NORSK HYDRO A.S
FINAL WELL REPORT
WELL 30/9-5
LICENCE 104

pam860512hjb

DISTRIBUSJONSLISTE FOR "FINAL WELL REPORT" OG "COMPLETION LOG" BRØNN: 30/9-5

Distribuert til:	Report	Completion Log		Dato
		Papir	Sepia	
NORSK HYDRO				
Arkiv, Sa	2	2	1	10.06
Arkiv, Sd	1	1	1	10.06
Arkiv, Be	2	2	1	10.06
Operasjonskontor,Sa	2	2		10.06
Operasjonskontor, Be	2	2		10.06
Utforskningsleder og prosjektgruppe (sirk.)	1	1		10.06
Reservoir, K. Kopren	1	1		10.06
OLJEDIREKTORATET **Ø. Lønne**	**2**	**2**	**1**	**10.06**
PARTNERE				
Statoil, Bg, Let-Arkiv	2	2	1	10.06
Tenneco, Stav., B. Williams	2	2	1	10.06
Agip, Stav., P. Pessina	2	2	1	10.06
DNO, Oslo, K. Trommestad	2	2	1	10.06
Ekstra	**3**	**3**	**9**	
Sum	**26**	**26**		

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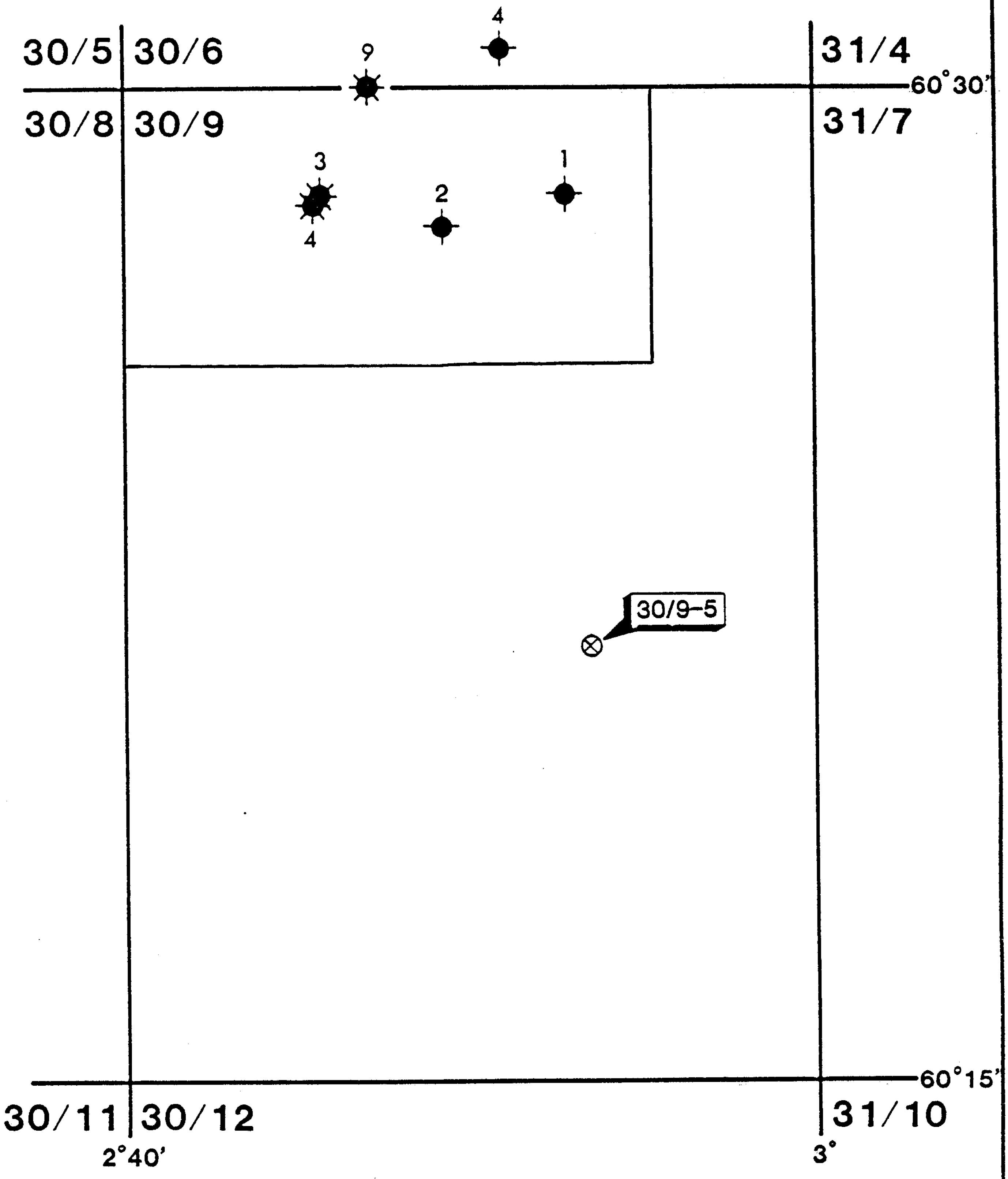
Preface

Licence 104 was awarded the Statoil/Hydro/Saga/Tenneco/ Norsk Agip/DNO group in 1985 with Norsk Hydro Production A.S. as operator. The licens includes the major part of the block 30/9 on the Norwegian continental shelf. See map on page II .

The group consists of the following companies:

Den Norske Stats Oljeselskap:	50 %
Norsk Hydro Produksjon A.S:	30 %
Saga Petroleum A.S:	5 %
Tenneco:	5 %
Norsk Agip:	5 %
Det Norske Oljeselskap:	5 %



SCALE 1:150 000

Norsk Hydro Drilling Department	LOCATION MAP WELL 30/9-5	Gr. no.: 7	Fig.:
		Date: 26.04.85. Sign: GEn / SF	Dwg. no.: 107

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==============================================================================
|        |           G e n e r a l   i n f o r m a t i o n s       ..Date..
|  (((   |           ---------------------------------------       19860206
| (ooo)  |                 System : Boredata Sandnes
|--------|     Well: 0030/09-05          Field: OSEBERG
| Norsk  |                Structure: J
| Hydro  |
==============================================================================
|        Lic: 104                 Country: NOR
|
|        LOCATION Coordinates Surface--------> Target-------->
|        UTM           N (m): 6691522.3 |6691563.3
|        UTM           E (m): 494131.4  |493906.1
|        Geographical  N    : 60dg21'31.35"|60dg21'32.65"
|        Geographical  E    : 02dg53'37.09"|02dg53'22.39"
|.............................................................................
|        Water depth       :103 m
|        Formation at TD   :Triassic
|=============================================================================
|        Operator          :HYDRO 30%
|        .....................................................................
|        Partners,         :Statoil 50%, D.N.O 5%,
|        (interests)       :Agip 5%, Teneco 5%,
|                          :Saga 5%
|        .....................................................................
|        RIG name              :TREASURE SEEKER
|        RIG      contractor   :WILHELM WILHELMSEN
|        MUD      contractor   :ANCHOR.DRLG.SERVICES
|        CEMENT   contractor   :HALLIBURTON
|        EL.LOGG  contractor   :SCHLUMBERGER
|        MUD LOGG contractor   :EXPL.LOG. A/S
|        Other     contractors:
|=============================================================================
|        Total depth (m RKB) :   Measured      Vertical
|        --------------          --------      --------
|                                 2980m        2963m
|                Rotary Table elevation : 25m
|=============================================================================
|        TIME SUMMARY   Spudding date:   270585  Last Report date: 200785
|        ============
|        Operations:        Moving Drilling Form.eval Prod.test PlugAban Downtim
|        -----------        ------ -------- --------- --------- -------- -------
|          Hours      :         52      693       144         0       58     384
|          Days       :        2.2     28.9       6.0        .0      2.4    16.0
|          % of total:           4       52        11         0        4      29
|        .....................................................................
|              TOTAL :             1330hrs            55days
|=============================================================================
|                            Hole and Casing record
|                            ======================
|        Hole   | Depth(m)            ||           Casing | Depth(m)
|        -------|---------            ||           -------|---------
|        36     |  219                ||           30       216
|        26     |  910                ||           20       893
|        17 1/2|  1935                ||           13 3/8  1908
|        12 1/4|  2980                ||
|-----------------------------------------------------------------------------
|            Well status :Perm. abandoned.
|                        :
|                        :
|                        :
| = -- = -- = -- = -- = -- = -- = -- = -- = -- = -- = -- = -- = -- = -- = -- =
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SECTION A
GEOLOGY

LIST OF CONTENT

SECTION A

1. OBJECTIVES

Well 30/9-5 is located on the "J" prospect, which is a rather flat structural feature sitting close to the western margin of the Horda Platform. The structure is bounded by Jurassic strata dipping down into the north, east and south, and by the main Horda Platform fault to the west.

The well 30/9-5 was the first well to be drilled on the Horda Platform in block 30/9. The objectives of the well were to:

- Prove possible hydrocarbon accumulation in the Etive Formation sandstones of the Brent Group.
- Improve the geological knowledge of the platform area
- verify the structural and stratigraphical interpretation of the area
- acquire input for further exploration activity in block 30/9.
- Find possible hydrocarbons in sandstones if present in the Heather-Drake- and Cook Formations.

The total depth of the well was planned at 3036 ± 100 mRKB, approximately 75 m into the Triassic Hegre Group.

2. RESULTS

The well encountered a gas bearing Cook Formation and minor amounts of gas in the Brent Group. No additional hydrocarbon bearing reservoirs were encountered by the well.

The Brent Group (2236-2253 mMD, 2222-2239 mTVD) was found severely eroded in the well, and the sands were poorly developed with a high water saturation. The net sand distribution is limited to a thin layer at the top of the formation. The rest of the formation appears to be very silty. The gross thickness is 17 m with a net pay of only 0.5 m. The average porosity (0) is 20.2% and the water saturation (Sw) 58.2%.
Cut off values were 0<12%, Vsh>40% and Sw>70%.

The Cook Formation (2447-2466 mMD, 2433-2452 mTVD) has moderately good reservoir qualities in the upper part but is silty and tight in the lower part. The gross thickness is 19 m and the net pay is 7.9 m. The average porosity is 20.4% and the water saturation 24.7%.
Cut off values were 0<15%, VSh>40% and Sw>70%.

The Statfjord Formation was encountered waterbearing at 2604 mMD (2589.5 mTVD).

Two conventional cores were cut in the well, one in the Cook Formation from 2455 m to 2473.2 mMD, and one in the Statfjord Formation from 2608 m to 2626.3 mMD.

RFT results. Two runs were performed in order to take formation pressure measurements and fluid samples. A total of 25 pressure recordings were done. Segregated samples were taken at 2452 mRKB in the Cook Formation and at 2238.5 mRKB in the Brent Group.

In the Brent Group no exact fluid gradient could be established due to a limited numbers of good measurements. However, the RFT pressures indicated the presence of gas which was verified by the fluid sample.

In the Cook Formation a gas gradient of 0.3 psi/m was obtained in the upper good sands. Low permeability and "supercharging" was experienced in the lower part of this formation.

The pore pressure in the Brent Group was found to be 1.06 rd, in the Cook Formation it was 1.11 rd, indicating no pressure communication.

The Statfjord Formation and the Hegre Groups appear to have vertical pressure communication, with a water gradient of 1.45 psi/m and a maximum pore pressure of 1.07 rd.

The RFT results are summarized in Appendix III. Full details on the RFT recordings can be studied in the separate report. "Formation Evaluation Report well 30/9-5". Core descriptions and sidewall core descriptions can be found in Appendix I and II respectively.

Note: Due to shallow gas indications on the site survey seismic the well location was moved approximately 150 m. The well was then deviated from a kick off point at 1000 m to reach the planned target. A maximum hole angle of 12.3° was obtained at approximately 1250 m, then gradually dropped back and kept around $3\text{-}4^{\circ}$ from 2000 m. At the total depth (TD) the difference between measured depth (MD) and total vertical depth (TVD) was 17 meters.

3. STRATIGRAPHY

The biostratigraphy evaluation of this well was performed by Robertson Resarch Int. Ltd., located in Wales, UK. The biostratigraphy is based on ditch cuttings. Sidewall cores were used when available. Ditch cutting samples were collected from 220 mRKB, below the 30" casing.

The diagram on page 8 shows the biostratigraphical and lithostratigraphical breakdown of this well. All depths are in mRKB. The true vertical depths (TVD) are indicated in brackets.

The first analyis were carried out on mixed sand and clays of Pleistocene age assigned to the Nordland Group. The Quaternary-Tertiary boundary is placed at 340 mRKB. The Nordland Group extends down to 815 m with the top Utsira Formation at 644 m. The top and base of the Utsira Formation are picked on the resistivity and sonic logs. On the gamma ray curve the boundaries are not so well defined.

The Nordland Group is of Pleistocene age down to 340 m and of Pliocene age down to 700 m. The Lower part is of Upper-Middle Miocene age. The Hordaland Group continues from 815 m down to 1920 m, ranging in age from Upper-Middle Miocene through Lower Eocene at base.

Top Rogaland Group and the Balder Formation is again placed on breaks on the resistivity and sonic logs at 1920 mMD (1907 mTVD). The boundary between the Balder- and the Sele Formations is well defined by the gamma ray curve. More subtle changes can be seen on logs where top Lista Formation is picked at 2018 mMD (2005 mTVD), also supported by correlation to other wells in the area. The Rogaland Group, assigned to the Upper Paleocene, extends down to 2157 m (2143 mTVD). The Montrose Group, Maureen Formation equivalent was found to be only four meters in this well (2157-2161 mMD, 2143-2147 mTVD).

The Shetland Group with a massive limestone unit at the upper part was encountered at 2161 m (2147 mTVD). The uppermost nine meters are assigned to the Lower Paleocene, Danian age. A possible unconformity at the top of the Cretaceous is indicated at 2170 m. Lithologically there was no change at this depth, but shifts can be observed on logs. The Cretaceous strata are of Maastrictian age. Another unconformity marks the base of the Cretaceous.

Below the Base Cretaceous Unconformity at 2236 m (2222 mTVD) the Middle Jurassic Brent Group was encountered as a poorly developed sandy section. The Middle Jurassic was dated possibly Middle Bajocian down to 2242 m, Middle Bajocian from 2242 m to 2248 m and Lower Bajocian down to 2260 m.

The Lower Jurassic Dunlin Group was encountered at 2253 m (2239 mTVD) with the Drake Formation extending down to 2447 m (2433 mTVD). The Drake Formation was dated Middle-Upper Toarcian dwon to 2349 m, Lower Toarcian from 2349 m to 2368 m and Upper Pleinsbachian below 2368 m.

Destinct logs breaks define the Cook Formation between 2447 m to 2466 m (2433-2452 mTVD). This formation is of Upper Pliensbachian age.

The boundary between the Burton- and Amundsen Formations is not so destinct, but subtle log shifts can be seen on the resistivity and sonic curves. The picking of this boundary is also supported by correlation to other wells. A Lower Pleinsbachian age is indicated from 2510 m down to 2577 m and Upper Sinemurian down to 2610 m.

The top of the Statfjord Formation, also well defined on logs and cuttings at 2604 m (2589.5 mTVD), is comprised of well developed sands with occasionally shale/claystone interbeds. The Statfjord Formation is generally of Lower Sinemurian age. The basal section from 2853 m is dated Hettanigian. The paleo report indicates a general Upper

Triassic age from 2875 m. The Statfjord Formation - Hegre Group boundary is placed at 2872 m (2856 mTVD), set at the base of a major sandstone section. The interval below is composed of claystones with interbeds of sands and with a mulitcoloured reddish brown colour to the claystones. This interval is probably equivalent to what has been called "Raude Member" in some wells.

The well was drilled to a total depth at 2980 mRKB (2963 mTVD). The loggers depth was 2985 mRKB.

Norsk Hydro

Bergen – Norway

WELL 30/9-5

Not to scale

DEPTH REF K.B. ELEVATION K.B 25m ALL DEPTHS IN METERS (m)

CHRONOSTRATIGRAPHY

SYSTEM	SERIES/STAGE	DEPTH	THICKNESS
QUAT.	SEABED	128	
	PLEISTOCENE	340	212
TERTIARY	PLIOCENE	700	360
	UPPER – MIDDLE MIOCENE	860	160
	U OLIGOCENE- L. MIOCENE	880	20
	UPPER OLIGOCENE	1300	420
	LOWER OLIGOCENE	1620	320
	UPPER-MIDDLE(?) EOCENE	1640	20
	MIDDLE – (?) LOWER EOCENE	1905	265
	LOWER EOCENE	1915	10
	UPPER PALEOCENE	2160	245
	LOWER PALEOCENE	2170	10
CRET.	UPPER MAASTRICHTIAN	2237	66.5
JURASSIC	MIDDLE BAJOCIAN	2248	12
	LOWER	2260	
	LOWER UPPER – MIDDLE TOARCIAN	2349	89
	LOWER TOARCIAN	2368	19
	UPPER PLIENSBACHIAN	2510	142
	LOWER PLIENSB.	2577	67
	UPPER SINEMURIAN	2610	33
	LOWER SINEMURIAN	2853	243
	HETTANGIAN	2875	22
TRIASSIC	UPPER		93

DRILLERS T.D.: 2963 mTVD
LOGGERS T.D.: 2968 mTVD

LITHOSTRATIGRAPHY

GROUP	FORMATION / MEMBER	
NORDLAND GROUP	(TVD depths in brackets)	644
	UTSIRA FM	815m
HORDALAND GROUP		1920 (1907)
ROGALAND GROUP	BALDER FM	1969 (1956)
	SELE FM	2018 (2005)
	LISTA FM	2157 (2143)
MONTROSE GROUP	MAUREEN FM EQ.	2161 (2147
SHETLAND GROUP		2236 (2222)
BRENT GROUP		2253 (2239)
DUNLIN GROUP	DRAKE FM	2447 (2433)
	COOK FM	2466 (2452)
	BURTON FM	2527 (2512.5
	AMUNDSEN FM	2604(2589,5
	STATFJORD FM	2872 (2856)
HEGRE GROUP		

DRILLERS T.D. 2980m MD
LOGGERS T.D. 2985m MD

4. LITHOSTRATIGRAPHY

This summary is based predominantly on ditch cuttings descriptions. Wirelinelogs were used for assistance in lithological interpretation, and to place formation boundaries. Sidewall cores were available from 2080 m in the Paleocene and down to T.D. in the Triassic. Two conventional cores were available, one from the Cook Formation and one from the Statfjord Formation. The boundaries between systems and series are based on the paleodating report and are not always consistent with formations and groups.

4.1 QUATERNARY (128-340 m)

NORDLAND GROUP (128-815 m)

128-219 m

The 36" hole section was drilled with returns to sea bed.

219-325 m

This interval consists of interbedded clays and sands. The clays are olive gray to olive black, soft, sticky, generally very silty and sandy and non calcareous. The sands are fine to coarse grained, occasionally pebbly, loose, angular to rounded and contain traces of glauconite, mica, shell fragments and other fossils. The sorting is generally moderate to poor.

325-340 m

The basal part of the Quarternary consists of clays which are olive gray, soft, stick, silty and sandy, carbonaceous and calcareous.

TERTIARY (340-2170 m)

NORDLAND GROUP cont.

340-644 m

The upper section of the Tertiary is lithologically a continuation of the strata above. The sections consists of clays with interbeds of sands. The clays are generally similar to those above in composition and colour but are locally also medium dark gray. The sands are ranging in grain size between fine to coarse, they are subangular to rounded and poorly to locally well sorted.

Traces of shell fragments, lignite and glauconite were seen.

Utsira Formation (644-815 m)

The Utsira Formation forms the first significant sand unit in the Tertiary interval.

The section comprises a fairly massive sand with a few claystones and siltstones below. The uppermost 40 metres show an overall fining upward trend on the logs.

The sands are made up of clear to milky quartz which are very fine to coarse with medium to coarse as the dominant grain size. The grains are generally subangular to subrounded and moderately sorted. Traces of glauconite, mica, shell fragments and pyrite occur. Traces of sandstones are also seen. The sandstones are greenish gray to olive gray in colour and are very fine to fine grained. They are friable, subrounded, argillaceous and silty and calcareous cemented with no visible porosity. The siltstones, developed as thin beds throughout the section, are olive gray to dusky yellowish brown and olive black. They are soft to friable, occasionally hard, sandy and argillaceous, very glauconitic and non to locally very calcareous. Pyrite is occasionally seen in trace amounts, and shell fragments and glauconite occur in aboundance.

The Nordland Group is of Pleistocene age down to 340 m, of Pliocene age down to 700 m and of Middle-Upper Miocene below (down to 860 m).

HORDALAND GROUP (815-1920 m, 815-1907 mTVD)

The Hordaland Group is generally a section of claystones with stringers of limestones and dolomites and with some sand and sandstones beds as the upper part. The interval is, subdivided in sections which have some characteristics in common.

815-1030 m

The upper part of the Hordaland Group makes up a claysection with some interbeds and stringers of sand and siltstone.

The clays are dusky yellowish brown and olive gray, soft to firm, in part sticky, silty and sandy, micromicaceous, locally carbonaceous, locally glauconitic, occasionally micropyritic and non to locally calcareous.

The sands are similar to those of the Utsira Formation above. Traces of sandstone which are dark grey and pinkish gray in colour, very fine to coarse grained, loose to moderately hard, subangular to rounded, calcareous cemented and with traces of glauconite are also seen.

The siltstones are olive gray and dusky yellowish brown, hard, friable, very argillaceous, sandy glauconitic, locally pyrite and very calcareous.

1013-1602 m

This interval is lithologically a continuation of the overlaying interval. However, the clays have firmed up and become claystone, and stringers of limestone are common. Sand and sandstones are now more rarely occurring.

The claystones are similar to the clays above and so are the sands. The rarely occurring sandstones are described as dusky yellowish brown and light gray to medium dark gray, very fine to medium, firm to moderately hard and locally friable. They are subangular to subrounded and poorly to moderately sorted, silty, micromicaceous, locally micropyrite, in part carbonaceous and glauconitic, and calcareous to locally kaolinitic cemented. They have no visible porosity.

The limestone are white, light gray and olive gray, soft to moderately hard, blocky, argillaceous and microcrystalline to locally crystalline.

1602-1710 m

The middle part of the Hordaland Group is again a continuation of the overlying strata, and is made up of claystones with stringers of limestones and dolomites.

The claystones have changed colour slightly and are dusky yellowish brown to brownish black and dark grey to greenish black. They are generally firm, blocky to subfissile, locally silty and rarely sandy, slightly carbonaceous and micromicaceous, rarely micropyritic and non calcareous.

The dolomite are dark to dusky yellowish brown to moderately brown, hard, blocky and microcrystalline. The limestones are similar to those above.

1710-1875 m

The lithology of this interval is still similar to above. A slight colour change of the claystone was, however, described.

The claystones have become dark greenish gray to greenish black, and olive black with traces of dusky blue green to grayish green. They are non calcareous.

The limestone, which occur in thin stringers, are light gray, soft and cryptocrystalline. Dolomites, also developed in thin stringers, are dark to pale yellowish brown, moderately hard to occasionally firm, blocky and microcrystalline.

1875-1920 m

The basal part of the Hordaland Group consists of claystones which have a dusky blue green dark greenish gray and moderately brown to reddish brown and locally very dusky red colour. They are firm to moderately hard, occasionally soft, blocky to locally subfissile, rarely silty in part slightly micromicareous and micropyritic and non to slightly calcareous.

Stringers of limestones which are light gray and pale yellowish, soft to moderately hard locally argillaceous and cryptocrystalline are occasionally developed.

The Hordaland Group was deposited in a marine shelf to upper bathyal environment.

The sediments of the Hordaland Group are of Upper-Middle age (down to 860 m), Upper-Lower Miocene (860-880 m), Upper Oligocene (880-1300 m), Lower Oligocene (1300-1620 m), Upper Middle Eocene (1620-1640 m), Middle-Lower Eocene (1640-1905 m) and of Lower Eocene age from 1905 m.

ROGALAND GROUP (1920-2161 m, 1907-2143 mTVD)

Balder Formation (1920-1969 m, 1907-1956 mTVD)

The Balder Formation is made up of claystones with a few stringers of limestones and dolomites. Tuff or tuffaceous claystone occur in trace amounts throughout the section.

The claystones are medium dark- to dark gray and brownish black, firm to moderately hard, blocky, locally subfissile, rarely micromicaceous and non calcareous.

The dolomites are dusky yellowish brown to moderately brown, hard to very hard and argillaceous.

The limestones are white to very light gray to medium dark gray, hard to very hard, micromicaceous, argillaceous and crystalline.

The tuff had a medium to dark gray and rarely grayish green colour and had locally white spects. It was partly very fine grained sandy, soft to moderately hard and non calcareous.

The depositional environment was marine outer shelf to upper bathyal.

Sele Formation (1969-2018 m, 1956-2005 mTVD)

This formation consists of claystones with stringers of limestones and dolomite. Sandstone and tuff were rarely observed also in this section.

The claystones are medium dark to dark gray and medium light to medium gray and locally grading olive black. They are generally firm to soft, locally moderately hard, locally sticky, blocky to subfissible, in part slightly silty, rarely carbonaceous and micromicaeous and non calcareous.

The sandstone which was only rarely observed was light gray to clear quartz, very fine to silt and calcareous cemented.

The limestone and dolomites are similar to those above, and so is the tuff.

The depositional environment is as for the Balder Formation.

Lista Formation (2018-2157 m, 2005-2143 mTVD)

The Lista Formation very much resembles the overlying Sele Formation. Again this is a sequence of Claystones with stringers of limestones and limestones/dolomites and traces of sand.

The claystones are medium to medium dark gray and greenish gray to dark green soft to firm, sticky, slightly silty, locally glauconitic and generally non to slightly calcareous. Locally they are very calcareous, grading to marl.

The limestones are white to very light gray, firm to hard and microcrystalline.

The limestone/dolomites are pale to dark yellowish brown and medium gray, moderately hard to very hard, argillaceous and microcrystalline.

The depositional environment is the same as for the rest of the Rogaland Group.

The Rogaland Group is of Upper Paleocene age (1915-2160 m).

MONTROSE GROUP (2157-2161 m, 2143-2147 mTVD))

Maureen Formation equivalent (2157-2161 m)

The Maureen Formation equivalent is in this well developed as a thin interval of mainly claystones overlying the limestones of the Shetland Group. The claystones are predominantly medium gray, very calcareous and else similar to those above.

The Maureen Formation eq. is assigned to the Upper Paleocene.

SHETLAND GROUP (2161-2236 m, 2147-2222 mTVD))

DANIAN (2161-2170 m)

CRETACEOUS (2170-2236 m)

UPPER CRETACEOUS (2170-2236 m)

The Shetland Group is made up of a 24 meter thick unit of limestone at the top, overlying a 37 meter thick sequence of claystones with stringers of limestones, and a 14 meter thick limestone unit at the base.

The limestones are pale yellowish brown and white to very light gray, moderately hard to locally very hard, blocky, locally glauconitic and in parts very argillaceous grading to marl.

The claystones are medium dark gray to olive gray, soft to moderately hard, blocky to fissile predominantly subfissile, micromicaceous, locally glauconitic, silty and calcareous.

The upper 9 meters of the Shetland Group are assigned to the Danian age. A possible unconformity separates the Danien from the limestones of Cretaceous age below. Lithologically the limestones above and below this possible unconformity are similar.

The depositional environment in which the Danian limestones are laid down is probably more open marine than the environment in which the Upper Paleocene claystones above were depositional. As for the Cretaceous sediments on outer shelf to upper Bathyal environment is suggested.

An unconformity and a lithology change defines the boundary between the Cretaceous and Jurassic strata.

An unconformity and a lithology change defines the boundary between the Cretaceous and Jurassic strata.

As indicated above the uppermost part of the Shetland Group is of Danian, lower Paleocene age (2160-2170 m). The remaining interval is of Maastricthian age (2170-2237 m).

JURASSIC (2236-2872 m, 2222-2856 mTVD))

MIDDLE JURASSIC (2236-2260 m)

BRENT GROUP (2236-2253 m, 2222-2238 mTVD)

Only a thin sequence of sediments assigned to the Brent Group were preserved in the well. This sequence is made up of interbedded sandstones and claystones/shales with a few stringers of limestones.

The sandstones are composed of clear to milky quartz which are ranging in grain size from very fine to coarse. They are partly loose, partly friable, locally silica cemented and moderately sorted.

The claystones/shales are dark greenish gray, olive black, dusky yellowish brown and moderately brown, firm to moderately hard, silty, micromicaceous and non calcareous.

The depositional environment is deltaic to marginal marine becoming innershelf with depth.

The Middle Jurassic sequence is dated Middle Bajocian (2237-2248 m) and Lower Bajocian (2248-2260 m).

LOWER JURASSIC (2260-2872 m)

DUNLIN GROUP (2253-2604 m, 2239-2589.5 mTVD)

Drake Formation (2253-2447 m, 2239-2433 mTVD)

The Drake Formation is a sequence of claystones with a few stringers of sandstones, limestones and marl.

The claystones are described as dusky yellowish brown and locally brownish gray, generally soft and sticky, locally firm and subfissile. They are micromicaceous, carbonaceous generally silty and non to slightly calcareous.

The sandstones consists of clear to milky quartz fine to very coarse grained, predominantly medium, loose, subangular, pyritic and moderately sorted.

The limestones are medium dark and light gray, moderately hard, in part very argillaceous grading to marl, locally sucrosic and generally microcrystalline.

The marl, which was mainly seen in the middle of this section, was pale olive gray to light gray becoming brownish gray to olive gray, generally soft and blocky, laminated and slightly silty. Locally traces of shell fragments were seen.

The Drake Formation is dated Upper-Middle Toarcian (2260-2349 m), Lower Toarcian (2349-2568 m) and Upper Pliensbachian (2368-2510 m).

Cook Formation (2447-2466 m, 2433-2452 mTVD)

The Cook Formation consists of sandstones with an interbedded siltstone/shale appearing on logs as an overall coarsening upward sequence.

The sandstones are described as being light to medium to olive gray, locally light brownish gray transparent to translucent quartz which is fine to very fine grained, subangular to rounded, slightly micraceous and moderately to well sorted.

The siltstone/shale is olive gray to olive black, friable to moderately hard, locally laminated with very fine sand, micaceous, locally pyritic and slightly calcareous.

The environment of deposition is interpreted as marginal marine, inner shelf.

The Cook Formation is of Upper Pliensbachian age.

Burton Formation (2466-2527 m, 2452-2512.5 mTVD)

The lithology of the Burton Formation is claystones with interbeds of siltstones and rarely stringers of sandstones.

The claystones are olive gray to dusky yellowish brown, soft to firm, blocky to subfissile, micromicaceous, carbonaceous and generally slightly calcareous. The claystones were locally very silty and sandy grading to siltstones. Pyrite was seen locally in trace amounts.

The siltstones were light olive gray, friable, and crumble, laminated, very argillaceous, micromicaceous and non to very slightly calcareous.

The sandstones were described as light to medium gray, olive gray to brownish gray quartz, very fine to locally medium grained, friably to moderately hard, subangular to rounded and moderately sorted. Traces of mica, carbonaceous material and glauconite were seen. The sandstones were calcareous cemented with no visible porosity.

The Burton Formation was probably laid down in a marine inner shelf environment.

This formation is of Upper Pliensbachian and Lower Pliensbachian (2510-2577 m) age.

Amundsen Formation (2527-2604 m, 2512.5-2589.5 mTVD)

The Amundsen Formation is a lithological continuation of the Burton Formation above. It is a sequence of claystones with thin beds of siltstones and stringers of limestones.

The claystones and siltstones are generally as described above. The limestones are white, medium light gray, soft, argillaceous, micraceous and silty.

The depositional environment is also as for the sediments above.

The Amundsen Formation is of Lower Pliensbachian and Upper Sinemurian (2577-2610 m) age.

Statfjord Formation (2604-2872 m, 2589.5-2956 mTVD)

The Statfjord Formation consists of predominantly sandstones with interbeds of claystones/siltstones. A few beds of coaly shale were also developed.

The sandstones are made up of quartz which are light gray to light olive gray, occasionally with light brownish gray to brownish gray stain. The grainsize ranges from fine to coarse, are angular to subrounded and poorly to moderately sorted. The sandstones are loose to friable, slightly calcarecous cemented and contain traces of coal fragments and mica. They are locally agrillaceous. The visible porosity was reported as poor to locally very good.

The claystones/siltstones are light bluish gray to light greenish gray to dusky olive gray, soft to firm, blocky, micromicaceous and non calcareous.

The coaly shales were described as dark greenish gray to brownish black, firm, angular to crumbly and locally slightly sandy, in part grading to argillaceous coal.

The depositional environment is interpreted as non marine, fluvial deltaric, lacustrine and marginal marine.

The Statfjord Formation is dated Lower Sinemurian (2610-2853 m) and Hettangian (2853-2875 m).

TRIASSIC (2872-2985 m TD, 2856-2968 mTVD)
HEGRE GROUP (2872-TD)

The Triassic sequence is made up of alternating claystones and sandstones with occasionally occurring stringers of limestone and coal.

The claystone are multicoloured light gray, dusky yellowish brown, reddish brown, moderately brown, dusky reddish gray and grayish black. They are soft to moderately hard, fissible to locally blocky, slightly micromicaceous, carbonaceous, silty and generally non calcareous.

The sandstones are very light gray clear quartz, fine to very coarse, predominantly medium, loose, angular to subrounded, poor to moderately sorted and locally calcareous cemented. Traces of mica, carbonaceous material and pyrite were occasionally seen.

The limestone were white, very light gray and grayish red, soft to moderately hard, blocky, in part brittle, locally very argillaceous and microcrystalline to crystalline.

The Coal, seen at the upper part of the section, was black and brownish black, brittle, blocky to platy and shiny.

The depositional environment was terrestrial to lacustrine and fluviale.

5. HYDROCARBON SHOWS

The evaluation of hydrocarbon shows at the wellsite was carried out in the conventional manner. The complete hydrocarbon total gas dectetor (50 units = 1%) was operational together with a gas chromatograph for automatic and continous gas analysis recorded as "ppm" by volume of C1 through C5.

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

5.1 GAS RECORD

217-720 m

The total amount of gas ranges from trace to 0.4% methane (C1) in this major section of the Nordland Group clays and sands. Down to 375 m the mudweight was 1.05 rd, the remaining section was drilled with a mudweight of 1.10 rd.

720-1666 m

There was only trace amounts of gas (0.01-0.06% C1) in the lower Nordland Group and the major upper part of the Hordaland Group sands and clays. The mudweight was progressively increased from 1.10-1.35 rd (1545 m) and then kept stable for the remaining section.

1666-1934 m

Total gas ranged from 0.02-2.0% C1-C2 with traces of C3-IC4. Mudweight was kept at 1.35 rd down to 1890 m where it was reduced to 1.30 rd. The section represents the bottom part of the Hordaland Group.

1934-2160 m

Total gas remained low in this interval, ranging from 0.02-0.16& mainly C1-C2, with the higher values including traces of C3-IC4 in the uppermost section. The mudweight was constant at 1.30 rd, and the section contains the Balder, Sele and Lista Formations with the additional bottom Maureen Formation Equivalent.

2160-2200 m

Total gas varied from 0.02-3.1% C1-IC4 in this limestone-dominated upper part of the Shetland Group. The mudweight was constant at 1.30 r.d.

2200-2446 m

Total gas was low, ranging from 0.03-0.2% C1-C3 in this interval displaying the lower part of the Shetland Group, the Brent Group and Drake Formation. A progressive decrease in mudweight from 1.30-1.25 rd was completed at 2390 m.

2446-2540 m

A marked increase in total gas, 0.06-6.0% C1-NC4, was recorded in this section consisting of the Cook- and the Burton Formations, and including the very upper part of the Amundsen Formation. The mudweight was kept constant at 1.25 rd.

2540-2917 m

Total gas is generally low, varying from 0.03-0.19% C1-C3 with minor trace of IC4. The section is comprised by the remaining lower part of the Amundsen Formation and all of the Statfjord Formation. Mudweight is kept constant at 1.25 rd through to TD.

2917-2985 m TD

Very low total gas was recorded from this interval, 0.01-0.04 dominantly C1 with minor traces of C2-IC4. Lithology is sands and claystones of the Hegre Group.

5.2 OIL STAIN AND FLUORESCENCE

1945-1960 mMD (1932-1947 mTVD)

There is weak shows in ditch cuttings from dolomite stringers in the Balder Formation. Locally, there is a weak direct orange flourenscence with a generally fast streaming bluish white flourescent cut. The flourescent residue is bright yellow, whereas the visible residue is ligh+ brown.

2160-2185 mMD (2146-2171 mTVD)

This interval is comprised by the Lower Palaeocnee/Upper Cretaceous massive limestones, which display a fair yellowish orange direct flourescence. There is none to a slow streaming bluish white flourescent cut, and a good slow fast streaming crush flourescent cut. A pale yellow fluorescent residue is generally present.

2235-2240 mMD (2221-2226 mTVD)

This narrow section is represented by Middle Jurassic sandstones of the Brent Group. The shows are apparently weak, with only a very weak dull yellow direct flouresence. The white-yellow flourescent cut is very weak but fast streaming, and there is no visible cut.

2447-2462.5 mMD (2433-2448.5 mTVD)

This interval is confined to the sandstones of the Cook Formation. The lower half of the interval is contained in the upper part of core no. 1. A generally good petroliferous odour is present, but no direct flourescence is seen. There is a weak to fast streaming white-yellow flourescent cut with an additional milky white crush flourescent cut.

Only a local dull brown direct fluorescence was reported from the uppermost sandstones of the Statfjord Formation. There was no flouresceing or visible cut.

6. CORING

6.1 CONVENTIONAL CORES

Only two cores were cut in this well. Core no. 1 includes the major part of the Cook Formation and the very upper part of the Burton Formation. Core no. 2 was cut in the uppermost part of the Statfjord Formation.

The depths referred to are measured depths.

Core no. 1 was cut from 2455-2473.2 m with at 95.1% or 17.3 m recovery. Predominant lithologies are shale/ siltstone with massive sandstone only in the very upper part. Locally the siltstone is gradational into fine sandstone, or it carries fine sandstone in flaser beds. Lenticular/flaser bedding and bioturbation are common sedimentary features.

Core no. 2 was cut from 2608-2626.2 m with a 100% recovery. The section is comprised by sandstones locally containing intraformational conglomerate layers and thin shale layers. Coal is present only in very minor amounts. Ripple lamination and relatively low angle cross-stratification is common throughout the cored section. Bioturbation and microfaulting are present, but of very restricted importance.

Hyrocarbon shows are only reported from the uppermost part of core no. 1, their quality is rated poor.

6.2. SIDEWALL CORES

Sidewall cores were taken from 2080 m MD in the basal part of the Palaeocen Lista Formation and down to TD. From two separate runs, a total of 71 samples were recovered out of 90 shot.

A detailed description of the sidewall cores can be studied in Appendix II.

7. WIRELINE LOGGING

The following is a summary of wireline logs run in the well 30/9-5, and provides the dates, logged intervals and run numbers of each log.

LOG	DATE	LOGGED INTERVAL	RUN NO.
ISF/LSS/GR/SP	1.6.85	126-882.4 m	1A
	14.6.85	894-1910 m	2B
ISF/LSS/GR/SP	14.7.85	1908-2984 m	3C
LDL/GR/CAL	14.6.85	894-1912.5 m	2A
LDL/CNL//CAL/GR	14.7.85	1908-2985 m	3B
NGT		2220-2929 m	3A
DLL/MSFL/GR/CAL	14.7.85	2220-2645 m	3A
SHDT	15.7.86	1908-2985 m	3A
RFT	15.7-85	2238.5-2940 m (sample at 2452 m)	3A
RFT	16.7.85	Sample at 2238.6 m	3B
CBL/VDL	17.7.85	125-1908 m	3A
VSP	14.7.85	128-2985 m	3A
CST	16.7.85	2979-2522 m	3A
"	17.7.85	2502-2080 m	3B

8. SPECIAL STUDIES

The biostratigraphic evaluation of the well has been performed by the laboratories of Robertson Research Int. Ltd, in Wales, UK. The results of this evaluation are contained in the report:

Norsk Hydro 30/9-5
Norwegian North Sea Well
Biostratigraphy of the interval 220-2980 m T.D.

The petrophysical evaluation, and the results of RFT pressure recordings and fluid sampling carried out in the well are presented in the report:

Formation Evaluation Report
Well 30/9-5
Cretaceous, Brent Eq., Cook
Statfjord and Hegre Formations.

APPENDIX I

CORE DESCRIPTION
(cores 1-2)

Norsk Hydro

Well no. 30/9-5

Core report

Core no's 1

Interval 2455-2460 m

Area Norwegian North Sea

Cut 2441-2459.2m TVD 2455-2473.2m

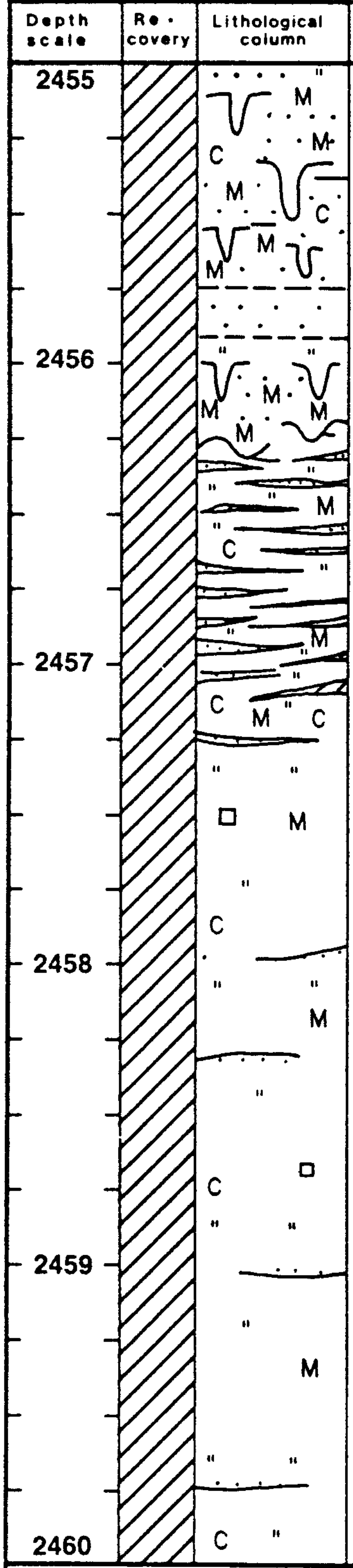
Date 6.7.85

Scale 1:25

Well R.K.B. 25 m

Recovery 2455-2472.31 m 95.1%

Geologist Aga/Kalgraff

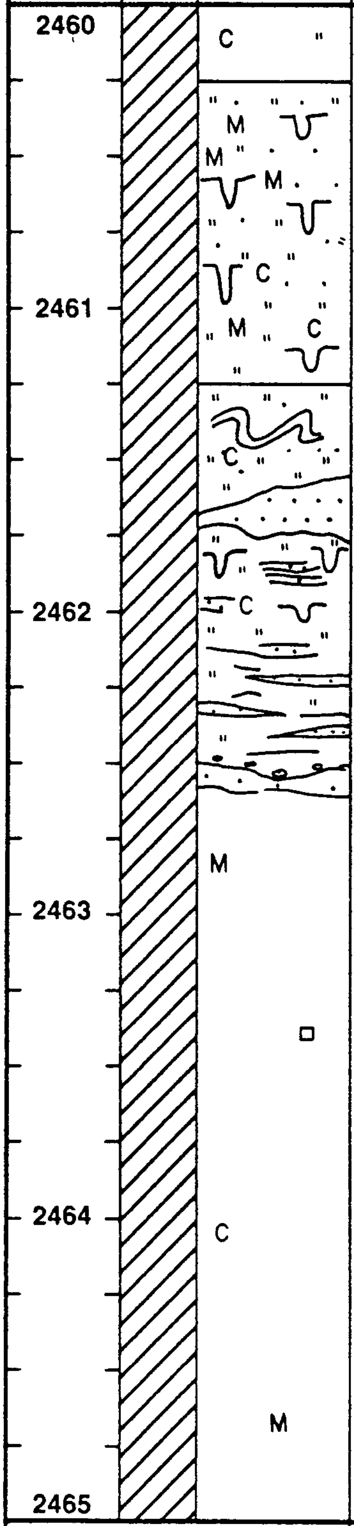


Depths	Lithological descriptions	Shows
	Sst: pred lt brn gy, lt olv gy, clr-v lt gy Qtz, vf-f, fri-mod hd, subang-rnd, also ang, carb, v slty, sl calc cmt, bioturb, mod srtd, fair vis por. Lent int lam **Clyst** dusky olv gy, dk grn gy, pred frm, also mod hd, v mica, v carb.	Gd pet odour, no dir flu, v wk-v slow strmg mlky wh crush cut.
2456.23 m Sealed sample 2456.45 m	**Sst** a/a in len and flazer bd.	Gd pet odour, no dir flu wk,fast strmg wh yel flu cut on Sst lam.
	Sh/Slst: olv gy-olv blk, fri-hd, ang, blky, lam, loc **Sst**lam, v mica, tr pyr, carb, sl calc.	

Well no.		Core no's
30/9-5	Core report	1

Interval	Area	Cut	Date
2460-2465 m	Norwegian North Sea	2441-2459.2m TVD 2455-2473.2m	6.7.85
Scale	**Well R.K.B.**	**Recovery**	**Geologist**
1:25	25 m	2455-2472.2 m 95.1%	Aga/Kalgraff

Depth scale | Re-covery | Lithological column

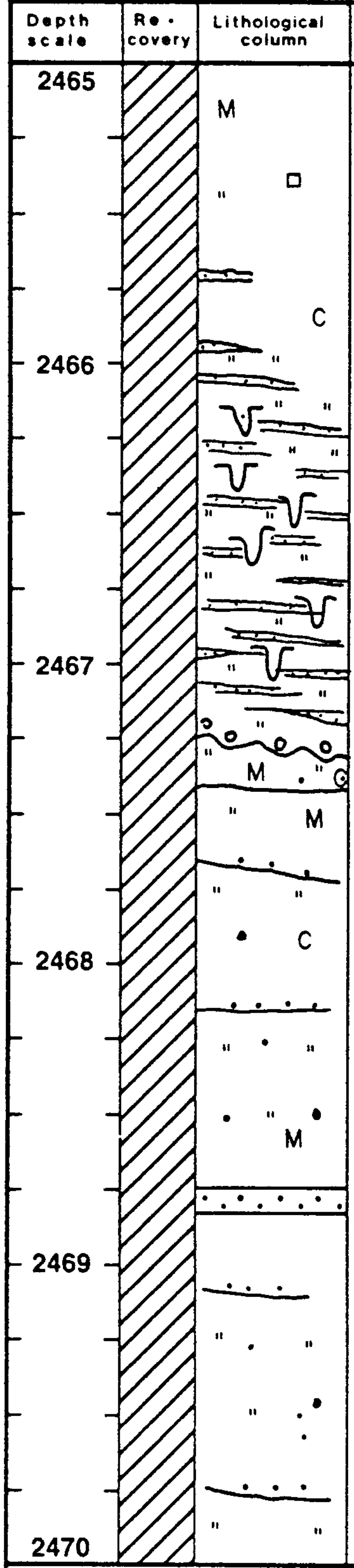


Depths	Lithological descriptions	Shows
2460.25 m		
	Slst/Sst: olv gy - olv blk, fri-hd, gen v sdy grdg **Sst:** vf, subang-subrnd, carb, v mica, bioturb, cntrtd, len lam, w/cgl lag at base, sl calc also sl silic, clyst len, pr srtd, no vis por.	Fair pet odour, no dir flu, v wk slow strmg wh yel flu cut, no vis cut, no flu resd.
2461.25 m		
2461.55 m		
2462.5 m		
2462.6 m		
	Sh: olv gy, frm, fis, hom lam, micromic, carb, tr pyr, non – v sl calc.	No show.

Norsk Hydro

Well no.		Core no's
30/9-5	Core report	1

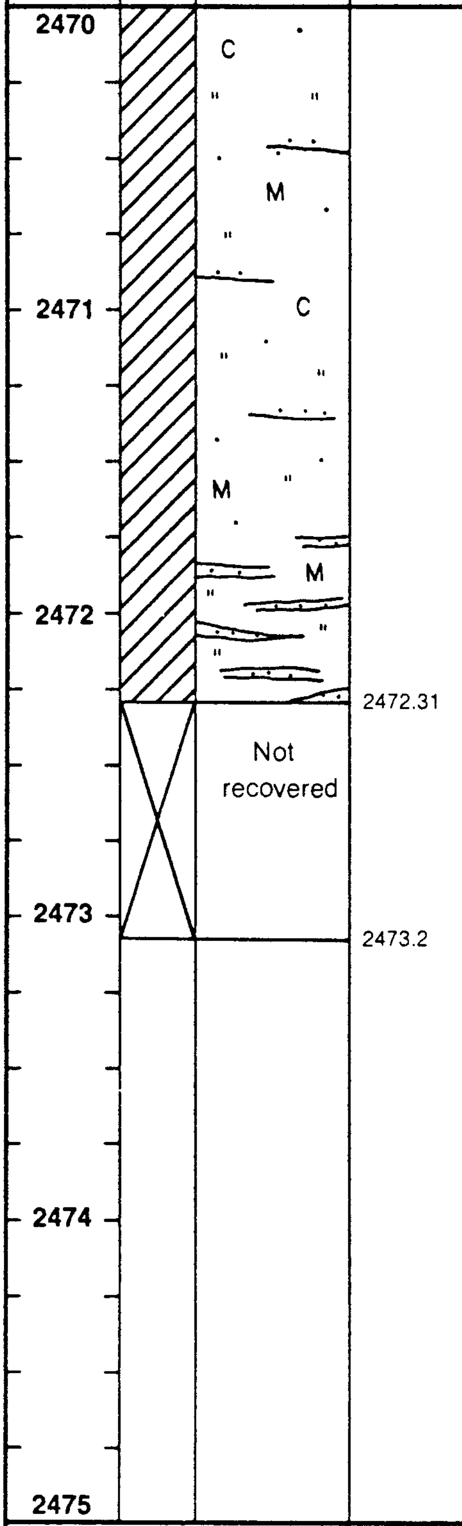
Interval	Area	Cut	Date
2465-2470 m	Norwegian North Sea	2441-2459.2m **TVD** 2455-2473.2m	6.7.85
Scale	**Well R.K.B.**	**Recovery**	**Geologist**
1:25	25 m	2455-2472.2 m 95.1%	Aga/Kalgraff



Depths	Lithological descriptions	Shows
	Sh: olv gy, frm, fis, hom lam, micromic, carb, tr pyr, non – v sl calc.	No show
	Gen **Sh** a/a w/ thin len of vf **Sst.**	
	Bioturb.	
		No show
2467.25 2467.35	Erosional cgl lag. **Clyst:** lt olv gy, frm-mod hd, blky, v slty grdg **Slst,** calc-v calc.	
	Sh/Slst: olv gy-olv blk, fri-hd, blky, lam, loc **Sst** lam, v mica, tr pyr, carb, loc v arg, olv blk-olv gy, sl calc.	
2468.75 2468.8		
		No show.

Norsk Hydro

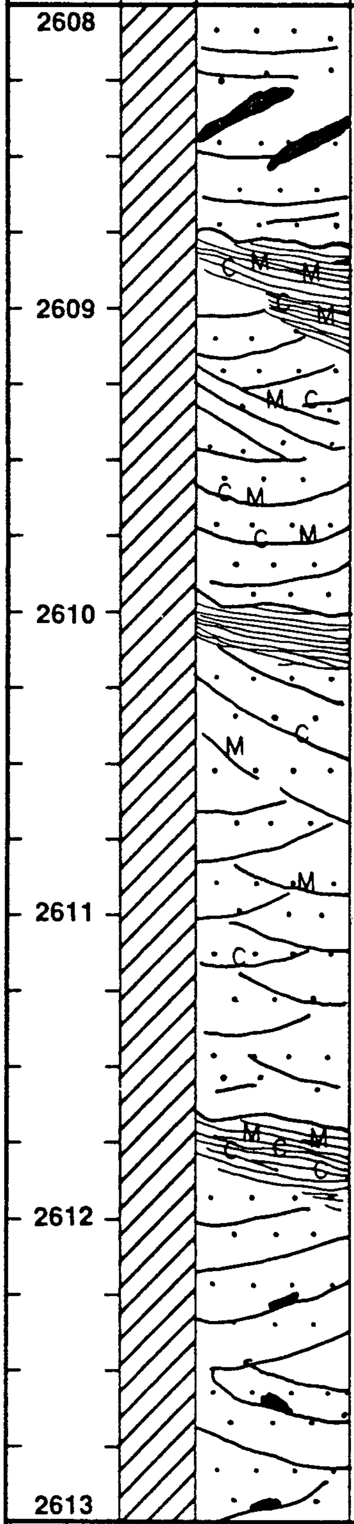
Well no. 30/9-5	Core report		Core no's 1
Interval 2470-2473 m	Area Norwegian North Sea	Cut 2441-2459.2m 2455-2473.2m	Date 6.7.85
Scale 1:25	Well R.K.B. 25 m	Recovery 2455-2472.2 m 95.1%	Geologist Aga/Kalgraff

Depth scale / Re-covery / Lithological column / Depths	Lithological descriptions	Shows
	**Sh/Slst:** olv gy-olv blk, fri-hd, blky, lam, loc **Sst** lam, incr towards base core, mica, tr pyr, sl calc.	No show

Well no.	Core report		Core no's
30/9-5			2

Interval	Area	Cut	Date
2608-2613 m	Norwegian North Sea	2593.4-2611.6 m TVD 2608-2626.2 m	9.7.85
Scale	**Well R.K.B.**	**Recovery**	**Geologist**
1:25	25 m	2608-2626.2 m 100%	Kalgraff/Knudsen

Depth scale	Re-covery	Lithological column	Depths	Lithological descriptions	Shows



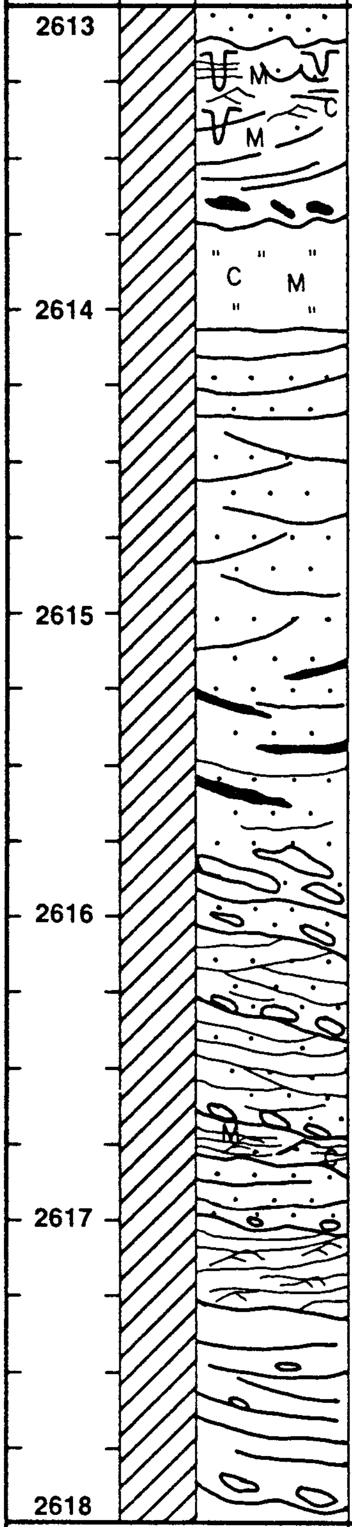
Depths	Lithological descriptions	Shows
	Sst: lt gy, clr-m lt gy Qtz, f-m, pred m, fri-lse, ang-subang, sl calc, mica, carb, pr-mod srtd, coal frags, poss trough x-strat, fair vis por.	No show
	Sst: lt gy, clr-lt gy Qtz, f, fri-lse, subang-subrnd, mica, carb, kao, sl calc, mod srtd, no vis por.	
	Sst: pred m a/a.	
	Sst: f, a/a.	
2610.51 Sealed sample 2610.75	**Sst:** pred m a/a w/trough x-strat.	No show
	Sst: m lt gy, clr-v lt gyQtz, vf-f, subang-subrnd, tr mica, carb, mod srtd, fair vis por.	
	Sst: brn gy, clr-lt gy-milky Qtz, m-v crs, pred crs, fri-lse, ang-subang, sl calc, mica, carb, pr srtd.	No show

Norsk Hydro

Well no.		Core no s
30/9-5	Core report	2

Interval	Area	Cut	Date
2613-2618 m	Norwegian North Sea	2593.4-2611.6 m TVD 2608-2626.2 m	9.7.85
Scale	**Well R.K.B.**	**Recovery**	**Geologist**
1:25	25 m	2608-2626.2 m 100%	Kalgraff/Knudsen

Depth scale | Re-covery | Lithological column

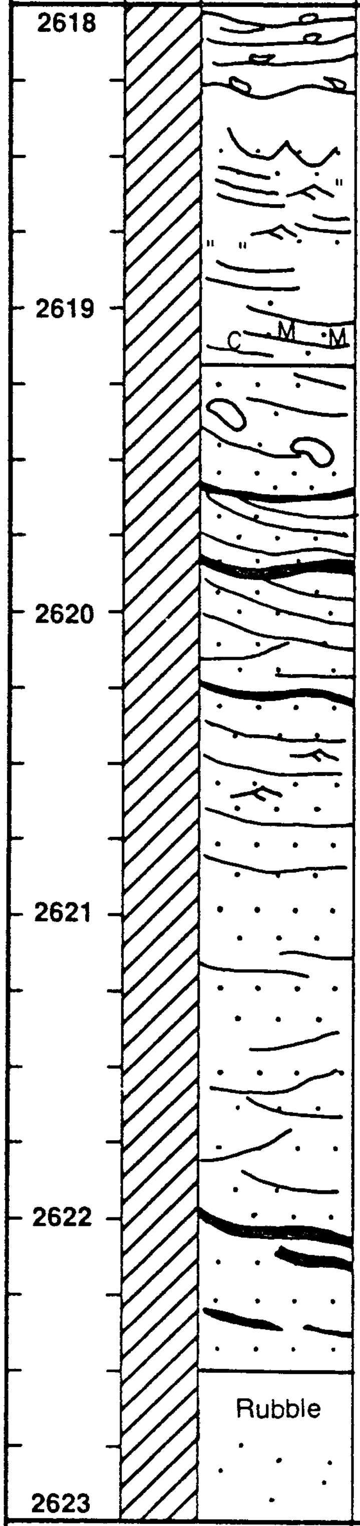


Depths	Lithological descriptions	Shows
2613.20	**Sst:** lt olv gy, clr-m dk gy Qtz, f-crs, pred m, fri-lse, ang-subrnd, mica, carb, kao cmt, loc sl calc cmt, mod srtd, pr vis por. Ripple lam, bioturb. (Cruziana?)	
2613.7		No show
2614.05 Sealed sample 2614.27	**Sh/Slst:** brn blk, mod hd-hd, fis, lam, v mica, carb, v slty, grdg **Slst** also vf sdy, non calc.	
	Sst: m gy, clr-lt gy Qtz, f-m, fri-lse, subang, mica, tr carb, mod srtd (bimodal), fair vis por.	
	Sst: lt gy-clr-milky Qtz, m, fri-lse, ang, subrnd, tr mica, kao, mod srtd, trough x-strat, coal frags, at base intraformational cgl.	
	MPS: 8,4,4 cm	
	MPS: 8,2,3,3 cm	
	MPS: 6,2 cm	No show
2616.7	MPS: 3.1.5, 1.5 cm **Sst.** m gy, clr Qtz, f-m, fri-lse, subang-subrnd, v mica, carb, v kao, mod srtd, no vis por.	
	Ripple lam.	
2617.25	**Sst:** lt gy-clr-milky Qtz, m, tr vf and crs, fri-lse, ang-subrnd, tr mica, tr kao in patches, mod srtd, gd vis por. Cgl.	
2617.62 Sealed sample 2617.91		

Well no.		Core no's
30/9-5	Core report	2

Interval	Area	Cut	Date
2618-2623 m	Norwegian North Sea	2593.4-2611.6 m TVD 2608-2626.2 m	9.7.85
Scale	**Well R.K.B.**	**Recovery**	**Geologist**
1:25	25 m	2608-2626.2 m 100%	Kalgraff/Knudsen

Depth scale | Re-covery | Lithological column

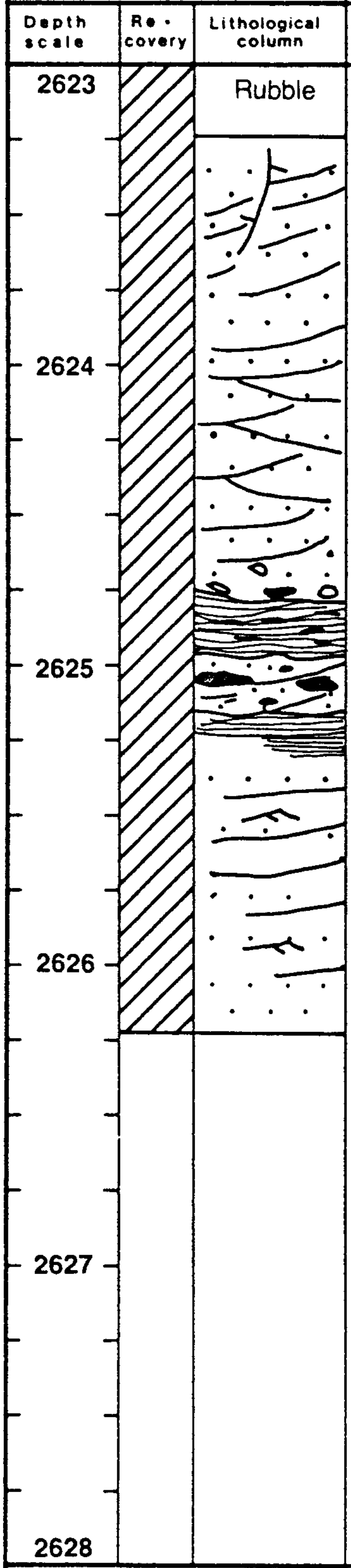


Depths	Lithological descriptions	Shows
2618.07	**Sst:** v lt gy, clr Qtz, vf-m, fri-lse, ang-subrnd, tr mica, rr tr carb, kao cmt, mod srtd, no vis por.	
2618.3	Ripple lam & flazer at top. **Sst:** brn gy, clr-milky Qtz, vf-f, fri, v mica, v carb in lam, mod srtd, no vis por.	No show
2619.2	**Sst:** lt brn gy, clr-m lt gy Qtz, f -v crs, gen crs, fri-lse, ang-subrnd, tr mica, tr carb, tr calc, kao, pr-mod srtd, fair vis por. Trough x-strat w/intraform cgl. **Sst:** m-crs, tr f, else a/a. Poss trough x-strat. **Sst:** vf-crs, pred m else a/a. Coal ptgs.	No show
2622.04 Sealed sample 2622.38	**Sst:** lt olv gy, clr-lt gy-tr milky Qtz, f-crs, pred m-crs, fri-lse, ang-subrnd, tr mica, sl kao, non calc, mod srtd, fair vis por. Coal and intraform cly clasts.	
2622.4		

Norsk Hydro

Well no.		Core no's
30/9-5	Core report	2

Interval	Area	Cut	Date
2623-2626.2 m	Norwegian North Sea	2593.4-2611.6 m TVD 2608-2626.2 m	9.7.85
Scale	**Well R.K.B.**	**Recovery**	**Geologist**
1:25	25 m	2608-2626.2 m 100%	Kalgraff/Knudsen



Depths	Lithological descriptions	Shows
	Sst: v lt gy, clr – lt gy Qtz, f-m, pred m, fri-lse, tr mica, tr carb, kao cmt, non calc, poss trough x-strat, microfault mod-w srtd, fair vis por.	No show
2624.75	**Sst/Cgl:** v lt gy-lt olv gy, clr Qtz, vf-c crs, pred crs, fri-lse, mica, kao cmt, sl silic, tr carb, tr Coal frags, cly frags, pr srtd, fair vis por.	
2624.9	**Sst:** brn gy, dusky yel brn, clr-milky Qtz, vf-f, mod hd, v mica, v carb, lam rr ripple lam, calc cmt, coal frgs, mod-pr srtd, no vis por.	
2625.1 2625.15 Sealed sample 2625.4		No show
	Sst. v lt gy- lt olv gy, clr-lt gy Qtz, gen f, fri-lse, subang-subrnd, in pt sl calc, tr carb, sl kao, tr silic cmt, tr mica, ripple mod srtd, fair vis por.	
2626.2		

APPENDIX II

SIDEWALL CORE DESCRIPTIONS

Norsk Hydro

SIDE WALL CORES DESCRIPTION

WELL: 30/9-5
LICENCE: 104
RUN N°: 3A
PAGE N°: 1 of 2
DATE: July 16th, 1985

SERVICE COMPANY:	Schlum.
ASKED:	30
SHOT:	20
LOST:	0
EMPTY:	0
SAMPLES RECOVERED:	20
Misfire	10

GEOLOGIST:
Beckman/Knudsen

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

N°	DEPTHS m	REC cm	LITHOLOGY	Fluorescence			CUT
				tr	M	G	
1	2979	4.5	**Clyst:** olv blk-olv gy, mod hd-frm, blky, v sl slty, sl micromic, mod calc.				
2	2961	3	**Clyst:** mod brn-dk gysh rd, frm, blky, slty, micromic, noncalc.				
3	2944	2.5	**Cly/Clyst:** lt gy, sft, blky, slty-v slty, mica-micromic, sl calc.				
4	2921	3.5	**Clyst:** mod brn-dk gysh rd, frm, blky, slty, v sl micromic, calc w tr **Cly/Clyst** as for 2944 m.				
5	2915	3	**Clyst:** as for 2921 m but v sl calc.				
6	2913	2.5	**Slst:** lt-v lt gy, frm-fri, sl mica, occ dk min specs, arg, sdy, pt grdg vf **Sst**, sl calc.				
7	2903	2	**Sst:** v lt gy, fri, clr-mlky-m gy Qtz, m-vf, occ crs, subrnd-ang, poorly srtd, calc cmt, pr-mod vis por.				
8	2885	3	**Clyst:** olv blk-dusky yelsh brn, frm, blky, slty-v slty, occ vf sdy, sl micromic, non calc.				
9	2875	4	**Clyst:** olv gy, mod hd, blky, slty, non calc.				
10	2855	2.5	**Clyst:** olv blk-dusky yelsh brn, frm, slty-v slty, sl micromic, non calc.				
11	2853	3	**Slst/Sst:** olv gy, frm-frm, clr-m gy Qtz, vf, subang, arg, lam of d, min, mica, non calc.				
12	2805	2.5	**Sst:** v lt olv gy, fri, clr-mlky Qtz, vf-f, subrnd-ang, prly srtd, slty, sl mica, occ dk min, calc cmt, pr vis por.				
13	2783	3	**Sst:** as for 2805, but occ m qtz and pt arg.				
14	2764	3	**Clyst:** dusky yelsh brn-dk olv gy, frm-mod hd, blky, sl slty-slty, sl micromic, non calc.				
15	2738		Misfire.				
16	2715	3	Alt **Sst:** as for 2805m and **Clyst:** olv gy-m gy, frm, blky, slty, mod micromic, mod calc.				
17	2700	3	**Clyst:** m olv gy, frm, blky, v slty and sdy, sl micromic, non calc.				
18	2690		Misfire.				

Norsk Hydro

SIDE WALL CORES DESCRIPTION

WELL: 30/9-5
LICENCE: 104
RUN N°: 3A
PAGE N°: 2 of 2
DATE: July 16th, 1985

SERVICE COMPANY:	Schlum.
ASKED:	30
SHOT:	20
LOST:	0
EMPTY:	0
SAMPLES RECOVERED:	20
Misfire	10

GEOLOGIST:
Beckman/Knudsen

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

N°	DEPTHS m	REC cm	LITHOLOGY	Fluorescence				CUT
					tr	M	G	
19	2683	3.5	**Coal:** blk, frm-brit, sl slty.					
20	2667	2.5	**Clyst/Slst:** m gy-v lt gy, frm, v sdy, sl micromic, v sl calc.					
21	2637		Misfire.					
22	2634	3.5	**Clyst:** m dk gy-olv gy, frm, blky, sl slty, v sl micromic, non calc.					
23	2604	2.5	**Clyst:** dusky yelsh brn-dk olv gy, frm, blky, slty-v slty, pt vf sdy, sl micromic, non-v sl calc.					
24	2592		Misfire.					
25	2583		Misfire.					
26	2577		Misfire.					
27	2561		Misfire.					
28	2544		Misfire.					
29	2534		Misfire.					
30	2522		Misfire.					

Norsk Hydro

SIDE WALL CORES DESCRIPTION

WELL: 30/9-5
LICENCE: 104
RUN N°: 3B
PAGE N°: 1 of 4
DATE: July 16-17th, 1985

SERVICE COMPANY: Schlum.
ASKED: 60
SHOT: 52
LOST: 1
EMPTY: 0
SAMPLES RECOVERED: 51
Misfire 8
GEOLOGIST: Beckman/Knudsen

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

N°	DEPTHS m	REC cm	LITHOLOGY	Fluorescence			CUT
				tr	M	G	
31	2502	3	**Clyst:** dk olv gy, frm, blky, sl slty, micromic, mod calc.				
32	2488	3.5	**Clyst:** as for 2502 m w/lam of **Slst/Sst:** lt olv gy.				
33	2445	4.5	**Clyst:** dk olv gy, frm-mod hd, subfis-blky, sl slty, mica-micromic, non-v sl calc.				
34	2440	4	**Clyst:** as for 2445 m but mod mica-micromic, sl – mod calc.				
35	2435	4.5	**Clyst:** dk olv gy-dusky yelsh brn, frm, blky, slty and vf sdy, mica-micromic, sl calc.				
36	2425	4.5	**Clyst:** dk olv gy-olv gy, frm-mod hd, blky, sl slty, sl micromic, sl calc.				
37	2414	4.5	**Clyst:** as for 2445m, but sl calc.				
38	2404	3.5	**Clyst:** dk olv gy-m dk gy, frm, blky-subfis, mod slty, mica-micromic, calc.				
39	2392	4.5	**Clyst:** dk olv gy, frm, blky, mod slty, micromic, calc.				
40	2382	3.5	**Clyst:** olv gy-m dk gy, sft-hd, blky, mod slty, sl micromic, v calc, grdg Lst (var. hardness due to var. calc)				
41	2376	4	**Clyst:** olv gy-dk olv gy, frm-mod hd, blky, slty, tr vf sd, sl micromic, v calc.				
42	2368	2	**Clyst:** dk olv gy, frm-mod hd, blky-subfis, slty, inlam v slty, occ vf sdy, micromic, calc.				
43	2365	2.5	**Clyst:** as for 2368 m, but mod calc-calc.				
44	2357	1.5	**Clyst:** as for 2365 m, but frm-hd, blky, mica-micromic.				
45	2349	3	**Clyst:** dk olv gy, frm, blky, slty-vf sdy, mod calc.				
46	2340	4.5	**Clyst:** dk olv gy-dusky yelsh brn, frm-mod hd, blky, slty-vf sdym mica-micromic, sl calc.				
47	2334	4.5	**Clyst:** dk olv gy, frm-mod hd, blky-subfis, slty, micromic, mod calc.				
48	2326	3	**Clyst:** dk gy-m dk gy, frm, slty, v pyr w/thin lam of **Slst** grdg vf **Sst:** m lt gy-lt gy, fri, arg, calc.				

Norsk Hydro

SIDE WALL CORES DESCRIPTION

SERVICE COMPANY:	Schlum.
ASKED:	60
SHOT:	52
LOST:	1
EMPTY:	0
SAMPLES RECOVERED:	51
Misfire	8

WELL: 30/9-5
LICENCE: 104
RUN N°: 3B
PAGE N°: 2 of 4
DATE: July 16-17th, 1985
GEOLOGIST: Beckman/Knudsen

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

N°	DEPTHS m	REC cm	LITHOLOGY	Fluorescence				CUT
					tr	M	G	
49	2320	4	**Clyst:** dk olv gy-olv blk-gysh blk, frm-mod hd, blky, sl micromic, sl calc.					
50	2314	4.5	**Clyst:** as for 2320 m					
51	2310	3.5	**Clyst:** as for 2320 m					
52	2307	4.5	**Clyst:** as for 2320 m					
53	2305	4.5	**Clyst:** as for 2320 m, but w/tr pyr.					
54	2301		Misfire.					
55	2298	3	**Clyst:** as for 2320 m, but mod calc.					
56	2296	3	**Clyst:** as for 2298 m.					
57	2293		Misfire.					
58	2290		Misfire					
59	2288		Misfire					
60	2284		Misfire					
61	2281	4	**Clyst:** as for 2320 m.					
62	2276	3.5	**Clyst:** as for 2320 m					
63	2274	4	**Clyst:** as for 2320 m.					
64	2271	3	**Clyst:** as for 2320 m, but sl-mod calc.					
65	2268	4	**Clyst:** as for 2298 m.					
66	2266	3.5	**Clyst:** as for 2298 m, but w/occ lt gy, slty-vf sdy lam.					

SIDE WALL CORES DESCRIPTION

WELL: 30/9-5
LICENCE: 104
RUN N°: 3B
PAGE N°: 3 of 4
DATE: July 16-17th, 1985

SERVICE COMPANY:	Schlum.
ASKED:	60
SHOT:	52
LOST:	1
EMPTY:	0
SAMPLES RECOVERED:	51
Misfire	8

GEOLOGIST:
Beckman/Knudsen

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

N°	DEPTHS m	REC cm	LITHOLOGY	Fluorescence				CUT		
					tr	M	G			
67	2262	3.5	**Clyst:** olv blk-gysh blk, frm-mod hd, blky, slty, sl-mod micromic, non-v sl calc.							
68	2258	3.5	**Clyst:** as for 2262 m, but mod calc and gd tr Pyr.							
69	2255	3.5	**Clyst:** as for 2262 m, but v calc.							
70	2253	3.5	**Clyst:** as for 2262 m, but non calc.							
71	2251	3	**Clyst:** as for 2262 m, but non-sl calc.							
72	2248	3	**Clyst:** as for 2251 m, alt **Sst/Slst:** lt olv gy, fri, sl micromic, calc cmt, **weak pet odour, wk rd flu, fast dull yel flu cut, dull yel flu resd.**		■			■		
73	2244		Lost.							
74	2242	2.5	**Slst/Sst:** dk yel brn, frm-fri, micromic, mod calc.							
75	2239		Misfire.							
76	2237	4	**Clyst:** dk grnsh gy, mod hd, blky, mod calc, sdy, pt grdg **Sst:** lt-m gy Qtz, f-crs, subang-subrnd, prly srtd w/lam of **Clyst:** dk gy, frm, slty, sl calc.							
77	2236	5	**Clyst:** grnsh blk, frm-mod hd, blky, sl slty, v sl micromic, v sl calc.							
78	2220	4	**Clyst:** olv blk-dk gy, frm, blky, sl slty, sl micromic, sl micropyr, v calc.							
79	2217	4.5	**Clyst:** olv blk-dk gy, frm-mod hd, blky, subfis, v sl slty, v sl micromic, v calc.							
80	2208	5	**Clyst:** as for 2217 m.							
81	2203	4	**Clyst:** as for 2217 m.							
82	2198		Misfire.							
83	2194	4	**Clyst:** olv blk-dk gy, frm, blky, sl slty, v sl micromic, v calc.							
84	2186	4	**Clyst:** olv blk-dk gy, frm-mod hd, blky, sl slty, v sl micromic, v sl micropyr, v calc.							

Norsk Hydro

SIDE WALL CORES DESCRIPTION

WELL: 30/9-5	RUN N°: 3B	SERVICE COMPANY:	Schlum.
LICENCE: 104	PAGE N°: 4 of 4	ASKED:	60
	DATE: July 16-17th, 1985	SHOT:	52
		LOST:	1
		EMPTY:	0
		SAMPLES RECOVERED:	51
		Misfire	8

GEOLOGIST:
Beckman/Knudsen

tr : trace - M : medium - G : good

N°	DEPTHS m	REC cm	LITHOLOGY	Fluorescence				CUT
					tr	M	G	
85	2159	5	**Clyst:** dk grnsh gy w/incl of gysh blk, frm, blky, non-v sl slty, mod calc when dk grnsh gy, v calc when gysh blk.					
86	2152	3.5	**Clyst:** gysh blk-olv blk, frm, blky, sl slty, tr micromic, v sl calc.					
87	2142	3.5	**Clyst:** olv blk-dk gy, mod hd-frm, blky, sl slty, v sl tr micromic, sl calc.					
88	2129	3	**Clyst:** as for 2142 m, but non calc.					
89	2103	3.5	**Clyst:** olv blk-dk gy, frm, blky, v sl slty, v sl tr micromic, sl-mod calc.					
90	2080		Misfire.					

APPENDIX III

WELL SUMMARY
GEOLOGICAL WELL SUMMARY
RFT RESULTS

PRELIMINARY WELL SUMMARY

Coord: 60° 21′ 31.34″ N UTM: 6691522.4N
02° 53′ 37.09″ E 494131.4E
Zone: 31
Line: NOD 3-84-19 SP 1330
Rig: Treasure Seeker
Waterdepth: 128 mRKB 103 mMSL
Stopped in: Hegre Group

On location: May 26th, 1985
Spudded: May 27th, 1985
At T.D.: July 13th, 1985
Completed: July 20th, 1985
T.D. Driller: 2980 m, 2963 m TVD
T.D. Logger: 2985 m, 2968 mTVD.
Wireline Logging: Schlumberger
Mudlogging: Exploration Logging

WELL
30/9-5

COUNTRY
Norway

OPERATOR NORSK HYDRO

LICENCE 104

OWNED BY NH/Statoil/Saga/Tenneco/Agip/DNO

TARGETS

Brent Group Sandstones
Statfjord Fm. Sandstones

RESULTS

The well encountered gas in the Lower Jurassic Cook Formation (2447 – 2466mMD) and in the Jurassic Brent Group (2236 – 2253 mMD).

Cook Formation:	Brent Group:
2433 -52 mTVD	2222 - 39 mTVD
Gross: 19	16
Net: 6.7	0,5
AvSw: 24.4	59
AvØ: 20.8	20

CASING

30″	216m
20″	893m
13 3/8″	1908m

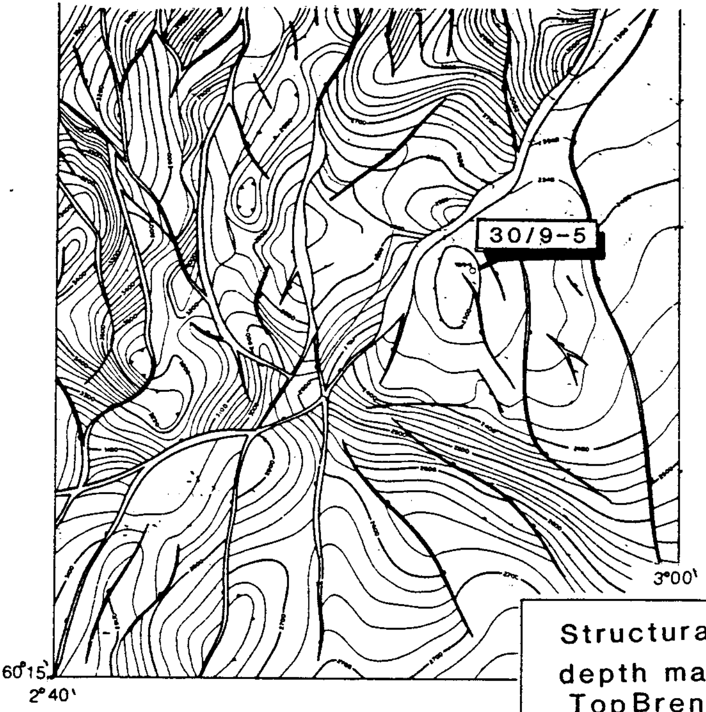
CORES

Core no.1	2455 – 2473.2 mMD 2441 – 2459.2 mTVD Rec: 95.1 %
Core no. 2	2608 – 2626.2 mMD 2593.4 – 2611.6 mTVD Rec: 100 %

GAS RECORD

217 – 720m	0.05 – 0.4 % C1
720 – 1666m	0.01 – 0.06 % C1
1666 – 1934m	0.02 – 2 % C1 – tr C3
1934 – 1958m	0.02-0.16 % C1-IC4
1958 – 2160m	0.02-0.06 % C1-trC3
2160 – 2200m	0.02-3.1 % C1-IC4
2200 – 2446m	0.03-0.2 % C1-C3
2446 – 2540m	0.04-6.0 % C1-NC4
2540 – 2917m	0.03-0.19 % C1-trC4
2917 – T.D.	0.01-0.04 % C1, trC2-C4

	CST	Rec:
3A	2522 – 2979m	30/10
3B	2080 – 2502m	60/9



Structural depth map TopBrent

LOGS

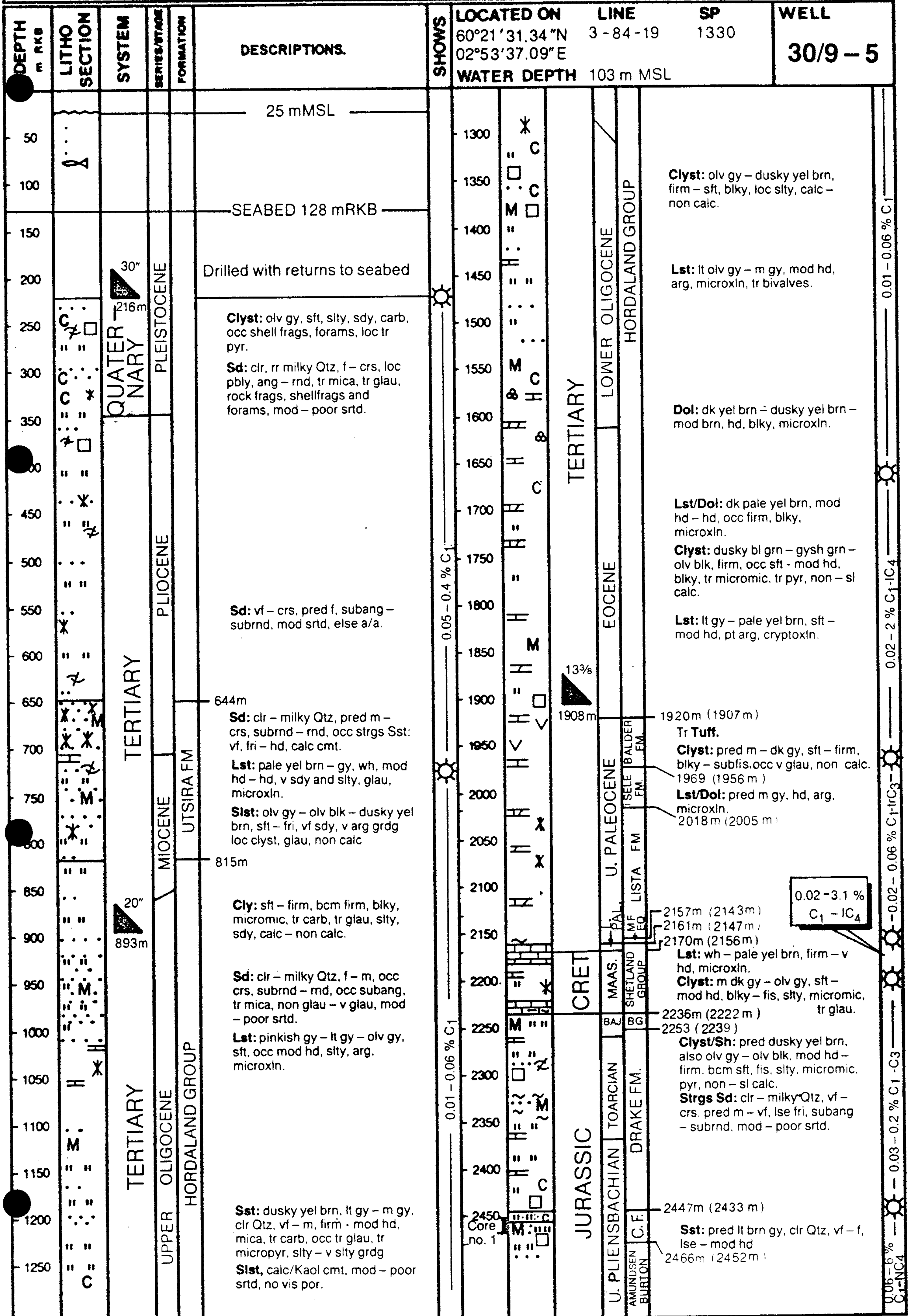
ISF/LSS/ GR /SP	126 – 882.4 894 – 1910m 1909 – 2984m	1A 2B 3C
LDL/GR/ CAL	894 – 1912.5m	2A
LDL/CNL/ CAL	1909 – 2985m	3B
CBL/VDL	125 – 1908m	3A
DLL/ MSFL/ GR/CAL	2220 – 2645m	3A
SHDT	1909 – 2985m	3A
VSP	128 2985m	1
RFT	2238.5 – 2940m 2238.6m	3A 3B
NGT	1909 – 2985m	3A

OIL SHOWS

1945 – 1960m	Rr orng flu, fast strmg bl wh flu cut, lt brn vis resd, bright yel flu resd.
2160 – 2185m	On Lst: Fair yel orng flu, no – slow strmg bl wh flu cut, no vis cut, good slow – fast strmg crush flu cut, pale yel flu resd.
2235 – 2240m	On Sd: V weak dull yel flu, v weak inst strmg wh yel flu cut, no vis cut.
2447 – 2462.5m	On Sst: Gd petr odour, no dir flu, weak – fast strmg wh – yel flu cut, milky wh crush flu cut.

GEOLOGICAL WELL SUMMARY

LOCATED ON 60°21'31.34"N 02°53'37.09"E
LINE 3-84-19
SP 1330
WELL 30/9-5
WATER DEPTH 103 m MSL



Drilled with returns to seabed

Clyst: olv gy, sft, slty, sdy, carb, occ shell frags, forams, loc tr pyr.

Sd: clr, rr milky Qtz, f – crs, loc pbly, ang – rnd, tr mica, tr glau, rock frags, shellfrags and forams, mod – poor srtd.

Sd: vf – crs, pred f, subang – subrnd, mod srtd, else a/a.

644m

Sd: clr – milky Qtz, pred m – crs, subrnd – rnd, occ strgs Sst: vf, fri – hd, calc cmt.

Lst: pale yel brn – gy, wh, mod hd – hd, v sdy and slty, glau, microxln.

Slst: olv gy – olv blk – dusky yel brn, sft – fri, vf sdy, v arg grdg loc clyst, glau, non calc

815m

Cly: sft – firm, bcm firm, blky, micromic, tr carb, tr glau, slty, sdy, calc – non calc.

Sd: clr – milky Qtz, f – m, occ crs, subrnd – rnd, occ subang, tr mica, non glau – v glau, mod – poor srtd.

Lst: pinkish gy – lt gy – olv gy, sft, occ mod hd, slty, arg, microxln.

Sst: dusky yel brn, lt gy – m gy, clr Qtz, vf – m, firm – mod hd, mica, tr carb, occ tr glau, tr micropyr, slty – v slty grdg

Slst, calc/Kaol cmt, mod – poor srtd, no vis por.

Clyst: olv gy – dusky yel brn, firm – sft, blky, loc slty, calc – non calc.

Lst: lt olv gy – m gy, mod hd, arg, microxln, tr bivalves.

Dol: dk yel brn – dusky yel brn – mod brn, hd, blky, microxln.

Lst/Dol: dk pale yel brn, mod hd – hd, occ firm, blky, microxln.

Clyst: dusky bl grn – gysh grn – olv blk, firm, occ sft - mod hd, blky, tr micromic. tr pyr, non – sl calc.

Lst: lt gy – pale yel brn, sft – mod hd, pt arg, cryptoxln.

1920m (1907m)

Tr **Tuff.**

Clyst: pred m – dk gy, sft – firm, blky – subfis,occ v glau, non calc.

1969 (1956m)

Lst/Dol: pred m gy, hd, arg, microxln.

2018m (2005 m)

2157m (2143m)

2161m (2147m)

2170m (2156m)

Lst: wh – pale yel brn, firm – v hd, microxln.

Clyst: m dk gy – olv gy, sft – mod hd, blky – fis, slty, micromic, tr glau.

2236m (2222 m)

2253 (2239)

Clyst/Sh: pred dusky yel brn, also olv gy – olv blk, mod hd – firm, bcm sft, fis, slty, micromic, pyr, non – sl calc.

Strgs Sd: clr – milky Qtz, vf – crs, pred m – vf, lse fri, subang – subrnd, mod – poor srtd.

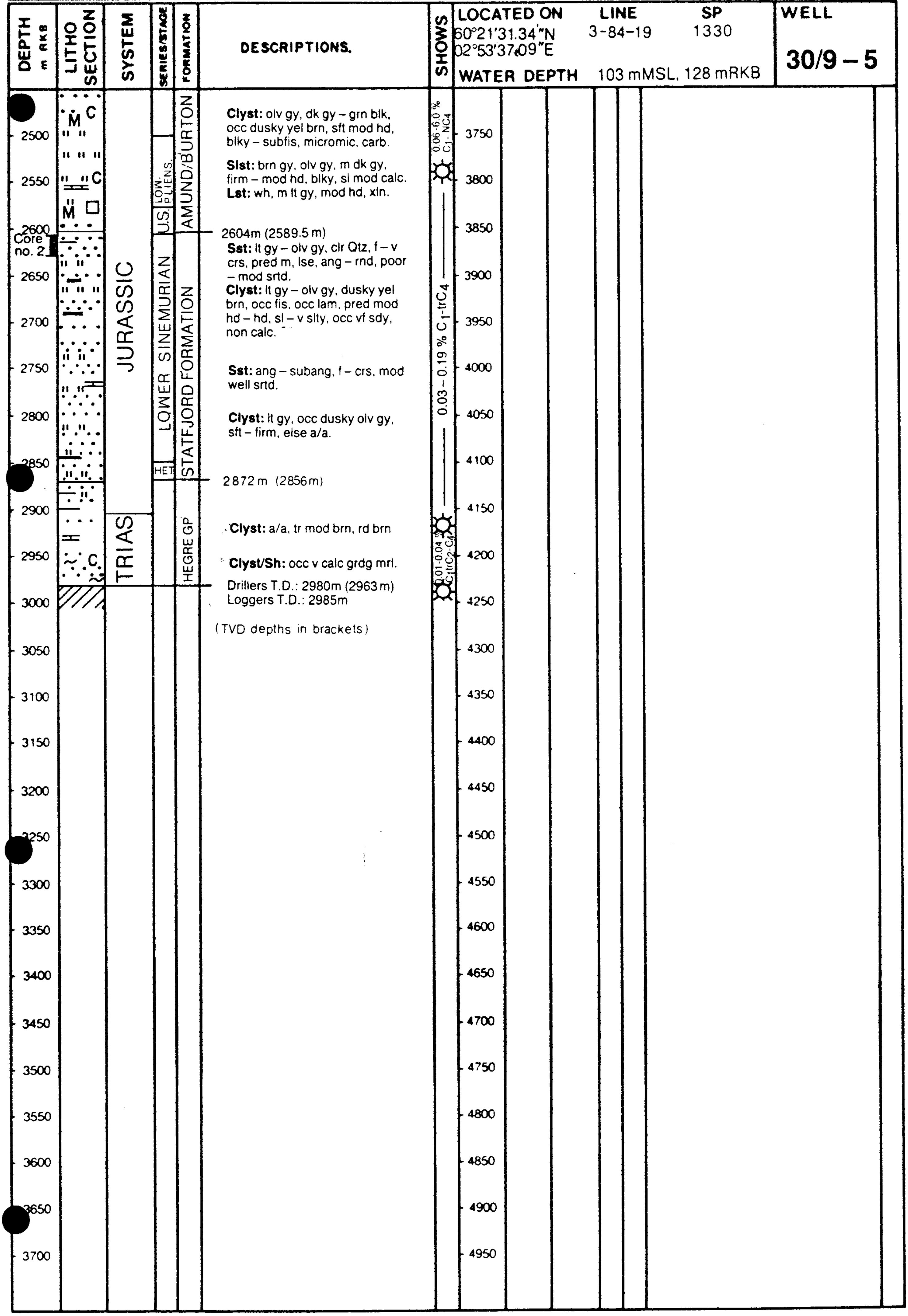
2447m (2433 m)

Sst: pred lt brn gy, clr Qtz, vf – f, lse – mod hd

2466m (2452m)

GEOLOGICAL WELL SUMMARY

LOCATED ON	LINE	SP	WELL
60°21'31.34"N 02°53'37.09"E	3-84-19	1330	30/9 – 5
WATER DEPTH 103 mMSL, 128 mRKB			



Clyst: olv gy, dk gy – grn blk, occ dusky yel brn, sft mod hd, blky – subfis, micromic, carb.

Slst: brn gy, olv gy, m dk gy, firm – mod hd, blky, sl mod calc.
Lst: wh, m lt gy, mod hd, xln.

2604m (2589.5 m)
Sst: lt gy – olv gy, clr Qtz, f – v crs, pred m, lse, ang – rnd, poor – mod srtd.
Clyst: lt gy – olv gy, dusky yel brn, occ fis, occ lam, pred mod hd – hd, sl – v slty, occ vf sdy, non calc.

Sst: ang – subang, f – crs, mod well srtd.

Clyst: lt gy, occ dusky olv gy, sft – firm, else a/a.

2872 m (2856m)

Clyst: a/a, tr mod brn, rd brn

Clyst/Sh: occ v calc grdg mrl.

Drillers T.D.: 2980m (2963 m)
Loggers T.D.: 2985m

(TVD depths in brackets)

RFT RESULTS PRESSURE

WELL 30/9-5

RUN NO./ TEST No.	DEPTH MRKB	IHP PSIA	FP PSIA	FHP PSIA	REMARKS
3A /1	2238.5	4052.7	3345.1	4052.8	GOOD PERM.
/2	2240.5	4056.6	3348.0	4056.6	POOR PERM.
/3	2450.5	4434.2	3852.2	4434.4	MODERATE PERM.
/4	2452.0	4436.9	3852.3	4437.0	FAIRLY GOOD PERM.
/5	2454.0	4440.6	3852.7	-	LOST SEAL
/6	2454.0	4440.5	3852.7	4440.7	MODERATE PERM.
/7	2456.5	4445.2	4051.0	4445.2	LOST SEAL
/8	2456.5	4445.0	-	-	LOST SEAL
/9	2456.3	4445.1	3853.8	4445.0	LOW PERM.
/10	2458.2	4448.4	3855.0	4448.4	SUPERCHARGED
/11	2611.0	4722.9	3946.5	4722.4	GOOD PERM.
/12	2627.0	4750.4	3969.0	4750.9	GOOD PERM.
/13	2643.0	4781.0	3991.7	4781.3	GOOD PERM.
/14	2653.0	4800.4	4006.3	4800.7	GOOD PERM.
/15	2678.0	4845.8	4043.3	4845.9	GOOD PERM.
/16	2696.0	4876.9	4067.6	4877.0	GOOD PERM.
/17	2725.0	4929.3	4109.4	4929.3	GOOD PERM.
/18	2758.0	4987.1	4156.4	4987.2	MODERATE PERM.
/19	2802.0	5065.9	4220.4	5066.0	MODERATE PERM.
/20	2837.0	5126.7	4269.8	5126.8	MODERATE PERM.
/21	2863.0	5172.7	4307.4	5172.8	MODERATE PERM.
/22	2902.0	5241.9	4363.9	5241.9	MODERATE PERM.
/23	2933.0	5296.6	4407.4	5296.0	GOOD PERM.
/24	2938.0	5304.2	4414.0	5304.4	GOOD PERM.
/25	2940.0	5308.0	4416.8	5308.0	GOOD PERM.
/26	2452.0	4442.5	3853.1		SEGREGATED SAMPLES
3B /1	2238.5				SEGREGATED SAMPLES

1. All pressure readings are from HP-gauge, i.e. temperature corrected.

2. IHP: Initial Hydrostatic Pressure
   FP: Formation Pressure
   FHP: Final Hydrostatic Pressure

3. Max Recorded Downhole Temperature: 222°F (106.8°C)

RFT RESULTS SAMPLES

WELL 30/9-5

SAMPLES ARE TAKEN IN THE COOK FM. AND THE BRENT GR.

SEGREGATED SAMPLE NO.1 AT 2452 MRKB (RUN NO.1) COOK FM

		1ST CHAMBER	2ND CHAMBER
CHAMBER VOL., GAL	:	2 3/4	1
FILLING TIME, MIN.	:	10	3.3
P CHAMBER, PSIG	:	2120	
GAS VOL., SCF	:	50.8	
OIL VOL., LITER	:	0.3 cond.	–
OIL GRAVITY, API	:	–	–
WATER/FILT., LITER	:	2.2	
WATER/FILT., PPM CL.	:	–	–
REMARKS	:	Drained at rig floor.	Sealed and sent ashore for transfer

SEGREGATED SAMPLE NO. 2 AT 2238 MRKB (RUN NO. 2) BRENT GROUP

		1ST CHAMBER	2ND CAMBER
CHAMBER VOL., GAL	:	2 3 4	1
FILLING TIME, MIN.	:	11.5	–
P CHAMBER, PSIG	:	2100	
GAS VOL., SCF	:	40.8	
OIL VOL., LITER	:	Traces of cond.	–
OIL GRAVITY, API	:	–	–
WATER/FILT., LITER	:	1.5	
WATER/FILT., PPM CL.	:	–	
REMARKS	:	Partial plugged flow line. Drained at rig floor.	Sealed and sent ashore for transfer.

SECTION B
OPERATIONS

1901M

LIST OF CONTENT

SECTION B

1. LOCATION SURVEY

The site survey for the 30/9-5 location was performed by Geoteam during the period March 28 to April 9 last year. The coordinates for the well were given as:

Latitude: 60° 21' 31.5"N

Longitude: 02° 53' 26.7"E

(The exact position for the well is given in "General informations" and "Positioning and anchoring of the rig")

The survey area of approximately 4 x 4 km, was covered by 5 lines running North-South, and 29 lines running East-West. One other East-West line was run as a 18.5 km long reconnaisance profile.

Sub-seabed geology according to the survey

101 m :	Water depth(126m RKB)
101-140 m :	Layer of fine acoustically transparent sand of thickness 24 meters, overlaying a 15 meters thick layer of stiff to very stiff clay.
140-166 m :	Layer of glaciomanne clay which is thought to be overconsolidated.
166-288 m :	Argillaceous sand to a dept of 254 meters. A claybed sequence is present between 254 m and 288 m.
288-758 m :	Reflectors near the top of the Pliocene might indicate sandy formations. An intermittent reflector at 758 meters might indicate a claystone layer in Miocene.

General:

The seabed slopes 0,2° towards east, with a water depth variation of 4m within the anchor pattern (3,0 km).

The side scan sonar data indicate that the seabed consists of a featureless, fine sand.

Sand mega-ripples characterize the seabed in the western part of the survey area, while the seabed in the south west corner consist of a featureless, but harder seabed than in the rest of the survey area.

2. Positioning and anchoring of the rig

The location of the well 30/9-5 was defined as shot point 1330 on the seismic line NOD 3-84-79. The well was to be spudded within a circle of radius 50 m.

Planned position of the well:

	Geogr.	UTM
Lat:	60° 21' 31.5" N	6.691.527 mN
Long:	02° 53' 26.7" E	493.972 mE

The equipment onboard the rig for navigation and positioning was Pulse-8 while the satelite navigation system was used to establish the final coordinates in the ED 1950 Datum.

Final position of the well:

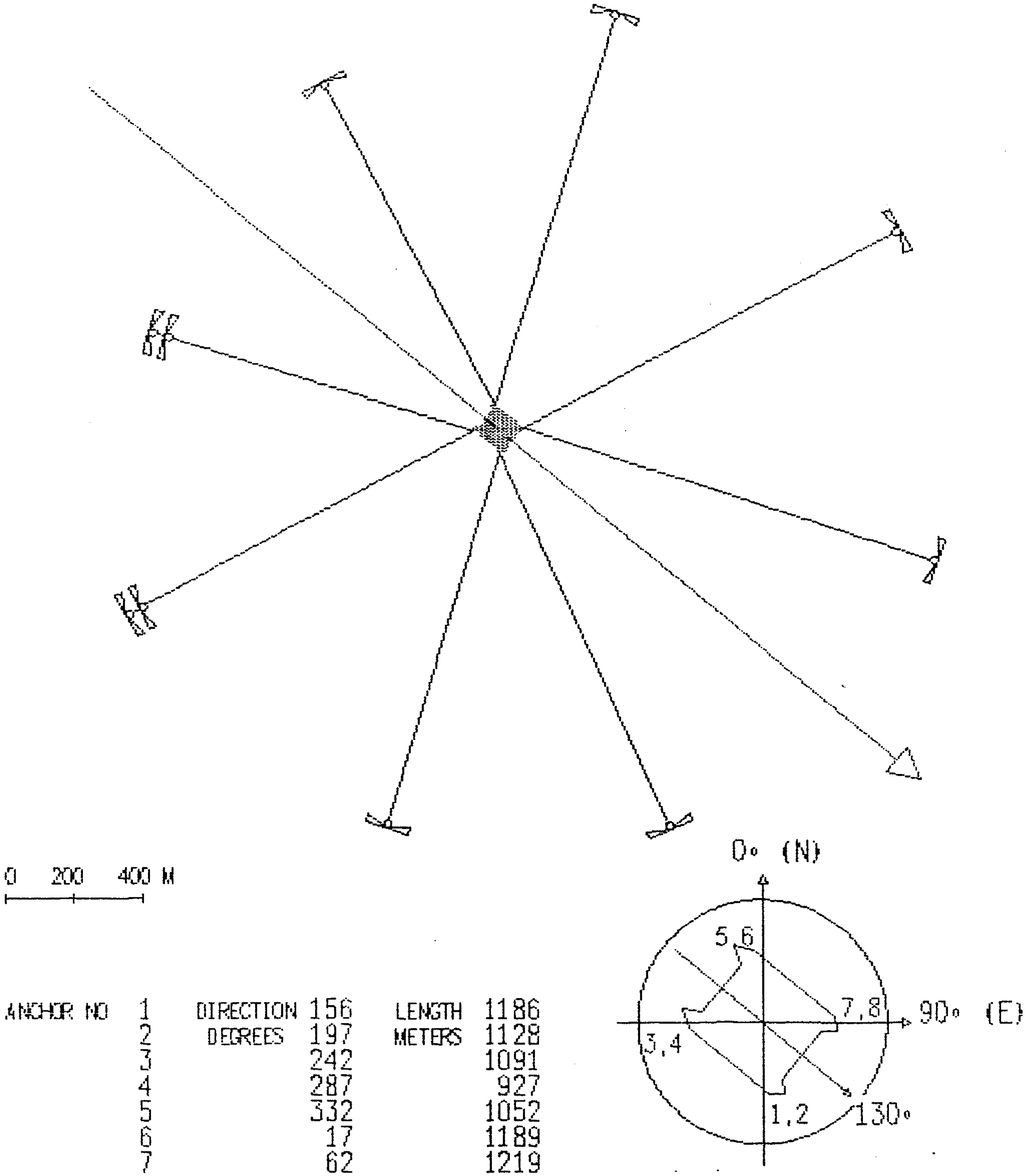
	Geogr.	UTM
Lat:	60° 21' 31.34" N	6.691.522.4 mN
Long:	02° 53' 37.09" E	494.131.4 mE

The rig heading was 130°. A 45° regular anchor pattern was used according to the operation manual.

Prior to drilling the 36" hole, the anchors were pretensioned to 445 kN.

The mooring line pattern is shown in Fig. B-1, next page.

Note: Due to shallow gas indications, the well was spudded appr. 150 m from the planned position. The hole was then deviated (kick off point at 1000 m) to reach the planned target.



ANCHOR NO	DIRECTION DEGREES	LENGTH METERS
1	156	1186
2	197	1128
3	242	1091
4	287	927
5	332	1052
6	17	1189
7	62	1219
8	108	1244

NORSK HYDRO
DRILLING DEP.

MOORING LINE PATTERN
TREASURE SEEKER
0030/09-05

FIG.
B-1

GS

3. OPERATION RESUME

3.1 Summary Drilling

Treasure Seeker arrived the 30/9-5 location on Mai 26th.

36" Hole Section

The well was spudded at 21.15 hours on mai 27th, 1985. The 36" hole was drilled from 128m to 219m. The 30" casing was run and landed with the shoe at 216 m and cemented back to the seabed.

26"Hole Section

The riser and the pin connector were run and the 17 1/2" pilot hole was drilled down to 885 m. ISF/LSS/GR logs were run before the pilot hole was opened to 26" using an underreamer. The 26" hole was drilled to 910 m.
The 20" casing was run and landed with the shoe at 893m and cemented back to the seabed. The BOP was run and tested prior to drill out of the 20" casing.

17 1/2" Hole section

The 17 1/2" hole was drilled to 913 m. Performed a leak-off test to 1,66 rd equivalent mud weight. The 17 1/2" hole was drilled to 1000 m. The 17 1/2" hole was drilled with turbine and kick off assembly with a building rate of 1.5°/ 30 m from 1000 m to 1214 m. Then the bottom hole assembly was changed to a locked assembly and the 17 1/2" hole was drilled to 1935 m. The hole was logged with IFS/LSS/GR/SP and LDT/GR. The 13 3/8" casing was run and landed with the shoe at 1908 m and cemented back to 450 m.
The casing and the BOP was tested and then the rig was on strike in the period 17.06 - 28.06.

12 1/4" Hole Section

The 12 1/4" hole was drilled from 1883 m to 1905 m and then displaced with NaCl-mud. The 12 1/4" hole was drilled to 1940 m where a formation integrity test to 1.65 rd equivalent mud weight was performed. The 12 1/4" hole was drilled to 2455 m where the coring started. Core no 1 was cut from 2455 m to 2471 m, and the 12 1/4" hole was drilled to 2608. Core no 2 was cut from 2608 m to 2626 m and the hole was drilled to 2980 m. The hole was logged with ISF/SONIC/GR/SP/CAL/LDT/NGT/CNL, DLL/MSFL/CAL, VSP,SHOT,RFT,CST, CBL and VDL.

The well was permanently abandoned as described in chapter 4 and fig.B-3

Treasure Seeker left the 30/9-5 location july 20th 1985.

(((
(ooo)
Norsk
Hydro

Daily report

..Date..
19860228

System : Boredata Sandnes
Well: 0030/09-05

Casing Size (in):	30	20	13 3/8
Setting depth (m):	216	893	1908

Report number	Mid depth (m)	EST.PORE PRESSURE (SG)	Mud dens. (SG)	Stop time	Short Summary
1	126	0	0	02:45	Started the operation on 30/9-5.
				20:00	Treasure Seeker arrived the location 30/9-5 at 12:00 hrs.
				24:00	Ran anchor no. 1 and 5. Anchor no. 1 on bottom at 20:55 hrs.
2	126	0	1.05	17:00	Ran anchor no.8,2,4,7,6 and 3. Started to ballast and position the rig. Made up the bottom hole assembly.
				21:15	Spudded in and drilled 36" hole from 128 m to 166 m.
				23:15	Worked and reamed tight spots due to boulders from 156 m to 166 m.
				24:00	Drilled 36" hole from 166 m to 168 m. Pumped 5 m3 high viscous mud on each connection.
3	219	0	1.05	08:30	Drilled 36" hole and observed the sea floor with the R.O.V. Circulated high viscous pills on each connection.
				09:15	The pipe got stuck on the connection. Worked the pipe loose.
				10:45	Circulated and worked the pipe.
				15:45	Drilled 36" hole from 199 m to 219 m.
				16:30	Circulated the hole clean, spotted a high viscous pill in the hole and dropped the survey.
				17:30	Made a wiper trip to the sea floor, recovered the survey and ran in the hole again, had 0.5 m fill.
				17:45	Pumped 45 m3 high viscous mud.
				19:00	Pulled out of the hole.
				24:00	Positioned the permanent guide base in the moon pool. Rigged up and ran the 30" casing made up to the permanent guide base.
4	219	0	1.05	01:45	Continued running the casing. Landed the casing with the shoe at 216 m.
				02:30	Circulated with seawater.
				04:30	Rigged up and tested the cement lines. Cemented the casing as pr. program.
				08:00	Waited on the cement.
				10:00	Released the running tool and pulled out of the hole.
				22:30	Grouted the top of the 30" casing.
				23:00	Rigged up and ran the pin connector and the riser. Latched on and pulltested.
				24:00	Laid down excess drill pipe.

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Norsk Hydro

Daily report

..Date..
19860228

System : Boredata Sandnes
Well: 0030/09-05

Casing Size (in):	30	20	13 3/8
Setting depth (m):	216	893	1908

Report number	Mid depth (m)	EST.PORE PRESSURE (SG)	Mud dens. (SG)	Stop time	Short Summary
5	549	1.03	1.10	00:30	Laid down excess drill pipe.
				04:45	Made up new bottom hole assembly, ran in the hole and tagged the top of the cement at 209 m.
				06:45	Tested the flow-line seals with the diverter element in.
				07:00	Drilled the cement and the float and cleaned the rat hole.
				21:30	Drilled 17 1/2" hole and flow checked at 378 m - ok. Pumped a high viscous pill to clean the hole.
				22:15	Circulated the hole clean and dropped a survey.
				24:00	Made a wiper trip to the shoe, retrieved the survey and ran in the hole to 490 m.
6	885	1.03	1.09	00:15	Continued running in the hole to 549 m.
				12:00	Drilled 17 1/2" pilot hole from 549 m to 798 m.
				13:00	Reamed tight spots from 784 m to 798 m.
				16:45	Drilled to 885 m.
				17:30	Pumped 8 m3 high viscous mud to clean the hole.
				18:00	Spotted 107 m3 high viscous mud in the hole.
				18:15	Dropped the multishot survey.
				20:15	Pulled out of the hole to 196 m. Max overpull was 311 kN. Flow checked at 505 m. The well was static.
				20:30	Retrieved the multishot survey tool.
				21:30	Mixed high viscous mud to spot in the hole.
				21:45	Changed out hose on the block retracting system.
				22:30	Ran in the hole to 885 m.
				23:00	Spotted 111 m3 high viscous mud.
				24:00	Pulled out of the hole to 600 m.
7	885	1.03	1.09	02:00	Continued pulling out of the hole.
				06:15	Rigged up and ran ISF/LSS/GR logs.
				09:15	Laid down pipe.
				11:30	Made up the 26" bottom hole assembly and bit no. 3 and ran in the hole to 209 m.
				13:30	Underreamed the 17 1/2" pilot hole to 26" from 209 m to 233 m.
				14:00	Changed out the washpipe.
				24:00	Underreamed to 26" from 233 m to 477m.
8	897	1.03	1.20	06:30	Underreamed to 26" from 477 m to 630 m.
				09:45	Pulled out of the hole.
				12:00	Made up and tested a new underreamer and

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Norsk
Hydro

Daily report

System : Boredata Sandnes

Well: 0030/09-05

..Date..
19860228

Casing Size (in):	30	20	13 3/8
Setting depth (m):	216	893	1908

Report number	Mid depth (m)	EST.PORE PRESSURE (SG)	Mud dens. (SG)	Stop time	Short Summary
					ran in the hole to 200 m.
				12:30	Slipped and cut the drilling line.
				13:00	Continued running in the hole to 630 m.
				22:45	Underreamed to 26" from 630 m to 885 m.
				24:00	Drilled 26" hole from 885 m to 897 m.
9	910	1.03	1.23	01:30	Continued drilling 26" hole to 907 m (bit at 910 m).
				02:45	Circulated the hole clean.
				05:15	Displaced the mud in the riser with sea water and observed the well. The well was static. Displaced back to mud and circulated.
				06:45	Pulled out of the hole to 170 m.
				07:45	Displaced the mud in the riser with sea water and observed the well. The well was static.
				09:15	Continued pulling out of the hole.
				14:30	Pulled the riser and the pin connector.
				16:45	Made up the cementing head and the 18 3/4" wellhead.
				19:30	Made up 26" bit and ran in the hole to 822 m.
				24:00	Reamed from 822 m to 910 m.
10	910	1.03	1.03	00:15	Displaced the hole with high viscous mud.
				04:00	Pulled out of the hole.
				14:15	Rigged up and ran the 20" casing. Pull tested the casing (222 kN overpull).
				16:00	Circulated and tested the cement lines to 172 bar. Pumped 17 m3 preflush.
				19:45	Mixed and pumped the cement.
				21:15	Displaced the cement with sea water. Bumped the plug and tested the casing to 69 bar.
				22:15	Pulled out of the hole with the running tool.
				23:00	Ran in the hole to 126 m with the jet sub. Washed the wellhead and pulled out of the hole.
				24:00	Rigged up to run the BOP and the riser.
11	910	1.03	1.12	03:15	Continued rigging up to run the BOP and the riser. Connected the lower marine riser package.
				03:45	Repaired the the yellow pod.
				18:00	Function tested the pods. Ran the BOP and the riser. Pressure tested the choke and kill lines to 345 bar. Positioned the rig to latch on the BOP to the well-

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Norsk Hydro

Daily report

System : Boredata Sandnes
Well: 0030/09-05

..Date..
19860228

Casing Size (in):	30	20	13 3/8
Setting depth (m):	216	893	1908

Report number	Mid depth (m)	EST.PORE PRESSURE (SG)	Mud dens. (SG)	Stop time	Short Summary
					head. Pull tested to 311 kN overpull. Laid down the running tools.
				24:00	Tested the BOP.
12	1000	1.03	1.15	00:45	Slipped and cut the drilling line.
				02:00	Pulled out of the hole with the test tool. Ran the seat protector.
				04:00	Pressure tested the surface equipment.
				07:30	Ran in the hole with bit no. 3(re-run 1) to 864 m.
				10:30	Drilled cement and the shoe at 893 m. Cleaned out the rat hole to 910 m.
				10:45	Drilled 17 1/2" hole to 913 m.
				12:00	Circulated to clean the hole.
				13:15	Performed a leak- off test to 1.66 rd equivalent mud weight.
				18:00	Drilled 17 1/2" hole from 913 m to 1000 m.
				19:00	Circulated and dropped the survey.
				21:15	Pulled out of the hole.
				24:00	Made up the kick off assembly. Tested the turbine and the MWD tool.
13	1188	1.03	1.17	02:30	Continued to run in the hole to 1000 m.
				14:30	Drilled 17 1/2" hole with the turbine from 1000 m to 1153 m.
				16:45	Dropped a survey, pulled out of the hole to 110 m and retrieved the survey.
				17:30	Pulled out of the hole.
				20:00	Made up bit no 5 and ran in the hole.
				20:30	Washed and reamed from 1136 m to 1153 m.
				24:00	Drilled with 17 1/2" hole from 1153 m to 1188 m.
14	1343	1.03	1.25	01:45	Drilled to 1214 m.
				02:00	Circulated to clean the hole.
				02:15	Dropped a survey.
				05:15	Pulled out of the hole, retrieved the survey and laid down the turbine.
				08:45	Made up a locked assembly and ran in the hole to 888 m.
				09:15	Slipped the drilling line.
				09:45	Ran in the hole and hit tight spot at 918 m.
				13:00	Washed and reamed from 918 m to 1214 m.
				21:30	Drilled from 1241 m to 1343 m.
				22:30	Worked the pipe in tight hole. Laid down 1 joint, washed and reamed tight hole at 1320 m.
				24:00	Made a wiper trip to 1252 m.

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Norsk
Hydro

Daily report

System : Boredata Sandnes
Well: 0030/09-05

..Date..
19860228

Casing Size (in):	30	20	13 3/8
Setting depth (m):	216	893	1908

Report number	Mid depth (m)	EST.PORE PRESSURE (SG)	Mud dens. (SG)	Stop time	Short Summary
15	1525	1.03	1.30	00:45	Continued with the wiper trip.
				01:45	Drilled 17 1/2" hole from 1343 m to 1458 m.
				10:00	Changed a valve in the pump.
				13:45	Drilled from 1458 m to 1525 m.
				15:30	Circulated a high viscous pill around and dropped the survey.
				24:00	Pulled out of the hole, had tight hole at 1462 m.
16	1714	1.03	1.35	02:30	Made up bit no. 7 and ran in the hole to 886 m.
				03:00	Slipped the drilling line.
				04:00	Continued running in hole to 1482 m.
				05:45	Washed and reamed to the bottom.
				14:45	Drilled 17 1/2" hole from 1525 m to 1629 m.
				16:00	Circulated and cleaned the hole.
				17:00	Made a wiper trip to 1326 m.
				24:00	Drilled 17 1/2" hole from 1629-1714m.
17	1746	1.03	1.35	02:15	Drilled 17 1/2" hole from 1714 m to 1743 m.
				03:45	Circulated to clean the hole.
				09:00	Pulled out of the hole. Had tight hole from 1520 m.
				12:30	Ran in the hole, the hole was tight at 1500 m.
				13:15	Washed and reamed to the bottom.
				16:15	Drilled to 1746 m.
				21:00	Tripped out of the hole to change the bit. Ran in the hole to 654 m.
				21:30	Slipped the drilling line.
				24:00	Repaired the lock bar on the compensator
18	1935	1.03	1.30	01:15	Continued running in the hole to 1727 m.
				02:45	Reamed and washed to the bottom.
				20:15	Drilled 17 1/2" hole from 1746 m to 1932 m.
				22:15	Circulated and cleaned the hole.
				23:30	Made a wiper trip to 1630 m.
				24:00	Drilled from 1932 m to 1935 m.
19	1935	1.03	1.30	02:15	Rig personel on strike. Circulated the bottoms up.
				03:30	Pulled out of the hole to the shoe.
				04:15	Circulated.
				19:45	The rig was on strike.
				21:00	The rig crew accepted the securing plan for the well and agreed to log and run the casing. Ran in the hole to 1918 m.

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|        |                    D a i l y   r e p o r t                         ..Date.. |
|  (((   |                    -----------------------                         19860228 |
| (ooo)  |                    System : Boredata Sandnes                                |
|--------|              Well: 0030/09-05                                               |
| Norsk  |Casing Size  (in):|30    |20    |13 3/8|                                    |
| Hydro  |Setting depth (m):|   216|   893|  1908|                                    |
==========================================================================================
  Report|Mid  |EST.PORE| Mud  | Stop |Short  Summary                              |
  number|depth|PRESSURE|dens. | time |                                            |
        | (m) |  (SG)  |(SG)  |      |                                            |
  ------|-----|--------|------| -----|--------------------------------------------|
        |     |        |      | 21:30|Washed and reamed down to 1935 m.           |
        |     |        |      | 24:00|Circulated and conditioned the mud.         |
  ------|-----|--------|------| -----|--------------------------------------------|
      20| 1935|    1.03|1.31  | 00:30|Spotted 8 m3 high viscous pill on the       |
        |     |        |      |      |bottom.                                     |
        |     |        |      | 03:30|Pulled out of the hole, had no drag.        |
        |     |        |      | 11:30|Rigged up and ran the following loggs:      |
        |     |        |      |      |Run no.1  ISF/LSS/GR/SP to 1913 m.          |
        |     |        |      |      |Run no.2  LDT/GR to 1913 m.                 |
        |     |        |      | 14:00|Laid down MWD tool,monels,stabilizers       |
        |     |        |      |      |and 9 1/2" drill collars.                   |
        |     |        |      | 17:00|Made up the casing hanger and the cross-    |
        |     |        |      |      |over for the cement head.                   |
        |     |        |      | 20:30|Made up bit no. 9 (re-run 1) and ran in     |
        |     |        |      |      |the hole. Tagged a bridge at 1908 m.        |
        |     |        |      | 22:00|Washed and reamed from 1908 m to 1935 m.    |
        |     |        |      | 23:00|Circulated.                                 |
        |     |        |      | 24:00|Made a wiper trip to 1320 m, ran in the     |
        |     |        |      |      |hole and tagged a bridge at 1917 m.         |
  ------|-----|--------|------| -----|--------------------------------------------|
      21| 1935|    1.03|1.30  | 00:15|Washed and reamed from 1920 m to 1935 m.    |
        |     |        |      | 02:15|Circulated bottoms up and spotted           |
        |     |        |      |      |15.9 m3 high viscous mud on the bottom.     |
        |     |        |      | 03:30|Pulled out of the hole to 886 m and         |
        |     |        |      |      |flow checked at the shoe, the well was      |
        |     |        |      |      |static.                                     |
        |     |        |      | 04:30|Cut and slipped the drilling line.          |
        |     |        |      | 06:00|Pulled out of the hole and broke off        |
        |     |        |      |      |the bit.                                    |
        |     |        |      | 07:45|Made up a jet sub and washed the well-      |
        |     |        |      |      |head. Retrieved the seat protector and      |
        |     |        |      |      |washed the landing area in the wellhead.    |
        |     |        |      | 21:15|Rigged up and ran the 13 3/8" casing.       |
        |     |        |      | 24:00|Rigged up the cement lines and circu-       |
        |     |        |      |      |lated the casing volume. Repaired a leak    |
        |     |        |      |      |in the ventline on the cement tank.         |
  ------|-----|--------|------| -----|--------------------------------------------|
      22| 1935|    1.03|      | 03:45|Pressure tested the cement lines to 345     |
        |     |        |      |      |bar, mixed and pumped the cement as pr.     |
        |     |        |      |      |programme.                                  |
        |     |        |      | 05:30|Displaced the cement with the rig pumpes    |
        |     |        |      |      |The plug did not bump.                      |
        |     |        |      | 09:00|Rigged down the cement head and laid        |
        |     |        |      |      |down the landing string.                    |
        |     |        |      | 12:00|Made up the brute tool and ran in the       |
        |     |        |      |      |hole. Made up and pressure tested the       |
        |     |        |      |      |seal assembly to 345 bar/10 minutes.        |
        |     |        |      |      |Pulled out of the hole and laid down the    |
        |     |        |      |      |brute tool.                                 |
        |     |        |      | 22:45|Displaced the riser with sea water and      |
        |     |        |      |      |rigged up to pull the BOP. Tested the       |
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Daily report

System : Boredata Sandnes

Well: 0030/09-05

..Date..
19860228

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Norsk Hydro			
Casing Size (in):	30	20	13 3/8
Setting depth (m):	216	893	1908

Report number	Mid depth (m)	EST.PORE PRESSURE (SG)	Mud dens. (SG)	Stop time	Short Summary
					13 3/8" casing to 138 bar for 10 min. Pulled the riser and BOP.
				24:00	Rigged up to run the corrosion cap.
23	1935	1.03		03:00	Ran and installed the corrosion cap on the wellhead. Pumped 400 litres corrosion inhibitor into the cap.
				05:00	Secured the rig.
				24:00	Rig on strike.
24	1935	1.03		24:00	Rig on strike.
25	1935	1.03		24:00	Rig on strike.
26	1935	1.03		24:00	Rig on strike.
27	1935	1.03		24:00	Rig on strike.
28	1935	1.03		24:00	Rig on strike.
29	1935	1.03		24:00	Rig on strike.
30	1935	1.03		24:00	Rig on strike.
31	1935	1.03		24:00	Rig on strike.
32	1935	1.03		24:00	Rig on strike.
33	1935	1.03		24:00	Rig on strike.
34	1935	1.03	1.30	12:30	Rig on strike.
				13:00	Pulled the corrosion cap.
				24:00	Rigged up and ran the BOP and the riser. Function tested the BOP on the spider beam on both pods. Pressure tested the choke and kill lines to 345 bars.
35	1935	1.03	1.3	06:15	Continued running the BOP and the riser. Hooked up kill, choke and booster line. Landed the BOP at 04:00 hrs. Pull tested to 222 KN.
				09:30	Made up the BOP test tool and ran in the hole. Got no test. Pulled out of the hole and re-set the dart sub. Ran in the hole.
				13:00	Tested the BOP to Norsk Hydro's specifications. Tested the acoustic system.
				14:45	Pulled out of the hole with the test plug. Ran in the hole and set the wear

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(ooo)
Norsk
Hydro

Daily report

..Date..
19860228

System : Boredata Sandnes
Well: 0030/09-05

Casing Size (in):	30	20	13 3/8
Setting depth (m):	216	893	1908

Report number	Mid depth (m)	EST.PORE PRESSURE (SG)	Mud dens. (SG)	Stop time	Short Summary
					bushing.
				16:45	Tested the surface equipment.
				18:00	Laid down 9 1/2" drill collars and 17 1/2" equipment.
				23:45	Made up 12 1/4" bit and new bottom hole assembly and ran in the hole. Tagged the cement at 1883 m.
				24:00	Drilled the cement from 1883 m to 1884 m.
36	2028	1.03	1.3	02:30	Drilled cement to 1905 m.
				04:00	Displaced the hole with NaCl-mud.
				05:15	Drilled the cement and the shoe and cleaned out the rat hole.
				05:45	Drilled 12 1/4" hole from 1935 m to 1940 m.
				07:15	Circulated and conditioned the mud.
				08:15	Pulled back to 1898 m and performed a formation integrity test to 1.65 rd. Ran back in the hole to 1940 m.
				10:00	Drilled 12 1/4" hole from 1940 m to 1971m.
				10:30	Circulated.
				12:45	Ran a survey on the slick line.
				14:45	Drilled 12 1/4" hole from 1971 m to 1999m.
				17:45	Dropped a survey and made a wiper trip to the shoe, had 222 kN drag. Retrieved the survey, it was a misrun.
				20:00	Drilled from 1999 m to 2028 m.
				21:15	Circulated and conditioned the mud.
				24:00	Dropped a survey and pulled out of the hole.
37	2171	1.03	1.3	07:30	Pulled out of the hole to change bit and bottom hole assembly. Picked up and tested the MWD tool and ran in the hole.
				24:00	Drilled 12 1/4" hole from 2028 m to 2171 m.
38	2250	1.03	1.29	16:00	Drilled 12 1/4" hole from 2171 m to 2235 m.
				17:30	Pumped 8 m3 high viscous-pill and circulated around.
				18:00	Made a wiper trip to the 13 3/8" casing shoe.
				18:30	Slipped the drilling line.
				18:45	Ran in the hole.
				20:30	Drilled from 2235 m to 2244 m.
				21:00	Circulated due to high gas readings.
				22:45	Circulated for samples.

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Norsk Hydro

Daily report

System : Boredata Sandnes

Well: 0030/09-05

..Date..
19860228

Casing Size (in):	30	20	13 3/8
Setting depth (m):	216	893	1908

Report number	Mid depth (m)	EST.PORE PRESSURE (SG)	Mud dens. (SG)	Stop time	Short Summary
				24:00	Drilled 12 1/4" hole from 2244 m to 2250 m.
39	2367	1.03	1.25	24:00	Drilled 12 1/4" hole from 2250 m to 2363 m.
40	2455	1.03	1.25	08:15	Drilled from 2363 m to 2405 m.
				09:45	Circulated a high viscous pill.
				10:00	Dropped the survey.
				15:15	Pumped slug and pulled out of the hole. Laid out the near bit stabilizer and changed the bit. Ran in the hole to the shoe.
				15:45	Slipped the drilling line.
				17:00	Ran in the hole and tested the MWD equipment at 1975 m. Had tight hole from 2260 m to 2285 m.
				23:00	Drilled from 2405 m to 2455 m.
				24:00	Circulated for sample.
41	2471	1.03	1.25	01:00	Circulated for sample.
				01:15	Dropped the survey.
				04:15	Pulled out of the hole to 344 m.
				04:30	Recovered the survey.
				06:15	Continued pulling out of the hole.
				07:00	Picked up the corebarrel.
				11:00	Ran in the hole.
				12:00	Reamed from 2413 m to 2455 m.
				13:00	Circulated and dropped the ball.
				24:00	Cut core no. 1.
42	2529	1.03	1.25	01:45	Cut core no. 1.
				05:00	Pulled out of the hole.
				06:15	Recovered 94.6% of the core. Serviced the corebarrel.
				10:15	Picked up a new MWD-tool. Tested it and ran in the hole with a new bottom hole assembly.
				11:15	Slipped and cut the drilling line.
				12:00	Laid down 4 singles and ran in the hole.
				15:00	Ran the gamma ray log from 2420 m to 2473 m.
				24:00	Drilled 12 1/4" hole.
43	2588	1.10	1.25	17:15	Drilled 12 1/4" hole from 2529 m to 2588 m.
				17:30	Dropped a survey.
				22:00	Pulled out of the hole.
				24:00	Ran in the hole with the jet sub and washed the well head. Pulled the wear-bushing and ran in the hole with the

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Norsk
Hydro

Daily report

System : Boredata Sandnes

Well: 0030/09-05

..Date..
19860228

Casing Size (in):	30	20	13 3/8
Setting depth (m):	216	893	1908

Report number	Mid depth (m)	EST.PORE PRESSURE (SG)	Mud dens. (SG)	Stop time	Short Summary
					test plug.
44	2608	1.10	1.25	04:30	Tested the BOP to Norsk Hydro's spesifications. Pulled out with the test tool.
				07:45	Ran in the hole to 1891 m.
				12:15	Tested the kill and choke manifold. Welded on the test line to the overboard burners.
				13:15	Ran in the hole to 2553 m.
				13:45	Reamed to the bottom.
				16:30	Drilled from 2588 m to 2608 m.
				18:15	Circulated out sample.
				19:15	Pulled out to the casing shoe.
				21:00	Tested the surface equipment to Norsk Hydro's spesifications.
				24:00	Pulled out of the hole. Cleaned the junk sub.
45	2659	1.10	1.25	03:30	Made up the corebarrel and ran in the hole.
				05:15	Washed to the bottom and circulated.
				08:30	Cut core no. 2.
				11:30	Pulled out of the hole.
				13:00	Recovered 100% of the core. Serviced the core barrel and set it back in the derrick.
				16:30	Made up bit no. 15 and ran in the hole.
				19:00	Reran the gamma ray and the resistivity log on the MWD tool from 2585 m to 2626 m.
				24:00	Drilled 12 1/4" hole.
46	2775	1.10	1.25	16:30	Drilled 12 1/4" hole from 2659 m to 2775 m.
				16:45	Dropped a single shot survey.
				24:00	Pulled out of the hole to change bit and MWD tool.
47	2905	1.10	1.25	00:15	Ran in the hole to 1904 m.
				00:45	Slipped and cut the drilling line.
				01:30	Ran in the hole to 2680 m.
				01:45	Checked the MWD tool.
				02:00	Ran in the hole to 2735 m.
				02:30	Washed to the bottom.
				24:00	Drilled from 2775 m to 2905 m.
48	2947	1.10	1.25	16:45	Drilled from 2905 m to 2947 m.
				21:00	Pulled out of the hole.
				23:30	Ran in the hole with bit no. 17.
				24:00	Slipped the drilling line.

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Norsk Hydro

Daily report

..Date..
19860228

System : Boredata Sandnes
Well: 0030/09-05

Casing Size (in):	30	20	13 3/8
Setting depth (m):	216	893	1908

Report number	Mid depth (m)	EST.PORE PRESSURE (SG)	Mud dens. (SG)	Stop time	Short Summary
49	2980	1.10	1.25	01:30	Ran in the hole.
				15:30	Drilled 12 1/4" hole to 2980 m.
				17:00	Circulated a high viscous pill.
				17:45	Pulled out of the hole.
				18:15	Ran in the hole.
				20:15	Set a high viscous pill on the bottom.
				20:30	Dropped a survey.
				24:00	Pulled out of the hole.
50	2980	1.10	1.25	00:30	Pulled out of the hole.
				24:00	Rigged up Schlumberger and ran log: No. 1: ISF/SONIC/GR/SP/CAL. No. 2: LDT/NGT/CNL No. 3: DLL/MSFL/CAL
51	2980	1.10	1.25	24:00	Continued to run V.S.P. Ran SHDT, and started to run RFT no.1.
52	2980	1.10	1.25	24:00	Continued with RFT no.1, recorded 22 pressure points and 2 segregated samples Ran RFT no.2, recorded 1 pressure point and 1 samples. Ran CST no.1, fired 30 shots, 10 were misfired, recovered 20 samples.
53			1.26	05:45	Continued running CST no.2. Fired 60 shots, recovered 51 and misfired 8. Ran CBL, VDL and rigged down the logging equipment.
				09:30	Ran in the hole with 5" drill pipe to TD at 2980 m.
				11:15	Circulated.
				13:15	Set cement plug no.1A from 2980 m to 2767 m. Pulled out to 2767 m and reverse circulated.
				15:15	Set cement plug no.1B from 2767 m to 2555 m. Pulled out to 2515 m and reverse circulated.
				17:00	Set cement plug no.2 from 2515 m to 2395 m and reverse circulated.
				18:30	Set cement plug no.3 from 2305 m to 2190 m. Pulled out to 2040 m and reverse circulated.
				19:00	Spotted a high viscous pill from 2040 m to 1960 m.
				20:45	Pulled out to 1960 m and set cement plug no.4 from 1960 m to 1808 m. Pulled out to 1750 m and reverse circulated.
				24:00	Pulled out of the hole and laid down excess drill pipe, 8" drill collars and the core barrel.

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Hydro

Daily report

..Date..
19860228

System : Boredata Sandnes
Well: 0030/09-05

Casing Size (in):	30	20	13 3/8
Setting depth (m):	216	893	1908

Report number	Mid depth (m)	EST.PORE PRESSURE (SG)	Mud dens. (SG)	Stop time	Short Summary
54			1.25	04:15	Continued laying down excess drill pipe, 8" drill collars and the core barrel.
				05:15	Slipped and cut the drilling line.
				07:30	Made up bit no. 12RR, ran in the hole and tagged the cement at 1824 m.
				08:15	Closed the upper pipe ram and tested the cement plug to 148 bar for 10 min.
				14:00	Slugged the pipe, pulled out of the hole and laid down excess drill pipe.
				16:30	Ran in the hole with open ended drill pipe. Rigged up and ran in the hole with 1 11/16" casing puncher and perforated the 13 3/8" casing at 135 m. Pulled out of the hole.
				17:15	Retrieved the wearbushing.
				21:15	Ran in the hole with the cutting assembly and cut the 13 3/8" casing at 401 m. Pulled out of the hole.
				24:00	Ran in the hole with the spear assembly and retrieved the 13 3/8" casing. Laid down the same.
55			1.25	01:30	Retrieved and laid down the 13 3/8" casing.
				02:15	Ran in the hole with open ended drill pipe to 350 m.
				03:45	Mixed and pumped cement for the top plug from 350 m to 150 m. Pulled back to 140 m and reverse circulated. Displaced the riser with seawater when pulling out of the hole.
				11:30	Rigged up to pull BOP. Unlatched. Pulled the BOP and set same on the spider beams at 0830 hrs. Had lower marine riser package on the stump at 0930 hrs and the BOP on the test stump at 1030 hrs.
				16:00	Ran in hole with explosives and cut the wellhead 5 m below the seabed. Retrieved the wellhead.
				24:00	Started to deballast the rig. Picked up and removed the piggy back on anchor no.3. Pulled anchor no. 3 and 7.
56				04:15	Pulled anchor no. 2,6,8 and no. 4. Anchor no. 5 broke while being pulled.
				11:30	Repaired anchor chain no. 5.
				12:45	Pulled anchor no. 5 and no. 1. The last anchor was bolstered at 12:45 hrs.

Time distribution

The total time used to move the rig to the location, drill the well and permanently plug and abandon the well 30/9-5 was 55.42 days.

The time distribution is shown in Table B-1 and Fig B-2.

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

- Moving and positioning of the rig: 2.16 days
- Drilling the well to TD : 28.85 days
- Formation evaluation : 5.99 days
- Downtime : 15.99 days
- Plugging and abandonment : 2.43 days

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|        |           T i m e   d i s t r i b u t i o n                ..Date.. |
|  (((   |           ---------------------------------                19860228 |
| (ooo)  |                System : Boredata Sandnes                            |
|--------|          Well: 0030/09-05                                           |
| Norsk  |      Rig name: TREASURE SEEKER                                      |
| Hydro  |                                                                    6|
=================================================================================
  Operations                           Hrs    %        Hrs       %     Subtotal
Rig moving--------------------
 Rig moving                      :   17.3  1.30
 Mooring                         :   34.5  2.59
             Sum ---------------------------     51.75    3.89   51.75
Drilling----------------------
 Drilling                        :  302.0 22.71
 Tripping                        :  160.3 12.05
 Underreaming                    :   28.3  2.12
 Circ. and cond. hole and mud    :   24.3  1.82
 Slip and cut drilling line      :    6.8   .51
 Sub sea equipment handling      :   28.0  2.11
 BOP testing/activities          :   20.5  1.54
 Other equipment testing         :    8.0   .60
 Surveying                       :    5.5   .41
 Formation leak off test         :    2.3   .17
 Running casing                  :   72.8  5.47
 Primary cementing               :   18.0  1.35
 Squeezing                       :   12.5   .94
 Pressure detection              :    3.5   .26
             Sum ---------------------------    692.50   52.07  744.25
Formation evaluation----------
 Coring                          :   19.5  1.47
 Tripping                        :   18.0  1.35
 Circ and cond mud/hole          :    5.8   .43
 Circulating for samples         :    5.5   .41
 Logging                         :   95.0  7.14
             Sum ---------------------------    143.75   10.81  888.00
Production testing------------
             Sum ---------------------------       .00     .00  888.00
Plug and abandonment----------
 Tripping                        :   20.0  1.50
 Circ and cond mud/hole          :    2.3   .17
 Perforating                     :    2.5   .19
 Cement plug                     :   11.3   .85
 Cutting                         :    4.5   .34
 Equipment recovery              :   16.8  1.26
 Slip and cut drilling line      :    1.0   .08
             Sum ---------------------------     58.25    4.38  946.25
Downtime----------------------
 Sub sea equipment repair        :     .5   .04
 Moving equipment repair         :    7.3   .55
 Drilling equipment repair       :   11.5   .86
 Other                           :  329.3 24.76
 Reaming                         :   22.5  1.69
 Wiper trip                      :    8.3   .62
 Drilling wait                   :    4.5   .34
             Sum ---------------------------    383.75   28.85 1330.00
-----------------------------------------------------------------------------
 Reported time (of well total 1330.00) :                        1330.00
=============================================================================
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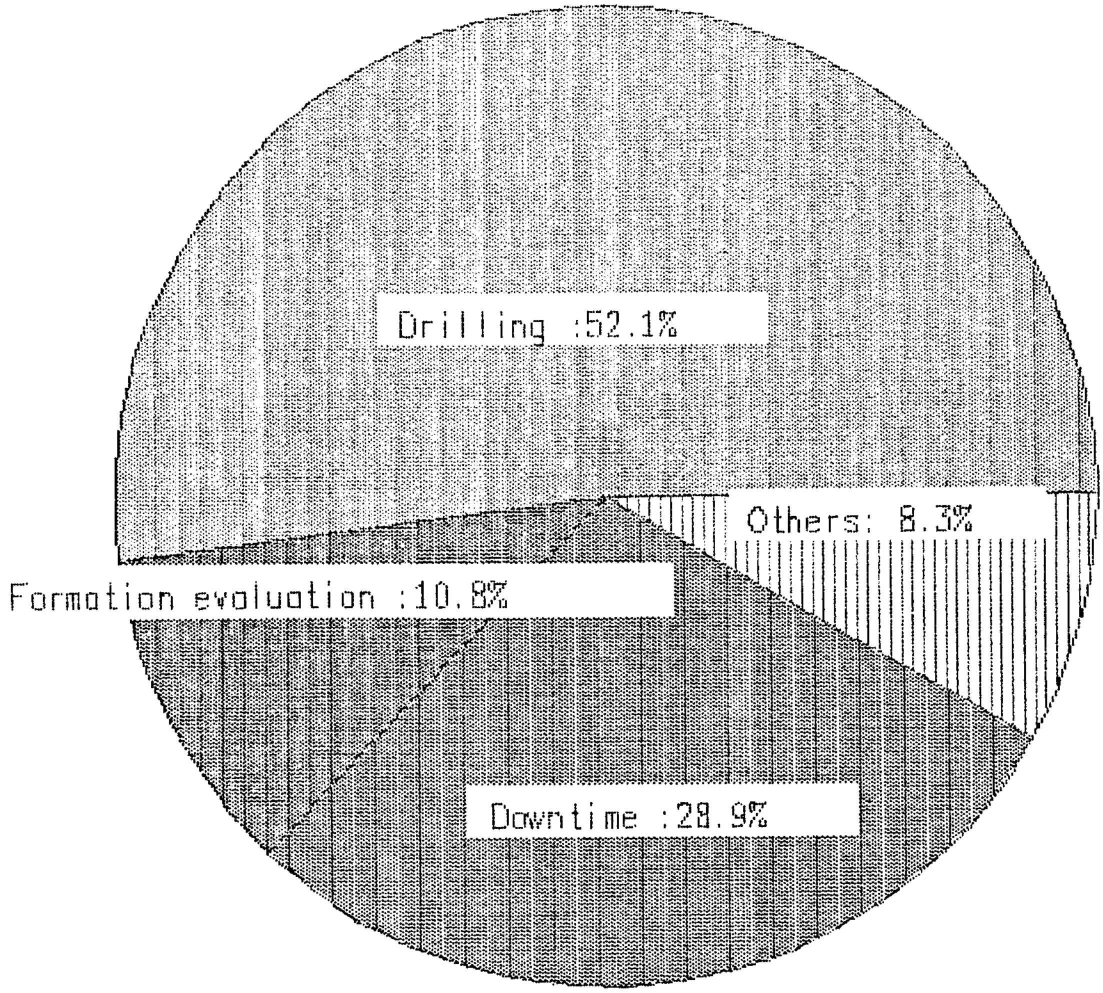

TIME REPORTED (HRS) 1330 OF TOTAL:1330

TOTAL OTHERS 8.3 %
Rig moving : 3.9 %
Plug and abandonment : 4.4 %

NORSK HYDRO DRILLING DEP.	TIME DISTRIBUTION	FIG. B-2	GS
	WELL: 0030/09-05 Date:19860228		

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Hole deviation

System : Boredata Sandnes

Well: 0030/09-05

..Date..
19860206

11

Measured Depth (m)	Incli-nation (deg)	Direction (deg)	Surveytool	Coordinates North (m)	Coordinates East (m)	True Vert Depth (m)	Dogleg Severity deg/30m
219	1.0	85	Singleshot	.17	1.90	219	.14
245.34	0.25	39.6	Teleco MWD	.23	2.17	245	.96
273.36	0.4	51.6	Teleco MWD	.34	2.29	273	.18
302.36	0.5	59.6	Teleco MWD	.47	2.47	302	.12
330.87	0.5	76.6	Teleco MWD	.56	2.70	331	.16
359.38	0.6	65.6	Teleco MWD	.65	2.96	359	.15
387.89	0.2	39.6	Teleco MWD	.75	3.13	388	.45
416.49	0.4	99.6	Teleco MWD	.77	3.26	416	.36
444.91	0.2	132.6	Teleco MWD	.72	3.39	445	.27
473.42	0.5	107.6	Teleco MWD	.65	3.55	473	.35
501.93	0.4	144.6	Teleco MWD	.53	3.72	502	.32
530.44	0.001	144.6	Teleco MWD	.45	3.78	530	.42
549	0.5	188.6	Singleshot	.37	3.77	549	.81
558.95	0.4	188.6	Teleco MWD	.29	3.76	559	.30
587.46	0.001	246.6	Teleco MWD	.19	3.74	587	.42
615.97	0.2	246.6	Teleco MWD	.17	3.70	616	.21
644.97	0.3	268.6	Teleco MWD	.15	3.57	645	.14
672.99	0.2	206.6	Teleco MWD	.10	3.48	673	.29
701.59	0.001	206.6	Teleco MWD	.06	3.46	702	.21
730.01	0.001	206.6	Teleco MWD	.06	3.46	730	.00
758.52	0.1	350.6	Teleco MWD	.08	3.45	758	.11
787.03	0.2	10.6	Teleco MWD	.16	3.46	787	.12
815.54	0.4	54.6	Teleco MWD	.26	3.55	816	.31
844.05	0.7	35.6	Teleco MWD	.46	3.73	844	.37
872.56	0.6	30.6	Teleco MWD	.73	3.91	873	.12
879	0.2	69	multishot	.77	3.93	879	2.14
996	0.25	70	singleshot	.93	4.36	996	.01
1014	1.0	276.6	Teleco MWD	.96	4.25	1014	2.05
1043	2.8	281.5	Teleco MWD	1.13	3.30	1043	1.87
1071	4.50	282.3	Teleco MWD	1.50	1.56	1071	1.82
1100	6.10	274.8	Teleco MWD	1.87	-1.09	1100	1.80
1129	7.70	274.4	Teleco MWD	2.15	-4.56	1129	1.66
1157	9.60	270.9	Teleco MWD	2.33	-8.77	1156	2.11
1196	11.30	266.7	Teleco MWD	2.16	-15.84	1195	1.43
1215	12.20	268.8	Teleco MWD	2.01	-19.70	1213	1.57
1244	12.30	268.5	Teleco MWD	1.87	-25.85	1242	.12
1273	12.30	269.2	Teleco MWD	1.74	-32.03	1270	.15
1302	12.20	269.9	Teleco MWD	1.69	-38.18	1298	.19
1330	12.00	269.2	Teleco MWD	1.65	-44.05	1326	.27
1359	11.90	269.2	Teleco MWD	1.56	-50.06	1354	.10
1388	11.70	268.8	Teleco MWD	1.46	-55.98	1382	.22
1416	11.30	268.5	Teleco MWD	1.33	-61.57	1410	.43
1445	11.30	269.2	Teleco MWD	1.22	-67.25	1438	.14

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H o l e   d e v i a t i o n

System : Boredata Sandnes

Well: 0030/09-05

..Date..
19860206

11

Measured Depth (m)	Inclination (deg)	Direction (deg)	Surveytool	Coordinates North (m)	Coordinates East (m)	True Vert Depth (m)	Dogleg Severity deg/30m
1473	10.90	268.1	Teleco MWD	1.09	-72.64	1466	.48
1502	10.60	268.8	Teleco MWD	.94	-78.04	1494	.34
1531	10.50	268.8	Teleco MWD	.83	-83.35	1523	.10
1560	10.10	269.9	Teleco MWD	.77	-88.54	1551	.46
1589	9.7	270.6	Teleco MWD	.79	-93.52	1580	.43
1618	9.3	274.1	Teleco MWD	.99	-98.30	1608	.73
1646	9.4	278.7	Teleco MWD	1.49	-102.82	1636	.81
1674	9.6	281.1	Teleco MWD	2.29	-107.37	1664	.48
1703	9.8	282.9	Teleco MWD	3.31	-112.15	1692	.38
1732	9.8	283.2	Teleco MWD	4.42	-116.96	1721	.05
1764	9.0	284.3	Teleco MWD	5.66	-122.03	1752	.77
1792	9.0	284.3	Teleco MWD	6.74	-126.28	1780	.00
1811	8.3	281.5	Teleco MWD	7.38	-129.06	1799	1.29
1840	7.7	284.6	Teleco MWD	8.29	-132.99	1828	.76
1868	6.9	286.0	Teleco MWD	9.23	-136.43	1855	.88
1896	6.2	285.1	Teleco MWD	10.08	-139.50	1883	.76
1924	5.7	284.3	Teleco MWD	10.82	-142.31	1911	.54
1971	4.75	286	Singleshot	11.93	-146.44	1958	.61
2020	3.5	287.8	Teleco MWD	12.95	-149.82	2007	.77
2028	3.00		Totco	13.23	-150.05	2015	14.44
2056	2.7	284.6	Teleco MWD	14.13	-150.69	2043	3.74
2084	3.0	284.3	Teleco MWD	14.48	-152.04	2071	.32
2113	3.3	266.8	Teleco MWD	14.62	-153.60	2100	1.04
2142	3.5	285.0	Teleco MWD	14.80	-155.29	2128	1.13
2170	3.70	284.3	Teleco MWD	15.25	-156.99	2156	.22
2199	3.80	287.7	Teleco MWD	15.77	-158.82	2185	.25
2228	3.90	283.9	Teleco MWD	16.30	-160.69	2214	.28
2234	3.90	284.0	Teleco MWD	16.40	-161.09	2220	.03
2255	3.90	283.9	Teleco MWD	16.74	-162.47	2241	.01
2285	3.90	286.0	Teleco MWD	17.27	-164.44	2271	.14
2313	4.00	290.2	Teleco MWD	17.87	-166.27	2299	.33
2341	4.00	290.9	Teleco MWD	18.55	-168.10	2327	.05
2370	4.00	291.3	Teleco Mwd	19.28	-169.99	2356	.03
2397	4.10	290.9	Singleshot	19.97	-171.77	2383	.12
2426	3.70	291.7	Teleco MWD	20.69	-173.61	2412	.42
2455	3.75	295	Singleshot	21.43	-175.34	2441	.23
2465	3.80	296.6	Teleco MWD	21.72	-175.93	2451	.35
2493	3.90	290.6	Teleco MWD	22.47	-177.65	2479	.44
2522	4.10	294.8	Teleco MWD	23.25	-179.51	2508	.37
2551	4.20	296.6	Teleco MWD	24.16	-181.40	2537	.17
2580	4.10	293.4	Singleshot	25.05	-183.31	2565	.26
2618	4.70	289.2	Teleco MWD	26.10	-186.02	2603	.54

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Hole deviation

System : Boredata Sandnes

..Date..
19860206

Well: 0030/09-05

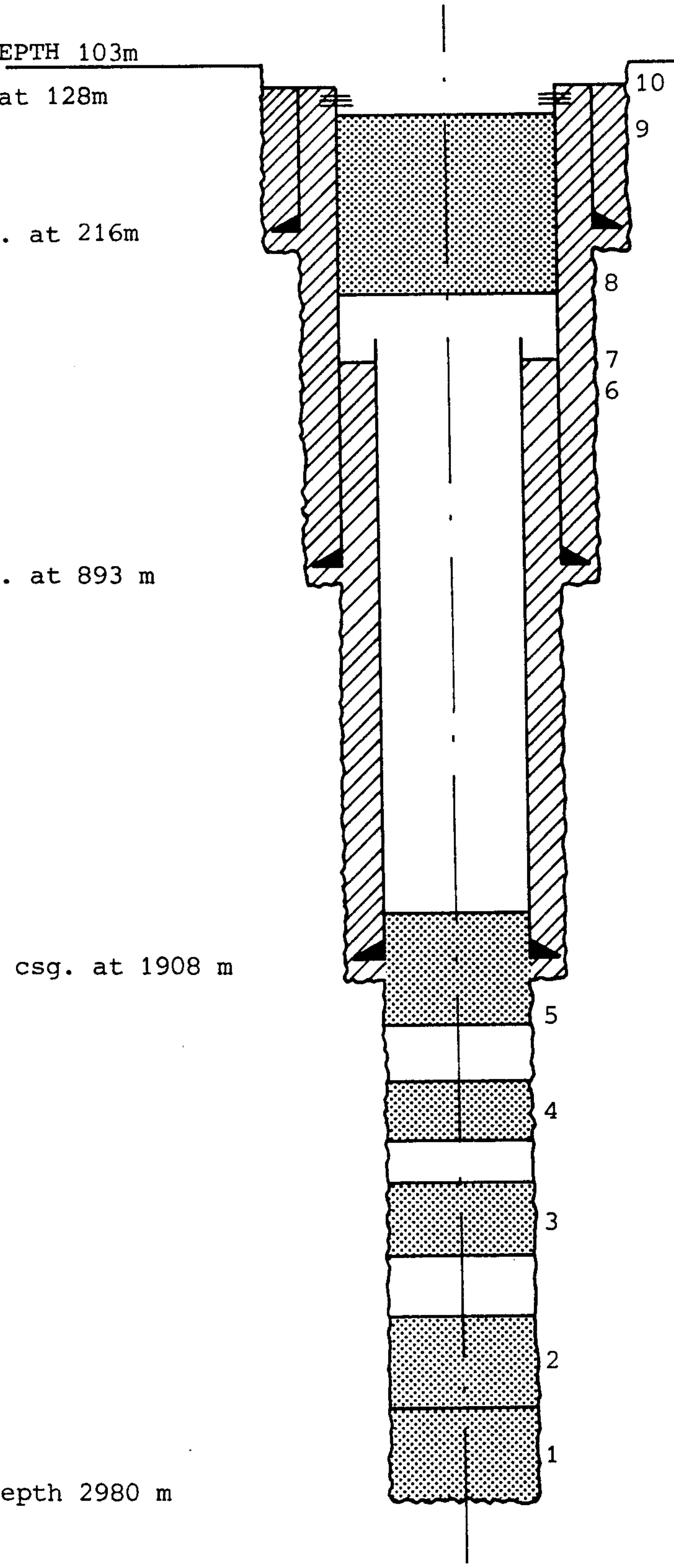
Measured Depth (m)	Inclination (deg)	Direction (deg)	Surveytool	Coordinates North (m)	Coordinates East (m)	True Vert Depth (m)	Dogleg Severity deg/30m
2647	4.80	290.7	Teleco MWD	26.92	-188.28	2632	.16
2675	5.10	293.8	Teleco MWD	27.84	-190.51	2660	.43
2763	5.25	280.0	Singleshot	30.11	-198.06	2748	.43
2766	5.70	293.8	Teleco MWD	30.20	-198.33	2751	13.87
2800	6.20	292.4	Teleco MWD	31.58	-201.57	2785	.46
2827	6.80	293.4	Teleco MWD	32.77	-204.39	2811	.68
2857	7.10	293.8	Teleco MWD	34.22	-207.71	2841	.30
2887	6.90	296.2	Teleco MWD	35.77	-211.03	2871	.35
2916	7.00	297.6	Teleco MWD	37.35	-214.16	2900	.20
2974	6.50	297.7	Singleshot	40.52	-220.19	2957	.26

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 a cement plug in open hole from 2980 m to 2767 m
2. " " " 2767 m to 2555 m
3. " " " 2515 m to 2395 m
4. " " " 2305 m to 2190 m
5. Set a cement plug in open hole from 1960 m and into 13 3/8" casing to 1824 m.
6. Perforated the 13 3/8" casing at 135 m to check for gas.
   Cut the 13 3/8" casing at 401 m and retrieved it.
7. Set a cement plug from 350 m to 150 m.
8. Cut the wellhead 5 m below the seabed and retrieved it.

ALL DEPTHS REFERS TO RKB (MD)



10. 30" and 20" csg. cut at 131 m

9. Perforations at 135 m

8. Cement plug from 150 m to 350 m

7. 13 3/8" csg. cut at 401 m

6. 13 3/8" csg. cemented back to 450 m

5. Cement plug from 1960 m to 1824 m

4. Cement plug from 2190 m to 2305 m

3. Cement plug from 2395 m to 2515 m

2. Cement plug from 2767 m to 2555 m

1. Cement plug from 2980 m to 2767 m

Norsk Hydro Drilling Department	PERMANENT ABANDONMENT WELL 30/9-5	Gr. no.: 4	Fig.: B-3
		Date: 06.02.86 Sign: GS/AHJ	Dwg. no.: 02

PORE PRESSURE, FORMATION INTEGRITY, OVERBURDEN GRADIENT AND FORMATION TEMPERATURE

Pore Pressure

The pore pressure in well 30/9-5 is estimated taking into consideration the reported pore pressure, the Sonic-log and R.F.T. - logs. The sonic-log pressure has been calculated using the equivalent depth method.

From seabed to app. 1400 m MD (1394 m TVD), the Sonic-log follows a normal compaction trend, indicating a normal pore pressure of 1.03 r.d.

From app. 1400 m MD (1394 m TVD) to app. 1910 m MD (1897 m TVD), both the Sonic-log and the D_c-exponent shows a divergence from the normal trend. A similar divergence exists over the same interval in block 30/7 and the pore pressure there has been measured to be normal. It is therefore believed that the divergence from the normal is caused by lithology changes rather than increasing pore pressure.

From app. 1910 m MD (1897 m TVD) to 2166 m MD (2152,5 m TVD) the Sonic-log is showing a decrease in travel time, this is believed to be caused by lithological factors rather than a change in the formation pressure.

From 2166 m MD (2152,5 m TVD) to 2236 m MD (2222 m TVD) both the Sonic-log and the D_c-exponent is too erratic to be of any use as indicators for pore pressure work. As there is no other indications of overpressure the formation is assumed to be normally pressured.

From 2236 m MD to T.D. 2222-2963 m TVD) a number of R.F.T. measurements show pressure in the range of 1.05-1.10 r.d. as specified in the attached table. The pore pressure has been smoothed over the R.F.T. measurements in this interval.

Formation Integrity

The following table shows the formation integrity test results.

Casing size (in)	Shoe depth MD/TVD (m)	Open hole depth MD/TVD (m)	Formation integity (r.d.)
20	893/893	913/913	1.66
13.3/8	1908/1895	1940/1927	1.65

Formation temperature

The maximum recorded temperatures obtained during electric - logging have been converted to bottom-hole static formation temperature (B.H.S.T.) using the Horner-plot-technique. At 885 m there was only 1 log run, so the B.H.S.T. is obtained by adding an extra 10% to the maximum recorded value.

An estimation of the temperature gradients are listed below.

Interval (m)	Temperature gradient (DEG c/100 m)
900 - 1900	2,93
1900 - 3000	4.09

TABLE B 5

NORSK HYDRO

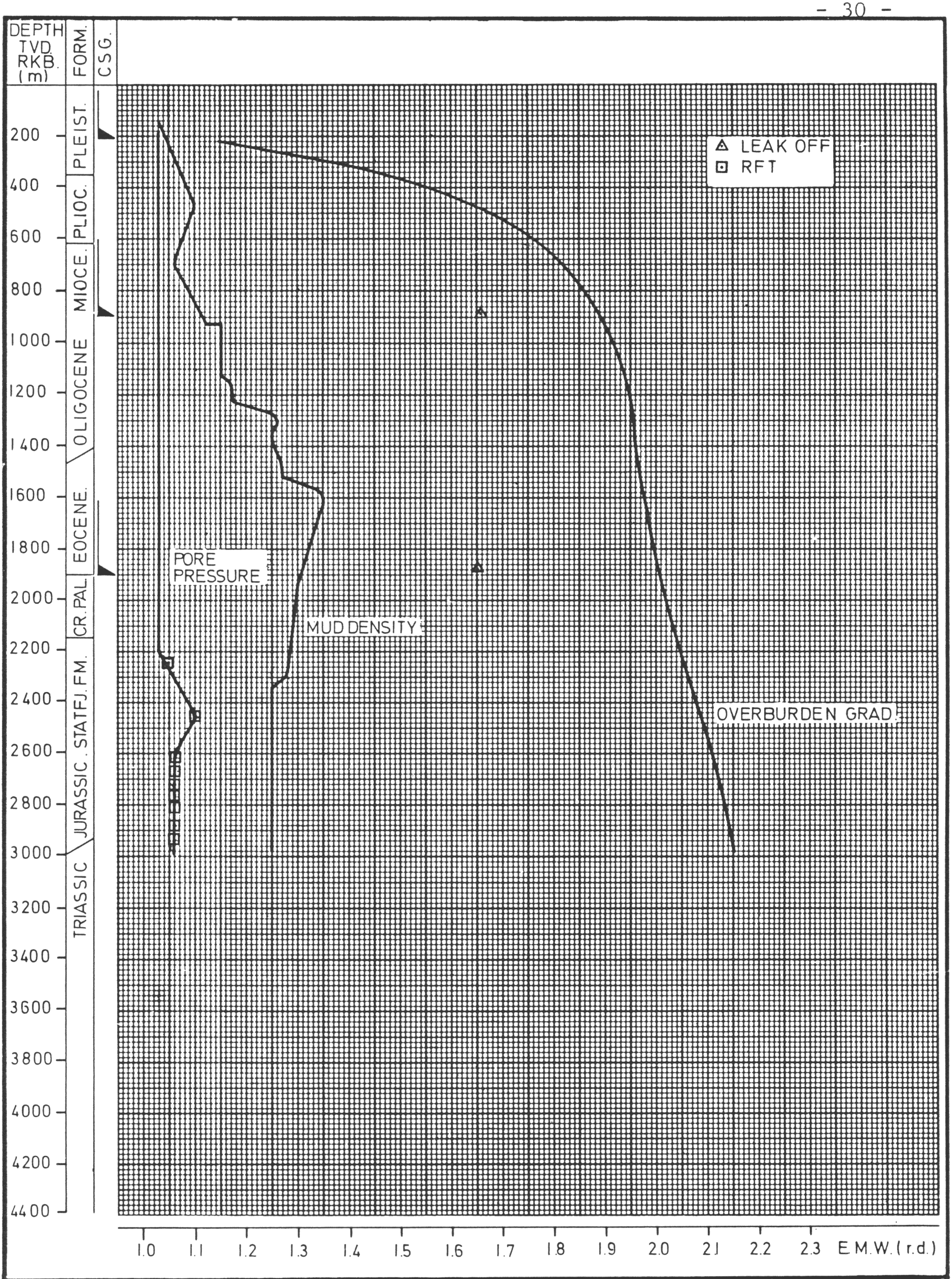
PORE PRESSURE

..DATE..
19860122

SYSTEM : BOREDATA SANDNES

WELL: 0030/09-05
SEABED AT: 128 MRKB
TOTAL DEPTH: 2980 M,MD,RKB

DEPTH MEAS (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)
128				1.03	1.05
200	1.03	1.03		1.03	1.05
300	1.03	1.03		1.03	1.10
400	1.03	1.03		1.03	1.10
500	1.03	1.03		1.03	1.10
600	1.03	1.03		1.03	1.10
700	1.03	1.03		1.03	1.10
800	1.03	1.03		1.03	1.10
900	1.03	1.03		1.03	1.15
1000	1.03	1.03		1.03	1.15
1100	1.03	1.03		1.03	1.15
1201	1.03	1.03		1.03	1.26
1304	1.03	1.03		1.03	1.26
1406	1.03	1.03		1.03	1.26
1508	1.03	1.03		1.03	1.35
1610	1.03	1.03		1.03	1.35
1711	1.03	1.03		1.03	1.35
1772	1.03	1.03		1.03	1.32
1812	1.03	1.03		1.03	1.32
1913	1.03	1.03		1.03	1.29
2013	1.03	1.03		1.03	1.29
2113	1.03	1.03		1.03	1.29
2214	1.03	1.03		1.03	1.29
2240		1.03	1.05	1.05	1.29
2314		1.03		1.07	1.25
2414		1.03		1.09	1.25
2450		1.03	1.10	1.10	1.25
2514		1.03		1.09	1.25
2611		1.10	1.06	1.06	1.25
2725		1.10	1.06	1.06	1.25
2837		1.10	1.06	1.06	1.25
2902		1.10	1.06	1.06	1.25
2933		1.10	1.06	1.06	1.25
2940		1.10	1.05	1.05	1.25
2980	1.05	1.10		1.05	1.25



Norsk Hydro

Drilling Department

PORE PRESSURE, MUD DENSITY AND OVERBURDEN GRADIENT WELL 30/9-5

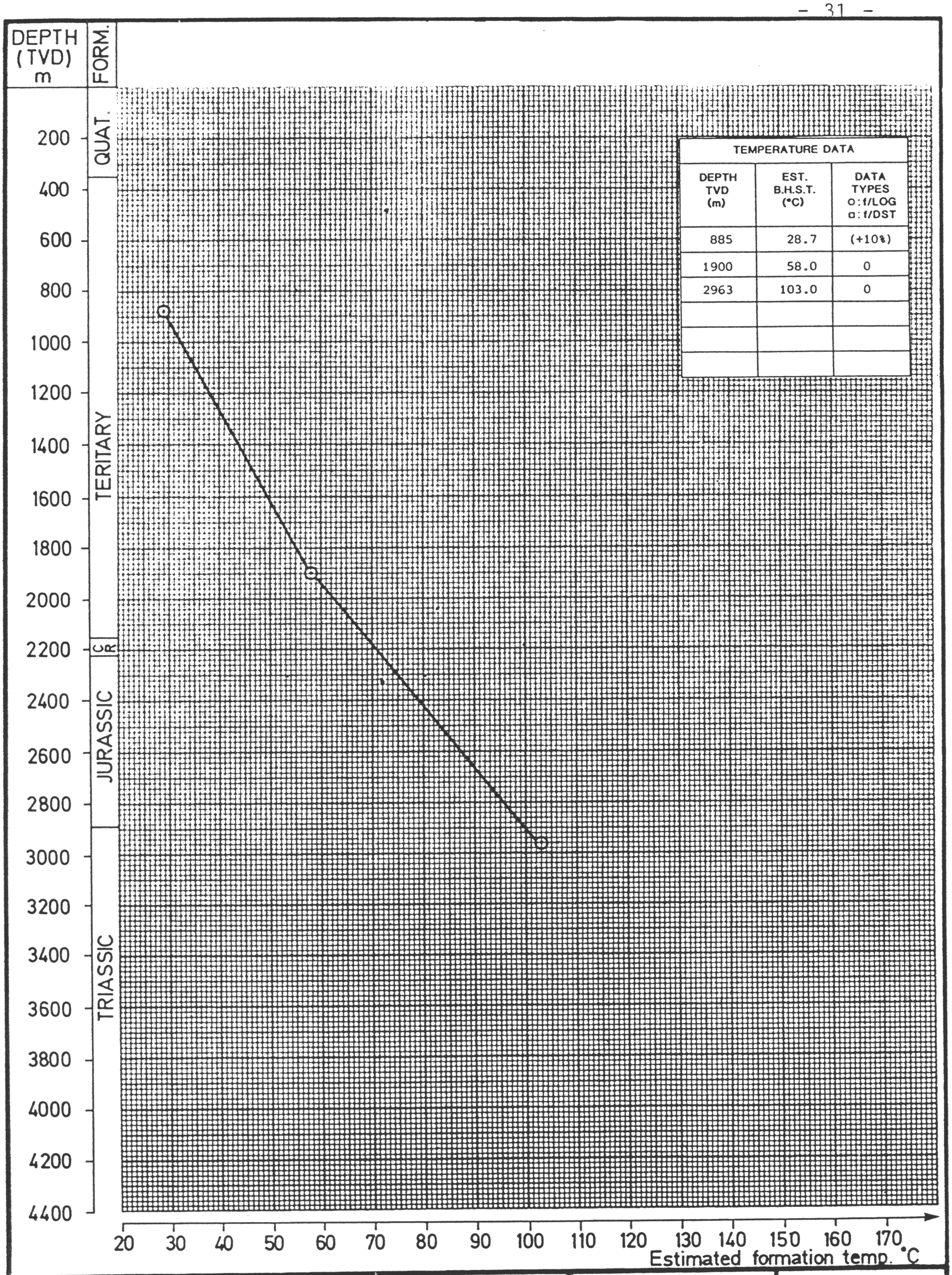
Gr. no.: 7

Fig.: B-4

Date: 17.09.85.

Dwg. no.: 117

Sign: GEn/SF



TEMPERATURE DATA

DEPTH TVD (m)	EST. B.H.S.T. (°C)	DATA TYPES ○: f/LOG □: f/DST
885	28.7	(+10%)
1900	58.0	0
2963	103.0	0

Norsk Hydro

Drilling Department

TEMPERATURE PROFILE
WELL 30/9-5

Gr. no.: 4

Fig.: B-5

Date: 12.02.86

Sign: BDi/AHJ

Dwg. no.: 03

6. MATERIAL REPORT

6.1 Main consumption casing and wellhead

6.2 Bit record

6.3 Bottom hole assembly

6.4 Mud report

6.5 Cement report

Norsk Hydro

Main consumptions

..Date..
19360124

System : Boredata Sandnes
Well: 0030/09-05
Wellhead:

5

Casing

size (in)	grade	weight kg/m	threads type	length (m)
30	B		LYNX	74
30	B		LYNX	10
20	X-56	107.9	LS	869
13 3/8	N-80	107.1	BUTTRESS	1908

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(ooo)
Norsk
Hydro

Main consumptions

..Date..
19860124

System : Boredata Sandnes

Cement contractor: HALLIBURTON

Casing size (in)	Additive name	Total used (1)
30		
Spacer	Econolitesq.	18000
Lead-	CEMENT	8254
	salt WATER	16481
	Econolite	4108
	Caustic	246
Tail-	CEMENT	7590
	salt WATER	10231
	CaCl2	1145
Flush		0
20		
Spacer	Econolitesq.	7100
Lead-	CEMENT	63175
	fresh WATER	172931
	Econolite	7065
Tail-	CEMENT	4127
	salt WATER	5999
Flush		0
13 3/8		
Spacer	Seawater	9500
Lead-	CEMENT	28508
	fresh WATER	81404
	Bentonite	2021
	CFR-2L	1437
	HR-6L	242
Tail-	CEMENT	9365
	fresh WATER	13001
	HR-6L	159
Flush		0

6.3

TABLE B-4

(((
(ooo)
Norsk
Hydro

Well: 0030/09-05

Bit record

System : Boredata Sandnes

..Date..
19860130

4

..Date..
60130

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 revol.	Weight min/max (KN)	Flow min/max (m3/h)	Wear				Remarks
																				T	B	G	Other	
1 P	26	REED	Y11	T5 9903	111	21	21	21	21	1	219	91	17.75	15.60	5.8	40/80	62187	/45	/254.7	3	3	0		
1 HO	36	SERVC								1	219	91	17.75	15.60	5.8	40/80	62187	/45	/245.7	4	8	0		
2 P	17 1/2	HTC	OSC3AJ	108RR	111	22	22	22		2	885	666	30.0	15.1	44.1	/125	110120	0/133	/258.0	4	4	0		
3 P	17 1/2	VAREL	L3A	11753	111	18	18	18		3		0		30	.0				/258.0	1	1	1		RUN ON U/R
3 UR	26	SERVC	15000							3	630	421		30	14.0	/125		0/80	/258.0	5	4	0		
3 RR1	17 1/2	VAREL	L3A	108RR	111	24	24	24		3	910	25	2.5	2.3	10.9	/95		0/80	/268.0	1	1	1		
3 URRR1	26	SERVC	15000		215					3	910	280		12.5	22.4	/95			/268.0	7	6	1		
1 RR1	26	REED	Y11	T5 9903	111							0		1.0	.0									WIPER TRIP
3 RR2	17 1/2	VAREL	L3A	11753	111	24	24	24		4	1000	90	5.0	3.2	28.1	/125	25930	0/80	/270.2	6	6	9		KICK O/PT
4	17 1/2	VAREL	L3A	11754	111	22	22	22		5	1153	153	12.0	8.2	18.7	/925	453259	22/89	/183.5	6	5	1		TURBINE
5	17 1/2	HTC	X3A	152FL	114	22	22	22		5	1214	61	5.5	3.7	16.5	/925	202833	66/88	/183.5	2	2	0		TURBINE
6	17 1/2	REED	811G	W6781	114	22	22	24		6	1525	311	21.25	13.3	23.4	100/125	90599	110/200	/240.0	4	3	0	BT	
7	17 1/2	SMITH	CJSDT	XD7205	124	24	24	24	18	7	1743	218	18.25	11.9	18.3	125/160	56298	200/244	/215.0	5	4	0	BT	
8	17 1/2	HTC	XDG	UK304		28	28	28		8	1746	3	3.0	3.0	1.0	130/160		180/222	/210.0	1	1	0	BALLED	CLAYSTONE
9	17 1/2	SMITH	SDT	EH8950		22	22	22		8	1935	189	18.0	11.5	16.4	140/160	102039	111/180	/210.0	5	4	0	BT	CLAYSTONE
9 RR1	17 1/2	SMITH	SDT	EH8950		22	22	22				0		2.0	.0									WASH/REAM
10	12 1/4	HTC	XDG	355GF	135	12	12	13		9	2028	93	6.5	4.5	20.7	/130	36400	/110	/131.7	3	2	0		DRL.SHOE
11	12 1/4	REED	FP52J	HHZ726	517	13	13	13		10	2405	377	67.75	58.30	6.5	90/95	330050	/200	/134.0	4	4	0		
12	12 1/4	SMITH	SVH	XC9977	215	13	13	13		11	2455	50	6.0	3.7	13.5	70/90	26066	/220	/134.0	2	2	2		
13 C	12 1/4	CHRIS	SC226	1480036						12	2473	18	12.5	11.8	1.5	70/110	59998	88/111	/92.0				30% WORN	94.6% REC
14	12 1/4	REED	FP52	HYY1306	517	13	13	13		13	2588	115	26.25	22.50	5.1	70/120	122760	177/277	/133.5	8	8	0		75% BROKEN
15	12 1/4	SMITH	SVH	XD1819	215	14	14	13		14	2608	20	2.75	1.90	10.5	70/90	10198	/200	/138.3	2	2	0		
13 C RR1	12 1/4	CHRIS	SC226	XD1819						15	2626	18	3.25	2.70	6.7	60/100	15197	45/67	/85.9				45% WORN	100% REC
16	12 1/4	SMITH	F3	MA4163	537	14	14	14		16	2775	149	21.50	17.50	8.5	55/65	69219	200/244	/143.1	8	8	0	BT	SKID2CONES
17	12 1/4	HTC	J33	043LK	537	14	14	14		16	2947	172	38.25	33.80	5.1	50/65	118166	150/246	/143.1	3	3	0		
18	12 1/4	HTC	J33	286LK	537	14	14	14		17	2980	33	14.00	12.50	2.6	/55	44763	/222	/146.9	2	2	0		

(((
(ooo)
Norsk
Hydro

Bottom hole assembly

System : Boredata Sandnes

Well: 0030/09-05

..Date..
19860131

BHA no.:1 Item:no./name/OD,in/length,m Depth interval MD,m: 128-219

1	Bit	26	.62	6	DC Steel	9 1/2	36.44
2	Hole Opener	36	2.10	7	X-over		.69
3	Nonmag collar	9 1/2	8.81	8	DC Steel	8	53.60
4	DC Steel	9 1/2	8.98	9	X-over		1.01
5	Steel stab	36	2.06	10	HWDP	5	73.31

BHA no.:2 Item:no./name/OD,in/length,m Depth interval MD,m: 219-885

1	Bit	17 1/2	.42	7	DC Steel	8	53.66
2	Bit Sub		.86	8	Jar	8	10.82
3	Nonmag collar	9 1/2	8.81	9	DC Steel	8	26.78
4	Steel stab	17 1/2	1.68	10	X-over		1.84
5	DC Steel	9 1/2	36.44	11	HWDP	5	137.76
6	X-over		.69				

BHA no.:3 Item:no./name/OD,in/length,m Depth interval MD,m: 219-910

1	Bit	17 1/2	.38	8	DC Steel	9 1/2	36.44
2	Steel stab	17 1/2	1.76	9	X-over		.69
3	Under Reamer	26	2.65	10	DC Steel	8	52.66
4	Bit Sub		.86	11	Jar	8	10.83
5	Nonmag collar	9 1/2	8.81	12	DC Steel	8	26.78
6	DC Steel	9 1/2	8.98	13	X-over		1.01
7	Steel stab	17 1/2	1.68	14	HWDP	5	136.76

BHA no.:4 Item:no./name/OD,in/length,m Depth interval MD,m: 910-1000

1	Bit	17 1/2	.38	7	DC Steel	8	52.66
2	Junksub		.71	8	Jar	8	10.83
3	Bit Sub		.86	9	DC Steel	8	26.78
4	Nonmag collar	9 1/2	8.81	10	X-over		1.01
5	DC Steel	9 1/2	45.42	11	HWDP	5	136.76
6	X-over		.64				

BHA no.:5 Item:no./name/OD,in/length,m Depth interval MD,m:1000-1214

1	Bit	17 1/2	.39	8	DC Steel	9 1/2	45.42
2	Turbine		7.17	9	X-over		.69
3	Bit Sub		.75	10	DC Steel	8	52.66
4	Short N.M.D.C.	9 1/2	2.82	11	Jar	8	10.83
5	X-over		.72	12	DC Steel	8	26.78
6	MWD		9.14	13	X-over		1.01
7	Nonmag collar	9 1/2	18.35	14	HWDP	5	136.76

BHA no.:6 Item:no./name/OD,in/length,m Depth interval MD,m:1214-1525

1	Bit	17 1/2	.41	9	DC Steel	9 1/2	45.42
2	Nearbit stab	17 1/2	1.75	10	X-over		1.01
3	Steel stab	17 1/2	2.49	11	DC Steel	8	52.66
4	Short N.M.D.C.	9 1/2	2.82	12	Jar	8	10.83
5	X-over		.72	13	DC Steel	8	26.78
6	MWD		9.14	14	X-over		1.01
7	Nonmag stab	17 1/2	2.01	15	HWDP	5	136.76

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=============================================================================
|         |          B o t t o m   h o l e   a s s e m b l y        ..Date..
|   (((   |          ---------------------------------------        19860131
|  (ooo)  |                 System : Boredata Sandnes
|---------|Well: 0030/09-05
|  Norsk  |
|  Hydro  |                                                                 7
=============================================================================
  | 8|Nonmag collar   |9 1/2    |   18.35||
  |
  | BHA no.:7 Item:no./name/OD,in/length,m  Depth interval MD,m:1525-1743   |
  |.........................................................................
  | 1|Bit             |17 1/2   |     .41||  9|DC Steel        |9 1/2    |  45.42|
  | 2|Nearbit stab    |17 1/2   |    1.75|| 10|X-over          |         |    .64|
  | 3|Short N.M.D.C.  |9 1/2    |    2.82|| 11|DC Steel        |8        |  52.66|
  | 4|Nonmag stab     |17 1/2   |    2.06|| 12|Jar             |8        |  11.21|
  | 5|X-over          |         |     .72|| 13|DC Steel        |8        |  26.78|
  | 6|MWD             |         |    9.14|| 14|X-over          |         |   1.01|
  | 7|Nonmag stab     |17 1/2   |    2.01|| 15|HWDP            |5        | 136.76|
  | 8|Nonmag collar   |9 1/2    |   18.35||
  |
  | BHA no.:8 Item:no./name/OD,in/length,m  Depth interval MD,m:1743-1935   |
  |.........................................................................
  | 1|Bit             |17 1/2   |     .54||  9|Nonmag collar   |9 1/2    |   8.81|
  | 2|Bit Sub         |         |     .86|| 10|DC Steel        |9 1/2    |  45.42|
  | 3|Short N.M.D.C.  |9 1/2    |    2.82|| 11|X-over          |         |    .64|
  | 4|X-over          |         |     .72|| 12|DC Steel        |8        |  52.66|
  | 5|MWD             |         |    9.14|| 13|Jar             |8        |  11.21|
  | 6|Nonmag stab     |17 1/2   |    2.01|| 14|DC Steel        |8        |  26.78|
  | 7|Nonmag collar   |9 1/2    |    9.54|| 15|X-over          |         |   1.01|
  | 8|Nonmag stab     |17 1/2   |    2.06|| 16|HWDP            |5        | 136.76|
  |
  | BHA no.:9 Item:no./name/OD,in/length,m  Depth interval MD,m:1935-2028   |
  |.........................................................................
  | 1|Bit             |12 1/4   |     .30||  6|DC Steel        |8        | 142.98|
  | 2|Bit Sub         |         |    1.50||  7|Jar             |8        |  11.21|
  | 3|Nonmag collar   |8        |    8.70||  8|DC Steel        |8        |  26.50|
  | 4|DC Steel        |8        |    8.76||  9|X-over          |         |   1.01|
  | 5|Steel stab      |12 1/4   |    1.57|| 10|HWDP            |5        | 136.76|
  |
  | BHA no.:10 Item:no./name/OD,in/length,m  Depth interval MD,m:2028-2405  |
  |.........................................................................
  | 1|Bit             |12 1/4   |     .30||  8|Steel stab      |12 1/4   |   1.57|
  | 2|Nearbit stab    |12 1/4   |    1.52||  9|DC Steel        |8        | 134.34|
  | 3|MWD             |         |   12.25|| 10|Jar             |8        |  11.21|
  | 4|Nonmag stab     |12 1/4   |    1.70|| 11|DC Steel        |8        |  26.50|
  | 5|Nonmag collar   |8        |    8.70|| 12|X-over          |         |   1.01|
  | 6|Steel stab      |12 1/4   |    1.48|| 13|HWDP            |5        | 136.76|
  | 7|DC Steel        |8        |   17.40||
  |
  | BHA no.:11 Item:no./name/OD,in/length,m  Depth interval MD,m:2405-2455  |
  |.........................................................................
  | 1|Bit             |12 1/4   |     .30||  7|Steel stab      |12 1/4   |   1.57|
  | 2|MWD             |         |   11.87||  8|DC Steel        |8        | 134.34|
  | 3|Nonmag stab     |12 1/4   |    1.70||  9|Jar             |8        |  11.21|
  | 4|Nonmag collar   |8        |    8.70|| 10|DC Steel        |8        |  26.50|
  | 5|Steel stab      |12 1/4   |    1.48|| 11|X-over          |         |   1.01|
  | 6|DC Steel        |8        |   17.40|| 12|HWDP            |5        | 136.76|
  |
  | BHA no.:12 Item:no./name/OD,in/length,m  Depth interval MD,m:2455-2473  |
  |.........................................................................
  | 1|Core bit        |12 1/4   |     .26||  7|DC Steel        |8        | 134.34|
  | 2|Core barrel     |12 1/4   |   19.95||  8|Jar             |8        |  11.21|
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 | 3|Nonmag collar  |8       |    8.70||  9|DC Steel      |8       |  26.50|
 | 4|Steel stab     |12 1/4  |    1.48|| 10|X-over        |        |   1.01|
 | 5|DC Steel       |8       |   17.40|| 11|HWDP          |        | 136.76|
 | 6|Steel stab     |12 1/4  |    1.70||
 |
 | BHA no.:13 Item:no./name/OD,in/length,m  Depth interval MD,m:2473-2588  |
 |.........................................................................
 | 1|Bit            |12 1/4  |     .30||  8|Steel stab    |12 1/4  |   1.70|
 | 2|Nearbit stab   |12 1/4  |    1.52||  9|DC Steel      |8       | 134.34|
 | 3|MWD            |        |   12.42|| 10|Jar           |8       |  10.84|
 | 4|Nonmag stab    |12 1/4  |    1.57|| 11|DC Steel      |8       |  26.50|
 | 5|Nonmag collar  |8       |    8.70|| 12|X-over        |        |   1.01|
 | 6|Steel stab     |12 1/4  |    1.48|| 13|HWDP          |5       | 136.76|
 | 7|DC Steel       |8       |   17.40||
 |
 | BHA no.:14 Item:no./name/OD,in/length,m  Depth interval MD,m:2588-2608  |
 |.........................................................................
 | 1|Bit            |12 1/4  |     .30||  8|DC Steel      |8       |  17.40|
 | 2|Junksub        |        |     .67||  9|Steel stab    |12 1/4  |   1.70|
 | 3|Nearbit stab   |12 1/4  |    1.52|| 10|DC Steel      |8       | 134.34|
 | 4|MWD            |        |   12.42|| 11|Jar           |8       |  10.84|
 | 5|Nonmag stab    |12 1/4  |    1.57|| 12|DC Steel      |8       |  26.50|
 | 6|Nonmag collar  |8       |    8.70|| 13|X-over        |        |   1.01|
 | 7|Steel stab     |12 1/4  |    1.48|| 14|HWDP          |5       | 136.76|
 |
 | BHA no.:15 Item:no./name/OD,in/length,m  Depth interval MD,m:2608-2626  |
 |.........................................................................
 | 1|Core bit       |12 1/4  |     .26||  7|DC Steel      |8       | 136.34|
 | 2|Core barrel    |12 1/4  |   19.95||  8|Jar           |8       |  10.84|
 | 3|Nonmag collar  |8       |    8.70||  9|DC Steel      |8       |  26.50|
 | 4|Steel stab     |12 1/4  |    1.48|| 10|X-over        |        |   1.01|
 | 5|DC Steel       |8       |   17.40|| 11|HWDP          |5       | 136.76|
 | 6|Steel stab     |12 1/4  |    1.70||
 |
 | BHA no.:16 Item:no./name/OD,in/length,m  Depth interval MD,m:2626-2947  |
 |.........................................................................
 | 1|Bit            |12 1/4  |     .30||  8|Steel stab    |12 1/4  |   1.70|
 | 2|Nearbit stab   |12 1/4  |    1.52||  9|DC Steel      |8       | 136.34|
 | 3|MWD            |        |   12.42|| 10|Jar           |8       |  10.84|
 | 4|Nonmag stab    |12 1/4  |    1.57|| 11|DC Steel      |8       |  26.50|
 | 5|Nonmag collar  |8       |    8.70|| 12|X-over        |        |   1.01|
 | 6|Steel stab     |12 1/4  |    1.48|| 13|HWDP          |5       | 136.76|
 | 7|DC Steel       |8       |   17.40||
 |
 | BHA no.:17 Item:no./name/OD,in/length,m  Depth interval MD,m:2947-2980  |
 |.........................................................................
 | 1|Bit            |12 1/4  |     .30||  7|DC Steel      |8       | 134.34|
 | 2|Nearbit stab   |12 1/4  |    1.52||  8|Jar           |8       |  10.84|
 | 3|Nonmag collar  |8       |    8.70||  9|DC Steel      |8       |  26.50|
 | 4|Steel stab     |12 1/4  |    1.48|| 10|X-over        |        |   1.01|
 | 5|DC Steel       |8       |   17.40|| 11|HWDP          |5       | 136.76|
 | 6|Steel stab     |12 1/4  |    1.70||
 |
```

MUD REPORT

Drilling fluid used.

Hole section:	Mud:
36"	Spud mud
26"	Spud mud
17 1/2"	KCL/Polymer
12 1/4"	NaCl/Polymer

36" hole section

The 36" hole was drilled down to 219 m using seawater/high viscous s slugs. 8m^3 of high viscous mud was pumped on each connection to help cleaning the hole. At TD, the hole was displaced with 50m3 high viscous mud prior to run the casing.

Materials used in this section:

Bentonite, Caustic soda, Aluminium sterate.

26" hole section

The 26" hole was drilled down to 910 m using prehydrated bentonite/seawater. The 17 1/2" pilot hole was drilled to 885 m with at 8m3 high viscous pill on every third connection. 107m3 high viscous pill was then spotted, a wiper trip was made and another 111m3 of hivis mud was spotted before the hole was logged.

After logging, the hole was underreamed to 26" and displaced to 1,20 rd mud. The riser was then displaced to seawater and a flow check was made. The riser was then pulled and the hole was reamed with a 26" bit to 907 m with a high viscous pill on each connection. The hole was then filled with 1,23 rd mud and the 20" casing was run.

Materials used in this section:

Barite, Bentonite, Causic soda, Soda ash, AA-100 regular

17 1/2" hole section

The 17 1/2" hole was drilled to 1935 m using a KCL/polymer system. When drilling out the shoe, the mudweight was kept at 1,15 rd. At 1214 m the mudweight was increased to 1,25 rd due to sticky hole. The hole continued being tight and sticky, and the mudweight was increased to 1,30 rd at 1525 m and to 1,35 rd at 1558 m. The mud was also treated with lubricants at this stage and high viscous pills were pumped around to assist improving the hole cleaning. At 1746 m the bit balled up and detergent and nut plug was added to the mud to clean up the bit and bottom hole assembly.

After reaching TD of this section, the mud weight was cut back to 1,30 rd prior to logging. After logging, 15m3 of high viscous 1,40 rd mud was spotted on the bottom and the 13 3/8" casing was run.

Materials used in this section:

Barite, KCL brine, KCL sxs, AA-100 regular, AA-100 lovis, Anco biovis, Ancomel, Caustic soda, Drilling detergent, Defoamer, Soltex, Nut plug, Bentonite, Ancolube.

12 1/4" hole section

Prior to drilling out the casing shoe, the hole was displaced to NaCl/polymer mud. Chlorides were kept in the 55 -60000 mg/l range to optimize logging conditions. The hole was drilled to 2980 m. First wiper trip at 1999 m proved some tight spots. At 2363 the mud weight was cut to 1,25 rd and bentonite was added to improve the HTHP conditions. High viscous pills at 1.30 rd were pumped as required while drilling sandstone to give better hole cleaning. At TD a wiper trip was done without any problems. Loggs were run and the well was plugged back.

Materials used in this section:

Barite, Bentonite, Caustic, NaCl sxs, NaCl, Anco biovis, AA-100 regular, AA-100 lovis, Soda ash, Ancotemp, CMC lovis, Drispac regular, Ancolube, Drilling detergent, DF-vis(xc), Sodium bicarbonate.

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Norsk
Hydro

Daily mud properties

..Date..
19860311

System : Boredata Sandnes
Well: 0030/09-05
Mud Contractor: ANCHOR.DRLG.SERVICES

TABLE B-5

Date	Mid depth (m)	Mud dens. (SG)	PV cps	YP mPa	GEL 0 mPa	GEL 10 mPa	Ph	100 psi (cc)	HP/HT (cc)	Cl- inn/out mg/l	Alkalinity			Ca++ inn/out mg/l	Oil %	Sol %	H2O %	V.G. meter at 115AF						Mud type
											Pf	Pm	Mf					600 rpm	300 rpm	200 rpm	100 rpm	6 rpm	3 rpm	
850526	126	0	0	0													100							WATER
850527	126	1.05															100							SPUD
850528	219	1.05															100							SPUD
850529	219	1.05															100							SPUD
850530	549	1.10	3	25													100							GEL/S.WATER
850531	885	1.09	6	14						12000/							100							GEL/S.WATER
850601	885	1.09	8	34													100							GEL/S.WATER
850602	897	1.20	9	14													100							GEL/S.WATER
850603	910	1.23	21	15													100							GEL/S.WATER
850604	910	1.03															100							SEA WATER
850605	910	1.12	14	5			8.6	7.5		72000/				580/			100	38	24					KCl polymer
850606	1000	1.15	16	6	1	1	10.6	6.2		69000/	0.8		1.3	640/		9	91	44	28					KCl/POLYMER
850607	1188	1.17	21	10	2	2	10.5	5.2		70000/	0.5		0.9	580/		10	90	63	42	34	22	5	2	KCl/POLYMER
850608	1343	1.25	22	11	2	4	10.0	5.5		80000/	0.2		0.5	900/		13	87	66	44					KCl/POLYMER
850609	1525	1.30	27	13	2	6	8.5	6.4		78000/	0.1		0.2	1200/		14	86	70	53					KCl/POLYMER
850610	1714	1.35	28	12	3	7	8.4	8.0		81000/	.05		.2	1600/		16	84	80	52					KCl/POLYMER
850611	1746	1.35	24	12	2	5	8.3	8.0		78000/	.05		.3	1600/		18	82	72	48					KCl/POLYMER
850612	1935	1.30	30	13	2	5	8.3	7.4		75000/	0.1		0.4	1600/		16	84	85	55					KCl/POLYMER
850613	1935	1.30	29	11	2	4	8.4	7.6		76000/	0.1		0.4	1600/		17	83	80	51					KCl/POLYMER
850614	1935	1.31	24	10	2	4	8.4	7.6		82000/	.1		.45	1560/		17	83	68	44					KCl/POLYMER
850615	1935	1.30	22	9	1	3	8.4	7.5		83000/	.1		.45	1580/		17	83	62	40					KCl/POLYMER
850616	1935																100							KCl/POLYMER
850617	1935																100							KCl/POLYMER
850618	1935																100							KCl/POLYMER
850619	1935																100							KCl/POLYMER
850620	1935																100							KCl/POLYMER
850621	1935																100							KCl/POLYMER
850622	1935																100							KCl/POLYMER
850623	1935																100							KCl/POLYMER
850624	1935																100							KCl/POLYMER
850625	1935																100							KCl/POLYMER
850626	1935																100							KCl/POLYMER
850627	1935																100							KCl/POLYMER
850628	1935	1.30	27	9													100							NaCl/Polym.
850629	1935	1.3	27	8	1	1	10.5	8.5		70000/	0.8		2.2	400/		14	86	72	45					NaCl/Polym.
850630	2028	1.3	23	9	1	1	10	5.1	20	72000/	0.4		0.9	280/		14	86	66	43	31	20	3	1	NaCl/Polym.
850701	2171	1.3	25	9	1	1	10.5	4.6	10.5	76000/	0.6		1.3	120/		14	86	70	45	30	21	3	1	NaCl/Polym.
850702	2250	1.29	26	9	1	1	10.7	4	15	70000/	0.8		1.3	80/		13	87	72	46	32	21	2	1	NaCl/Polym.
850703	2367	1.25	26	11	1	2	10.2	5.2	14	65000/	0.3		0.9	80/		11	89	75	49	3	22	3	1	NaCl/Polym.
850704	2455	1.25	24	10	1	2	10.4	4.5	14	63000/	0.3		1.1	60/		11	89	68	44	33	21	2	1	NaCl/Polym.

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Norsk
Hydro

Daily mud properties

..Date..
19860311

System : Boredata Sandnes
Well: 0030/09-05
Mud Contractor: ANCHOR.DRLG.SERVICES

3

Date	Mid depth (m)	Mud dens. (SG)	PV cps	YP mPa	GEL 0 mPa	GEL 10 mPa	Ph	100 psi (cc)	HP/HT (cc)	Cl- inn/out mg/l	Alkalinity			Ca++ inn/out mg/l	Oil %	Sol %	H2O %	V.G. meter at 115AF						Mud type
											Pf	Pm	Mf					600 rpm	300 rpm	200 rpm	100 rpm	6 rpm	3 rpm	
850708	2608	1.25	26	11	1	2	10.5	4.5	18	60000/	0.6		1.3	80/		12	88	67	43	32	18	3	1	NaCl/Polym.
850709	2659	1.25	26	10	1	2	9.9	4.3	17	59000/	.55		1.4	80/		13	87	72	46	35	22	3	2	NaCl/Polym.
850710	2775	1.25	22	9	1	2	10.4	4.5	15	61000/	.65		1.5	40/		13	87	62	40	29	18	3	2	NaCl/Polym.
850711	2905	1.25	27	12	2	5	10.3	4.3	14	63000/	0.7		1.6	40/		13	87	78	51	40	25	4	3	NaCl/Polym.
850712	2947	1.25	24	10	2	3	10.2	4.4	12	70000/	0.6		1.3	40/		13	87	73	47	36	23	4	3	NaCl/Polym.
850713	2980	1.25	26	11	2	6	10.0	4.2	12	67000/	.55		1.3	80/		13	87	80	53	42	28	5	3	NaCl/Polym.
850714	2980	1.25	29	13	2	4	10.0	4.0	12	67000/	.55		1.3	100/		13	87	84	55					NaCl/Polym.
850715	2980	1.25	27	13	2	4	9.9	4.0	12	65000/	0.5		1.2	120/		13	87	81	54					NaCl/Polym.
850716	2980	1.25	28	13		4	9.9		12	64000/	.45		1.2	120/		13	87							NaCl/Polym.
850717		1.26	25	10	2	4	11.8	4.5		59000/	1.3		2.1	80/		14	86	70	45					NaCl/Polym.
850718		1.25	24	9	1	3	11.7	4.6		58000/	1.3		2.1	100/		14	86	66	42					NaCl/Polym.
850719		1.25	20	9	1	3		4.7		58000/	.45		.75	100/		14	86	57	37					NaCl/Polym.
850720																	100							

1901M

TABLE B-6

MUD MATERIAL CONSUMPTION

Material	Consumption	Unit Size
Barite	451	MT
Bentonite	114	MT
Caustic soda	264	25 kg/sx
NaCl sxs	80	50 kg/SX
NaCl	90	MT
Anco biovis	150	25 kg/sx
AA-100 lovis	328	25 kg/sx
AA-100 regular	336	25 kg/sx
Soda ash	132	30 kg/sx
Ancotemp	78	25 l/can
CMC lovis	230	25 kg/sx
Drispac regular	10	50 lbs/sx
Ancolube	10	200 l/drum
Drilling detergent	11	200 l/drum
DF-vis (XC)	13	25 kg/sx
Sodium bicarbonate	11	50 kg/sx
Aluminium sterate	8	25 kg/sx
KCl brine	2000	bbls
KCl sxs	915	50 kg/sx
Ancomel	300	25 kg/sx
Defoamer	1	25 l/can
Soltex	169	50 lbs/sx
Nutplug	8	25 kg/sx
Ancolube	20	200 l/drum

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Cement reports

System : Boredata Sandnes
Well: 0030/09-05
Cement contractor: HALLIBURTON

..Date..
19860127

10

Casing Size (in)	SLURRY VOLUME (m3)	SLURRY DENSITY (SG)	Thickening Time (hrs:min)	BHST (deg.C)	Additive name	Compo- sition (1/100kg)	Total used (1)
Lead-30	29	1.68	3.5	7	Econolite	15.8	4108.0
					Caustic	0.946	246.0
Tail-30	19	1.9	6.5	7	CaCl2	4.79	1145.3
Lead-20	248	1.56	3.9	33	Econolite	3.55	7064.5
Lead-13 3/8	112	1.56	5.0	74	Bentonite	2.25	2020.5
					CFR-2L	1.60	1436.8
					HR-6L	0.27	242.5
Tail-13 3/8	23	1.9	4.0	74	HR-6L	0.54	159.3

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Norsk
Hydro

Cement reports

..Date..
19860127

System : Boredata Sandnes
Well: 0030/09-05
Cement contractor: HALLIBURTON

10

Type of Job	Depth (m)	Slurry Volume (m3)	Slurry Density (SG)	Compress. strenght (bar/hrs)	Thickening time (hrs:min)	Additive name	Composition (1/100kg)	Total used (1)
Plug	2980	16	1.9			Fresh:	39.4	8274
						CFR 2L	2.57	540
						HR 6L	0.29	61
Plug	2767	16	1.9			Fresh:	39.4	8274
						CFR 2L	2.57	540
						HR 6L	0.29	61
Plug	2515	11	1.9			Fresh:	39.4	5516
						CFR 2L	2.54	356
						HR 6L	0.22	31
Plug	2305	9.5	1.9			Fresh:	45.9	5508
						CFR 2L	0.57	69
						HAL 10L	3.52	422
Plug	1960	16	1.97			Fresh:	38.8	8536
Plug	350	36	1.9			Fresh:	48.0	21600
						CaCl2	4.89	2200
Grout			1.9			Salt :	36.5	9490
						CaCl2	4.1	1066

0012o

COST REPORT

Period from	to	Total operation days
26.05.85 02.45 hrs	20.07.87 12.45 hrs	55.417 days

	Final estimated cost (1000 NOK)	
Site survey	800	
Resurvey	300	
Location clean up	200	
Positioning	700	
Sub total		2.000
Rig costs	16.740	
Drilling tools,equipment and services	3.240	
Wellheads	1.200	
Casing and casing services	3.570	
Cement and cementing services	1.920	
Mud and mud services	2.940	
Wire - line logging	4.700	
Testing tools, equipment and services	280	
Norsk Hydro offshore personell	2.800	
Other costs	2.250	
Sub total		39.640
Supply boats costs	4.070	
Standby boats costs	2.495	
Helicopter costs	890	
Sub total		7.455

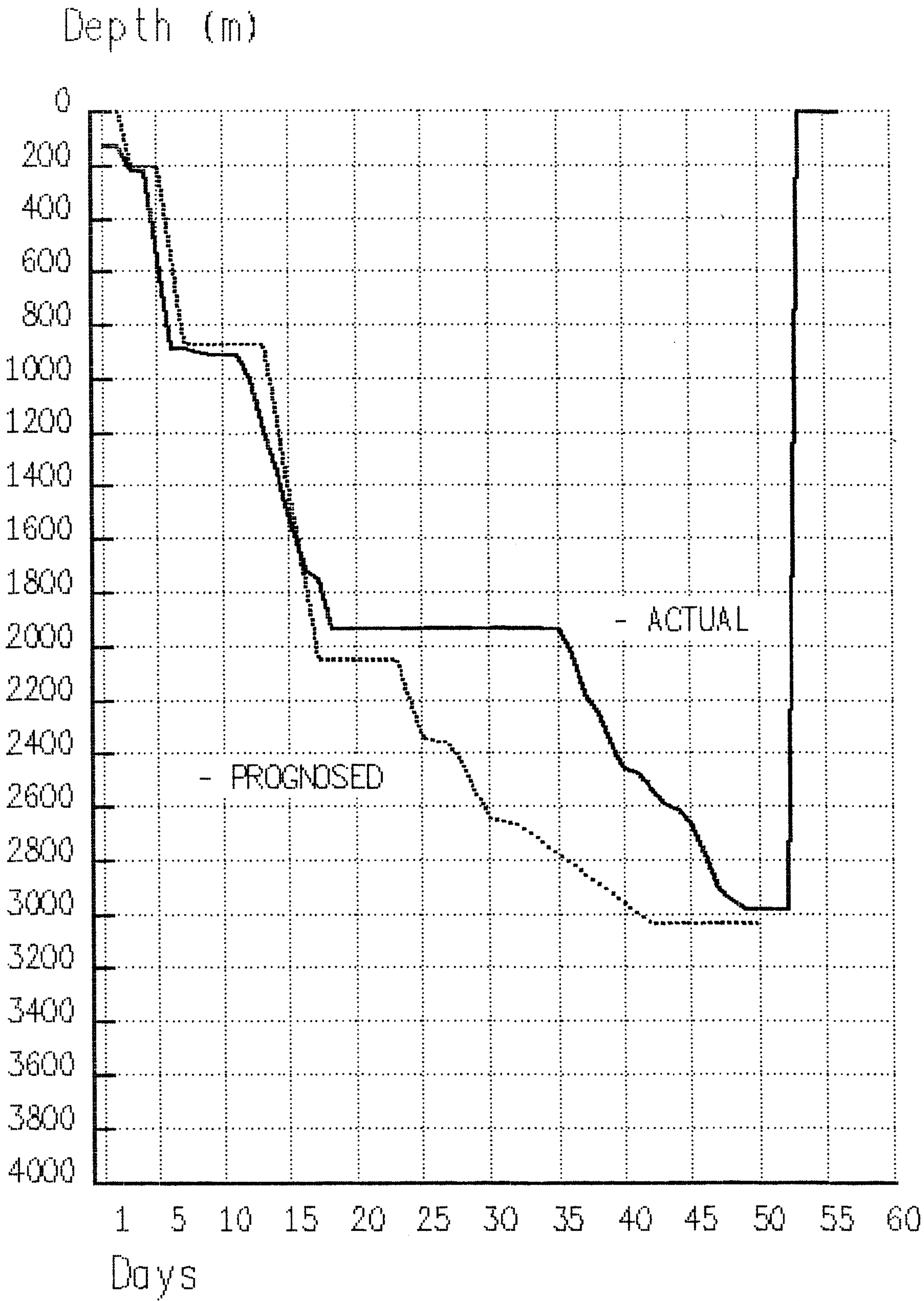
Warehouse costs	2.620	
Drlg.dept.adm. and facilities	2.220	
Onshore drilling supervision	1.665	
Onshore geology and reservoar	400	
Lab. studies geoglogy and reservoar	1.000	
Sub total		7.905
Total		57.000

The strike was effective on the "Treasure Seeker" in the period 17.06 -28.06 = 12 days delay to a total estimated cost of 6 mill. NOK.

00120

DRILLING EQUIPMENT FAILURES AND PROBLEMS

Date	Equipment	Failure/action
31.05.85	Hose on refract system	Changed out the hose.
01.06.85	Washpipe	Changed out the washpipe.
05.06.85	Yellow pod	Repaired the RBQ plate on the yellow pod.
09.06.85	Pump	Changed valve in the pump
11.06.85	Compensator	Repaired the lock bar on the compensator.
14.06.85	Mudpump	One mudpump was down.
15.06.85	Cementtank	Repaired a leak in the vent line on the cement tank.
20.07.85	Anchor chain no.5	Broke while pulling anchor.



NORSK HYDRO DRILLING DEP.	PROGNOSED AND ACTUAL DRILLING CURVES WELL: 0030/09-05	FIG. B-5	
		GS	

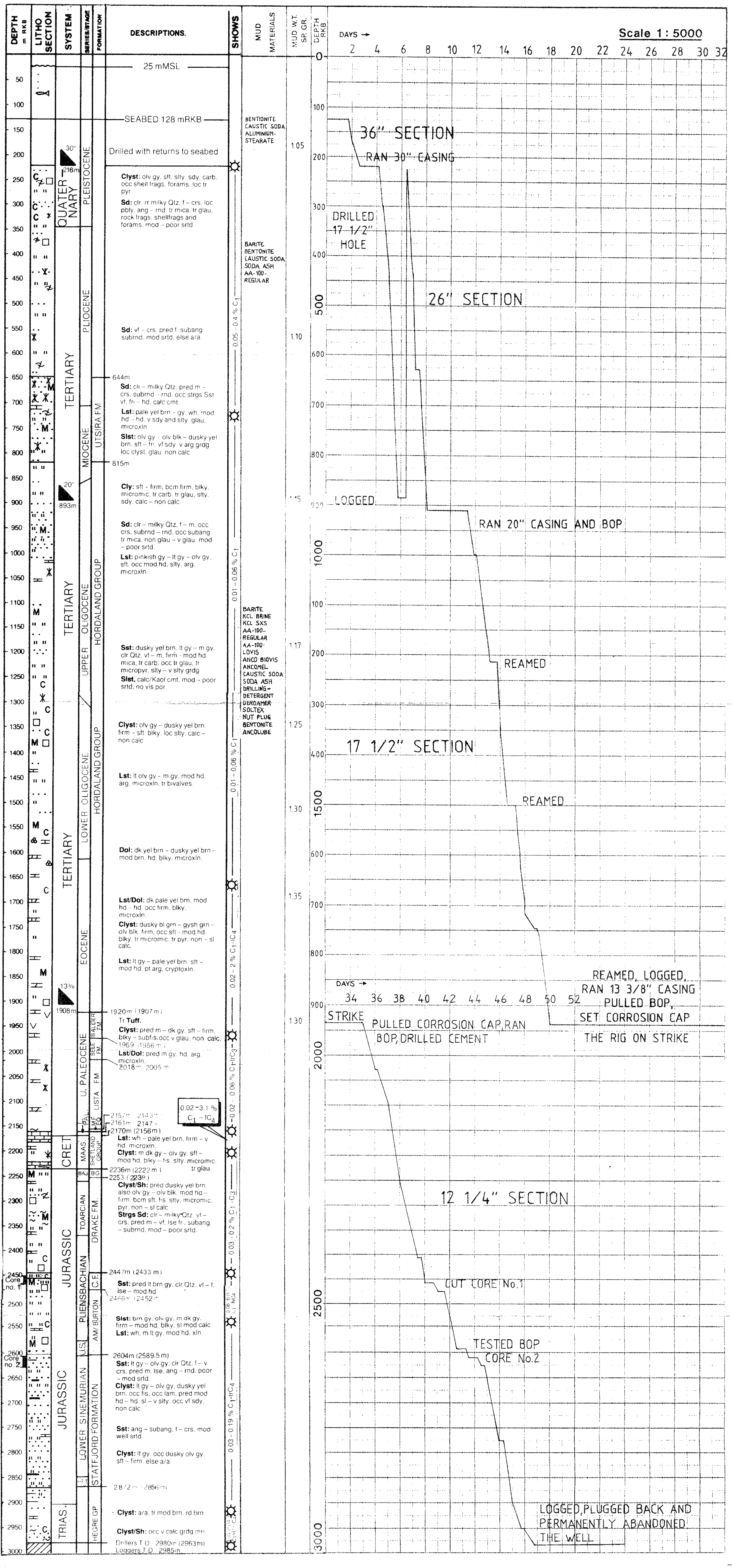
Norsk Hydro
Oslo - Norway

DRILLING PROGRESS, WELL 30/9-5

OPERATOR : NORSK HYDRO
COORDINATES : 60° 21' 31.34" N
: 02° 53' 37.09" E

SPUD IN : 27.05.85
WELL COMPL. : 20.07.85
RIG : TREASURE SEEKER

WATER DEPTH : 101
RKB to MSL : 25
RKB to SEABED : 126



Norsk Hydro

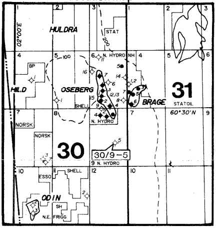
Bergen – Norway

Completion log

Scale 1:500

Well: 30/9-5

Location map



Scale: 1 : 1.000.000

Coordinates:	60°21'31,34"N 02°53'37,09"E	**UTM:** 6691522.4mN 494131.4mE
Elevation K B:	25 m	
Water Depth:	103 m MSL	
Total Depth (Driller):	2980 m RKB MD (2963 m RKB TVD)	
Total Depth (Logger):	2985 m » »	
Formation at Total Depth:	Hegre Group	

Country:	Norway
Licence:	104
Owners:	Norsk Hydro/Statoil/Saga/ Tenneco/Agip/D.N.O.
Field:	Exploration
Date Spudded:	May 27th, 1985
Reached Total Depth:	July 13th, 1985
Completed:	July 20th, 1985
Well Status:	Plugged and abandoned with gas shows in the Cook Fm. and the Brent Group.
Rig:	Treasure Seeker
Contractor:	Wilhelm Wilhelmsen
Mudlogging Company:	Exploration Logging
Logging Company:	Schlumberger
Geologists:	K. Kalgraff, K. Kjøsnes, O. Giskeødegaard, A. G. Lauvås, L. Beckman, K. Rønning, K. Kjærsrud, D. Aga, B. E. Knutsen
Prepared by:	P. A. Midtkandal, K. Kjærsrud, D. Tønseth
Date:	March, 1986.

Casing Records:

30"	at	216 m
20"	at	893 m
13 3/8"	at	1908 m

Comments:

In order to avoid a possible shallow gas zone the well was deviated from a kick off point at 1000 m. The T.D. location is approximately 43 m north and 227 m west of the wellhead location.

Logs Run

ISF/LSS/GR/SP	LDL/GR/CAL	SHDT	RFT	CST	VSP
1A. 126–882.4 m 2B. 894–1910 m 3C. 1908–2985 m	2A. 894–1912.5 m	3A. 1908–2985 m	3A. 2238.5–2940 m 3B. 2238.6 m	3A. 2522–2979 m 3B. 2080–2502 m	1. 128–2985 m
	LDL/CNL/CAL/GR	CBL/VDL			
	3B. 1908–2985 m	3A. 125–1908 m			
DLL/MSFL/GR/CAL	NGT				
3A. 2220–2645 m	3A 2220–2979 m				

Legend

CONGLOMERATE	SHALE	CHALK	ANHYDRITE	SANDY VERY SANDY SANDY SLIGHTLY	C Carbonaceous mat.
SAND/SANDSTONE	LIMESTONE	MARL/MARLSTONE	SALT	SILTY VERY SILTY SILTY SLIGHTLY	△ Chert
SILT/SILTSTONE	DOLOMITE	COAL/LIGNITE	GYPSUM	ARGILLACEOUS	✳ Glauconite
CLAY	DOLOMITIC LIMESTONE	☐	TUFF	☐	M Mica
CLAYSTONE	CALCAREOUS DOLOMITE	☐	IGNEOUS EXTR./INTR.	☐	□ Pyrite
					Macrofossils
					Macrofossils, frag
					Microfossils

Hydrocarbon Shows

◐ Stain

◒ Fluorecence

◔ Visible Cut

◑ Fluorecence Cut

☼ Gas Shows

Casing Shoe ◢

Deviation $\overset{\wedge}{2°}$

Dipmeter results 3°

Two way time from Velocity survey (depth m MSL)

3603 m RKB
–3578 m MSL
2.900S

Core Interval ▮

(No recovery) ☒

Side Wall Core →

(No recovery) ⇾

Perforated Interval

Cement

Plug

Interval

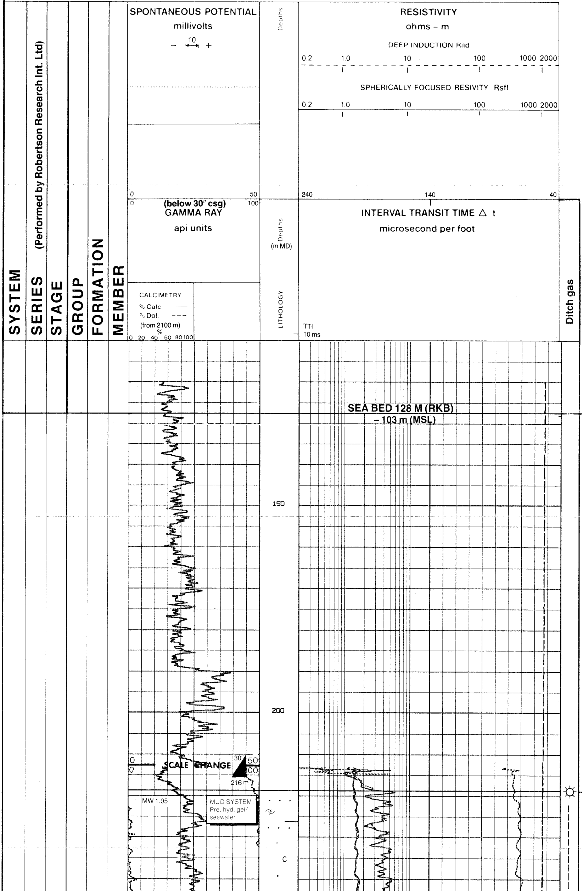
DST

Ⅱ ← Through casing

② ← Open hole

Re - Run

① RFT/FIT



Lithological descriptions

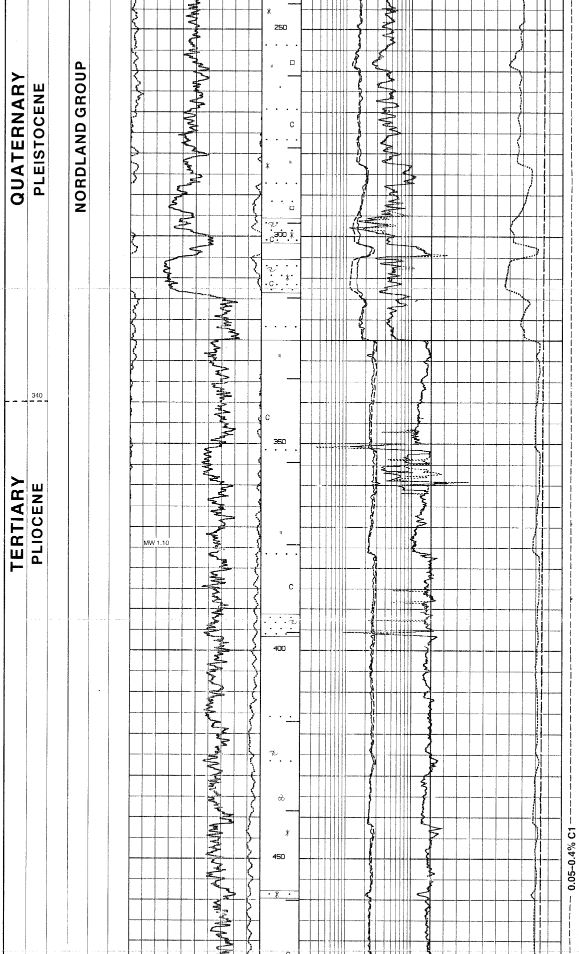
128 – 219 m

Drilled with returns to seabed

219 – 325 m

Cly: olv gy - olv blk, sft, stky, slty, sdy, carb, occ shell frags, forams, loc tr pyr, calc - non calc.

Sd: clr, rr milky Qtz, f - crs, pred m, loc pbly, lse, ang - rnd, tr mica, tr glau, rock frags, shell frags, forams, mod - poor srtd.

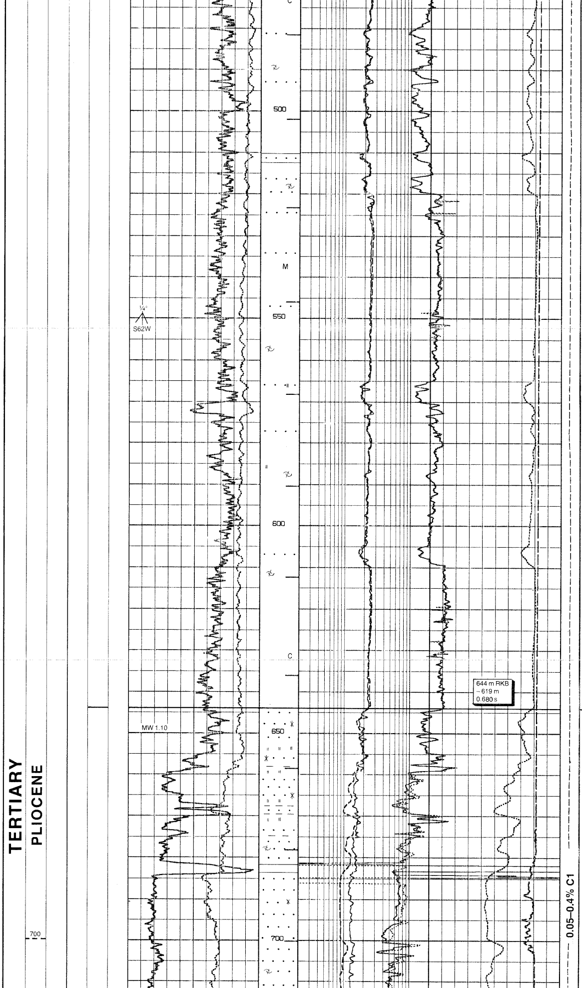


325 – 644 m

Cly: pred olv gy, loc m dk gy, olv blk, sft, stky, slty, sdy, carb, tr mica.

Sd: clr Qtz, f - crs, lse, subang - rnd, tr rock frags, pr - loc w srtd.

Tr **Shell frags, Glau, Lig.**



644 – 815 m

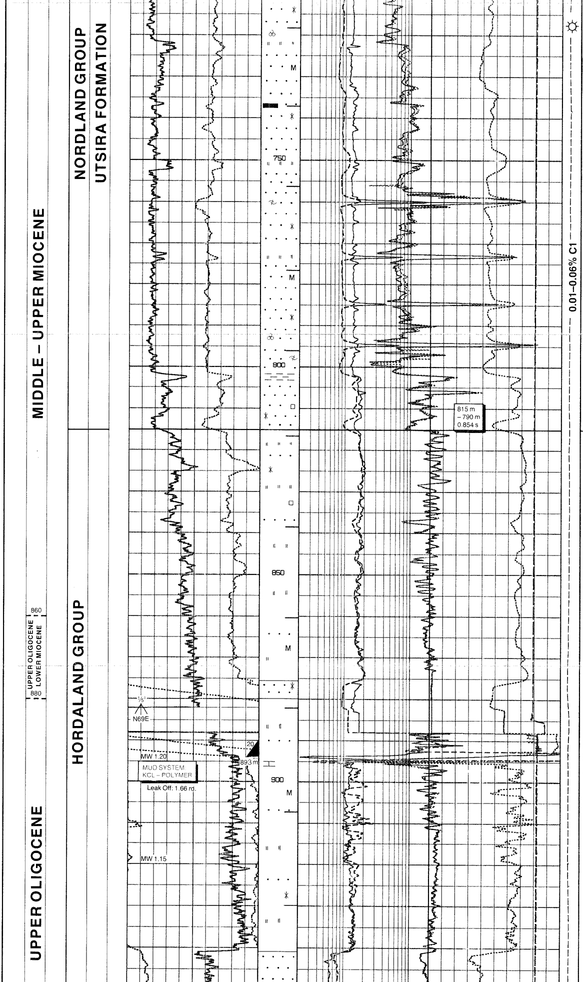
Sd: clr - milky Qtz, vf - crs, pred m - crs, lse, subang - subrnd, glau, mica, shell frags, tr pyr, mod srtd.

Sst: grn gy - olv gy, occ wh, clr - milky Qtz, vf, fri - hd, subrnd, slty, calc - v calc, sl arg, no vis por.

Slst: olv gy - dusky yel brn, olv blk, sft - fri, occ hd, sdy vf, v arg, v glau, tr pyr, non - v calc.

Abn **Shell frags, Glau.**

Tr **Lig,** brn blk, hd, brit.



815 – 1013 m

Cly: dusky yel brn - olv gy, sft - firm, loc stky, loc blky, slty, sdy, micromic, loc carb, loc glau, loc micropyr, calc - non calc.

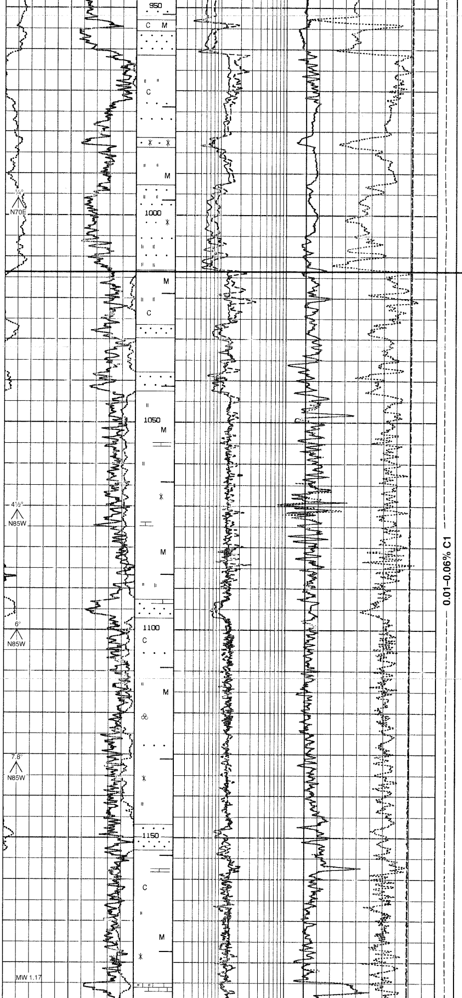
Sd: clr - milky Qtz, f - m, occ crs, pred m, lse, subrnd, loc rnd, tr mica, tr glau, poor - mod srtd.

Tr **Sst:** dk gy, pinkish gy, clr - milky Qtz, vf - crs, lse - mod hd, subang - rnd, gen calc cmt, tr glau.

Tr **Lst:** pinkish gy, mod hd, tr glau, tr pyr, microxln.

Slst: olv gy - dusky yel brn, hd, fri, v arg, sdy, glau, tr pyr, v calc.

UPPER OLIGOCENE



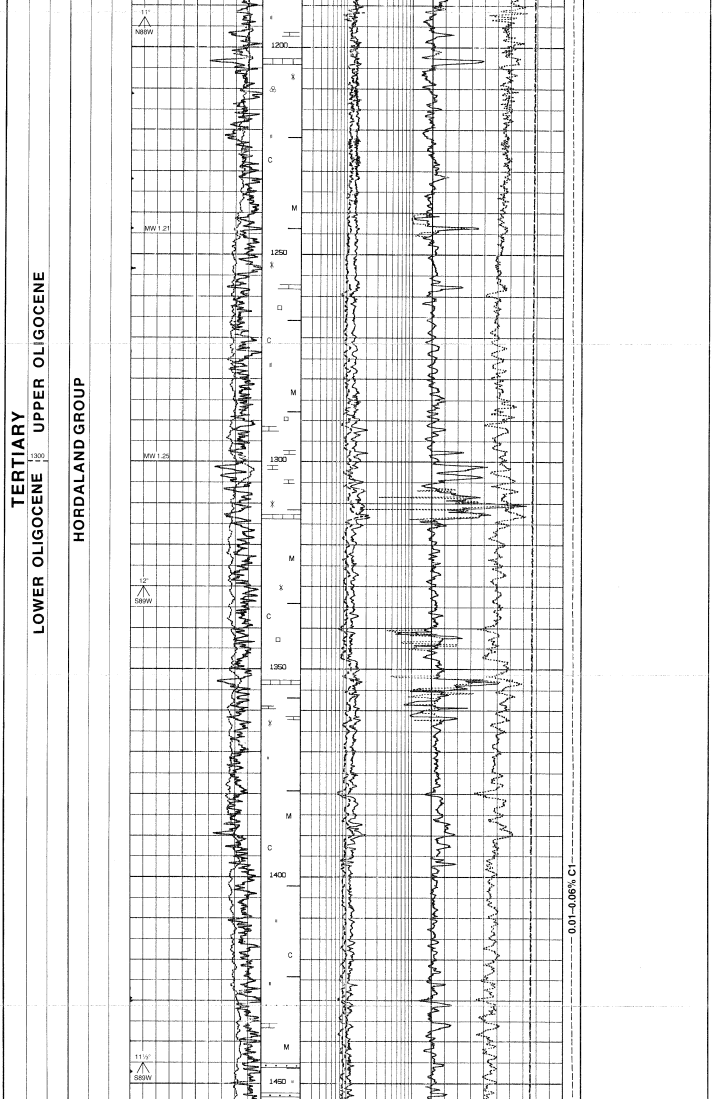
1013 – 1602 m

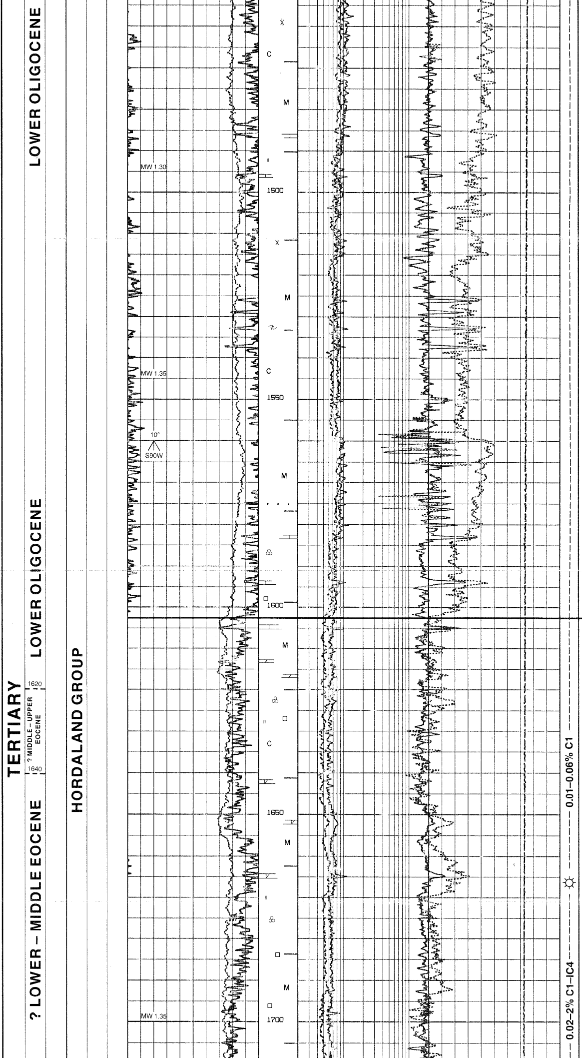
Clyst: dusky yel brn - olv gy, loc olv blk, firm - sft, blky, loc stky, slty, loc sdy, micromic, tr carb, tr glau, tr micropyr, calc - non calc.

Lst: wh, lt gy - olv gy, sft - mod hd, blky, arg, microxln, occ xln.

Tr **Sd:** clr - milky Qtz, vf - m, occ crs, lse, subang - rnd, mod srtd.

Tr **Sst:** dusky yel brn, also lt gy - m dk gy, clr Qtz, vf - m, firm - mod hd, loc fri, subang - subrnd, slty, micromic, tr glau, tr carb, tr micropyr, calc - kaol cmt, poor - mod srtd, no vis por.



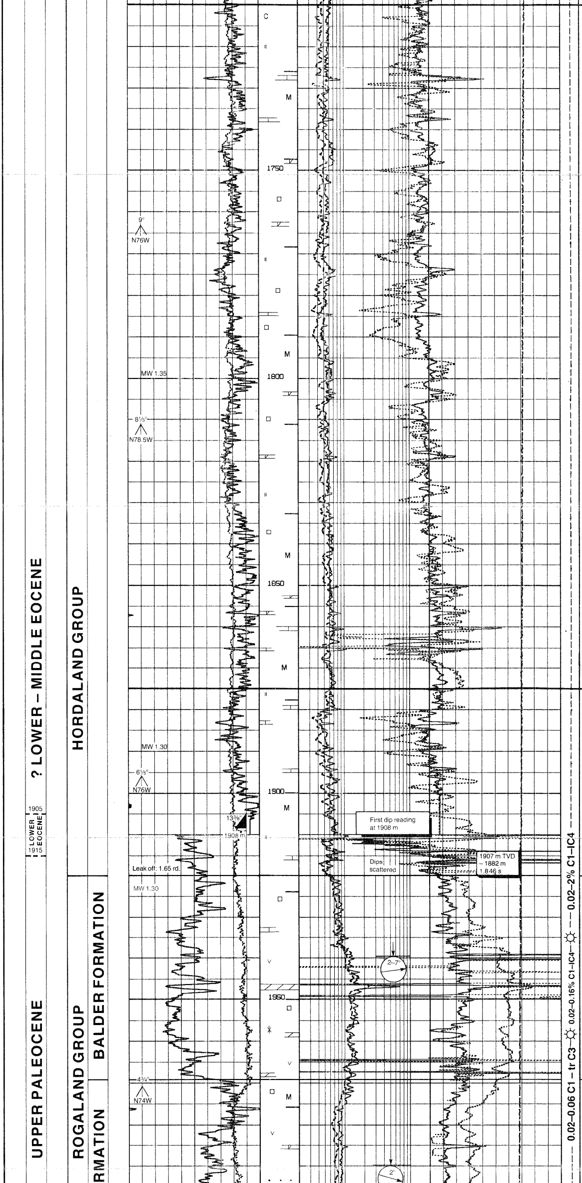


1602 – 1710 m

Clyst: dusky yel brn - brn blk, dk grn gy - grn blk, firm, occ sft, blky, loc subfis, tr slty, rr tr sdy, sl carb, micromic, rr tr micropyr, non calc.

Tr **Lst:** lt olv gy - m gy, tr wh, mod hd, blky, arg, microxln.

Tr **Dol:** dk yel brn - dusky yel brn - mod brn, hd, blky, microxln.



1710 – 1875 m

Clyst: dk grn gy - grn blk, olv blk, also dusky blu grn - gy grn, firm, occ sft, occ mod hd, blky, occ subfis, occ sl slty, sl micromic, tr pyr, non calc.

Tr **Lst:** lt gy, sft, cryptoxln.

Tr **Dol:** dk yel brn - pale yel brn, pred mod hd, occ firm, blky, microxln.

1875 – 1920 m

Clyst: dusky blu grn - dk grn gy, also mod brn - rd brn, loc v dusky rd, firm - mod hd, occ sft, blky, occ subfis, v rr slty, occ sl micromic, rr micropyr, non - sl calc.

Tr **Lst:** lt gy - pale yel brn, sft - mod hd, pt arg, cryptoxln.

(1907 m TVD)

1920 – 1969 m

Clyst: m dk - dk gy, also brn blk, firm - mod hd, blky, occ subfis, rr micromic, non calc.

Tr **Dol:** dusky yel brn - mod brn, hd - v hd, arg.

Tr **Lst:** wh - v lt gy - m dk gy, hd - v hd, micromic, arg, xln, rr weak shows.

Tr **Tuff:** m - dk gy w/wh spec, vf sdy text, sft - mod hd, non calc. Also rr gy grn w/blk and wh spec.

(1956 m TVD)

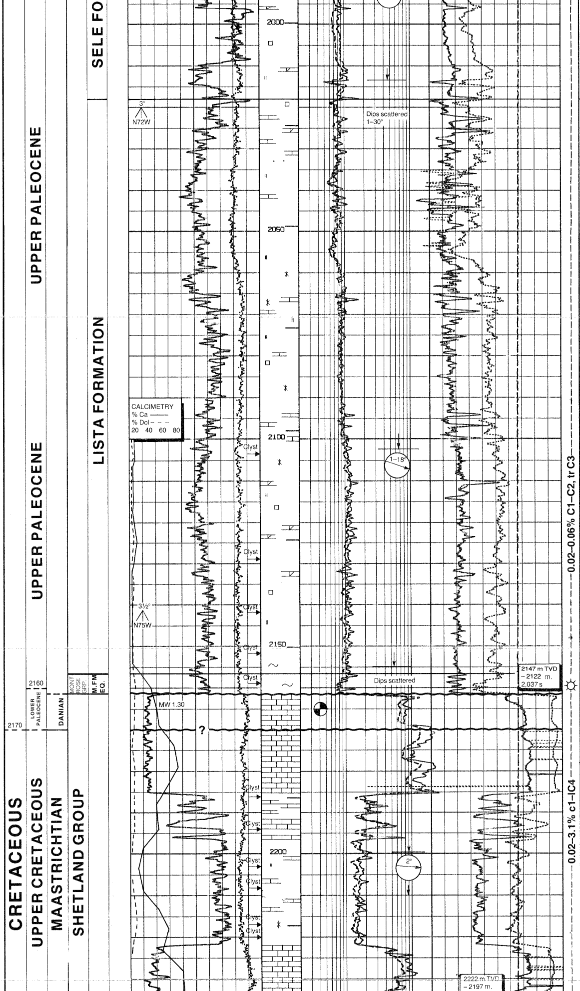
1969 – 2018 m

Clyst: m dk - dk gy, m lt - m gy, occ grdg olv blk, firm - sft, occ mod hd, occ stky, blky - subfis, non - sl slty, rr carb, rr micromic, non calc.

Rr **Sst:** lt gy, clr Qtz, vf - slty, calc cmt.

Tr **Lst/Dol** a/a.

Tr **Tuff** a/a.



(2005 m TVD)

2018 – 2157 m

Clyst: m gy - m dk gy, also grn gy - dk grn, gy, sft - firm, occ stky, sl slty, loc glau, non - occ sl calc, loc v calc grdg mrl.

Lst: wh - v lt gy, firm - hd, microxln.

Lst/Dol: m gy, pale - dk yel brn, mod hd - v hd, arg, microxln.

Tr **Sd:** Clr Qtz, f, subang.

(2143 m TVD)

2157 – 2161 m

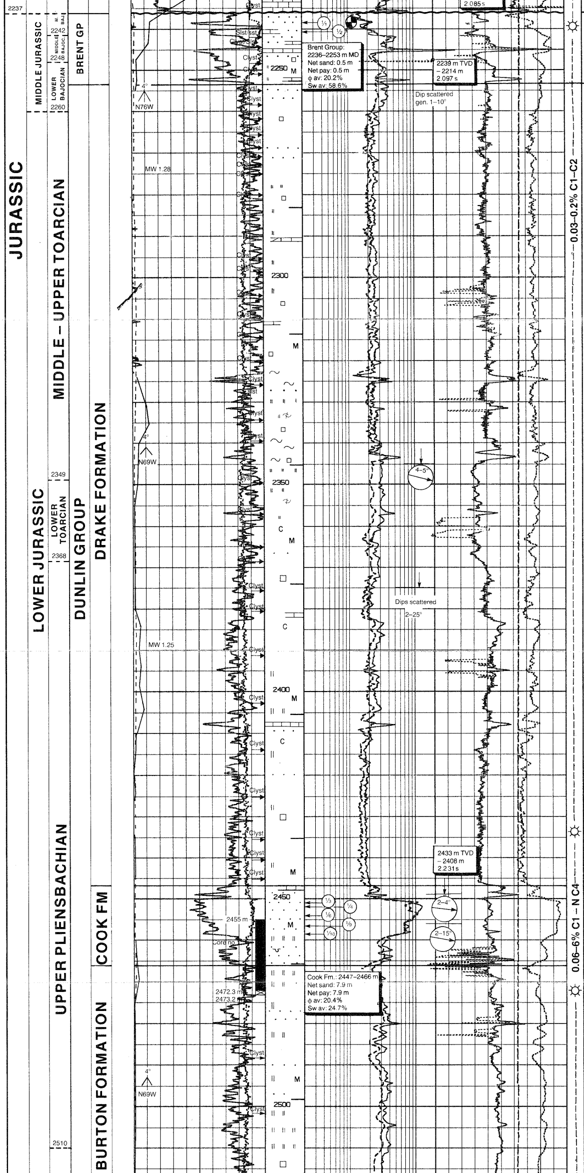
Clyst: gen a/a bcm pred m gy, v calc grdg **Mrl.**

(2147 m TVD)

2161 – 2236 m

Lst: pale yel brn, wh - v lt gy, mod hd - hd, occ v hd, blky, rr glau, micro - cryptoxln.
Show on **lst: fair, yel orn flu, no slo strmg bl wh cut flu, no vis cut, gd slo - fast strmg crsh cut flu, pl yel flu resd.**

Clyst: m dk gy - olv gy, sft - mod hd, pred subfis, slty, micromic, tr glau calc.



(2222 m TVD)

2236 – 2253 m

Sst: Clr - mlky Qtz, vf - crs, pred m, lse - fri, subang - subrnd, i.p. silic cmt, mod srtd.

Shows on tr sst: v veak dull yel dir flu, v weak inst strmg wh yel flu cut, no vis cut.

(2239 m TVD)

2253 – 2448 m

Clyst: dusky yel brn, occ brn gy, gen sft, stky, occ frm, subfis, micromic, carb, gen slty, non - sl calc.

Strgs of **Lst:** m dk gy, lt gy, mod hd, in pt v arg grdg **Mrl,** loc sucr, gen microxln.

Strgs of **Sst:** clr - milky Qtz, f - v crs, pred m, lse, subang, pyr, mod srtd.

Marl: pl olv - lt gy, bcm sl brnsh olv gy, fri - sft blky - crumb, lam, sl slty, loc tr Shell frags.

For details on cores see core descriptions below.

(2433 m TVD)

2447 – 2466 m

Sst: lt - m olv gy, lt brn gy Qtz, transp - transl, lse, vf - f, mod - w srtd, subang - rnd occ w rnd, non calc, sl mica.

Slst/Sh: olv gy - olv blk, fri hd, vf sdy in lam, mica, pyr, sl calc.

Show on Sst on core: Gjcl - fair petr odour, no dir flu, v wk slo strmg mlky wh flu cut, no vis cut, no flu resd.

(2452 m TVD)

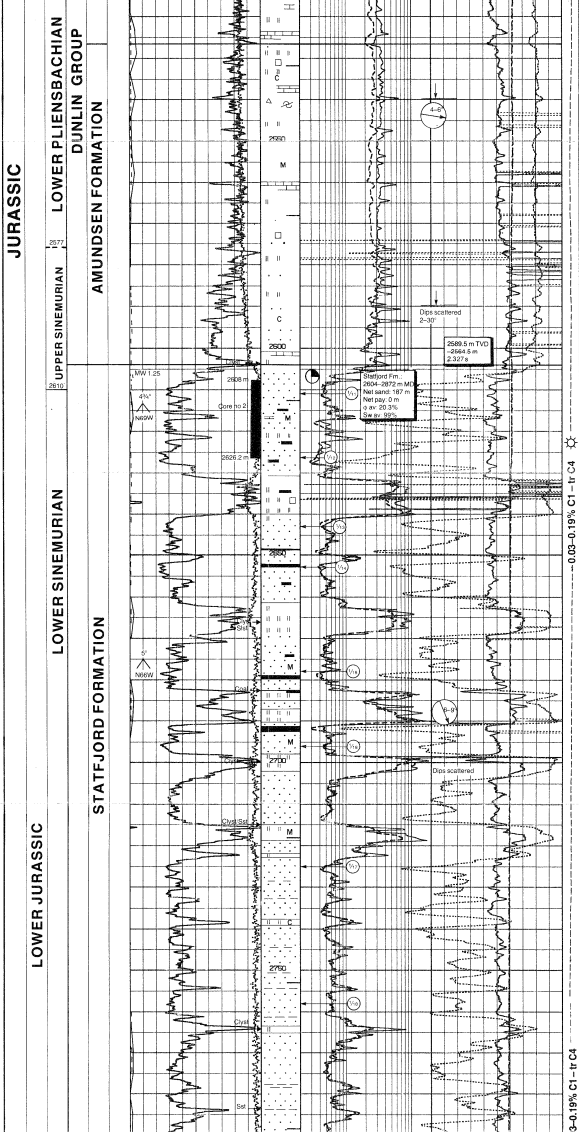
2466 – 2527 m

Clyst: Olv gy - dusky yel brn, sft - frm, blky - subfis, micromic, carb, tr pyr, gen sl calc, loc v slty grd slst, occ grd v/sst.

Slst: lt olv gy, fri - crumb, lam, v arg, micromic, non - sl calc.

Sst: lt - m gy, olv gy - brn gy, vf r occ m, fri - mod hd, subang - rnd, mod srtd, tr mica, carb, glau, calc cmt, no vis por.

Lst: gy wh - lt grn gy, sft, crumbly, arg, slty, mica.



2512.5 m TVD)

2527 – 2604 m

Clyst: olv gy, dusky yel brn, dk gy, brn blk, sft - mod hd, fis - blky, micromic, loc v mica, carb, slty, sl calc.

Lst: wh, m lt gy, sft - lse, calc xln, arg, mica slty.

Slst: brn gy - olv gy, m dk gy, mod hd, fri, lam - blky, in pt v mica, carb, arg, loc sdy, gen sl calc - calc.

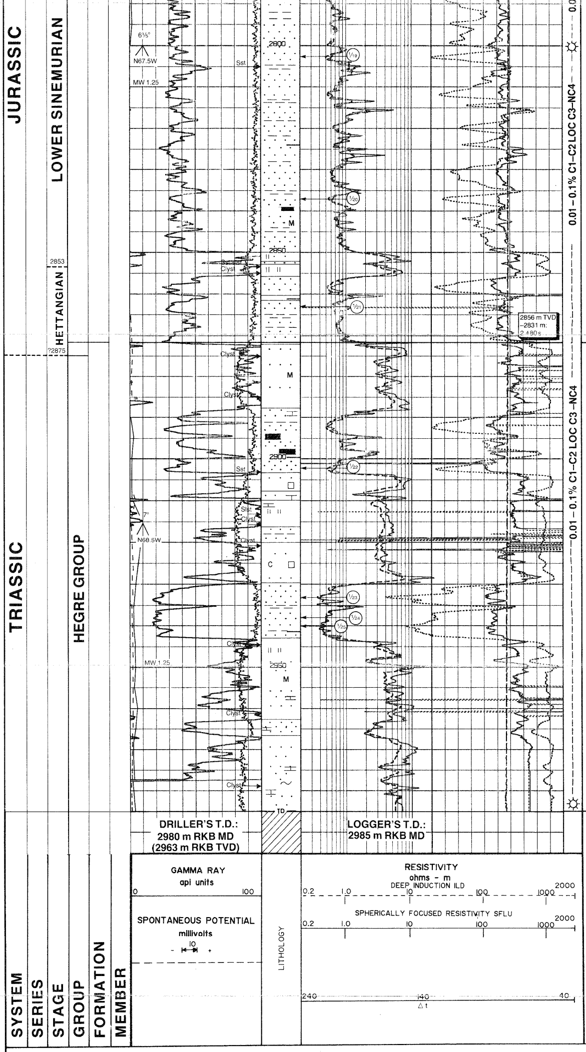
2589.5 m TVD)

2604 – 2872

Sst: lt gy - lt olv gy, loc lt brn gy - brn gy stn, clr mlky Qtz, f - crs pred m, fri - lse, ang - subrnd, gen sl calc cmt, coal frags, mic, loc arg - slty, pr - mod srtd, pr - mod - gd vis por.
Dull brn dir flu, no flu cut, no vis cut.

Clyst/Slst: lt bl gy - lt grn gy - dusky olv gy, sft - frm ang - blky, sl - v slty, non calc, micromic.

Coaly sh: dk grn gy, brn blk, frm, ang - crumb, also nod, v carb grdg coal, non calc, loc sl sdy.



(2856 m TVD)

2872 – 2985 m

Clyst: multicol lt gy, dusky yel brn, red brn, mod brn, dusky red gy, gy blk, sft - mod hd, fis - blky, sl micromic, crb, slty, gen non calc.

Sst: v lt gy - clr milky Qtz, f - v crs, pred m, lse, ang - subrnd, loc calc cmt, sl carb, mica, loc pyr, pr - mod srtd.

Lst: wh, v lt gy, gy red, sft - mod hd, blky, loc brit, in pt v arg, micro xln - xln.

Coal: blk, brn blk, brit, blky - plty, shiny.

(2968 m TVD)

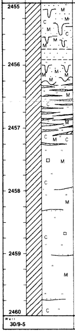
2985 m T.D.

CORE REPORTS

Norsk Hydro

Well no 30/9-5	Core report		Core no s 1
Interval 2455-2460 m	Area Norwegian North Sea	Cut 2441-2459.2m TVD 2455-2473.2m	Date 6.7.85
Scale	Well R.K.B. 25 m	Recovery 2455-2472.31 m 95.1%	Geologist Aga/Kalgraff

Depth scale	Re-covery	Lithological column	Depths	Lithological descriptions	Shows



2456.23 m
Sealed sample
2456.45 m

Sst: pred lt brn gy, lt olv gy, clr-v lt gy Qtz, vf-f, fri-mod hd, subang-rnd, also ang, carb, v slty, sl calc cmt, bioturb, mod srtd, fair vis por
Lent-int lam **Clyst** dusky olv gy, dk grn gy pred frm, also mod hd, v mica, v carb

Gd pet odour, no dir flu, v wkv slow strmg milky wh crush cut

Sst a/a in len and flazer bd

Gd pet odour, no dir flu wk fast [illegible]

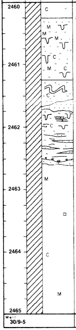
Sh/Slst: olv gy-olv blk, fri-hd, ang, blky, lam, loc **Sst** lam, v mica, tr pyr, carb, sl calc

Well	Core report	Core no s
30/9-5	1 of 4	1

Norsk Hydro

Well no 30/9-5	Core report		Core no s 1
Interval 2460-2465 m	Area Norwegian North Sea	Cut 2441-2459.2m TVD 2455-2473.2m	Date 6.7.85
Scale	Well R.K.B. 25 m	Recovery 2455-2472.2 m 95.1%	Geologist Aga/Kalgraff

Depth scale	Re-covery	Lithological column	Depths	Lithological descriptions	Shows



2460.25 m
2461.25 m
2462.5 m
2462.6 m

Slst/Sst: olv gy - olv blk, fri-hd, gen v sdy grdg **Sst:** vf subang-subrnd, carb, mica, bioturb, contd len lam, w cgl lag at base, sl calc also sl sil, clyst len, pr Sst no vis por

Fair pet odour, no dir flu, v wk slow strmg wh yel flu cut, no vis cut, no flu resd

Sh: olv gy, frm, fis, hom lam, micromic, carb, tr pyr, non - v sl calc

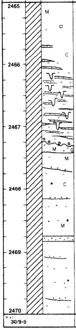
No show

Well	Core report	Core no s
30/9-5	2 of 4	1

Norsk Hydro

Well no 30/9-5	Core report		Core no s 1
Interval 2465-2470 m	Area Norwegian North Sea	Cut 2441-2459.2m TVD 2455-2473.2m	Date 6.7.85
Scale	Well R.K.B. 25 m	Recovery 2455-2472.2 m 95.1%	Geologist Aga/Kalgraff

Depth scale	Re-covery	Lithological column	Depths	Lithological descriptions	Shows



Sh: olv gy, frm, fis, hom lam, micromic, carb, tr pyr, non - v sl calc

No show

Gen **Sh** a/a w/ thin len of vf **Sst**.

Bioturb

No show

2467.25
2467.35

Erosional cgl lag
Clyst: lt olv gy, frm-mod hd, blky, v slty grdg
Slst, calc-v calc

Sh/Slst: olv gy-olv blk, fri-hd, blky, lam, loc **Sst** lam, v mica, tr pyr, carb, loc v arg, olv blk-olv gy, sl calc

2468.75
2468.8

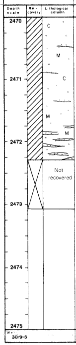
No show

Well	Core report	Core no s
30/9-5	3 of 4	1

Norsk Hydro

Well no 30/9-5	Core report		Core no s 1
Interval 2470-2473 m	Area Norwegian North Sea	Cut 2441-2459.2m 2455-2473.2m	Date 6.7.85
Scale	Well R.K.B. 25 m	Recovery 2455-2472.2 m 95.1%	Geologist Aga/Kalgraff

Depth scale	Re-covery	Lithological column	Depths	Lithological descriptions	Shows



Sh/Slst: olv gy-olv blk, fri-hd, blky, lam, loc **Sst** lam, incr towards base core, mica, tr pyr, sl calc

No show

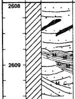
2472.31
2473.2

Well	Core report	Core no s
30/9-5	4 of 4	1

Norsk Hydro

Well no 30/9-5	Core report		Core no s 2
Interval 2608-2613 m	Area Norwegian North Sea	Cut 2593.4-2611.6 m TVD 2608-2626.2 m	Date 9.7.85
Scale	Well R.K.B. 25 m	Recovery 2608-2626.2 m 100%	Geologist Kalgraff/Knudsen

Depth scale	Re-covery	Lithological column	Depths	Lithological descriptions	Shows



Sst: lt gy, clr-m lt gy Qtz, f-m, pred m, fri-lse, ang-subang, sl calc, mica, carb, pr-mod srtd, coal frags, poss trough x-strat, fair vis por

No show

Sst: lt gy, clr-lt gy Qtz, f, fri-lse, subang-subrnd, mica, carb, kao, sl calc, mod srtd, no vis por

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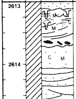
Norsk Hydro

Well no 30/9-5	Core report		Core no s 2
Interval 2613-2618 m	Area Norwegian North Sea	Cut 2593.4-2611.6 m TVD 2608-2626.2 m	Date 9.7.85
Scale	Well R.K.B. 25 m	Recovery 2608-2626.2 m 100%	Geologist Kalgraff/Knudsen

Depth scale	Re-covery	Lithological column	Depths	Lithological descriptions	Shows



2613.20
2613.7

Sst: lt olv gy, clr-m dk gy Qtz, f-crs, pred m, fri-lse, ang-subrnd, mica, carb, kao cmt, loc sl calc cmt, mod srtd, pr vis por
Ripple lam, bioturb
(Cruziana?)

No show

Sh/Slst: brn blk, mod hd-hd, fis, lam, v mica, carb, v slty, grdg **Slst** also vf sdy, non calc

2614.05
Sealed sample
2614.27

Sst: m gy, clr-lt gy Qtz, f-m, fri-lse, subang, mica, tr carb, mod srtd (bimodal), fair vis por

Depth scale	Depths	Lithological descriptions	Shows
		Sst: pred m a/a	
2610		**Sst:** f. a/a	
			No show
	2610.51 – Sealed sample – 2610.75	**Sst:** pred m a/a w/trough x-strat	
2611			
2612		**Sst:** m lt gy, clr-v lt gyQtz, vf-f, subang-subrnd, tr mica, carb, mod srtd, fair vis por	
2613		**Sst:** brn gy, clr-lt gy-milky Qtz, m-v crs, pred crs, fri-lse, ang-subang, sl calc, mica, carb, pr srtd	No show

Well	Core report	Core nos
30/9-5	1 of 4	2

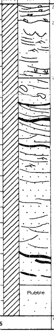
Depth scale	Depths	Lithological descriptions	Shows
2615		**Sst:** lt gy-clr-milky Qtz, m, fri-lse, ang, subrnd tr mica, kao, mod srtd, trough x-strat, coal frags, at base intraformational cgl	
		MPS 8,4,4 cm	
2616		MPS 8,2,3,3 cm	
		MPS 6,2 cm	No show
	2616.7	MPS 3,1.5, 1.5 cm	
		Sst. m gy, clr Qtz, f-m, fri-lse, subang-subrnd, v mica, carb, v kao, mod srtd, no vis por	
2617			
	2617.25	Ripple lam	
	2617.62 – Sealed sample – 2617.91	**Sst:** lt gy-clr-milky Qtz, m, tr vf and crs, fri-lse, ang-subrnd, tr mica, tr kao in patches, mod srtd, gd vis por. Cgl	
2618			

Well	Core report	Core nos
30/9-5	2 of 4	2

Norsk Hydro

Well no		Core nos
30/9-5	Core report	2

Interval	Area	Cut	Date
2618-2623 m	Norwegian North Sea	2593.4-2611.6 m TVD 2608-2626.2 m	9.7.85
Scale	**Well R.K.B.**	**Recovery**	**Geologist**
	25 m	2608-2626.2 m 100%	Kalgraff/Knudsen



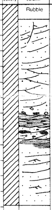
Depth scale	Depths	Lithological descriptions	Shows
2618	2618.07	**Sst:** v lt gy, clr Qtz, vf-m, fri-lse, ang-subrnd, tr mica, rr tr carb, kao cmt, mod srtd, no vis por	
	2618.3		No show
		Ripple lam & flazer at top	
		Sst: brn gy, clr-milky Qtz, vf-f, fri, v mica, v carb in lam, mod srtd, no vis por	
2619	2619.2		
		Sst: lt brn gy, clr-m lt gy Qtz, f-v crs, gen crs, fri-lse, ang-subrnd, tr mica, tr carb, tr calc kao, pr-mod srtd, fair vis por Trough x-strat w/intraform cg	
2620		**Sst:** m-crs, tr f, else a/a Poss trough x-strat.	
		Sst: vf-crs, pred m else a/a	
2621		Coal ptgs	
			No show
2622	2622.04 – Sealed sample – 2622.38	**Sst:** lt olv gy, clr-lt gy-tr milky Qtz, f-crs, pred m-crs, fri-lse, ang-subrnd, tr mica, sl kao, non calc, mod srtd, fair vis por Coal and intraform cly clasts	
	2622.4		
2623			

Well	Core report	Core nos
30/9-5	3 of 4	2

Norsk Hydro

Well no		Core nos
30/9-5	Core report	2

Interval	Area	Cut	Date
2623-2626.2 m	Norwegian North Sea	2593.4-2611.6 m TVD 2608-2626.2 m	9.7.85
Scale	**Well R.K.B.**	**Recovery**	**Geologist**
	25 m	2608-2626.2 m 100%	Kalgraff/Knudsen



Depth scale	Depths	Lithological descriptions	Shows
2623			
		Sst: v lt gy, clr - lt gy Qtz, f-m, pred m, fr-lse, tr mica, tr carb, kao cmt, non calc, poss trough x-strat, microfault mod-w srtd, fair vis por	No show
2624			
	2624.75	**Sst/Cgl:** v lt gy-lt olv gy, clr Qtz, vf-v crs, pred crs, fri-lse, mica, kao cmt, sl silic, tr carb, tr Coal frags, cly frags, pr srtd, fair vis por	
	2624.9	**Sst:** brn gy, dusky yel brn, clr-milky Qtz, vf-f, mod hd, v mica, v carb, lam w ripple lam, calc cmt, coal frgs, mod-pr srtd, no vis por	
2625	2625.1 – 2625.15 – Sealed sample – 2625.4		No show
2626		**Sst.** v lt gy-lt olv gy, clr-lt gy Qtz, gen f, fri-lse, subang-subrnd, n pt si calc, tr carb, sl kao, tr silic cmt, tr mica, ripple mod srtd, fair vis por	
	2626.2		
2627			
2628			

Well	Core report	Core nos
30/9-5	4 of 4	2

RFT RESULTS

RFT SAMPLES — WELL 30/9-5

SAMPLES ARE TAKEN IN THE COOK FM AND THE BRENT GP

SEGREGATED SAMPLE NO.1 AT 2452 MRKB (RUN NO 1) COOK FORMATION

	1ST CHAMBER	2ND CHAMBER
CHAMBER VOL., GAL :	2 3 4	1
FILLING TIME, MIN :	10	3.3
P CHAMBER, PSIG :	2120	
GAS VOL., SCF :	50.8	
OIL VOL., LITER :	0.3 cond.	–
OIL GRAVITY, API :	–	–
WATER FILT., LITER :	2.2	
WATER FILT., PPM CL. :	–	–
REMARKS :	Drained at rig floor.	Sealed and sent ashore for transfer

SEGREGATED SAMPLE NO 2 AT 2238 MRKB (RUN NO. 2) BRENT GROUP

	1ST CHAMBER	2ND CAMBER
CHAMBER VOL., GAL :	2 3 4	1
FILLING TIME, MIN :	11.5	–
P CHAMBER, PSIG :	2100	
GAS VOL., SCF :	40.8	
OIL VOL., LITER :	Traces of cond	–
OIL GRAVITY, API :	–	–
WATER FILT., LITER :	1.5	
WATER FILT., PPM CL :	–	
REMARKS :	Partial plugged flow line. Drained at rig floor.	Sealed and sent ashore for transfer.

RFT PRESSURES — WELL 30/9-5

RUN NO./ TEST No.	DEPTH MRKB	IHP PSIA	FP PSIA	FHP PSIA	REMARKS
3A /1	2238.5	4052.7	3345.1	4052.8	GOOD PERM.
/2	2240.5	4056.6	3348.0	4056.6	POOR PERM.
/3	2450.5	4434.2	3852.2	4434.4	MODERATE PERM.
/4	2452.0	4436.9	3852.3	4437.0	FAIRLY GOOD PERM.
/5	2454.0	4440.6	3852.7	-	LOST SEAL
/6	2454.0	4440.5	3852.7	4440.7	MODERATE PERM.
/7	2456.5	4445.2	4051.0	4445.2	LOST SEAL
/8	2456.5	4445.0	-	-	LOST SEAL
/9	2456.3	4445.1	3853.8	4445.0	LOW PERM.
/10	2458.2	4448.4	3855.0	4448.4	SUPERCHARGED
/11	2611.0	4722.9	3946.5	4722.4	GOOD PERM.
/12	2627.0	4750.4	3969.0	4750.9	GOOD PERM.
/13	2643.0	4781.0	3991.7	4781.3	GOOD PERM.
/14	2653.0	4800.4	4006.3	4800.7	GOOD PERM.
/15	2678.0	4845.8	4043.3	4845.9	GOOD PERM.
/16	2696.0	4876.9	4067.6	4877.0	GOOD PERM.
/17	2725.0	4929.3	4109.4	4929.3	GOOD PERM.
/18	2758.0	4987.1	4156.4	4987.2	MODERATE PERM.
/19	2802.0	5065.9	4220.4	5066.0	MODERATE PERM.
/20	2837.0	5126.7	4269.8	5126.8	MODERATE PERM.
/21	2863.0	5172.7	4307.4	5172.8	MODERATE PERM.
/22	2902.0	5241.9	4363.9	5241.9	MODERATE PERM.
/23	2933.0	5296.6	4407.4	5296.0	GOOD PERM.
/24	2938.0	5304.2	4414.0	5304.4	GOOD PERM.
/25	2940.0	5308.0	4416.8	5308.0	GOOD PERM.
/26	2452.0	4442.5	3853.1		SEGREGATED SAMPLES
3B /1	2238.5				SEGREGATED SAMPLES

1. All pressure readings are from HP-gauge, i.e. temperature corrected.

2. IHP: Initial Hydrostatic Pressure
   FP: Formation Pressure
   FHP: Final Hydrostatic Pressure

3. Max Recorded Downhole Temperature: 222°F (106.8°C)