.20 sg. Drilled further to 1606 m, and performed a wipertrip before logging. The Caliper log indicated a good hole. Drilled to 1629 m while increasing the mudweight to 1.25 sg. Ran and cemented the 13 3/8" casing. Lost 20-25m³ mud while running and cementing the casing.

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Materials used in this section: Barite, Permalose, Caustic Soda, Milpolymer 302, Drispac Reg, KCl (sx), KCl-brine, Pro-Defoam.

12 1/4" hole

Drilled float, shoe and cement, and increased the mudweight to 1.38 sg. Tried to perform a leak off test to 2.25 sg. equivalent mudweight. Drilled ahead to 1866 m, and pulled out of hole to change bottom hole assembly. Ran back in hole, the trip was reported to be very good. Drilled ahead to 2336 m, while running the sentrifuge periodically to control the contents of low gravity solids. Drilled ahead to the total depth at 3046 m with 1.39 sg. mud. The hole was in good condition. Logged the hole and plugged and abandoned the well. 159m³ KCl/Polymer mud was transferred to the standby boat.

Materials mud in this section: Barite, Soda Ash, Caustic Soda, Milpolymer 302, Drispac Reg, KCl (sx), KCl brine, Pro-Defoam, Sodium Bicarbonate, Drispac S.L., Probio, SAPP, Staflo XL.

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Daily mud properties

System : Boredata Sandnes
Well: 30/6-20
Mud Contractor: PROMUD

Date: 19860904
Date: 19860904

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Date	Mid depth (m)	Mud dens. (Sg)	FV cps	YP mPa	GEL 10 mPa	GEL 10 mPa	Ph	100 psi (cc)	HP/HT (cc)	Cl- inn/out mg/l	Alkalinity PF Pm Mf	Ca++ inn/out mg/l	Oil Sol H2O %	%	V.G. meter at 115WF rpm	rpm	rpm	Mud type
860308	0	1.02	0	0														KCl
860309	0	1.03	0	0														KCl
860310	193	1.03	0	0														KCl
860311	222	1.03	0	0														KCl
860312	500	1.03	0	0														KCl
860313	620	1.03	0	0														KCl
860314	620	1.03	0	0														KCl
860315	620	1.03	0	0														KCl
860316	620	1.03	0	0														KCl
860317	620	1.15	19	13	2	2	9.5	6.0		61000/	0.1	0.2	0.3					KCl
860318	620	1.15	18	13	2	2	9.2	5.6		60000/	0.1	0.2	0.2	280/				KCl
860319	620	1.15	19	13	2	2	9.5	5.5		61000/	0.1	0.2	0.3	360/				KCl
860320	623	1.15	18	13	2	2	9.2	5.6		60000/	0.1	0.2	0.2	280/				KCl
860321	623	1.15	18	14	2	2	9.2	5.5		60000/	0.1	0.2	0.2	280/				KCl
860322	623	1.15	18	13	2	2	9.2	5.5		60000/	0.1	0.2	0.2	240/				KCl
860323	710	1.15	22	16	3	3	9.2	5.0		58000/	0.1	0.2	0.2	240/				KCl
860324	1160	1.15	19	15	3	3	9.4	5.6		52000/	0.1	0.4	0.3	250/				KCl
860325	1396	1.20	20	15	3	4	8.8	6.0		59000/	0.1	0.2	0.3	320/				KCl
860326	1606	1.20	20	17	3	4	9.5	6.6		54000/	0.2	0.4	0.4	300/				KCl
860327	1606	1.23	20	23	4	6	8.8	5.5		54000/	0.1	0.3	0.3	200/				KCl
860328	1629	1.25	18	21	3	4	8.1	5.9		56000/	0.1	0.3	0.3	240/				KCl
860329	1629	1.25	18	19	3	4	8.0	6.0		55000/	0.2	0.2	0.2	220/				KCl
860330	1790	1.38	22	15	2	4	9.7	8.5		58000/	0.1	0.4	0.5	400/				KCl
860331	2008	1.38	23	15	2	4	8.5	8.2		57000/	0.1	0.3	0.6	1080/				KCl
860401	2266	1.38	23	10	2	4	8.9			56000/				940/				KCl
860402	2336	1.38	24	10	2	6	8.4	8.0		62000/	0.1	0.1	0.5	940/				KCl
860403	2493	1.39	31	15	2	8	10.0	5.6		84000/	0.2	0.4	0.5	360/				KCl
860404	2594	1.38	21	11	2	6	9.0	4.8		65000/	0.1	0.3	0.3	228/				KCl
860405	2702	1.38	28	11	2	5	9.6	4.5		63000/	0.2		0.3	360/				KCl
860406	2837	1.39	28	10	2	5	9.7	4.8		61000/	0.2		0.3	300/				KCl
860407	2958	1.39	30	11	2	7	9.6	5.1		61000/	0.2		0.3	300/				KCl
860408	3046	1.39	27	11	2	6	9.4	5.1		61000/	0.1	0.3	0.2	145/				KCl
860409	3046	1.39	30	11	2	7	9.0	4.8		60000/	0.1	0.2	0.1	100/				KCl
860410	3046	1.39	26	10	2	5	9.5	5.1		60000/	0.1	0.3	0.2	200/				KCl
860411	1533	1.39	0	0			9.6											KCl
860412	139	1.03	0	0														KCl
860413	139	1.03	0	0														KCl

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TABLE B-7

MUD MATERIAL CONSUMPTION

<u>Product</u>	<u>no units</u>	<u>Size of unit</u>
Barite	453	mt
Bentonite	113	mt
Caustic Soda	113	25 kg
Soda Ash	9	50 kg
Sodium Bicarbonate	11	50 kg
Milpolymer 302	329	25 kg
Permalose	271	25 kg
Drispac Reg	204	50 lbs
Drispac SL	206	50 lbs
Lime	18	40 lbs
KCl	2234	50 kg
KCl brine	2221	bb1
Probid	3	55 gal
Pro-Defoam	5	25 l
SAPP	2	50 kg
Staflo XL	38	25 kg

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((((ooo)	C e m e n t r e p o r t s						..Date..
	System : Boredata Sandnes Well: 30/6-20 Cement contractor: DOWELL SCHLUMBERGER						19860922
Norsk Hydro							10

Casing Size (in)	SLURRY VOLUME (m3)	SLURRY DENSITY (SG)	Thickening Time (hrs)	BHST (deg.C)	Additive name	Compo- sition (l/100kg)	Total used (l)
Lead-30	35	1.68		8	Seawater D111 D77	64.52 7.1 3.90	21292 2343 1287
Tail-30	20	1.90		8	Seawater D77	42.7 4.44	10675 1110
Lead-20	145	1.44		24	Seawater D75	129.42 4.44	111974 3841
Tail-20	7.7	1.90		24	Seawater D77	44.41 1.78	4370 175
Lead-13 3/8	75	1.62		63	Seawater D75 D81	79.15 2.66 1.53	51701 1738 999
Tail-13 3/8	15	1.90		63	Freshwater D81 D-604	100 0.20 1.33	19600 39 261

((((ooo)		C e m e n t r e p o r t s					..Date.. 19860922	
Norsk Hydro		System : Boredata Sandnes Well: 30/6-20 Cement contractor: DOWELL SCHLUMBERGER						
		10						
Type of Job	Depth (m)	Slurry Volume (m3)	Slurry Density (SG)	Compress. strenght (bar/hrs)	Thickening time (hrs)	Additive name	Compo- sition l/100kg	Total used (l)
Plug	3046	12	1.90			Freshwater	41.68	6669
						D603	0.88	141
						D604	0.88	141
						D801	0.45	72
Plug	2836	16	1.90			Freshwater	42.33	8889
						D603	0.88	185
						D604	0.88	185
						D801	0.45	94
Plug	1661	13	1.90			Freshwater	42.81	7278
						D604	1.33	226
						D81	0.56	95
Plug	339	36	1.90			Seawater	44.0	21120

7.

Partner Report

NORSK HYDRO A.S.
DRILLING SECTOR

REPORT NO 03 FINAL ESTIMATE

DATE : 24.09.86

WELL : 30/6-20 D
LIC : 953
RIG : TREASURE SCOUT
DEPTH : 3025 M
RIG RATE : NOK 500.000
EXCHANGE : USD 7,00
START DATE : 08.03.86 AT 12:00 HRS
FINISH DATE : 13.04.86 AT 16:00 HRS
TOTAL DAYS : 36.167

ESTIMATED COSTS
(in 000 NOK)

401	Site survey	1,000	
402	Resurvey	0	
403	Location clean up	0	
404	Positioning	350	
Class 40 Site surv & posit. . costs. costs.			1,350
410	Rig costs	22,821	
411	Drilling tools, equipm. & services	2,115	
412	Wellheads	2,030	
413	Casing & casing services	2,835	
414	Cement & cementing services	1,724	
415	Mud & mud services	1,461	
416	Wire line logging	2,019	
417	Test tools, equipm. & services	434	
418	Norsk Hydro offshore personnel	1,700	
419	Other costs	1,229	
Class 41 Rig controllable costs			38,368
420	Supply vessels	3,725	
421	Standby vessels	1,157	
423	Helicopter costs	1,013	
424	Fixed wing transport	0	
429	Other transport & dir. freight	0	
Class 42 Transportation costs			5,895
438	Warehouse costs	1,808	
439	Drill.dept. adm. & facilities	1,447	
Class 43 Warehouse costs			3,255
448	Onshore drilling supervision	1,121	
Class 44 Onshore supervision			1,121
458	Onshore geology & reservoir	687	
459	Lab. studies geol. & reservoir	940	
Class 45 Laboratory studies			1,627
CLASS 4 WELL COSTS TOTAL			51,616

8. EQUIPMENT FAILURES AND PROBLEMS

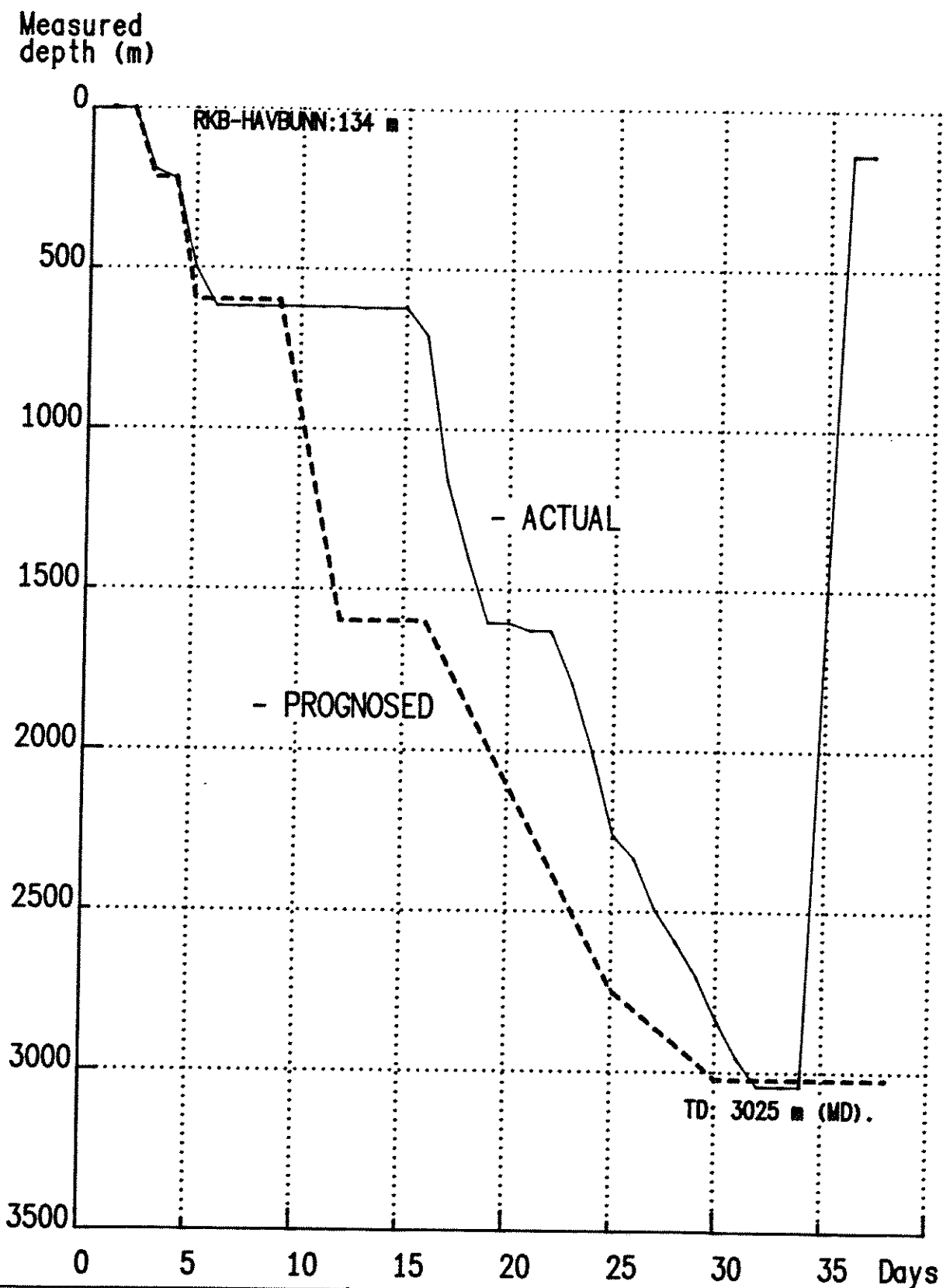
Date	Equipment	Failure
10.03.86	9 1/2" MWD tool	No pulses back to surface.
11.03.86	Permanent guidebase	Did not fit into 30" housing.
11.03.86	Remote Operated Vessel (ROV)	Power shutdown of ROV.
12.03.86	Hook position indicator	Not working
12.03.86	Super charge pump no 1	Electrical motor not working.
12.03.86	8" MWD tool	No inclination or azimuth reading.
18.03.86	Tensioner of guideline no 4	Constantly loosing pressure. Unable to keep preset tension.
19.03.86	Universal BOP test tool	Sealing rubber came off. Shear pins not sheared.
19.03.86	Choke manifold and cement line	Union leaking on cement line. No 6 valve leaking on the choke manifold.
19.03.86	Accoustic system	Indicator not working properly.
21.03.86	Guidelines	Guideline no 3 and 4 broke and had to be reset.

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Date	Equipment	Failure
21.03.86	ROV	Water in connector between transformer can and power supply.
21.03.86	Sub sea TV	Destroyed the guide frame.
23.03.86	Ship joint	5 parted and 11 loose bolts holding packing box to outer barrel.
29.03.86	Acoustic system	Indicators on surface failed.
31.03.86	8" MWD tool	Got no signals back to surface.
31.03.86	Single shot tool	Timer failed.
01.04.86	Single shot tool	No picture. Timer not working.
02.04.86	8" MWD tool	Tool failed to pulse as valve stem of pulsing valve was jammed open - not sealed.
02.04.86	Exlog unit	Lost power when test MWD tool.
03.04.86	Racking arm	Hydraulic hose to telescop on upper racking arm bursted.
06.04.86	Drawwork	Leak on water cooling system for drawwork broke.

25 SEP 1986 8:01 AM BY SMD/UTTER



Norsk Hydro
Drilling Department

Date:19860909

PROGNOSSED AND ACTUAL
DRILLING CURVES

WELL: 30/6-20

Fig.
B-6

19860909