Final Well Report

34/7-31 / 31 A

PL 089

Title: WELL 34/7-31 / -31 A
FINAL WELL REPORT
PL 089

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PREFACE

The licensees' percentage share of the block is as follows:

Norsk Hydro (operator)	16.1 %
Statoil/SDØE	55 %
Idemitsu Petroleum Norge	9,6 %
RWE-DEA	2,8 %
Total - Fina - Elf	6,6 %
EXXON Mobil Norge	10,6 %

The well was drilled by Norsk Hydro ASA., on behalf of the group, during March- April2001 (see Location Map, page 3).

All depths in this report are mMD RKB unless otherwise stated.

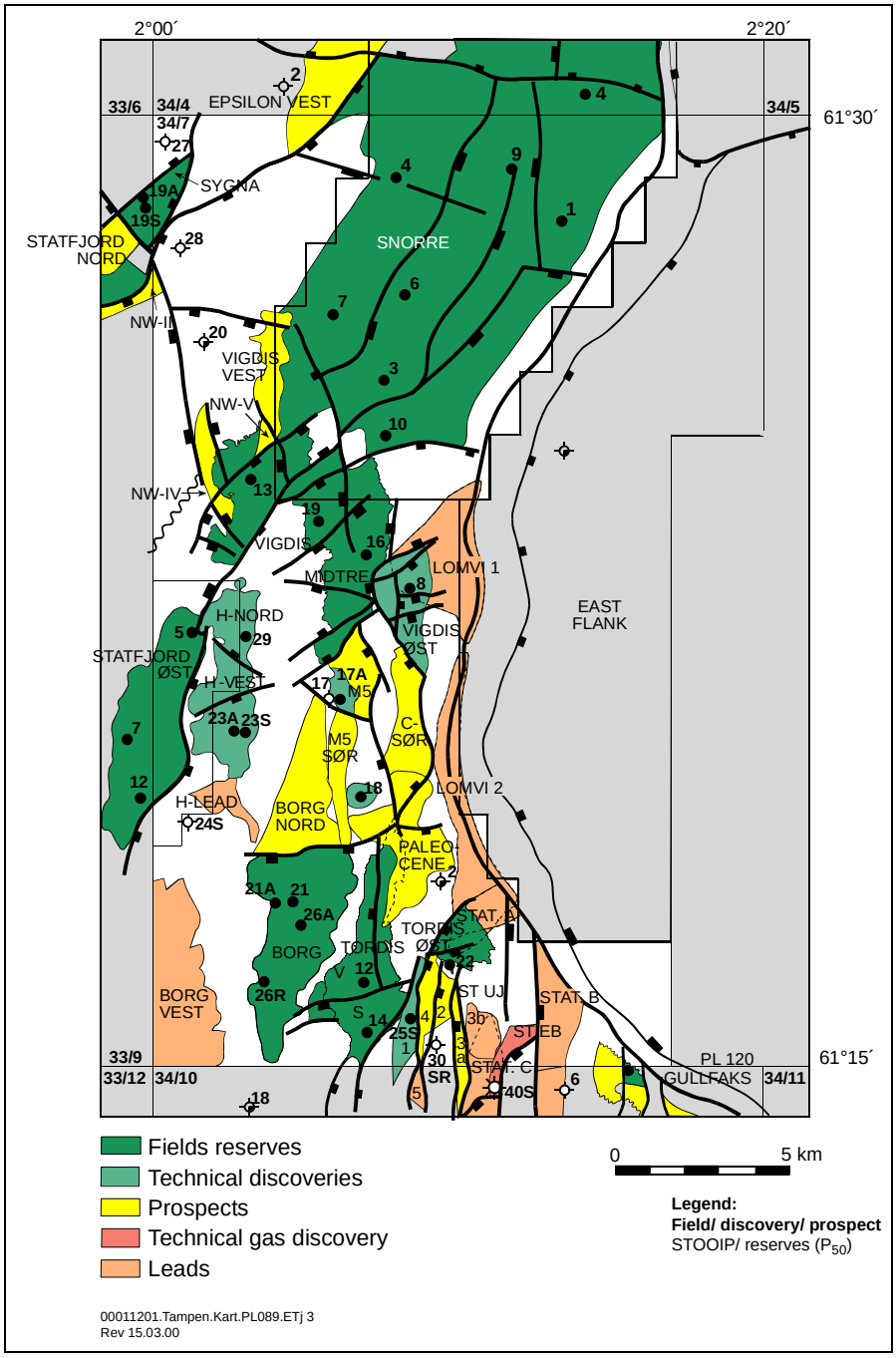

Figure 1. Location Map.

SUMMARY OF WELL DATA	
LOCATION:	61° 18' 37.69"N 02° 03' 59.81"E 6 797 888.5 mN 450 009.2 mE ED 50, UTM Zone 31, CM 03°E
OPERATOR: RIG: CONTRACTOR:	Norsk Hydro ASA Scarabeo 6 Saipem
RKB ELEVATION (to MSL): WATER DEPTH (MSL):	26 m 207 m
START OF OPERATIONS: WELL SPUDDED: WELL RESPUDDED: -31 : REACHED TD ON: WELL SIDETRACKED: -31 A: REACHED TD ON: END OPERATIONS (OFF COST): STATUS: FORMATION AT TD:	28.02.2001 10.03.2001 14.03.2001 08.04.2001(Well -31) 13.04.2001(Well -31 A) 17.04.2001(Well -31 A) 25.04.2001 Permanently plugged and abandoned (-31) Tarbert Formation in the Brent Group (-31 A) Heather Formation in the Viking Group
TD DRILLER (mark): TD LOGGER (mRKB):	2650m MD (Well -31) 3454m MD (Well -31 A) Not available
DRILLING DEPTHS (-31): DRILLING DEPTHS (-31 A):	36" to 306 m 26" to 1144 m 17½" to 1785 m 8½" to 2650 m 12¼" to 1788 m 9 5/8" to 3454 m kicked off at 1802m.
CASING DEPTHS:	30" to 306 m 20" to 1144 m 13 3/8" to 1779 m

SECTION A

GEOLOGY

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APPENDICES

1 Objectives

The primary objective for well 34/7-31 is a delineation of the Borg Field.
The main objectives of the well were to prove sufficient volumes to be able to initiate an oil development o the Borg North segment, to identify thickness and quality of Upper Jurassic (Draupne Formation) Sandstone and improve seismic tie. The reserves will most probably be produced through the Vigdis Field installations.

Secondary objectives were to test the presence of Paleocene sand (Sele/Lista Formations) in a downflank position from well 34/7-18 were these sands were oilfilled. In addition, test whether lower Cretaceous sands, found oil filled in well 34/7-21, are present at 34/7-31 location.The well was to be drilled 50 m into the Brent Group which was expected to be water bearing at well location.

In case of encountering an oil filled sand thicker than 10 m TVD in the well, a sidetrack should be drilled, kicked off below the 13 3/8” casing. The purposes of the sidetrack 34/7-31 A were to map the extension of the Draupne reservoir sand to optimise the position of a later producer in the Borg North structure, and to improve the reservoir model and calculations of in place volumes (STOOIP).

2 Results

2.1 34/7-31 A

Operations on the side-track 34/7-31 A started the 13.04.01, and the well was kicked off from below the 13 3/8" shoe at 1802 m. The well was drilled and steered horizontally through the reservoir section using Schlumberger/Anadrill's rotating assembly the PowerDrive. The horisontal section includes approx. 100mMD of good quality sand of the the Draupne reservoir and 100mMD of less quality sand. The well was drilled successfully to TD at 3454m MD/2355.8m TVD, in the Shetland Gp, reached the 17th of April 01. A total of 8 days were spent on the sidetrack compared to 14 days planned (14 days budget to a TD of 2550mMD).

The objectives of the well were met as the well delineated the reservoir towards North-East.

The main results include:
Locate the eastern limit of sand and identify location for an optimal position for an oil producer.

2.2 34/7-31

The rig Scarabeo 6 went on PL089 cost the 28th of February 2001. The well was spudded 10.March 2001 and reached a total depth of 2650m RKB in the Brent Gp/Tarbert Fomation on 8th of April 2001. The well was plugged back for sidetrack, and thereafter permanently plugged and abandoned as a discovery the 25th of April 2001. 48,5 days were spent in total on the 34/7-31 well as to 37 days planned.

All objectives of the well were met.

Paleocene
The objective where met by identifying sand in the Heimdal Fm.
Side wall cores where collected and formation pressure recorded though the sand was water filled.
Draupne
The objective with the Draupne prospect where met. An oil filled Draupne Fm. sand of 35 m TVD thickness were logged and cored.
Brent
The objective with the Brent prospect where met. The well gave tie to seismic interpretation of top Brent Gp.

The main results includes the following:
Paleocene
Information from the well are important for both sand distribution mapping and delineation of the oil discovery in the well 34/7-18 .
Draupne
The possibility to extend the Borg field towards North and to calibrate seismic interpretation together with an improved understanding of hydraulic communication has been the most important results.
Brent
The seismic tie where useful in adjusting interpretation of top Brent Gp. by approximate 40 ms shallower.

3 Biostratigraphy

The biostratigraphical evaluation of well 34/7-31 and sidetrack -31 A was carried out by Millennia Ltd. The analysed interval is 1170m - 2650m RKB for well 34/7-31, and 2815m - 3105m RKB for well 34/7-31A. Micropaleontological and palynological analyses have formed the basis for the biostratigraphical interpretation of the well. The analyses were carried out on cuttings, sidewall cores and core samples. The results are documented in the following reports: "Biostratigraphic analysis of the Norsk Hydro Well 34/7-31 (interval 1170m - 2650m) NOCS" and "Biostratigraphic analysis of the Norsk Hydro Well 34/7-31A (interval 2815m- 3105m) NOCS".

Tables 3.1, 3.2 and 3.3 on the following pages show a summarised lithostratigraphic sub-division and geochronological breakdown of 34/7-31 and sidetrack -31A. The interpretation is in accordance with Norsk Hydro's standard interpretation for the area and differs slightly from Millennia's interpretation.

Some of the major points from well 34/7-31 are summarised below:

- The youngest sediments analysed at 1170m are of Late Oligocene age

- The oldest sediments at 2650m (Tarbert Formation) are of Late Bathonian age

- The Rogaland Gp. (Balder Fm.) was penetrated at 1700m

- The Shetland Gp. was penetrated at 1891m

- A significant stratigraphic break separates the Rogaland Group with sediments of Late Paleocene age from the underlying Late Maastricthian Shetland Group. No Early Paleocene (Danian) were encountered. The Shetland Group ranges in age from Late Maastrichtian to Early Conacian.

- An unconformity was also identified between the Shetland Group and the Cromer Knoll Group below, where Early Coniacian sediments rest on sediments of Late Albian age. The Cromer Knoll Group represents a relatively condensed sequence which ranges in age from Late Albian to Late Valanginian.

- A minor stratigraphical break is indicated between the Cromer Knoll Group and the underlying Viking Group, with Late Valanginian sediments resting on Late Ryazanian strata of the Draupne Formation.

- The Draupne Sand is assigned to palynozones PJ8C, Pj9, PK1A and PK1B (Middle

Volgian to Late Ryazanian). The underlying Draupne shale are suggested to be of Volgian age.

- A major stratigraphic break separates the Draupne Formation from the underlying Heather Formation, were sediments of probably latest Kimmeridgian age rest on sediments of middle Callovian - Early Callovian age. The Heather Formation is assigned an age range from Middle Callovian into Late Bathonian.

- The Brent Group (Tarbert Formation) is assigned to the Late Bathonian.

Some of the major points in well 34/7-31A are summarised below:

- The youngest sediments analysed at 2815m (Cromer Knoll Group) is indicated to have a Barremian age.

- The sample at 2825m proved to have an age range of Hauterivian to Valanginian.

- The oldest sediments analysed at 3105m (Heather Formation) are of Middle - Early Callovian age.

- A minor stratigraphic break separates the the Cromer Knoll Group from the underlying Viking Group.

- A major stratigraphic break separates the Draupne Formation from the underlying Heather Formation where probably Volgian sediments rests on Middle - Early Callovian sediments.

LITHOSTRATIGRAPHICAL BREAKDOWN, WELL 34/7-31 & -31 A

GROUP	FORMATION	MEMBER	34/7-31 DEPTH mMDRKB	34/7-31 A DEPTH mMDRKB
Nordland			233	233
	Utsira		924	924
Hordaland			1062	1062
Rogaland	Balder		1700	1700
	Sele		1738	1738
	Lista		1806	1806
Shetland			1891	1892
Cromer Knoll			2460	2815
Viking	Draupne		2470	2830
Viking	Heather		2520	3105
Brent	Tarbert		2602	Not penetrated
Brent	Tarbert		2650 **TD**	-
Viking	Heather		-	3385
Cromer Knoll			-	3392
Shetland			-	3454 **TD**

Table 3.1 Lithostratigraphical breakdown of well 34/7-31 and 34/7-31 A

Geochronological breakdown well 34/7-31				
SAMPLE DEPTH m	PERIOD	AGE	Palyno Zone	Mikro Zone
1170	TERTIARY	Late Oligocene		MOP2B
1230		Early Oligocene	PT7B-2	
1330		Late Eocene		MEB-4
1430		Middle Eocene	PT5-3	
1670		Early Eocene	PT3B-2	
1710		earliest Eocene	PT3A-1	
1750		Late Paleocene	PJ2C	
		----UNCONFORMITY----		
1895	LATE CRETACEOUS	Late Maastrichtian		MK16
2020		Early Maastricthian	PK9B-1	
2160		Late Campanian - Middle Campa	PK8C-2	
2220		Middle Campanian	intra PK8B-2	
2280		Early Campanian	PK8B-1	
2430		Santonian - Early Coniacian	PK8A-3	
2455		Early Coniacian		MK9B
		----UNCONFORMITY----		
2460	EARLY CRETACEOUS	Late Albian - Late Barremian		MK6C
2465		Early Barremian - Hautervian		MK3B
2470		Late Valanginian		MK2B
		----UNCONFORMITY----		
2472		Late Ryazian	PK1C	
2477		Early Ryazian	PK1B	
2482	LATE JURASSIC	Late Volgian	PJ9	
2502,3		Middle Volgian	PJ8C	
2506		?Middle Volgian - Early Volgian	Unassigned	
2520		? Late Kimmeridgian		?MJ11B
		----UNCONFORMITY----		
2530	MIDDLE JURASSIC	Middle Callovian - Early Callovian		MJ9A
2540		Late Bathonian	PJ5B	
2650 TD				

Table. 3.2 Geochronologic breakdown well 34/7-31

Geochronological breakdown well 34/7-31A				
SAMPLE DEPTH m	PERIOD	AGE	Palyno Zone	Mikro Zone
2815	EARLY CRETACEOUS	Barremian		MK4
2825		Early Hautervian-Valanginian		MK2C
		----UNCONFORMITY----		
2830		Ryazian - Volgian	Unassigned	
2885	LATE JURASSIC	?Volgian	Unassigned	
		----UNCONFORMITY----		
3100	MIDDLE JURASSIC	Early Callovian	PJ5C	

Table. 3.3 Geochronologic breakdown well 34/7-31A

4 Litostratigraphy

All depths are in mMD RKB (RKB elevation is 26m).

This summary is compiled predominantly from ditch cuttings descriptions and formation tops from a combination of logs, ditch cuttings and biostratigraphic control. A total of 2 conventional cores were cut in the interval from 2472m to 2507m in the well, see Table 6.1.

Wireline and MWD logs were used to aid lithological interpretation and the placement of formation boundaries.

The well was drilled with returns to seabed from the seafloor at 233 m to 1150 m before setting 20" casing at 1144 m. Lithology interpretation through this interval is based on MWD logs and drilling parameters. The first drill cuttings samples were taken at 1170 m.
All Formation depths are wellsite estimates and are to be interpreted as preliminary until project revision.

4.1 34/7-31

4.1.1 Nordland Group (233 - 1062m)

233-247,5m

This interval is interpreted to be comprised of Sand with minor Silt.

Age: Quaternary

247,5-379m

This interval is interpreted to be comprised of clay.

Age: Undifferentiated Tertiary

379-400m

This interval is interpreted to be comprised of Sand with minor silty Clay

Age: Pliocene

400-924m

This interval is interpreted to be comprised of Clay with trace of Sand

Age: Pliocene - Miocene

924 - 1062m (Utsira Formation at 924 - 1062m)

This interval is interpreted to be comprised of Sand interbedded with Silt and Clay

Age: Miocene

4.1.2 Hordaland Group (1062-1700m)

1062 - 1150m

The interval is interpreted to be comprised of Siltstone/Claystone

1150-1230m

Sampling commenced at 1170m

This interval consists of Claystone.
CLAYSTONE:Dark yellow brown - olive gray, firm - soft, none calcareous, slightly silty - very fine sandy, trace black speckled, trace sponge spicules, Trace Mica, Trace micromicaceous, rare Glauconite

Age:Oligocene

1230 -1301m

This interval consists of Claystones with minor Sandstone layers.

SANDSTONE: clear - translucent - milky Quartz, fine - medium - rare coarse becoming predominantly fine-coarse- rare very coarse, subroundd, generaly loose, moderate sorted, occasional Sandstone: medium light gray - light green gray, argillaceous, Glauconite.

CLAYSTONE: olive gray, dark green gray-green black, firm, none calcareous, trace Glauconite, trace silty, occasionall abundant with Glauconite, rare micropyritic, rare micromicaceous.

Age:Late Eocene

1301 - 1700 m

This interval consist of Claystones with Traces of Sandstones.

CLAYSTONES:olive gray, dark greenish gray - greenish black, becoming also brownish gray, firm, subblocky, none calcareous, occasional slily silty, minor very fine sandy, rare-trace micromicaceous, none - trace micropyritic, rare - trace Glauconite, occasional Pyritic Nodules, rare carbonaceous.

CLAYSTONE:Varicoloured olive gray - brown gray, moderate brown, rare moderate yellow brown, rare light greenish gray, rare greenish gray, firm, subblocky, slily silty, rare - trace micromicaceous, rare - trace micropyritic, rare carbonaceous

SANDSTONE:clear - translucent, trace milky white Quartz, very fine - coarse, rare very coarse, rounded - subangular, poor sorted, loose

SANDSTONE:yellow gray - light greenish gray, clear - translucent Quartz, very fine - medium, predominantly fine, subrounded, moderate - well sorted, firm - loose, argillaceous Matrix, none calcareous, abundant Glauconite, trace, becoming rare Pyritic Nodules, poor visible porosity.

SANDSTONE:white - yellow gray, clear - translucent Quartz, fine - medium, rare coarse, subrounded, moderate sorted, predominantly loose, minor calcareous cemented, rare silica cemented aggregate, argillaceous - clean, trace Micaceous, slily Glauconitic, poor visible porosity.

Age:Eocene

4.1.3 Rogaland Group (1700 - 1891m)

4.1.3.1 Balder Formation, 1700 - 1738m

1700 - 1738
This interval consist of Claystones interbedded with Tuff

CLAYSTONES:olv gry, grn gry, brn gry, mod brn-mod rd brn, bl gry, frm, bcm frm-mod hd, sbblky, loc slty, non-sl calc, r-tr micromic, r-tr micropyr.
Tuff: m bl gry-dk gn gry, gry bl gn, gn blk, sft-frm, sbblky, loc amor, slty, non calc, trnsl-wh-blk spks (volac shards).
Age: Eocene

4.1.3.2 Sele Fm (1738 - 1806m)

1738 - 1806m
This interval consist of Claystones with minor Sandstone and Trace of Limestone

CLAYSTONE:	brn gry, olv gry, brn blk, frm-mod hd, sbplty-sbblky, non calc, Tr micromic
CLAYSTONE:	varicol, gry blgn-gn gry, lot olv gry-lt gry, olv gry-dk gn gry, amor-sft, non calc-calc, occ micromic, Tr Pyr Nod, occ sli slty
CLAYSTONE:	lt olv gry-lt gry, olv gry-dk gn gry, amor-sft, non-sli calc, occ sli slty, Tr mic
SANDSTONE:	clr trnsl-mky wh Qtz, pred lse grns, occ trnsl lt brn-yel brn Qtz, pred f, occ crs, ang-sbrndd, wl-mod srt, Kao Mtrx, occ sli calc cmt, no-pr vis por

SANDSTONE: clr trnsl-mky wh Qtz, pred lse grns, pred trnsl Qtz, vf-f, pred f, occ crs, sbang, wl srt, no-pr vis por, no shows
LIMESTONE: wh, occ v lt gry-lt olv gry, sft-frm, sbblky, pred arg grd Clst

Age: Late Paleocene - Early Eocene

4.1.3.3 Lista Fm (1806 - 1891m)

1806 - 1891m
This interval consist of Claystones with Limestone stringers and rare Sandstone

CLAYSTONE: lt olv gry-lt gry, olv gry-dk gn gry, amor-frm, non-sli calc, occ sli slty, Tr mic
CLAYSTONE: dsky brn-gry brn, blky, sft-frm, non calc
LIMESTONE: wh, occ v lt gry-lt olv gry, sft-frm, sbblky, pred arg grd Clst
SANDSTONE: clr trnsl-mky Qtz, pred trnsl, pred lse grns, vf-f, pred f, occ crs, sbang, wl srt, no-pr vis por, no shows

Age: Late Maastrichtian

4.1.4 Shetland Group (1891 - 2460m)

1891 - 1920m
This interval consist of Claystones with Trace of Limestone stringers and rare Sandstone

CLAYSTONE: lt olv gry-lt gry, olv gry-dk gn gry, amor-frm, non-sli calc, occ sli slty, Tr mic
CLAYSTONE: dsky brn-gry brn, blky, sft-frm, non calc
LIMESTONE: wh, occ v lt gry-lt olv gry, sft-frm, sbblky, pred arg grd Clst
SANDSTONE: clr trnsl-mky Qtz, pred trnsl, pred lse grns, vf-f, pred f, occ crs, sbang, wl srt, no-pr vis por, no shows
Age: Late Maastrichtian

1920 - 2020m
This interval consist of Claystones

CLAYSTONE: lt olv gry-olv gry, dk gry-gry blk, r dsky brn, sft-frm, blky, calc, occ sli slty, Tr Mic, r Pyr Nod, Tr Sst, r Ls

Age: Late Maastrichtian

2020 - 2080m

This interval consists of Claystones

CLAYSTONE: olv gry-olv blk, dk gry-gry blk, blky, sft-frm, mod hd, sli calc, occ sli slty, Tr Mic, r Pyr Nod, r sdy

Age: Early Maastrichtian

2080 - 2140m

This interval consist of Claystones with Trace of Limestone

CLAYSTONE: olv gry-olv blk, dk gry-gry blk, blky, sft-frm, mod hd, sli calc, occ sli slty, r sdy, r Pyr Nod

LIMESTONE: v lt gry, sft, sbblky, arg, microxln

Age: Early Maastrichtian

2140 - 2170m

This interval consist of Claystones with minor Limestone

CLAYSTONE: m dk gry-gry blk, blky, sft-mod hd, sli calc, occ sli slty

CLAYSTONE: mod brn-gry brn, blky-sbblky, sft-frm, calc grd Mrl, sli slty

LIMESTONE: v lt gry-lt olv gry, sft, blky, arg, microxln

Age: Early Maastrichtian - Late Campanian

2170 - 2213m

This interval consist of Claystones

CLAYSTONE: m dk gry-gry blk, r mod brn-gry brn, blky-sbblky, sft-frm, mod hd, sli calc, occ sli slty

Age: Late Campanian - Middle Campanian

2213 - 2268m

This interval consist of Claystones

CLAYSTONE: m dk gry-gry blk, dk gn gry, blky, frm-mod hd, pred frm, non-sli calc, occ sli slty, r Ls: lt gry-dk gry, blky, sft, v arg, microxln

Age: Middle Campanian

2268-2340m
This interval consist of Claystones

CLAYSTONE: olv gry-gry blk, r dk gn gry, blky, frm-mod hd, non-sli calc, pred non calc, occ sli slty, r micromic

Age: Middle Campanian - Early Campanian

2340-2421m
This interval consists of Claystones with minor Limestone and Traces of Sandstone

CLAYSTONE: olv gry-gry blk, blky, stky, frm-mod hd, non-sli calc, non-sli slty, r micromic
LIMESTONE: yel gry-gry or, lt bl gry, occ vf blk sptd, sft-frm, non-sli arg
SANDSTONE: v lt gry-yel gry, clr trnsl-mky Qtz, vf, sbrndd-rndd, wl srt, frm-mod hd,, sli calc, occ arg, no vis por, no shows

Age: Early Campanian

2421 - 2460m
This interval consist of Claystones

CLAYSTONE: olv gry-gry blk, amor-sbblky, stky, sft-frm, non calc-calc, pred calc, occ sli slty, r micromic, r blk spec, r sdy, r Glauc

Age: Early Campanian - Santonian - Early Coniacian

4.1.5 Cromer Knoll Group (2460 - 2470m)

2460 - 2470m
This interval consist of Claystones interbedded with Limestone

CLAYSTONE: olv gry-gry blk, r mod brn, amor-sbblky, stky, sft-frm, calc, occ sli slty, r blk spec, r sdy, r Glauc

LIMESTONE: yel gry-lt gry, blky, sft-frm, occ sli arg, microxln

Age: Late Albian - Late Barremian - Early Barremian - Hauterivian - Late Valanginian

4.1.6 Viking Group (2470 - 2602m)

4.1.6.1 Draupe Formation (2470 - 2520m)

Draupe Sandstone 2470 - 2506m
This interval consist of Sandstone with rare Claystone

SANDSTONE: brn blk - dk gry blk, clr trnsl - mky wh Qtz, m - crs, r f, r v crs, bcm f-m at btm, ang - sbrndd, r rndd, pr - wl srt, pred mod srt, fri - frm, bcm fri - hd at btm, occ sli calc cmt, r Tr micromic, gd vis por
SANDSTONE: brn blk-dk gry blk, clr trnsl - mky wh Qtz, f - m, pred f, r crs, ang - sbrndd, mod - wl srt, fri - mod hd, I.P. sil cmt, arg, bcm v arg grd sdy Sh, r Glauc, r Mic, r Pyr, pr - gd vis por
CLAYSTONE: m dk gry - olv gry, lam in Sst, sbblky, frm - hd, sli calc
CLAYSTONE: dk gry - gry blk, glos surf, blky, frm - hd, sli calc

Age: Late Ryazian - Early Ryazian - Late Volgian - Middle Volgian

Draupne Shale/Silt 2506 - 2520m
This interval consist of Siltstone

SILTSTONE: m dk gry - dk gry, amor - sbblky, sli stky, sft - frm, calc - v calc, sli vf sdy, arg, Tr micromic, r Tr carb Frag, no shows

Age: Middle Volgian - Early Volgian.

4.1.6.2 Heather Formation (2520 - 2602m)

This interval consist of silty Claystones with Limestone stringers, rare Dolomite and rare Sandstone

CLAYSTONE: brn blk, dk olv gry - olv blk, occ olv gry - dk gn gry, amor - sbblky, sft - mod hd, I.P. stky, non calc - calc, sli slty - slty, I.P. grd Sltst, occ vf sdy, micromic, Pyr, Tr micropyr, loc Tr Glauc, r - Tr carb

LIMESTONE: wh - v lt gry, pl yel or - mod yel brn, blky, sft - mod hd, pred microxlnl, I.P. micro - crpxln, occ sli arg
DOLOMITE: mod brn - rd brn, dk yel brn, blky, hd
SANDSTONE: clr - trnl, occ mky wh Qtz, m - crs, r f, as lse gr, mod srt, sbang - sbrndd, no shows
Age: Late Kimmeridgian - Middle Collovian - Early Collovian - Late Bathonian.

4.1.7 Brent Group (2602 - 2650,0m TD for well)

4.1.7.1 Tarbert Formation (2602 - 2650,0m)

This interval consist of Sandstones with minor Claystone

SANDSTONE: clr - trnsl, tr mky, r smky Qtz, vf - m, r crs, pred f, sbang - sbrndd, as lse grns, loc sli calc, loc Kao, Tr Mic, loc r Pyr
CLAYSTONE: brn gry - brn blk, olv gry, amor - sbblky, sft - frm, sli calc, sli slty, stky, micromic, micropyr, r carb
Age: Bajocian - Bathonian

4.2 34/7-31 A

4.2.1 Rogaland Group (1802 [kick off] - 1892m)

4.2.1.1 Sele Fm (1802 [kick off] - 1874m MD / 1873.7m TVD)

1802 - 1874m
This interval consist of Claystones with minor Sandstone and Trace of Limestone

CLAYSTONE: brn gry, olv gry, gn gry, bcm pred olv gry, frm - mod hd, sli calc, micromic, Tr Pyr, Tr carb
CLAYSTONE: lt olv gry-olv gry, occ brn gry, frm - mod hd, sbblky, sli calc, micromic, Tr Pyr, Tr carb
SANDSTONE: v lt gry - lt gry, clr - trnsl Qtz, occ yel or, pred f, r m, lse sbang - sbrndd, wl - mod srt, occ Kao Mtrx, Tr Mic, r Pyr
LIMESTONE: wh-v lt gry, lt gry, sbblky, mod hd, I.P. arg

Age: Late Paleocene - Early Eocene

4.2.1.2 Lista Fm (1874 - 1895m MD / 1894.4m TVD)

1874 - 1892m MD
This interval consist of Claystones with rare Sandstone

CLAYSTONE: lt olv gry-olv gry, occ brn gry, frm - mod hd, sbblky, sli calc, micromic, Tr Pyr, Tr carb
SANDSTONE: lt gry-lt grn gry-v lt gry, pl yel or, vf - r crs, pred f, lse, sbang - sbrndd, mod srt, occ Kao Mtrx, Tr Mic, r Pyr

Age: Late Maastrichtian

4.2.2 Shetland Gp (1892 - 2815m MD / 1891.4 - 2438.7m TVD)

1892 - 2040m MD
This interval consist of Claystones with Trace of Limestone stringers

CLAYSTONE: lt olv gry-olv gry, occ brn gry, frm - mod hd, sbblky, sli calc, micromic, Tr Pyr, Tr carb
CLAYSTONE: olv gry, lt brn gry, sbblky, mod hd, calc, Tr Pyr, Tr micromic, r carb
CLAYSTONE: mod brn, sbblky, frm - mod hd, sl - mod calc, slty
LIMESTONE: pl yel or - dk yel brn, blky, mod hd, crpxln
LIMESTONE: wh - v lt gry, blky, mod hd, crpxln

Age: Late Maastrichtian - Early Maastrichtian

2040 - 2160m MD
This interval consist of Claystones with Trace of Limestone stringers and rare Dolomite

CLAYSTONE: olv blk, mod hd, fri - brit, def, mod calc, Tr carb, loc Tr Glauc, Tr micromic, loc Tr Pyr
CLAYSTONE: olv gry, sbblky, mod hd, calc, micromic, micropyr, Tr carb, Tr Glauc
LIMESTONE: v lt gry, mod hd, fri, crp - microxln, cln
DOLOMITE: pl yel brn - dk yel brn, fri - hd, def, micro - crpxln

Age: Early Maastrichtian - Late Campanian

2160 - 2460m MD
This interval consist of Claystone with rare Dolomite and rare Limestone

CLAYSTONE: dk gry - olv blk, bcm dk gry - m dk gry, frm - mod hd, def, non - mod calc, bcm pred non calc, sl - mod slty, Tr micromic
DOLOMITE: pl yel brn - dk yel brn, blky, fri - hd, def, micro - crpxln
LIMESTONE: m gry, mod hd, def, crp - microxln, sl arg

Age: Early Campanian

2460 - 2815m MD
this interval consist of Claystone with minor Limestone stringer and rare sandstone

CLAYSTONE: olv gry - olv blk, dk gry, frm - mod hd, sbblky, non - mod calc, sl slty, loc slty, brit - fri, def, micropyr, r micromic, Tr carb
LIMESTONE: v pl or - pl yel or, dk yel brn, mod hd, blky, micro - crpxln, sl dol
LIMESTONE: v lt gry, lt gry, sbblky - blky, mod hd, micro - crpxln, sl - loc v arg, loc vf sdy
Age: Early Campanian - Santonian - Early Coniacian

4.2.3 Cromer Knoll Group (2815 - 2830m MD / 2438.7 - 2440.3mTVD)

2815 - 2830m
This interval consist of Claystones interbedded with Limestone

CLAYSTONE: olv gry-gry blk, r mod brn, amor-sbblky, stky, sft-frm, calc, occ sli slty, r blk spec, r sdy, r Glauc
LIMESTONE: yel gry-lt gry, blky, sft-frm, occ sli arg, microxln

Age: Barremian - Early Hauterivian - Valanginian

4.2.4 Viking Group (2830 - 3385 mMD / 2440.3 - 2396.9mTVD)

4.2.4.1 Draupne Formation (2830 - 3105m)

Draupe Sandstone2830 - 3090 m
This interval consist of Sandstone with rare Claystone

SAND: clr-trnsl Qtz, occ mky, f-occ crs, pred m, loc Tr pbl<5mm, sbrnd-ang, sbspher, pr-mod srt, lse, r Pyr, loc Tr blk/dk brn O stn.

SANDSTONE: gry blk-olv blk, Qtz, vf-f, loc fltg m-crs gr, sbang-sbrnd, mod-pr srt, non calc, def, v slty Mtrx loc grad Sltst, arg, carb, at top v carb w/ occ C frag, micromic, r micropyr.

Age: Ryazian - Volgian

4.2.4.2 Draupne Shale/Silt 3090-3105m

This interval consist of Claystone

CLAYSTONE: olv blk-m dk gry, mod hd, fri-brit, def, non calc, v slty grad Sltst, com micromic, Tr carb

Age: Volgian - Early Collovian

4.2.4.3 Heather Formation (3105 -3385m)

This interval consist of silty Claystones with Limestone stringers, rare Dolomite and rare Sandstone

CLAYSTONE: olv blk-gry blk-m dk gry, mod hd, fri-brit, def, non calc, slty occ grad Sltst, micromic, loc micropyr, Tr carb, loc Glau.
LIMESTONE: dk yel brn - dsky yel brn, mod hd, blky, crpxln - microxln, sl arg, sl carb,

Age: Late Kimmeridgian - Middle Collovian - Early Collovian - Late Bathonian.

4.2.5 Base Cromer Knoll Group (3385 - 3392 mMD / 2396.9 - 2393.2)

LIMESTONE: yel gry, Tr dk gn gry, hd, brit, def, crpxln, cln, r loc glau.

4.2.6 Base Shetland Group (3392 - 3454 mMD (TD) / 2393.2 - 2355.8 mTVD)

CLAYSTONE: olv blk-gry blk, mod hd, brit, def, non-mod calc, pt sli slty, Tr micromic, Tr carb.
LIMESTONE: v lt gry, hd, brit, def, crpxln, cln.

Age: Late Albian - Late Barremian - Early Barremian - Hauterivian - Late Valanginian

5 Hydrocarbon Shows

The evaluation of hydrocarbon shows at the wellsite was carried out in a conventional manner.A standard (Sperry Sun) hydrocarbon total gas detector system(THA) together with a gas chromatograph for automatic and continuous gas analysis, recorded as ppm by volume of C1 through nC4, were operational below 1345 m down to the TD of both the wells.

Hydrocarbon shows on ditch cuttings and core were evaluated according to procedures described in Norsk Hydro's "Wellsite Geologist's Manual".

5.1 Gas Record

The gas summary for the wells are presented in the gas ratio logs in section C.

5.2 Oil stain and Fluorescence

A summary of the observed shows in 34/7-31 is given in Table 5.2 below:

INTERVAL (mRKB)	SOURCE	LITHOLOGY	SHOWS DESCRIPTION
2472- 2488	core	Sandstone	Strong petroleum odour, dark brown oil stain, bright strong yellow white direct fluorescence, instant strong blue white fluorescent cut, strong brown even visible cut, strong yellow white fluorescent residue, light-moderate brown visible residue.
2849	core	Sandstone	Very weak petroleum odour, no oil stain, bright moderate yelloe white direct fluorescence, slow moderate blue white fluorescent cut, weak light yellow pale brown even visible cut, moderate yellow white fluorescent residue, no visible residue.
2490-2499.3	core	Sandstone	Strong petroleum odour, dark brown oil stain, bright strong yellow white direct fluorescence, instant strong blue white fluorescent cut, strong brown even visible cut, strong yellow white fluororsent residue, light-moderate brown visible residue
2500.3-2503.3	core	Sandstone	Strong petroleum odour, dark brown oil stain, uniform bright strong yellow white direct fluorescence, instant strong blue white fluorescent cut, strong brown even visible cut, strong yellow white fluororsent residue, moderate brown visible residue
2504.3-2506.3	Core	Sandstone	Moderate petroleum odour, brown oil stain, patchy moderate yellow white direct fluorescence, instant strong blue white fluorescent cut, strong brown even visible cut, strong yellow white fluororsent residue, moderate brown visible residue

Table 5.2 Shows summary 34/7-31

6 Coring

6.1 Conventional Cores

A total of 2 cores (90') was cut in the Draupne Formation. Core #2 jammed off after 7m.A summary of the core is presented in Table 6.1 below and the core description can be found in Appendix I.
No core was cut in 34/7-31 A.

No	C: Cut(m) R: Recovery(m)	Rec. %	Lithology	Formations
1	C:2472 - 2499.3 R:2472 - 2499,3	100	Sandstone	Draupne
2	C:2499,3 - 2506,3 R:2499,3 - 2506,3	100	Sandstone, minor Claystone	Draupne

Table 6.1: Conventional Cores 34/7-31

6.2 Sidewall Cores

A total of 16 sidewall cores were taken, 9 were recovered and 7 lost, in 34/7-31. No sidewall coring was performed in 34/7-31 A.

Run	Requested	Misfired	Lost	Empty	Recovered	Rec %
1A	16	-	7	-	9	56

Table 6.2: Sidewall cores

7 Logging

7.1 MWD Logs

A MWD service (Schlumberger Anadrill) yielding gamma ray, resistivity, survey measurements was run in the following sections:

Run	Log depth int. (m MD)	Hole	Tool	Comments
1	233 - 1150	9 7/8”	MWD - CDR	No problems
2	233 - 308	36”	MWD	No problems
3	308 - 1150	26”	MWD	No problems
4	1150 - 1305	17 ½”	MWD - CDR	No problems
5	1305 - 1788	17 ½”	MWD - CDR	No problems
6	1788 - 2097	8 ½”	MWD – RAB - ADN	ADN failed
7	2092 - 2213	8 ½”	MWD – RAB – ADN	ADN tool ran without radioactiv source due to problems loading. Bit change due to low ROP
8	2213 - 2268	8 ½”	MWD – RAB – ADN	ADN tool ran without radioactiv source due to problems loading. Bit change due to low ROP
9	2268 - 2472	8 ½”	MWD – RAB – ADN	ADN tool ran without radioactiv source due to problems loading. No realtime data due to problem receiving signals Stopped drilling at core point.
10	2506 - 2650	8 ½”	MWD – RAB - ADN	Reamed 2 interval: 1779 – 1900 and 2440 – 2506 before drilling cont. to TD.

Table 7.1: MWD runs 34/7-31

Run	Log depth int. (m MD)	Hole	Tool	Comments
1	1788 - 3454	9 ½”	MWD – VISION - ADN	Density is heavy affected by borehole. Bottom pad is least affected and used as input in Interpretation.

Table 7.2: MWD runs 34/7-31A

More detailed MWD results can be found in the report "End of Well Report/Logs, (Schlumberger/Sperry Sun) Well 34/7-31 & 34/7-31A."

7.2 Wireline Logs

The following table is a summary of wireline logs run in the well and shows log type, date run, logged intervals and run number for each log run in 34/7-31. No wireline logs was run in 34/7-31 A.

Logs	Date	Logged interval (mRKB)	Run / Comments
MDT	08-09.04.01	1842,0-2618,5	1A
PEX/DSI/VSP	10-11.04.01	2627 - 1700	1A
MSCT	11.04.01	2641 - 1840	1A, core bit stuck, pulled of saftey pin.POOH & changed bit

Table 7.3: Wireline logs 34/7-31

7.3 MDT Sampling

One MDT-run was carried out, but the tool had to be pulled to surface once in order to correct a circuit experienced in the 50 V line in the cable. Below is a short summary of run 1A. For more detail information about the operation, see **ref. /1&2/.**

Run 1A, MDT:

- 20 pre-tests were taken out of which 8 were dry tests due to “tight” formation. The tool was pulled to the surface, and 1600 m of the cable was cut. The pre-tests were continued with 7 additional pre-tests, all of good quality.

- 6 oil samples and 5 water samples were captured from 3 different reservoir intervals. 2 bottles did not fire open due to malfunctioning of the “nerd” in the single shot valves.

The MDT-tool was well equipped with sampling containers in order to collect the required volume and number of samples in just one run. As a result of this the MDT-tool was configured with the maximum number of modules in the string. The tool configuration is shown in the figure 7.1 below.

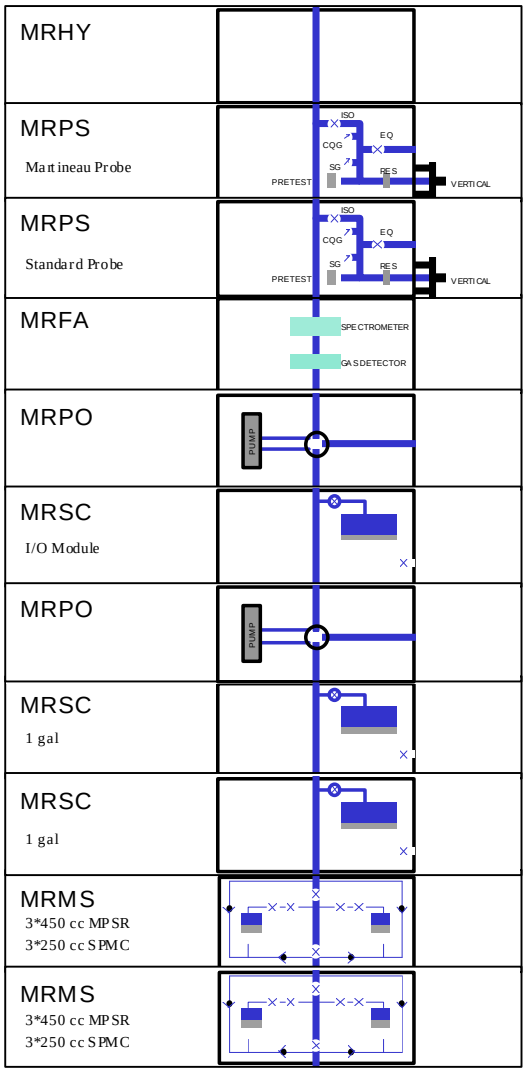


Figure 7.1: Tool configuration

7.4 Velocity Surveys

A zero offset VSP was aquired by Schlumberger and processed by Read Well Services. The acquisition was performed in 1 run with no major problems. The final processed VSP data had overall a very good quality.

For more information see the VSP report ref. /3/.

Type of log	Run No.	Interval m MD	Operational Comments
VSP	1	2620-1690	2 level VSP tool (CSI), 10 m level spacing. 3x155 cu. in. source.

Table 7.4: VSP Runs 34/7-31

7.5 Bottom Hole Temperatures From Wireline Logs

The table below gives a summary of the bottom hole temperatures measured from wireline logs.

Log suite	Run	Depth (mRKB)	Temp ° C	Time since circ. (hrs)
MDT	1A	2 611,5	92	32,97
PEX/DSI/VSP	1A	2 620	87	51,80
MSCT	1A	2 646	89	63,63

Table 7.5: Bottom Hole Temperatures 34/7-31

8 Petrophysical Results

8.1 Summary

About 38 meters MD of Upper Draupne Sand (UDS) is interpreted as net reservoir formation in well 34/7-31, and 270m MD in well 34/7-31 A. Well 34/7-31 also have 14 m MD of shale before entering the Heather formation. Some sand was observed in the Paleocene, Sele Fm. and in Brent, but these two were waterfilled and are not included in the petrophysical interpretation.

The UDS consists mainly of homogeneous sandstone with excellent reservoir quality. Some minor lamination of shaly sand is seen on cores, but does not show on logs. The log porosity is correlated to overburden corrected core porosity. Water saturation is calculated by using Indonesia equation.

The electrical parameters (a,m,n) are the same as used in previous interpretation of wells in the Borg field. The petrophysical net sand averages are summarised in Table 8.5 and Table 8.6.

A computer assisted petrophysical interpretation (CPI) was processed from 2468 m MD to 2520m MD in well 34/7-31 and from 2815 to 3100 in well 34/7-31 A.

8.2 Log Data Acquisition

Well 34/7-31

The entire well was drilled with water based mud (KCL Polymer). The quality is generally good, but there were some problems with the depth shifts of the reamed and the drilled memory logs. There was a discrepancy between depth shifts, which needed to be applied in different sections of the well. This was carried out by the service company and the result is a combination of reamed and drilled memory log. Depthshift is considered as good, and no further shifts are necessary. There are no washouts in the reservoir section.

There were also problems with the source in the ADN tool. A more detailed description and results of the MWD job can be found in the report “End of Well Report/Logs, (Schlumberger Anadrill) Well 34/7-31 & 31A (ref./2/).

WL data are of good quality, no remarks.

Well 34/7-31A

The well was logged with MWD logs only and with OBM. The logs are of generally good quality except for problems with the density pad. Due to 9 ½" hole drilled with tool constructed for 8 ½" hole, there are a large stand-off on the top quadrant, and therefore the bottom quadrant are used as input to interpretation. Minor washout in well.

Splicing and editing of log data are carried out in order to get the best and most representative dataset for the petrophysical interpretation and evaluation (table 8.1). No depth-shifts were necessary on the composite log.

	CURVE	LOG	Top (MD)	Bottom (MD)
GAMMA	GR_CDR	ADN	230,2	1 698
	GR	PEX	1 698	2 620
	GR_RAB	ADN	2 620	2 649
RESISTIVITY	ATR	ADN	230,2	1 775,7
	PSR	ADN	230,2	1 775,7
	Res_Bit	RAB	1 775,1	2 648,5
	Res_M	RAB	1 775,1	2 648,5
	Res_D	RAB	1 775,1	2 648,5
NEUTRON	NPHI	PEX	1 698,7	2 645,3
DENSITY	RHOZ	PEX	1 675	2 645,3
SONIC	DTCO	DSI_TLD_MCFL	1 698	2 645
	DTSM	DSI_TLD_MCFL	1 698	2 645
CALIPER	HCAL	PEX	1 698,7	2 645,3
DENCOR	HDRA	PEX	1 698,7	2 645,3

Table 8.1; Spliced log as input to Composite log

No wireline logs were run in well 34/7-31A, hence only logs from the LWD are available.

8.3 Core Data

Two cores were cut in the 8 1/2" sections in well 34/7-31, (table 8.2). No cores were taken in 34/7-31 A. The cored intervals and recoveries are listed in . No depth shifts were necessary for the two cores. Conventional core analysis was conducted; including measurements of helium porosity, Klinkenberg corrected air permeability and grain density. No water saturation measurements were performed. For more details see Conventional Core Analysis Report (Ref./X/).

Core no.	Top (m MD)	Bottom (m MD)	Recovery
1	2472	2499,3	100%
2	2499,3	2505,7	100%

Table 8.2: Cored intervals in well 34/7-31

8.4 MDT Pressure and Sampling

Pressure points were taken with the MDT-tool in order to obtain formation pressures and fluid gradients from all reservoirs encountered in well 34/7-31 (table 8.3). Especially the degree of depletion in the Draupne Formation was regarded as crucial information.

The measured Draupne reservoir pressure was the same as the shut-in pressure in the Main Borg field. The gradient and reservoir fluid density was well defined, 0,69 g/cc or 0,067 bars/meter, and the reservoir pressure was measured to 307.038 bar at 2494.7 m TVD RKB. There was an ODT situation, hence the OWC is still not defined.

Six high quality oil samples were captured from the Draupne Formation at 2496 m MD. Four of these were 250cc single-phase samples. The quality check done offshore, indicated same fluid-type as found in the main Borg Field reservoir. The density was measured to 0.855 g/cc at 20 deg C. The reservoir pressure had been depleted in the Draupne formation as a consequence of the pressure reduction in the main Borg Field, however, the system in Borg North was still undersaturated. A bubble pressure of 152 bar and a GOR of 136 Sm^3/Sm^3 at 20 deg. C were measured offshore.

Formation water was captured from the Brent and Paleocene reservoir sand at 2611.5 m MD and 1842 m MD, respectively. Only 450 cc multi-phase samples were taken in these formations. The samples are of good quality. See ref. /1/ and /2/ for sampling details. At the time when the report is written, no onshore lab-analysis have been performed.

All the samples were transferred from sample bottles to transport bottles on the rig and shipped onshore.

The mini test was aborted due to low drawdown.

Test	Depth MD RKB	Depth TVD MSL	Formation Pressure (qtz.)	Initial Hyd. Pressure	Final Hyd. pressure	Mob	Remarks
No.	meter	meter	Bar	Bar	Bar	mD/cp	
6	1850.7	1824.6	254.7	295.9	295.9	4.4	Good point
7	1848.8	1820.1	254.6	295.6	295.7	1.7	Good point, low perm
8	1846.2	1819.8	254.2	295.2	295.2	5.3	Good point, very low perm
9	1842	1815.8	253.8	294.7	294.6	11.7	Good point
11	2503.4	2477.2	307.6	399.0	398.9	33.1	Good
12	2500	2473.8	307.4	398.2	398.2	1447.	Very good perm
13	2495	2468.7	307.0	397.5	397.4	1798.	Very good perm
14	2492	2465.8	306.8	397.0	397.0	1026.	Very good perm
15	2486.5	2460.3	306.5	396.2	396.1	1375.	Very good perm
16	2484.5	2458.3	306.3	395.8	395.8	839.9	Very good perm
17	2479	2452.7	306.0	394.9	395.0	211.1	Good
20	2470.3	2444.1	305.4	394.3	393.7	41.5	Good
22	2621.5	2595.2	324.5	420.0	418.2	22.8	Good
23	2618.5	2592.1	324.2	417.5	417.1	19.4	Good
24	2613.5	2587.2	323.7	416.3	415.2	42.6	Good
25	2611.5	2585.2	323.5	415.9	415.9	91.3	Good
26	2606	2579.7	323.0	415.0	415.0	21.3	Good
27	2604.5	2578.2	322.8	414.8	414.8	4.9	Good
28	2603.5	2576.7	322.7	414.6	414.6	35.6	Good

Table 8.3: Valid pressure point well 34/7-31

8.5 Petrophysical Evaluation Procedure

A computer assisted petrophysical interpretation (CPI) was processed from 2468 m MD to 2520m MD in well 34/7-31 and from 2815 to 3100 in well 34/7-31 A. Below is the log analysis model described in detail.
The following models are used in calculation of shale volume, porosity and water saturation.

Shale volume
The volume of shale is estimated from the minimum value of the linear gamma ray relationship, and the density-neutron cross plot method.

Porosity
The density log has been used for porosity calculations. The effective porosity is corrected for shale effects and also hydrocarbon effects in well 34/7-31 A. No hydrocarbon effect correction was necessary in well 34/7-31 due to the fact that the well was logged in waterbased mud and the data showed little or no invation of fluid. The log derived porosity in well 34/7-31 was then compared to and corrected to the overburden corrected core porosity. The factor used for overburden corrected core porosity was 0,97 which are used in the other wells on the field. PVT analysis performed on well 34/7-21 gives an oil density of 0,72 g/cc. Pressure points give an oil gradient of 0,70 g/cc, but in this interpretation the gradient from the PVT analysis in well 34/7-21 is used as input to the interpretation.

Water saturation
To evaluate the effective water saturation (S_{ew}), the Poupon-Leveaux (Indonesia) equation was applied. This compensates for shale content.
The electrical parameters (a; lithology factor, m; cementations factor and n; saturation exponent) are established parameters used in the field.

Reservoir temperature using the Horner Plot gives a temperature (based on DST), lower than the field temperature. Hence, this temperature is not considered to be representative.

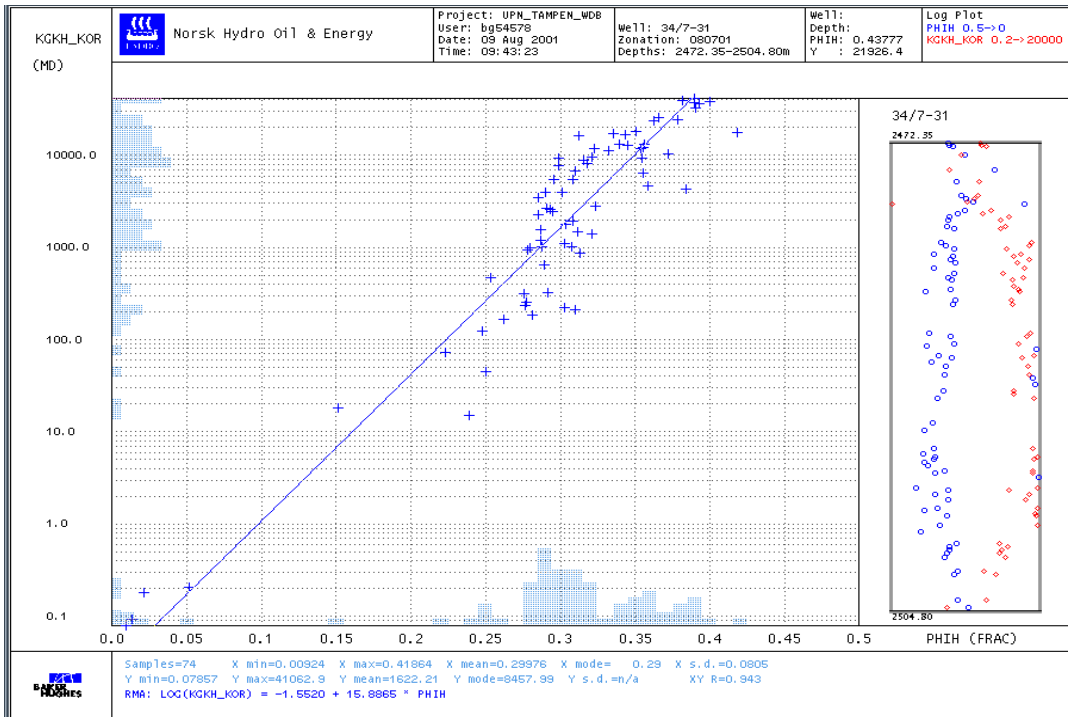
	Units	UDS	Shale
Top	MD RKB/TVD MSL	2470/2443,8	2508/2481,8
Bottom	MD RKB/TVD MSL	2508/2481,8	2520/2493,8
GR clean	API	60	60
GR shale	API	120	120
PHINSH	G/CC	0.4	0.4
RHOM	G/CC	2.65[1]	2.65[1]
RHOSH	G/CC	2.5	2.5
RHOFL	G/CC	1.1	1.1
RHOHC	G/CC	0,72[2]	0,72[2]
Rw@20deg	Ohmm	0.25	0.25
Rmf@20deg	Ohmm	0.059	0.059
Fm.Temp@2640	Deg. C	95	95
Temp. grad	Deg. C/ 100m	3.8	3.8
RSH	Ohmm	3	3
a		1	1
m		1.8	1.8
n		2.15	2.15

Table 8.4: Petrophysical interpretation (CPI) in well 34/7-31

[1] *Average from core GRD*

[2] *From PVT analysis well 34/7-21*

A permeability cutoff of 1 mD is defined in Borg area. The porosity corresponding to 1 mD permeability by use of a linear regression on core porosity/permeability plot equal to 10,2% (see Fig. 8.1). From this por/perm plot it is obvious that the net sand is not affected by the choice of cut-off, because the reservoir quality is good and most of the interval is net reservoir.
A shale cut-off of 40% was used to avoid including obviously non-reservoir rock. Due to low watersaturation in the interval, all net sand is then considered net pay.



1Figure 8.1: Relationship of horizontal, Klinkenberg corrected core permeability vs. core porosity

8.6 Petrophysical Results

Well 34/7-31 and 34/7-31 A

A reduced version of CPI for the formation interpreted (Draupne) is presented in Figs. 8.2 & 8.3. The depth reference is in m MD RKB.

The average values of calculated shale volume, porosity and water saturation are calculated using the net sand criteria specified in 8.5 . The results are listed in table 8.5 and table 8.6 .

The reservoir section consisting of Upper Draupne Sand has been divided in four intervals for the purpose of petrophysical calculation of average values. This is mainly due to get reasonable values in the calculations.
UDS_Topp is the interval between the Cromer Knoll and the good reservoir sand. This interval is recognised by high gamma ray response, low resistivity and high density values. Core description of interva suggests increased land derived organic detritus. In the sidetracked well the same interval is recognised, bu does not show the same high log readings.

UDS_1 is the main reservoir interval and is recognised by very good quality sand. UDS_2 and UDS_3 are also reservoir formations, but with lower quality.

No OWC is penetrated in the field or in these wells.

Zone	Interval	Gross (MD)	Net (MD)	N/G	Vsh	PHIE	Swe
Cromer Knoll	2460-2470	10	0.91	0.09	0.09	0.2	0.30
UDS_Topp	2470-2476.5	6.5	5.03	0.80	0.17	0.19	0.35
UDS_1	2476.5-2501	24.5	23.7	0.97	0	0.31	0.10
UDS_2	2501-2505	4	4.0	1.00	0.06	0.24	0.25
UDS_3	2505-2508	3	2.2	0.73	0.38	0.15	0.55
DR_shale	2508-2520	12	0.61	0.05	0.44	0.18	0.57

Table 8.5: Average values, Well 34/7-31

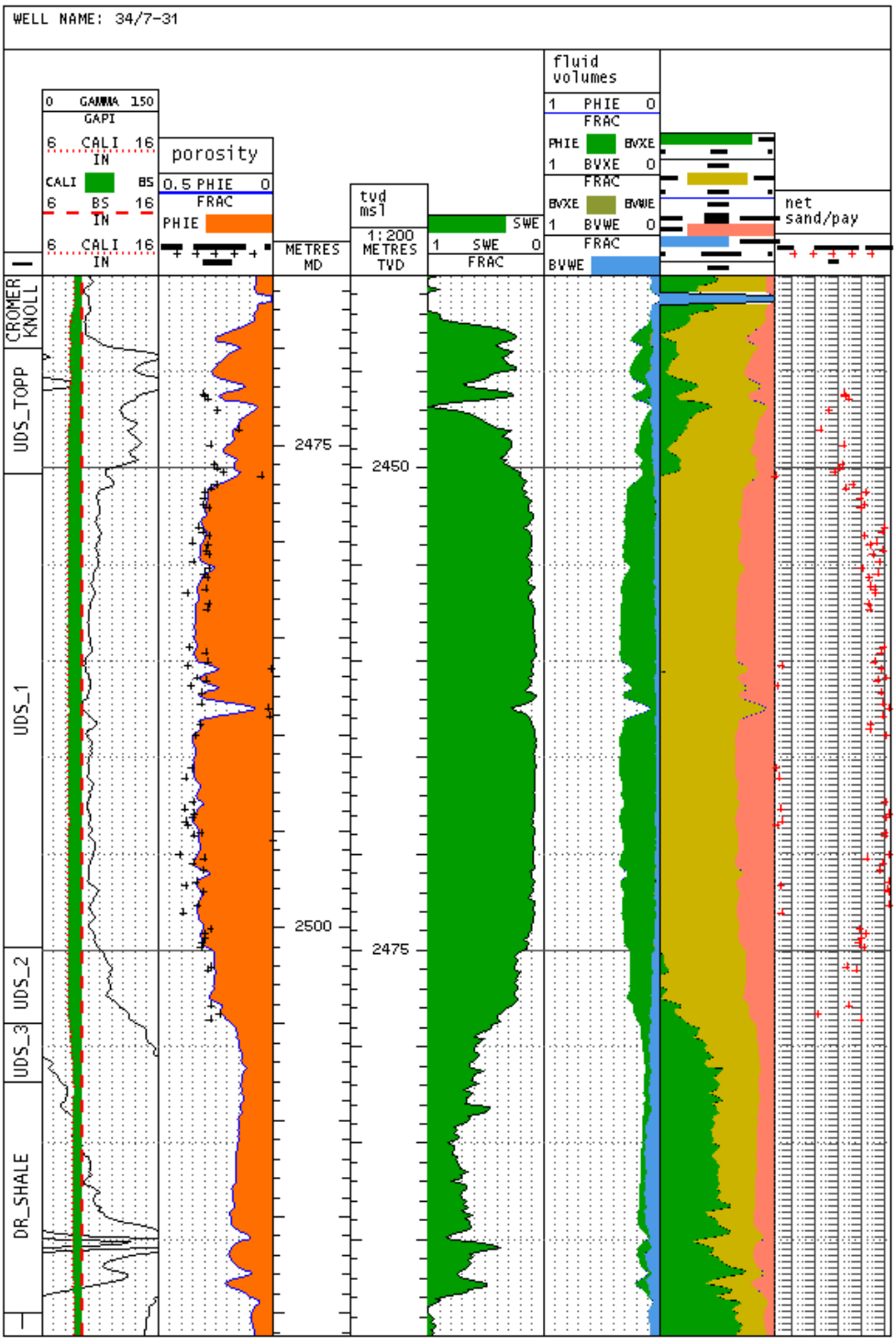
1

Zone	Interval	Gross (MD)	Net (MD)	N/G	Vsh	PHIE	Swe
Cromer Knoll	2815-2830	15	2.44	0.16	0.14	0.18	0.29
UDS_Topp	2830-2834.5	4.5	4.38	0.97	0	0.31	0.09
UDS_1	2834.5-2913	78.5	78.5	1,0	0	0.33	0.05
UDS_2	2913-2955	42	41.54	0,99	0.06	0.24	0.14
UDS_3	2955-3100	145	44.43	0,30	0.36	0.16	0.28

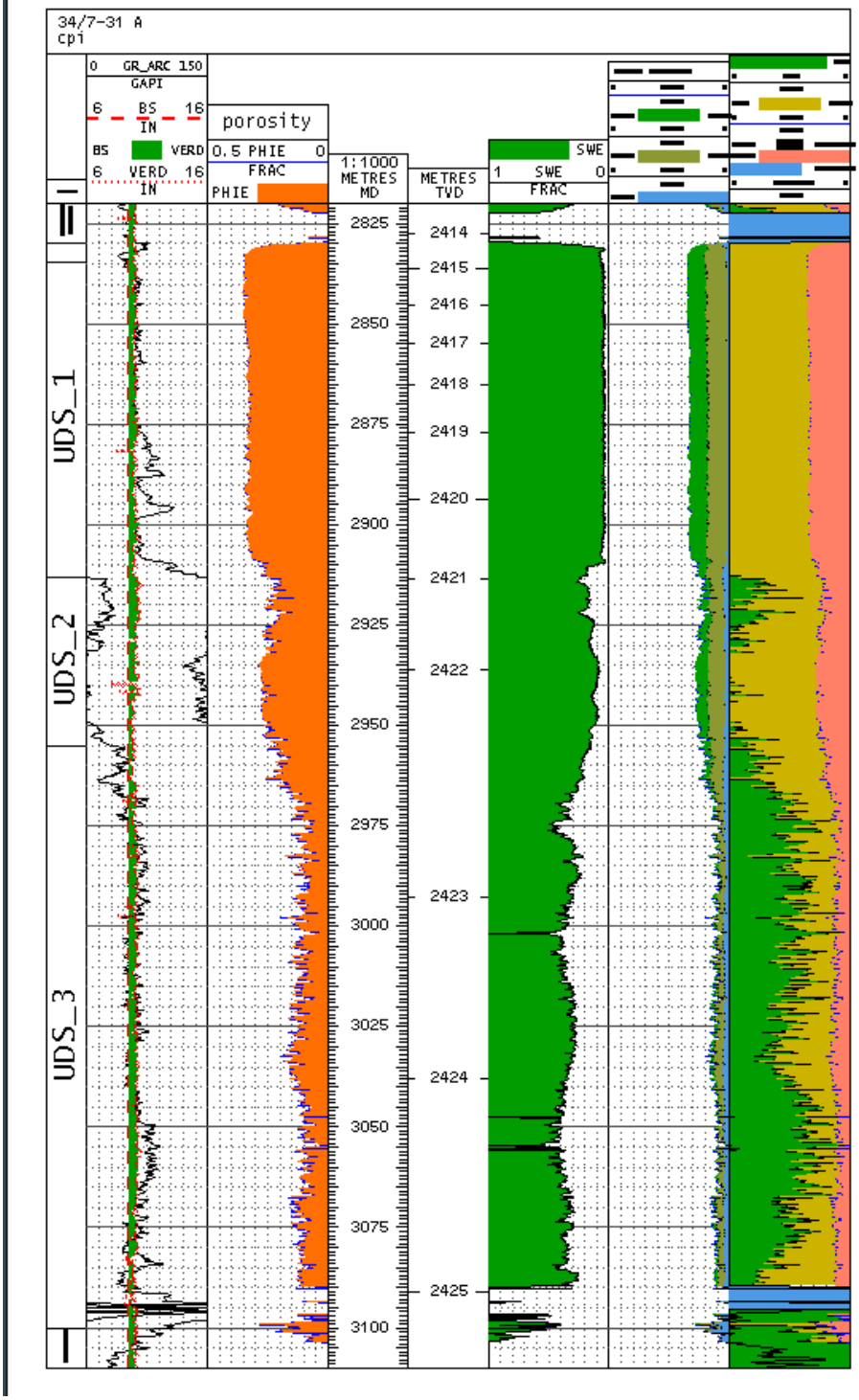
Table 8.6: Average values, Well 34/7-31 A

8.7 Fluid Contacts

No OWC is encountered in the well. Entire reservoir is oiled filled.



2Figure 8.2: CPI of Well 34/7-31



3Figure 8.3: CPI of Well 34/7-31A

8.8 References

ref. /1/ "Offshore Sample Transfer and Analyses Report", Oilphase, May 2001
ref. /2/ "Well 34/7-31 and -31A Formation Evaluation Report", Norsk Hydro, August 2001
ref. /3/ " VSP report, 34/7-31, Read Well Service
ref. /4/ " RESLAB, Conventional Core Measurements well 34/7-31

9 Pore Pressure, Fracture, Overburden and Temperature Gradients

9.1 Pore Pressure

The pore pressures in well 34/7-31and 34/7-31 A are based on well site observations, gas data, MDT pressure readings and calculations based on logs (MWD and Dxc). All depths are quoted as m TVD RKB unless otherwise stated.

The Pore pressure-, Fracture- and Overburden gradients are given in Fig. 9.1.
No shallow gas was observed.

From sea bottom to 1160m a generally hydrostatic pressure is regarded as most likely and a normal dxc-trend and resistivity trend was established. In parts of Shetland we experienced events of bit-balling making dxc-trends unsuitable as pore pressure estimating tool.
At 1160m a cut back in resistivity and dxc marks the start of pressure build-up. This coincide with the prognosis. The pore pressure increased steadily through Hordaland to a maximum of 1.35sg at 1650m at the base Hordaland.
There was taken 3 good pressure points and 5 rejected points (tight) using MDT in Rogaland sands. They gave 1.404sg to 1.405sg. The pore pressure seems to drop from 1.405sg at 1800m to 1.35sg at 1950m.
From 2125m the pore pressure increases steadily through the rest of the Cretaceous reaching 1.40sg at base Shetland. The major parts of the Cretaceous was drilled with 1.60 to 1.63sg in the pilot hole. Based on the pore pressure estimate obtained in the pilot hole the sidetrack was drilled with 1.50sg mud. No hole problems were observed using 1.50sg mud and the log and gas data supported the estimates of the pilot hole.
Pressure points taken in Draupne sands gave 1.25sg to 1.26sg. This was close to maximum calculated depletion.
It is assumed that shales between Draupne sand and Brent sands has kept its original pore pressure of 1.35sg. The seven good MDT pressure points of the Brent succession gave all 1.26sg.

9.2 Formation Strength

One LOT was taken at 1144m to 1.83sg. This was a high LOT relative to this shallow depth, and is not regarded as representative of the true fracture gradient. The fracture point of the LOT-curve was difficult to set exactly.
One LOT was taken at 1788m to 1.82sg. This was within the range of previous LOT of this area.
The vertical pilot hole and the deviated sidetrack was stable, ie no mudlosses, tight spots or collapse.

9.3 Overburden Gradient

Overburden gradient is based on regional studies, calculated values and the density log.

9.4 Temperature Gradient

MDT-readings gives a formation temperature of 97° C at TD calculated using Horner plot. This gives an average formation temperature gradient of 3,8° C/ 100m from seafloor down to 2650m.
The formation temperature gradient is given in Fig. 9.2.

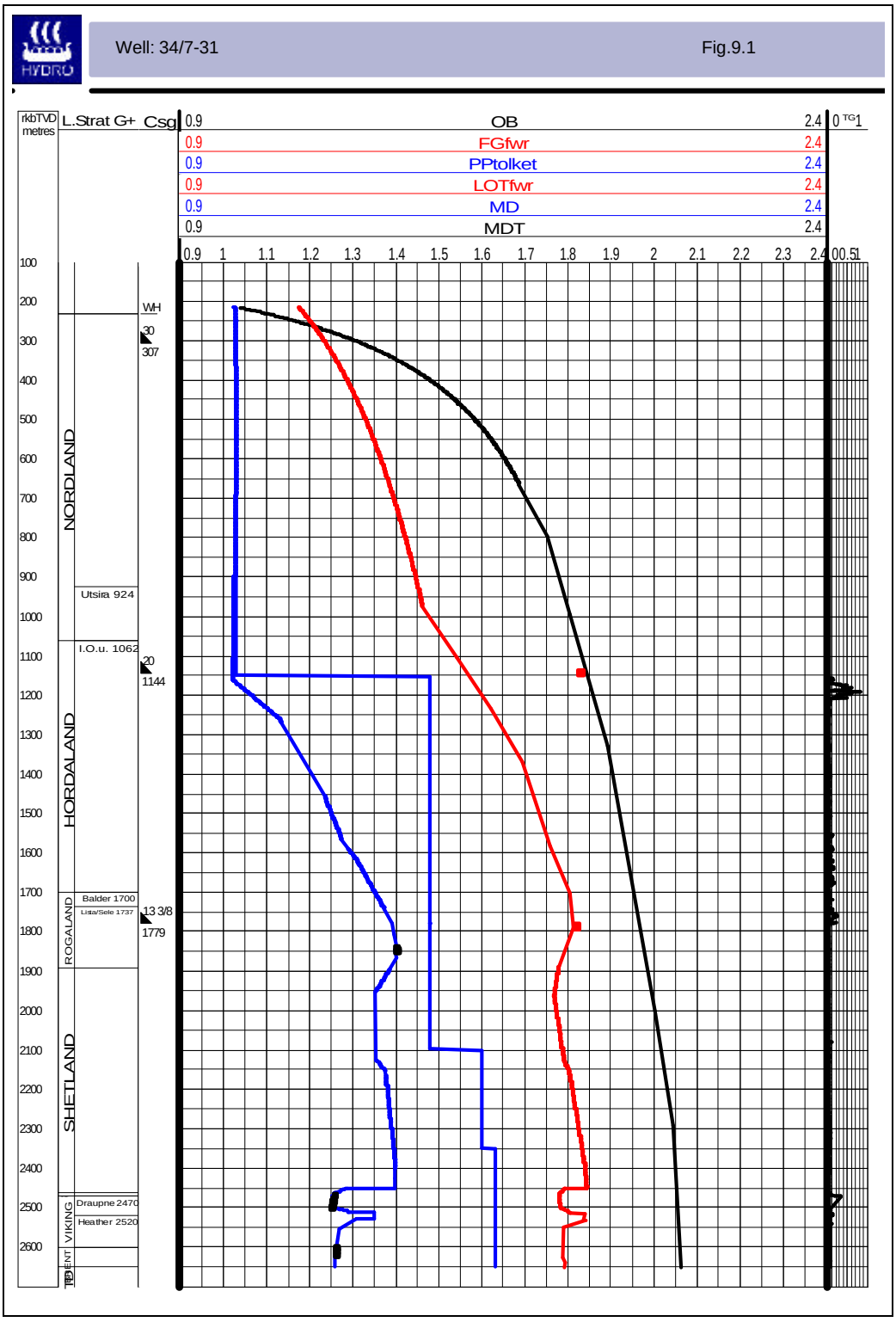


Figure 9.1: Pore Pressure, Fracture, Overburden and Temperature Gradients

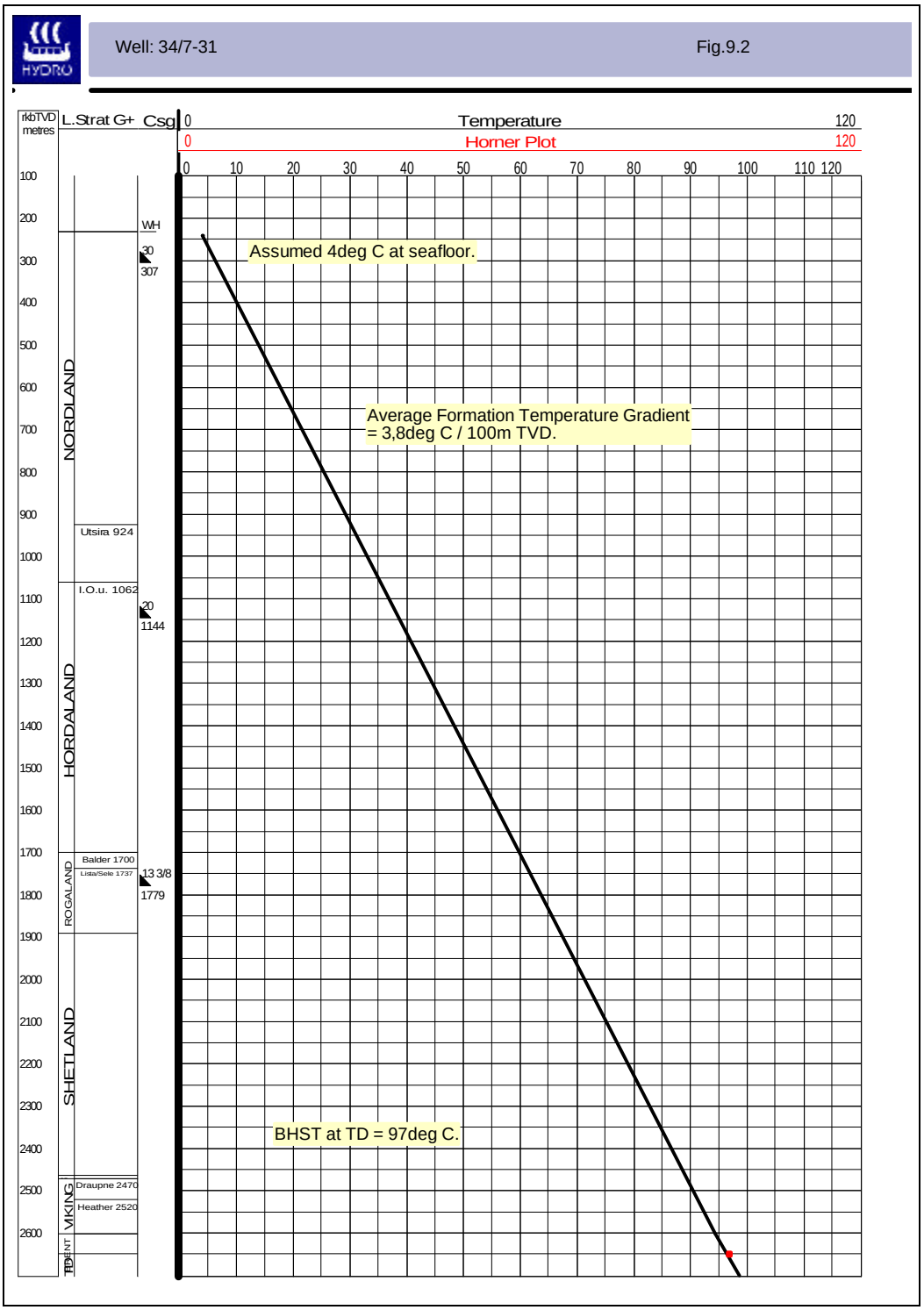


Figure 9.2: Formation temperature gradient

10 Geophysical Results

The prognosed depths were within the prognosed picked depths, except the top Brent reflector that was prognosed too deep.

Horizon	Formation	MD (mrkb)	TVD (mrkb)	Delta (m)	TWT (msec)	Delta TWT
Nordland		233	233		315	
				691		
	Utsira	924	924			
				138		
Hordaland		1 062	1 062			
				638		
Rogaland	Balder	1 700	1 700		1 746	
				38		34
	Sele	1 738	1 738		1 780	
				68		64
	Lista	1 806	1 806		1 844	
				85		73
Shetland		1 891	1 891		1 917	
				569		442
Cromer Knoll		2 460	2 460		2 359	
				10		7
Viking	Draupne	2 470	2 470		2 366	
				50		38
	Heather	2 520	2 520		2 404	
				82		59
Brent	Tarbert	2 602	2 602		2 463	
				48		
TD		2 650	2 650			

Table 10.1: Geophysical Summary

11 Post Site Survey Report for well 34/7-31

WELL DATA :

1 Distance from rig floor to sea level: 233 m

2 Water depth (MSL): 207 m

3a Setting depth for conductor (m RKB): 306,3 m

3b Leak Off / Formation Integrity Test (g/cc): N/A

4a Setting depth (m RKB TVD) for casing on which BOP mounted: 1144 m

4b Formation Integrity Test (g/cc): 1.83 sg

5 Depth (m RKB (TVD) & Two Way Time) to formation/section/layer tops:

Base Kleppe Senior Fm (PLEI1)	247,5 m	302 (ms)
Base Norwegian Trench Fm (PLEI2)	268 m	317 (ms)
Intra Ferder Formation (IFD)	282,5m	337 (ms)
Base Ferder Formation (PLEI3)	332 m	385 (ms)
Intra Mariner Fm (PLEI4)	379 m	436 (ms)
Base Pleistocene (Base Mariner Fm) (BPLEI)	400,5m	467 (ms)
Intra Pliocene 1 (PLIO1)	468 m	545 (ms)
Intra Pliocene 2 (PLIO2)	526 m	594 (ms)
Intra Pliocene 3 (PLIO3)	566 m	627 (ms)
Intra Pliocene 4 (PLIO4)	623 m	693 (ms)
Intra Pliocene 5 (PLIO5)	802 m	867 (ms)
Base Pliocene (BPLIO) (T.Utsira)	900 m	926(ms)
Base Upper Miocene(BMIO)	1062 m	1080 (ms)

Note:

No chronostratigraphic information was collected in the top hole section of the well (from seabed down to 1170 m RKB TVD). Also mud logging commenced at 1170 m RKB TVD. Consequently, the interpretation of the different formations in this area is based on the MWD logs, seismic character and previous work.

6 Depth interval (m RKB (TVD) & Two Way Time) and age of sand bodies shallower than 1000 m under the seabed. Note which layers if any contain gas:

Note:

No data exists on background gas levels from seabed down to 1170 m (the section drilled with returns to seabed). However, no gas related incidents were reported over this interval.

Pleistocene Interval:

280 m - 282 m	Possible shallow gas
372 m - 374,5 m	Possible shallow gas
379 m - 400,5 m	

Pliocene Interval:

526 m - 529 m	
558 m - 561 m	Possible shallow gas
566 m - 568 m	
623 m - 625 m	
802 m - 815 m	
860 m - 862 m	
878 m - 881 m	

Late Miocene Interval:

900 m - 1062 m	Sand/clay intervals

Late Oligocene Interval

1268 m - 1301 m

7 By what means is the presence of gas proven:

A 9 7/8" pilot hole was drilled to 1150 m MD, the setting depth of the surface casing, to check for shallow gas in the 36" and 26" section intervas. No shallow gas was proven while drilling. However, the MWD logs indicate gas levels at 280 m - 282 m, 372 m - 374,5 m and 558 m - 561 m (increased resitivity and reduced gamma values).

8 Composition and origin of gas: N/A

9 Describe all measurements taken in gas bearing layers: N/A

SEISMIC DATA:

10 Given depth and extent of any gas blanking ("gass-skygging"), seismic anomalies etc.:

High amplitude reflections indicative of lithological and structural differences or shallow gas, have been identified in the following four intervals/levels:

Interval/Level	Depth (m MSL) at location	Distance from location (m) to anomaly
PLEI2 - IFD	240 m ± 3 m - 260 ± 3 m	At location (2D/3D data)
PLEI4-BPLEI	356 m ± 5 m - 386 m ± 15 m	460 m N (2D/3D data)
PLIO2-PLIO3	514 m ± 11 m - 549 m ± 11 m	475 m E (2D / 3D data)
PLIO4	618 m ± 12 m	450 m NE of location(2D / 3D)

At the 34/7-31 Planned Well Location, amplitude anomalies occur at the interval between 240 m MSL (Near Base Norwegian Trench Formation) and 260 m MSL (Intra Ferder Formation). The anomalies are interpreted as lithological in origin (high acoustic impedance contrast) rather than gas, although small quantities of background gas was recorded (minor log responses) in the tie-well 24/7-21A at this level. No other anomalously high amplitude reflectors have been found at the Planned Well Location in the 2D or 3D datasets.

Shallow gas has been observed, measured or is indicated on log responses in most of the wells in Block 34/7, mainly associated with sand layers near Base Pleistocene. Other shallow gas observations or indications in wells seem to occur more randomly associated with sand layers in Pliocene. Based on the seismic anomaly distribution and the shallow gas observed in the nearby wells, **it was considered very likely to encounter small quantities of gas at the following levels/intervals:**

PLEI2 - IFD: 240 m ± 3 m to 260 m ± 3 m MSL (266 - 286 m RKB)
PLEI4-BPLEI: 356 m ± 5 m to 386 m ± 15 m MSL (382 - 412 m RKB)
PLIO2-PLIO3: 514 m ± 11 m to 549 m ± 11 m MSL (540 - 575 m RKB)

In conclusion, **a weak gas warning was issued for well 34/7-31**. However, the gas was not considered to pose a hazard to drilling.

11 Note any indication of gas originating from deeper levels. Give description in cases where gas comes from deeper layers: N/A

12 How does the interpretation of the site survey correspond to the well data with respect to:

12a Shallow Gas:

Four amplitude anomaly intervals/levels were mapped in the 34/7-31 area. Weak gas warnings were given for three of these intervals.

No gas related problems were experienced in the well. However, the MWD logs show possible gas levels at 280 m - 282 m, 372 m - 374,5 m and 558 m - 561 m.

Minor gas peaks on MWD-logs (mRKB)	**Weak gas warning (m RKB)**
280 m - 282 m	266 m ± 3 m to 286 m ± 3 m
372 m - 374,5	Slightly shallower than predicted
558 m - 561 m	540 m ± 11 m to 575 m ± 11 m

The interval 372 m - 374,5 represents a thin sand/silt layer in the Mariner Formation and is found 10 m shallower than the prognosed sand interval PLEI4-BPLEI (382 - 412 m RKB).

12b Sand Bodies:

Pleistocene sand lenses were prognosed and observed in two intervals (the Ferder and the Mariner Formation), but the individual layers were not annotated with exact depth. However, the Lower Mariner Formation encontered a more massive sand than predicted.

Five predicted thin Pliocene sand layers are observed on the MWD log. One predicted sand, the PLIO1 marker (468 m RKB) appears to be a more diffuse claystone/claystone transition. Two thin sand layers near base Pliocene (at 860-862 m and 878-881 m), representing a transition zone into the Utsira sand, were not predicted.

The Miocene sands were predicted, but the individual layers were not annotated with exact depth. The encountered sand layers correspond with the interpretation.

Minor Oligocene sandstone layers, mainly in the interval 1230-1301 m, was not predictet.

12c Boulders:

Scattered boulders were predicted in the shallow section between 252 m - 412 m RKB TVD. No boulders were encountered in the interval, but an overpull in the 26" hole section over the 735-709 m interval was most likely caused by boulders falling in.

12d Unconformities (depths in metres RKB (TVD) :

Horizon	Prognosed	Observed	Difference (P-O)
Base Kleppe Senior Fm (PLEI1)	252 ± 3 m	247,5 m	4, 5 m shallower
Base Norwegian Trench Fm (PLEI2)	266 ± 3 m	268 m	2 m deeper
Intra Ferder Formation (IFD)	286 ± 3 m	282 m	4 m shallower
Base Ferder Formation (PLEI3)	332 ± 5 m	332 m	0 m
Intra Mariner Fm (PLEI4)	382 ± 5 m	379 m	3 m shallower
Base Pleistocene (BPLEI)	412 ± 15 m	400,5 m	11,5 m shallower
Intra Pliocene 1 (PLIO1)	489 ± 11 m	468 m	21 m shallower
Intra Pliocene 2 (PLIO2)	540 ± 11 m	526 m	14 m shallower
Intra Pliocene 3 (PLIO3)	575 ± 11 m	566 m	9 m shallower
Intra Pliocene 4 (PLIO4)	644 ± 12 m	623 m	21 m shallower
Intra Pliocene 5 (PLIO5)	829 ± 17 m	802 m	27 m shallower
Base Pliocene (BPLIO) (T.Utsira)	892 ± 27 m	924	32 m (deeper)
Base Miocene(BMIO)	1059 ± 56 m	1062	3 m (deeper)

The observed depths were generally 3% shallower than the prognosed depths. The difference between the predicted and observed depth may have been caused by discrepancies in either the seismic pick, the MWD log picks, the velocity model used for depth conversion or a combination of all.

12e Correlation to Nearby Wells:

The drilling conditions experienced in well 34/7-31 are similar to those encountered in tie-well 34/7-21.

12 How does the interpretation of the site survey correspond to the well data with respect to:

12a Shallow Gas:

Four amplitude anomaly intervals/levels were mapped in the 34/7-31 area. Weak gas warnings were given for three of these intervals.

No gas related problems were experienced in the well. However, the MWD logs show possible gas levels at 280 m - 282 m, 372 m - 374,5 m and 558 m - 561 m.

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Intra Pliocene 3 (PLIO3)	575 ± 11 m	566 m	9 m shallower
Intra Pliocene 4 (PLIO4)	644 ± 12 m	623 m	21 m shallower
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The observed depths were generally 3% shallower than the prognosed depths. The difference between the predicted and observed depth may have been caused by discrepancies in either the seismic pick, the MWD log picks, the velocity model used for depth conversion or a combination of all.

12e Correlation to Nearby Wells:

The drilling conditions experienced in well 34/7-31 are similar to those encountered in tie-well 34/7-21.

12 Standard and Special Studies

- **Norsk Hydro, 2001**: Well 34/7-31 and -31A Formation Evaluation Report
- **Oilphase 2001**: Offshore Sample Transfer and Analyses Report
- **Read Well Services**: VSP report, 34/7-31
- **RESLAB**: Conventional Core Measurements well 34/7-31

APPENDIX I

CORE DESCRIPTIONS

Core Report

Geologists: B. Schønningsen, E. Skottlien

Field : **Borg Nord**
Well : **34/7-31**
Date : **2001-04-07**
Scale : **1 : 200**

Depth m MD RKB	Core No.	Grain Size (pbl vc c m f vf slt cl)	Lith Struct	Lithological Description	Oil Stn (pr m gd)	Dir Flu (pr m gd)	Cut Flu (pr m gd)	Vis Cut (pr m gd)	Shows Description
2472–2499	1			**Sandstone** Sst: brn blk-dk grysh blk, clr trnsl Qtz, m-crs, r f, r v crs, sbang-sbrndd, mod-wl srt, lse-frm, l.P. sli calc, gd vis por Sst: brn blk-dk grysh blk, clr trnsl-occ mlky wh Qtz, f-m, occ crs, r v crs, sbang-sbrndd, mod srt, lse-frm, l.P. sli calc, micromic, fr vis por Tr Clst: med dk gry-olv gry, lam in Sst, sbblky, frm, slily calc Sst: brn blk-dk grysh blk, clr trnsl-occ mlky wh Qtz, m-crs, occ f, r crs-v crs, sbang-sbrndd, mod srt, lse-frm, occ sli calc, pred non calc, Tr Micromic, gd vis por Tr Clst: dk gry-gry blk, glos Surf, blky, frm-hd, slily calc Sst: brn blk-dk grysh blk, clr trnsl-occ mlky wh Qtz, m, r f, r crs, sbang-sbrndd, occ rndd, wl srt, fri-frm, pred fri, occ sli calc cmt, pred non calc, gd vis por Sst: lt gry, clr trnsl Qtz, m-crs, r f, r v crs, sbang-sbrndd, mod srt, v hd, calc cmt, no-pr vis por Sst: brn blk-dk grysh blk, clr trnsl-occ mlky wh Qtz, m, r f, r crs, sbang-sbrndd, occ rndd, wl srt, fri-frm, pred fri, occ sli calc cmt, pred non calc, gd vis por Sst: brn blk-dk grysh blk, clr trnsl Qtz, f-m, r crs, sbang-sbrndd, wl srt, lse-frm, occ mod hd, l.P. sli calc, slily arg, mod vis por					Strg pet od, dk brn Ostn, brt strg yel-wh dir Fluor, inst strg bl wh Fluor cut, strg brn even vis Cut, strg yel wh Fluor res, lt-mod brn vis Res V wk pet od, no Ostn, brt mod yel-wh dir Fluor, slo mod bl wh Fluor cut, wk lt yel pl brn even vis Cut, mod yel wh Fluor res, no vis Res Strg pet od, dk brn Ostn, brt strg yel-wh dir Fluor, inst strg bl wh Fluor cut, strg brn even vis Cut, strg yel wh Fluor res, lt-mod brn vis Res

Winlog template version 20010309-AJC Log output date 14:35:25 2001-04-07

Core Report

Geologists: Å. Halvorsen, E. Skottlien

Field : **Borg Nord**
Well : **34/7-31**
Date : **2001-04-07**
Scale : **1 : 200**

Depth m MD RKB	Core No.	Grain Size (pbl vc c m f vf slt cl)	Lith Struct	Lithological Description	Oil Stn (pr m gd)	Dir Flu (pr m gd)	Cut Flu (pr m gd)	Vis Cut (pr m gd)	Shows Description
2500 2501 2502 2503 2504 2505 2506 2507 2508 2509	2		H M	Sst: brn blk-dk grysh blk, clr trnsl Qtz, m-crs, r f, r v crs, sbang-sbrndd, lse-frm, mod srt, l.P. sli calc, gd vis por Sst: brn blk-dk grysh blk, clr trnsl - mky wh Qtz, f-crs, r v crs, ang-sbrndd, pr-mod srt, fri-lse, r Glauc, r Pyr, gd vis por Sst: brn blk-dk grysh blk, clr trnsl-mky wh Qtz, f-m, pred f, ang-sbrndd, mod-wl srt, fri-hd, l.P. sil cmt, v arg grd sdy Sh, r Glauc, r Pyr, r Mic, pr-fair vis por					Strg pet od, dk brn Ostn, brt strg yel-wh dir Fluor, inst strg bl wh Fluor cut, strg brn even vis Cut, strg yel wh Fluor res, lt-mod brn vis Res Wk-mod pet od,brn-lt brn O stn, ptchy mod yel wh dir Fluor, inst-fast strg bl wh Fluor cut, mod-strg brn even vis cut, strg yel wh Fluor Res, mod brn vis Res

Winlog template version 20010309-AJC Log output date 13:41:59 2001-04-07

APPENDIX II

SIDEWALL CORE DESCRIPTIONS

Date: 11.04.01		**Well: 34/7-31**	**Run no: 1A**	**Page no: 1**
Depth	%	Lithology description:	Shows	Formation:
1877 40mm recovery Core# 1	100	CLST: Dark green grey – green black, firm – moderately hard, non calcareous, carbonaceous, micromicaceous, rare Pyrite	N/s	Lista
1873 LOST Core# 2			N/s	Lista
1858 43mm recovery Core# 3	90 10	Sst: very light grey – light grey, clear – translucent Qartz, very fine, occasionally fine, friable – firm, angular – subrounded,, well sorted, no calcareous cement, slightly argillaceous, Trace Micaceous, rare Pyrite, rare carbonaceous Clst: dark green grey – green black, firm – moderately hard, non calcareous, carbonaceous, micromicaceous	N/s	Sele
1855 LOST Core# 4				Sele
1852 LOST Core# 5				Sele
1849 17mm recovery Core# 6	100	Light grey, clear – translucent Quartz, very fine, rare coarse, friable – firm, angular – subrounded, well sorted, non calcareous cement, slightly argillaceous,Trace Mica, rare Pyrite, rare carbonaceous.	N/s	Sele

Date: 11.04.01		**Well: 34/7-31**	**Run no: 1A**	**Page no: 2**
Depth	%	Lithology description:	Shows	Formation:
1846 45mm recovery Core# 7	100	Sst: Light grey, clear – translucent Quartz, very fine, rare coarse, friable – firm, angular – subrounded, well sorted, calcareous cement, slightly argillaceous,Trace Mica, rare Pyrite, rare carbonaceous.	N/s	Sele
1843 LOST Core# 8				Sele
1840 45mm recovery Core# 9	100	Sst: Light grey, clear – translucent Quartz, very fine, rare coarse, friable – firm, angular – subrounded, well sorted, calcareous cement, slightly argillaceous,Trace Mica, rare Pyrite, rare carbonaceous	N/s	Sele
2149 12mm recovery Core# 10	100	Clst: Moderately brown, firm - moderately hard, non - slightly calcareous, no acsessoric minerals seen in the sample	N/s	Shetland
2147 45mm recovery Core# 11		Clst: Moderately brown, firm - moderately hard, calcareous, no accessoric minerals seen in the sample	N/s	Shetland
2471 45mm recovery Core# 12	100	Sst: Light grey - pale yellow orange, Clear - translucent, pale yellow orange Quartz, friable - firm, fine - coarse, angular - subrounded, moderately sorted, very argillaceous, Micaceous, Trace Pyrite, Trace carbonaceous, in part slightly calcareous cement, poor, in part fair visible porosity	Brown oil stain, weak petroleum odour, weak straw visible cut, dull 90% yellow white direct Fluorescence, fast blooming blue white fluorescence cut, straw visible residual.	Draupne

Date: 11.04.01		**Well: 34/7-31**	**Run no: 1A**	**Page no: 3**
Depth	%	Lithology description:	Shows	Formation:
2469,5 36mm recovery Core# 13		Very light grey – light grey, clear – translucent Quartz, very fine – fine, angular – subrounded, firm – moderately hard, in part friable, well sorted, abundant calcareous cement, Trace Mica, rare Glauconite, rare Pyrite	No oil stain, very weak petroleum odour??, no visible cut, dull even weak yellow white direct Fluorescence, moderate pin point blue white Fluorescence cut, weak straw visible residual.	Draupne
2468 LOST Core# 14				Cr. Knoll
2465 LOST Core# 15				Cr. Knoll
2462 LOST Core# 16				Cr. Knoll

APPENDIX III

WELL SUMMARY

GEOLOGICAL WELL SUMMARY

MDT RESULTS

WELL SUMMARY:

Coord: 61°18' 37.69"N UTM: 6 797 888.5 mN
02°03' 59.81"E 450 009.2 mE

Zone: ED-50 UTM Zone 31 CM 3° E

Line: NH-In-line 1800, X-line 6456

Rig: Scarabeo 6

Waterdepth: 207 m MSL **KB:** 26 m

Stopped in: Tarbert Formation in the Brent Group

On location: 28.02.01 @ 00:00hrs
Spud: 10.03.01 @ 07:00hrs
Respud: 14.03.01 @ 01:00hrs
At TD -31: 08.04.01 @ 04:00hrs
P&A finished: 25.04.01 @ 10:00hrs
TDDriller(-31): 2650 mMD / TVD
TD Logger: Not logged to TD
Wireline Logg: Schlumberger WS
MWD: Schlumberger Anadrill
Mudlogging: Halliburton Sperry-sun

WELL: **34/7-31**

LICENCE: **PL 089**

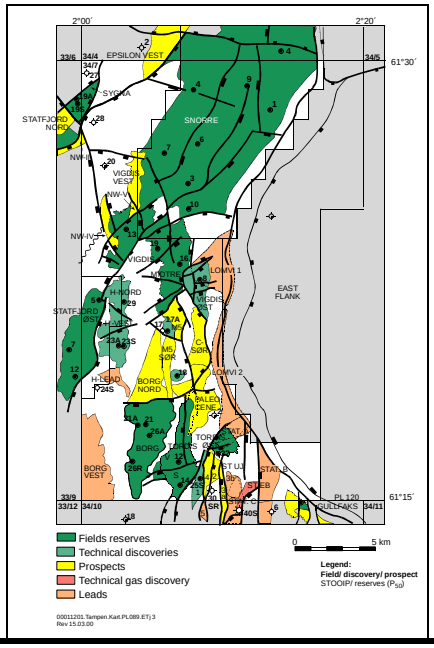
COUNTRY: **Norway**

OPERATOR: NORSK HYDRO. OWNED BY: Hydro, Petoro, Statoil, ExxonMobil, Idemitsu,TotalFinaElf, RWE-DEA

TARGET:
HC in Draupne Sand in the Borg North Prospect.

RESULTS:
- Oil in Draupne Sand in the Draupne Formation

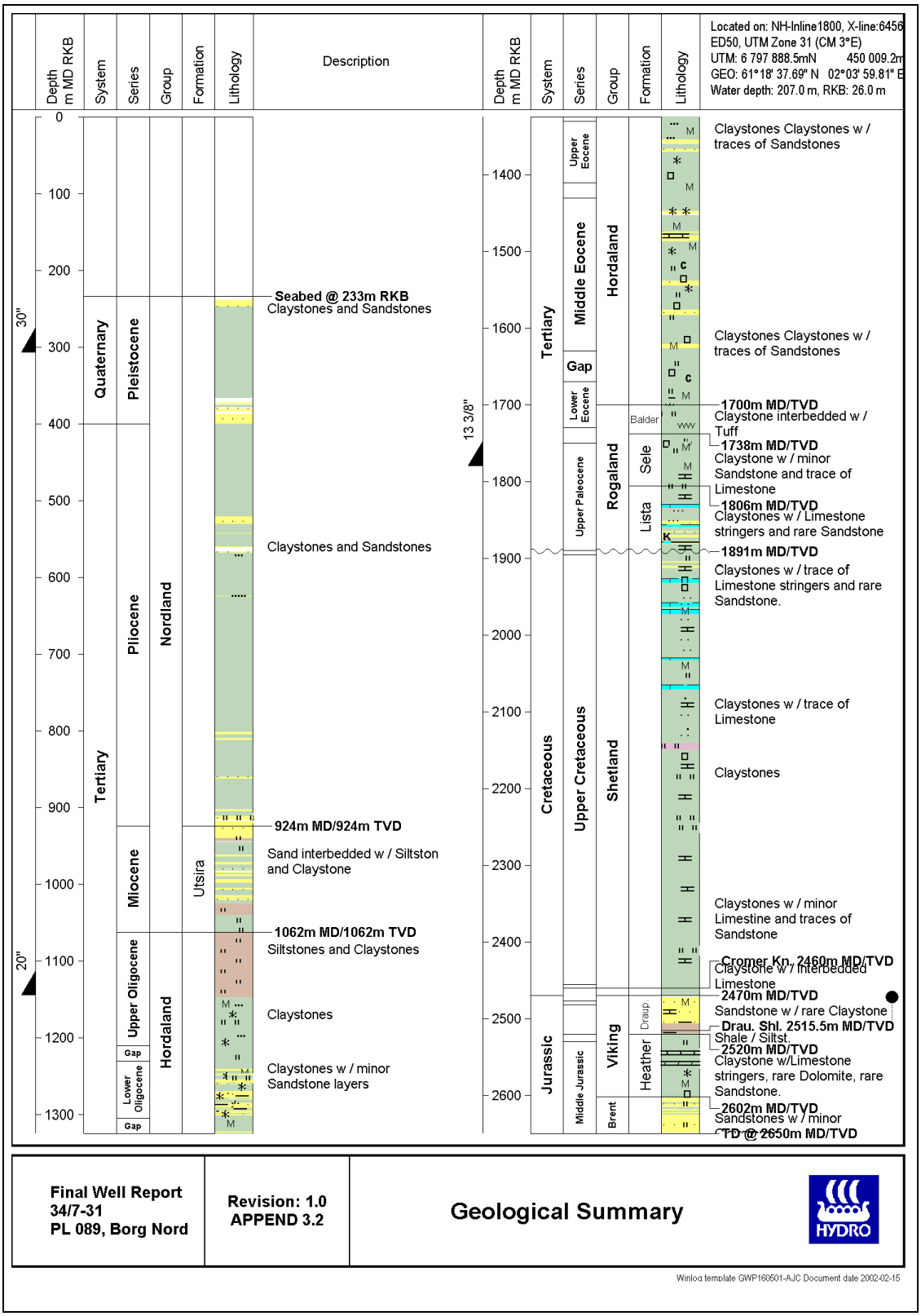
CASING (MD / TVD RKB)			**MUD TYPE / WEIGHT**
30"	at	306.0 m / 306.0 m	Seawater -HiVis pills
20"	at	1143.7 m / 1143,7 m	Seawater -HiVis pills
13 3/8"	at	1778.8 m / 1778.8 m	KCL/Polymer 1.48sg
TD	at	2650.0 m / 2650.0 m	KCL/Polymer 1.63sg



LOGS

CORES

MWD/LWD			**Core #1**: 2472,0 - 2499,3 m
PowerPulse-CDR (Pilot)	9 7/8"	233,0 - 1150,0 m	Rec.: 2472,0 - 2499,3 m 100%
PowerPulse	36"	233,0 - 308,0 m	
PowerPulse	26"	308,0 - 1150,0 m	**Core #2**: 2499,3 - 2506,3 m
PowerPulse-CDR	17½"	1150,0 - 1305,0 m	Rec.: 2499,3 - 2506,3 m 100%
PowerPulse-CDR	17½"	1305,0 - 1788,0 m	
PowerPulse-RAB-ADN	8½"	1788,0 - 2097,0 m	
PowerPulse-RAB-ADN	8½"	2092,0 - 2213,0 m	
PowerPulse-RAB-ADN	8½"	2213,0 - 2268,0 m	
PowerPulse-RAB-ADN	8½"	2268,0 - 2472,0 m *	
PowerPulse-RAB-ADN	8½"	2506,0 - 2650,0 m **	
		* Stop at coredepth	
Wireline		** Reamed cored int.	
MDT (Pressure only)	1A		
PEX-DSI-VSP (0-offset)	1A		
MSCT (16 cores)	1A	Rec 9 / Lost 7=> 56%	


Depth m MD RKB
System
Series
Group
Formation
Lithology
Description
Located on: NH-Inline1800, X-line:6456
ED50, UTM Zone 31 (CM 3°E)
UTM: 6 797 888.5mN 450 009.2m
GEO: 61°18' 37.69" N 02°03' 59.81" E
Water depth: 207.0 m, RKB: 26.0 m
30"
20"
13 3/8"
Quaternary
Pleistocene
Pliocene
Miocene
Upper Oligocene
Gap
Lower Oligocene
Gap
Tertiary
Nordland
Hordaland
Utsira
Seabed @ 233m RKB
Claystones and Sandstones
Claystones and Sandstones
924m MD/924m TVD
Sand interbedded w / Siltston and Claystone
1062m MD/1062m TVD
Siltstones and Claystones
Claystones
Claystones w / minor Sandstone layers
Tertiary
Cretaceous
Jurassic
Upper Eocene
Middle Eocene
Gap
Lower Eocene
Upper Paleocene
Upper Cretaceous
Middle Jurassic
Hordaland
Rogaland
Shetland
Viking
Brent
Balder
Sele
Lista
Draup.
Heather
Claystones Claystones w / traces of Sandstones
Claystones Claystones w / traces of Sandstones
1700m MD/TVD
Claystone interbedded w / Tuff
1738m MD/TVD
Claystone w / minor Sandstone and trace of Limestone
1806m MD/TVD
Claystones w / Limestone stringers and rare Sandstone
1891m MD/TVD
Claystones w / trace of Limestone stringers and rare Sandstone.
Claystones w / trace of Limestone
Claystones
Claystones w / minor Limestine and traces of Sandstone
Cromer Kn. 2460m MD/TVD
Claystone w / interbedded Limestone
2470m MD/TVD
Sandstone w / rare Claystone
Drau. Shl. 2515.5m MD/TVD
Shale / Siltst.
2520m MD/TVD
Claystone w/Limestone stringers, rare Dolomite, rare Sandstone.
2602m MD/TVD
Sandstones w / minor
TD @ 2650m MD/TVD
Final Well Report
34/7-31
PL 089, Borg Nord
Revision: 1.0
APPEND 3.2
Geological Summary
Winlog template GWP160501-AJC Document date 2002-02-15

Title: WELL 34/7-31 / -31 A
FINAL WELL REPORT
PL 089

Coord: 61°18' 37.69"N UTM: 6 797 888.5 mN
02°03' 59.81"E 450 009.2 mE

Zone: ED-50 UTM Zone 31 CM 3° E

Line:

Rig: Scarabeo 6

Waterdepth: 207 m MSL **KB:** 26 m

Stopped in: Tarbert Formation in the Brent Group

On location: 28.02.01 @ 20:30hrs
At TD -31: 08.04.01

Sidetrack: 13.04.01 @ 06:00hrs
"Spud": 15.04.01 @ 07:30hrs
At TD -31A: 17.04.01
P&A finished: 20.04.01 @ 13:00hrs

KickOff depth: 1802m MD/TVD
TDDriller: 3454mMD (2355,8mTVD)
TD Logger: Not logged to TD

Wireline Logg: Schlumberger WS
MWD: Schlumberger Anadrill
Mudlogging: Halliburton Sperry-sun

WELL:
34/7-31A

LICENCE:
PL 089

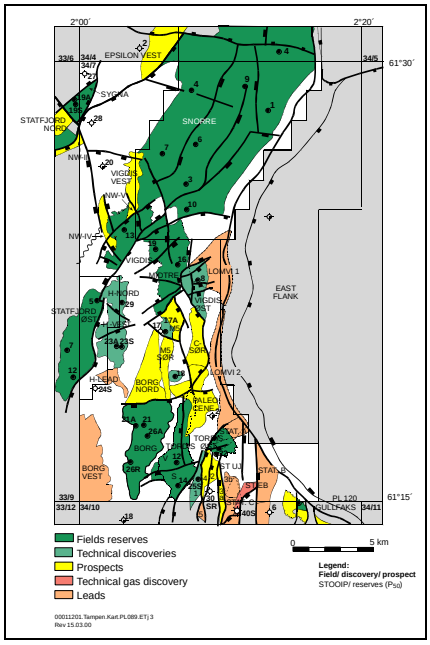
COUNTRY:
Norway

OPERATOR: NORSK HYDRO. OWNED BY: Hydro, Petoro, Statoil, ExxonMobil, Idemitsu,TotalFinaElf, RWE-DEA

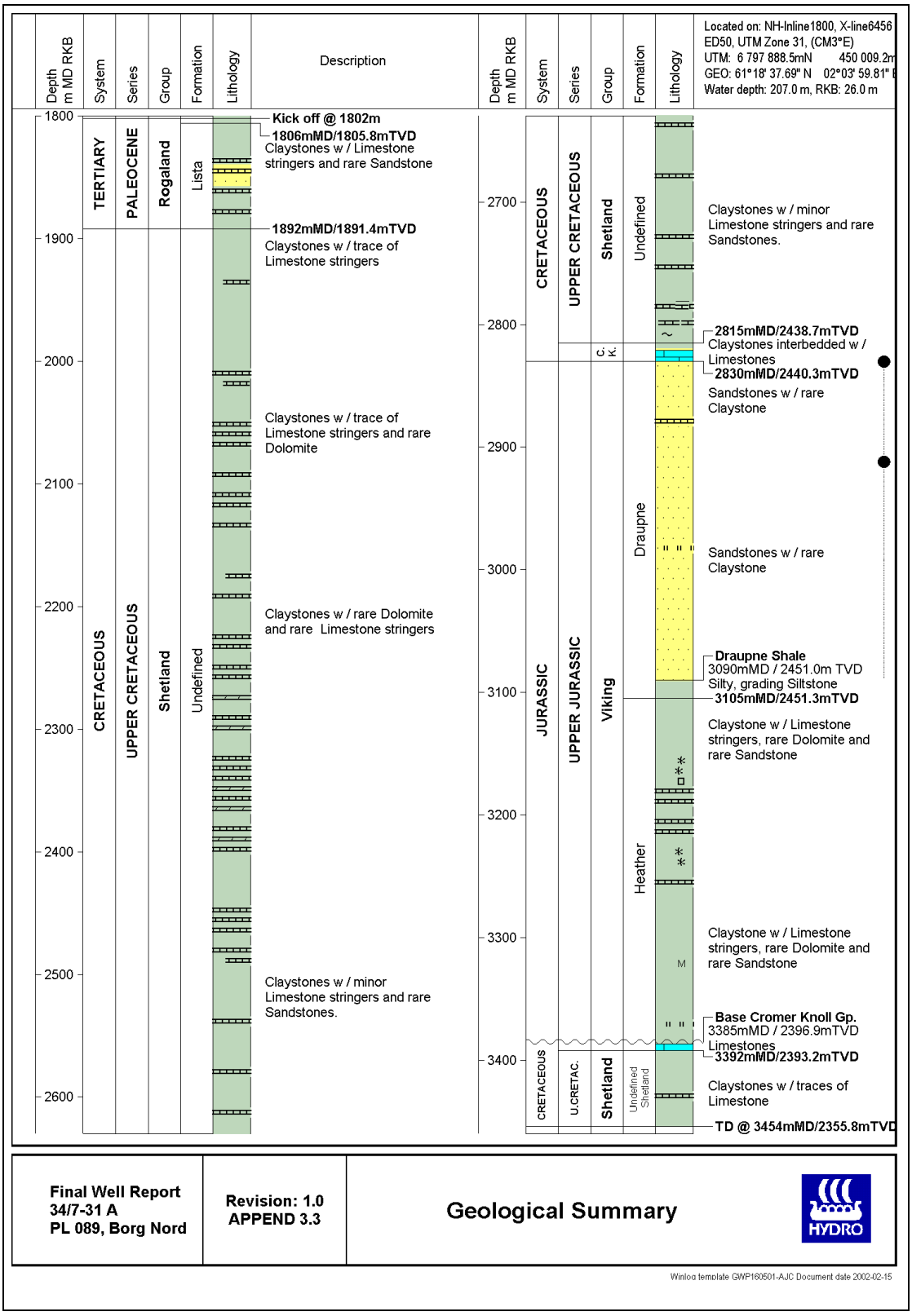
TARGET:
- Sidetrack to map lateral extent of HC filled Draupne Sand.

RESULTS:
- Oil in Draupne Sand in the Draupne Formation

CASING (MD / TVD RKB)	**MUD TYPE / WEIGHT**
No casing TD at 3454.0 m / 2355.8.0m	OBM.Versavert 1.50sg



LOGS			**CORES**
MWD/LWD PowerPulse-Vision-ADN	9½"	1788 - 3454 m	No coring
Wireline No logging			


Depth m MD RKB
System
Series
Group
Formation
Lithology
Description
Located on: NH-Inline1800, X-line6456
ED50, UTM Zone 31, (CM3°E)
UTM: 6 797 888.5mN 450 009.2m
GEO: 61° 18' 37.69" N 02° 03' 59.81"
Water depth: 207.0 m, RKB: 26.0 m
1800
1900
2000
2100
2200
2300
2400
2500
2600
TERTIARY
PALEOCENE
Rogaland
Lista
CRETACEOUS
UPPER CRETACEOUS
Shetland
Undefined
Kick off @ 1802m
1806mMD/1805.8mTVD
Claystones w / Limestone stringers and rare Sandstone
1892mMD/1891.4mTVD
Claystones w / trace of Limestone stringers
Claystones w / trace of Limestone stringers and rare Dolomite
Claystones w / rare Dolomite and rare Limestone stringers
Claystones w / minor Limestone stringers and rare Sandstones.
2700
2800
2900
3000
3100
3200
3300
3400
CRETACEOUS
JURASSIC
UPPER CRETACEOUS
UPPER JURASSIC
U.CRETAC.
Shetland
Undefined
Undefined Shetland
Viking
Draupne
Heather
c.
k.
Claystones w / minor Limestone stringers and rare Sandstones.
2815mMD/2438.7mTVD
Claystones interbedded w / Limestones
2830mMD/2440.3mTVD
Sandstones w / rare Claystone
Sandstones w / rare Claystone
Draupne Shale
3090mMD / 2451.0m TVD
Silty, grading Siltstone
3105mMD/2451.3mTVD
Claystone w / Limestone stringers, rare Dolomite and rare Sandstone
Claystone w / Limestone stringers, rare Dolomite and rare Sandstone
Base Cromer Knoll Gp.
3385mMD / 2396.9mTVD
Limestones
3392mMD/2393.2mTVD
Claystones w / traces of Limestone
TD @ 3454mMD/2355.8mTVD
Final Well Report
34/7-31 A
PL 089, Borg Nord
Revision: 1.0
APPEND 3.3
Geological Summary
Winlog template GWP160501-AJC Document date 2002-02-15

Formation Pressure Worksheet Run 1A

Well: 34/7-31 Rig: Scarabeo 6 Date: 8-10 April 2001

Pressure Units: Bars RKB-MSL: 26 m MSL-SBed: 207 m Witnessed by: Rokke/Skottlien/Halvorsen

Toolstring: PC-HY-SP(Mart)-HY-SP(Std)-OFA-PO-IO-PO-SC1-SC1-MS(4x450,2x250)-MS(4x450,2x250) Conveyance: Wireline

Test no.	Depth mMD RKB	Depth mTVD RKB	Initial Hydrostatic Pressure		Formation Pressure		Final Hydrostatic Pressure			Time hh:mm		Formation Pressure sg EMD	Mud Pressure sg EMD	Test Temp degC	Good Data Y/N	Quartz Mobility md/cp	Remarks	Pre Test Vol
			Quartz	Strain	Quartz	Strain	Quartz	Strain	Diff.	Set	Retract							
1	1 872,5	1 872,4	299,76	300,74	130,080	131,66	299,57	300,60	0,19	03:04	03:09	0,708	1,632	55,1	N	0,7	Tight	2,65
2	1 858,0	1 857,9	297,25	298,28	146,240	147,27	297,21	298,26	0,04	03:17	03:23	0,802	1,631	55,4	N		Tight	1+3.6
3	1 854,5	1 854,4	296,63	297,66	144,279	145,11	296,60	297,63	0,03	03:28	03:36	0,793	1,631	55,7	N	0,4	Tight	2,65
4	1 853,5	1 853,4	296,44	297,47	255,488	256,46	296,42	297,44	0,02	03:43	03:48	1,405	1,63	56,2	N	0,6	Possibly a good point???	8,65
5	1 852,0	1 851,8	296,16	297,18	255,318	256,27	296,14	297,14	0,02	03:55	04:15	1,405	1,63	56,3	N	0,1	"Repairing" supercharged point	6.7+2.5
6	1 850,7	1 850,6	295,93	296,94	254,733	255,68	295,94	296,94	-0,01	04:22	04:28	1,403	1,63	56,7	Y	4,4	Good point	20
7	1 848,8	1 846,1	295,62	296,62	254,566	255,51	295,65	296,65	-0,03	04:34	04:39	1,406	1,632	57,0	Y	1,7	Good point, low perm.	20
8	1846,2	1 841,8	295,19	296,20	254,230	255,18	295,23	296,23	-0,04	04:45	04:51	1,407	1,634	57,1	Y	5,3	Good point, very low perm.	20
9	1 842,0	1 841,8	294,57	295,58	253,772	254,72	294,56	295,57	0,01	04:58	05:03	1,405	1,63	57,2	Y	11,7	Good point	20
10	2 148,0	2 147,8	343,34	344,30	140,833	141,57	343,26	344,30	0,08	05:52	05:58	0,668	1,63	61,8	N	0,4	Tight	3,67
	1,0	1,0							0			0	0					

11	2 503,4	2 503,2	398,95	399,90	307,609	308,51	398,85	399,80	0,1	07:10	07:14	1,253	1,625	74,4	Y	33,1	Good	20
12	2 500,0	2 499,8	398,24	399,23	307,371	308,29	398,24	399,24	0	07:20	07:26	1,253	1,624	76,6	Y	1447,7	Very good perm	20
13	2 495,0	2 494,7	397,47	398,44	307,038	307,95	397,42	398,40	0,05	07:34	07:39	1,255	1,624	76,5	Y	1798,3	Very good perm	20
14	2 492,0	2 491,8	396,98	397,96	306,836	307,74	396,96	397,94	0,03	07:46	07:51	1,255	1,624	76,4	Y	1026,5	Very good perm	20
15	2 486,5	2 486,3	396,17	397,14	306,458	307,37	396,12	397,11	0,04	08:00	08:04	1,256	1,624	76,4	Y	1375,3	Very good perm	20
16	2 484,5	2 484,3	395,79	396,77	306,329	307,23	395,80	396,78	-0,01	08:10	08:14	1,257	1,624	76,3	Y	839,9	Very good perm	20
17	2 479,0	2 478,7	394,89	395,86	305,958	306,68	394,96	395,93	-0,07	08:19	08:26	1,258	1,624	76,4	Y	211,1	Good	20
18	2 477,5	2 477,3	394,69	395,67			394,73	395,72	-0,04	08:32	08:35	0	1,624	76,1	N	0,1	Tight, pretest 3.2cc	3,2
19	2 475,0	2 474,9	394,35	395,32			394,34	395,31	0	08:43	08:50	0	1,624	76,4	N	0,3	Supercharged	2,7
20	2 470,3	2 470,1	394,33	395,32	305,372	306,27	393,66	394,64	0,67	09:12	09:18	1,26	1,627	76,0	Y	41,5	Good	20
	2 628,5	2 628,2							0			0	0				Skip P-point, too close to TD of well	
21	2 621,5	2 621,2							0	10:09	10:11	0	0		N		Tool failure, POOH with tool to check, cable short.	
22	2 621,5	2 621,2	419,96	413,93	324,535	325,07	418,20	418,86	1,75	18:02	18:06	1,262	1,633	73,7	Y	22,8	Good	20
23	2 618,5	2 618,1	417,48	418,16	324,239	324,92	417,14	417,97	0,34	18:11	18:16	1,262	1,625	77,4	Y	19,4	Good	20
24	2 613,5	2 613,2	416,29	417,06	323,729	324,46	415,15	417,06	1,14	18:21	18:26	1,263	1,624	80,1	Y	42,6	Good	20
25	2 611,5	2 611,2	415,88	416,74	323,546	324,29	415,85	416,76	0,04	18:31	18:36	1,263	1,624	81,6	Y	91,3	Good	20
26	2 606,0	2 605,7	415,02	415,89	322,997	323,75	415,00	415,91	0,03	18:43	18:47	1,264	1,624	83,1	Y	21,3	Good	20

27	2 604,5	2 604,2	414,79	415,67	322,826	323,62	414,77	415,68	0,02	18:51	18:55	1,264	1,624	84,1	Y	4,9	Good	20
28	2 603,5	2 602,7	414,60	415,49	322,718	323,52	414,59	415,51	0	19:03	19:08	1,264	1,624	85,0	Y	35,6	Good	20
29-MAR-PS2	2 500,0	2 499,7	398,35	399,64					398,35	19:43	19:47	0	1,624		N		Sample pt. In Draupne, abandoned	20
30-MAR-PS2	2 499,5	2 499,3	398,23	399,52	308,508	309,84			398,23	19:50	19:59	1,258	1,624	82,7	N		Sample pt. In Draupne, abondoned	20
31-MAR-PS2	2 496,0	2 495,8	397,66	398,91	306,806	308,12			397,66	20:07	01:10	1,253	1,624	82,2	N		Sample pt. In Draupne	20
32-MAR-PS2	2 603,4	2 603,2	415,40	416,58					415,4			0	1,627		N		Sampling pt. In Brent, abandoned	
33-MAR-PS2	2 611,5	2 611,2	416,1	417,32	321,000				416,11	02:15	04:10	1,253	1,624	85,2	N		Sampling point in Brent	20
34-MAR-PS1	1 842,0	1 841,8	254,3	255,10	253,669	254,70	295,04	296,06	-40,79	05:37	06:49	1,404	1,407	61,5	N	39	Sampling point in Paleocene	1,2
35-MAR-PS2	2 496,0	2 495,8	399,1	399,87					399,07	07:41	07:43	0	1,63	80,9	N		Minitest, lost seal, retract Martineau probe	20
36-MAR-PS2	2 496,0	2 495,8	398,7	399,50					398,67	07:44	07:47	0	1,628	81,3	N		Minitest, lost seal, retract Martineau probe	20
37-MAR-PS2	2 494,0	2 493,2	397,7	398,69					397,72	07:51	07:55	0	1,626	81,5	N		Minitest, lost seal, retract Martineau probe	20
38-MAR-PS1	2 496,4	2 496,2	397,7	398,65	307,250	308,08	398,37	399,59	-0,62	07:58	08:22	1,255	1,624	83,3	N		Minitest Draupne, StP, low drawdown	20

SECTION B

OPERATIONS

Prepared by: P.V. Fossum

Approved by: Terje Skram

LIST OF CONTENTS

TABLES

34/7-31

34/7-31 A

FIGURES

1 DRILLING SUMMARY AND EXPERIENCES

1.1 Mobilising

Total time used:	266.0 hrs	
Operational time:	156.5 hrs	(58.8 %)
Downtime:	109.5 hrs	(41.2 %)

Wellhead co-ordinates:

6 797888.5 mN 0 450009.2 mE

The rig move towards well 34/7-31 & 31 A started on 28.02.2001 at 23:59 and anchor handling was finished on 10.03.2001 at 06:00.

Rig heading was 185 degrees.

1.2 36" Pilot Hole Section / 30" Conductor

Total depth of 9 7/8" pilot hole: 1150.0 m.

Total depth of 36" section: 306.0 m.

Total time used:	119.5 hrs	
Operational time:	90.0 hrs	(75.3 %)
Downtime:	29.5 hrs	(24.7 %)

1.2.1 Drilling

The well was spudded on 10 March 2001, at 07:00 hrs.

A 9 7/8" pilot hole was drilled from 233 m - 1150 m with hi-visc. pills and seawater. Partly washed and partly drilled down to 258 m. Boulders was present, and the pilot hole was re-spudded twice in order to hold the section vertical. At TD, a 40 m3 hi-visc. pill was pumped in order to clean the well prior top-up of 1,50 sg bentonite mud.

A 36" rotary BHA with 17-1/2" insert bit and 36" hole opener was run next. The 36" hole was drilled with sea water and hi-visc. pills to TD at 306 m. A wipertrip to seabed was performed, and a 25 m3 hi-visc. pill was circulated out to clean hole.

The 36" hole was topped with 1,50 sg mud prior running 30" conductor. The conductor with the Permanent Guide Base was run to 306 m and cemented back to seabed.

1.2.2 Casing

The conductor with the Permanent Guide Base was run to 306 m and cemented back to seabed.

1.3 26" Pilot Hole Section / 20" casing

Total depth of section: 1150.0 m.

Total time used:	87.5 hrs	
Operational time:	83.0 hrs	(94.9 %)

Downtime: 4.5 hrs (5.1 %)

1.3.1 Drilling

Ran in hole with a 26" milltooth bit and opened 9 7/8" hole to 26" from 306 m to 1150 m in one go at an average of 61,2 m/hr. No resistance was met while pulling out of hole.

1.3.2 Casing

Set casing after performed 25 mT overpull. Established circulation with seawater and pressure tested cement hose to 100 bar. Cemented as per plan.

1.4 17-1/2" Pilot Hole Section / 13-3/8" Casing

Total depth of section: 1785.0 m.

Total time used:	287.5 hrs	
Operational time:	112.5 hrs	(39.1 %)
Downtime:	175.0 hrs	(60.9 %)

1.4.1 Drilling

Drilled cement and rathole with seawater. Into new formation the hole was displaced to KCl/polymer mud, and a Leak Off Test (LOT) was performed with 1,48 sg to 1,82 EMW.

Continued to drill and orient with a rotary assembly and rollercone bit type 02GMODC. From 1150 - 1305 m, the pump pressure was peaking at 223 bar at 3600 lpm having a minimum of 40 bar /1900 lpm, which were considered to high, and made a bit trip to change nozzles from 1x16, 3x22 to 1x16, 1x22, 2x24.

Ran back on bottom and drilled from 1305 m - 1477 having excessive losses at the shakers. The returns were massive and slity, reactive clay were blocking the screens on the shakers to an extent that the pumprate were reduced and coarse screens put back on. Commenced to TD at 1785 m.

CIrculated the hole clean and attempted to pull out, but no go. The hole was tight and any attempt of wiping the spots was unsuccesful. Backreamed to 1395 m and circulated bottoms up as huge lumps of cuttings had been accumulated at Bottom Hole Assembly (BHA). Another pull were tried, but had to ream back to shoe.

Ran back in hole to TD and circulated the hole clean again. This time it was possible to pull out, only reaming tight spots at 1691 m, 1565 m and 1228 m.

1.4.2 Casing

Ran 13 3/8" casing with circulation tool, filling each third joint on way down. No drag was experienced. Started to circulate when casing landed in wellhead. Lost 9 m3 after 6000 strokes, but worked the casing up/down to maintain annulus flow while pumping bottoms up. Regained circulation and started cementing.

The seal assembly was set with 15 mT but did only gain 25 bar / 160 ltr during pressure testing. Made several attempts to retrieve it, but no go. Drifted through seal assembly and found the casing hanger 30 cm too high by operating middle

pipe ram for reference. Attempts were made to run wear bushing with modified lock pins, and also latch ring, but still no go.

Cleaned out wellhead area. Ran down to wellhead with jet tool and displaced riser and pumped soap until clean. Surveyed wellhead and inside BOP with camera, no sign of lockring.

Prepared an MPT with lock dog adaptor, landed MPT in wellhead. After pulling out, the lock dogs were found sheared. Ran in with spear and pulled casing 1/2 m with 210 mT overpull for, if possible, release seal assembly. Another run with camera surveying wellhead was performed.

A modified wearbushing on standard MPT was run, this time the string was rotated with max torque 3000 ft.lbs. Found the lock dogs sheared again.

A 13 3/8" cutting assembly was made up, displaced the riser to 1,48 sg mud same. Cut and retrieve the casing at 595,6 m. The seal assembly came out without lockring, the casing hanger had scratches in tieback area and had 2 plugged flowby ports.

Displaced riser to seawater and pumped a soap pill. Jetted BOP and riser and ran in with camera to survey wellhead. No signs of lock ring.

Made up casing patch to latch onto cut. Landed and set down 10 mT, took weight back to neutral, set down 45 mT included landing string, but casing was still 1,5 m too high. Made up Heavy Weight Drill Pipe and Drill Collar's, set down on casing hanger with 61 mT and confirmed a 1,5 m drop (operated pipe rams for reference). A new set of running tool and seal assembly was run. Set down with 20 mT, and got a test to 270 bar / 10 min.

1.5 12-1/4" Pilot Hole Section

Total depth of section: 1788.0 m.

Total time used:	23.5 hrs	
Operational time:	23.5 hrs	(100.0 %)
Downtime:	0.0 hrs	(0.0 %)

1.5.1 Drilling

Made up a float sub, 12 1/4" bit along with drill collars to drill plugs, float collar and 3 m formation.

Tagged cement at 1723,7 m and drilled new hole from 1785 to 1788 m.

Performed a LOT to 1,82 sg with a 5 m3 LCM-pill on bottom.

1.6 8-1/2" Pilot Hole Section

Drilling

Total depth of section: 2650.0 m.

Total time used:	195.0 hrs	
Operational time:	192.0 hrs	(98.5 %)
Downtime:	3.0 hrs	(1.5 %)

Logging

Total time used:	67.0 hrs	
Operational time:	54.0 hrs	(80.6 %)
Downtime:	13.0 hrs	(19.4 %)

1.6.1 Drilling

Ran in hole with rotary assembly, Resistivity At Bit tool (RAB) and a diamond bit, type BD445 (3x16 nozzles). Bottom was tagged at 1788 m. In front of drilling, the hole was then displaced to 1,61 sg KCl/polymer mud. Drilled from 1788 m to 2092 m, where the bit was pulled due to bit balling. The nozzles were changed (1x14, 2x15) to be able to clean out cuttings more efficiently, however, at 2208 m KCl-pill were pumped twice in order to release clay from the bit with no go.

A Smith MA74PX diamond bit were set on. Commenced drilling 68 m, a new 6 m3 KCl pill were spotted, but still no go.

A change was made from using diamond bit to milltooth which made progress until coring point at 2472 m, although a Rate Of Penetration (ROP) of only 8,4 m/hr.

Cored 2 runs altogether as shown in ch. 1.4.5.

Ran back in hole with same assembly as previous. Reamed while logging from 1765 m-1900 m. Circulated bottoms up to clean hole, commenced then to 2506 m. Drilled 8 1/2" hole from 2506 m to TD at 2650 m in one go. Had to backream all way to shoe, and performed a wipertrip on result of this.

Ran in hole with logging assembly.

1.6.2 Coring

The following runs were done:

Run #	Cored interval m MD	ROP m/h	Recovery %	Reason pulled
1	2472-2499	18.0	100	TD
2	2499-2506	-	-	Core jam

1.6.3 Logging

The following logs were run:

	Log suite	Logged interval mMD	Comments
1, 2	MDT	2618,5-1842	One misrun
3	PEX/DSI/VSP	2650-1700	OK
4, 5	MSCT	2471-1840	One misrun

1.7 Pilot Hole Plug and Abandonment

Total time used:	36.0 hrs	
Operational time:	34.5 hrs	(95.8 %)
Downtime:	1.5 hrs	(4.2 %)

The open hole was plugged back in one stage. Three cement plugs were set to fill open hole from TD and into 13 3/8" casing. A high density kick-off plug was then set on top.

Commenced rigging up for drilling 34/7-31 A.

1.8 12-1/4" Hole Section 34/7-31 A

Total depth of section: 1788.0 m.

Total time used:	42.5 hrs	
Operational time:	36.5 hrs	(85.9 %)
Downtime:	6.0 hrs	(14.1 %)

1.8.1 Drilling

Ran in hole with a jetting assembly to clean BOP, made up MPT and landed to test BOP, but no go. A cuptest tool was installed below MPT and got test on yellow pod to 25/250 bar and a function test on blue pod.

Picked up 12 1/4" dress-out assembly, washed down from 1650 m until tagged hard cement at 1701 m. Drilled hard cement to 1788 m, displaced same to oil base mud at 1,5 sg, and pulled out.

1.9 9-1/2" Hole Section 34/7-31 A

Total depth of section: 3454.0 m.

Total time used:	86.5 hrs	
Operational time:	85.0 hrs	(98.3 %)
Downtime:	1.5 hrs	(1.7 %)

1.9.1 Drilling

A 9 1/2" rotary-steerable assembly and diamond bit, type MRS74PX, was made up for kick-off.

Ran in hole to 1758 m and washed down to Kick Off Point (KOP) at 1788 m. Kicked off having orienting mode from 1802 m - 2304 m and drilling mode from 3022 m to TD at 3454 m MD / 2356 m TVD, average ROP of 39,1 m/hr.

No hole problems were encountered.

1.10 Plug and Abandonment 34/7-31 A

Total time used:	46.0 hrs	
Operational time:	46.0 hrs	(100.0 %)
Downtime:	0.0 hrs	(0.0 %)

Old 5" drillpipe were picked up and installed from 3154 m MD to top Polished Bore Receptical (PBR) at 1691 m, and cement was pumped on inside/outside of pipe from TD to 1691 m.

The liner packer was tested to 220 bar, the well displaced from oil base mud to KCl/polymer mud, and the final P/A for 34/7-31 commenced.

1.11 Plug and Abandonment

Total time used:	117.0 hrs	
Operational time:	89.5 hrs	(76.5 %)
Downtime:	27.5 hrs	(23.5 %)

The 13 3/8" casing was cut at 796 m. While pulling, the casing got parted at the patch, and 16 joints were left in the hole. Attempted to latch on, but no go.

Cut and retrieved casing at 784 m and a plug was set from top cut to 446 m. This plug was tagged at 603 m with 12 mT and pressure tested to 110 bar.

The well was afterwards displaced to seawater and the BOP and riser were retrieved.

The 20"/30" casing was then cut at 237,2 m, the anchors were pulled, and on 25 April 2001 at 10:00 hrs the last anchor was on the bolster and the rig commenced the move to 31/3-Q21 H.

GENERAL INFORMATION ON WELL 34/7-31

Field : BORG **Country** : NORWAY
Licence : 89 **Installation** : SCARABEO 6
UTM zone : 31 **Central Median** : 3' E **Horiz. Datum:** ED50

Location coordinates:		**Surface**	**Target**
UTM	**North [m]:**	6797888,5	
UTM	**East [m]:**	450009,2	
Geographical	**North :**	61 18'37.68"	
Geographical	**East :**	02 03'59.81"	

Water Depth: 207,0 **m** **Reference Point Height:** 26,0 **m**
Formation at TD: TARBERT at 2650 m MD

Operators:	NORSK HYDRO PRODUKSJON A/S	**Share:** 13,28 **%**
Partners:	PETORO	**Share:** 30,00 **%**
	DEN NORSKE STATS OLJESELSKAP A/S	28,22 **%**
	EXXON MOBIL	10,50 **%**
	IDEMUTSU PETROLEUM	9,60 **%**
	TOTALFINAELF	5,60 **%**
	RWE-DEA	2,80 **%**

Total depth (RKB) : 2650,0 **m MD** 2649,6 **m TVD**

TIME SUMMARY
Start Time : 2001-02-28 00:00:00
Spudding date : 2001-03-10
Abandonment date : 2001-04-25

Main operation	**Hours**	**Days**	**%**
MOBILIZATION	156,5	6,5	13,3
DRILLING	465,5	19,4	39,5
FORMATION EVALUATION MWD	8,0	0,3	0,7
FORMATION EVALUATION LOGGING	55,5	2,3	4,7
FORMATION EVALUATION CORING	26,0	1,1	2,2
PLUG AND ABANDONMENT	104,0	4,3	8,8
DOWNTIME MOBILIZATION	109,5	4,6	9,3
DOWNTIME DRILLING	212,0	8,8	18,0
DOWNTIME FORM. EVAL. LOGGING	13,0	0,5	1,1
DOWNTIME PLUG AND ABANDONMENT	29,0	1,2	2,5
Sum:	**1179,0**	**49,1**	

Hole and casing record

Hole	**Track**	**Depth [m MD]**	**Casing/Tubing**	**Track**	**Depth [m MD]**
36"		306,0	30"		306,0
26"		1144,0	20"		1143,7
17 1/2"		1785,0	13 3/8"		1778,8
12 1/4"		1788,0			
8 1/2"		2650,0			

Well status: ABANDONED; PILOT HOLE

CONTRACTORS:

Bit Supplier :	SMITH INTERNATIONAL A/S
Casing Equipment Supplier :	MITSUI
Casing/Running Contractor :	ODFJELL WELL SERVICES
Centralizer Supplier :	WEATHERFORD NORGE A/S
Completion Eq. Contractor :	BAKER OIL TOOLS

GENERAL INFORMATION ON WELL 34/7-31

CONTRACTORS:

Mud Contractor :	MI NORGE
Other Supplier :	MONGSTAD BASE NORSK HYDRO A/S
Other Supplier :	PSL
Rig Contractor :	SAIPEM S.P.A.
Under Reamer Supplier :	ANDERGAUGE
Wellhead Supplier :	DRIL-QUIP

AVSETNING P & A BRØNN 34/7-31

30.09.01

EDI	TEKST	BOKFØRT 30.09.01	DAGRAPP ESTIMAT	EVT. KORR.	NY FINAL COST	BUDSJ. TOTAL
0	EMPLOYEE RELATED COSTS	6 453 219	0	-1 412 481	-1 412 481	0
0	RIG COSTS	41 927 114	0	6 890	6 890	0
0	RIG SUPPORT COSTS/REIMBURSAB	11 222 780	0	-708 612	-708 612	0
3A	FUEL/LUB	3 615 826	0	1 805 670	1 805 670	0
3C	BITS	2 729 708	0	-1 194 843	-1 194 843	0
3D	CASING/CASING EQUIPMENT	6 786 576	0	2 284 018	2 284 018	0
3E	WELLHEAD/X-MASTREE	1 685 183	0	400 383	400 383	0
3F	CEMENT/CEMENT ADDITIVES	1 673 148	0	488 148	488 148	0
3G	MUD	5 337 302	0	2 601 385	2 601 385	0
3G	CUTTING DISPOSAL	0	0	0	0	0
4B	CHARTERFLY	0	0	0	0	0
4C	OTHER TRANSPORTATION	91 611	0	-149 743	-149 743	0
4D	STAND BY VESSEL	2 538 478	0	0	0	0
4F	HELICOPTER TRANSPORTATION	2 182 855	0	0	0	0
4G	SUPPLY/AH VESSELS	13 186 233	0	0	0	0
4G						
			0			0
5A	CORING	275 750	0	-110 250	-110 250	0
5B	DIRECTIONAL DRLG	949 635	0	300 263	300 263	0
5C	CUTTING OF CASING	1 459 271	0	1 057 072	1 057 072	0
5D	COMPLETION SERVICES	0	0	0	0	0
5E	PERFORATION	0	0	0	0	0
5F	MWD SERVICES	2 428 803	0	889 146	889 146	0
5G	CASING OPERATIONS	820 597	0	9 357	9 357	0
5H	MUD LOG	848 812	0	-138 423	-138 423	0
5H	MUD SERVICES	0	0	0	0	0
5I	CEMENTING SERVICES	1 118 735	0		0	0
5J	ELECTRICAL LOGGING	4 547 891	0	575 000	575 000	0
5K	VSP	0	0	0	0	0
5L	PROD TESTING	501 642	0	0	0	0
5M	DIVING/ROV	1 546 471	0	0	0	0
5N	RIGPOOL	0	0	715 560	0	0
5N	DIVERSE	1 863 568	0	1 380 860	1 380 860	0
5O	COILED TUBING	0	0	0	0	0
			0			
6A	SITE SURVEY	0	0	300 000	0	0
6B	RIG POSITIONING	715 931	0	119 593	119 593	0
6C	DRILLING SITE CLEAN UP	0	0	0	0	0
			0			
0	WAREHOUSE COSTS	4 994 053	0	124747	124 747	0
			0			0
0	LAB COST	0	0	-1490000	0	0
SUM		121 501 192	0	7 853 740	8 328 180	0

DAILY REPORT ON WELL 34/7-31

Daily report no : 1 **Date:** 2001-02-28
Midnight depth : m MD **Estimated PP:** sg **Mud weight:** 0,00 sg

Stop time	Description
23:59	Sailed towards new location.

Daily report no : 2 **Date:** 2001-03-01
Midnight depth : m MD **Estimated PP:** sg **Mud weight:** 0,00 sg

Stop time	Description
23:59	Lat. 57 deg 32' N, Long. 3 deg 35' E. Distance to go 233 Nmiles. Average speed last 24 hrs 4,25 knots. ETA Sunday 11:00 hrs.

Daily report no : 3 **Date:** 2001-03-02
Midnight depth : m MD **Estimated PP:** sg **Mud weight:** 0,00 sg

Stop time	Description
23:59	Lat. 59 deg 9' N, Long. 3 deg 7' E. Distance to go 136 Nmiles. Average speed last 24 hrs 4,04 knots.

Daily report no : 4 **Date:** 2001-03-03
Midnight depth : m MD **Estimated PP:** sg **Mud weight:** 0,00 sg

Stop time	Description
09:00	Rig on tow.
21:00	WOW. Due to bad weather forecast changed route to avoid platforms and wait out weather. 15:30 hrs in position to ride out weather and evaluate weather forecasts.
23:59	Resumed towing. Position at midnight : Lat 60 deg 4' N, Long 3 deg 33' E. Distance to go 112 Nmiles.

Daily report no : 5 **Date:** 2001-03-04
Midnight depth : m MD **Estimated PP:** sg **Mud weight:** 0,00 sg

Stop time	Description
23:59	On tow. Lat. 61 deg 22' N, 2 deg 46' E. Average speed last 6 hrs 4 knots. 5 miles to holding position.

Daily report no : 6 **Date:** 2001-03-05
Midnight depth : m MD **Estimated PP:** sg **Mud weight:** 0,00 sg

Stop time	Description
02:00	On tow for holding position.
23:59	Holding position at Lat. 61 deg 28' N, Long. 2 deg 39' E. 19 Nmiles from spudding position.

Daily report no : 7 **Date:** 2001-03-06
Midnight depth : m MD **Estimated PP:** sg **Mud weight:** 0,00 sg

Stop time	Description
23:59	WOW. Holding position at Lat. 61 deg 28' N, 2 deg 39' E. App. 19 Nmiles from spudding position.

Daily report no : 8 **Date:** 2001-03-07
Midnight depth : m MD **Estimated PP:** sg **Mud weight:** 0,00 sg

Stop time	Description
23:59	WOW. Holding position at Lat. 61 deg 28' N, Long. 2 deg 39' E. 19 Nmiles from spudding position.

Daily report no : 9 **Date:** 2001-03-08
Midnight depth : m MD **Estimated PP:** sg **Mud weight:** 0,00 sg

Stop time	Description
09:30	WOW. Holding position 19 Nmiles from spudding position.

DAILY REPORT ON WELL 34/7-31

Daily report no : 9 **Date:** 2001-03-08
Midnight depth : m MD **Estimated PP:** sg **Mud weight:** 0,00 sg

Stop time	Description
13:00	On tow.
23:59	WOW. Holding position at Lat. 61 deg 25' N, 2 deg 21' E. 10 Nmiles from spudding position.

Daily report no : 10 **Date:** 2001-03-09
Midnight depth : m MD **Estimated PP:** sg **Mud weight:** 0,00 sg

Stop time	Description
07:00	WOW. Holding position at Lat. 61 deg 25' N, 2 deg 21' E. !0 Nmiles from location.
10:00	On tow for spudding location.
23:59	Start anchor handling. First anchor on bottom 12:55 hrs.

Daily report no : 11 **Date:** 2001-03-10
Midnight depth : 267 m MD **Estimated PP:** 1,03 sg **Mud weight:** 1,05 sg

Stop time	Description
01:00	Anchor handling. Shortened 1 chain with +/- 120 m.
04:30	Pretensioned anchors to stall, 168 ton.
06:00	Pulled rig onto location.
07:00	Tagged bottom at 233 m with 5 ton. Penetration 0,2 m. Took survey with inclination 0.47 deg.
08:30	Spudded well. Washed and drilled 9 7/8" pilot hole from 233 m to 258 m. Took survey, inclination 2,0 deg. Reamed hole and surveyed to 1.98 deg.
10:00	Moved rig 8 m stb. Took survey 1.5 with 2 ton weight. Reamed hole.
10:30	Moved rig additional 3 m. Surveyed to 0.5 deg.
11:00	Drilled 9 7/8" hole from 258 m to 268 m. Took survey to 2.71 deg.
12:30	Reamed hole with 200 rpm. Took survey to to 2.9 deg. Moved rig back to original position.
14:30	Took survey with 2 ton on bottom. 2.6 deg inclination. Adjust rig position. Not able to pass 262 m. Reamed from 262 m to 268 m.
16:30	Drilled 9 7/8" hole from 268 m to 278 m. Took survey to 15,0 deg.
17:00	Move drig 5 m stb and forward. Took survey to 14.9 deg.
18:30	Drilled 9 7/8" hole from 278 m to 306 m. Survey 13,7 deg. inclination.
19:30	POOH while taking check surveys at previous stations.
21:00	Pulled clear of seabed with BHA. ROV recovered bouys. Moved rig to new spotting position, 5 m North of original hole.
21:30	Tagged seabed with 5 ton. Deployed marker bouy. Took check survey to 0.42 deg.
22:30	Re-spudded well. Washed and drilled to 278 m. Survey at 246 m 0,23 deg. Formation firming up at 253 m. Survey at 278 m 2,18 deg.
23:59	Reamed stand twice. Second time not able to pass 256 m. Made several attempts to pass with different parameters. Eventually drilled to 267 m. Surveyed to 5,12 deg inclination.

Daily report no : 12 **Date:** 2001-03-11
Midnight depth : 905 m MD **Estimated PP:** 1,03 sg **Mud weight:** 1,05 sg

Stop time	Description
01:00	Moved rig 5 m stb. Survey 5 deg inclination. Moved rig another 5 m stb. Survey 4.99 deg.
23:30	Drilled 9 7/8" pilot hole from 267 m to 905 m.
23:59	Top drive malfunctioned. Not able to rotate string. Trouble shoot electrically.

Daily report no : 13 **Date:** 2001-03-12
Midnight depth : 1150 m MD **Estimated PP:** 1,03 sg **Mud weight:** 1,05 sg

Stop time	Description
06:30	Continued trouble shoot and repairing top drive system.
07:00	Ran in hole from 820 m to 905 m. Washed down last stand.
07:30	Hydraulic leak on compensator system. Tightened connection.
13:00	Drilled 9 7/8" pilot hole from 905 m to 1150 m.
14:00	Pumped 40 m3 of hi-vis and circulated out of hole. Filled hole with 1.5 SG mud.
16:30	POOH with 9 7/8" pilot assembly.
17:30	Laid out 9 7/8" pilot hole assembly.
20:00	Made up 36" hole opener assembly.

DAILY REPORT ON WELL 34/7-31

Daily report no : 13 **Date:** 2001-03-12
Midnight depth : 1150 m MD **Estimated PP:** 1,03 sg **Mud weight:** 1,05 sg

Stop time	Description
20:30	Tested MWD tool. Laid out pup joint. Picked up cross over.
22:00	Ran in hole with 36" hole opener assembly on drill collars. Crossed over to HWDP and ran in hole to 139 m.
23:59	Picked up 5" drill pipe and racked in derrick while investigating problems with hydraulic power to top drive.

Daily report no : 14 **Date:** 2001-03-13
Midnight depth : 267 m MD **Estimated PP:** 1,03 sg **Mud weight:** 1,05 sg

Stop time	Description
02:00	Continued picking up 5" drill pipe while trouble shooting on hydraulic power to top drive.
02:30	Ran down to 220 m with 36" hole opener assembly.
23:59	Waited on spares, installed and tested hydraulic unit.

Daily report no : 15 **Date:** 2001-03-14
Midnight depth : 306 m MD **Estimated PP:** 1,03 sg **Mud weight:** 1,05 sg

Stop time	Description
01:00	Adjusted rig and landed in 9 7/8" pilot hole. Took survey to 0,26 deg.
01:30	Drilled 10 m from 233 m to 243 m and took survey to 1,28 deg.
08:00	Adjusted rig and took survey to 1.1 deg. Opened 9 7/8" hole to 36" from 243 m to 306 m. Final inclination 0.39 deg.
08:30	Displaced hole to 1.5 SG mud.
09:00	Performed wiper trip t right below seabed with 36" hole opener.
09:30	Pumped 25 m3 hi-vis and filled hole with 1,5 SG mud.
10:30	POOH with 36" hole opener assembly.
12:00	Rigged up to run 30" conductor.
13:30	Ran 30", 461 kg/m, X-52 conductor through PGB.
14:00	Removed elevator support frame and other running equipment from drill floor. Landed and locked conductor in PGB. Released running tool and racked same in derrick.
15:00	Changed bails. Made up stinger and ran in hole same.
15:30	Made up conductor running tool, ran in and latched into PGB sitting on BOP transporter. Picked up and skidded transporter in.
17:00	Ran in i hole to 306 m with conductor.
18:00	Circulated conductor volume. Pressure tested cement hose to 100 bar.
19:00	Cemented conductor in place with shoe at 306 m. Pumped 23 m3 1.56 SG lead cement followed by 23 m3 1.95 SG tail cement. Displaced cement with seawater to 301 m.
23:59	Waited on cement.

Daily report no : 16 **Date:** 2001-03-15
Midnight depth : 1150 m MD **Estimated PP:** 1,03 sg **Mud weight:** 1,05 sg

Stop time	Description
01:00	Continued waiting on cement.
03:00	Released running tool with 5 right hand turns. POOH with running tool and laid out same.
04:30	Laid out cement stand with pump-in sub. Picked up cement head for next section and made it up to 2 joints landing string. Racked same in derrick.
05:30	Laid out 36" hole opener.
08:30	Made up 26" bottom hole assembly.
09:00	Stabbed into well head at 231 m. Ran in hole and tagged firm cement at 304 m.
10:30	Drilled hard cement and shoe. Reamed shoe and rathole several times.
16:00	Opened 9 7/8" hole to 26 " from 306 m to 460 m.
18:30	Wash pipe leaked. Pulled into shoe and changed same. Ran in hole.
23:59	Opened 9 7/8" hole to 26" from 460 m to 688 m.

Daily report no : 17 **Date:** 2001-03-16
Midnight depth : 1150 m MD **Estimated PP:** 1,03 sg **Mud weight:** 1,50 sg

Stop time	Description
06:00	Opened 9 7/8" pilot hole to 26" from 688 m to 908 m.
11:30	Continued to open pilot hole to to 26" from 908m to 1150m.

DAILY REPORT ON WELL 34/7-31

Daily report no : 17 **Date:** 2001-03-16

Midnight depth : 1150 m MD **Estimated PP:** 1,03 sg **Mud weight:** 1,50 sg

Stop time	Description
12:30	Took TD survey, swept hole with 56m3 HiVisc pill and displaced same out with sea water.
15:00	Diplaced hole to 1.50 sg mud.
17:30	POOH and racked BHA, hole conditions good.
19:00	Cleared rig floor and rigged up to run casing. Held prejob safety meeting
21:00	Installed PS 30 power slips. Discovered interference between Odjell tong frame and PS 30. Disconnected PS 30 and rigged up air operated slips.
21:30	Picke up shoe joint, attached guide ropes and checked float.
23:59	Ran 20" casing as per programme

Daily report no : 18 **Date:** 2001-03-17

Midnight depth : 1150 m MD **Estimated PP:** 1,03 sg **Mud weight:** 1,50 sg

Stop time	Description
08:00	Continued to run 20 " casing (total 76 jts 20", x-56, 133#/ft)
10:30	Changed elevator, picked up Wellhead joint and continued to RIH on ITAG landing string. Landed casing and performed 25t overpull.
15:30	Established circulation with sea water and presssure tested cement hose to 100 bar. Mixed and pumped 228 m3 lead and 23m tail slurry.
17:00	Dropped dart and sheared wiper plug with BJ. Displaced cement with rig pumps (3000 lpm) and bumped plug. Observed full returns with ROV. Checked float, OK. Rigged down cement hose.
19:00	Released wellhead running tool and retrieved landing string.
21:00	Rigged up for running BOP/riser. Moved rig 15m aft. Held safety meeting.
23:59	Made up double joint and moved BOP to well centre. Installed pod lines/guide lines.

Daily report no : 19 **Date:** 2001-03-18

Midnight depth : 1150 m MD **Estimated PP:** 1,03 sg **Mud weight:** 1,50 sg

Stop time	Description
01:30	Picked up BOP and moved transporter aft.
09:30	Ran BOP on riser, tested kil&choke lines to 20/345bar and conduits/booster line to 20/205 bar every third joint.
11:30	Made up slip joint, engaged rucker ring and fit umbilical sadles.
12:00	Moved rig over well.
12:30	Untangled guide wires on PGB.
15:00	Landed BOP, set down 30 tons. Checked bulls eye; 1 degree. Locked connector and performed 25 ton overpull test. Stroked out innerbarrel and installed diverter.
15:30	Removed riser handling equipment, tested crown saver.
19:00	RIH with test plug and tested BOP connector to 20/345 bar. Function tested BOP on yellow/blue pod. POOH with test plug.
21:00	Made up hang-off stand and loaded cement head.
23:59	Laid down 26" BHA. Meanwhile tested 20"casing against shear ram to 117 bar. Made up 17 1/2" BHA.

Daily report no : 20 **Date:** 2001-03-19

Midnight depth : 1305 m MD **Estimated PP:** 1,03 sg **Mud weight:** 1,48 sg

Stop time	Description
02:30	RIH, broke circulation and tagged cement @ 1127m.
03:00	Performed choke drill with crew.
06:00	Drilled Float, cement in shoe track and shoe.
07:30	Cleaned out rat hole and drilled 3 m new formation to 1153m. Meanwhile displaced hole to 1.48sg Glydrill mud.
09:30	Pulled inside shoe and circulated/conditioned mud. Performed leak-off test to 1.82sg.
17:30	Recorded SCR's and drilled 17 1/2" hole from 1153 m to 1305 m. Stopped due to slow progress and high pump pressure.
19:00	Circulated bottoms up and pumped slug.
20:30	Attempted to pull inside shoe, no go, max 25 ton overpull. Worked BHA while pumping/rotating.
23:59	Pumped slug and POOH, racked BHA.

DAILY REPORT ON WELL 34/7-31

Daily report no : 21 **Date:** 2001-03-20

Midnight depth : 1663 m MD **Estimated PP:** 1,28 sg **Mud weight:** 1,48 sg

Stop time	Description
01:30	Broke bit, inspected same and changed nozzles. Meanwhile downloded MWD.
05:00	RIH to 1305m, no fill.
12:00	Drilled 17 1/2" hole from 1305 - 1477m.
14:00	Stopped drilling due to excessive mud losses at the shakers. Changed shakers screens while rotating/resiprocating pipe and pumping at slow rate.
23:59	Drilled 17 1/2" hole from 1477 - 1663m.

Daily report no : 22 **Date:** 2001-03-21

Midnight depth : 1785 m MD **Estimated PP:** 1,39 sg **Mud weight:** 1,48 sg

Stop time	Description
09:30	Drilled 171/2" hole from 1663 - 1785m.
11:30	Circulated hole clean while rotated/resiprocated pipe.
15:00	Flowchecked and started to POOH. Hole tight, attempted to wipe spots, no go. Atempted to pump out of hole, no go. Back-reamed to 1395m.
16:00	Circulated bottoms up due to cuttings accumulation at BHA. Shaker overloaded with big lumps.
17:00	Continued to POOH, still tight, backreamed into shoe.
19:00	Circulated bottoms up inside shoe.
20:00	RIH to 1760m. Wiped tight spots, hole OK.
20:30	Repaired broken IBOP actuator on DDM.
22:30	RIH to 1785 (1m fill) and circulated hole clean.
23:59	Flowchecked and POOH to shoe. Wiped tight spots @ 1691, 1565 & 1228m. Max overpull 25 ton, hole OK after wiping.

Daily report no : 23 **Date:** 2001-03-22

Midnight depth : 1785 m MD **Estimated PP:** 1,39 sg **Mud weight:** 1,48 sg

Stop time	Description
03:30	POOH and racked BHA.
06:00	Retrieved bore protector.
08:30	Rigged up to run casing, installed LaFleur, changed bails, fit PS 30 power slips. Held safety meeting.
10:30	Trouble shoot Odfjell remote operated casing tong, no go. Performed SJA and rigged up manual power tong.
23:59	Picked up shoe joint, intermediate joints and float joint. Checked float and RIH with 13 3/8" casing to 1543m (125 joints of 13 3/8", 72#, P-110, NS-CC connections). Filled casing every third joint. Hole ok, no drag in open hole.

Daily report no : 24 **Date:** 2001-03-23

Midnight depth : 1785 m MD **Estimated PP:** 1,39 sg **Mud weight:** 1,48 sg

Stop time	Description
02:00	Continued to run 13 3/8" casing to 1778 m.
03:30	Made up casing hanger and RIH with casing on ITAG landing string. Made up cement stand / hose, ran in and landed casing in wellhead while breaking circulation. Circulated 2677 l/min / 77 bar, increasing to 100 bar after 6000 strokes.
05:00	Circulating and loosing mud to formation. Stopped pumping, attempted to re-establish circulation with reduced pump rate. Lost 9 m3 mud.
05:30	Picked up casing string and worked casing 2-3 m up/down to maintain annulus flow while pumping bottoms up.
06:00	Established circulation, experienced losses due to hole packing off. Regained circ. and started cement job.
07:30	Relanded casing. Lined up and cemented casing as per program. Pumped 9 m3 1.60 SG spacer, mixed and pumped 30 m3 1.92 SG cement. Dropped plug and sheared same with 1.48 SG mud & 90 bar.
09:30	Displaced cement with rig pump & pumped plug with 8500 strokes & 130 bar.
11:30	Continued pumping to 8623 stroks & 270 bar. Held pressure for 10 min. Attempted to set seal assy with 15 ton down & 5 turns right hand several times. OK. Closed pipe rams & attempted to pressure test seal assy. Gained only 25 bar with 160 l
13:30	Opened rams & pulled out casing hanger running tool. Rigged down cement hose & cement head. Laid down casing hanger running tool. Made up Multi purpose tool for seal assy.
15:00	Ran in Multi purpose tool. Washed down with 150 strokes, 28 bar. Landed down 8 ton. Attempted to retrieve seal assy. Pulled out without seal assy.
16:30	Ran in, washed down and landed Multi purpose tool with 15 ton down. Tried to retrieve seal assy with 25 ton overpull. No go.
17:30	Broke out Multi purpose tool & changed snap ring.
19:30	Made up jet sub on Multi purpose tool & ran in hole. Jetted wellhead with 75 bar. Set down Multi purpose tool with 12 ton. Pulled out with 45 ton overpull. No seal assy.
21:00	Examined marks on Multi purpose tool. Lifeboat drill. Transported 8" bumper sub to drill floor.

DAILY REPORT ON WELL 34/7-31

Daily report no : 24 **Date:** 2001-03-23

Midnight depth : 1785 m MD **Estimated PP:** 1,39 sg **Mud weight:** 1,48 sg

Stop time	Description
23:00	Made up Multi purpose tool, jet sub & bumper sub and ran in hole. Jetted wellhead with 4000 lpm / 162 bar for 15 min. Latched onto seal assy and pulled out. No seal assy.
23:59	Ran in hole to latch seal assy.

Daily report no : 25 **Date:** 2001-03-24

Midnight depth : 1785 m MD **Estimated PP:** 1,39 sg **Mud weight:** 1,48 sg

Stop time	Description
01:00	Latched to seal assy with Multi Purpose Tool (MPT), got overpull. Turned tool right hand & pulled out. No go.
03:00	Ran in and latched to seal assy. Worked and turned tool right hand. Operated rams and pulled out without seal assy.
04:00	Laid down MPT, bumper sub, single & jet sub. Cleared rig floor.
06:00	Rigged up cement hose, pressure tested inside BOP on top drive and mud hose while evaluating situation.
10:00	Made up 13 3/8" wear bushing to MPT with single, bumper sub and ran same. Attempted to lock wear bushing in seal assy with 15 ton down & 3 ton overpull. Operated middle pipe ram for reference.Pulled wear bushing. Ram marks not conclusive.
11:30	Prepared wear bushing & MPT with single, painted & ran same.
12:30	Set wear bushing with 15 ton down. Operated upper pipe ram for reference. Pulled out with wear bushing.
15:00	Laid out wear bushing, MPT & single. Changed bails, laid down 17 1/2" assy while evaluating situation. Cleared rig floor.
16:30	Dressed MPT with 13" OD jet tool & ran same.
17:30	Set MPT with 15 ton down. Drifted through seal assy and found casing hanger 30 cm too high. Operated middle pipe rams for reference. Laid down MPT.
18:30	Cleared rig floor. Made up 12 1/4" assy. Pressure tested surface equipment.
19:00	Changed bails & elevator.
22:30	Made up MPT with new snap ring and single, bumper sub & 2 stands drill collar. Worked seal assy down 35 cm to top of casing hanger with max 10 ton downweight. Had virtually no overpull. Operated pipe ram for reference. Pulled out MPT.
23:30	Continued to modify wear bushing lock pins. Made up wear bushing to MPT.
23:59	Ran in wear bushing with modified lock pins.

Daily report no : 26 **Date:** 2001-03-25

Midnight depth : 1785 m MD **Estimated PP:** 1,39 sg **Mud weight:** 1,48 sg

Stop time	Description
02:00	Continued to run down modified wear bushing. Fished for seal assy. Max overpull = 4 ton. Pulled out wear bushing & tool. Examined marks in paint.
06:30	Laid down wear bushing. Modified Multi Purpose Tool (MPT) latch ring, and run down MPT. Fished for seal assy. Pulled out with 35 ton overpull.
10:00	Fitted remodified latch ring to MPT. Ran same with bumpersub. Set down 10 ton, got 15 ton overpull, and pulled out. No go.
12:00	Ran down jet tool and displaced wellhead & riser with 4000 l/min & 39 bar. Functioned all rams & annulars. Cleaned trip tank & filled same with seawater. Flowchecked for 30 min OK.
14:30	Continued circulating on booster line while pulling out and jetting riser. Flowchecked for 30 min OK.
16:00	Ran in jet tool while jetting riser.
17:00	Pumped 8 m3 soap & continued to circulate till clean returns. Pulled out while pumping through kill & choke lines.
19:00	Prepared Oceaneering camera & ran down same.
21:00	Surveyed wellhead with camera.
22:00	Pulled out and rigged down camera. Laid out riser centraliser.
23:00	Prepared MPT with lock dog adaptor. Picked up bumper sub.
23:59	Ran in and landed MPT with 4 ton down. Picked up with 15 ton over pull max. Pulled out and found lock dogs sheared.

Daily report no : 27 **Date:** 2001-03-26

Midnight depth : 1785 m MD **Estimated PP:** 1,39 sg **Mud weight:** 1,48 sg

Stop time	Description
01:00	Pulled out Multi Purpose Tool (MPT) and found lock dogs sheared.
02:30	Laid out Saipem bumper sub & MPT. Made up spear assy with new bumper sub.
03:30	Changed to 500 ton bails and elevator (hydraulic).
05:00	Ran in spear assy and pulled casing 1/2 m with 210 ton overpull..
06:30	Released spear and circulated hole clean with 4080 l/min & 72 bar. Pulled out spear and laid down same.
08:30	Made up camera pad eye and riser centraliser and ran down camera on drill pipe.
10:00	Surveyed wellhead with camera.

DAILY REPORT ON WELL 34/7-31

Daily report no : 27 **Date:** 2001-03-26

Midnight depth : 1785 m MD **Estimated PP:** 1,39 sg **Mud weight:** 1,48 sg

Stop time	Description
11:00	Pulled out and laid down camera assy.
14:30	Prepared modified wear bushing while serviced rig and slip & cut drill line.
18:00	Picked up 8 x 6 1/2" drill collars and jar while waiting for wear bushing modification.
22:30	Waiting on modifications on MPT.
23:59	Made up modified MPT and tested same. Ran in standard MPT on modified wear bushing. Made several attempts to catch seal assy. Set down 5-15 ton, rotated string. Max torque 3000 ft.lbs. No overpull.

Daily report no : 28 **Date:** 2001-03-27

Midnight depth : 1785 m MD **Estimated PP:** 1,39 sg **Mud weight:** 1,48 sg

Stop time	Description
02:00	Pulled out modified wear bushing. Lock dogs were sheared. Laid out wellhead equipment.
04:30	Displaced riser to 1.48 SG mud while making up cutting assy. Tested cutter at surface and ran down same. Picked up marine swivel and tested same. Continued to run down and land in wellhead.
07:00	Cut 13 3/8" casing at 595.6 m. Pulled out cutting assy. Laid down marine swivel.
07:30	Continued to POOH cutting assy. Laid down internal cutter.
08:30	Made up spear assy and ran down through 13 3/8" casing hanger.
10:30	Set spear with 8 down and confirmed depth with Vetco line. Pulled casing hanger with 35 ton overpull. Released spear & racked same.
11:30	Rigged up casing equipment.
16:00	Held prejob meeting with rig crews. Pulled and laid out casing hanger and 30 joints 13 3/8" casing while displacing hole to seawater through kill & choke lines.
16:30	Rigged down casing equipment.
17:30	Made up jet sub, single, pup & centralizer. Ran down to 240 m.
19:30	Pumped 8 m3 soap pill, pulled out while jetting BOP & riser, and circulating through kill & choke line.
20:00	Made up pad eye sub and camera on drill pipe and ran down 15 m.
23:00	Camera failure. Pulled out and repaired same while making up top dress mill assy.
23:59	Ran down camera inside BOP.

Daily report no : 29 **Date:** 2001-03-28

Midnight depth : 1785 m MD **Estimated PP:** 1,39 sg **Mud weight:** 1,48 sg

Stop time	Description
01:00	Surveyed wellhead & BOPs while circulating seawater. No signs of lock ring.
02:00	Pulled out camera assy. Laid out camera assy, single & riser stabiliser.
03:30	Ran down top dress mill.
04:00	Tagged top of casing and dressed same.
05:30	Pulled out and laid down mill.
06:00	Cleared drill floor.
07:30	Made up overshot
09:00	Ran down overshot. Sat down 5 ton. Took Vetco measurement.
11:00	Pulled out and laid down overshot assy.
11:30	Cleared rig floor for excess equipment.
13:00	Prepared to run casing patch & casing.
16:00	Made up patch assy to casing. Rigged up to run casing. Held prejob meeting.
17:30	Ran in patch on 13 3/8" casing to 48 m.
18:00	Brakedown on casing tong cylinder. Repaired same.
21:00	Ran 17 jnts casing down to the BOPs.
23:59	Waiting on weather

Daily report no : 30 **Date:** 2001-03-29

Midnight depth : 1785 m MD **Estimated PP:** 1,39 sg **Mud weight:** 1,48 sg

Stop time	Description
06:30	Waiting on weather and boat loading.
09:30	Continued to run 13 3/8" casing patch from 199-363 m.
10:00	Removed hydraulic slips, installed rotary bushings. Operated upper and middle pipe rams for reference.
12:00	Picked up casing hanger and made up same.
14:00	Continued to run in landing string. Made up top drive on every stand due to overflow in pipe.

DAILY REPORT ON WELL 34/7-31

Daily report no : 30 **Date:** 2001-03-29

Midnight depth : 1785 m MD **Estimated PP:** 1,39 sg **Mud weight:** 1,48 sg

Stop time	Description
15:30	Tagged casing with patch, set down 10 ton. Took weight back to neutral. Set down 45 ton, incl. landing string, but casing still 1.5 m too high. Took 5 ton overpull. Set down max weight again but patch would not seat.
17:00	Circulated wile performing rig maintenance.
18:00	Backed out running tool and pulled out same.
18:30	Laid out casing hanger running tool.
20:30	Made up 5 stands HWDP and 2 stands 6" drill collars below the hang off tool donut.
22:00	Picked up 8 x 8" drill collars from pipe deck & continued to run in with another 2 stands from derrick and ITAG landing string.
23:30	Set down hang off tool on casing hanger with 61 ton and confirm a 1.5 m drop with the Vetco line. Operated pipe rams for reference. Pulled out hang off tool.
23:59	Laid down bumper sub, racked hang off tool donut.

Daily report no : 31 **Date:** 2001-03-30

Midnight depth : 1785 m MD **Estimated PP:** 1,39 sg **Mud weight:** 1,48 sg

Stop time	Description
02:00	Picked up running tool and seal assy. Made up & ran in same.
02:30	Set seal assy with 20 ton down. Lined up and set/test seal assy with 270 bar / 10 min OK.
04:30	Unseated seal assy running tool with 30 ton overpull. Pulled out running tool, seal assy still on running tool.
06:00	Laid down seal assy running tool. Released seal assy and inspected same. Ran down pipe below running tool while waiting on Dril-Quip recommendation.
07:00	Prepared mill & flush tool.
08:00	Ran in mill & flush tool.
09:00	Circulated with 1300 lpm - 12 bar. Took torque readings. Set down 3 ton. Took Vetco measurement. Rotated 15 rpm, torque 0-100 daNm. Circulated 1.5 riser volume, 2180 lpm - 27 bar. Pulled back 1.5 m, circulated for 5 min.
10:00	Pulled out mill & flush tool and laid out same.
11:30	Made up running tool and seal assy with lock ring, and ran in same.
12:00	Set down 25 ton. Closed middle pipe rams and pressure tested seal assy to 270 bar / 10 min OK.
13:00	Took 30 ton overpull to shear pins. Pulled out and laid down running tool.
14:00	Made up cup tester, wear bushing & running tool, and ran in above shear rams.
14:30	Closed shear rams. Lined up and tested casing patch to 270 bar / 10 min.
15:30	Landed wear bushing in wellhead with 15 ton.
18:00	Pressure tested BOP, operated on blue pod. Function tested on yellow pod.
19:00	Unseated tool from wear bushing and pulled out tool.
20:00	Laid out running tool and test tool. Continued to pull out string below.
20:30	Changed to 350 ton bails and air operated elevator.
21:30	Made up float sub, 12 1/4" bit, drill collars and ran in same.
22:30	Installed diverter bag. Continued to run in.
23:59	Stopped at 1077 m and filled pipe. Continued to run in to 1700 m. Filled pipe.

Daily report no : 32 **Date:** 2001-03-31

Midnight depth : 1788 m MD **Estimated PP:** 1,39 sg **Mud weight:** 1,48 sg

Stop time	Description
03:00	Continued to fill pipe. Tagged cement at 1723.7 m. Drilled plugs and float collar.
05:30	Continued to drill cement with 60 rpm / 10-15 ton & 3400 lpm.
06:00	Drilled 3 m new formation to 1788 m.
07:30	Circulated bottoms up. Spotted 5 m3 LCM pill at bottom. Pulled inside shoe.
08:00	Performed leak off test to 1.82 SG.
11:00	Slugged pipe and pulled out to 85 m.
13:00	Laid down 8" drill collars & jar.
17:00	Laid down MWD stand & 8" drill collars from derrick.
17:30	Tidyed rig floor. Performed test on crown and floor savers. Adjusted top drive. Changed valve on trip tank.
20:00	Laid down cement stand.
21:30	Made up 8 1/2" assy.
22:00	Installed radioactive source.
23:30	Continued to make up 8 1/2" assy. Tested MWD OK.
23:59	Ran in 8 1/2" assy. Filled pipe at 1100 m.

DAILY REPORT ON WELL 34/7-31

Daily report no : 33 **Date:** 2001-04-01
Midnight depth : 2092 m MD **Estimated PP:** 1,39 sg **Mud weight:** 1,60 sg

Stop time	Description
02:00	Continued to run in hole.
06:00	Tagged bottom and drilled 8 1/2" hole from 1788-1912 m.
12:00	Continued drilling from 1912-2001 m.
18:00	Continued drilling from 2001-2077 m.
22:00	Continued drilling from 2077-2092 m.
23:59	Slugged pipe, pulled out for bit trip.

Daily report no : 34 **Date:** 2001-04-02
Midnight depth : 2213 m MD **Estimated PP:** 1,39 sg **Mud weight:** 1,61 sg

Stop time	Description
01:30	Pulled out BHA.
02:00	Removed radioactive source.
02:30	Downloaded RAB and inspected bit, while cleaning balled up bit and changing nozzles from 3x 16 to 1x14, 2x15.
03:30	Laid out ADN and picked up new tool.
05:00	Attempted to install radioactive source in new ADN. No go.
08:30	Continued to run in 8 1/2" assy to 2044 m.
12:00	Washed down to 2092 m. Continued to drill 8 1/2" hole from 2092-2147 m.
18:00	Continued drilling from 2147-2199 m.
20:00	Continued drilling from 2199-2208 m.
21:30	Pumped 7.5 m3 KCl pill. Spotted 2 m3 in annulus and waited 10 min twice.
22:00	Continued drilling 8 1/2" hole from 2208-2213 m. Flowcheck for 15 min and pulled out due to low penetration.
23:30	Pulled bit inside shoe and flowchecked for 10 min.
23:59	Continued to pull out to 1154 m.

Daily report no : 35 **Date:** 2001-04-03
Midnight depth : 2268 m MD **Estimated PP:** 1,39 sg **Mud weight:** 1,61 sg

Stop time	Description
02:30	Pulled out from 1154-525 m. Flowchecked 15 min. Continued to pull out and changed bit.
03:00	Dumped LWD tool.
06:00	Ran in hole to 1672 m.
07:30	Ran in hole to 2197 m. Washed down to 2213 m.
12:00	Drilled 8 1/2" hole from 2213-2244 m.
14:30	Continued to drill 8 1/2" hole from 2244-2252 m.
15:30	Pumped 6 m3 KCl pill. Displaced 2 m3 in annulus and soaked 10 min twice to clear bit.
18:00	Continued drilling from 2252-2268 m.
18:30	Flowchecked 15 min. Pumped 3.5 m3 slug.
22:00	Pulled out to 1760 m. Flowchecked 15 min. Continued to pull out.
22:30	Changed bit. Dumped LWD tool.
23:59	Ran in 8 1/2" bit to 550 m.

Daily report no : 36 **Date:** 2001-04-04
Midnight depth : 2412 m MD **Estimated PP:** 1,49 sg **Mud weight:** 1,63 sg

Stop time	Description
02:30	Ran in from 550-2248 m. Washed down to 2268 m.
14:00	Drilled from 2268-2356 m. Increased mudweight to 1.63 SG.
14:30	MWD tool problem. Troubleshooted same.
15:00	Flowchecked 15 min. Circulated hole.
23:59	Continued drilling from 2356-2412 m.

Daily report no : 37 **Date:** 2001-04-05
Midnight depth : 2492 m MD **Estimated PP:** 1,40 sg **Mud weight:** 1,63 sg

Stop time	Description
08:30	Continued drilling from 2412-2472 m. Drill break at 2469.5 m. Drilled 2.5 m & flowchecked 10 min.

DAILY REPORT ON WELL 34/7-31

Daily report no : 37 **Date:** 2001-04-05

Midnight depth : 2492 m MD **Estimated PP:** 1,40 sg **Mud weight:** 1,63 sg

Stop time	Description
10:00	Circulated for samples.
10:30	Flowchecked 15 min. Pumped 3.5 m3 slug.
12:00	Pulled inside casing shoe. Flowchecked 15 min. Wiped tight spots at 2351-2342, 2405 m. 15 ton overpull. 2427-2418 m 10 ton overpull.
14:30	Continued to pull out.
15:00	Laid out BHA tools & bit.
15:30	Cleared catwalk & rig floor.
17:00	Held prejob meeting. Picked up and made up 90 ft core barrel and 8 1/2" core head. Made up inner barrels.
17:30	Ran in core head and coring assy #1.
18:00	Picked up 3 x 6 1/2" DC and rabbited same to 2 1/8".
21:00	Ran in 8 1/2" coring assy. Filled pipe at the shoe.
22:30	Made up drilling stand and washed down to 2472 m.
23:00	Dropped ball and chased same with 1000 lpm.
23:59	Cored from 2472-2492 m.

Daily report no : 38 **Date:** 2001-04-06

Midnight depth : 2506 m MD **Estimated PP:** 1,40 sg **Mud weight:** 1,63 sg

Stop time	Description
00:30	Cored from 2492 m to 2499 m.
01:00	Flowchecked for 15 min OK. Slugged pipe.
06:30	Pulled out core #1.
07:00	Broke and laid out corehead.
08:00	Broke out safety joint and laid out inner barrel.
08:30	Made up new inner barrels and same corehead.
12:30	Ran in hole to 2499 m to cut core #2.
13:30	Broke circulation with 1600 lpm/110 bar. Dropped ball and circulated same down with 1000 lpm/57 bar.
14:30	Cut core #2 from 2499 m to 2506 m. Lost torque and gained 10 bar pressure. Core jammed
16:00	Flow checked well. POOH from 2506 m to casing shoe at 1779 m.
19:30	POOH from 1779 m to surface.
22:00	Broke out safety joint and laid out inner barrel. Laid out core barrel and cleaned rig floor.
23:59	Made up 8 1/2" BHA. Surface tested MWD tool with 2200 lpm.

Daily report no : 39 **Date:** 2001-04-07

Midnight depth : 2590 m MD **Estimated PP:** 1,40 sg **Mud weight:** 1,63 sg

Stop time	Description
01:00	Installed radioactive sources.
04:00	Ran in hole with 8 1/2" drilling assembly to 1765 m.
09:00	Reamed down while logging from 1765 m to 1900 m.
10:00	Circulated bottoms up to clean hole with 2200 lpm and 110 rpm. Boosted riser with 1200 lpm at same time.
11:00	Ran in hole from 1900 m to 2440 m.
14:00	Reamed down while logging from 2440 m to 2506 m.
23:59	Drilled 8 1/2" hole from 2506 m to 2590 m.

Daily report no : 40 **Date:** 2001-04-08

Midnight depth : 2650 m MD **Estimated PP:** 1,40 sg **Mud weight:** 1,63 sg

Stop time	Description
04:00	Continued drilling 8 1/2" hole from 2590 m to TD 2650 m.
06:00	Circulated hole clean with 2250 lpm/275 bar and 200 rpm.
07:00	Flow checked well and POOH with 8 1/2" assembly from 2650 m to 2503 m.
08:00	Not able to pass 2503 m. Back reamed out from 2525 m to 2445 m with 2176 lpm/252 bar and 110 rpm/max torque 2500 daNm.
09:30	Circulated bottoms up with 2230 lpm/262 bar and 105 rpm.
10:00	POOH to 2338 m. Took survey.
11:30	POOH to casing shoe at 1779 m.
12:00	Flow checked well.

DAILY REPORT ON WELL 34/7-31

Daily report no : 40 **Date:** 2001-04-08
Midnight depth : 2650 m MD **Estimated PP:** 1,40 sg **Mud weight:** 1,63 sg

Stop time	Description
13:30	Ran in hole from casing shoe to 2618 m. Washed down to TD at 2650 m.
15:30	Circulated and conditioned mud with 2200 lpm/266 bar and 115 rpm/ 200 daNm.
16:00	POOH from 2650 m to 2321 m.
17:30	Pumped slug and POOH from 2321 m to casing shoe at 1779 m.
20:30	POOH from 1779 m to surface.
21:00	Removed radioactive source.
21:30	Laid out MWD, stabilizer and RAB tool. Broke out bit.
23:00	Cleared rig floor. Rigged up sheaves and compensator system for compensated wireline logging.
23:59	Made up logging string for logging run #1.

Daily report no : 41 **Date:** 2001-04-09
Midnight depth : 2650 m MD **Estimated PP:** 1,26 sg **Mud weight:** 1,63 sg

Stop time	Description
01:00	Continued making up wireline logging string #1.
02:30	Ran in hole with logging string #1, MDT.
03:00	Correlated logs.
10:00	Logged MDT pressure points.
16:30	Lost communication to MDT tool. POOH.
18:00	Ran in hole with MDT tools run #2. Correlated depths.
19:00	Finished pressure testing.
23:59	Started sampling in Draupne formation.

Daily report no : 42 **Date:** 2001-04-10
Midnight depth : 2650 m MD **Estimated PP:** 1,26 sg **Mud weight:** 1,63 sg

Stop time	Description
08:30	Continued downhole sampling with MDT tools run #2.
10:00	POOH with MDT logging tools.
11:00	Rigged down MDT logging tools.
13:00	Rigged up PEX/DSI/VSP. Surface tested OK.
14:00	Ran in hole with PEX/DSI/VSP logging tools to casing shoe at 1779 m.
18:00	Logged PEX/DSI.
18:30	When changing to VSP logging, problems with guns not firing.
20:00	Performed VSP logging.
21:00	Problems with software. Trouble shoot.
23:59	Performed VSP logging.

Daily report no : 43 **Date:** 2001-04-11
Midnight depth : 2650 m MD **Estimated PP:** 1,26 sg **Mud weight:** 1,63 sg

Stop time	Description
01:00	Continued performing VSP logging.
02:30	POOH with PEX/DSI/VSP logging tools.
03:30	Laid out logging tools.
05:30	Made up MSCT toolstring and surface tested same.
07:00	Ran in hole with MSCT logging tools to TD 2650 m.
09:00	Started core sampling.
10:30	Core head stuck in formation 2634 m. Pulled free and lost core head in hole. POOH to change tool.
12:30	Changed tool. Ran in hole and correlated depth.
16:30	Took side wall cores.
18:00	POOH and rigged down wireline equipment.
20:00	Slipped and cut drilling line.
21:00	Prepared to pick up 3 1/2" drillpipe. Held safety meeting.
23:59	Picked up muleshoe and 33 joints of 3 1/2" drill pipe.

DAILY REPORT ON WELL 34/7-31

Daily report no : 44 **Date:** 2001-04-12

Midnight depth : 2650 m MD **Estimated PP:** sg **Mud weight:** 1,63 sg

Stop time	Description
04:30	Ran in hole with cement stinger from 324 m to 2650 m.
06:00	Circulated bottoms up.
06:30	Pressure tested cement line. Reverse circulated and established reverse circulating rate of 176 lpm/30 bar.
07:00	Lined up for cement job. Pumped 5 m3 of freshwater spacer.
07:30	IBOP leaked. Investigated problem.
09:00	Mixed and pumped 10.5 m3 1.9 SG cement with 0.57 m3 freshwater behind to balance. Displaced same with 1.63 SG mud from rig pumps to spot cement plug #1 from 2650 m to 2400 m.
10:00	POOH from 2650 m to 2400 m.
12:00	Circulated clean conventionally. Dumped 43 m3 cement contaminated mud and spacer at shakers.
12:30	Installed TIW-valve and pressure tested cement lines. Spaced out stinger at 2395 m. Pumped 5 m3 freshwater spacer.
13:30	Computer problems on cement unit.
15:00	Mixed and pumped 10,5 m3 1.9 SG cement with 0,57 m3 freshwater behind to balance. Displaced with 1,63 SG mud from rigpumps to spot cement plug #2 from 2395 m to 2145 m.
16:00	POOH from 2395 m to 2145 m.
17:30	Circulated bottoms up conventionally with 2500 lpm. Dumped 33 m3 of cement contaminated cement and spacer at shakers.
19:00	Spaced out stinger at 2140 m. Pressure tested lines. Pumped 5 m3 freswater. Mixed and pumped 10,5 m3 1,9 SG cement with0,57 m3 freshwater behind to balance. Displaced with 1,63 SG mud from mudpumps to spot plug #3 from 2140 m to 1890 m.
20:00	POOH from 2140 m to 1890 m.
21:30	Circulated clean conventionally with 2600 lpm/210 bar. Dumped 57 m3 cement contaminated mud and spacer at shakers.
23:00	Spaced out at 1885 m. Pressure tested lines. Pumped 10 m3 of freshwater. Mixed and pumped 13,4 m3 2,05 SG cement with 0,5 m3 freshwater behind. Spotted kick off plug from 1885 m to 1635 m with 1,63 SG mud from mudpumps.
23:59	POOH from 1885 m to 1650 m.

Daily report no : 45 **Date:** 2001-04-13

Midnight depth : 2650 m MD **Estimated PP:** sg **Mud weight:** 1,60 sg

Stop time	Description
01:30	Circulated clean with 2600 lpm/182 bar. Dumped 25 m3 cement contaminated mud and spacer at shakers.
02:00	Dropped drill pipe wiper and displaced same. Operated annular preventer and pipe rams.
05:00	POOH with cement stinger.
06:00	Changed to 5" handling equipment. Broke down cement stand and drilling pup joint.
23:59	Now on 34/7-31A.

Daily report no : 46 **Date:** 2001-04-20

Midnight depth : 1650 m MD **Estimated PP:** sg **Mud weight:** 1,60 sg

Stop time	Description
13:00	No activety on well 34/7-31.
13:30	Made up jet sub and RIH.
14:00	Jetted wellhead and BOP with 4080LPM at 115bar.
16:30	Made up wear bushing retreving tool, RIH with same. Latched on and pulled wear bushing with 30ton over pull. POOH and laid out wear bushing.
17:30	RIH to retrieve seal assembly. Closed lower annular and performed drag test on drill pipe only. Latched on to seal assembly and pulled free with 55ton over pull. Checked for pressure build-up.
18:30	POOH with seal assembly and laid out same.
19:30	Continued to POOH with jetting assembly and laid down same.
20:30	Made up Red Baron 13 3/8" cutting assembly, function tested pipe cutter.
21:30	Strapped in hole to cut casing.
23:30	Re-arranged 6 1/2" DC`s in derrick, picked up 8" dc`s and laid out 1 single, continued to RIH picking up rotating spear.
23:59	Continued to RIH with cutting assembly on 5" drill pipe.

Daily report no : 47 **Date:** 2001-04-21

Midnight depth : 1650 m MD **Estimated PP:** sg **Mud weight:** 1,60 sg

Stop time	Description
00:30	Continued to RIH with cutting assembly.
01:00	Cut 13 3/8" casing at 796m.

DAILY REPORT ON WELL 34/7-31

Daily report no : 47 **Date:** 2001-04-21

Midnight depth : 1650 m MD **Estimated PP:** sg **Mud weight:** 1,60 sg

Stop time	Description
04:00	Took 70ton overpull, casing free, released spear assembly and POOH with pipe cutter. Made up pup joint and racked back drill collars and spear. Continued to POOH and lay out cutter assembly.
05:00	Picked up spear assembly and RIH and latched onto 13 3/8" casing.
06:00	Started to POOH with 13 3/8" casing.
07:00	Released 13 3/8" casing spear, racked back in derrick and changed to 350ton bails and elevators.
11:00	Held safety brief and SJA, prior to start pulling and laying down 13 3/8" casing. Pulled hanger joint, pup joint, 29 joints of casing and casing patch. 16 joints above cut point left in hole.
12:00	Cleaned up and cleared off rig floor for excess equipment, moved DC`s in derrick while picking up tools from deck.
14:30	Picked up new spear and RIH.
15:30	Attempted to latch onto and retrieve casing, no success.
17:00	POOH, inspected spear and removed spear pack-off.
19:00	RIH with spear and enganged into 13 3/8" casing. Attempted to pull pipe free with 220ton on weight indicator, no success. Released casing spear.
21:00	POOH with 13 3/8" casing spear, racked back BHA and laid out spear assembly.
21:30	Made up Red Baron 13 3/8" casing cutter and function tested at drill floor.
23:30	RIH with 13 3/8" casing cutter, picked up rotating spear and continued to RIH to cut casing at 784m.
23:59	Cut 13 3/8" casing at 784m, casing free at pick-up, made several attempts to release casing spear-no success.

Daily report no : 48 **Date:** 2001-04-22

Midnight depth : 580 m MD **Estimated PP:** sg **Mud weight:** 1,60 sg

Stop time	Description
02:30	POOH slowly with 13 3/8" casing on 5" drill pipe. Took 15ton loss in string weight with spear 38m below rotary table, continued to POOH with spear and cutter assembly. Laid down pup joint, single and casing cutter.
03:00	Picked up and made up new casing spear.
04:00	RIH with casing spear and latched onto fish.
06:00	Pulled 13 3/8" casing free with 90ton and POOH with same and set in rotary.
06:30	Racked spear assembly in derrick, cut hanling holes in casing and conducted SJA meeting prior to lay out casing.
07:00	Laid out 13 3/8" cut off joint.
08:30	Rigged up hydraulic casing tong and laid out 16 joints 13 3/8" casing.
09:30	Rigged down casing retrieving equipment and cleaned up rig floor.
12:00	Made up parabow with x/o and RIH.
13:30	Rigged up to cement, pressure tested lines to 100bar, made up cement stand and dropped ball. Ball seated with 320stks. and 800LPM. Sat parabow.
14:30	Pumped 10m3 F.W. spacer, mixed and pumped 35,6m3 -1,95SG slurry followed by 550L F.W. spacer. Displaced balanced plug with 2770L mud.
16:00	POOH to 446m. Installed cmt stand.
16:30	Reverced circulation at 446m with 1060LPM at 29bar. Dumped 7m3 of contaminated mud.
17:00	Rigged down cement hose, laid out 3 joints of drill pipe. Made up top drive.
20:30	WOC. Shut rig down to install power supply modification, clean and maintain rig while WOC.
23:30	WOC. Pumped slug and changed elevators prior to POOH and lay down 42 joints of 5" drill pipe. Laid down parabow running tool while waiting on cement.
23:59	WOC. Started to RIH with 6 1/2" drill collars while WOC.

Daily report no : 49 **Date:** 2001-04-23

Midnight depth : 580 m MD **Estimated PP:** sg **Mud weight:** 1,60 sg

Stop time	Description
01:00	WOC. Continued to RIH and pull out to lay down 9each 6 1/2" drill collars while WOC.
02:30	WOC. Made up 17 1/2" bit and RIH to 450m while WOC.
03:30	Washed down from 450 to 603m. Tagged hard cement at 603m and applied 12ton bit weight.
04:30	Circulated bottoms up from 603m and dumped 29m3 of cement contaminated mud.
05:00	Rigged up and pressure tested cement plug to 110bar for 10min- OK.
05:30	Lined up and displaced well to S.W.
06:00	Lined up to displace riser through BOP and started to POOH with 17 1/2" bit.
06:30	Continued to POOH to 240m, made up top drive and washed BOP area.
07:30	Continued to POOH , laid out 17 1/2" bit, x/o and 3 joints Heavy weight drill pipe.
09:30	Prepared to pull BOP.
10:30	Pulled diverter assembly, held satety brief and SJA prior to lay down diverter, laid down diverter assembly.
19:00	Picked up landing joint, made up to and closed telescopic joint, unlatched BOP and moved rig 15m port. Removed pod hose saddles from support ring and commenced pulling BOP`s.

DAILY REPORT ON WELL 34/7-31

Daily report no : 49 **Date:** 2001-04-23

Midnight depth : 580 m MD **Estimated PP:** sg **Mud weight:** 1,60 sg

Stop time	Description
19:30	Prepared transporter and safety slings prior to pulling BOP through splash zone.
22:00	Continued to pull BOP, installed pod line saddles, sequred BOP and removed guide lines prior to land BOP on transporter.
23:30	Latched wellhead connector, disconnected riser double and pressure tested to 10K PSI under blind /shear rams.
23:59	Started to move transporter with BOP to parking area, started sequring BOP and laid down riser double. Rigged down riser handling equipment.

Daily report no : 50 **Date:** 2001-04-24

Midnight depth : 580 m MD **Estimated PP:** sg **Mud weight:** 1,60 sg

Stop time	Description
01:00	Continued to rig down riser equipment.
03:00	Changed elevators, made up 20 to 30" casing cutter and spear assembly, started to RIH with same.
03:30	Tied guide ropes to guide wires.
05:00	RIH with cutting assembly on landing string.
06:00	Stabbed into wellhead and commenced cutting 20" and 30" casing at 237,2m.
09:30	Continued to cut casing at 237,2m with 3000LPM. at 71bar.
10:30	Increased pump rate to 3200LPM - 79bar. Stopped pumps and attempted to pull casing with 250ton, no success. Continued to cut with 3200LPM at 84bar.
13:00	Continued to cut casing. Tried several times to pull casing pulling from250 to 380tons without success. Continued to cut casing with 3200LPM at 88bar.
14:00	Stopped pumps and worked pipe, casing came free with 300ton over pull, commenced pulling out with casing and guide base.
23:59	Commenced pulling anchors for departure to new location 31/3-Q-21H. 1453hrs: Normand Borg has no. 3anchor on deck, 1445hrs. M.Chaiienger has no2 on deck, 1507hrs. T.Titan har no.7 on deck, 2340hrs.N.Borg has no4 on deck.

Daily report no : 51 **Date:** 2001-04-25

Midnight depth : 0 m MD **Estimated PP:** sg **Mud weight:** 1,60 sg

Stop time	Description
10:00	Continued anchor handling to move to well 31/3-Q-21H. At 0520hrs. T.Titan has no.8 anchor on deck, at 0740hrs N.Challenger has no5 on deck and at 0821hrs M.Challenger has no1 on deck.
23:59	Under tow to new location 31/3-Q-21H.

TIME DISTRIBUTION

Well: 34/7-31 **PO:** 1 **Start date:** 1980-01-01 **Rig:** SCARABEO 6 **Depth:** 2650,0 **m MD**
All sections **Stop date:** 2001-11-05

Operations	Hours	%	Hours	%	Acc. total
MOBILIZATION					
MOVING	116,5	9,88			
MOORING; RUNNING ANCHORS	20,0	1,70			
MOORING; PULLING ANCHORS	20,0	1,70			
Sum.			156,5	13,27	156,5
DRILLING					
BHA HANDLING/TESTING	24,5	2,08			
EQUIPMENT TEST	3,0	0,25			
MWD HANDLING/TESTING/SURVEYING	8,0	0,68			
TRIPPING IN CASED HOLE	37,0	3,14			
TRIPPING IN OPEN HOLE	38,5	3,27			
DRILLING	167,5	14,21			
OPENING HOLE	30,5	2,59			
OTHER	0,5	0,04			
WELLHEAD EQUIPMENT INSTALLATION	6,0	0,51			
REAMING	1,0	0,08			
CIRC. AND COND. MUD/HOLE	29,0	2,46			
WIPER TRIP	0,5	0,04			
CASING HANDLING/TESTING	40,0	3,39			
RUNNING CASING IN OPEN HOLE	3,5	0,30			
DRILLING OUT OF CASING	7,0	0,59			
PRIMARY CEMENTING	24,0	2,04			
DRILLING OUT CEMENT PLUG	5,5	0,47			
FORMATION STRENGTH TESTING	2,5	0,21			
BOP HANDLING	1,0	0,08			
BOP RUNNING/RETRIEVING	20,0	1,70			
BOP TESTING	6,0	0,51			
WELLHEAD EQUIPMENT HANDLING	6,5	0,55			
SLIP AND CUT DRILLING LINE	3,5	0,30			
Sum.			465,5	39,48	622,0
FORMATION EVALUATION MWD					
LOGGING WITH MWD	8,0	0,68			
Sum.			8,0	0,68	630,0
FORMATION EVALUATION LOGGING					
LOGGING	15,0	1,27			
LOGGING EQUIPMENT HANDLING/TESTING	3,5	0,30			
FORMATION TESTER	37,0	3,14			
Sum.			55,5	4,71	685,5
FORMATION EVALUATION CORING					
BHA HANDLING/TESTING	1,0	0,08			
TRIPPING IN CASED HOLE	16,0	1,36			
CORING EQUIPMENT/CORE HANDLING	4,5	0,38			
TRIPPING IN OPEN HOLE	1,5	0,13			
CORING	1,5	0,13			
CIRC. AND COND. MUD/HOLE	1,5	0,13			
Sum.			26,0	2,21	711,5
PLUG AND ABANDONMENT					
TRIPPING IN CASED HOLE	10,0	0,85			
OTHER	1,0	0,08			
CIRC. AND COND. MUD/HOLE	2,0	0,17			
TRIPPING FOR CEMENT JOB	8,5	0,72			
BOP HANDLING	3,0	0,25			
BOP RUNNING/RETRIEVING	14,5	1,23			
WELLHEAD EQUIPMENT HANDLING	5,5	0,47			
SET CEMENT PLUG	30,0	2,54			
TRIPPING OF CASING CUTTING EQUIPMENT	3,5	0,30			
CUT CASING/WELLHEAD	14,5	1,23			

TIME DISTRIBUTION

Well: 34/7-31 **PO:** 1 **Start date:** 1980-01-01 **Rig:** SCARABEO 6 **Depth:** 2650,0 **m MD**
All sections **Stop date:** 2001-11-05

Operations	Hours	%	Hours	%	Acc. total
PLUG AND ABANDONMENT					
CASING RETRIEVING	9,5	0,81			
SLIP AND CUT DRILLING LINE	2,0	0,17			
Sum			104,0	8,82	815,5
DOWNTIME MOBILIZATION					
WAITING	109,5	9,29			
Sum			109,5	9,29	925,0
DOWNTIME DRILLING					
EQUIPMENT FAILURE AND REPAIR	200,5	17,01			
WAITING	9,5	0,81			
OTHER	2,0	0,17			
Sum			212,0	17,98	1137,0
DOWNTIME FORM. EVAL. LOGGING					
EQUIPMENT FAILURE AND REPAIR	13,0	1,10			
Sum			13,0	1,10	1150,0
DOWNTIME PLUG AND ABANDONMENT					
EQUIPMENT FAILURE AND REPAIR	1,5	0,13			
WAITING	9,5	0,81			
FISHING	18,0	1,53			
Sum			29,0	2,46	1179,0

Reported time (100,0 % of well total 1179,0 hours) : 1179,0

Norsk Hydro

2001-11-05

HOLE DEVIATION

Well: 34/7-31 **Reference point:** RKB ; 26,0 m ABOVE MSL

Waterdepth: 207,0 m **Vertical to:** 232,9 m **Total Depth:** 2650,0 m MD

Utm zone: 31 **Central Median:** 3' E **Horizontal datum:** ED50

Template Centre Coordinates, UTM: **North :** m, **East :** m

Wellhead Coordinates, UTM: **North :** 6797888,50 m, **East :** 450009,20 m

Official Surveys: Y **Track :**

Coordinates are measured from the wellhead centre.

Depth MD [m]	Incli-nation [Deg]	Direc-tion [Deg]	Tool Type	#	Depth TVD [m]	Coordinates North [m]	Coordinates East [m]	Vert. Sect [m]	Dogleg [D/30m]	Build [D/30m]	Turn [D/30m]
233,9	0,23	319,81	MWD	1	233,9	0,00	0,00	0,0	0,00	0,00	0,00
234,7	1,17	308,90	MWD	1	234,7	0,01	-0,01	0,0	35,89	35,70	-414,30
246,8	1,20	359,80	MWD	1	246,8	0,21	-0,10	0,2	2,52	0,07	125,89
254,0	0,04	331,00	MWD	1	254,0	0,29	-0,11	0,3	4,85	-4,83	-120,00
263,1	0,50	204,20	MWD	1	263,1	0,26	-0,12	0,3	1,73	1,52	-418,02
272,3	0,60	237,70	MWD	1	272,3	0,19	-0,18	0,3	1,08	0,33	109,24
283,0	0,60	231,20	MWD	1	283,0	0,13	-0,27	0,3	0,19	0,00	-18,22
293,9	0,40	244,50	MWD	1	293,9	0,08	-0,35	0,4	0,63	-0,55	36,61
303,5	0,20	264,80	MWD	1	303,5	0,06	-0,40	0,4	0,70	-0,63	63,44
313,2	0,20	290,30	MWD	1	313,2	0,06	-0,43	0,4	0,27	0,00	78,87
323,1	0,10	275,60	MWD	1	323,1	0,07	-0,45	0,5	0,32	-0,30	-44,55
353,0	0,20	251,90	MWD	1	353,0	0,06	-0,53	0,5	0,12	0,10	-23,78
380,6	0,10	350,00	MWD	1	380,6	0,07	-0,58	0,6	0,26	-0,11	106,63
409,3	0,50	339,40	MWD	1	409,3	0,21	-0,63	0,7	0,42	0,42	-11,08
436,6	0,40	313,80	MWD	1	436,6	0,39	-0,74	0,8	0,24	-0,11	-28,13
465,2	0,30	311,80	MWD	1	465,2	0,50	-0,87	1,0	0,11	-0,10	-2,10
491,8	0,50	321,80	MWD	1	491,8	0,64	-0,99	1,2	0,24	0,23	11,28
521,0	0,40	303,30	MWD	1	521,0	0,80	-1,16	1,4	0,18	-0,10	-19,01
548,9	0,30	315,00	MWD	1	548,9	0,90	-1,29	1,6	0,13	-0,11	12,58
577,6	0,40	310,10	MWD	1	577,6	1,02	-1,42	1,7	0,11	0,10	-5,12
607,9	0,20	276,00	MWD	1	607,9	1,09	-1,55	1,9	0,26	-0,20	-33,76
634,2	0,30	266,40	MWD	1	634,2	1,09	-1,67	2,0	0,12	0,11	-10,95
662,9	0,30	261,20	MWD	1	662,9	1,08	-1,81	2,1	0,03	0,00	-5,44
693,7	0,30	250,20	MWD	1	693,7	1,04	-1,97	2,2	0,06	0,00	-10,71
719,7	0,20	250,40	MWD	1	719,7	1,00	-2,08	2,3	0,12	-0,12	0,23
748,4	0,20	226,40	MWD	1	748,4	0,95	-2,16	2,4	0,09	0,00	-25,09
777,8	0,20	230,30	MWD	1	777,8	0,88	-2,24	2,4	0,01	0,00	3,98
805,0	0,10	234,80	MWD	1	805,0	0,84	-2,29	2,4	0,11	-0,11	4,96
834,8	0,20	218,60	MWD	1	834,8	0,78	-2,35	2,5	0,11	0,10	-16,31
861,9	0,20	240,20	MWD	1	861,9	0,72	-2,42	2,5	0,08	0,00	23,91
890,7	0,10	253,80	MWD	1	890,7	0,69	-2,49	2,6	0,11	-0,10	14,17
949,0	0,80	229,20	MWD	1	949,0	0,41	-2,84	2,9	0,37	0,36	-12,66
977,5	0,90	224,20	MWD	1	977,5	0,12	-3,15	3,2	0,13	0,11	-5,26
1006,4	0,80	225,40	MWD	1	1006,4	-0,19	-3,45	3,5	0,11	-0,10	1,25
1034,0	0,80	234,00	MWD	1	1034,0	-0,43	-3,74	3,8	0,13	0,00	9,35
1062,8	0,40	215,20	MWD	1	1062,8	-0,63	-3,96	4,0	0,46	-0,42	-19,58

Norsk Hydro

2001-11-05

HOLE DEVIATION

Well: 34/7-31 **Reference point:** RKB ; 26,0 m ABOVE MSL

Waterdepth: 207,0 m **Vertical to:** 232,9 m **Total Depth:** 2650,0 m MD

Utm zone: 31 **Central Median:** 3' E **Horizontal datum:** ED50

Template Centre Coordinates, UTM: **North :** m, **East :** m

Wellhead Coordinates, UTM: **North :** 6797888,50 m, **East :** 450009,20 m

Official Surveys: Y **Track :**

Coordinates are measured from the wellhead centre.

Depth MD [m]	Incli-nation [Deg]	Direc-tion [Deg]	Tool Type	#	Depth TVD [m]	Coordinates North [m]	Coordinates East [m]	Vert. Sect [m]	Dogleg [D/30m]	Build [D/30m]	Turn [D/30m]
1090,6	0,40	214,10	MWD	1	1090,6	-0,79	-4,07	4,2	0,00	0,00	-1,19
1119,1	0,40	223,10	MWD	1	1119,1	-0,95	-4,20	4,3	0,07	0,00	9,47
1137,9	0,50	220,00	MWD	1	1137,9	-1,06	-4,30	4,4	0,16	0,16	-4,95
1150,5	0,40	229,20	MWD	1	1150,5	-1,13	-4,36	4,5	0,29	-0,24	21,90
1178,0	0,40	249,70	MWD	1	1178,0	-1,23	-4,53	4,7	0,16	0,00	22,36
1206,8	0,40	261,90	MWD	1	1206,8	-1,28	-4,72	4,9	0,09	0,00	12,71
1235,7	0,60	267,90	MWD	1	1235,7	-1,30	-4,97	5,1	0,21	0,21	6,23
1262,8	0,60	269,80	MWD	1	1262,8	-1,30	-5,26	5,4	0,02	0,00	2,10
1284,0	0,60	238,80	MWD	1	1284,0	-1,36	-5,46	5,6	0,45	0,00	-43,87
1290,3	0,60	242,20	MWD	1	1290,3	-1,39	-5,52	5,7	0,17	0,00	16,19
1318,4	0,60	243,10	MWD	1	1318,4	-1,53	-5,78	6,0	0,01	0,00	0,96
1347,0	0,50	233,80	MWD	1	1347,0	-1,67	-6,02	6,2	0,14	-0,10	-9,76
1373,8	0,50	222,00	MWD	1	1373,8	-1,82	-6,19	6,5	0,11	0,00	-13,21
1403,1	0,60	219,90	MWD	1	1403,1	-2,04	-6,37	6,7	0,10	0,10	-2,15
1432,3	0,80	247,10	MWD	1	1432,3	-2,23	-6,66	7,0	0,39	0,21	27,95
1462,2	1,20	255,50	MWD	1	1462,2	-2,39	-7,15	7,5	0,43	0,40	8,43
1490,3	1,20	254,30	MWD	1	1490,2	-2,55	-7,72	8,1	0,03	0,00	-1,28
1520,0	1,30	257,20	MWD	1	1519,9	-2,71	-8,35	8,8	0,12	0,10	2,93
1548,0	1,20	255,10	MWD	1	1547,9	-2,85	-8,94	9,4	0,12	-0,11	-2,25
1576,3	1,40	252,40	MWD	1	1576,2	-3,03	-9,56	10,0	0,22	0,21	-2,86
1603,5	1,50	256,80	MWD	1	1603,4	-3,21	-10,22	10,7	0,16	0,11	4,85
1631,7	1,40	261,60	MWD	1	1631,6	-3,35	-10,92	11,4	0,17	-0,11	5,11
1659,9	1,70	284,50	MWD	1	1659,8	-3,29	-11,67	12,1	0,73	0,32	24,36
1688,4	1,60	288,40	MWD	1	1688,3	-3,06	-12,45	12,8	0,16	-0,11	4,11
1700,6	1,60	283,30	MWD	1	1700,5	-2,97	-12,78	13,1	0,35	0,00	-12,54
1717,3	1,30	279,50	MWD	1	1717,2	-2,88	-13,20	13,5	0,57	-0,54	-6,83
1729,8	1,30	276,50	MWD	1	1729,7	-2,85	-13,48	13,8	0,16	0,00	-7,20
1744,2	1,20	266,00	MWD	1	1744,1	-2,84	-13,79	14,1	0,52	-0,21	-21,88
1764,3	1,10	266,70	MWD	1	1764,2	-2,86	-14,19	14,5	0,15	-0,15	1,04
1809,0	0,80	260,80	MWD	10	1808,9	-2,94	-14,93	15,2	0,21	-0,20	-3,96
1893,3	0,60	220,60	MWD	10	1893,2	-3,37	-15,80	16,2	0,18	-0,07	-14,31
1949,2	0,40	226,60	MWD	10	1949,1	-3,72	-16,13	16,6	0,11	-0,11	3,22
2008,5	0,40	229,10	MWD	10	2008,4	-4,00	-16,43	16,9	0,01	0,00	1,26
2034,9	0,50	219,40	MWD	10	2034,8	-4,15	-16,58	17,1	0,14	0,11	-11,02
2047,4	0,60	211,30	MWD	10	2047,3	-4,25	-16,65	17,2	0,30	0,24	-19,44
2059,9	0,60	215,60	MWD	10	2059,8	-4,36	-16,72	17,3	0,11	0,00	10,32

Norsk Hydro 2001-11-05

HOLE DEVIATION

Well: 34/7-31 **Reference point:** RKB ; 26,0 m ABOVE MSL

Waterdepth: 207,0 m **Vertical to:** 232,9 m **Total Depth:** 2650,0 m MD

Utm zone: 31 **Central Median:** 3' E **Horizontal datum:** ED50

Template Centre Coordinates, UTM: **North :** m, **East :** m

Wellhead Coordinates, UTM: **North :** 6797888,50 m, **East :** 450009,20 m

Official Surveys: Y **Track :**

Coordinates are measured from the wellhead centre.

Depth MD [m]	Incli-nation [Deg]	Direc-tion [Deg]	Tool Type	#	Depth TVD [m]	Coordinates North [m]	Coordinates East [m]	Vert. Sect [m]	Dogleg [D/30m]	Build [D/30m]	Turn [D/30m]
2104,0	0,60	195,80	MWD	10	2103,8	-4,77	-16,92	17,6	0,14	0,00	-13,47
2133,5	0,60	190,40	MWD	10	2133,3	-5,07	-16,99	17,7	0,06	0,00	-5,49
2162,0	0,60	192,90	MWD	10	2161,8	-5,36	-17,05	17,9	0,03	0,00	2,63
2232,3	0,80	174,00	MWD	10	2232,1	-6,21	-17,08	18,2	0,13	0,09	-8,07
2290,8	0,80	162,20	MWD	10	2290,6	-7,00	-16,91	18,3	0,08	0,00	-6,05
2378,2	1,70	101,10	MWD	10	2378,0	-7,83	-15,45	17,3	0,51	0,31	-20,97
2465,4	1,80	50,10	MWD	10	2465,2	-7,20	-13,13	15,0	0,52	0,03	-17,55
2525,5	2,30	59,70	MWD	10	2525,2	-5,99	-11,36	12,8	0,30	0,25	4,79
2553,0	2,40	63,40	MWD	10	2552,7	-5,45	-10,37	11,7	0,20	0,11	4,04
2581,1	2,50	63,10	MWD	10	2580,8	-4,91	-9,30	10,5	0,11	0,11	-0,32
2609,7	2,30	60,70	MWD	10	2609,4	-4,35	-8,24	9,3	0,23	-0,21	-2,52
2639,0	2,40	63,00	MWD	10	2638,6	-3,78	-7,18	8,1	0,14	0,10	2,35

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MAIN CONSUMPTION OF CASING/TUBING ON WELL 34/7-31 PO: 1

Size	Casing string	Grade	Weight [kg/m]	Weight [lb/ft]	Threads type	Length [m]	No. of joints
30"	CONDUCTOR	X-52	460,86	309,70	SL-60	74,8	6
20"	SURFACE	X-56	197,92	133,00	E60MT	912,9	76
13 3/8"	INTERMEDIATE	P-110	107,14	72,00	NS-CC	1546,8	129

BITRECORD FOR WELL 34/7-31 PO: 1

Bit No	Bit RR	Bit Type	Size (in)	Manu-fact-urer	Trade name	Serial no.	IADC code	Nozzles diameter (../32in)	Flow area (in2)	BHA no.	Depth out (m MD)	Bit meter (m)	Rot. hours (hrs)	ROP (m/hr)	Rotation min/max) (rpm)	Total bit revol.	Weight min/max (kN)	Flow min/max (l/min)	Pump min/max (bar)	Cutting Structure I - O -DC- L - B	Gauge 1/16 (in)	Other Remarks	Pull Cause
1		ISRT	9,88	SMIT	10MF	M60471	437X	14,20,20,20	1,071	1	1150	917	20,10	45,6	41/200	165400	0/111	1226/3320	28/140	1 - 1 - NO - A - E	I	NO	TD
2		MITO	17,50	SMIT	MGGHODC	LW5405	135	13,18,18,19	0,904	2	306	73	4,80	15,2	35/132	24700	6/80	2500/4571	49/150,3	1 - 1 - NO - A - E	I	RR	TD
		HO	36,00	REDB	HEAVYDUTY	RB13461		8,8,8,8,8,8,8,8,8,8	0,589	2	306	73	4,80	15,2	35/132	24700	6/80	2500/4571	49/150,3	1 - 1 - NO - A - E		RR	
3		MITO	26,00	SMIT	MSDSHCOD	LW6130	115	14,22,22,22	1,264	3	1150	844	13,80	61,2	79/187	122000	44/217	4030/5255	124/220	1 - 1 - WT - A - E	I	NO	TD
4		ISRT	17,50	SMIT	02GMODC	LW5474		16,22,22,22	1,310	4	1305	155	5,60	27,7	65/208	64400	13/305	1900/3600	40/223	1 - 1 - CT - M - E	I	NO	PP
4	1	ISRT	17,50	SMIT	02GMODC	LW5474		16,22,24,24	1,451	5	1785	480	17,20	27,9	121/194	192400	15/29	2862/4198	150/312	7 - 7 - BT - A - E	3	LT	TD
5		ISRT	12,25	SMIT	15GFDPD	LW7389	445		0,000	10	1788	3	0,10	30,0	65/65	500000	0/11	3532/3550	197/200	1 - 1 - NO - A - 1	I		TD
6		PDC	8,50	HTC	BD445	1213105	M333	16,16,16	0,589	11	2092	304	16,00	19,0		140500	0/19	1266/2328	89/276	1 - 0 - CT - N - X	I	NO	PR
6	1	PDC	8,50	HTC	BD445	1213105	M333	14,15,15	0,495	12	2213	121	9,30	13,0	96/182	88000	1/15	1840/4059	245/281	2 - 1 - BU - A - X	I	BT	PR
7		PDC	8,50	SMIT	MA74PX	JS2827	M223	11,11,11,11,11,11	0,557	13	2268	55	7,90	7,0	85/198	80600	2/16	2138/2245	248/272	0 - 0 - BU - A - X	I	PN	PR
8		MITO	8,50	SMIT	MFDGH	LW7073	137	16,16,20	0,699	14	2472	204	24,20	8,4	79/202	168000	4/20	2176/2484	230/253	1 - 1 - NO - A - 4	I	NO	CP
9		CORE	8,50	SDBS	FC284RILI	Z000512	M231		0,000	15	2499	27	1,50	18,0	67/122	10100	1/10	979/991	77,4/84,3	1 - 1 - NO - A - X	I	NO	NC
9	1	CORE	8,50	SDBS	FC284RILI	Z000512	M231		0,000	16	2506	7	0,80	8,8	35/114	4600	18/58	1020/1110	51,5/85,7	1 - 1 - NO - A - X	I	NO	CJ
10		PDC	8,50	SMIT	MA74PX	JS2827	M223	11,11,11,11,11,11	0,557	17	2650	144	9,90	14,5	106/176	197800	2/208	1975/2295	233/313	1 - 1 - CT - N - X	I	CT	TD
11		MILL	11,75	REDB	MILL	43406			0,000	18	795	0		0,0									

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BOTTOM HOLE ASSEMBLIES USED ON WELL 34/7-31 PO: 1

BHA no. 1: No. / Element / OD(in) / Length(m) Depth In: 233 m MD Out: 1150 m MD

1	10MF	9,875	0,40	2	BIT SUB	8,25	0,89
3	CDR	8,375	6,95	4	MWD	8,25	8,44
5	NON MAG. STAB	9,875	1,70	6	NON MAG. COLLAR	8,0	8,41
7	DRILL COLLAR STEEL	7,875	55,79	8	JAR	8,0	9,81
9	DRILL COLLAR STEEL	7,75	18,36	10	X-OVER	6,5	0,77

Reason pulled: TOTAL DEPTH/CASING DEPTI Sum: 111,52

BHA no. 2: No. / Element / OD(in) / Length(m) Depth In: 233 m MD Out: 306 m MD

1	MGGHODC	17,5	0,43	2	HEAVYDUTY	36,0	5,07
3	X-OVER	11,125	0,85	4	MWD	9,125	8,99
5	NON MAG. STAB	26,0	2,23	6	NON MAG. COLLAR	9,5	8,90
7	X-OVER	9,5	0,67	8	DRILL COLLAR STEEL	7,875	55,79
9	JAR	8,0	9,81	10	DRILL COLLAR STEEL	7,75	18,36
11	X-OVER	6,5	0,77	12	HWDP	5,0	136,42

Reason pulled: TOTAL DEPTH/CASING DEPTI Sum: 248,29

BHA no. 3: No. / Element / OD(in) / Length(m) Depth In: 306 m MD Out: 1150 m MD

1	MSDSHCOD	26,0	0,65	2	NEAR BIT STAB	26,0	2,86
3	NON MAG. COLLAR	9,5	3,06	4	MWD	9,125	8,99
5	NON MAG. STAB	26,0	2,23	6	NON MAG. COLLAR	9,5	8,90
7	X-OVER	9,5	0,67	8	DRILL COLLAR STEEL	7,875	55,79
9	JAR	8,0	9,81	10	DRILL COLLAR STEEL	7,75	18,36
11	X-OVER	6,5	0,77	12	HWDP	5,0	136,42
13	NON MAG. STAB	26,0	2,04				

Reason pulled: TOTAL DEPTH/CASING DEPTI Sum: 250,55

BHA no. 4: No. / Element / OD(in) / Length(m) Depth In: 1150 m MD Out: 1305 m MD

1	02GMODC	17,5	0,44	2	NEAR BIT STAB	17,375	1,87
3	SHORT DRILL COLLAR	9,5	2,97	4	STEEL STAB	17,5	1,90
5	CDR	9,5	7,36	6	MWD	9,5	8,51
7	NON MAG. STAB	17,5	2,30	8	NON MAG. COLLAR	9,5	8,90
9	X-OVER	9,5	0,67	10	DRILL COLLAR STEEL	7,875	55,79
11	JAR	8,0	9,81	12	DRILL COLLAR STEEL	7,75	18,36
13	X-OVER	6,5	0,77	14	HWDP	5,0	136,42

Reason pulled: PUMP PRESSURE Sum: 256,07

BHA no. 5: No. / Element / OD(in) / Length(m) Depth In: 1305 m MD Out: 1785 m MD

1	02GMODC			2	NEAR BIT STAB	17,375	1,87
3	SHORT DRILL COLLAR	9,5	2,97	4	STEEL STAB	17,5	1,90
5	CDR	9,5	7,36	6	MWD	9,5	8,51
7	NON MAG. STAB	17,5	2,30	8	NON MAG. COLLAR	9,5	8,90
9	X-OVER	9,5	0,67	10	DRILL COLLAR STEEL	7,875	55,79
11	JAR	8,0	9,81	12	DRILL COLLAR STEEL	7,75	18,36
13	X-OVER	6,5	0,77	14	HWDP	5,0	136,42

Reason pulled: TOTAL DEPTH/CASING DEPTI Sum: 255,63

BHA no. 6: No. / Element / OD(in) / Length(m) Depth In: 232 m MD Out: 232 m MD

1	SPEAR	7,75	1,50	2	STOP SUB	8,0	0,97
3	BUMPER SUB	7,938	1,61	4	DRILL COLLAR STEEL	8,0	28,08
5	X-OVER	6,5	0,92				

Reason pulled: Sum: 33,08

BOTTOM HOLE ASSEMBLIES USED ON WELL 34/7-31 PO: 1

BHA no. 7: No. / Element / OD(in) / Length(m) Depth In: 596 m MD Out: 596 m MD

1	INTERNAL CUTTER	11,75	2,96	2	X-OVER	8,0	0,57
3	DRILL PIPE	5,0	362,14	4	X-OVER	8,0	0,52
5	OTHER	14,0	1,68	6	DRILL COLLAR STEEL	8,0	28,08
7	X-OVER	6,5	0,77	8	HWDP	5,0	136,42
9	DRILL PIPE	5,0	65,24				

Reason pulled: Sum: 598,38

BHA no. 8: No. / Element / OD(in) / Length(m) Depth In: 595 m MD Out: 595 m MD

1	SPEAR	7,75	1,50	2	STOP SUB	8,0	0,97
3	BUMPER SUB	7,938	2,11	4	DRILL COLLAR STEEL	8,0	28,08
5	X-OVER	6,5	0,92				

Reason pulled: Sum: 33,58

BHA no. 9: No. / Element / OD(in) / Length(m) Depth In: 595 m MD Out: 595 m MD

2	OTHER	12,0	1,49	3	STRING MILL	1,625	1,37
4	X-OVER	9,5	0,36	6	DRILL COLLAR STEEL	8,0	28,08
7	X-OVER	6,5	0,77	8	HWDP	5,0	136,42
9	DRILL PIPE	5,0	429,26				

Reason pulled: Sum: 597,75

BHA no. 10: No. / Element / OD(in) / Length(m) Depth In: 1785 m MD Out: 1788 m MD

1	15GFDPD	12,25	0,32	2	BIT SUB	8,25	0,90
3	DRILL COLLAR STEEL	8,0	55,79	4	JAR	8,0	9,81
5	DRILL COLLAR STEEL	8,0	18,36	6	X-OVER	7,625	0,52
7	HWDP	5,0	136,42				

Reason pulled: TOTAL DEPTH/CASING DEPT Sum: 222,12

BHA no. 11: No. / Element / OD(in) / Length(m) Depth In: 1788 m MD Out: 2092 m MD

1	BD445	8,5	0,33	2	LOGGING WHILE DRILLING TO	6,813	2,91
3	MWD	6,875	9,83	4	ADN	6,875	6,18
5	NON MAG. COLLAR	6,563	8,88	6	X-OVER	6,25	0,22
7	DRILL COLLAR STEEL	6,375	56,24	8	JAR	6,375	10,69
9	DRILL COLLAR STEEL	6,375	18,92	10	X-OVER	6,375	0,43
11	HWDP	6,5	136,42	12	DART SUB	6,375	0,62

Reason pulled: PENETRATION RATE Sum: 251,67

BHA no. 12: No. / Element / OD(in) / Length(m) Depth In: 2092 m MD Out: 2213 m MD

1	BD445	8,5	0,33	2	LOGGING WHILE DRILLING TO	6,813	2,91
3	MWD	6,875	9,83	4	ADN	6,875	6,11
5	NON MAG. COLLAR	6,563	8,88	6	X-OVER	6,25	0,22
7	DRILL COLLAR STEEL	6,375	56,24	8	JAR	6,375	10,69
9	DRILL COLLAR STEEL	6,375	18,92	10	X-OVER	6,375	0,43
11	HWDP	6,5	136,42	12	DART SUB	6,375	0,62

Reason pulled: PENETRATION RATE Sum: 251,60

BHA no. 13: No. / Element / OD(in) / Length(m) Depth In: 2213 m MD Out: 2268 m MD

1	MA74PX	8,5		2	LOGGING WHILE DRILLING TO	6,813	2,91
3	MWD	6,875	9,83	4	ADN	6,875	6,11
5	NON MAG. COLLAR	6,563	8,88	6	X-OVER	6,25	0,22
7	DRILL COLLAR STEEL	6,375	56,24	8	JAR	6,375	10,69
9	DRILL COLLAR STEEL	6,375	18,92	10	X-OVER	6,375	0,43
11	HWDP	6,5	136,42	12	DART SUB	6,375	0,62

Reason pulled: PENETRATION RATE Sum: 251,27

BOTTOM HOLE ASSEMBLIES USED ON WELL 34/7-31 PO: 1

BHA no. 14: No. / Element / OD(in) / Length(m) Depth In: 2268 m MD Out: 2472 m MD

1	MFDGH	8,5	0,25	2	LOGGING WHILE DRILLING TO	6,813	2,91
3	MWD	6,875	9,83	4	ADN	6,875	6,11
5	NON MAG. COLLAR	6,563	8,88	6	X-OVER	6,25	0,22
7	DRILL COLLAR STEEL	6,375	56,24	8	JAR	6,375	10,69
9	DRILL COLLAR STEEL	6,375	18,92	10	X-OVER	6,375	0,43
11	HWDP	6,5	136,42	12	DART SUB	6,375	0,62

Reason pulled: CORE POINT Sum: 251,52

BHA no. 15: No. / Element / OD(in) / Length(m) Depth In: 2472 m MD Out: 2499 m MD

1	FC284RILI	8,5	0,36	2	CORE BARREL	6,75	30,08
3	FLOAT SUB	6,5	0,91	4	X-OVER	6,25	0,22
5	DRILL COLLAR STEEL	6,5	84,49	6	JAR	6,375	10,69
7	DRILL COLLAR STEEL	6,375	18,92	8	X-OVER	6,375	0,43
9	HWDP	6,5	136,42	10	PUP JOINT	5,0	3,67
11	DART SUB	6,375	0,62				

Reason pulled: NEW CORE/FULL BARREL Sum: 286,81

BHA no. 16: No. / Element / OD(in) / Length(m) Depth In: 2499 m MD Out: 2506 m MD

1	FC284RILI	8,5	0,36	2	CORE BARREL	6,75	30,08
3	FLOAT SUB	6,5	0,91	4	X-OVER	6,25	0,22
5	DRILL COLLAR STEEL	6,5	84,49	6	JAR	6,375	10,69
7	DRILL COLLAR STEEL	6,375	18,92	8	X-OVER	6,375	0,43
9	HWDP	6,5	136,42	10	PUP JOINT	5,0	1,01
11	DART SUB	6,375	0,62				

Reason pulled: CORE JAMMED Sum: 284,15

BHA no. 17: No. / Element / OD(in) / Length(m) Depth In: 2506 m MD Out: 2650 m MD

1	MA74PX	8,5	0,28	2	LOGGING WHILE DRILLING TO	6,813	2,91
3	MWD	6,875	8,29	4	ADN	6,875	6,02
5	NON MAG. COLLAR	6,563	8,88	6	X-OVER	6,25	0,22
7	DRILL COLLAR STEEL	6,375	84,49	8	JAR	6,375	10,69
9	DRILL COLLAR STEEL	6,375	18,92	10	X-OVER	6,375	0,43
11	HWDP	6,5	136,42	12	DART SUB	6,375	0,62
13	NON MAG. STAB	8,5	1,52				

Reason pulled: TOTAL DEPTH/CASING DEPT Sum: 279,69

BHA no. 18: No. / Element / OD(in) / Length(m) Depth In: 795 m MD Out: 795 m MD

1	MILL	11,75	2,37	2	X-OVER	9,5	0,37
3	X-OVER	8,0	0,52	4	PUP JOINT	5,0	1,98
5	DRILL PIPE	5,0	559,80	6	X-OVER	8,0	0,41
7	SPEAR	8,0	2,22	8	BUMPER SUB	7,937	3,79
9	DRILL COLLAR STEEL	8,0	18,94	10	X-OVER	8,0	1,10

Reason pulled: Sum: 591,50

BHA no. 19: No. / Element / OD(in) / Length(m) Depth In: 784 m MD Out: 784 m MD

1	MILL	11,75	2,37	2	X-OVER	9,5	0,37
3	X-OVER	8,0	0,52	4	PUP JOINT	5,0	8,38
5	DRILL PIPE	5,0	180,16	6	X-OVER	8,0	0,41
7	SPEAR	8,0	2,22	8	BUMPER SUB	7,937	3,79
9	DRILL COLLAR STEEL	8,0	18,94	10	X-OVER	8,0	1,10

Reason pulled: Sum: 218,26

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BOTTOM HOLE ASSEMBLIES USED ON WELL 34/7-31 PO: 1

BHA no. 20: No. / Element / OD(in) / Length(m) Depth In: 580 m MD Out: 603 m MD

1	MGGHODC	17,5	0,55	2	BIT SUB	9,5	0,90
3	X-OVER	7,625	0,52	4	HWDP	5,0	136,42

Reason pulled: Sum: 138,39

BHA no. 21: No. / Element / OD(in) / Length(m) Depth In: 237 m MD Out: 237 m MD

1	STEEL STAB	17,5	1,68	2	INTERNAL CUTTER	11,75	3,00
3	CIRCULATING SUB	7,75	0,99	4	EXTENSION SUB	7,75	0,52
5	DOWNHOLE MOTOR	9,5	9,02	6	BUMPER SUB	8,0	
7	DRILL COLLAR STEEL	8,0	55,83	8	X-OVER	7,875	1,10

Reason pulled: Sum: 72,14

Norsk Hydro

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CEMENT SLURRY REPORT ON WELL 34/7-31 PO: 1

Date	CsgSize	Jobtype	Slurry Type	Pumped Volume [m3]	Density [sg]	BHCT [DegC]	Yield [l/100 kg]	Additive	Unit	Additives [../100 kg Cement]	Additives [../m3 Slurry]
2001-03-15	30"	CASING CEMENTING	SPACER		1,03	8,00					
			LEAD	23,00	1,56	8,00	129,60	FP-14L	l	0,20	
								A-3L	l	3,50	
			TAIL SLURRY	23,00	1,95	8,00	74,73	FP-14L	l	0,20	
								A-7L	l	3,50	
			DISPLACEMENT	5,10	1,03	8,00					
			DISPLACEMENT			8,00					
2001-03-17	20"	CASING CEMENTING	SPACER	15,00	1,03	30,00					
			LEAD	228,00	1,44	30,00	169,30	FP-14L	l	0,20	
								R-15L	l	1,25	
								A-3L	l	5,30	
			TAIL SLURRY	23,00	1,92	30,00	75,01	R-12L	l	0,35	
								FP-14L	l	0,20	
			DISPLACEMENT	1,50	1,03	30,00					
			DISPLACEMENT			30,00					
2001-03-23	13 3/8"	CASING CEMENTING	SPACER	9,00	1,60	41,00	0,00	BARITC	kg		785,00
								FP-14L	l		10,00
								GW-22	kg		2,00
								MCS-G	l		52,00
								NAOH	kg		0,50
			LEAD	30,00	1,92	41,00	75,04	R-12L	l	0,50	
								FP-14L	l	0,20	
			DISPLACEMENT	116,00	1,48	41,00	0,00				
			DISPLACEMENT			41,00					
2001-04-12	13 3/8"	PLUG	SPACER	10,00	1,00	50,00					
			TAIL SLURRY	13,36	2,05	50,00	65,86	CD-31L	l	0,80	
								FP-14L	l	0,20	
								R-12L	l	0,30	
			DISPLACEMENT	13,10	1,63	50,00					
			DISPLACEMENT			50,00					
		PLUG IN CASED TO OPEN HOLE	SPACER	10,00	1,00	50,00					

CEMENT SLURRY REPORT ON WELL 34/7-31 PO: 1

Date	CsgSize	Jobtype	Slurry Type	Pumped Volume [m3]	Density [sg]	BHCT [DegC]	Yield [l/100 kg]	Additive	Unit	Additives [../100 kg Cement]	Additives [../m3 Slurry]
2001-04-12	13 3/8"	PLUG IN CASED TO OPEN HOLE	TAIL SLURRY	13,36	2,05	50,00	65,86	CD-31L	l	0,80	
								FP-14L	l	0,20	
								R-12L	l	0,30	
			DISPLACEMENT	13,10	1,63	50,00					
			DISPLACEMENT			50,00					
2001-04-12	UNDEFINED	PLUG	SPACER	5,00	1,00	57,00					
			TAIL SLURRY	11,50	1,90	57,00	76,75	FP-14L	l	0,20	
								R-12L	l	0,75	
			DISPLACEMENT	15,30	1,63	57,00					
			DISPLACEMENT			57,00					
2001-04-12	UNDEFINED	PLUG	SPACER	5,00	1,00	63,00					
			TAIL SLURRY	11,50	1,90	63,00	82,50	CD-31L	l	0,80	
								FL-45L	l	6,75	
								FP-14L	l	0,20	
								MICRO	l	12,00	
								R-12L	l	0,90	
			DISPLACEMENT	17,60	1,63	63,00					
			DISPLACEMENT			63,00					
2001-04-12	UNDEFINED	PLUG	SPACER	5,00	1,00	50,00					
			TAIL SLURRY	11,50	1,90	50,00	82,50	CD-31L	l	0,80	
								FL-45L	l	6,75	
								FP-14L	l	0,20	
								MICRO	l	12,00	
								R-12L	l	0,90	
			DISPLACEMENT	20,00	1,63	50,00					
			DISPLACEMENT			50,00					
2001-04-22	20"	PLUG	MCS-G SPACER		1,00	23,00					
			TAIL SLURRY	35,60	1,95	23,00	73,69	FP-14L	l	0,20	
			DISPLACEMENT		1,60	23,00					
			DISPLACEMENT			23,00					

TOTAL CONSUMPTION OF CEMENT ADDITIVES ON WELL 34/7-31 PO: 1

Section	Cement/Additive	Unit	Total Amount Used
26"	SPECIAL ADDITIVE: DEFOAMER FP-14L	l	146,00
	API CLASS G	MT	46,00
17 1/2"	GW-22 VISCOSIFIER	kg	25,00
	RETARDER: LIQUID LIGNOSULFONATE UP TO 93 DEGC	l	201,00
	API CLASS G	MT	41,00
	SPACER ADDITIVE: MCS-G	l	576,00
	SPACER ADDITIVE: CAUSTIC SODA POWDER	kg	5,00
	SPECIAL ADDITIVE: DEFOAMER FP-14L	l	175,00
0.0	RETARDER: LIQUID LIGNOSULFONATE UP TO 93 DEGC	l	819,00
	RETARDER: HIGH TEMP. BETWEEN 93 AND 149 DEGC	l	1596,00
	SPECIAL ADDITIVE: DEFOAMER FP-14L	l	672,00
	DISPERSANT: CD-31L LIQUID	l	564,00
	API CLASS G	MT	131886,00
	FLUID-LOSS ADDITIVE: BETWEEN 38 AND 177 DEGC	l	1818,00
	SPECIAL ADDITIVE: MICROBLOCK, ANTI GAS MIGRATION	l	3426,00
	EXTENDER: LIQUID LODENSE	l	7760,00
	ACCELERATOR: LIQUID CACL2	l	1252,00

DAILY MUD PROPERTIES:RHEOLOGY PARAMETERS FOR WELL 34/7-31 PO: 1

Hole section : 9 7/8" **WATER BASED SYSTEM**

Date	Depth [m] MD	Depth [m] TVD	Mud Type	Funnel Visc [sec]	Dens [sg]	Mudtmp Out [DegC]	Fann Readings 600	300	200	100	60	30	6	3	Rheo Test [DegC]	PV [mPas]	YP [Pa]	Gel0 [Pa]	Gel10 [Pa]
2001-02-28		0	SPUD MUD				0	0	0	0	0	0	0	0					
2001-03-01		0	SPUD MUD				0	0	0	0	0	0	0	0					
2001-03-02		0	SPUD MUD				0	0	0	0	0	0	0	0					
2001-03-03		0	SPUD MUD				0	0	0	0	0	0	0	0					
2001-03-04		0	SPUD MUD				0	0	0	0	0	0	0	0					
2001-03-05		0	SPUD MUD				0	0	0	0	0	0	0	0					
2001-03-06		0	SPUD MUD				0	0	0	0	0	0	0	0					
2001-03-07		0	SPUD MUD				0	0	0	0	0	0	0	0					
2001-03-08		0	SPUD MUD				0	0	0	0	0	0	0	0					
2001-03-09		0	SPUD MUD				0	0	0	0	0	0	0	0					
2001-03-10	277	277	SPUD MUD	0,0	1,05		0	0	0	0	0	0	0	0					
2001-03-11	905	905	SPUD MUD	0,0	1,05		0	0	0	0	0	0	0	0					
2001-03-12	233	233	SPUD MUD	0,0	1,05		0	0	0	0	0	0	0	0					

Hole section : 36" **WATER BASED SYSTEM**

Date	Depth [m] MD	Depth [m] TVD	Mud Type	Funnel Visc [sec]	Dens [sg]	Mudtmp Out [DegC]	Fann Readings 600	300	200	100	60	30	6	3	Rheo Test [DegC]	PV [mPas]	YP [Pa]	Gel0 [Pa]	Gel10 [Pa]
2001-03-13	233	233	SPUD MUD	0,0	1,05		0	0	0	0	0	0	0	0					
2001-03-14	306	306	SPUD MUD	0,0	1,05		0	0	0	0	0	0	0	0					
2001-03-15	688	688	SPUD MUD	0,0	1,05		0	0	0	0	0	0	0	0					

Hole section : 26" **WATER BASED SYSTEM**

Date	Depth [m] MD	Depth [m] TVD	Mud Type	Funnel Visc [sec]	Dens [sg]	Mudtmp Out [DegC]	Fann Readings 600	300	200	100	60	30	6	3	Rheo Test [DegC]	PV [mPas]	YP [Pa]	Gel0 [Pa]	Gel10 [Pa]
2001-03-16	1150	1150	SPUD MUD	115,0	1,50		0	0	0	0	0	0	0	0					
2001-03-17	1150	1150	SPUD MUD				0	0	0	0	0	0	0	0					
2001-03-18	1150	1150	SPUD MUD				0	0	0	0	0	0	0	0					
2001-03-19	1305	1305	KCL/POLYMER	76,0	1,48		90	65	50	36	0	0	12	10	50,0	25,0	20,0	6,0	10,0

DAILY MUD PROPERTIES:RHEOLOGY PARAMETERS FOR WELL 34/7-31 PO: 1

Hole section : 17 1/2" **WATER BASED SYSTEM**

Date	Depth [m] MD	Depth [m] TVD	Mud Type	Funnel Visc [sec]	Dens [sg]	Mudtmp Out [DegC]	Fann Readings 600	300	200	100	60	30	6	3	Rheo Test [DegC]	PV [mPas]	YP [Pa]	Gel0 [Pa]	Gel10 [Pa]
2001-03-20	1663	1663	KCL/POLYMER	64,0	1,48	35,0	75	52	43	31	0	0	11	10	50,0	23,0	14,5	6,0	9,0
2001-03-21	1785	1785	KCL/POLYMER	62,0	1,48	36,0	85	61	51	36	0	0	13	11	50,0	24,0	18,5	8,0	11,0
2001-03-22	1785	1785	KCL/POLYMER	74,0	1,48		85	61	51	35	0	0	13	11	50,0	24,0	18,5	9,0	12,0
2001-03-23	1785	1785	KCL/POLYMER	70,0	1,48	15,0	68	49	40	29	0	0	11	9	50,0	19,0	15,0	6,0	9,0
2001-03-24	1785	1785	KCL/POLYMER	70,0	1,48	16,0	74	52	43	31	0	0	12	10	50,0	22,0	15,0	6,0	10,0
2001-03-25	1785	1785	KCL/POLYMER	68,0	1,48	16,0	74	52	43	31	0	0	12	10	50,0	22,0	15,0	6,0	10,0
2001-03-26	1785	1785	KCL/POLYMER	68,0	1,48	16,0	74	52	43	31	0	0	12	10	50,0	22,0	15,0	6,0	10,0
2001-03-27	1785	1785	KCL/POLYMER	65,0	1,48	16,0	73	52	42	30	0	0	12	10	50,0	21,0	15,5	5,0	9,0
2001-03-28	1785	1785	KCL/POLYMER	73,0	1,48	10,0	72	54	46	33	0	0	14	13	50,0	18,0	18,0	5,0	11,0
2001-03-30	1785	1785	KCL/POLYMER	75,0	1,48	14,0	72	54	45	32	0	0	14	12	50,0	18,0	18,0	5,0	12,0

Hole section : 12 1/4" **WATER BASED SYSTEM**

Date	Depth [m] MD	Depth [m] TVD	Mud Type	Funnel Visc [sec]	Dens [sg]	Mudtmp Out [DegC]	Fann Readings 600	300	200	100	60	30	6	3	Rheo Test [DegC]	PV [mPas]	YP [Pa]	Gel0 [Pa]	Gel10 [Pa]
2001-03-31	1788	1788	KCL/POLYMER	70,0	1,48	21,0	71	51	42	31	0	0	13	10	50,0	20,0	15,5	5,0	10,0

Hole section : 8 1/2" **WATER BASED SYSTEM**

Date	Depth [m] MD	Depth [m] TVD	Mud Type	Funnel Visc [sec]	Dens [sg]	Mudtmp Out [DegC]	Fann Readings 600	300	200	100	60	30	6	3	Rheo Test [DegC]	PV [mPas]	YP [Pa]	Gel0 [Pa]	Gel10 [Pa]
2001-04-01	2092	2092	KCL/POLYMER	70,0	1,60	26,0	91	65	54	40	0	0	14	11	50,0	26,0	19,5	6,0	12,0

Hole section : 17 1/2" **WATER BASED SYSTEM**

Date	Depth [m] MD	Depth [m] TVD	Mud Type	Funnel Visc [sec]	Dens [sg]	Mudtmp Out [DegC]	Fann Readings 600	300	200	100	60	30	6	3	Rheo Test [DegC]	PV [mPas]	YP [Pa]	Gel0 [Pa]	Gel10 [Pa]
2001-04-02	2213	2213	KCL/POLYMER	70,0	1,61	31,0	90	62	51	37	0	0	12	10	50,0	28,0	17,0	5,0	10,0

DAILY MUD PROPERTIES:RHEOLOGY PARAMETERS FOR WELL 34/7-31 PO: 1

Hole section : 8 1/2" **WATER BASED SYSTEM**

Date	Depth [m]		Mud Type	Funnel Visc	Dens	Mudtmp Out	Fann Readings								Rheo Test	PV	YP	Gel0	Gel10
	MD	TVD		[sec]	[sg]	[DegC]	600	300	200	100	60	30	6	3	[DegC]	[mPas]	[Pa]	[Pa]	[Pa]
2001-04-03	2268	2268	KCL/POLYMER	80,0	1,61	20,0	90	65	55	40	0	0	13	10	50,0	25,0	20,0	5,0	12,0
2001-04-04	2415	2415	KCL/POLYMER	65,0	1,63	32,0	91	65	56	41	0	0	14	11	50,0	26,0	19,5	5,0	13,0
2001-04-05	2475	2475	KCL/POLYMER	74,0	1,63	24,0	90	64	53	39	0	0	14	11	50,0	26,0	19,0	5,0	13,0
2001-04-06	2505	2505	KCL/POLYMER		1,63	18,0	92	65	53	39	0	0	14	12	50,0	27,0	19,0	6,0	13,0
2001-04-07	2590	2590	KCL/POLYMER	73,0	1,63	28,0	96	67	55	41	0	0	14	12	50,0	29,0	19,0	6,0	13,0
2001-04-08	2650	2650	KCL/POLYMER	82,0	1,63	27,0	90	63	51	38	0	0	13	11	50,0	27,0	18,0	6,0	15,0
2001-04-09	2650	2650	KCL/POLYMER	85,0	1,63	18,0	91	64	51	37	0	0	13	11	50,0	27,0	18,5	6,0	15,0
2001-04-10	2650	2650	KCL/POLYMER	85,0	1,63	15,0	90	64	51	37	0	0	13	11	50,0	26,0	19,0	6,0	15,0
2001-04-11	2650	2650	KCL/POLYMER	85,0	1,63	15,0	90	63	51	37	0	0	13	11	50,0	27,0	18,0	6,0	15,0

Hole section : P&A **WATER BASED SYSTEM**

Date	Depth [m]		Mud Type	Funnel Visc	Dens	Mudtmp Out	Fann Readings								Rheo Test	PV	YP	Gel0	Gel10
	MD	TVD		[sec]	[sg]	[DegC]	600	300	200	100	60	30	6	3	[DegC]	[mPas]	[Pa]	[Pa]	[Pa]
2001-04-12	2650	2650	KCL/POLYMER	68,0	1,63	24,0	91	63	52	38	0	0	13	10	50,0	28,0	17,5	5,5	14,0
2001-04-13	2650	2650	KCL/POLYMER	64,0	1,60	24,0	91	64	51	38	0	0	13	10	50,0	27,0	18,5	5,5	12,0
2001-04-23	0	0	KCL/POLYMER								0	0							
2001-04-24		0	KCL/POLYMER				0	0	0	0	0	0	0	0					

DAILY MUD PROPERTIES : OTHER PARAMETERS FOR WELL 34/7-31 PO: 1

Hole section : 0.0 **WATER BASED SYSTEM**

Date	Depth [m] MD	Depth [m] TVD	Mud Type	Dens [sg]	Filtrate API [ml]	Filtrate HPHT [ml]	Filtcake API [mm]	Filtcake HPHT [mm]	HPHT Press/Temp [bar/DegC]	pH	Alcalinity Pm [ml]	Alcalinity Pf [ml]	Alcalinity Mf [ml]	Inhib Chem [Kg/m3]	K+ [mg/l]	CL- [mg/l]	Ca++ [mg/l]	Mg++ [mg/l]	Tot hard [mg/l]	Percentage Solid [%]	Percentage Oil [%]	Percentage Sand [%]	CEC [Kg/m3]	ASG [sg]	LGS [Kg/m3]
2001-02-28		0	SPUD MUD						/																
2001-03-01		0	SPUD MUD						/																
2001-03-02		0	SPUD MUD						/																
2001-03-03		0	SPUD MUD						/																
2001-03-04		0	SPUD MUD						/																
2001-03-05		0	SPUD MUD						/																
2001-03-06		0	SPUD MUD						/																
2001-03-07		0	SPUD MUD						/																
2001-03-08		0	SPUD MUD						/																
2001-03-09		0	SPUD MUD						/																
2001-03-10	277	277	SPUD MUD	1,05					/																
2001-03-11	905	905	SPUD MUD	1,05					/																
2001-03-12	233	233	SPUD MUD	1,05					/																

Hole section : 36" **WATER BASED SYSTEM**

Date	Depth [m] MD	Depth [m] TVD	Mud Type	Dens [sg]	Filtrate API [ml]	Filtrate HPHT [ml]	Filtcake API [mm]	Filtcake HPHT [mm]	HPHT Press/Temp [bar/DegC]	pH	Alcalinity Pm [ml]	Alcalinity Pf [ml]	Alcalinity Mf [ml]	Inhib Chem [Kg/m3]	K+ [mg/l]	CL- [mg/l]	Ca++ [mg/l]	Mg++ [mg/l]	Tot hard [mg/l]	Percentage Solid [%]	Percentage Oil [%]	Percentage Sand [%]	CEC [Kg/m3]	ASG [sg]	LGS [Kg/m3]
2001-03-13	233	233	SPUD MUD	1,05					/																
2001-03-14	306	306	SPUD MUD	1,05					/																
2001-03-15	688	688	SPUD MUD	1,05					/																

Hole section : 26" **WATER BASED SYSTEM**

Date	Depth [m] MD	Depth [m] TVD	Mud Type	Dens [sg]	Filtrate API [ml]	Filtrate HPHT [ml]	Filtcake API [mm]	Filtcake HPHT [mm]	HPHT Press/Temp [bar/DegC]	pH	Alcalinity Pm [ml]	Alcalinity Pf [ml]	Alcalinity Mf [ml]	Inhib Chem [Kg/m3]	K+ [mg/l]	CL- [mg/l]	Ca++ [mg/l]	Mg++ [mg/l]	Tot hard [mg/l]	Percentage Solid [%]	Percentage Oil [%]	Percentage Sand [%]	CEC [Kg/m3]	ASG [sg]	LGS [Kg/m3]
2001-03-16	1150	1150	SPUD MUD	1,50	9,0				/																
2001-03-17	1150	1150	SPUD MUD						/																
2001-03-18	1150	1150	SPUD MUD						/																

Hole section : 17 1/2" **WATER BASED SYSTEM**

Date	Depth [m] MD	Depth [m] TVD	Mud Type	Dens [sg]	Filtrate API [ml]	Filtrate HPHT [ml]	Filtcake API [mm]	Filtcake HPHT [mm]	HPHT Press/Temp [bar/DegC]	pH	Alcalinity Pm [ml]	Alcalinity Pf [ml]	Alcalinity Mf [ml]	Inhib Chem [Kg/m3]	K+ [mg/l]	CL- [mg/l]	Ca++ [mg/l]	Mg++ [mg/l]	Tot hard [mg/l]	Percentage Solid [%]	Percentage Oil [%]	Percentage Sand [%]	CEC [Kg/m3]	ASG [sg]	LGS [Kg/m3]
2001-03-19	1305	1305	KCL/POLYMER	1,48	2,5		1		/	8,4		0,2	1,0		95700	86000	420		420	19,5		0,0	50	3,9	64

DAILY MUD PROPERTIES : OTHER PARAMETERS FOR WELL 34/7-31 PO: 1

Hole section : 17 1/2" **WATER BASED SYSTEM**

Date	Depth [m] MD	Depth [m] TVD	Mud Type	Dens [sg]	Filtrate API [ml]	Filtrate HPHT [ml]	Filtcake API [mm]	Filtcake HPHT [mm]	HPHT Press/Temp [bar/DegC]	pH	Alcalinity Pm [ml]	Alcalinity Pf [ml]	Alcalinity Mf [ml]	Inhib Chem [Kg/m3]	K+ [mg/l]	CL- [mg/l]	Ca++ [mg/l]	Mg++ [mg/l]	Tot hard [mg/l]	Percentage Solid [%]	Percentage Oil [%]	Percentage Sand [%]	CEC [Kg/m3]	ASG [sg]	LGS [Kg/m3]
2001-03-20	1663	1663	KCL/POLYMER	1,48	2,6		1		/	8,0		0,1	1,0		93500	85000	720		720	20,0		0,1	1	3,8	95
2001-03-21	1785	1785	KCL/POLYMER	1,48	3,0		1		/	8,0		0,0	0,8		94	86000	640		640	20,5		0,1	62	3,4	215
2001-03-22	1785	1785	KCL/POLYMER	1,48	3,1		1		/	8,1		0,0	0,9		94	85000	700		700	20,5		0,1	63	3,4	216
2001-03-23	1785	1785	KCL/POLYMER	1,48	2,6		1		/	7,9		0,1	1,0		92652	84000	900		900	20,0		0,0	67	3,8	105
2001-03-24	1785	1785	KCL/POLYMER	1,48	2,6		1		/	7,9		0,1	1,0		99270	90000	900		900	20,0		0,0	67	3,9	90
2001-03-25	1785	1785	KCL/POLYMER	1,48	2,6		1		/	7,9		0,1	1,0		99270	90000	900		900	20,0		0,0	67	3,9	90
2001-03-26	1785	1785	KCL/POLYMER	1,48	2,6		1		/	7,9		0,1	1,0		99270	90000	900		900	20,0		0,0	67	3,9	90
2001-03-27	1785	1785	KCL/POLYMER	1,48	2,5		1		/	7,9		0,1	1,0		93755	85000	900		900	20,0		0,0	66	3,8	102
2001-03-28	1785	1785	KCL/POLYMER	1,48	2,3		1		/	7,9		0,1	1,0		91549	83000	900		900	20,0		0,0	64	3,8	107
2001-03-30	1785	1785	KCL/POLYMER	1,48	2,3		1		/	7,9		0,1	1,0		91549	83000	900		900	20,0		0,0	65	3,8	107

Hole section : 12 1/4" **WATER BASED SYSTEM**

Date	Depth [m] MD	Depth [m] TVD	Mud Type	Dens [sg]	Filtrate API [ml]	Filtrate HPHT [ml]	Filtcake API [mm]	Filtcake HPHT [mm]	HPHT Press/Temp [bar/DegC]	pH	Alcalinity Pm [ml]	Alcalinity Pf [ml]	Alcalinity Mf [ml]	Inhib Chem [Kg/m3]	K+ [mg/l]	CL- [mg/l]	Ca++ [mg/l]	Mg++ [mg/l]	Tot hard [mg/l]	Percentage Solid [%]	Percentage Oil [%]	Percentage Sand [%]	CEC [Kg/m3]	ASG [sg]	LGS [Kg/m3]
2001-03-31	1788	1788	KCL/POLYMER	1,48	1,7		1		/	8,1		0,1	1,0		91549	83000	940		940	19,0		0,0	54	4,0	55

Hole section : 8 1/2" **WATER BASED SYSTEM**

Date	Depth [m] MD	Depth [m] TVD	Mud Type	Dens [sg]	Filtrate API [ml]	Filtrate HPHT [ml]	Filtcake API [mm]	Filtcake HPHT [mm]	HPHT Press/Temp [bar/DegC]	pH	Alcalinity Pm [ml]	Alcalinity Pf [ml]	Alcalinity Mf [ml]	Inhib Chem [Kg/m3]	K+ [mg/l]	CL- [mg/l]	Ca++ [mg/l]	Mg++ [mg/l]	Tot hard [mg/l]	Percentage Solid [%]	Percentage Oil [%]	Percentage Sand [%]	CEC [Kg/m3]	ASG [sg]	LGS [Kg/m3]
2001-04-01	2092	2092	KCL/POLYMER	1,60	2,8		1		/	8,0		0,1	1,1		91549	83000	850		850	22,5		0,0	37	4,1	55
2001-04-02	2213	2213	KCL/POLYMER	1,61	2,6		1		/	8,3		0,1	1,0		95961	87000	840		840	23,5		0,0	45	4,0	67
2001-04-03	2268	2268	KCL/POLYMER	1,61	2,6		1		/	8,2		0,1	1,0		93755	85000	850		850	23,0		0,0	45	4,1	47
2001-04-04	2415	2415	KCL/POLYMER	1,63	2,6		1		/	8,2		0,1	1,0		98167	89000	820		820	24,2		0,0	46	4,0	68
2001-04-05	2475	2475	KCL/POLYMER	1,63	2,7		1		/	8,1		0,1	1,0		95961	87000	810		810	24,0		0,0	50	4,0	63
2001-04-06	2505	2505	KCL/POLYMER	1,63	2,6		1		/	8,2		0,1	1,0		94858	86000	790		790	24,0		0,0	50	4,0	65
2001-04-07	2590	2590	KCL/POLYMER	1,63	2,4		1		/	8,2		0,1	1,0		87137	82000	720		720	24,0		0,0	48	4,0	79
2001-04-08	2650	2650	KCL/POLYMER	1,63	2,8		1		/	8,2		0,1	1,0		87137	81000	790		790	24,5		0,0	51	3,9	104
2001-04-09	2650	2650	KCL/POLYMER	1,63	2,9		1		/	8,2		0,1	1,0		87137	81000	790		790	24,5		0,0	50	3,9	104
2001-04-10	2650	2650	KCL/POLYMER	1,63	2,8		1		/	8,1		0,1	1,0		87137	81000	790		790	24,5		0,0	50	3,9	104
2001-04-11	2650	2650	KCL/POLYMER	1,63	2,8		1		/	8,1		0,1	1,0		87137	81000	790		790	24,5		0,0	50	3,9	104
2001-04-12	2650	2650	KCL/POLYMER	1,63	2,9		1		/	9,2		0,3	1,0		87137	81000	680		680	24,5		0,0	46	3,8	119
2001-04-13	2650	2650	KCL/POLYMER	1,60	2,9		1		/	9,3		0,3	1,2		87137	81000	690		690	24,5		0,0	48	3,7	149

Norsk Hydro

DAILY MUD PROPERTIES : OTHER PARAMETERS FOR WELL 34/7-31 PO: 1

Hole section : 0.0 **WATER BASED SYSTEM**

Date	Depth [m] MD	Depth [m] TVD	Mud Type	Dens [sg]	Filtrate API [ml]	Filtrate HPHT [ml]	Filtcake API [mm]	Filtcake HPHT [mm]	HPHT Press/Temp [bar/DegC]	pH	Alcalinity Pm [ml]	Alcalinity Pf [ml]	Alcalinity Mf [ml]	Inhib Chem [Kg/m3]	K+ [mg/l]	CL- [mg/l]	Ca++ [mg/l]	Mg++ [mg/l]	Tot hard [mg/l]	Percentage Solid [%]	Percentage Oil [%]	Percentage Sand [%]	CEC [Kg/m3]	ASG [sg]	LGS [Kg/m3]
2001-04-23	0	0	KCL/POLYMER						/						87137										
2001-04-24		0	KCL/POLYMER						/						87137										
2001-04-25		0	KCL/POLYMER						/						87137										

TOTAL CONSUMPTION OF MUD ADDITIVES ON WELL 34/7-31 PO: 1

Section	Product/ Additive	Unit	Total Amount Used
36"	BARITE	kg	69000,00
	BENTONITE	kg	18000,00
	CMC EHV	kg	50,00
	SODA ASH	kg	375,00
26"	BARITE	kg	336000,00
	BENTONITE	kg	56000,00
	CMC EHV	kg	2800,00
	SODA ASH	kg	850,00
17 1/2"	BARITE	kg	230000,00
	CELPOL ESL	kg	8350,00
	CITRIC ACID	kg	75,00
	DUOTEC NS	kg	2850,00
	GLYDRIL MC	l	3500,00
	KCL BRINE/GLYDRIL MC	l	346000,00
	KCL POWDER	kg	12000,00
	LIME	kg	140,00
	NUTPLUG F	kg	125,00
	POTASSIUM CARBONATE	kg	500,00
	SODIUM BICARBONATE	kg	400,00
9 7/8"	BARITE	kg	87000,00
	BENTONITE	kg	35000,00
	CMC EHV	kg	100,00
	DUOTEC NS	kg	50,00
	SODA ASH	kg	450,00
8 1/2"	BARITE	kg	166000,00
	CELPOL ESL	kg	1525,00
	CITRIC ACID	kg	1575,00
	DUOTEC NS	kg	950,00
	GLYDRIL MC	l	15500,00
	KCL BRINE/GLYDRIL MC	l	34000,00
	KCL POWDER	kg	14500,00
	NUTPLUG F	kg	500,00
	POTASSIUM CARBONATE	kg	250,00
	SODA ASH	kg	450,00
	SODIUM BICARBONATE	kg	1050,00

LOGGING INFORMATION ON WELL 34/7-31

Hole size: 8 1/2"

#	Run No.	Logging Company	Logged Bottom [m MD]	Logged Top [m MD]	Log Suite
1	1A		2618,5	1842	MDT
2	1A		2620	1700	PEX/DSI/VSP
3	1A		2471	1840	MSCT

GENERAL INFORMATION ON WELL 34/7-31 A

Field	: BORG	**Country**	: NORWAY		
Licence	: 89	**Installation**	: SCARABEO 6		
UTM zone	: 31	**Central Median**	: 3' E	**Horiz. Datum:**	ED50

Location coordinates:		**Surface**	**Target**
UTM	**North [m]:**	6797888,5	
UTM	**East [m]:**	450009,2	
Geographical	**North :**	61 18'37.68"	
Geographical	**East :**	02 03'59.81"	

Water Depth: 207,0 **m** **Reference Point Height:** 26,0 **m**
Formation at TD: HEATHER at 3385 m MD

Operators:	NORSK HYDRO PRODUKSJON A/S	**Share:** 13,28 **%**
Partners:	PETORO	**Share:** 30,00 **%**
	DEN NORSKE STATS OLJESELSKAP A/S	28,22 **%**
	EXXON MOBIL	10,50 **%**
	IDEMUTSU PETROLEUM	9,60 **%**
	TOTALFINAELF	5,60 **%**
	RWE-DEA	2,80 **%**

Total depth (RKB) : 3454,0 **m MD** 2355,8 **m TVD**

TIME SUMMARY

Start Time	:	2001-04-13 06:00:00
Spudding date	:	2001-04-15
Abandonment date	:	2001-04-20

Main operation	**Hours**	**Days**	**%**
DRILLING	121,5	5,1	69,4
PLUG AND ABANDONMENT	46,0	1,9	26,3
DOWNTIME DRILLING	7,5	0,3	4,3
Sum:	**175,0**	**7,3**	

Hole and casing record

Hole	**Track**	**Depth [m MD]**
12 1/4"		1788,0
9 1/2"		3454,0

Well status: PERMANENTLY ABANDONED

CONTRACTORS:

Bit Supplier :	SMITH INTERNATIONAL A/S
Casing Equipment Supplier :	MITSUI
Casing/Running Contractor :	ODFJELL WELL SERVICES
Centralizer Supplier :	WEATHERFORD NORGE A/S
Completion Eq. Contractor :	BAKER OIL TOOLS
Mud Contractor :	MI NORGE
Other Supplier :	MONGSTAD BASE NORSK HYDRO A/S
Other Supplier :	PSL
Rig Contractor :	SAIPEM S.P.A.
Under Reamer Supplier :	ANDERGAUGE
Wellhead Supplier :	DRIL-QUIP

AVSETNING P & A BRØNN 34/7-31A "Sidetrack"

05. september 2001

EDI	TEKST	BOKFØRT 30.09.01	DAGRAPP ESTIMAT	EVT. KORR.	NY FINAL COST	BUDSJ. TOTAL
0	EMPLOYEE RELATED COSTS	268 963	0	-504 959	-504 959	0
0	RIG COSTS	6 902 614	0	499 378	499 378	0
0	RIG SUPPORT COSTS/REIMB	1 630 573	0	-275 884	-275 884	0
3A	FUEL/LUB	4 284	0	-236 625	273 375	0
3C	BITS	32 267	0	0	881 420	0
3D	CASING/CASING EQUIPMENT	1 270 377	0	0	0	0
3E	WELLHEAD/X-MASTREE	0	0	0	0	0
3F	CEMENT/CEMENT ADDITIVES	0	0	-600 000	-600 000	0
3G	MUD	-35 500	0	-1 618 827	-1 618 827	0
3G	CUTTING DISPOSAL	0	0	0	0	0
4B	CHARTERFLY	0	0	0	0	0
4C	OTHER TRANSPORTATION	0	0	-36 450	-36 450	0
4D	STAND BY VESSEL	411 552	0	10 602	10 602	0
4F	HELICOPTER TRANSPORTAT	297 456	0	78 756	78 756	0
4G	SUPPLY/AH VESSELS	210 567	0	-739 433	-739 433	0
4G						
5A	CORING	0	0	0	0	0
5B	DIRECTIONAL DRLG	0	0	-3 670 713	-3 670 713	0
5C	CUTTING OF CASING	0	0	0	0	0
5D	COMPLETION SERVICES	0	0	0	0	0
5E	PERFORATION	0	0	0	0	0
5F	MWD SERVICES	6 808 769	0	6 216 765	6 216 765	0
5G	CASING OPERATIONS	15 965	0	15 965	15 965	0
5H	MUD LOG	146 271	0	-2 824	-2 824	0
5H	MUD SERVICES	0	0	-62 300	-62 300	0
5I	CEMENTING SERVICES	0	0	-163 296	-163 296	0
5J	ELECTRICAL LOGGING	13 153	0	13 153	13 153	0
5K	VSP	0	0	0	0	0
5L	PROD TESTING	79 159	0	5 384	5 384	0
5M	DIVING/ROV	213 260	0	-64 795	-64 795	0
5N	RIGPOOL	0	0	-145 800	-145 800	0
5N	DIVERSE	286 393	0	136 644	136 644	0
5O	COILED TUBING	0	0	0	0	0
6A	SITE SURVEY	0	0	0	0	0
6B	RIG POSITIONING	13 598	0	13 598	13 598	0
6C	DRILLING SITE CLEAN UP	0	0	0	0	0
0	WAREHOUSE COSTS	563 587	0 0	162637	162 637	0 0
0	LAB COST	0	0	0	0	0
SUM		19 133 308	0	-969 024	**422 396**	0

DAILY REPORT ON WELL 34/7-31 A

Daily report no : 1 **Date:** 2001-04-13
Midnight depth : 1650 m MD **Estimated PP:** sg **Mud weight:** 1,51 sg

Stop time	Description
06:00	On well 34/7-31.
07:30	Made up BOP jetting assembly. Ran in hole and jetted BOP.
08:30	Made up multipurpose tool and ran in hole with same.
09:00	Landed multipurpose tool and attempted to get seal for BOP test. No success.
10:00	POOH with test tool and laid out same.
11:00	POOH with jetting assembly.
12:00	Made up 13 3/8" cuptester below multipurpose tool. Ran in hole.
14:30	Landed test tool and pressure tested BOP on yellow pod to 25/250 bar. Function tested on blue pod.
15:30	POOH with test tool and laid out same.
17:00	Made up 12 1/4" bottom hole assembly and ran in hole with same to 234 m.
17:30	Rigged up to pick up 5" drill pipe. Installed hydraulic elevator.
22:00	Ran in hole from 234 m to 888 m while picking up 5" drill pipe from deck.
23:30	Ran in hole with 5" drill pipe from derrick.
23:59	Held trip drill. Rigged up to pressure test IBOP.

Daily report no : 2 **Date:** 2001-04-14
Midnight depth : 1788 m MD **Estimated PP:** sg **Mud weight:** 1,50 sg

Stop time	Description
02:00	Continued to prepare for pressure test of IBOP and mudhose. Mudhose OK 30/345 bar. IBOP leaked.
04:30	Changed out IBOP and pressure tested same.
05:00	Installed topdrive torque wrench.
05:30	Installed drilling bails.
06:00	Ran in hole from 1372 m to 1630 m with 12 1/4" dress off assembly.
06:30	Adjusted torque wrench to allign with drilling pup joint.
08:00	Washed down from 1650 m to 1701 m looking for cement. Tagged hard cement at 1701 m.
08:30	Performed choke drill.
09:00	Displaced choke-, kill- and booster lines to seawater.
10:00	Drilled hard cement from 1701 m to 1716 m.
19:30	Drilled hard cement from 1716 m to 1788 m.
21:30	Circulated hole clean 2600 lpm/209 bar (no nozzels).
23:59	POOH with 12 1/4" dress off assembly.

Daily report no : 3 **Date:** 2001-04-15
Midnight depth : 2304 m MD **Estimated PP:** 1,40 sg **Mud weight:** 1,50 sg

Stop time	Description
00:30	Laid out 12 1/4" bottom hole assembly.
04:00	Made up 9 1/2" kick off assembly and tested same.
06:30	Ran in hole with 9 1/2" kick off assembly to 1758 m.
07:00	Picked up drilling pup from deck. Filled string and took SCR.
07:30	Washed down from 1758 m to 1788 m.
23:59	Drilled 9 1/2" hole from 1788 m to 1802 m and kicked off well. Continued orientated drilling from 1802 m to 2304 m.

Daily report no : 4 **Date:** 2001-04-16
Midnight depth : 3022 m MD **Estimated PP:** 1,26 sg **Mud weight:** 1,50 sg

Stop time	Description
23:59	Drilled 9 1/2" hole from 2304 m to 3022 m.

Daily report no : 5 **Date:** 2001-04-17
Midnight depth : 3454 m MD **Estimated PP:** 1,40 sg **Mud weight:** 1,50 sg

Stop time	Description
21:30	Drilled 9 1/2" hole from 3022 m to 3454 m, TD of well.
23:59	Pumped 7 m3 hi-weight and hi-vis pill around the hole.

DAILY REPORT ON WELL 34/7-31 A

Daily report no : 6 **Date:** 2001-04-18

Midnight depth : 3454 m MD **Estimated PP:** 1,40 sg **Mud weight:** 1,51 sg

Stop time	Description
00:30	Continued circulating hole clean.
01:00	Flow checked well for 15 min. POOH 9 1 /2" kick off assembly wet from 3454 m to 3368 m.
02:00	Pumped slug and POOH from 3368 m to 3223 m. 25 ton over pull and 3.5 m heave.
03:30	Made up topdrive and reamed out of hole from 3223 m to 3137 m with 1000 lpm/57 bar and 30 rpm.
07:30	POOH from 3137 m to 1725 m.
08:00	Flow checked well while taking torque readings for up comming liner hanger job.
09:30	Installed new shear pin on upper racking racking arm.
12:30	POOH from 1725 m to 60 m.
15:00	Laid out 9 1/2" BHA.
15:30	Checked floor saver and held prejob safety meeting prior to handling 10 3/4" casing hanger.
17:00	Made up liner hanger and racked same in derrick.
19:00	Made up cement head on HWDP. Racked back all
23:59	Picked up old 5" drill pipe.

Daily report no : 7 **Date:** 2001-04-19

Midnight depth : 3454 m MD **Estimated PP:** 1,40 sg **Mud weight:** 1,51 sg

Stop time	Description
04:00	Continued to pick up old 5" drill pipe.
05:30	Changed to long bails and casing elevator. Picked up casing cross over. Changed back to short bail and drill pipe elevator. Installed hanger from derrick.
10:30	Ran in hole with liner and hanger on 5 " drill pipe to 3154 m.
11:30	Picked up cement stand and spaced out.
12:30	Dropped ball and set liner hanger with shoe at 3154 m and top PBR at 1691 m.
14:00	Circulated bottoms up with 2020 lpm/184 bar.
16:30	Pumped 15 m3 1,70sg. MCS-G spacer,dropped dart 1. Pumped 70 m3 of 1,90 sg gastight cement and dropped dart 2. Chased it with 1,5 m3 1,70 sg spacer and 1.50 sg OBM. Displaced all from cement pump. Bumped plug with 22o bar.
17:00	Checked for back flow and set liner packer.
17:30	Set back cement stand.
19:00	POOH with liner running tool from 1691 m to 900 m.
20:00	Pressure tested liner packer in increments to 220 bar.
23:59	Circulated bottoms up and continued preparations for displacement to water base mud.

Daily report no : 8 **Date:** 2001-04-20

Midnight depth : 1650 m MD **Estimated PP:** 1,40 sg **Mud weight:** 1,51 sg

Stop time	Description
06:00	Cleaned pits, mixing lines and transfere lines. Prepared wash pills.
06:30	Commenced displacement from OBM to Glydril WBM. Pumped 8m3 base oil, 8m3 safe surf spacer and 35m3 safe solve wash.
07:30	Displaced well to WBM.
08:00	Pumped wiper dart through drill pipe, pumped slug.
12:00	POOH and laid out drill pipe to 528m, racked back in stands from 528m.
13:00	Laid out Baker liner hanger and cementing equipment from derrick.
23:59	Continued on well 34/7-31.

TIME DISTRIBUTION

Well: 34/7-31 A **PO:** 1 **Start date:** 1980-01-01 **Rig:** SCARABEO 6 **Depth:** 3454,0 **m MD**
All sections **Stop date:** 2001-11-05

Operations	Hours	%	Hours	%	Acc. total
DRILLING					
BHA HANDLING/TESTING	8,0	4,57			
TRIPPING IN CASED HOLE	16,0	9,14			
TRIPPING IN OPEN HOLE	7,5	4,29			
DRILLING	62,0	35,43			
OTHER	1,0	0,57			
CIRC. AND COND. MUD/HOLE	5,5	3,14			
DRILLING OUT CEMENT PLUG	12,0	6,86			
BOP TESTING	9,5	5,43			
Sum.			121,5	69,43	121,5
PLUG AND ABANDONMENT					
TRIPPING IN CASED HOLE	4,0	2,29			
OTHER	11,0	6,29			
CIRC. AND COND. MUD/HOLE	2,0	1,14			
TRIPPING FOR CEMENT JOB	20,5	11,71			
SET CEMENT PLUG	8,5	4,86			
Sum.			46,0	26,29	167,5
DOWNTIME DRILLING					
EQUIPMENT FAILURE AND REPAIR	7,5	4,29			
Sum.			7,5	4,29	175,0
Reported time (100,0 % of well total 175,0 hours) :					175,0

HOLE DEVIATION

Well: 34/7-31 A **Reference point:** RKB ; 26,0 **m** ABOVE MSL

Waterdepth: 207,0 **m** **Vertical to:** 232,9 **m** **Total Depth:** 3454,0 **m MD**

Utm zone: 31 **Central Median:** 3' E **Horizontal datum:** ED50

Template Centre Coordinates, UTM: **North :** **m,** **East :** **m**

Wellhead Coordinates, UTM: **North :** 6797888,50 **m,** **East :** 450009,20 **m**

Official Surveys: Y **Track :**

Coordinates are measured from the wellhead centre.

Depth MD [m]	Incli-nation [Deg]	Direc-tion [Deg]	Tool Type	#	Depth TVD [m]	Coordinates North [m]	Coordinates East [m]	Vert. Sect [m]	Dogleg [D/30m]	Build [D/30m]	Turn [D/30m]
233,00	0,00	0,00	MWD	1	233,00	0,00	0,00	0,00	0,00	0,00	0,00
233,88	0,23	319,81	MWD	1	233,88	0,00	-0,00	0,00	7,84	7,84	-999,99
234,67	1,17	308,92	MWD	1	234,67	0,01	-0,01	0,01	35,89	35,70	-413,54
246,80	1,20	359,80	MWD	1	246,80	0,21	-0,11	0,24	2,52	0,07	125,84
254,00	0,04	331,00	MWD	1	254,00	0,29	-0,11	0,31	4,85	-4,83	-120,00
263,10	0,50	204,20	MWD	1	263,10	0,26	-0,12	0,29	1,73	1,52	-418,02
272,30	0,60	237,70	MWD	1	272,30	0,19	-0,18	0,27	1,08	0,33	109,24
283,00	0,60	231,20	MWD	1	283,00	0,13	-0,27	0,30	0,19	0,00	-18,22
293,90	0,40	244,50	MWD	1	293,90	0,08	-0,35	0,36	0,63	-0,55	36,61
303,50	0,20	264,80	MWD	1	303,50	0,06	-0,40	0,40	0,70	-0,63	63,44
313,20	0,20	290,30	MWD	1	313,20	0,07	-0,43	0,44	0,27	0,00	78,87
323,10	0,10	275,60	MWD	1	323,10	0,07	-0,46	0,46	0,32	-0,30	-44,55
353,00	0,20	251,90	MWD	1	353,00	0,06	-0,53	0,53	0,12	0,10	-23,78
380,60	0,10	350,00	MWD	1	380,60	0,07	-0,58	0,59	0,26	-0,11	106,63
409,30	0,50	339,40	MWD	1	409,29	0,21	-0,63	0,66	0,42	0,42	-11,08
436,60	0,40	313,80	MWD	1	436,59	0,39	-0,74	0,84	0,24	-0,11	-28,13
465,20	0,30	311,80	MWD	1	465,19	0,51	-0,87	1,01	0,11	-0,10	-2,10
491,80	0,50	321,80	MWD	1	491,79	0,64	-0,99	1,18	0,24	0,23	11,28
521,00	0,40	303,30	MWD	1	520,99	0,80	-1,16	1,41	0,18	-0,10	-19,01
548,90	0,30	315,00	MWD	1	548,89	0,90	-1,29	1,57	0,13	-0,11	12,58
577,60	0,40	310,10	MWD	1	577,59	1,02	-1,42	1,75	0,11	0,10	-5,12
607,90	0,20	276,00	MWD	1	607,89	1,10	-1,55	1,90	0,26	-0,20	-33,76
634,20	0,30	266,40	MWD	1	634,19	1,10	-1,67	2,00	0,12	0,11	-10,95
662,90	0,30	261,20	MWD	1	662,89	1,08	-1,82	2,11	0,03	0,00	-5,44
693,70	0,30	250,20	MWD	1	693,69	1,04	-1,97	2,23	0,06	0,00	-10,71
719,70	0,20	250,40	MWD	1	719,69	1,00	-2,08	2,31	0,12	-0,12	0,23
748,40	0,20	226,40	MWD	1	748,39	0,95	-2,16	2,36	0,09	0,00	-25,09
777,80	0,20	230,30	MWD	1	777,79	0,88	-2,24	2,41	0,01	0,00	3,98
805,00	0,10	234,80	MWD	1	804,99	0,84	-2,29	2,44	0,11	-0,11	4,96
834,80	0,20	218,60	MWD	1	834,79	0,78	-2,35	2,48	0,11	0,10	-16,31
861,90	0,20	240,20	MWD	1	861,89	0,72	-2,42	2,52	0,08	0,00	23,91
890,70	0,10	253,80	MWD	1	890,69	0,69	-2,49	2,58	0,11	-0,10	14,17
949,00	0,80	229,20	MWD	1	948,99	0,41	-2,84	2,87	0,37	0,36	-12,66
977,50	0,90	224,20	MWD	1	977,48	0,12	-3,15	3,15	0,13	0,11	-5,26
1006,40	0,80	225,40	MWD	1	1006,38	-0,18	-3,45	3,46	0,11	-0,10	1,25
1034,00	0,80	234,00	MWD	1	1033,98	-0,43	-3,75	3,77	0,13	0,00	9,35

HOLE DEVIATION

Well: 34/7-31 A **Reference point:** RKB ; 26,0 **m** ABOVE MSL

Waterdepth: 207,0 **m** **Vertical to:** 232,9 **m** **Total Depth:** 3454,0 **m MD**

Utm zone: 31 **Central Median:** 3' E **Horizontal datum:** ED50

Template Centre Coordinates, UTM: **North :** **m,** **East :** **m**

Wellhead Coordinates, UTM: **North :** 6797888,50 **m,** **East :** 450009,20 **m**

Official Surveys: Y **Track :**

Coordinates are measured from the wellhead centre.

Depth MD [m]	Incli-nation [Deg]	Direc-tion [Deg]	Tool Type	#	Depth TVD [m]	Coordinates North [m]	Coordinates East [m]	Vert. Sect [m]	Dogleg [D/30m]	Build [D/30m]	Turn [D/30m]
1062,80	0,40	215,20	MWD	1	1062,78	-0,63	-3,97	4,02	0,46	-0,42	-19,58
1090,60	0,40	214,10	MWD	1	1090,57	-0,79	-4,08	4,15	0,00	0,00	-1,19
1119,10	0,40	223,10	MWD	1	1119,07	-0,95	-4,20	4,31	0,07	0,00	9,47
1137,90	0,50	220,00	MWD	1	1137,87	-1,06	-4,30	4,43	0,16	0,16	-4,95
1150,60	0,40	229,20	MWD	1	1150,57	-1,13	-4,37	4,51	0,29	-0,24	21,73
1178,00	0,40	249,70	MWD	1	1177,97	-1,23	-4,53	4,69	0,16	0,00	22,45
1206,80	0,40	261,90	MWD	1	1206,77	-1,27	-4,72	4,89	0,09	0,00	12,71
1235,70	0,60	267,90	MWD	1	1235,67	-1,29	-4,97	5,14	0,21	0,21	6,23
1262,80	0,60	269,80	MWD	1	1262,77	-1,30	-5,26	5,42	0,02	0,00	2,10
1284,00	0,60	238,80	MWD	1	1283,97	-1,36	-5,46	5,63	0,45	0,00	-43,87
1290,30	0,60	242,20	MWD	1	1290,27	-1,39	-5,52	5,69	0,17	0,00	16,19
1318,40	0,60	243,10	MWD	1	1318,37	-1,53	-5,78	5,98	0,01	0,00	0,96
1347,00	0,50	233,80	MWD	1	1346,96	-1,67	-6,02	6,24	0,14	-0,10	-9,76
1373,80	0,50	222,00	MWD	1	1373,76	-1,82	-6,19	6,45	0,11	0,00	-13,21
1403,10	0,60	219,90	MWD	1	1403,06	-2,04	-6,37	6,69	0,10	0,10	-2,15
1432,30	0,80	247,10	MWD	1	1432,26	-2,23	-6,66	7,02	0,39	0,21	27,95
1462,20	1,20	255,50	MWD	1	1462,16	-2,39	-7,15	7,54	0,43	0,40	8,43
1490,30	1,20	254,30	MWD	1	1490,25	-2,55	-7,72	8,13	0,03	0,00	-1,28
1520,00	1,30	257,20	MWD	1	1519,94	-2,70	-8,35	8,78	0,12	0,10	2,93
1548,00	1,20	255,10	MWD	1	1547,94	-2,85	-8,94	9,39	0,12	-0,11	-2,25
1576,30	1,40	252,40	MWD	1	1576,23	-3,03	-9,56	10,03	0,22	0,21	-2,86
1603,30	1,50	256,80	MWD	1	1603,22	-3,21	-10,22	10,71	0,17	0,11	4,89
1631,70	1,40	261,60	MWD	1	1631,61	-3,35	-10,92	11,42	0,17	-0,11	5,07
1659,90	1,70	284,50	MWD	1	1659,80	-3,29	-11,67	12,12	0,73	0,32	24,36
1688,40	1,60	288,40	MWD	1	1688,29	-3,06	-12,46	12,83	0,16	-0,11	4,11
1700,60	1,60	283,30	MWD	1	1700,48	-2,97	-12,78	13,12	0,35	0,00	-12,54
1717,30	1,30	279,50	MWD	1	1717,18	-2,88	-13,20	13,51	0,57	-0,54	-6,83
1729,80	1,30	276,50	MWD	1	1729,68	-2,84	-13,48	13,77	0,16	0,00	-7,20
1744,20	1,20	266,00	MWD	1	1744,07	-2,84	-13,79	14,08	0,52	-0,21	-21,88
1760,00	1,10	266,50	MWD	1	1759,87	-2,86	-14,11	14,39	0,19	-0,19	0,95
1762,30	1,10	266,70	MWD	1	1762,17	-2,86	-14,15	14,44	0,00	0,00	2,61
1802,70	3,80	263,30	MWD	1	1802,53	-3,04	-15,87	16,16	2,01	2,00	-2,52
1830,20	0,40	345,70	MWD	1	1830,01	-3,05	-16,80	17,07	4,11	-3,71	89,89
1858,40	5,40	74,70	MWD	1	1858,17	-2,61	-15,54	15,76	5,75	5,32	94,68
1887,00	9,50	74,80	MWD	1	1886,52	-1,63	-11,96	12,07	4,30	4,30	0,10
1915,00	12,00	75,60	MWD	1	1914,02	-0,30	-6,91	6,92	2,68	2,68	0,86

HOLE DEVIATION

Well: 34/7-31 A **Reference point:** RKB ; 26,0 **m** ABOVE MSL

Waterdepth: 207,0 **m** **Vertical to:** 232,9 **m** **Total Depth:** 3454,0 **m MD**

Utm zone: 31 **Central Median:** 3' E **Horizontal datum:** ED50

Template Centre Coordinates, UTM: **North :** **m,** **East :** **m**

Wellhead Coordinates, UTM: **North :** 6797888,50 **m,** **East :** 450009,20 **m**

Official Surveys: Y **Track :**

Coordinates are measured from the wellhead centre.

Depth MD [m]	Incli-nation [Deg]	Direc-tion [Deg]	Tool Type	#	Depth TVD [m]	Coordinates North [m]	Coordinates East [m]	Vert. Sect [m]	Dogleg [D/30m]	Build [D/30m]	Turn [D/30m]
1944,40	14,90	75,70	MWD	1	1942,61	1,39	-0,29	1,42	2,96	2,96	0,10
1972,10	16,10	75,20	MWD	1	1969,31	3,25	6,88	7,61	1,31	1,30	-0,54
2000,20	18,00	72,80	MWD	1	1996,17	5,53	14,79	15,79	2,16	2,03	-2,56
2029,30	20,30	66,10	MWD	1	2023,66	8,91	23,70	25,32	3,28	2,37	-6,91
2057,80	22,20	62,00	MWD	1	2050,22	13,44	32,98	35,61	2,54	2,00	-4,32
2086,30	25,80	55,10	MWD	1	2076,26	19,52	42,83	47,06	4,80	3,79	-7,26
2116,40	27,80	54,90	MWD	1	2103,13	27,30	53,94	60,46	2,00	1,99	-0,20
2146,10	29,90	55,80	MWD	1	2129,14	35,45	65,73	74,68	2,17	2,12	0,91
2174,60	31,70	55,60	MWD	1	2153,62	43,67	77,79	89,21	1,90	1,89	-0,21
2203,80	34,40	55,70	MWD	1	2178,09	52,66	90,93	105,08	2,77	2,77	0,10
2231,60	37,60	55,30	MWD	1	2200,58	61,91	104,40	121,37	3,46	3,45	-0,43
2263,00	41,10	54,50	MWD	1	2224,86	73,36	120,68	141,23	3,38	3,34	-0,76
2290,80	44,20	54,60	MWD	1	2245,30	84,29	136,02	160,02	3,35	3,35	0,11
2317,60	46,20	54,10	MWD	1	2264,19	95,37	151,47	178,99	2,27	2,24	-0,56
2346,70	48,10	53,50	MWD	1	2283,97	107,97	168,69	200,28	2,01	1,96	-0,62
2376,00	49,90	52,90	MWD	1	2303,20	121,22	186,39	222,34	1,90	1,84	-0,61
2405,70	52,70	53,80	MWD	1	2321,76	135,05	204,99	245,47	2,92	2,83	0,91
2434,70	55,30	56,10	MWD	1	2338,81	148,51	224,19	268,92	3,31	2,69	2,38
2463,60	57,80	57,20	MWD	1	2354,74	161,77	244,34	293,03	2,76	2,60	1,14
2492,10	61,45	58,40	MWD	1	2369,15	174,86	265,14	317,61	3,99	3,84	1,26
2519,00	65,80	57,10	MWD	1	2381,10	187,72	285,51	341,70	5,02	4,85	-1,45
2548,40	69,70	58,90	MWD	1	2392,23	202,13	308,59	368,90	4,33	3,98	1,84
2577,00	74,30	58,00	MWD	1	2401,06	216,36	331,76	396,08	4,91	4,83	-0,94
2605,80	78,00	57,90	MWD	1	2407,96	231,20	355,46	424,03	3,86	3,85	-0,10
2634,10	80,20	57,60	MWD	1	2413,31	246,03	378,96	451,82	2,35	2,33	-0,32
2662,60	80,50	58,10	MWD	1	2418,08	260,98	402,75	479,91	0,61	0,32	0,53
2691,30	80,90	58,10	MWD	1	2422,72	275,95	426,79	508,23	0,42	0,42	0,00
2719,00	81,00	59,20	MWD	1	2427,08	290,18	450,15	535,57	1,18	0,11	1,19
2748,40	82,60	58,40	MWD	1	2431,27	305,25	475,04	564,66	1,82	1,63	-0,82
2776,90	83,80	59,80	MWD	1	2434,65	319,78	499,32	592,95	1,93	1,26	1,47
2806,10	84,10	58,50	MWD	1	2437,73	334,67	524,25	621,97	1,36	0,31	-1,34
2834,70	83,40	58,10	MWD	1	2440,84	349,61	548,44	650,40	0,84	-0,73	-0,42
2862,50	84,50	59,10	MWD	1	2443,77	364,02	572,04	678,04	1,60	1,19	1,08
2891,70	87,10	60,40	MWD	1	2445,91	378,68	597,19	707,13	2,98	2,67	1,34
2920,10	87,20	60,40	MWD	1	2447,32	392,69	621,85	735,47	0,11	0,11	0,00
2949,90	88,60	59,80	MWD	1	2448,41	407,54	647,67	765,22	1,53	1,41	-0,60

HOLE DEVIATION

Well: 34/7-31 A **Reference point:** RKB ; 26,0 **m** ABOVE MSL

Waterdepth: 207,0 **m** **Vertical to:** 232,9 **m** **Total Depth:** 3454,0 **m MD**

Utm zone: 31 **Central Median:** 3' E **Horizontal datum:** ED50

Template Centre Coordinates, UTM: **North :** **m,** **East :** **m**

Wellhead Coordinates, UTM: **North :** 6797888,50 **m,** **East :** 450009,20 **m**

Official Surveys: Y **Track :**

Coordinates are measured from the wellhead centre.

Depth MD [m]	Incli-nation [Deg]	Direc-tion [Deg]	Tool Type	#	Depth TVD [m]	Coordinates North [m]	Coordinates East [m]	Vert. Sect [m]	Dogleg [D/30m]	Build [D/30m]	Turn [D/30m]
2978,70	89,60	59,70	MWD	1	2448,86	422,05	672,54	794,00	1,05	1,04	-0,10
3008,70	88,90	59,00	MWD	1	2449,26	437,34	698,35	823,99	0,99	-0,70	-0,70
3037,50	88,20	57,70	MWD	1	2449,99	452,44	722,86	852,78	1,54	-0,73	-1,35
3064,90	89,10	58,00	MWD	1	2450,63	467,02	746,05	880,17	1,04	0,99	0,33
3093,10	89,30	57,70	MWD	1	2451,02	482,03	769,92	908,37	0,38	0,21	-0,32
3121,80	88,00	56,90	MWD	1	2451,70	497,53	794,07	937,06	1,60	-1,36	-0,84
3151,50	90,40	56,70	MWD	1	2452,12	513,79	818,91	966,75	2,43	2,42	-0,20
3180,50	94,20	56,30	MWD	1	2450,95	529,78	843,07	995,71	3,95	3,93	-0,41
3210,80	96,40	55,80	MWD	1	2448,15	546,62	868,10	1025,86	2,23	2,18	-0,50
3239,20	99,10	55,90	MWD	1	2444,32	562,42	891,39	1053,98	2,85	2,85	0,11
3268,70	103,90	57,10	MWD	1	2438,44	578,37	915,48	1082,88	5,03	4,88	1,22
3296,90	107,20	59,10	MWD	1	2430,88	592,73	938,54	1110,04	4,07	3,51	2,13
3325,10	110,10	60,30	MWD	1	2421,87	606,21	961,61	1136,74	3,31	3,09	1,28
3353,50	114,10	62,20	MWD	1	2411,18	618,87	984,67	1163,00	4,62	4,23	2,01
3381,60	118,90	62,60	MWD	1	2398,65	630,52	1006,94	1188,06	5,14	5,12	0,43
3406,30	124,50	62,70	MWD	1	2385,68	640,17	1025,60	1209,00	6,80	6,80	0,12
3436,40	130,80	61,90	MWD	1	2367,30	651,24	1046,70	1232,75	6,31	6,28	-0,80

BITRECORD FOR WELL 34/7-31 A PO: 1

Bit No	Bit RR	Bit Type	Size (in)	Manu-fact-urer	Trade name	Serial no.	IADC code	Nozzles diameter (../32in)	Flow area (in2)	BHA no.	Depth out (m MD)	Bit meter (m)	Rot. hours (hrs)	ROP (m/hr)	Rotation min/max) (rpm)	Total bit revol.	Weight min/max (kN)	Flow min/max (l/min)	Pump min/max (bar)	Cutting Structure I - O -DC- L - B	Gauge 1/16 (in)	Other Remarks	Pull Cause
1	1	ISRT	12,25	SMIT	15GFDPD	LW7389PD	445		0,000	1	1788	138	8,90	15,5	70/106	42200	80/160	1830/2600	150/209	1 - 3 - CT - G - E	I	NO	KOP
2		PDC	9,50	SMIT	MRS74PX	JR9283	M223	12,12,12,12,12,12	0,663	2	3454	1666	42,60	39,1	125/177	366700	6/259	1835/2203	209/303	1 - 3 - BT - N - E	I	NO	TD

Norsk Hydro 2001-11-05

BOTTOM HOLE ASSEMBLIES USED ON WELL 34/7-31 A PO: 1

BHA no. 1: No. / Element / OD(in) / Length(m) Depth In: 1650 m MD Out: 1788 m MD

1	15GFDPD	12,5	0,30	2	FLOAT SUB	8,375	0,92
3	X-OVER	8,125	0,97	4	DRILL COLLAR STEEL	6,375	56,24
5	JAR	6,375	10,69	6	DRILL COLLAR STEEL	6,375	18,92
7	X-OVER	6,375	0,43	8	HWDP	5,0	136,42

Reason pulled: REACHED KICK OFF POINT Sum: 224,89

BHA no. 2: No. / Element / OD(in) / Length(m) Depth In: 1788 m MD Out: 3454 m MD

1	MRS74PX	9,5	0,30	2	POWER DRIVE	6,75	3,79
3	NON MAG. STAB	9,44	1,92	4	FLEX SUB	6,0	2,73
5	MWD	6,5	8,36	6	CDR	6,75	5,96
7	ADN	8,25	6,02	8	NON MAG. HEAVY WALL DRILL	5,0	18,57
9	JAR	6,375	9,47	10	HWDP	5,0	136,42

Reason pulled: TOTAL DEPTH/CASING DEPT Sum: 193,54

DAILY MUD PROPERTIES:RHEOLOGY PARAMETERS FOR WELL 34/7-31 A PO: 1

Hole section : 0.0 **OIL BASED SYSTEM**

Date	Depth [m] MD	Depth [m] TVD	Mud Type	Funnel Visc [sec]	Dens [sg]	Mudtmp Out [DegC]	Fann Readings 600	300	200	100	60	30	6	3	Rheo Test [DegC]	PV [mPas]	YP [Pa]	Gel0 [Pa]	Gel10 [Pa]
2001-04-13	1702	1702	VERSAVERT		1,51		100	58	44	28	0	0	8	7	50,0	42,0	8,0	5,0	9,0

Hole section : 12 1/4" **OIL BASED SYSTEM**

Date	Depth [m] MD	Depth [m] TVD	Mud Type	Funnel Visc [sec]	Dens [sg]	Mudtmp Out [DegC]	Fann Readings 600	300	200	100	60	30	6	3	Rheo Test [DegC]	PV [mPas]	YP [Pa]	Gel0 [Pa]	Gel10 [Pa]
2001-04-14	1788	1788	VERSAVERT		1,50	26,0	93	55	40	26	0	0	9	8	50,0	38,0	8,5	6,0	9,0
2001-04-15	2304	2255	VERSAVERT	100,0	1,50	29,0	101	61	48	32	0	0	12	10	50,0	40,0	10,5	6,0	9,0

Hole section : 9 1/2" **OIL BASED SYSTEM**

Date	Depth [m] MD	Depth [m] TVD	Mud Type	Funnel Visc [sec]	Dens [sg]	Mudtmp Out [DegC]	Fann Readings 600	300	200	100	60	30	6	3	Rheo Test [DegC]	PV [mPas]	YP [Pa]	Gel0 [Pa]	Gel10 [Pa]
2001-04-16	3022	2450	VERSAVERT	97,0	1,50	34,0	106	65	52	36	0	0	14	13	50,0	41,0	12,0	7,0	10,0
2001-04-17	3089	2451	VERSAVERT	102,0	1,50	35,0	115	71	57	39	0	0	16	14	50,0	44,0	13,5	7,0	13,0

Hole section : 0.0 **OIL BASED SYSTEM**

Date	Depth [m] MD	Depth [m] TVD	Mud Type	Funnel Visc [sec]	Dens [sg]	Mudtmp Out [DegC]	Fann Readings 600	300	200	100	60	30	6	3	Rheo Test [DegC]	PV [mPas]	YP [Pa]	Gel0 [Pa]	Gel10 [Pa]
2001-04-18	0	0	VERSAVERT	120,0	1,51	15,0	116	71	58	39	0	0	16	14	50,0	45,0	13,0	7,0	13,0

DAILY MUD PROPERTIES : OTHER PARAMETERS FOR WELL 34/7-31 A PO: 1

Hole section : 0.0 — **OIL BASED SYSTEM**

Date	Depth [m] MD	Depth [m] TVD	Mud Type	Density [sg]	Filtrate HPHT [ml]	Filtcake HPHT [mm]	HPHT Press/Temp [bar/DegC]	Electrical stability [V]	Alcalinity Pm [ml]	CaCl2 [mg/l]	Oil/Water Ratio	Percentage Solid [%]	Percentage Oil [%]	Percentage Sand [%]	ASG [sg]	LGS [Kg/m3]
2001-04-13	1702	1702	VERSAVERT	1,51	3,8	1	/	485		174	75/ 25	20,5	59,5	0,0	4,0	55

Hole section : 12 1/4" — **OIL BASED SYSTEM**

Date	Depth [m] MD	Depth [m] TVD	Mud Type	Density [sg]	Filtrate HPHT [ml]	Filtcake HPHT [mm]	HPHT Press/Temp [bar/DegC]	Electrical stability [V]	Alcalinity Pm [ml]	CaCl2 [mg/l]	Oil/Water Ratio	Percentage Solid [%]	Percentage Oil [%]	Percentage Sand [%]	ASG [sg]	LGS [Kg/m3]
2001-04-14	1788	1788	VERSAVERT	1,50	3,1	1	34 /	489		172	75/ 25	20,5	59,5	0,0	4,0	70
2001-04-15	2304	2255	VERSAVERT	1,50	2,5	1	34 /	611		174	73/ 28	21,0	58,0	0,0	3,9	97

Hole section : 9 1/2" — **OIL BASED SYSTEM**

Date	Depth [m] MD	Depth [m] TVD	Mud Type	Density [sg]	Filtrate HPHT [ml]	Filtcake HPHT [mm]	HPHT Press/Temp [bar/DegC]	Electrical stability [V]	Alcalinity Pm [ml]	CaCl2 [mg/l]	Oil/Water Ratio	Percentage Solid [%]	Percentage Oil [%]	Percentage Sand [%]	ASG [sg]	LGS [Kg/m3]
2001-04-16	3022	2450	VERSAVERT	1,50	2,8	1	34 /	812		174	73/ 27	22,0	57,0	0,0	3,7	147
2001-04-17	3089	2451	VERSAVERT	1,50	2,6	1	34 /	850		174	72/ 28	22,0	56,5	0,3	3,7	149

Hole section : 0.0 — **OIL BASED SYSTEM**

Date	Depth [m] MD	Depth [m] TVD	Mud Type	Density [sg]	Filtrate HPHT [ml]	Filtcake HPHT [mm]	HPHT Press/Temp [bar/DegC]	Electrical stability [V]	Alcalinity Pm [ml]	CaCl2 [mg/l]	Oil/Water Ratio	Percentage Solid [%]	Percentage Oil [%]	Percentage Sand [%]	ASG [sg]	LGS [Kg/m3]
2001-04-18	0	0	VERSAVERT	1,51	2,7	1	34 /	840		174	72/ 28	22,0	56,5	0,3	3,8	134

TOTAL CONSUMPTION OF MUD ADDITIVES ON WELL 34/7-31 A PO: 1

Section	Product/ Additive	Unit	Total Amount Used
12 1/4"	BENTONE 128	kg	75,00
	EDC 95/11	l	23000,00
9 1/2"	BARITE	kg	77000,00
	BENTONE 128	kg	1975,00
	CALCIUM CHLORIDE	kg	5775,00
	EDC 95/11	l	54000,00
	LIME	kg	3310,00
	SAFE SOLV OE	L	100,00
	VERSAVERT F	l	3000,00
	VERSAVERT PE	l	3000,00
	VERSAVERT SE	l	3000,00

Downtimereport

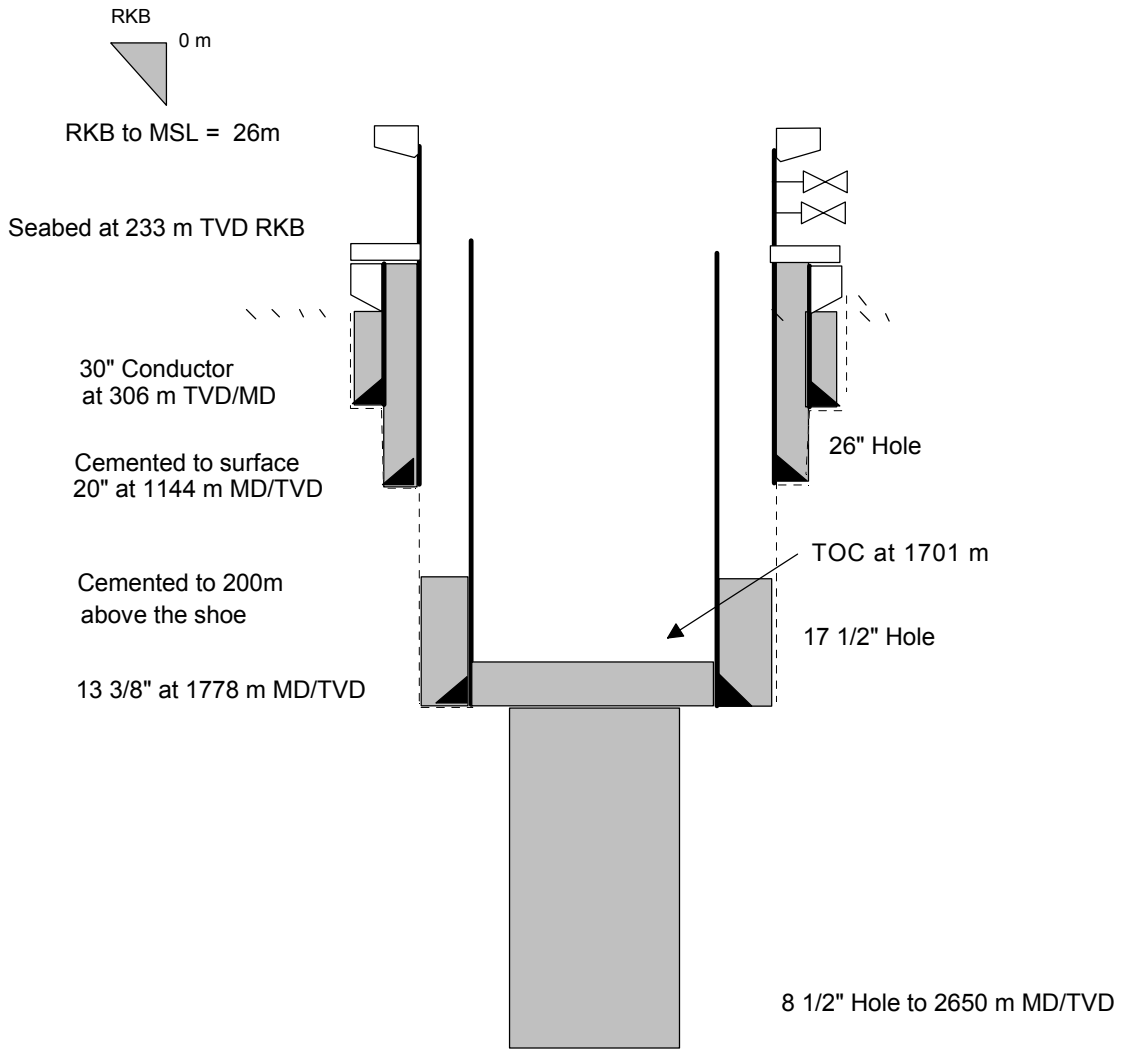
2001-11-05

Well	Rep	#	Hrs	Date	Downtime Type	Short Description	Responsible Contractor	Nsfi Type	Equipment Type	Service Type
34/7-31	1.		12.0	2001-03-03	Waiting on we	WOW. Due to bad weather forecast changed route to avoid platforms and wait out weather. 15:30 hrs in position to ride out weather and evaluate weather forecasts.				
		1	79.5	2001-03-05	Waiting on we	Holding position at Lat. 61 deg 28' N, Long. 2 deg 39' E. 19 Nmiles from spudding position.				
		2	18.0	2001-03-08	Waiting on we	WOW. Holding position at Lat. 61 deg 25' N, 2 deg 21' E. 10 Nmiles from spudding position.				
	2.		7.5	2001-03-11	Equipment fail	Topdrive problems. Not able to rotate string. Trouble shoot electrically and hydraulically. Found malfunction on governing of hydraulic pumps.	SAIPEM S.P.A	Top Drive	HOISTING EQUIPME	DRILLING CO
	3.		0.5	2001-03-12	Equipment fail	Hydraulic leak on compensator system. Tightened connection.	SAIPEM S.P.A	Crown Block (w/ T	HOISTING EQUIPME	DRILLING CO
	2.	1	21.5	2001-03-13	Equipment fail	Torque problems on DDM. Waited on spares, installed and tested hydraulic unit.	SAIPEM S.P.A	Top Drive	HOISTING EQUIPME	DRILLING CO
	4.		2.5	2001-03-15	Equipment fail	Wash pipe leaked. Changed same.	SAIPEM S.P.A	Top Drive	HOISTING EQUIPME	DRILLING CO
	5.		2.0	2001-03-16	Equipment fail	Installed PS 30 power slips. Discovered interference between Odjell tong frame and PS 30. Disconnected PS 30 and rigged up air operated slips.	ODFJELL WE	Drillfloor Tubular H	PIPE HANDLING EQ	CASING/TUBI
	8.		11.5	2001-03-19	Equipment fail	POOH due to high pump pressure. Changed nozzles in bit and RIH.	SAIPEM S.P.A	Bit	DRILLSTRING/DOW	DRILLING CO
	6.		2.0	2001-03-20	Other	Stopped drilling due to excessive mud losses at the shakers. Changed shakers screens while rotating/resiprocating pipe and pumping at slow rate.	SAIPEM S.P.A			
	7.		0.5	2001-03-21	Equipment fail	Repaired broken IBOP actuator on DDM.	SAIPEM S.P.A	Inside BOP, Kelly	WELLCONTROL EQ	RIG UTILITIE
	9.		2.0	2001-03-22	Equipment fail	Trouble shoot Odfjell remote operated casing tong, no go. Performed SJA and rigged up manual power tong.	ODFJELL WE	Drillfloor Tubular H	PIPE HANDLING EQ	CASING/TUBI
	10.		129.0	2001-03-23	Equipment fail	Unsuccesfull pressure test on seal assy. Seal assy stuck in wellhead.	NORSK HYD	Wellhead	SERVICE EQUIPME	WELLHEAD
		3	3.0	2001-03-27	Equipment fail	Camera for internal survey failed. Pulled out and repaired same while making up top dress mill assy.	OCEANEERI	Spesial Service	SERVICE EQUIPME	ROV
		2	0.5	2001-03-28	Equipment fail	Brakedown on casing tong cylinder. Repaired same.	ODFJELL WE	Casing	SERVICE EQUIPME	CASING RUN
		1	9.5	2001-03-28	Waiting on we	Waiting on weather				
		4	8.5	2001-03-29	Equipment fail	Unable to land casing hanger. Hanger 1.2 m too high. Evaluated situation and conferred with the beach.	SMITH RED B	Casing Auxilery	SERVICE EQUIPME	CASING RUN
		5	8.5	2001-03-30	Equipment fail	Unable to lock seal assy on 13 3/8" casing hanger. The seal assy had a lock down ring.	DRIL-QUIP	Wellhead	SERVICE EQUIPME	WELLHEAD
	14.		1.0	2001-04-02	Equipment fail	ADN tool failure. Laid out same.	ANADRILL	MWD/LWD	DRILLSTRING/DOW	MWD/LWD
	16.		1.5	2001-04-02	Equipment fail	Attempted to install radioactive source. No go.	ANADRILL	MWD/LWD	DRILLSTRING/DOW	MWD/LWD

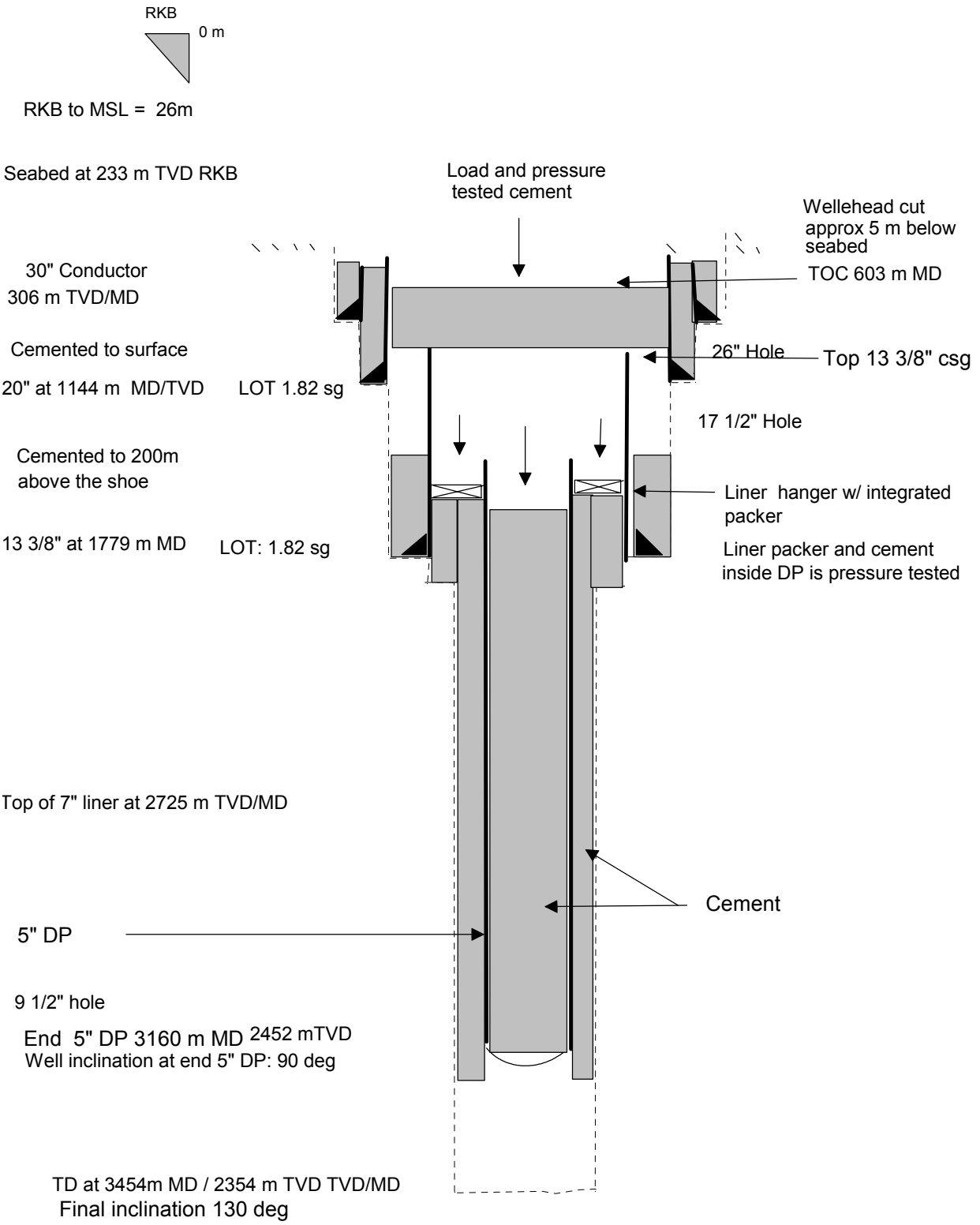
Downtimereport

2001-11-05

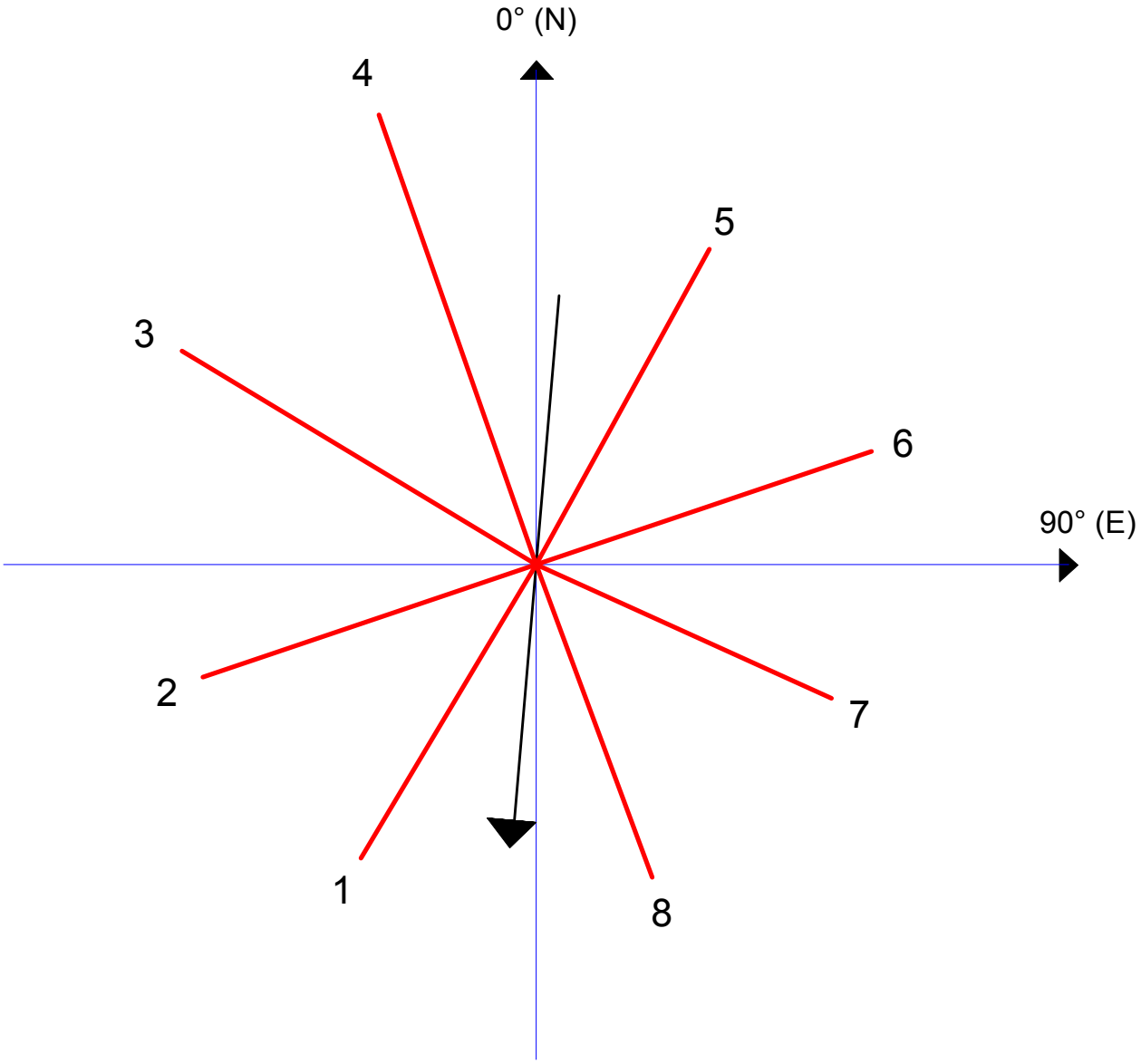
Well	Rep	#	Hrs	Date	Downtime Type	Short Description	Responsible Contractor	Nsfi Type	Equipment Type	Service Type
34/7-31	17.		0.5	2001-04-04	Equipment fail	MWD tool problem. Troubleshooted same. No MWD/LWD data transmitted.	ANADRILL	MWD/LWD	DRILLSTRING/DOW	MWD/LWD
	18.		8.0	2001-04-09	Equipment fail	Lost communication to MDT tool. POOH.	SCHLUMBER	Formation Tester (	SERVICE EQUIPME	ELECTRIC LO
	19.		0.5	2001-04-10	Equipment fail	Guns not firing at start of VSP logging. Communication between system and portable computer.	SCHLUMBER	Vertical Seismic (V	SERVICE EQUIPME	VSP
		1	1.0	2001-04-10	Equipment fail	Problems with software. Trouble shoot.	SCHLUMBER	Vertical Seismic (V	SERVICE EQUIPME	VSP
	20.		3.5	2001-04-11	Equipment fail	Core head stuck in formation 2634 m. Pulled free and lost core head in hole. POOH to change tool.	SCHLUMBER	Side Wall Cores (	SERVICE EQUIPME	ELECTRIC LO
	21.		0.5	2001-04-12	Equipment fail	IBOP leaked. Investigated problem.	SAIPEM S.P.A	Inside BOP, Kelly	WELLCONTROL EQ	DRILLING CO
	22.		1.0	2001-04-12	Equipment fail	Computer problems on cement unit.	BJ SERVICES	Cement: Unit/pipe	SERVICE EQUIPME	CEMENTING
	23.		18.0	2001-04-21	Other	Picked up new spear and RIH.	SMITH RED B			
	24.		9.5	2001-04-22	Waiting for ce	WOC. Shut rig down to install power supply modification, clean and maintain rig while WOC.	HYDRO HAN			
34/7-31 A	1.		2.5	2001-04-13	Equipment fail	Attempted to get seal with multipurpose tool for BOP test. No success.	SAIPEM S.P.A	Bop Test Tool	WELLCONTROL EQ	DRILLING CO
	2.		2.5	2001-04-14	Equipment fail	IBOP leaked. Changed out IBOP and presuure tested same.	SAIPEM S.P.A	Inside BOP, Kelly	WELLCONTROL EQ	DRILLING CO
	3.		1.0	2001-04-14	Equipment fail	Installed topdrive torque wrench after repair.	SAIPEM S.P.A	Drillfloor Tubular H	PIPE HANDLING EQ	DRILLING CO
	4.		1.5	2001-04-18	Equipment fail	Installed new shear pin on upper racking racking arm.	SAIPEM S.P.A	Drillfloor Tubular H	PIPE HANDLING EQ	DRILLING CO
			371.0							



Final Well **34/7-31 Pilot**	**Fig. B-9.1** **Revision: 0**	**Permanent Plug & Abandonment**



Final Well **34/7-31 A Sidetrack**	**Fig. B-9.2** **Revision: 0**	**Permanent Plug & Abandonment**



RIGHEADING 185 DEG.

ANCHOR NO		DIRECTION (DEG.)		LENGTH (m)	
	1		209		1950
	2		250		1913
	3		303		2280
	4		342		2749
	5		27		2057
	6		70		1926
	7		116		1772
	8		161		1922

Figure 9,3		RIG ANCHORS SCARABEO 6 34/7-31	**HYDRO**

2001-11-05

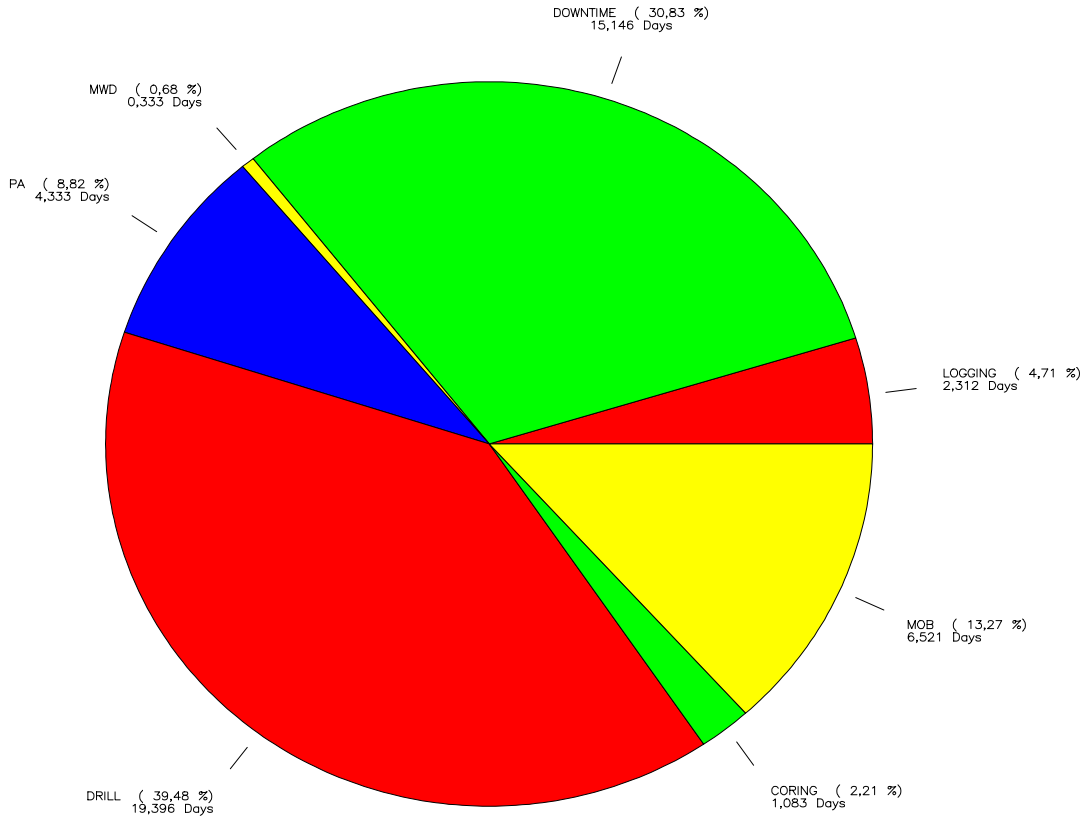


Figure 9,4		Time Distribution 34/7-31	**HYDRO**

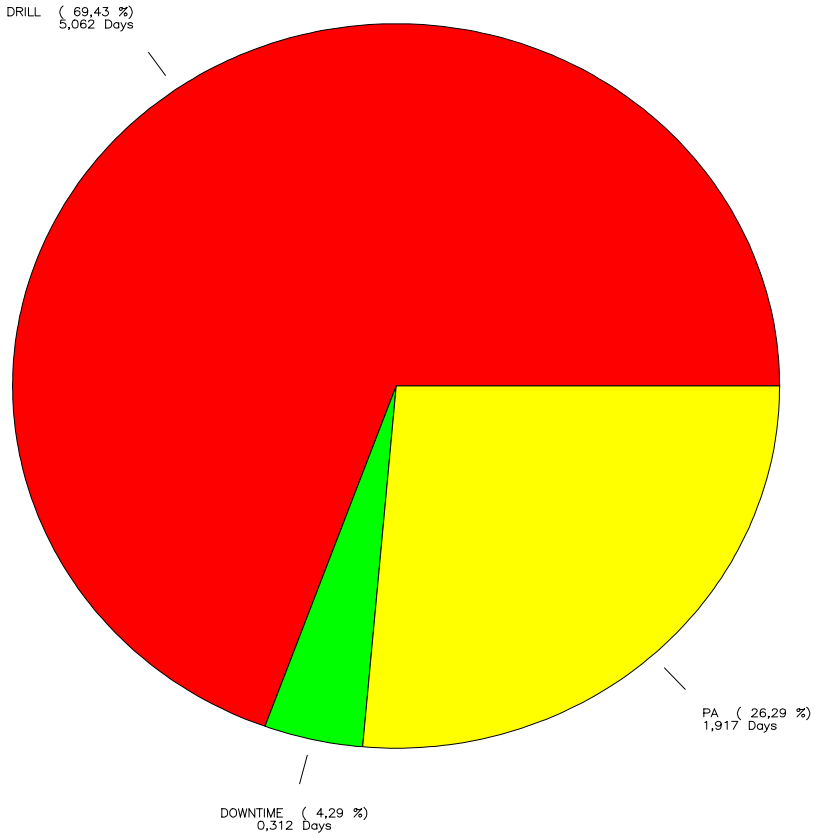


Figure 9,5		Time Distribution 34/7-31 A	**HYDRO**

SECTION C

COMPOSITE LOG

LITHOLOGY LOG

CORE LOG

GASRATIO LOG

POST SITE SURVEY LOG

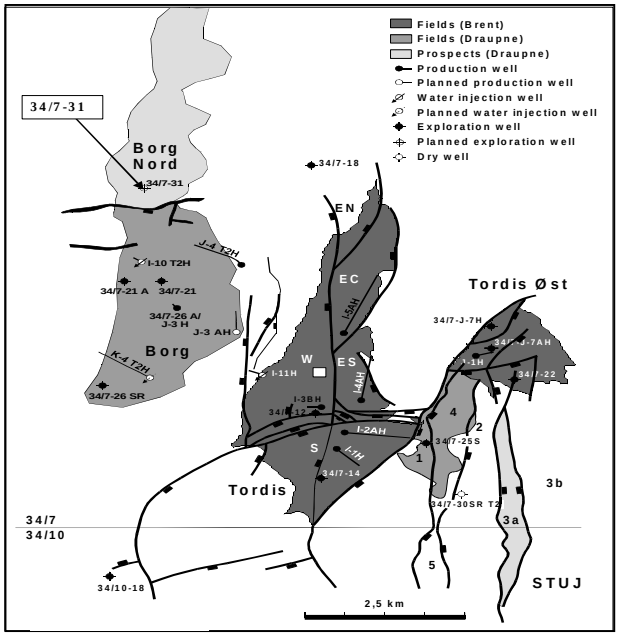
COMPOSITE LOG

BORG NORD

Scale: 1 / 500

Well: 34/7-31

Location Map



KB Elevation	26.0 m	**Country**	Norway
Water Depth	207.0 m	**Licence**	PL 089
Depth Reference	RKB		
		Owners	Norsk Hydro ASA, Statoil, Idemitsu, TotalFinaElf, RWE-DEA, ExxonMobil
Total Depth (Driller)	2650.0 m MD 2649.6 mTVD		
Total Depth (Logger)	N/A N/A		
		Field	BORG NORD
Formation at Total Depth	Tarbert Formation (Brent Grp.)	**Platform**	SCARABEO 6
Date Spudded	10.03.2001		
Date Reached TD	08.04.2001	**Drilling Contractor**	Saipem
Date Completed	25.04.2001	**Mudlogging Company**	Halliburton Sperry-sun
Well Status	Permanently plugged and abandoned	**Logging Company**	Schlumberger Anadrill
		MWD Company	Schlumberger WL
Well Classification	Exploration	**Geologists**	B.Schønningsen, C.Dons, Å.Halvorsen, K.Kalgraff, E.Skottlien
Prepared by	Halvorsen, Dons, Schønningsen, Kalgraff, Skottlien		
Controlled by	A.E.Lea		
Date	15.12..2001		
Well Coordinates	**Surface location**		
	ED50-UTM zone 31	UTM: 6 797 888.5 mN	GEO: 61°18' 37.69" N
	SM 3 deg East	450 009.2 mE	02° 03' 59.81" E

Winlog well ID : 34_7_31_compositelog
Winlog template version : 20010131 - AJC

Casing Records

Diameter	Shoe depth m MD RKB	Shoe depth m TVD RKB
30" Casing shoe	306	306
20" Casing shoe	1144	1144
13 3/8" Casing shoe	1779	1779

LOT / FIT

Type	Result SG	Depth m MD RKB	Depth m TVD RKB
LOT	1.83	1153.0	1152.9
LOT	1.82	1788.0	1787.9

Comments

A 9 7/8" pilothole was drilled from seabed 233m to 1150m.
Logs (MWD) presented from seabed 233m to 1150m were recorded in the 9-7/8" pilot hole.
The 9 7/8" pilot hole was then opened to 36" and 30" casing run to 306m.
The 26" hole (Using 26" hole opener) deviated from the original 9 7/8" pilot hole below 306m and the two holes were approx. 27 m apart at 1150m.
Well 34/7-31 was drilled with returns to Seabed down to 1150m. Sampling started at 1170m
After reaching TD=2650 m a sidetrack was performed from 1802m (Well named 34/7-31 A)

Logs

Run no.	Log type	Logged interval
1	MWD(CDR) - GR/RES	233-1147(Pilot hole)
4	MWD(CDR) - GR/RES	1145-1295
5	MWD(CDR) - GR/RES	1295-1775
6	MWD(RAB-ADN)GR/RES	1788-2092
7	MWD(RAB-ADN)GR/RES	2092-2213
8	MWD(RAB-ADN)GR/RES	2213-2268
9	MWD(RAB-ADN)GR/RES	2268-2472
10	MWD - GR/RES/DENS/NEU	2506-2650
1A	MDT	2621.5 - 1842
1A	PEX/DSI/VSP	2626 - 1700
1A	MSCT	1840 - 2471

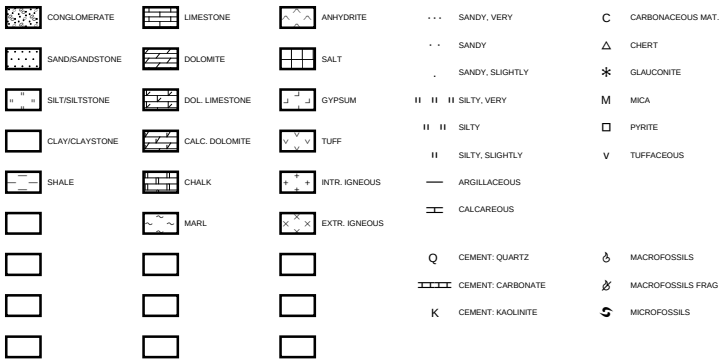
Cores

Core no.	Cored interval m MD RKB		Recovered interval m MD RKB		Rec. mMD	Rec. %
1	2472.0	2499.3	2472.0	2499.3	27.3	100.0
2	2499.3	2506.3	2499.3	2506.3	7.0	100.0

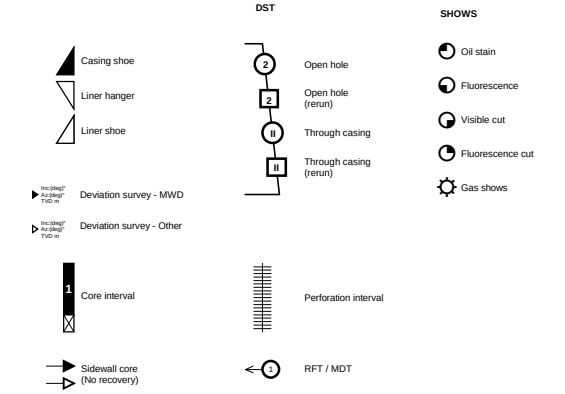
Pressure points (MDT)

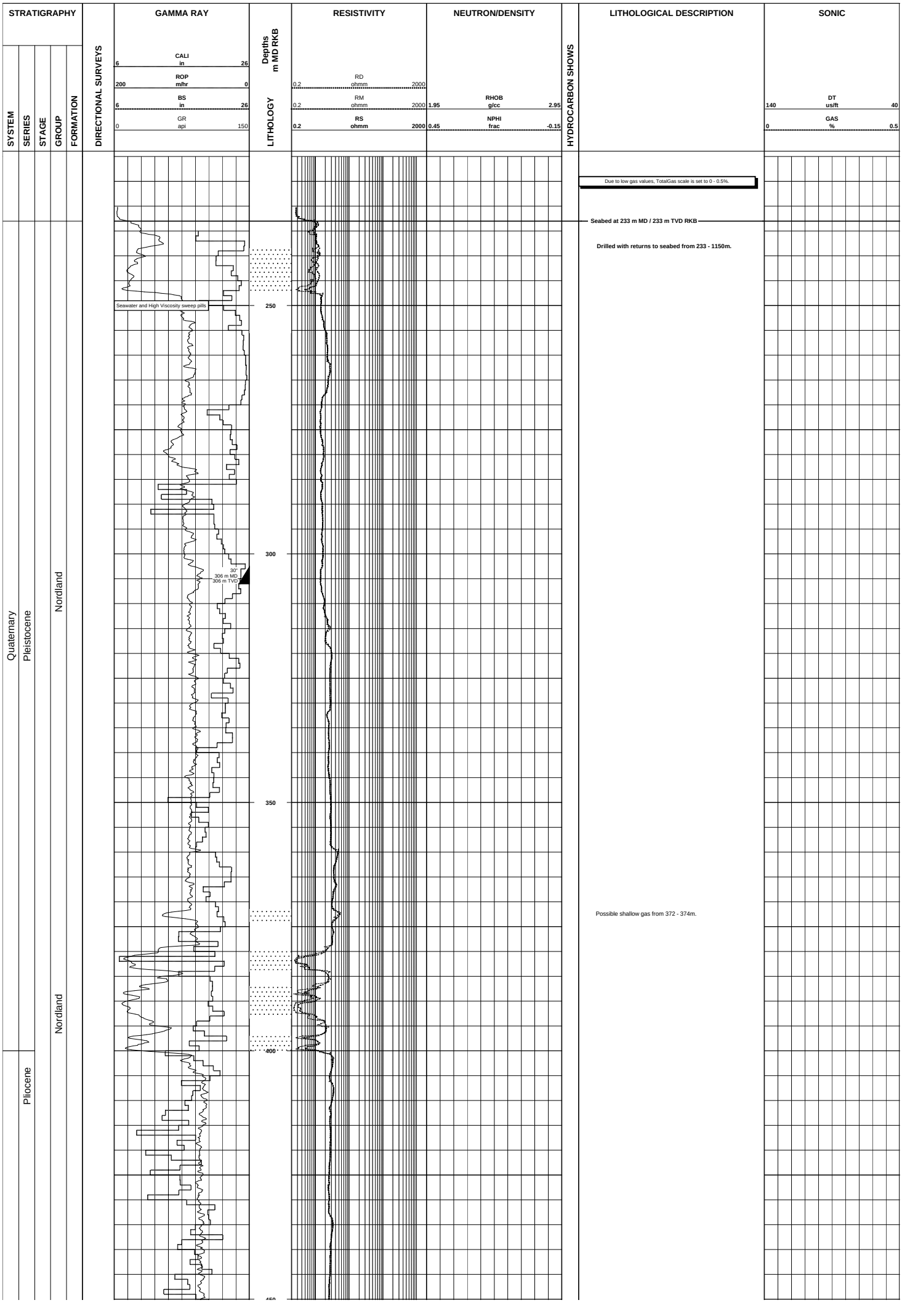
Test no.	Depth m MD RKB	Depth m TVD RKB	Fmn. Press. Bars
4	1853.5	1853.4	255.49
6	1850.7	1850.6	254.73
7	1848.8	1848.7	254.57
8	1846.2	1846.1	254.23
9	1842.0	1841.9	253.77
11	2503.4	2503.2	307.61
12	2500.0	2499.8	307.37
13	2495.0	2494.8	307.04
14	2492.0	2491.8	306.84
15	2486.5	2486.3	306.46
16	2484.5	2484.3	306.33
17	2479.0	2478.8	305.96
20	2470.3	2470.1	305.37
22	2621.5	2621.2	324.54
23	2618.5	2618.2	324.24
24	2613.5	2613.2	323.73
25	2611.5	2611.2	323.55
26	2606.0	2605.7	323.00
27	2604.5	2604.2	322.83
28	2603.5	2603.2	322.72

Lithology Legend

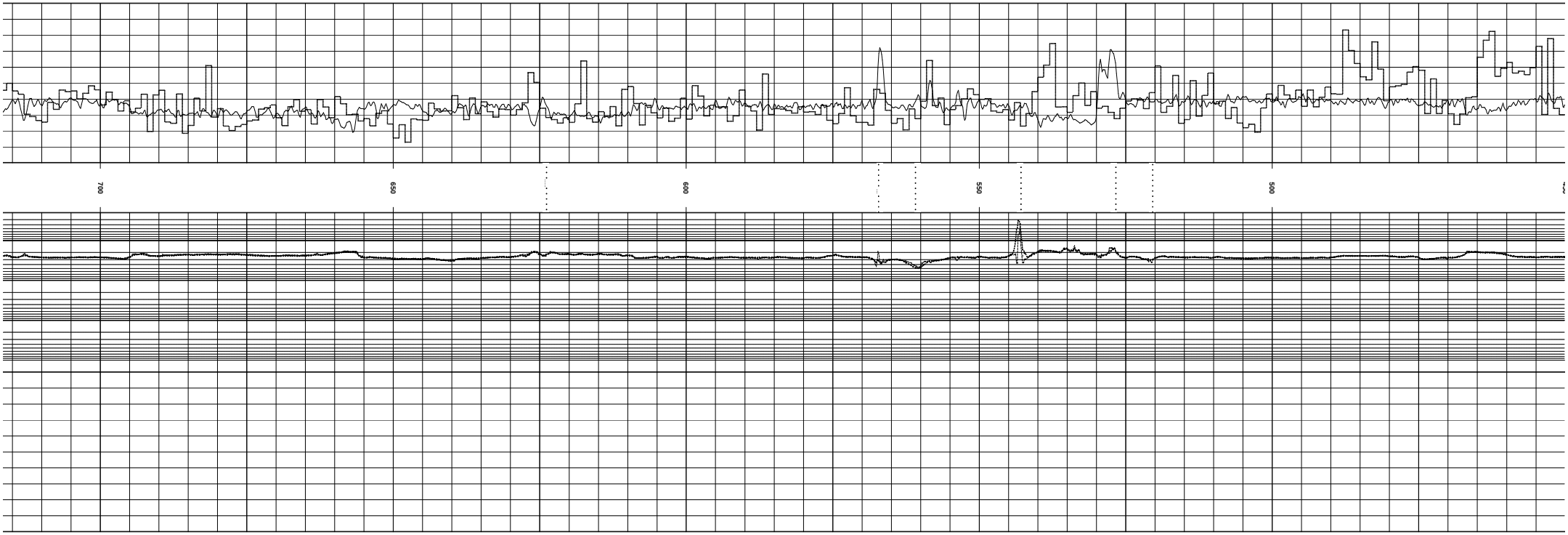


Symbol legend




STRATIGRAPHY
SYSTEM
SERIES
STAGE
GROUP
FORMATION
DIRECTIONAL SURVEYS
GAMMA RAY
CALI
in
6
26
ROP
m/hr
200
0
BS
in
6
26
GR
api
0
150
Depths
m MD RKB
LITHOLOGY
RESISTIVITY
RD
ohmm
0.2
2000
RM
ohmm
0.2
2000
RS
ohmm
0.2
2000
NEUTRON/DENSITY
RHOB
g/cc
1.95
2.95
NPHI
frac
0.45
-0.15
HYDROCARBON SHOWS
LITHOLOGICAL DESCRIPTION
SONIC
DT
us/ft
140
40
GAS
%
0
0.5
Due to low gas values, TotalGas scale is set to 0 - 0.5%.
Seabed at 233 m MD / 233 m TVD RKB
Drilled with returns to seabed from 233 - 1150m.
Seawater and High Viscosity sweep pills
30"
306 m MD
306 m TVD
Possible shallow gas from 372 - 374m.
250
300
350
400
450
Quaternary
Pleistocene
Pliocene
Nordland
Nordland

Tertiary	Tertiary	Tertiary
Pliocene	Pliocene	Pliocene
Nordland	Nordland	Nordland

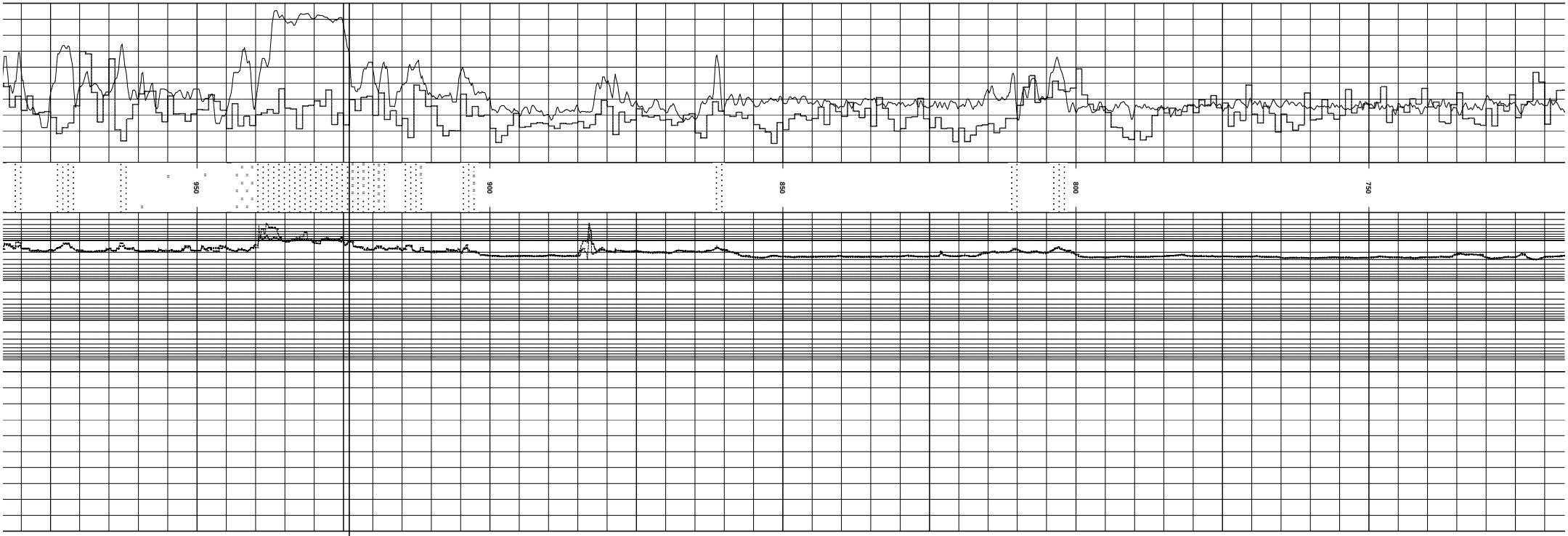


Possible shallow gas from 560 - 561m.

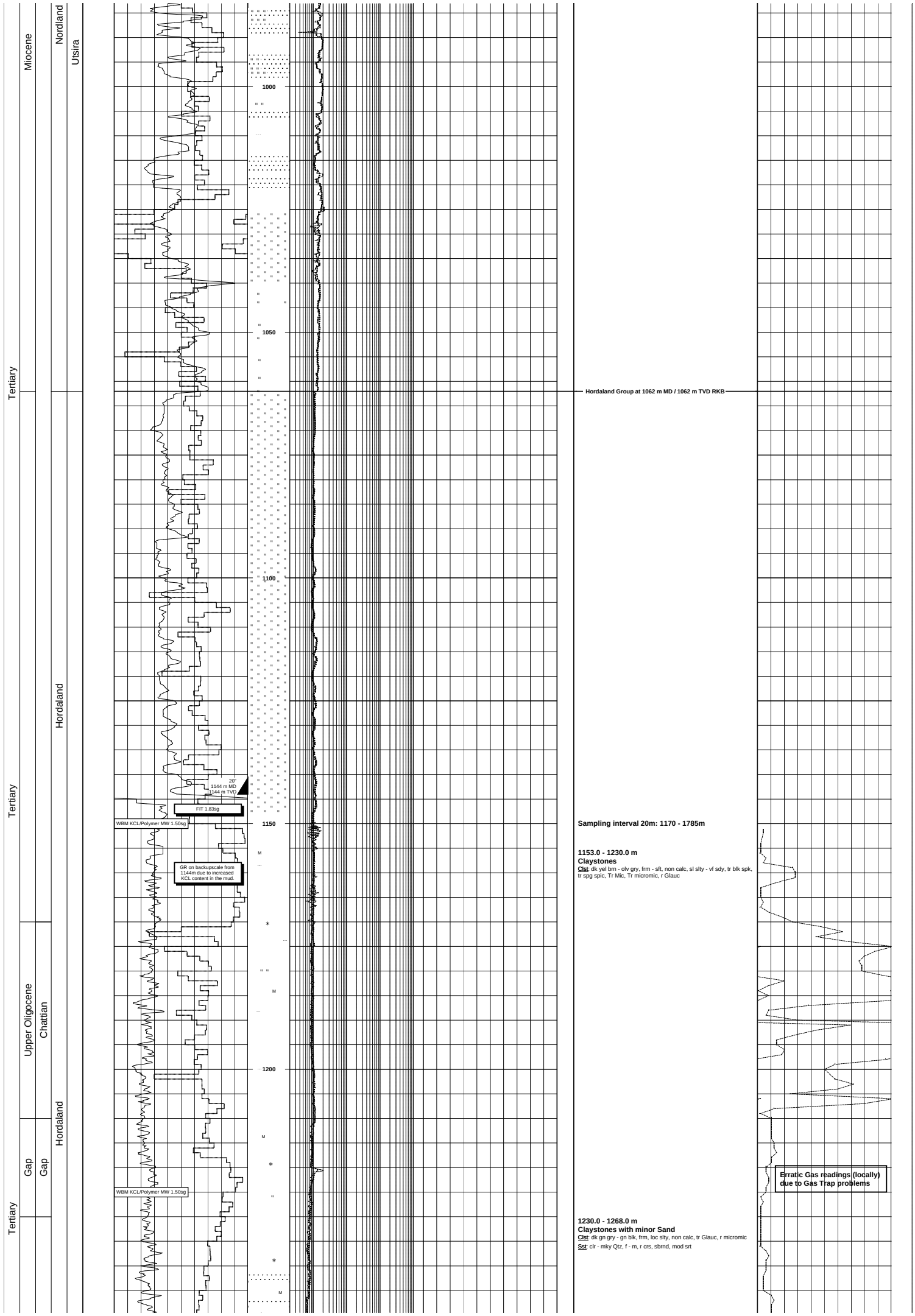
Tertiary | Tertiary | Tertiary | Tertiary

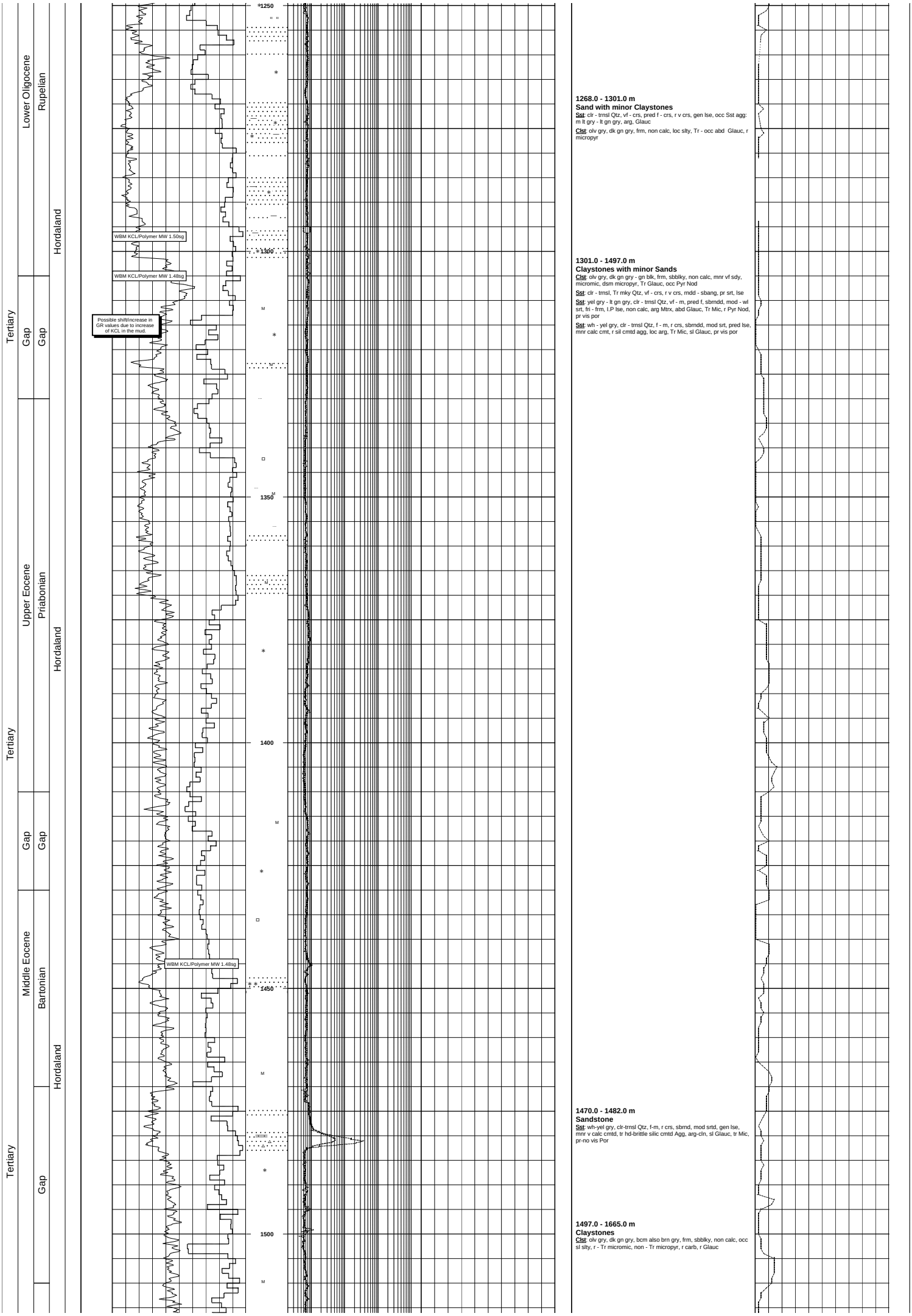
Pliocene | Pliocene | Pliocene

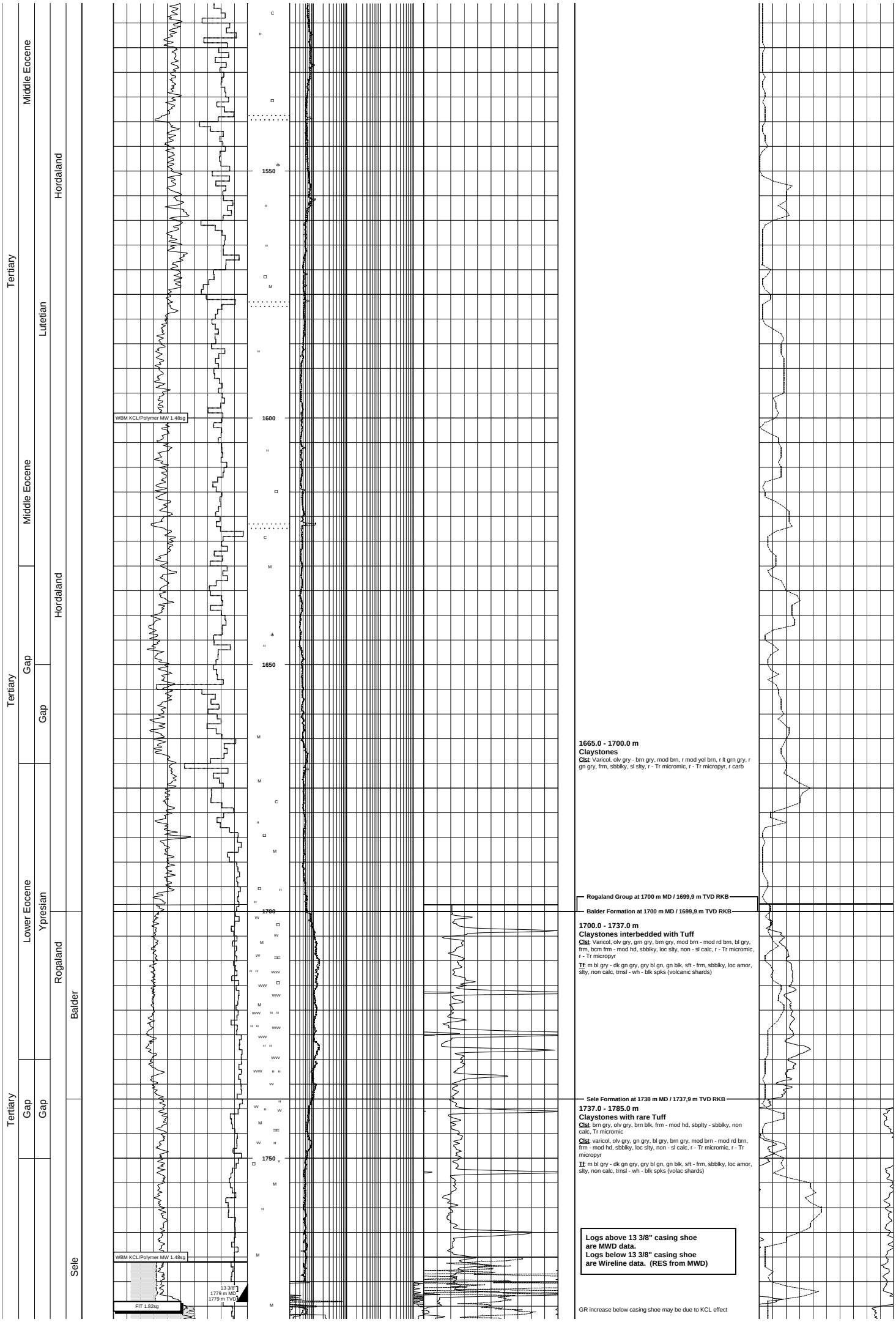
Nordland | Nordland | Nordland

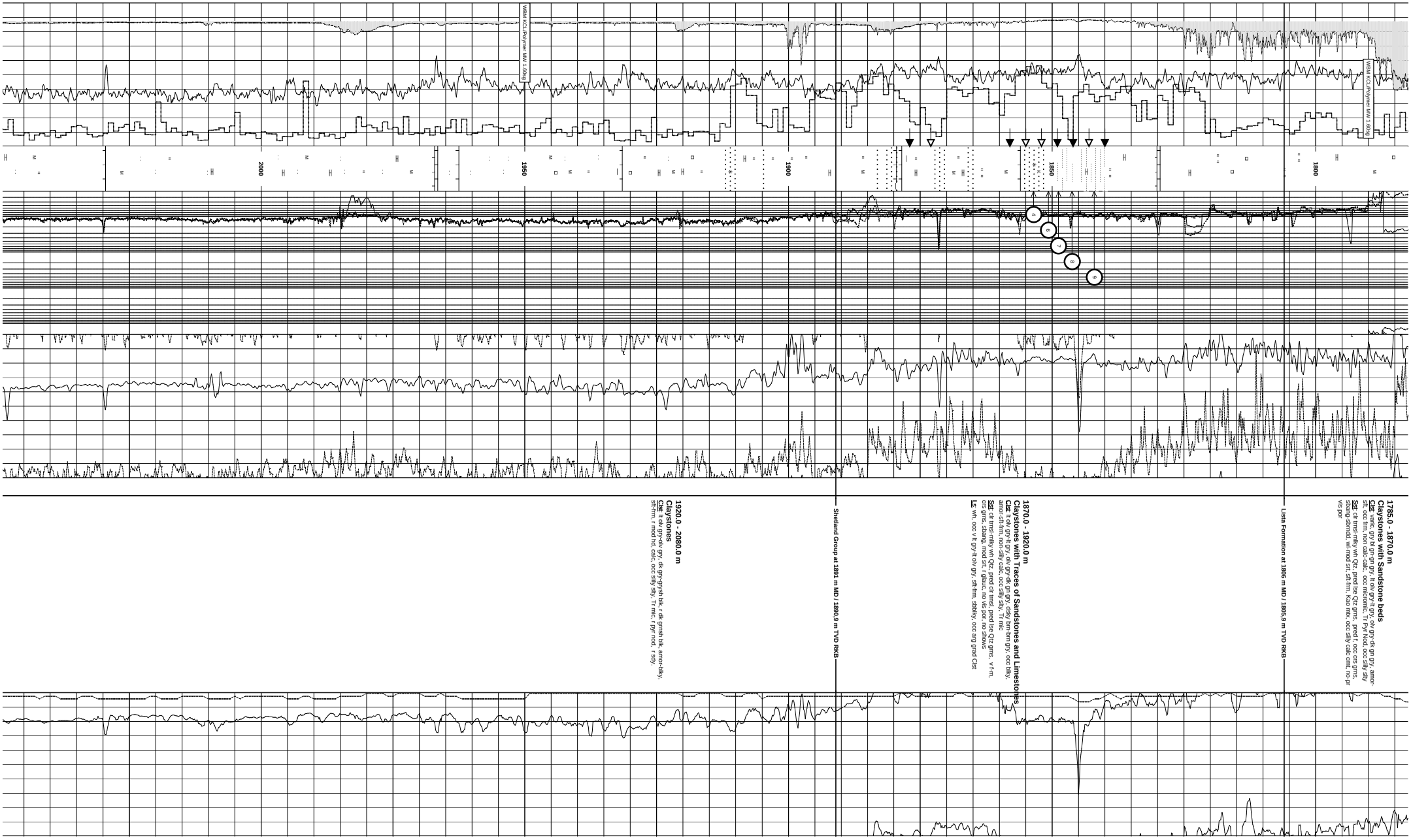


Utsira Formation at 924 m MD / 924 m TVD RKB

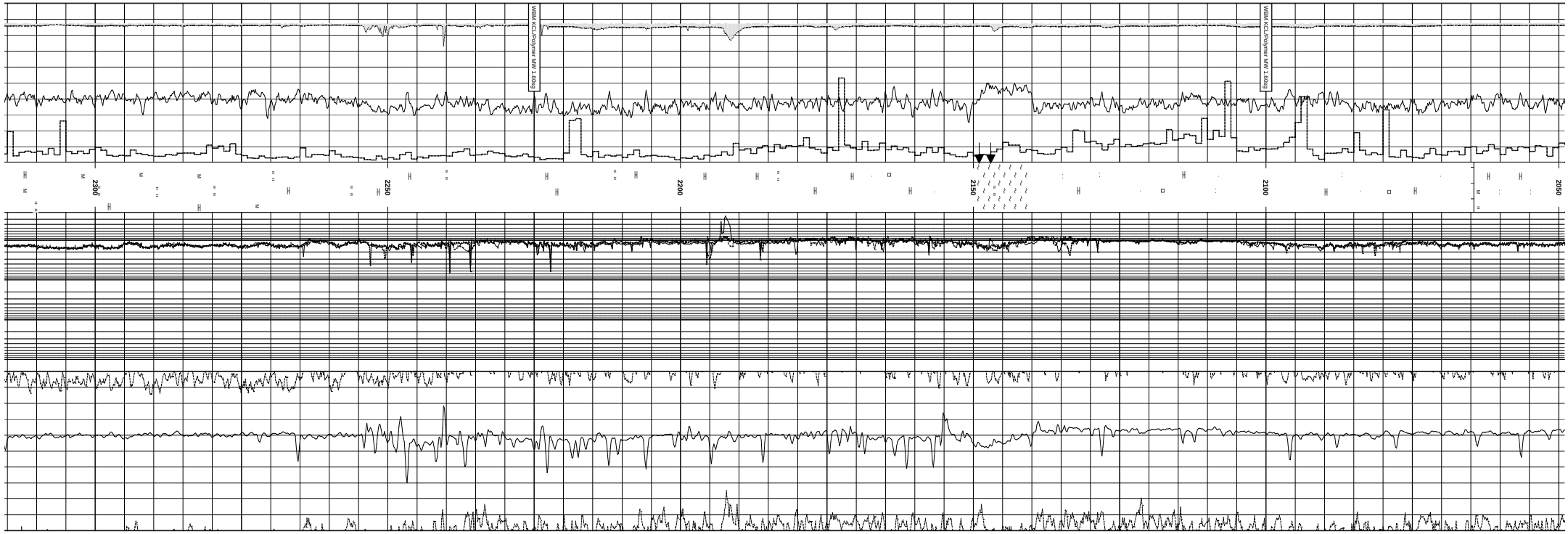

Tertiary
Miocene
Nordland
Utsira
1000
1050
Hordaland Group at 1062 m MD / 1062 m TVD RKB
Hordaland
1100
20°
1144 m MD
1144 m TVD
FIT 1.83sg
WBM KCL/Polymer MW 1.50sg
1150
GR on backupscale from 1144m due to increased KCL content in the mud.
Tertiary
Upper Oligocene
Chattian
Hordaland
1200
Tertiary
Gap
Gap
Hordaland
WBM KCL/Polymer MW 1.50sg
Sampling interval 20m: 1170 - 1785m
1153.0 - 1230.0 m
Claystones
Clst: dk yel brn - olv gry, frm - sft, non calc, sl slty - vf sdy, tr blk spk, tr spg spic, Tr Mic, Tr micromic, r Glauc
Erratic Gas readings (locally) due to Gas Trap problems
1230.0 - 1268.0 m
Claystones with minor Sand
Clst: dk gn gry - gn blk, frm, loc slty, non calc, tr Glauc, r micromic
Sst: clr - mky Qtz, f - m, r crs, sbrnd, mod srt


Tertiary
Lower Oligocene
Rupelian
Hordaland
Tertiary
Gap
Gap
Hordaland
Tertiary
Upper Eocene
Priabonian
Hordaland
Tertiary
Gap
Gap
Hordaland
Tertiary
Middle Eocene
Bartonian
Hordaland
Tertiary
Gap
Hordaland
1250
1300
1350
1400
1450
1500
WBM KCL/Polymer MW 1.50sg
WBM KCL/Polymer MW 1.48sg
Possible shift/increase in GR values due to increase of KCL in the mud.
WBM KCL/Polymer MW 1.48sg
1268.0 - 1301.0 m
Sand with minor Claystones
Sst: clr - trnsl Qtz, vf - crs, pred f - crs, r v crs, gen lse, occ Sst agg: m lt gry - lt gn gry, arg, Glauc
Clst: olv gry, dk gn gry, frm, non calc, loc slty, Tr - occ abd Glauc, r micropyr
1301.0 - 1497.0 m
Claystones with minor Sands
Clst: olv gry, dk gn gry - gn blk, frm, sbblky, non calc, mnr vf sdy, micromic, dsm micropyr, Tr Glauc, occ Pyr Nod
Sst: clr - trnsl, Tr mky Qtz, vf - crs, r v crs, rndd - sbang, pr srt, lse
Sst: yel gry - lt gn gry, clr - trnsl Qtz, vf - m, pred f, sbrndd, mod - wl srt, fri - frm, l.P lse, non calc, arg Mtrx, abd Glauc, Tr Mic, r Pyr Nod, pr vis por
Sst: wh - yel gry, clr - trnsl Qtz, f - m, r crs, sbrndd, mod srt, pred lse, mnr calc cmt, r sil cmtd agg, loc arg, Tr Mic, sl Glauc, pr vis por
1470.0 - 1482.0 m
Sandstone
Sst: wh-yel gry, clr-trnsl Qtz, f-m, r crs, sbrnd, mod srtd, gen lse, mnr v calc cmtd, tr hd-brittle silic cmtd Agg, arg-cln, sl Glauc, tr Mic, pr-no vis Por
1497.0 - 1665.0 m
Claystones
Clst: olv gry, dk gn gry, bcm also brn gry, frm, sbblky, non calc, occ sl slty, r - Tr micromic, non - Tr micropyr, r carb, r Glauc


Tertiary
Middle Eocene
Lutetian
Hordaland
Tertiary
Middle Eocene
Gap
Hordaland
Tertiary
Lower Eocene
Gap
Ypresian
Rogaland
Balder
Tertiary
Gap
Gap
Sele
1550
1600
1650
1700
1750
WBM KCL/Polymer MW 1.48sg
WBM KCL/Polymer MW 1.48sg
13 3/8"
1779 m MD
1779 m TVD
FIT 1.82sg
1665.0 - 1700.0 m
Claystones
Clst: Varicol, olv gry - brn gry, mod brn, r mod yel brn, r lt grn gry, r gn gry, frm, sbblky, sl slty, r - Tr micromic, r - Tr micropyr, r carb
Rogaland Group at 1700 m MD / 1699,9 m TVD RKB
Balder Formation at 1700 m MD / 1699,9 m TVD RKB
1700.0 - 1737.0 m
Claystones interbedded with Tuff
Clst: Varicol, olv gry, grn gry, brn gry, mod brn - mod rd brn, bl gry, frm, bcm frm - mod hd, sbblky, loc slty, non - sl calc, r - Tr micromic, r - Tr micropyr
Tf: m bl gry - dk gn gry, gry bl gn, gn blk, sft - frm, sbblky, loc amor, slty, non calc, trnsl - wh - blk spks (volcanic shards)
Sele Formation at 1738 m MD / 1737,9 m TVD RKB
1737.0 - 1785.0 m
Claystones with rare Tuff
Clst: brn gry, olv gry, brn blk, frm - mod hd, sbplty - sbblky, non calc, Tr micromic
Clst: varicol, olv gry, gn gry, bl gry, brn gry, mod brn - mod rd brn, frm - mod hd, sbblky, loc slty, non - sl calc, r - Tr micromic, r - Tr micropyr
Tf: m bl gry - dk gn gry, gry bl gn, gn blk, sft - frm, sbblky, loc amor, slty, non calc, trnsl - wh - blk spks (volac shards)
Logs above 13 3/8" casing shoe are MWD data.
Logs below 13 3/8" casing shoe are Wireline data. (RES from MWD)
GR increase below casing shoe may be due to KCL effect


Cretaceous
Upper Cretaceous
Gap
Shetland
Cretaceous
Upper Cretaceous
Late Maastrichtian
Shetland
Gap
Gap
Tertiary
Upper Paleocene
? Selandian ?
Gap
Thanetian
Rogaland
Rogaland
Lista
WBM KCL/Polymer MW 1.60sg
WBM KCL/Polymer MW 1.60sg
2000
1950
1900
1850
1800
1920.0 - 2080.0 m
Claystones
Clst: lt olv gry-olv gry, dk gry-grysh blk, r dk grnsh blk, amor-blky, slt-frm, r mod hd, calc, occ silty sity, Tr mic, r pyr mod, r sdy.
Shetland Group at 1891 m MD / 1890.9 m TVD RKB
1870.0 - 1920.0 m
Claystones with Traces of Sandstone and Limestones
Clst: lt olv gry-lt gry, olv gry-dk grn gry, dsky brn-brn gry, occ blky, amor-slt-frm, non-silty calc, occ silty sity, Tr mic
Sst: clr trnsl-milky wh Qtz, pred clr trnsl, pred lse Qtz grns, v f-m, crs grns, sbang, mod srt, r glauc, no vis por, no shows
Ls: wh, occ v lt gry-lt olv gry, slt-frm, sbblky, occ arg grad Clst
1785.0 - 1870.0 m
Claystones with Sandstone beds
Clst: varic, gry lt grn gry, lt olv gry-lt gry, olv gry-dk grn gry, amor-slt, occ frm, non calc-calc, occ micromic, Tr Pyr Nod, occ silty sity
Sst: clr trnsl-milky wh Qtz, pred lse Qtz grns, pred f, occ crs grns, sbang-sbrndd, wl-mod srt, slt-frm, Kao mtx, occ silty calc cmt, no-p vis por
Lista Formation at 1806 m MD / 1805.9 m TVD RKB

Cretaceous		Cretaceous		Cretaceous
Upper Cretaceous		Upper Cretaceous		Upper Cretaceous
Gap	Middle Campanian	Gap	Late-Middle Campanian	Gap	Early Maastrichtian
Shetland		Shetland		Shetland



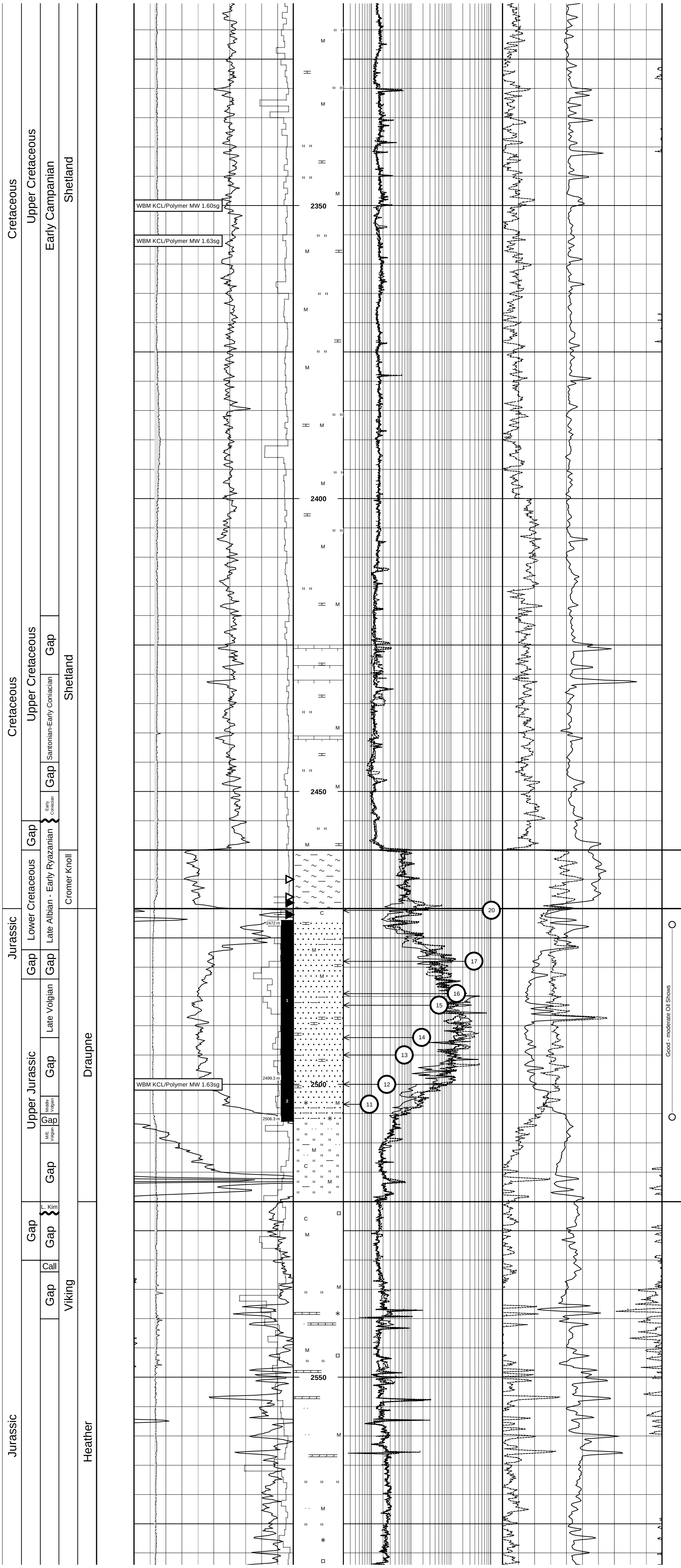
2270.0 - 2340.0 m
Claystones
Cst olv gry-dk gry-grysh blk, r dk-grish gry, blky, frm-mod hd, non-sil calc, pred non calc, occ sil slty, r micromic

2210.0 - 2270.0 m
Claystones with rare Traces of Limestones
Cst m dk gry-dk gry-grysh blk, dk grish gry, blky, frm-mod hd, pred frm, non-sil calc, occ sil slty
Ls lt gry-dk gry, blky, sft, v arg, microoln

2170.0 - 2210.0 m
Claystones
Cst m dk gry-dk gry-grysh blk, blky, sft-frm, mod hd, sil calc, occ sil slty

2140.0 - 2170.0 m
Claystones with minor Limestones
Cst (1) m dk gry-dk gry-grysh blk, blky, sft-frm, mod hd, sil calc, occ sil slty
Cst (2) mod brn-grysh brn, blky-sbblky, sft-frm, calc grad Mrl, slilt sty
Ls v lt gry-lt olv gry, sft, blky, arg, microoln

2080.0 - 2140.0 m
Claystones with rare Traces of Limestone
Cst olv gry-olv blk, dk gry-grysh blk, blky, sft-frm, mod hd, sil calc, occ sil slty, r sdy, r pyr nod
Ls v lt gry, sft, sbblky, arg, microoln



2340.0 - 2450.0 m

Claystones with minor Limestones and Traces of Sandstone

Clst: olv gry-dk gry-grysh blk, blky, stky, frm-occ mod hd, non-slily calc, sli slty, r micromic

Ls: yel gry-gry org, occ v f blk sptd, frm, pred slily arg

Sst: v lt gry-yel gry, clr trnsl-mlky wh Qtz, v f, sbrnnd-rndd, wl srt, frm-mod hd, slil calc cmt, occ arg, no vis por, no shows

Ls: lt bl gry, v f blk spt, sft-frm, non-slily arg

Cromer Knoll Group at 2460 m MD / 2459,8 m TVD RKB

2460.0 - 2469.0 m

Limestones and Claystones

Ls: yelsh gry-lt gry, blky, sft-frm, occ sli arg, microxln

Clst: olv gry-dk gry-grysh blk, r mod brn, amor-sbblky, stky, sft-frm, calc, occ slily slty, r blk spec, r sdy, r Glauc

Viking Group at 2470 m MD / 2469,8 m TVD RKB

Draupne at 2470 m MD / 2469,8 m TVD RKB

2469.0 - 2472.0 m

Sandstones, Limestones and Traces of Coal

Sst: brn blk-dk grysh blk, clr trnsl Qtz, m-crs, r f, r v crs, sbang-sbrndd, mod-wl srt, lse-frm, I.P. sli calc, gd vis por

Sandstones

Sst: brn blk-dk grysh blk, clr trnsl Qtz, m-crs, r f, r v crs, sbang-sbrndd, mod-wl srt, lse-frm, I.P. sli calc, gd vis por

Shows: Strg pet od, dk brn Ostn, brt strg yel-wh dir Fluor, inst strg bl wh Fluor cut, strg brn even vis Cut, strg yel wh Fluor res, lt-mod brn vis Res

Sst: brn blk-dk grysh blk, clr trnsl-occ mlky wh Qtz, m, r f, r crs, sbang-sbrndd, occ rndd, wl srt, fri-frm, pred fri, occ sli calc cmt, pred non calc, gd vis por

Shows: Strg pet od, dk brn Ostn, brt strg yel-wh dir Fluor, inst strg bl wh Fluor cut, strg brn even vis Cut, strg yel wh Fluor res, lt-mod brn vis Res

Sst: brn blk-dk grysh blk, clr trnsl-mky wh Qtz, f-m, pred f, ang-sbrndd, mod-wl srt, fri-hd, I.P. sil cmt, v arg grd sdy Sh, r Glauc, r Pyr, r Mic, pr-fair vis por

Shows: Wk-mod pet od,brn-lt brn O stn, ptchy mod yel wh dir Fluor, inst-fast strg bl wh Fluor cut, mod-strg brn even vis cut, strg yel wh Fluor Res, mod brn vis Res

Siltstone

Sltst: m dk gry - dk gry, m gry - olv gry, amor - sbblky, slily stky, sft - frm, calc - v calc, sli vf sdy, arg, Tr micromic, r Tr Carb Frag

Ls: wh-pl yel or, blky, sft, pred microxln, occ sli arg

Heather Formation at 2520 m MD / 2519,8 m TVD RKB

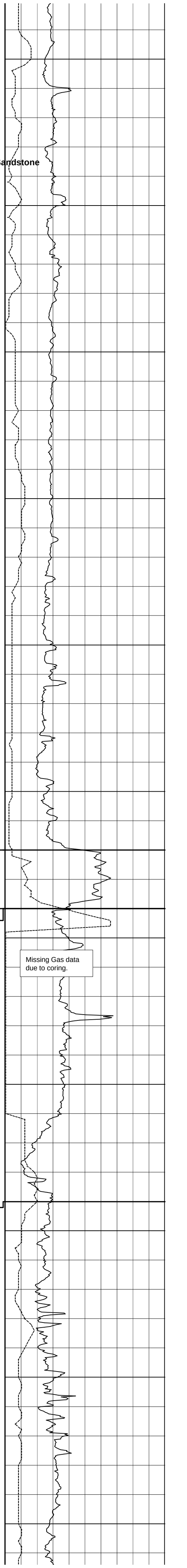
Claystone w/ Limestone stringers

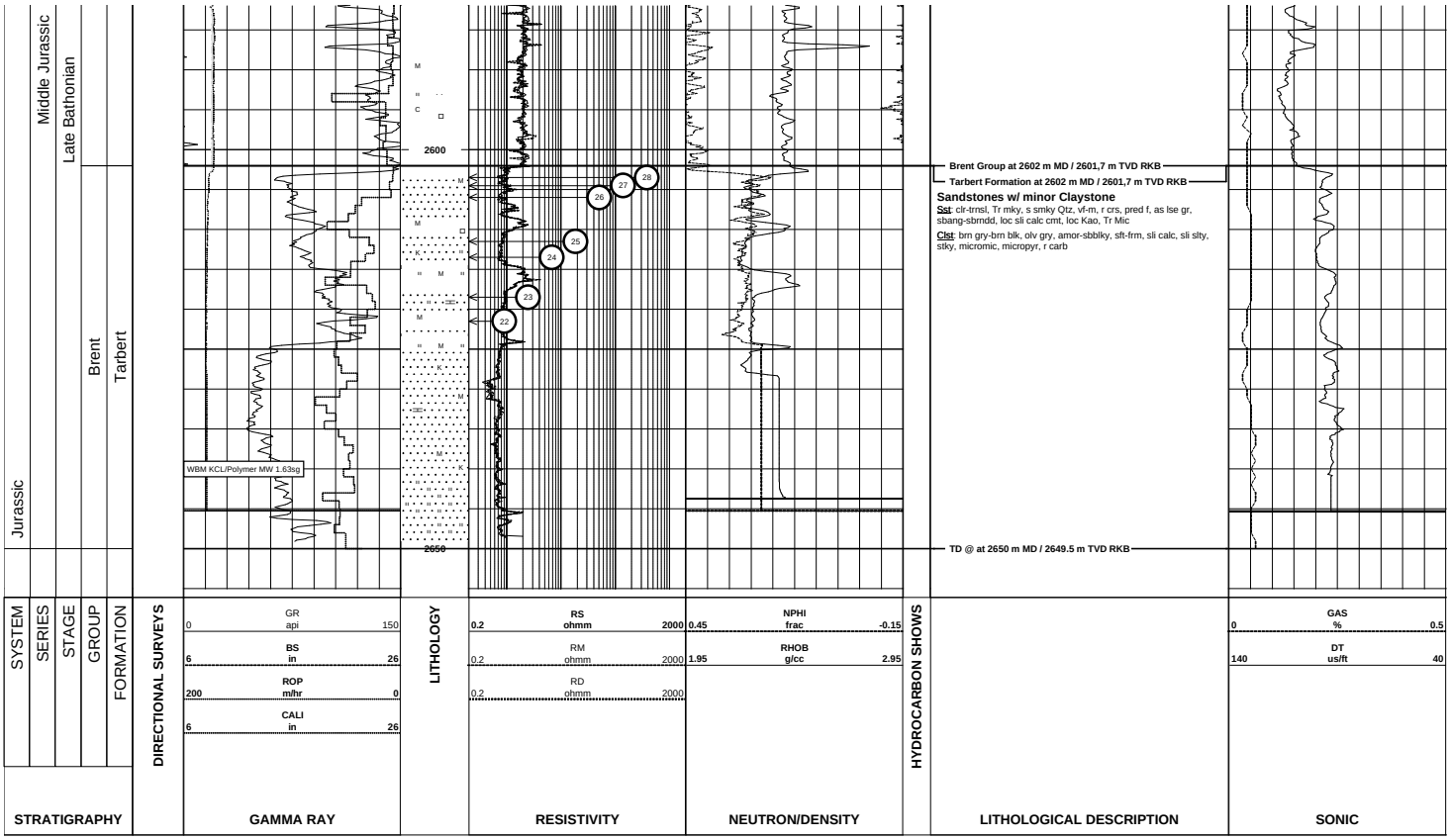
Clst: brn blk, dk olv gry-olv blk, occ olv gry-dk gn gry, amor-sbblky, sft-mod hd, I.P. stky, non calc-calc, sli slty-slty, I.P. grd Sltst, occ vf sdy, micromic, Pyr, Tr micropyr, loc Tr Glauc, r-Tr carb

Ls: wh-v lt gry, pl yrl or-mod yel brn, blky, sft-mod hd, pred microxln, I.P. micro-crpxln, occ sli arg, no shows

Dol: mod brn-rd brn, dk yel brn, dk yel brn, blky, hd

Sst: clr-trnsl, occ mky wh Qtz, m-crs, r f, as lse gr, mod srt, sbang-sbrndd, no shows





SYSTEM	SERIES	STAGE	GROUP	FORMATION	DIRECTIONAL SURVEYS	GAMMA RAY	LITHOLOGY	RESISTIVITY	NEUTRON/DENSITY	HYDROCARBON SHOWS	LITHOLOGICAL DESCRIPTION	SONIC
						GR 0 api 150 BS 6 in 26 ROP 200 m/hr 0 CALI 6 in 26		RS 0.2 ohmm 2000 RM 0.2 ohmm 2000 RD 0.2 ohmm 2000	NPHI 0.45 frac -0.15 RHOB 1.95 g/cc 2.95			GAS 0 % 0.5 DT 140 us/ft 40
STRATIGRAPHY						GAMMA RAY		RESISTIVITY	NEUTRON/DENSITY		LITHOLOGICAL DESCRIPTION	SONIC

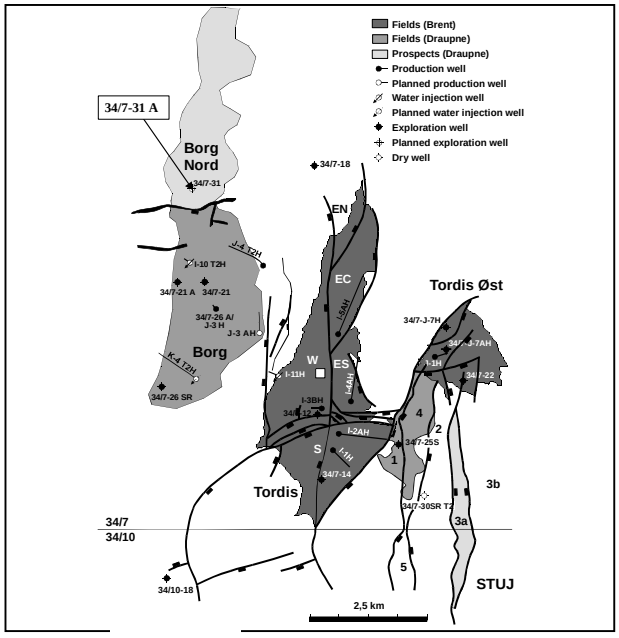
Completion Log

Borg Nord

Scale: 1 / 500

Well: 34/7-31 A

Location Map



KB Elevation	26m	**Country**	Norway
Water Depth	207m	**Licence**	PL089
Depth Reference	RKB		
		Owners	NORSK HYDRO ASA, STATOIL, IDEMITSU, TOTAL-FINA-ELF, RWE-DEA, EXXON MOBIL
Total Depth (Driller)	3454 m MD RKB 2355.4 m TVD RKB		
Total Depth (Logger)	Not logged Not logged		
		Field	Borg Nord
Formation at Total Depth	Shetland Group	**Platform**	Scarabeo 6
Date Spudded	15.04.2001 (Kick-off from 34/7-31)		
Date Reached TD	17.04.2001	**Drilling Contractor**	Saipem
Date Completed	25.04.2001	**Mudlogging Company**	Halliburton Sperry-sun
Well Status	Permanently plugged and abandoned	**Logging Company**	Schlumberger WL
		MWD Company	Schlumberger Anadrill
Well Classification	Exploration well	**Geologists**	Å. Halvorsen, M. Henderson
Prepared by	M. Henderson, Å. Halvorsen, C.Dons		
Controlled by	T.Pedersen		
Date	19.09.2001		

Well Coordinates

Surface location		
UTM - Coordinates:	6 797 888.5 mN	61°18' 37.69" N
ED50-UTM zone 31 (SM 3° E)	450 009.2 mE	02° 03' 59.81" E

Output log file created : 2002-02-18 15:47:23
Winlog well ID : 34_7_31 A
Winlog template version : 20010309 - AJC

Casing Records

Diameter	Shoe depth m MD RKB	Shoe depth m TVD RKB
30" Casing shoe	306	306
20" Casing shoe	1144	1144
13 3/8" Casing shoe	1779	1779

LOT / FIT

Type	Result SG	Depth m MD RKB	Depth m TVD RKB

Comments

Well 34/7-31 A was sidetracked from well 34/7-31at 1802 m MD RKB and reached TD= 3454m MD RKB
The hole was drilled with 9.5" bit and Anadrill PowerPulse with ARC6 + ADN (MWD)
No wireline logging was performed

Logs

Run no.	Log type	Logged interval
1	GR/DIR/RES/DENS/NEU	1773-3454

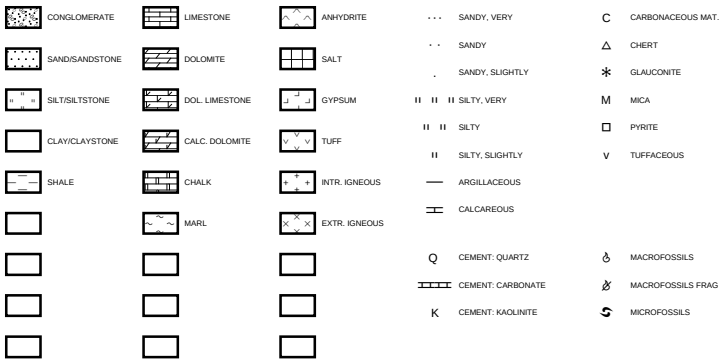
Cores

Core no.	Cored interval m MD RKB	Recovered interval m MD RKB	Rec. mMD	Rec. %
No cores				

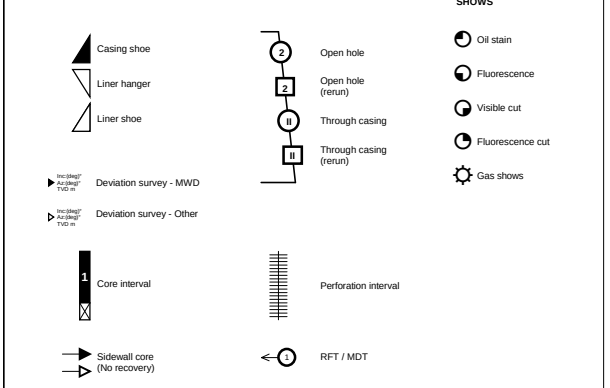
Pressure points (MDT)

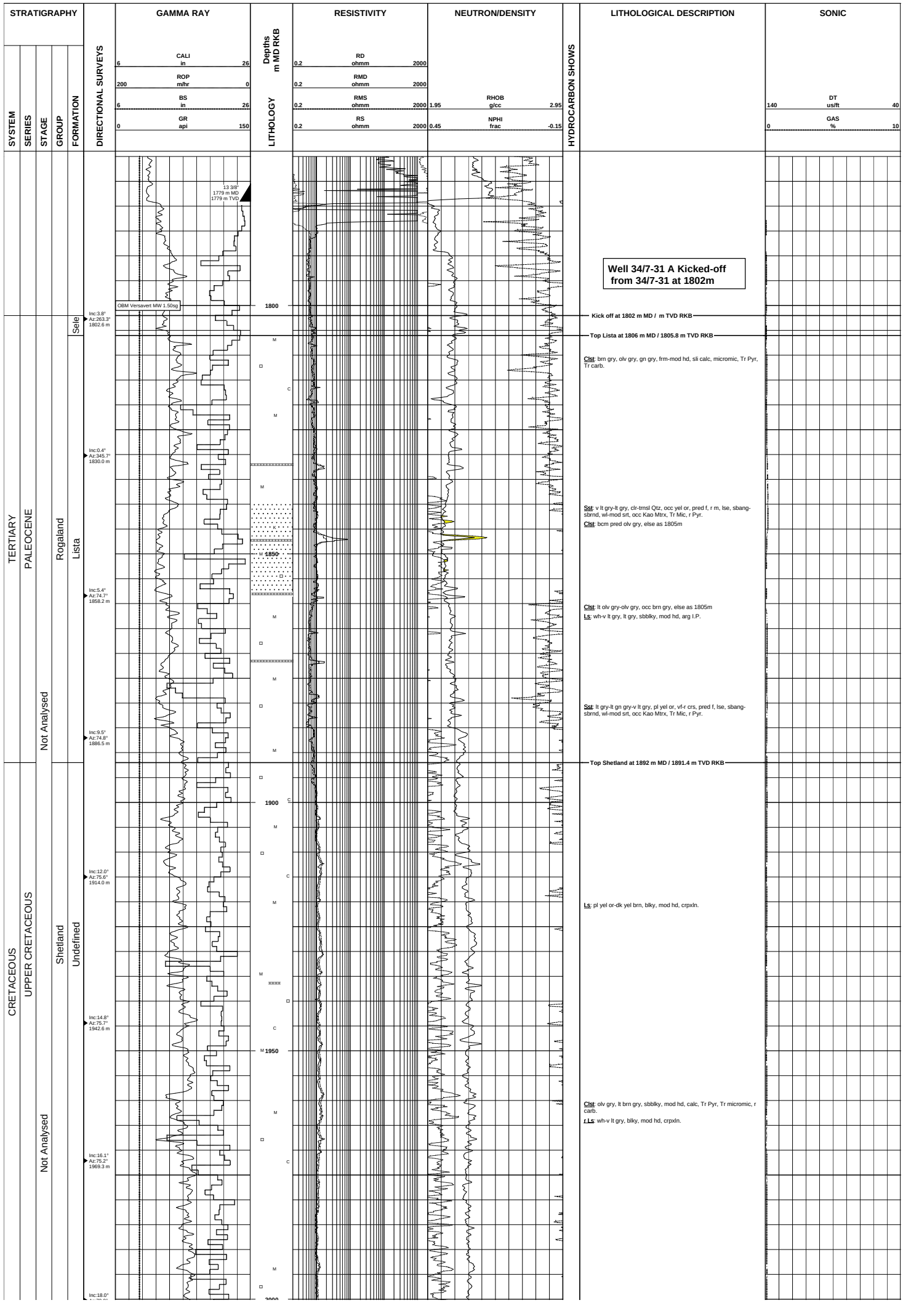
Test no.	Depth m MD RKB	Depth m TVD RKB	Fmn. Press. Bars	Test no.	Depth m MD RKB	Depth m TVD RKB	Fmn. Press. Bars
No formation pressure tests							

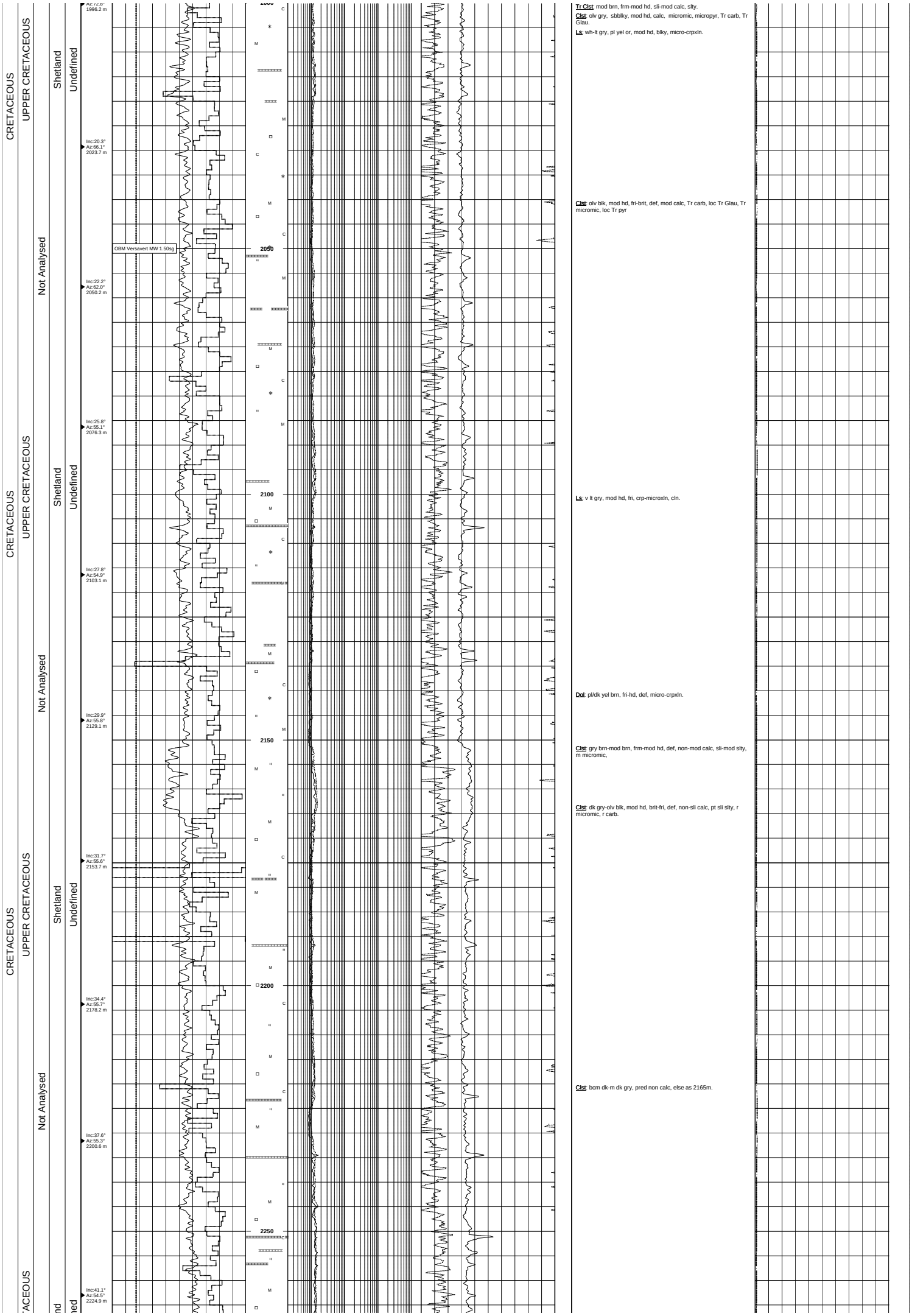
Lithology Legend

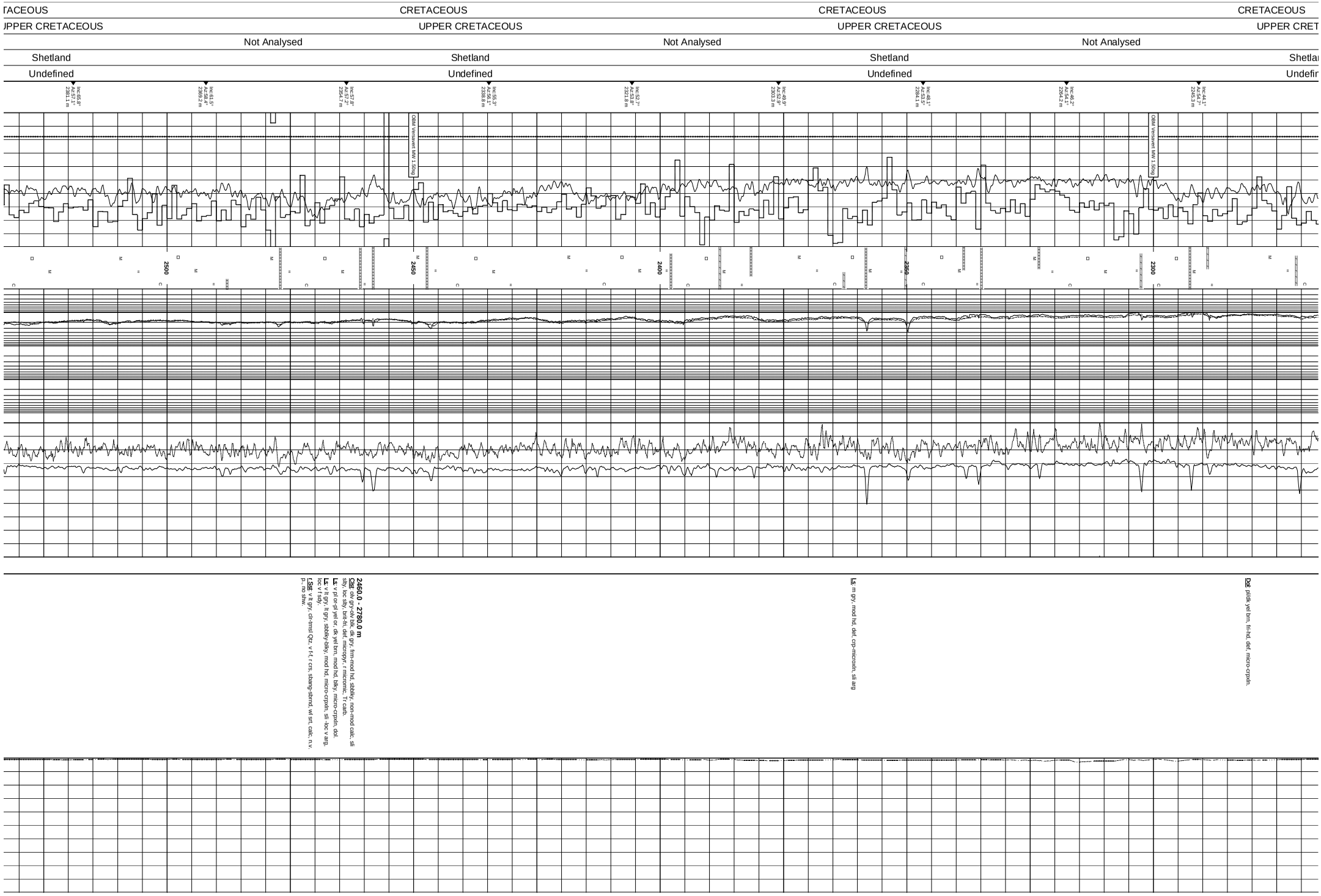


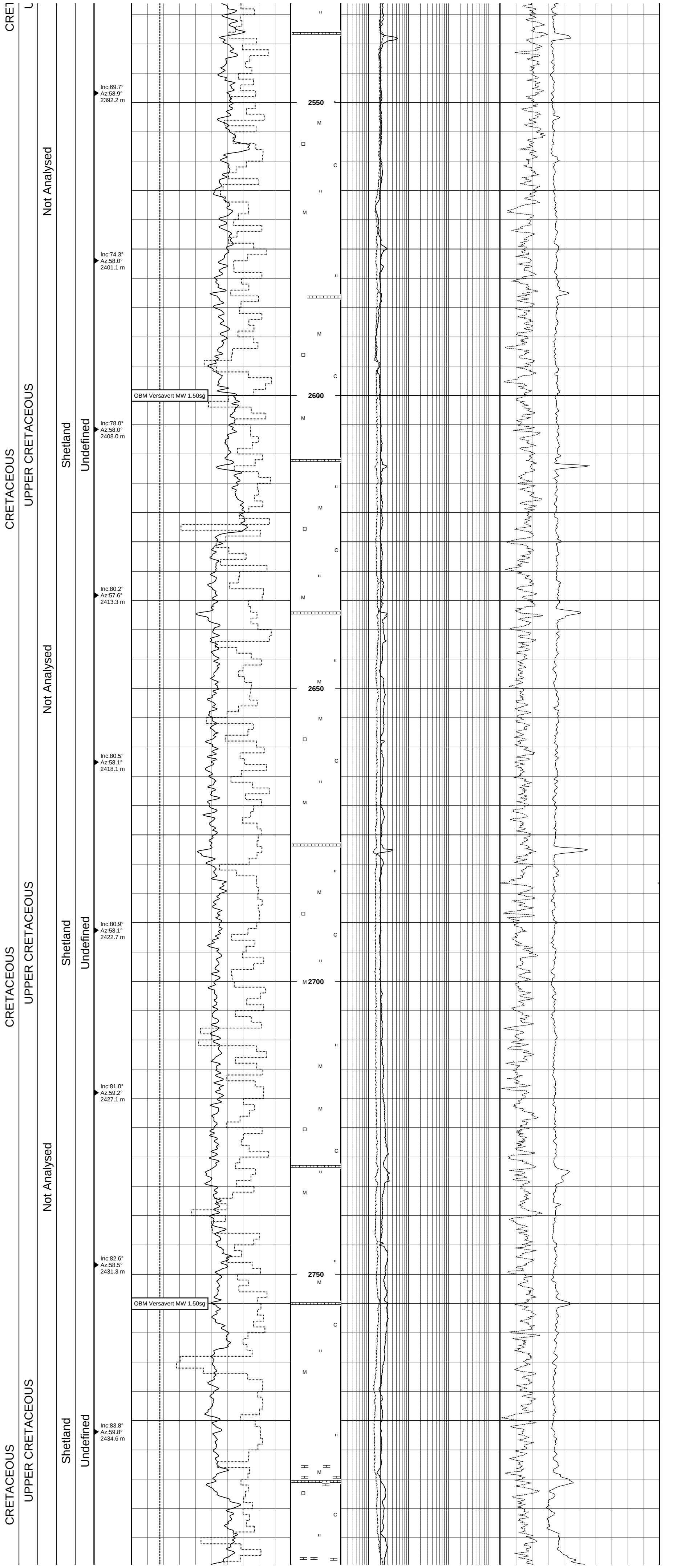
Symbol legend




STRATIGRAPHY
SYSTEM
SERIES
STAGE
GROUP
FORMATION
DIRECTIONAL SURVEYS
GAMMA RAY
CALI
in
6
26
ROP
m/hr
200
0
BS
in
6
26
GR
api
0
150
Depths
m MD RKB
LITHOLOGY
RESISTIVITY
RD
ohmm
0.2
2000
RMD
ohmm
0.2
2000
RMS
ohmm
0.2
2000
RS
ohmm
0.2
2000
NEUTRON/DENSITY
RHOB
g/cc
1.95
2.95
NPHI
frac
0.45
-0.15
HYDROCARBON SHOWS
LITHOLOGICAL DESCRIPTION
SONIC
DT
us/ft
140
40
GAS
%
0
10
TERTIARY
PALEOCENE
CRETACEOUS
UPPER CRETACEOUS
Not Analysed
Not Analysed
Rogaland
Shetland
Sele
Lista
Undefined
13 3/8"
1779 m MD
1779 m TVD
OBM Versavert MW 1.50sg
1800
1850
1900
1950
2000
Inc:3.8°
Az:263.3°
1802.6 m
Inc:0.4°
Az:345.7°
1830.0 m
Inc:5.4°
Az:74.7°
1858.2 m
Inc:9.5°
Az:74.8°
1886.5 m
Inc:12.0°
Az:75.6°
1914.0 m
Inc:14.8°
Az:75.7°
1942.6 m
Inc:16.1°
Az:75.2°
1969.3 m
Inc:18.0°
Well 34/7-31 A Kicked-off from 34/7-31 at 1802m
Kick off at 1802 m MD / m TVD RKB
Top Lista at 1806 m MD / 1805.8 m TVD RKB
Clst: brn gry, olv gry, gn gry, frm-mod hd, sli calc, micromic, Tr Pyr, Tr carb.
Sst: v lt gry-lt gry, clr-trnsl Qtz, occ yel or, pred f, r m, lse, sbang-sbrnd, wl-mod srt, occ Kao Mtrx, Tr Mic, r Pyr.
Clst: bcm pred olv gry, else as 1805m
Clst: lt olv gry-olv gry, occ brn gry, else as 1805m
Ls: wh-v lt gry, lt gry, sbblky, mod hd, arg l.P.
Sst: lt gry-lt gn gry-v lt gry, pl yel or, vf-r crs, pred f, lse, sbang-sbrnd, wl-mod srt, occ Kao Mtrx, Tr Mic, r Pyr.
Top Shetland at 1892 m MD / 1891.4 m TVD RKB
Ls: pl yel or-dk yel brn, blky, mod hd, crpxln.
Clst: olv gry, lt brn gry, sbblky, mod hd, calc, Tr Pyr, Tr micromic, r carb.
r Ls: wh-v lt gry, blky, mod hd, crpxln.


CRETACEOUS
UPPER CRETACEOUS
Not Analysed
Shetland
Undefined
Az:72.8°
1996.2 m
Inc:20.3°
Az:66.1°
2023.7 m
OBM Versavert MW 1.50sg
2050
Inc:22.2°
Az:62.0°
2050.2 m
Inc:25.8°
Az:55.1°
2076.3 m
2100
Inc:27.8°
Az:54.9°
2103.1 m
Inc:29.9°
Az:55.8°
2129.1 m
2150
Inc:31.7°
Az:55.6°
2153.7 m
2200
Inc:34.4°
Az:55.7°
2178.2 m
Inc:37.6°
Az:55.3°
2200.6 m
2250
Inc:41.1°
Az:54.5°
2224.9 m
Tr Clst: mod brn, frm-mod hd, sli-mod calc, slty.
Clst: olv gry, sbblky, mod hd, calc, micromic, micropyr, Tr carb, Tr Glau.
Ls: wh-lt gry, pl yel or, mod hd, blky, micro-crpxln.
Clst: olv blk, mod hd, fri-brit, def, mod calc, Tr carb, loc Tr Glau, Tr micromic, loc Tr pyr
Ls: v lt gry, mod hd, fri, crp-microxln, cln.
Dol: pl/dk yel brn, fri-hd, def, micro-crpxln.
Clst: gry brn-mod brn, frm-mod hd, def, non-mod calc, sli-mod slty, m micromic,
Clst: dk gry-olv blk, mod hd, brit-fri, def, non-sli calc, pt sli slty, r micromic, r carb.
Clst: bcm dk-m dk gry, pred non calc, else as 2165m.


TACEOUS
CRETACEOUS
CRETACEOUS
CRETACEOUS
UPPER CRETACEOUS
UPPER CRETACEOUS
UPPER CRETACEOUS
UPPER CRET
Not Analysed
Not Analysed
Not Analysed
Shetland
Shetland
Shetland
Undefined
Undefined
Undefined
Undefir
Inc=66.8°
Az=57.1°
2361.1 m
Inc=61.5°
Az=58.9°
2369.2 m
Inc=57.8°
Az=57.2°
2354.7 m
Inc=52.5°
Az=56.1°
2338.8 m
Inc=52.7°
Az=55.9°
2321.8 m
Inc=49.9°
Az=55.5°
2303.3 m
Inc=48.1°
Az=55.0°
2284.1 m
Inc=46.2°
Az=54.1°
2264.4 m
Inc=44.1°
Az=54.7°
2245.3 m
OBM Versavert MW 1.50sg
OBM Versavert MW 1.50sg
2500
2450
2400
2350
2300
2460.0 - 2780.0 m
CSS: olv gry-olv blk, dk gry, firm-mod hd, sbblky, non-mod calc, sli slty, loc slty; brit-fri, def, microgyr, r micromic, Tr carb.
LS: v lt-pl or-pl yel or, dk yel brn, mod hd, blky, micro-crpxln, dol.
LS: v lt gry, lt-gry, sbblky-blky, mod hd, micro-crpxln, sli- loc v arg, loc v f sdy.
r Sst: v lt gry, clr-rmsl Qtz, v f-f, r crs, sbang-sbrnd, wl srt, calc, n.v. p., no stnv.
LS: m gry, mod hd, def, crp-microxln, sli arg
Dol: pl-dk yel brn, fri-hd, def, micro-crpxln.



2780.0 - 2795.0 m

Clst: olv gry-olv blk, mod hd, sbblky, mod calc, sli slty, def, micropyr, Tr micromic, Tr carb.

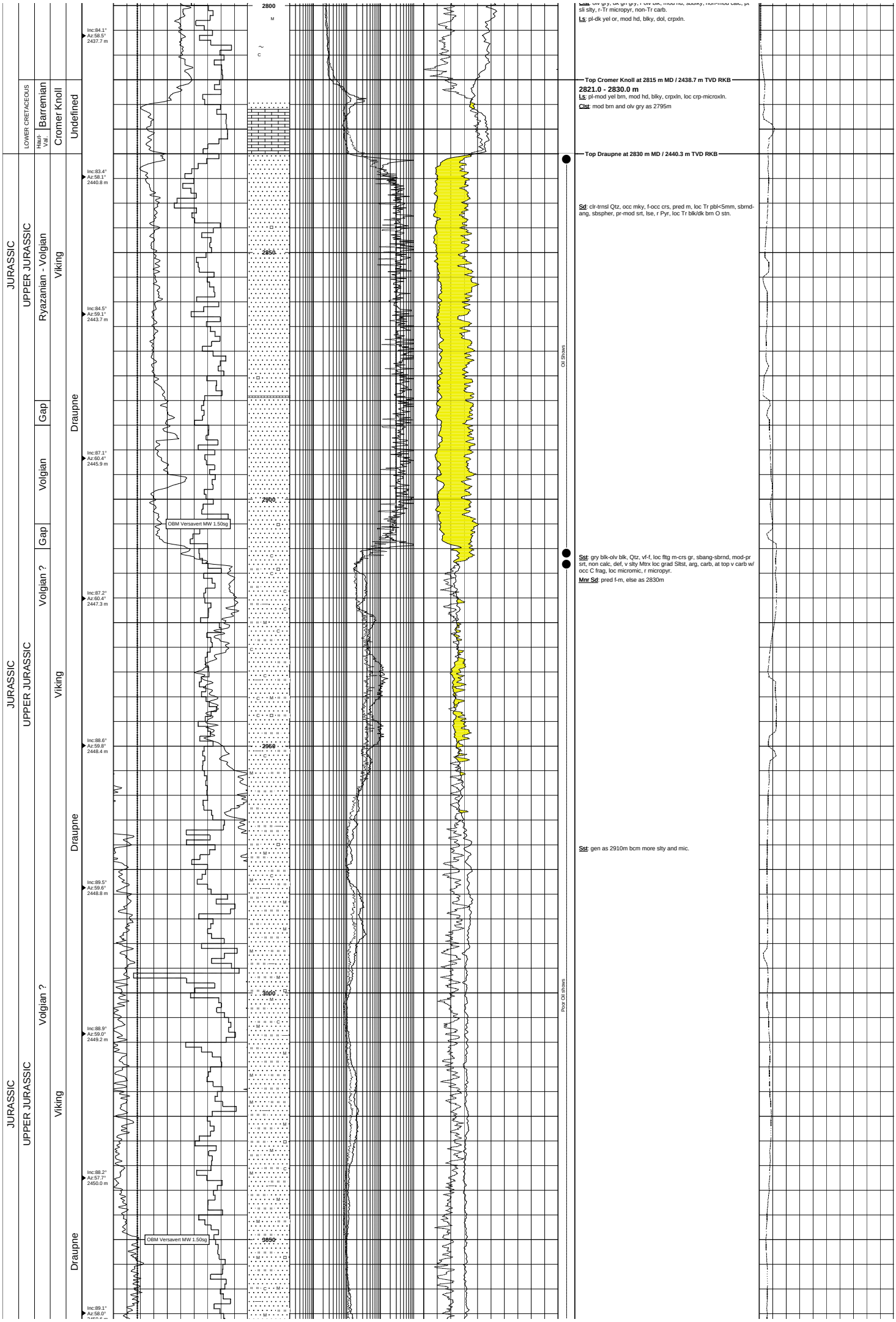
Clst: dk gn gry, gn gry, sbblky, mod hd, non-sli calc, r micromic, non-r carb.

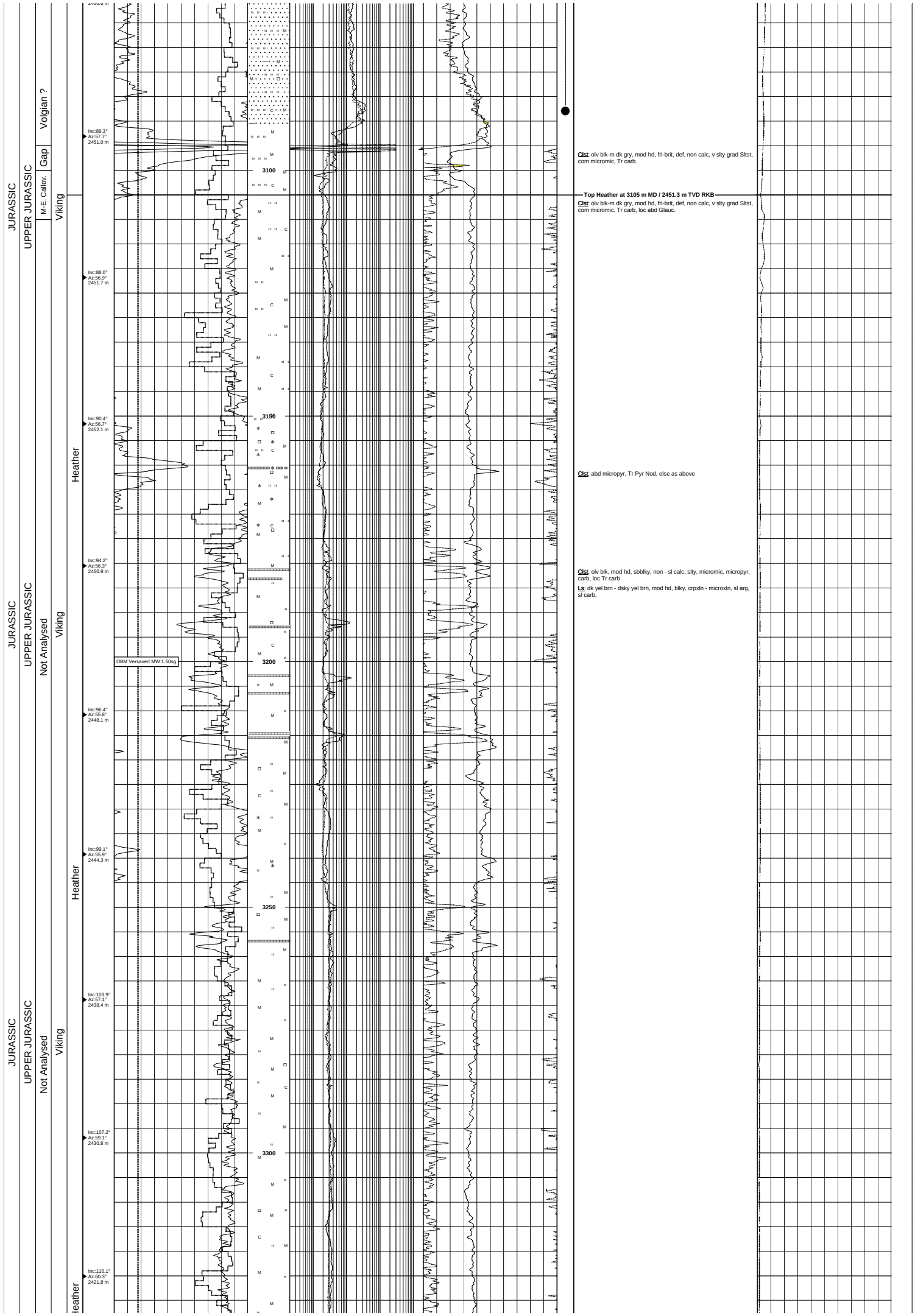
Ls: pl-dk yel or, mod hd, blky, dol, crpxln.

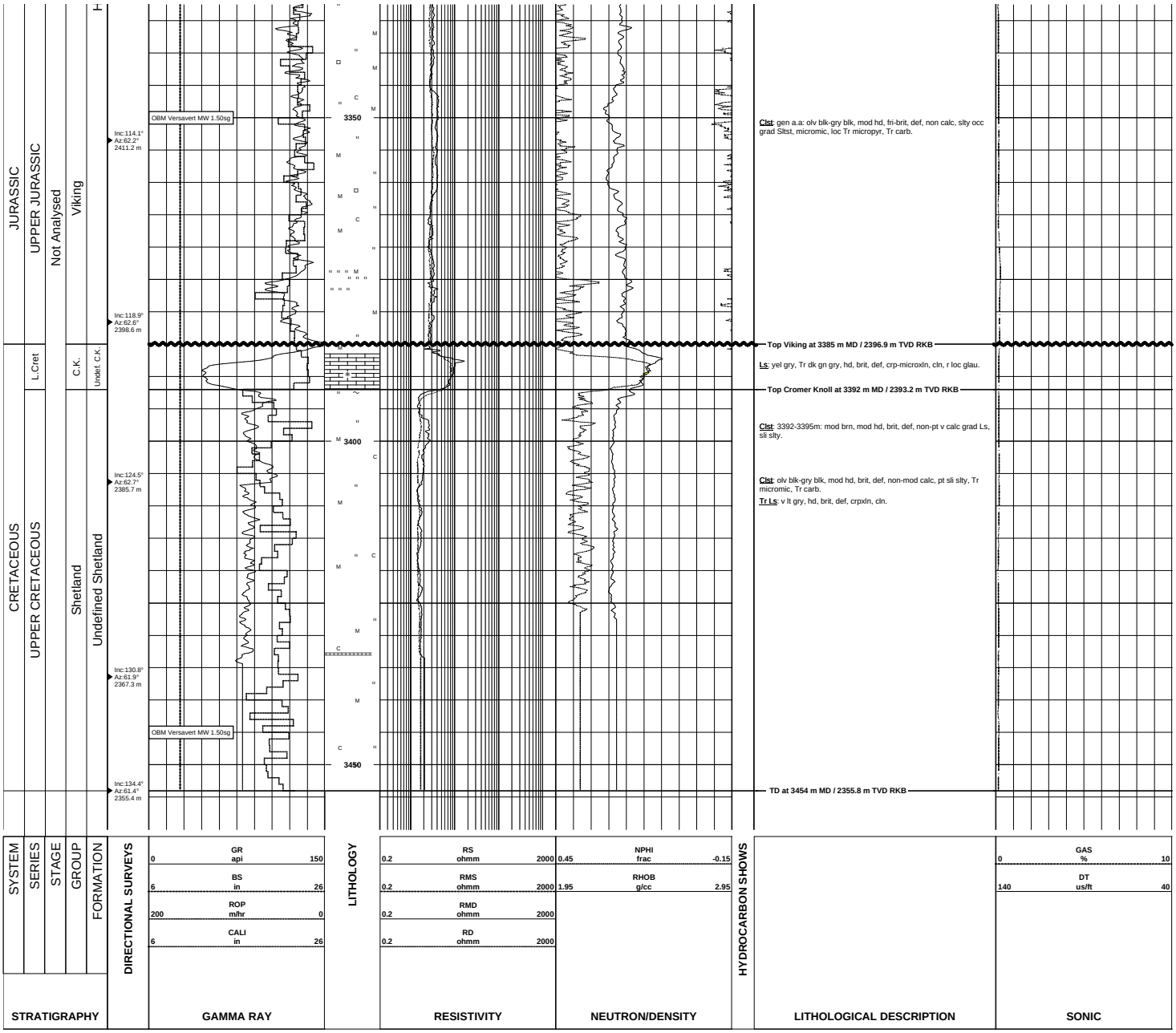
2795.0 - 2815.0 m

Clst: mod brn, sbblky, mod hd, calc-v calc pt grad Mrl, r carb.

Clst: olv gry, dk gn gry, r olv blk, mod hd, sbblky, non-mod calc, pt


JURASSIC
UPPER JURASSIC
LOWER CRETACEOUS
Haut-Val.
Barremian
Ryazanian - Volgian
Volgian
Gap
Volgian ?
Gap
Volgian ?
Cromer Knoll
Undefined
Viking
Draupne
Viking
Draupne
Viking
Draupne
Inc:84.1° Az:58.5° 2437.7 m
Inc:83.4° Az:58.1° 2440.8 m
Inc:84.5° Az:59.1° 2443.7 m
Inc:87.1° Az:60.4° 2445.9 m
Inc:87.2° Az:60.4° 2447.3 m
Inc:88.6° Az:59.8° 2448.4 m
Inc:89.5° Az:59.6° 2448.8 m
Inc:88.9° Az:59.0° 2449.2 m
Inc:88.2° Az:57.7° 2450.0 m
Inc:89.1° Az:58.0°
2800
2850
2900
2950
3000
3050
OBM Versavert MW 1.50sg
OBM Versavert MW 1.50sg
Oil Shows
Poor Oil shows
Top Cromer Knoll at 2815 m MD / 2438.7 m TVD RKB
2821.0 - 2830.0 m
Ls: pl-mod yel brn, mod hd, blky, crpxln, loc crp-microxln.
Clst: mod brn and olv gry as 2795m
Top Draupne at 2830 m MD / 2440.3 m TVD RKB
Sd: clr-trnsl Qtz, occ mky, f-occ crs, pred m, loc Tr pbl<5mm, sbrnd-ang, sbspher, pr-mod srt, lse, r Pyr, loc Tr blk/dk brn O stn.
Sst: gry blk-olv blk, Qtz, vf-f, loc fltg m-crs gr, sbang-sbrnd, mod-pr srt, non calc, def, v slty Mtrx loc grad Sltst, arg, carb, at top v carb w/ occ C frag, loc micromic, r micropyr.
Mnr Sd: pred f-m, else as 2830m
Sst: gen as 2910m bcm more slty and mic.


JURASSIC
UPPER JURASSIC
Not Analysed
Viking
M-E. Callov.
Gap
Volgian ?
Heather
Inc:89.3°
Az:57.7°
2451.0 m
3100
Inc:88.0°
Az:56.9°
2451.7 m
Inc:90.4°
Az:56.7°
2452.1 m
3150
Inc:94.2°
Az:56.3°
2450.9 m
OBM Versavert MW 1.50sg
3200
Inc:96.4°
Az:55.8°
2448.1 m
Inc:99.1°
Az:55.9°
2444.3 m
3250
Inc:103.9°
Az:57.1°
2438.4 m
Inc:107.2°
Az:59.1°
2430.8 m
3300
Inc:110.1°
Az:60.3°
2421.8 m
Clst: olv blk-m dk gry, mod hd, fri-brit, def, non calc, v slty grad Sltst, com micromic, Tr carb.
Top Heather at 3105 m MD / 2451.3 m TVD RKB
Clst: olv blk-m dk gry, mod hd, fri-brit, def, non calc, v slty grad Sltst, com micromic, Tr carb, loc abd Glauc.
Clst: abd micropyr, Tr Pyr Nod, else as above
Clst: olv blk, mod hd, sbblky, non - sl calc, slty, micromic, micropyr, carb, loc Tr carb
Ls: dk yel brn - dsky yel brn, mod hd, blky, crpxln - microxln, sl arg, sl carb,


SYSTEM
SERIES
STAGE
GROUP
FORMATION
JURASSIC
UPPER JURASSIC
Not Analysed
Viking
H
CRETACEOUS
L.Cret
C.K.
Undef. C.K.
UPPER CRETACEOUS
Shetland
Undefined Shetland
OBM Versavert MW 1.50sg
Inc:114.1°
Az:62.2°
2411.2 m
Inc:118.9°
Az:62.6°
2398.6 m
Inc:124.5°
Az:62.7°
2385.7 m
Inc:130.8°
Az:61.9°
2367.3 m
OBM Versavert MW 1.50sg
Inc:134.4°
Az:61.4°
2355.4 m
3350
3400
3450
Clst: gen a.a: olv blk-gry blk, mod hd, fri-brit, def, non calc, slty occ grad Sltst, micromic, loc Tr micropyr, Tr carb.
Top Viking at 3385 m MD / 2396.9 m TVD RKB
Ls: yel gry, Tr dk gn gry, hd, brit, def, crp-microxln, cln, r loc glau.
Top Cromer Knoll at 3392 m MD / 2393.2 m TVD RKB
Clst: 3392-3395m: mod brn, mod hd, brit, def, non-pt v calc grad Ls, sli slty.
Clst: olv blk-gry blk, mod hd, brit, def, non-mod calc, pt sli slty, Tr micromic, Tr carb.
Tr Ls: v lt gry, hd, brit, def, crpxln, cln.
TD at 3454 m MD / 2355.8 m TVD RKB
DIRECTIONAL SURVEYS
LITHOLOGY
HYDROCARBON SHOWS
GR
0 api 150
BS
6 in 26
ROP
200 m/hr 0
CALI
6 in 26
RS
0.2 ohmm 2000
RMS
0.2 ohmm 2000
RMD
0.2 ohmm 2000
RD
0.2 ohmm 2000
NPHI
0.45 frac -0.15
RHOB
1.95 g/cc 2.95
GAS
0 % 10
DT
140 us/ft 40
STRATIGRAPHY
GAMMA RAY
RESISTIVITY
NEUTRON/DENSITY
LITHOLOGICAL DESCRIPTION
SONIC

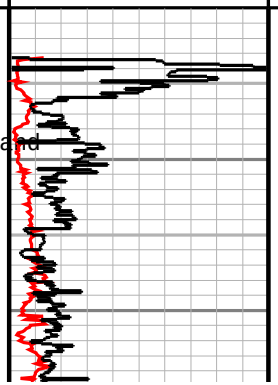
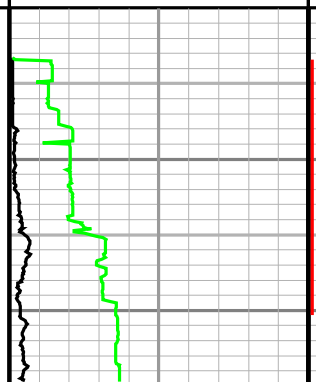
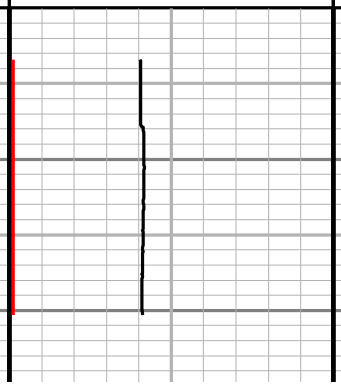
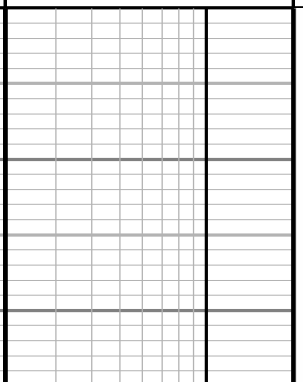
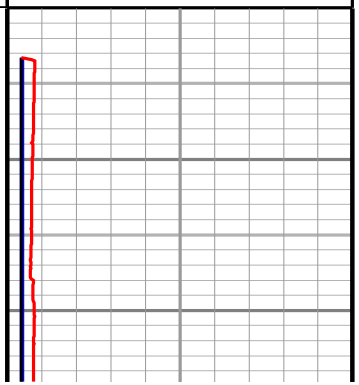
Pressure Evaluation Log

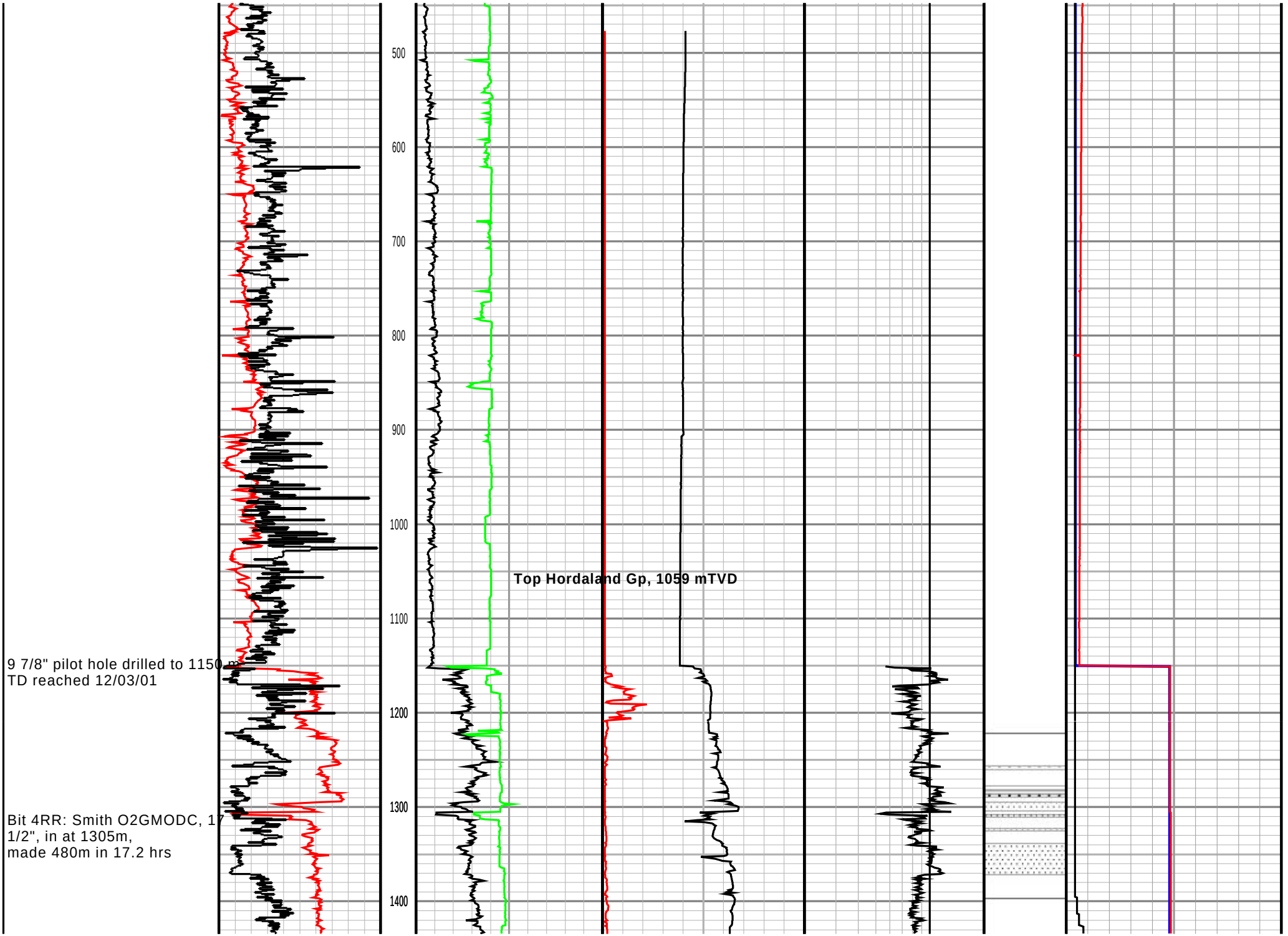
34/7-31

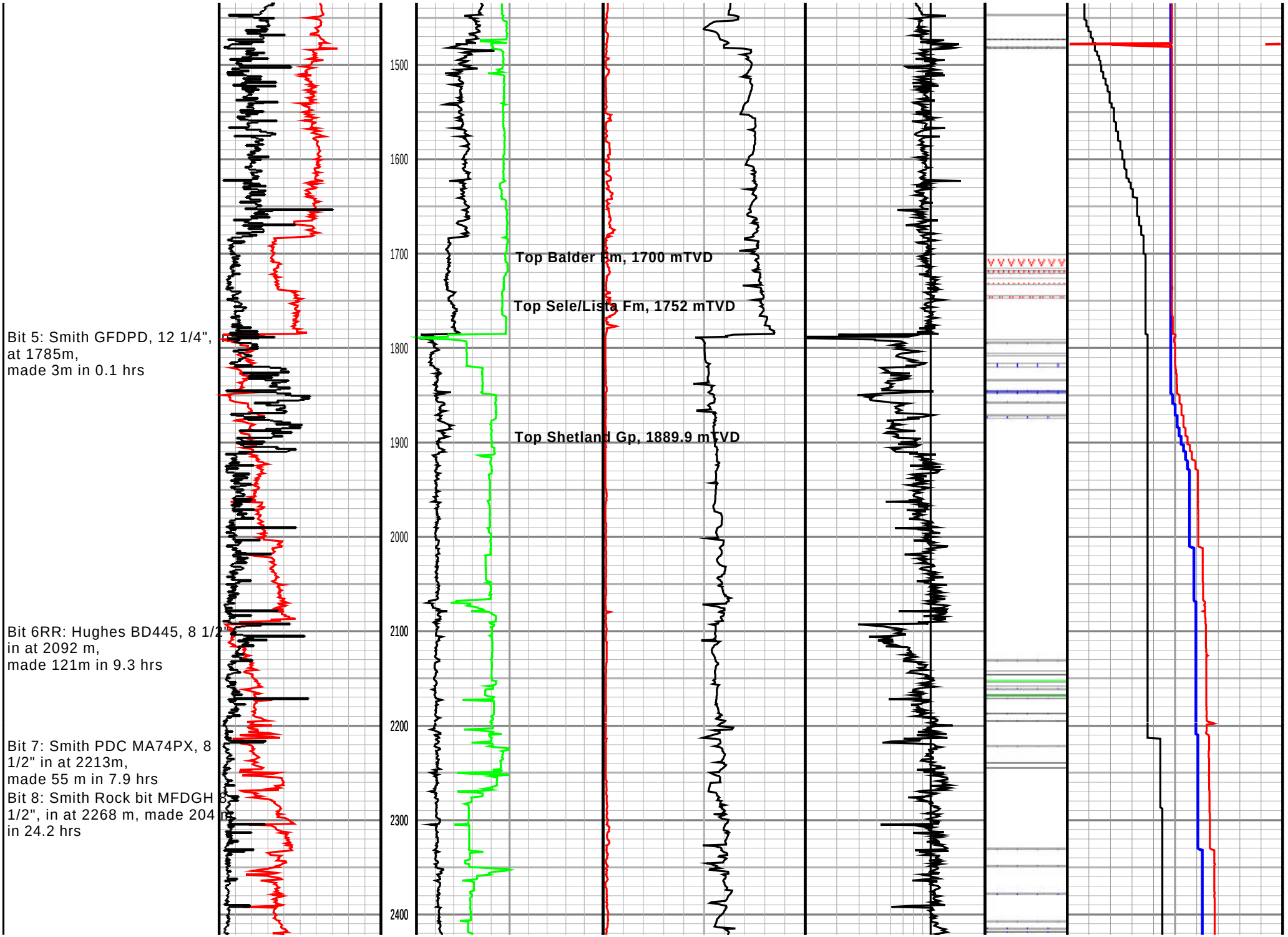
Sperry-Sun Drilling Services

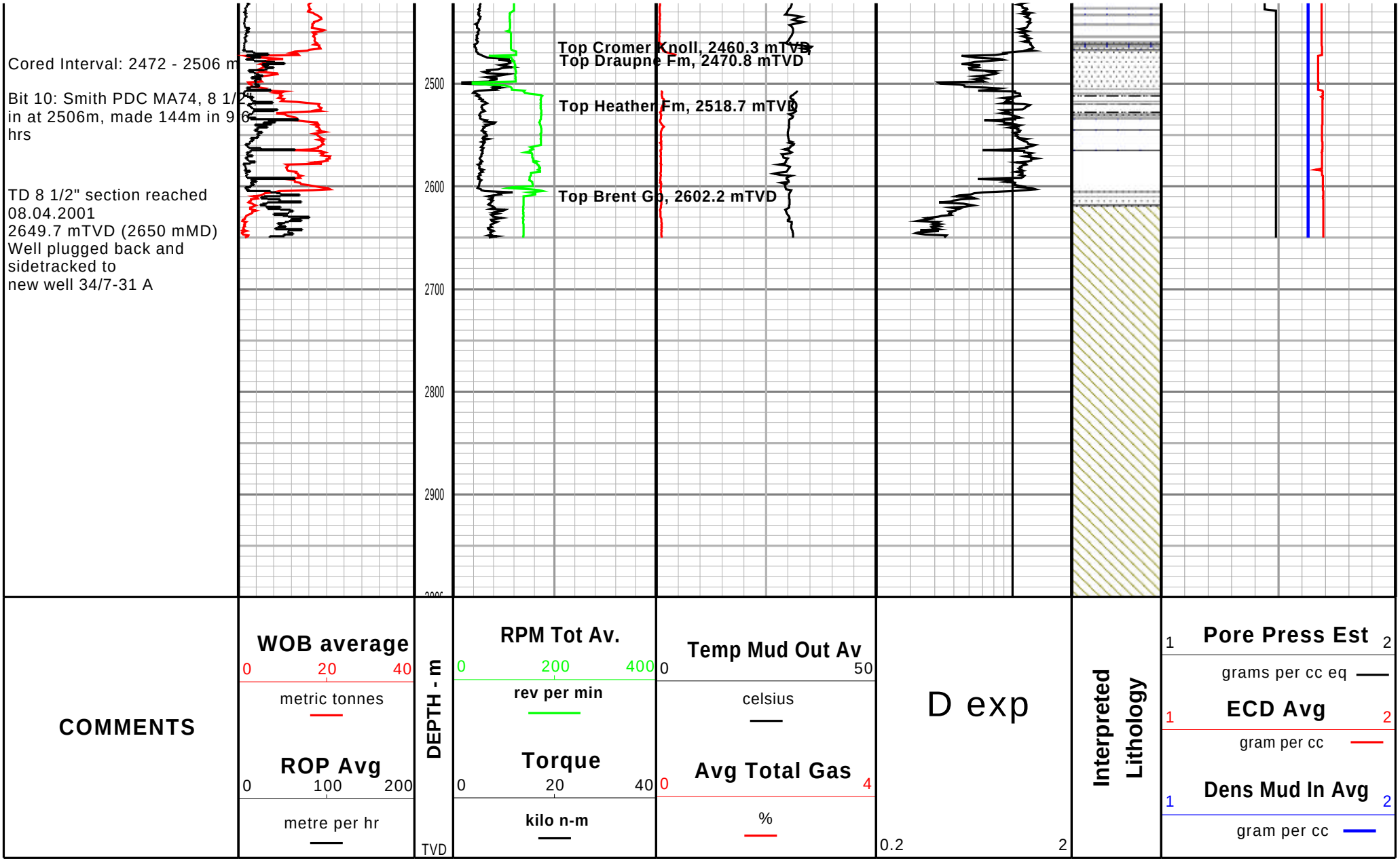
Scale 1:5000

Sand | Sandstone | Siltstone | Claystone | Coal | Limestone | No Sample

COMMENTS	WOB average (0 20 40) metric tonnes / ROP Avg (0 100 200) metre per hr	DEPTH - m TVD	RPM Tot Av. (0 200 400) rev per min / Torque (0 20 40) kilo n-m	Temp Mud Out Av (0 50) celsius / Avg Total Gas (0 4) %	D exp (0.2 2)	Interpreted Lithology	Pore Press Est (1 2) grams per cc eq / ECD Avg (1 2) gram per cc / Dens Mud In Avg (1 2) gram per cc
Well spudded 10/03/01 with 9 7/8" Pilot hc Section drilled with seawater and viscous sweeps		200 300 400					


500
600
700
800
900
1000
1100
1200
1300
1400
Top Hordaland Gp, 1059 mTVD
9 7/8" pilot hole drilled to 1150 m
TD reached 12/03/01
Bit 4RR: Smith O2GMODC, 17
1/2", in at 1305m,
made 480m in 17.2 hrs

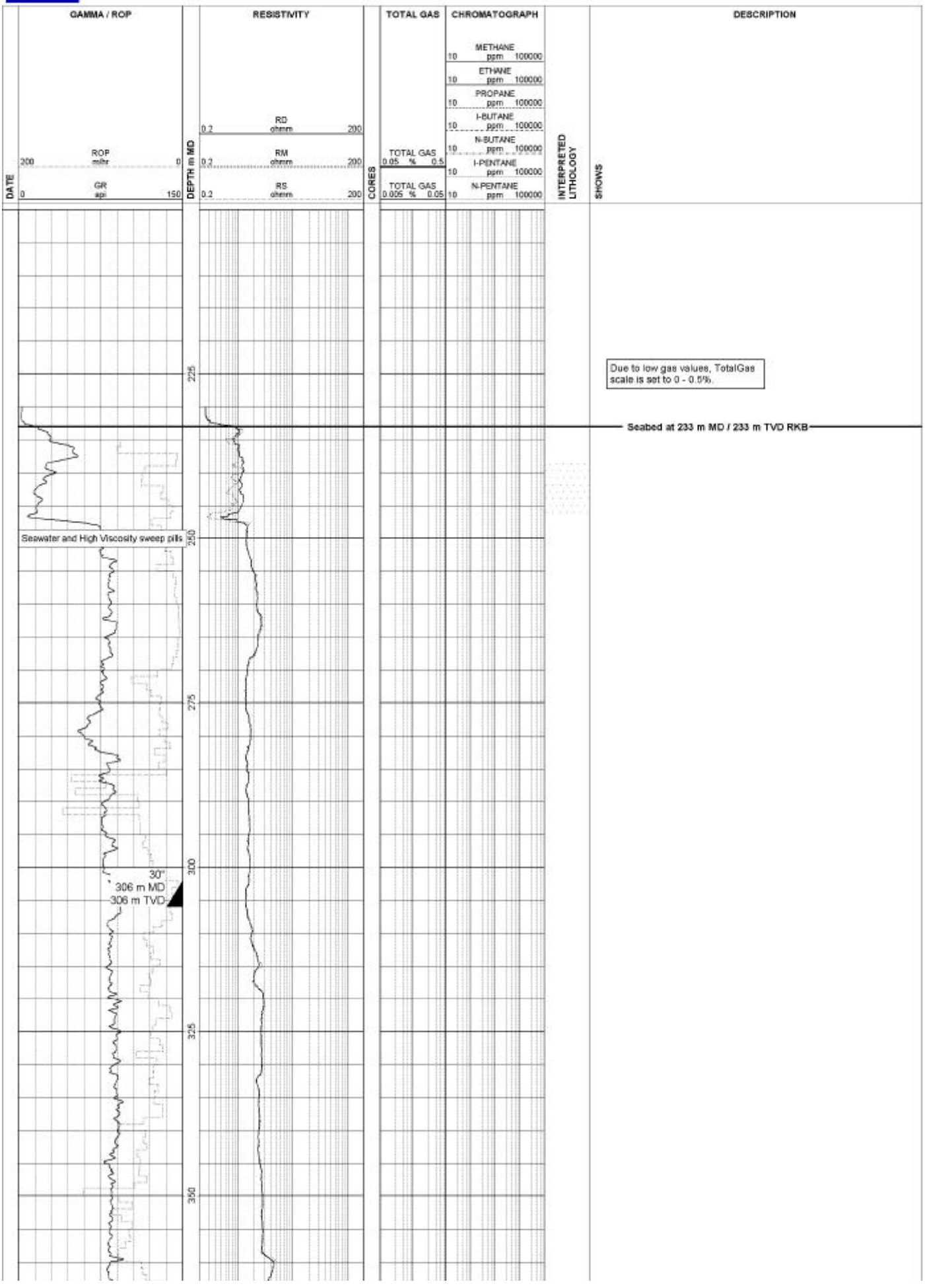

Bit 5: Smith GFDPD, 12 1/4", in at 1785m,
made 3m in 0.1 hrs
Bit 6RR: Hughes BD445, 8 1/2" in at 2092 m,
made 121m in 9.3 hrs
Bit 7: Smith PDC MA74PX, 8 1/2" in at 2213m,
made 55 m in 7.9 hrs
Bit 8: Smith Rock bit MFDGH 8 1/2", in at 2268 m, made 204 m in 24.2 hrs
1500
1600
1700
1800
1900
2000
2100
2200
2300
2400
Top Balder Fm, 1700 mTVD
Top Sele/Lista Fm, 1752 mTVD
Top Shetland Gp, 1889.9 mTVD

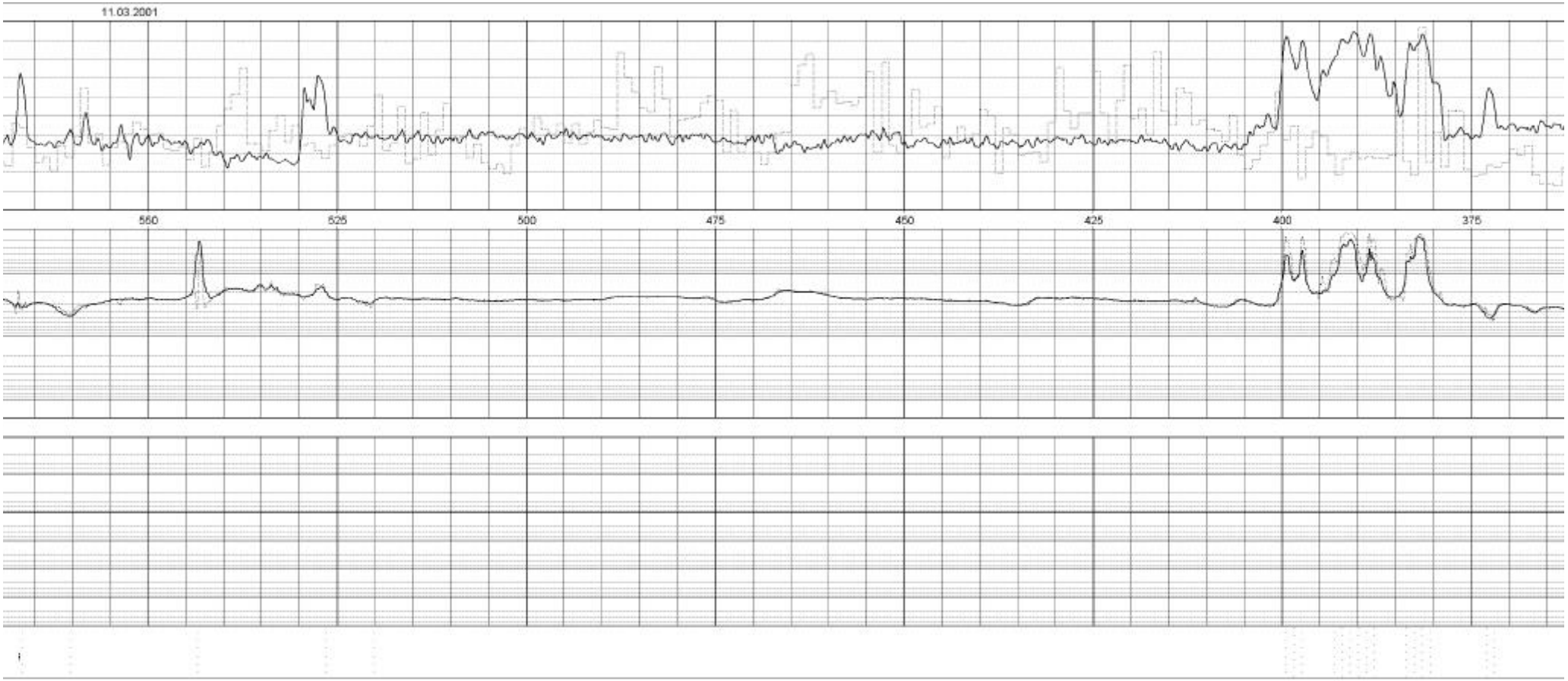

Cored Interval: 2472 - 2506 m
Bit 10: Smith PDC MA74, 8 1/2" in at 2506m, made 144m in 9 6 hrs
TD 8 1/2" section reached 08.04.2001
2649.7 mTVD (2650 mMD)
Well plugged back and sidetracked to new well 34/7-31 A
Top Cromer Knoll, 2460.3 mTVD
Top Draupne Fm, 2470.8 mTVD
Top Heather Fm, 2518.7 mTVD
Top Brent Gp, 2602.2 mTVD
2500
2600
2700
2800
2900
COMMENTS
WOB average
0 20 40
metric tonnes
ROP Avg
0 100 200
metre per hr
DEPTH - m
TVD
RPM Tot Av.
0 200 400
rev per min
Torque
0 20 40
kilo n-m
Temp Mud Out Av
0 50
celsius
Avg Total Gas
0 4
%
D exp
0.2 2
Interpreted Lithology
Pore Press Est
1 2
grams per cc eq
ECD Avg
1 2
gram per cc
Dens Mud In Avg
1 2
gram per cc

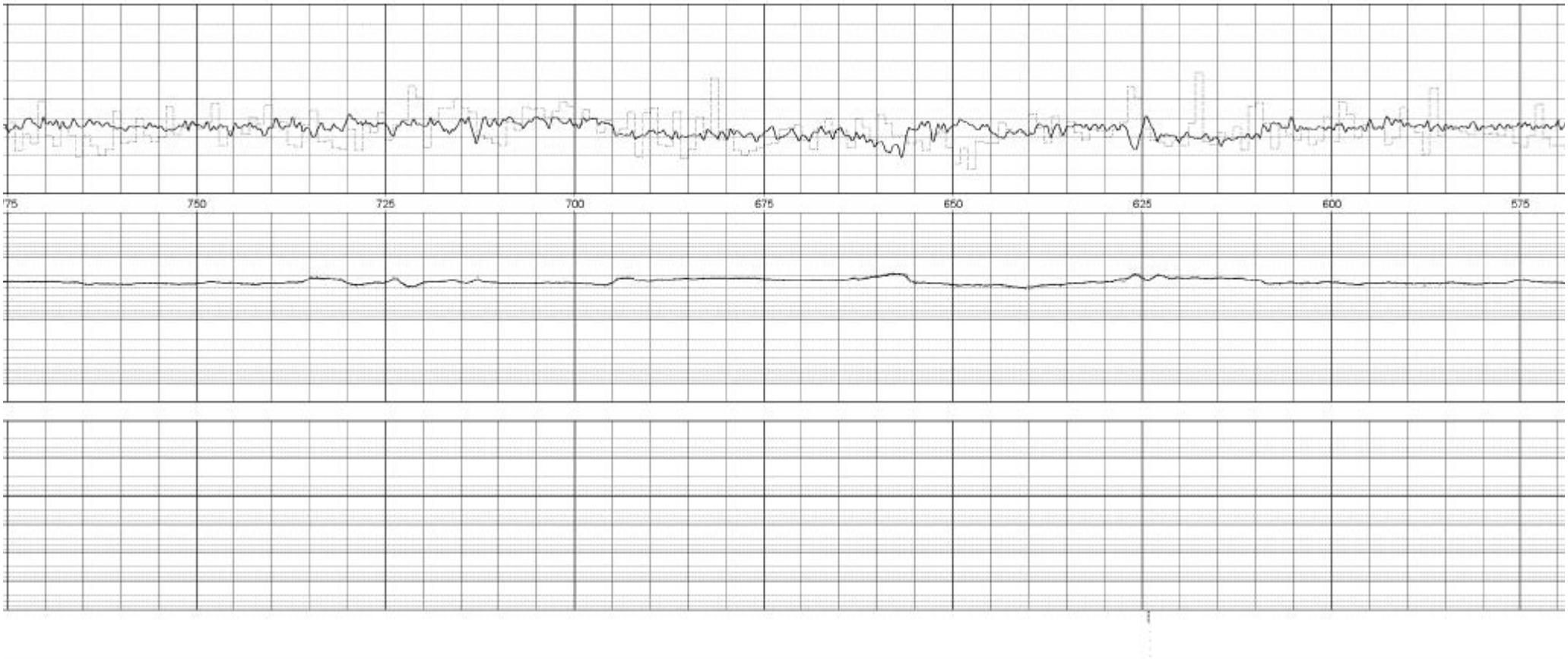
NORSK HYDRO WELLSITE LITHOLOG

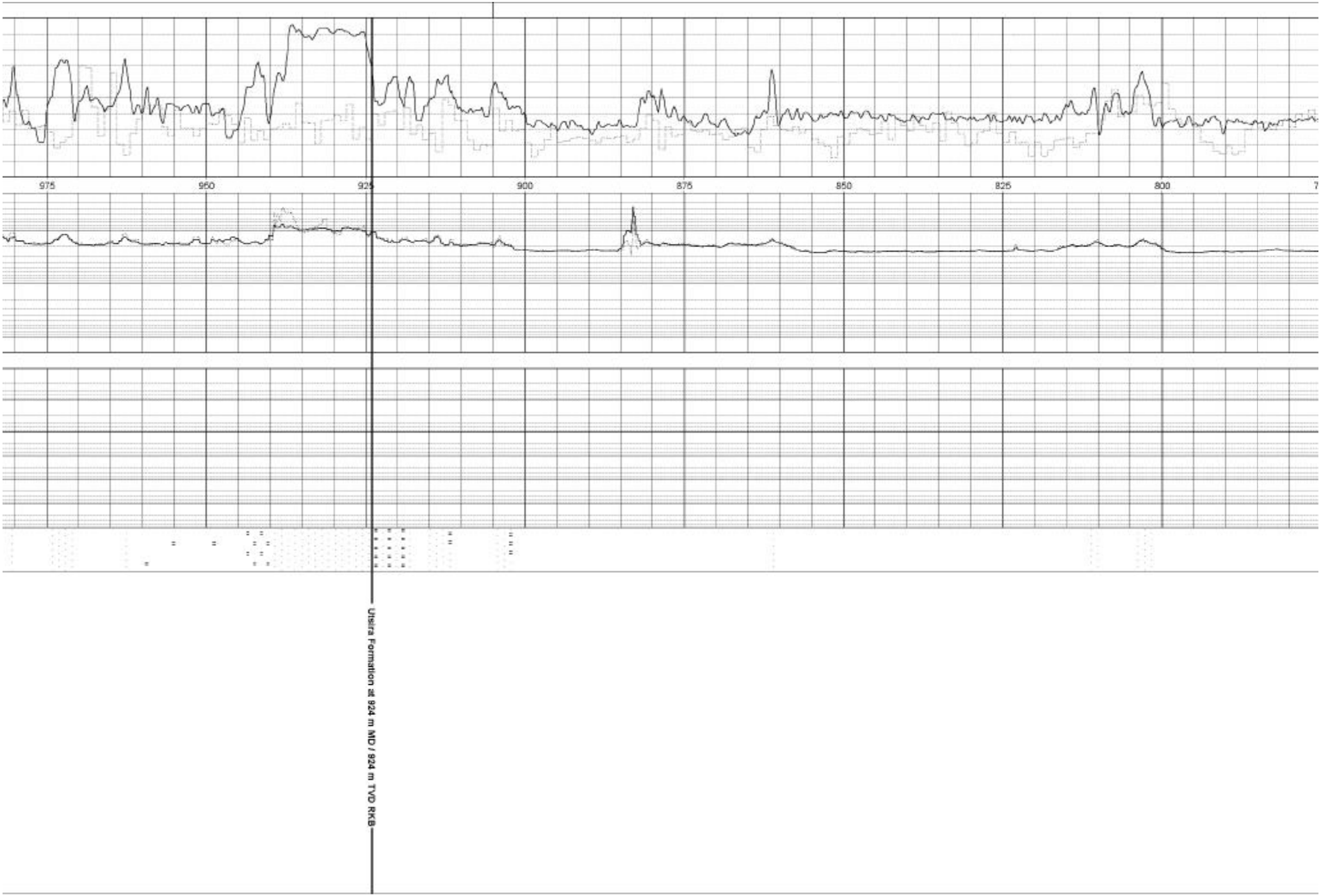
Scale 1:500

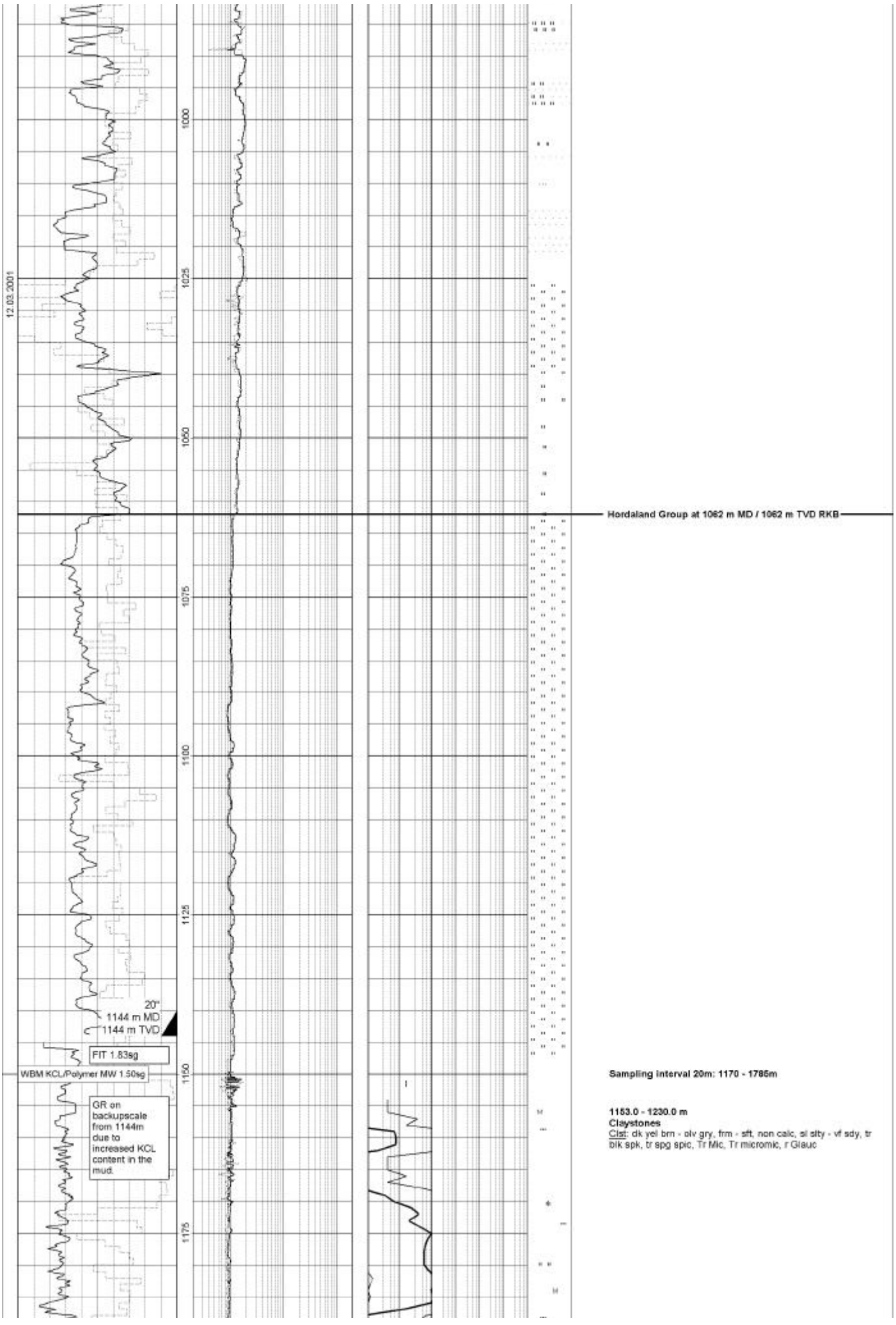
Well	34/7-31	Platform	SCARABEO 6	Geologists	B.Schønningsen, C.Dons, Å.Halvorsen, K.Kalgraff, E.Skottlien
Field	BORG NORD	RKB-MSL	26.0 m		
Licence	PL 089	Water depth	207.0 m		

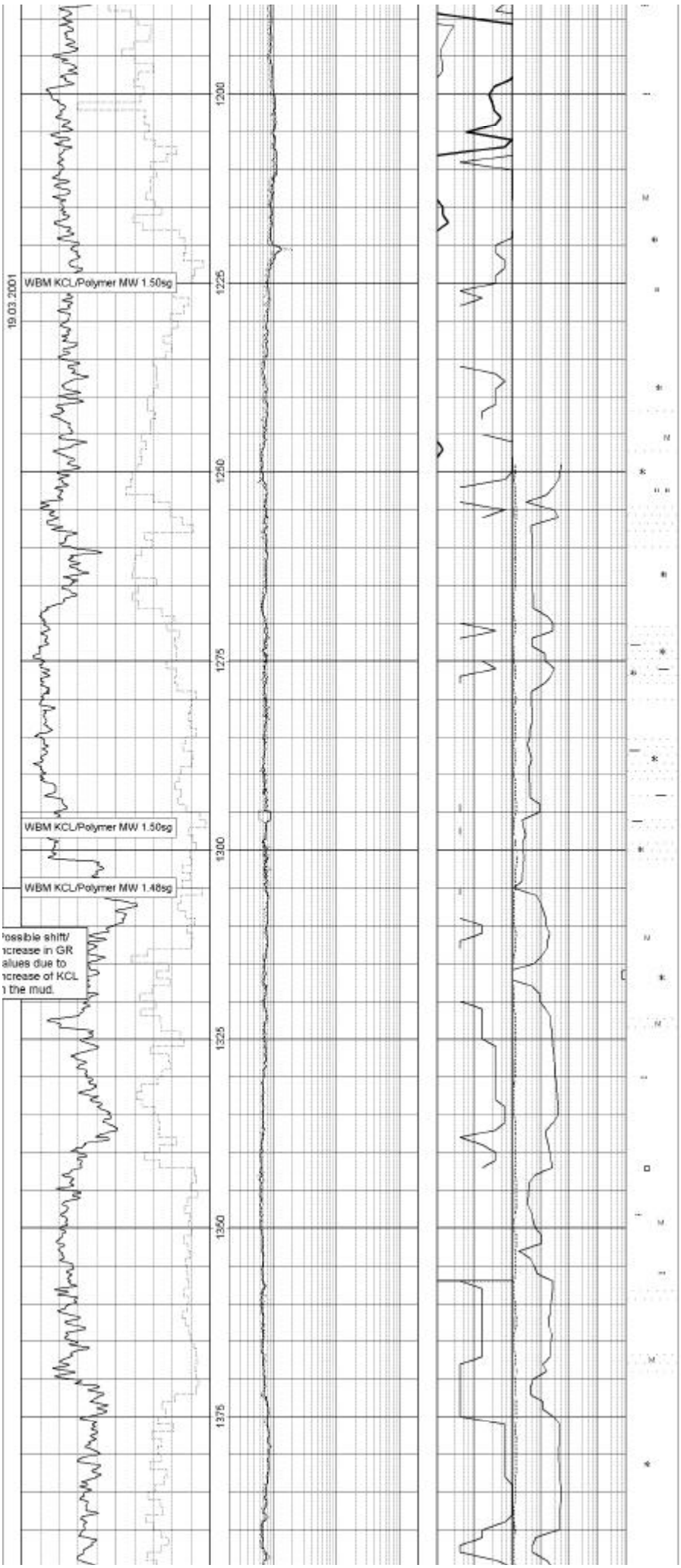



11.03.2001
550
525
500
475
450
425
400
375


775
750
725
700
675
650
625
600
575


975
950
925
900
875
850
825
800
Utsira Formation at 924 m MD / 924 m TVD RKB


12.03.2001
1000
1025
1050
Hordaland Group at 1062 m MD / 1062 m TVD RKB
1075
1100
1125
20"
1144 m MD
1144 m TVD
FIT 1.83sg
WBM KCL/Polymer MW 1.50sg
1150
GR on backupscale from 1144m due to increased KCL content in the mud.
1175
Sampling interval 20m: 1170 - 1785m
1153.0 - 1230.0 m
Claystones
Clst: dk yel brn - olv gry, frm - sft, non calc, sl slty - vf sdy, tr blk spk, tr spg spic, Tr Mic, Tr micromic, r Glauc



1230.0 - 1268.0 m
Claystones with minor Sand
Clst: dk gn gry - gn blk, frm, loc slty, non calc, tr Glauc, r micromic

Sst: clr - mky Qtz, f - m, r crs, abrnd, mod srt

1268.0 - 1301.0 m
Sand with minor Claystones
Sst: clr - trnsl Qtz, vf - crs, pred f - crs, r v crs, gen lse, occ Sst agg: m lt gry - lt gn gry, arg, Glauc

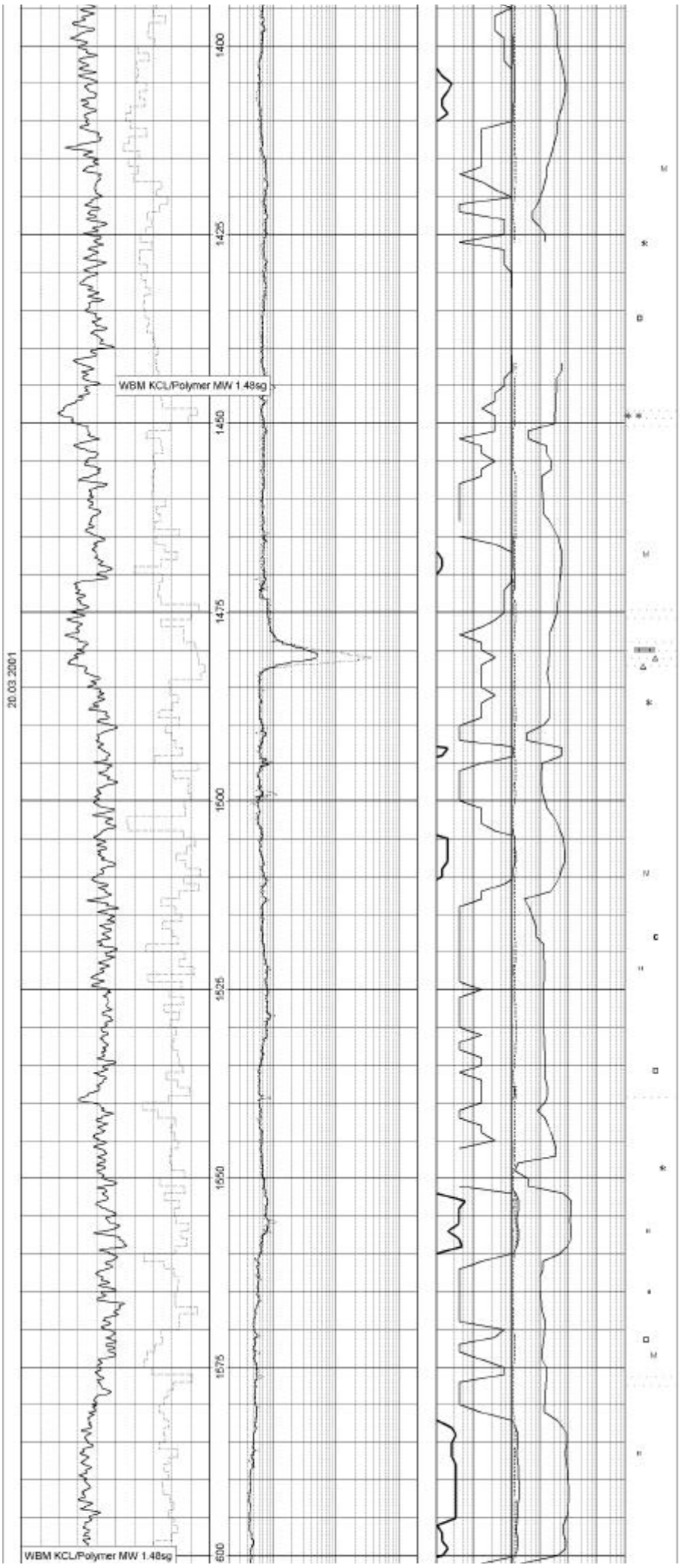
Clst: olv gry, dk gn gry, frm, non calc, loc slty, Tr - occ abd Glauc, r micropyr

1301.0 - 1497.0 m
Claystones with minor Sands
Clst: olv gry, dk gn gry - gn blk, frm, sbblky, non calc, mnr vf sdy, micromic, dsm micropyr, Tr Glauc, occ Pyr Nod

Sst: clr - trnsl, Tr mky Qtz, vf - crs, r v crs, rndd - sbang, pr srt, lse

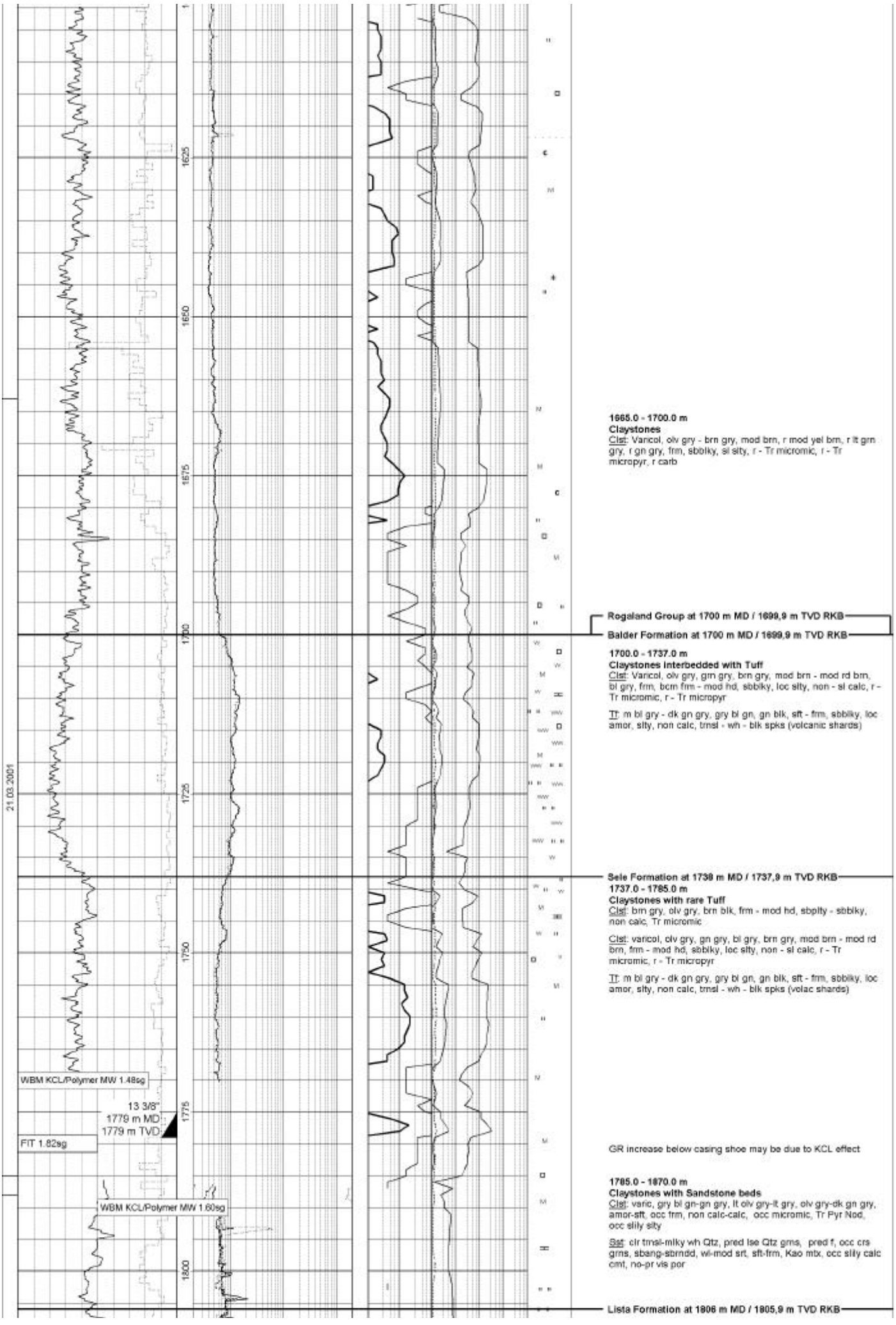
Sst: yel gry - lt gn gry, clr - trnsl Qtz, vf - m, pred f, sbrndd, mod - wl srt, fri - frm, l.P lse, non calc, arg Mtrx, abd Glauc, Tr Mic, r Pyr Nod, pr vis por

Sst: wh - yel gry, clr - trnsl Qtz, f - m, r crs, sbrndd, mod srt, pred lse, mnr calc cmt, r sil cmtd agg, loc arg, Tr Mic, sl Glauc, pr vis por



1470.0 - 1482.0 m
Sandstone
Sst: wh-yel gry, clr-trnsl Qtz, f-m, r crs, sbrnd, mod srtd, gen lse, mnr v calc cmtd, tr hd-brittle silic cmtd Agg, arg-cln, sl Glauc, tr Mic, pr-no vis Por

1497.0 - 1665.0 m
Claystones
Clst: olv gry, dk gn gry, bcm also brn gry, frm, sbblky, non calc, occ sl slty, r - Tr micromic, non - Tr micropyr, r carb, r Glauc



1665.0 - 1700.0 m
Claystones
Clst: Varicol, olv gry - brn gry, mod brn, r mod yel brn, r lt grn gry, r gn gry, frm, sbblky, sl slty, r - Tr micromic, r - Tr micropyr, r carb

1700.0 - 1737.0 m
Claystones interbedded with Tuff
Clst: Varicol, olv gry, grn gry, brn gry, mod brn - mod rd brn, bl gry, frm, bcm frm - mod hd, sbblky, loc slty, non - sl calc, r - Tr micromic, r - Tr micropyr

Tf: m bl gry - dk gn gry, gry bl gn, gn blk, sft - frm, sbblky, loc amor, slty, non calc, trnsl - wh - blk spks (volcanic shards)

1737.0 - 1785.0 m
Claystones with rare Tuff
Clst: brn gry, olv gry, brn blk, frm - mod hd, sbplty - sbblky, non calc, Tr micromic

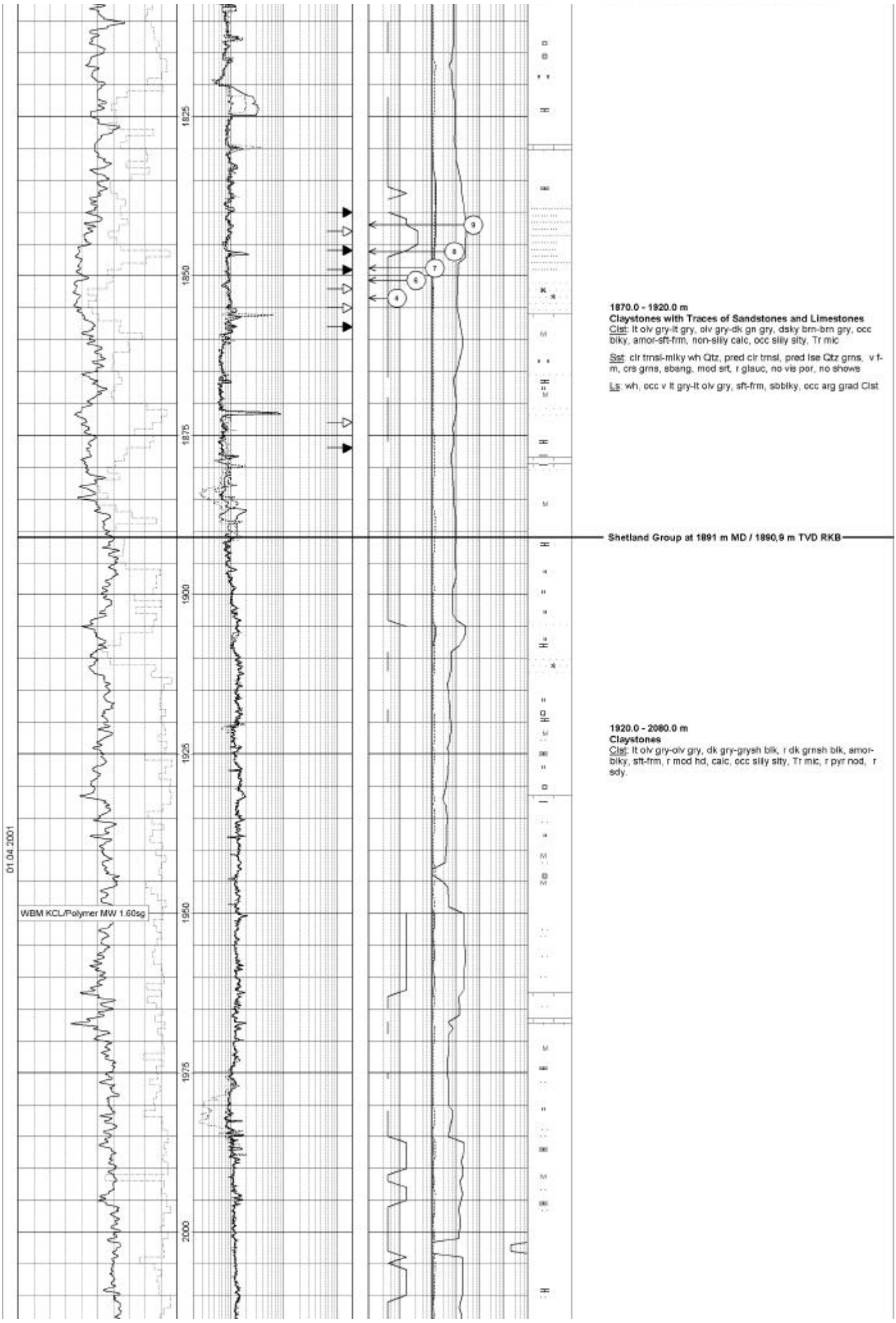
Clst: varicol, olv gry, gn gry, bl gry, brn gry, mod brn - mod rd brn, frm - mod hd, sbblky, loc slty, non - sl calc, r - Tr micromic, r - Tr micropyr

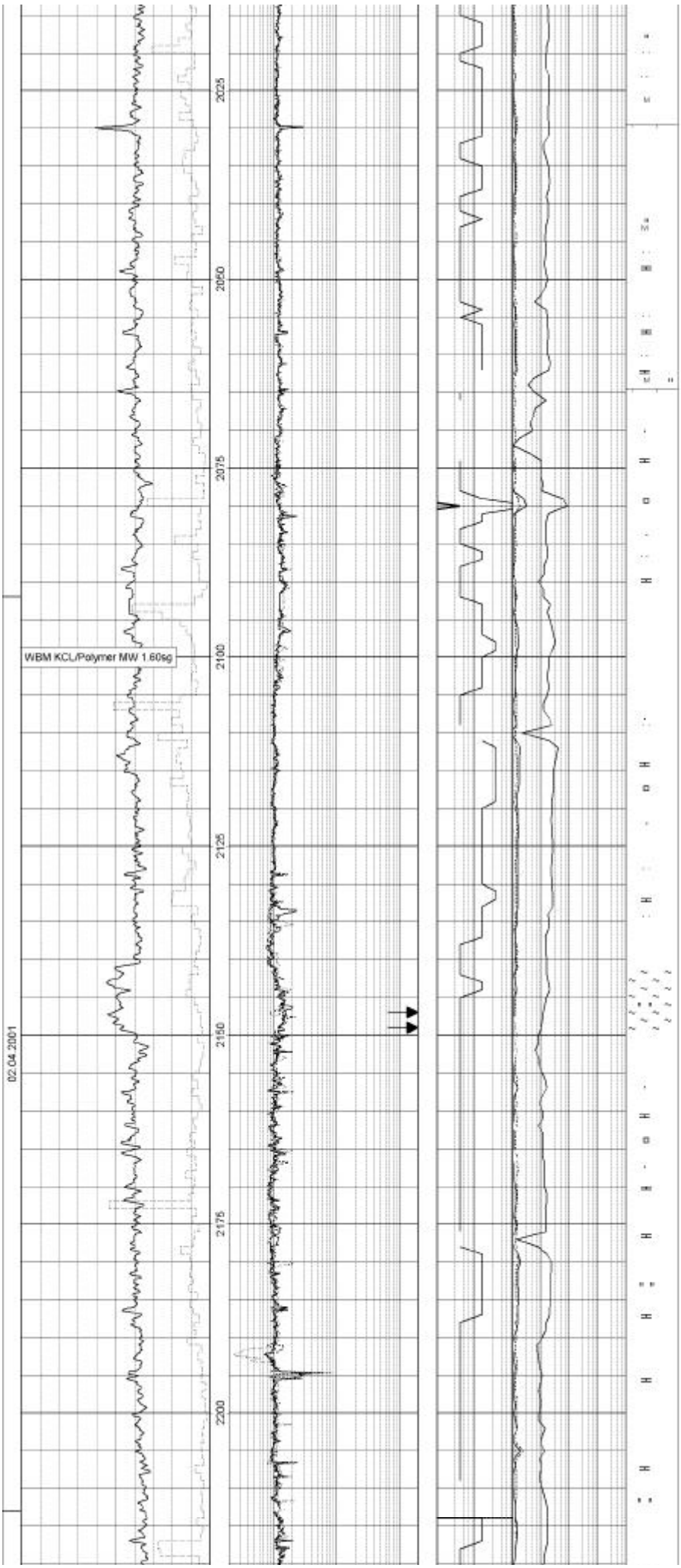
Tf: m bl gry - dk gn gry, gry bl gn, gn blk, sft - frm, sbblky, loc amor, slty, non calc, trnsl - wh - blk spks (volac shards)

GR increase below casing shoe may be due to KCL effect

1785.0 - 1870.0 m
Claystones with Sandstone beds
Clst: varic, gry bl gn-gn gry, lt olv gry-lt gry, olv gry-dk gn gry, amor-sft, occ frm, non calc-calc, occ micromic, Tr Pyr Nod, occ slily silty

Sst: clr trnsl-mlky wh Qtz, pred lse Qtz grns, pred f, occ crs grns, sbang-sbrndd, wl-mod srt, sft-frm, Kao mtx, occ slily calc cmt, no-pr vis por


01.04.2001
WBM KCL/Polymer MW 1.60sg
1825
1850
1875
1900
1925
1950
1975
2000
3
4
5
6
7
8
Shetland Group at 1891 m MD / 1890,9 m TVD RKB
1870.0 - 1920.0 m
Claystones with Traces of Sandstones and Limestones
Clst: lt olv gry-lt gry, olv gry-dk gn gry, dsky brn-brn gry, occ blky, amor-sft-frm, non-slty calc, occ slty sity, Tr mic
Sst: clr trnsl-mlky wh Qtz, pred clr trnsl, pred lse Qtz grns, v f-m, crs grns, sbang, mod srt, r glauc, no vis por, no shows
Ls: wh, occ v lt gry-lt olv gry, sft-frm, sbblky, occ arg grad Clst
1920.0 - 2080.0 m
Claystones
Clst: lt olv gry-olv gry, dk gry-grysh blk, r dk grnsh blk, amor-blky, sft-frm, r mod hd, calc, occ slty sity, Tr mic, r pyr nod, r sdy.



2080.0 - 2140.0 m
Claystones with rare Traces of Limestone
Clst: olv gry-olv blk, dk gry-grysh blk, blky, sft-frm, mod hd, sli calc, occ sli slty, r sdy, r pyr nod

Ls: v lt gry, sft, sbblky, arg, microxln

2140.0 - 2170.0 m
Claystones with minor Limestones
Clst: (1) m dk gry-dk gry-grysh blk, blky, sft-frm, mod hd, sli calc, occ sli slty

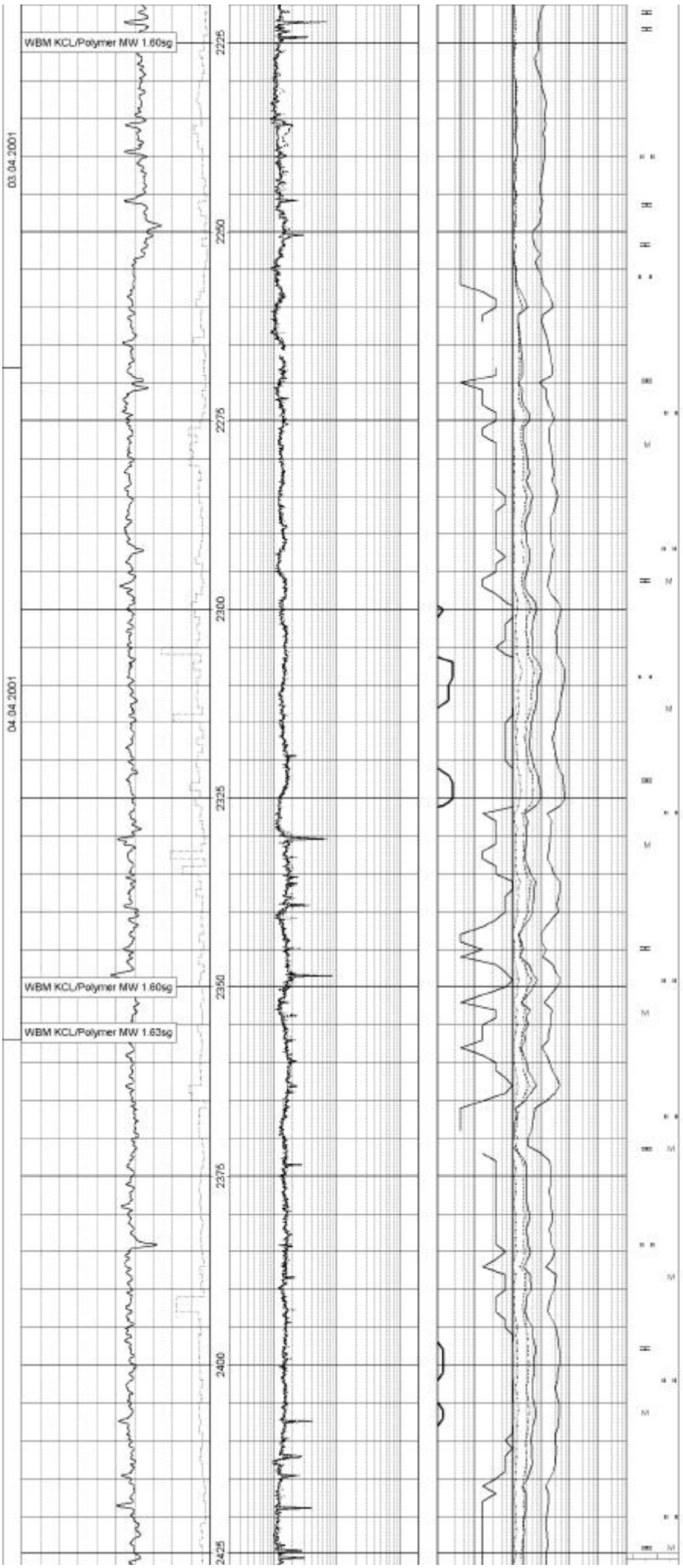
Clst: (2) mod brn-grysh brn, blky-sbblky, sft-frm, calc grad Mrl, slift slty

Ls: v lt gry-lt olv gry, sft, blky, arg, microxln

2170.0 - 2210.0 m
Claystones
Clst: m dk gry-dk gry-grysh blk, blky, sft-frm, mod hd, sli calc, occ sli slty

2210.0 - 2270.0 m
Claystones with rare Traces of Limestones
Clst: m dk gry-dk gry-grysh blk, dk gnsh gry, blky, frm-mod hd, pred frm, non-sli calc, occ sli slty

Ls: lt gry-dk gry, blky, sft, v arg, microxln



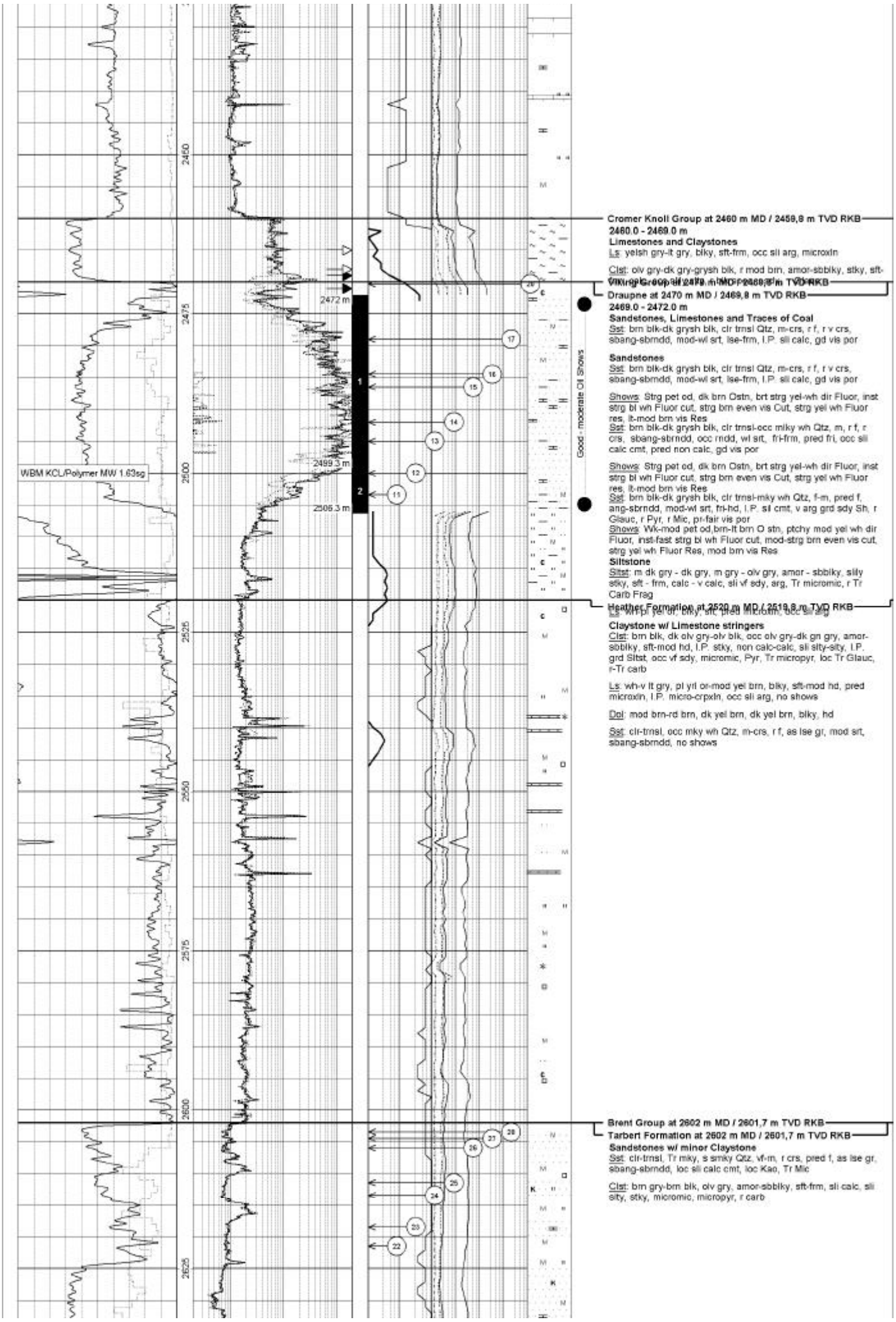
2270.0 - 2340.0 m
Claystones
Clst: olv gry-dk gry-grysh blk, r dk-gnsh gry, blky, frm-mod hd, non-sli calc, pred non calc, occ sli silty, r micromic

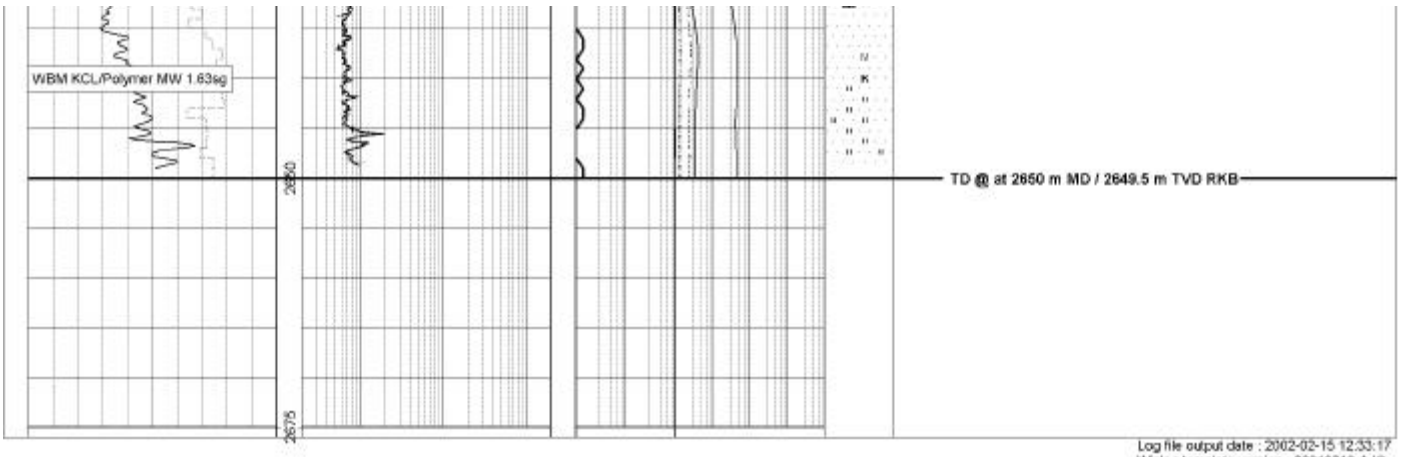
2340.0 - 2450.0 m
Claystones with minor Limestones and Traces of Sandstone
Clst: olv gry-dk gry-grysh blk, blky, stky, frm-occ mod hd, non-slily calc, sli silty, r micromic

Ls: yel gry-gry org, occ v f blk sptd, frm, pred slily arg

Sst: v lt gry-yel gry, clr trnsl-milky wh Qtz, v f, sbrnnd-rndd, wl srt, frm-mod hd, slil calc cmt, occ arg, no vis por, no shows

Ls: lt bl gry, v f blk spt, sft-frm, non-slily arg


2450
2475
2500
2525
2550
2575
2600
2625
2472 m
2499.3 m
2506.3 m
WBM KCL/Polymer MW 1.63sg
Good - moderate Oil Shows
Cromer Knoll Group at 2460 m MD / 2459,8 m TVD RKB
2460.0 - 2469.0 m
Limestones and Claystones
Ls: yelsh gry-lt gry, blky, sft-frm, occ sli arg, microxln
Clst: olv gry-dk gry-grysh blk, r mod brn, amor-sbblky, stky, sft-
Draupne at 2470 m MD / 2469,8 m TVD RKB
2469.0 - 2472.0 m
Sandstones, Limestones and Traces of Coal
Sst: brn blk-dk grysh blk, clr trnsl Qtz, m-crs, r f, r v crs, sbang-sbrndd, mod-wl srt, lse-frm, l.P. sli calc, gd vis por
Sandstones
Sst: brn blk-dk grysh blk, clr trnsl Qtz, m-crs, r f, r v crs, sbang-sbrndd, mod-wl srt, lse-frm, l.P. sli calc, gd vis por
Shows: Strg pet od, dk brn Ostn, brt strg yel-wh dir Fluor, inst strg bl wh Fluor cut, strg brn even vis Cut, strg yel wh Fluor res, lt-mod brn vis Res
Sst: brn blk-dk grysh blk, clr trnsl-occ mlky wh Qtz, m, r f, r crs, sbang-sbrndd, occ rndd, wl srt, fri-frm, pred fri, occ sli calc cmt, pred non calc, gd vis por
Shows: Strg pet od, dk brn Ostn, brt strg yel-wh dir Fluor, inst strg bl wh Fluor cut, strg brn even vis Cut, strg yel wh Fluor res, lt-mod brn vis Res
Sst: brn blk-dk grysh blk, clr trnsl-mky wh Qtz, f-m, pred f, ang-sbrndd, mod-wl srt, fri-hd, l.P. sil cmt, v arg grd sdy Sh, r Glauc, r Pyr, r Mic, pr-fair vis por
Shows: Wk-mod pet od,brn-lt brn O stn, ptchy mod yel wh dir Fluor, inst-fast strg bl wh Fluor cut, mod-strg brn even vis cut, strg yel wh Fluor Res, mod brn vis Res
Siltstone
Sltst: m dk gry - dk gry, m gry - olv gry, amor - sbblky, slity stky, sft - frm, calc - v calc, sli vf sdy, arg, Tr micromic, r Tr Carb Frag
Heather Formation at 2520 m MD / 2519,8 m TVD RKB
Claystone w/ Limestone stringers
Clst: brn blk, dk olv gry-olv blk, occ olv gry-dk gn gry, amor-sbblky, sft-mod hd, l.P. stky, non calc-calc, sli slty-silty, l.P. grd Sltst, occ vf sdy, micromic, Pyr, Tr micropyr, loc Tr Glauc, r-Tr carb
Ls: wh-v lt gry, pl yl or-mod yel brn, blky, sft-mod hd, pred microxln, l.P. micro-crpxln, occ sli arg, no shows
Dol: mod brn-rd brn, dk yel brn, dk yel brn, blky, hd
Sst: clr-trnsl, occ mky wh Qtz, m-crs, r f, as lse gr, mod srt, sbang-sbrndd, no shows
Brent Group at 2602 m MD / 2601,7 m TVD RKB
Tarbert Formation at 2602 m MD / 2601,7 m TVD RKB
Sandstones w/ minor Claystone
Sst: clr-trnsl, Tr mky, s smky Qtz, vf-m, r crs, pred f, as lse gr, sbang-sbrndd, loc sli calc cmt, loc Kao, Tr Mic
Clst: brn gry-brn blk, olv gry, amor-sbblky, sft-frm, sli calc, sli slty, stky, micromic, micropyr, r carb



Log file output date : 2002-02-15 12:33:17
Winlog template version : 20010210-AJC

NORSK HYDRO WELLSITE LITHOLOG

Scale 1:500

Well	34/7-31 A	Platform	Scarabeo 6	Geologists	A. Halvorsen, M. Henderson
Field	Borg Nord	RKB-MSL	26m		
Licence	PL089	Water depth	207m		

GAMMA / ROP: ROP 200–0 m/hr; GR 0–150 api
RESISTIVITY: RD 0.2–200 ohmm; RM 0.2–200 ohmm; RS 0.2–200 ohmm
TOTAL GAS: GAS 1–100 %; GAS 0.01–1 %
CHROMATOGRAPH: METHANE, ETHANE, PROPANE, I-BUTANE, N-BUTANE, I-PENTANE, N-PENTANE 10–100000 ppm

DATE: 14.04.01

DEPTH m MD: 1775, 1800, 1825, 1850, 1875, 1900, 1925

13 3/8"
1779 m MD
1779 m TVD

Bit # 2, Smith MRS74PX

OBM Versavert MW 1.50sg

Inc:0.4°
Az:265.3°
1802.6 m

Inc:0.4°
Az:245.7°
1830.0 m

Inc:5.4°
Az:74.7°
1858.2 m

Inc:9.5°
Az:74.8°
1886.5 m

Inc:12.0°
Az:75.6°
1914.0 m

Kick off at 1802 m MD / m TVD RKB

Top Lista at 1806 m MD / 1805.8 m TVD RKB

Clst: brn gry, olv gry, grn gry, frm-mod hd, sli calc, micromic, Tr Pyr, Tr carb

Sst: v lt gry-lt gry, clr-trnsl Qtz, occ yel or, pred f, r m, lse, sbang-sbrnd, wl-mod srt, occ Kao Mtrx, Tr Mic, r Pyr.

Clst: bcm pred olv gry, else as 1805m

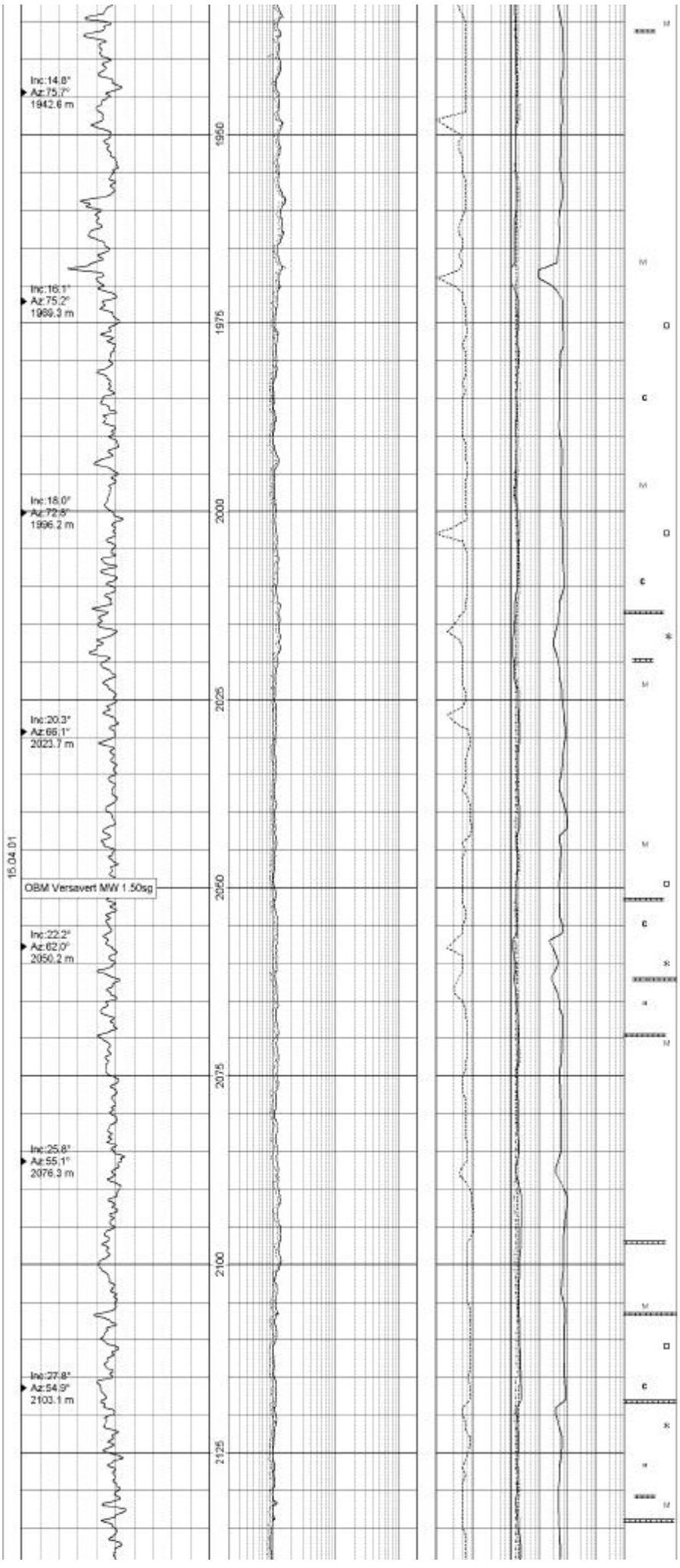
Clst: lt olv gry-olv gry, occ brn gry, else as 1805m

Ls: wh-v lt gry, lt gry, sbblky, mod hd, arg l.P.

Sst: lt gry-lt grn gry-v lt gry, pl yel or, vf-r crs, pred f, lse, sbang-sbrnd, wl-mod srt, occ Kao Mtrx, Tr Mic, r Pyr.

Top Shetland at 1892 m MD / 1891.4 m TVD RKB

Ls: pl yel or-dk yel brn, blky, mod hd, crpxln.



Clst: olv gry, lt brn gry, sbblky, mod hd, calc, Tr Pyr, Tr micromic, r carb.

r Ls: wh-v lt gry, blky, mod hd, crpxln.

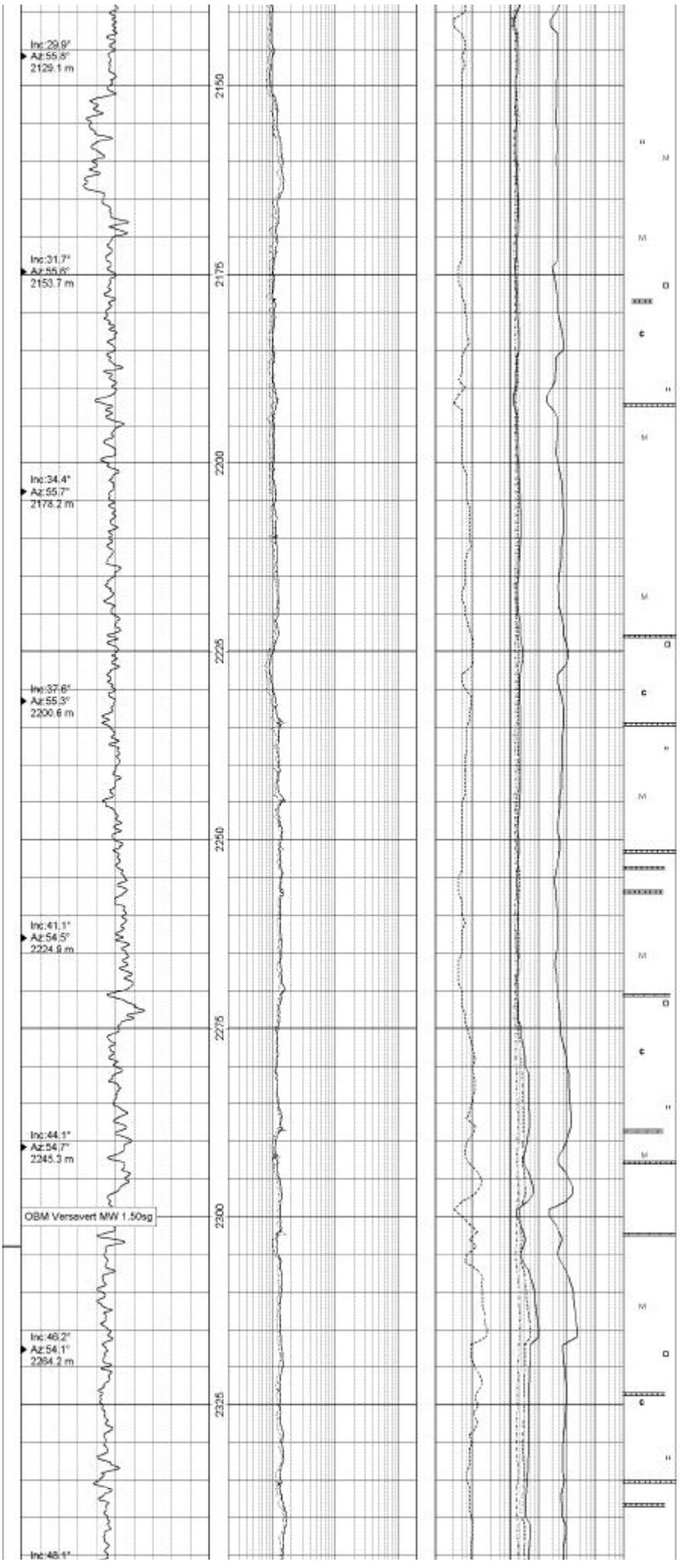
Tr Clst: mod brn, frm-mod hd, sli-mod calc, slty.

Clst: olv gry, sbblky, mod hd, calc, micromic, micropyr, Tr carb, Tr Glau.

Ls: wh-lt gry, pl yel or, mod hd, blky, micro-crpxln.

Clst: olv blk, mod hd, fri-brit, def, mod calc, Tr carb, loc Tr Glau, Tr micromic, loc Tr pyr

Ls: v lt gry, mod hd, fri, crp-microdn, cln.



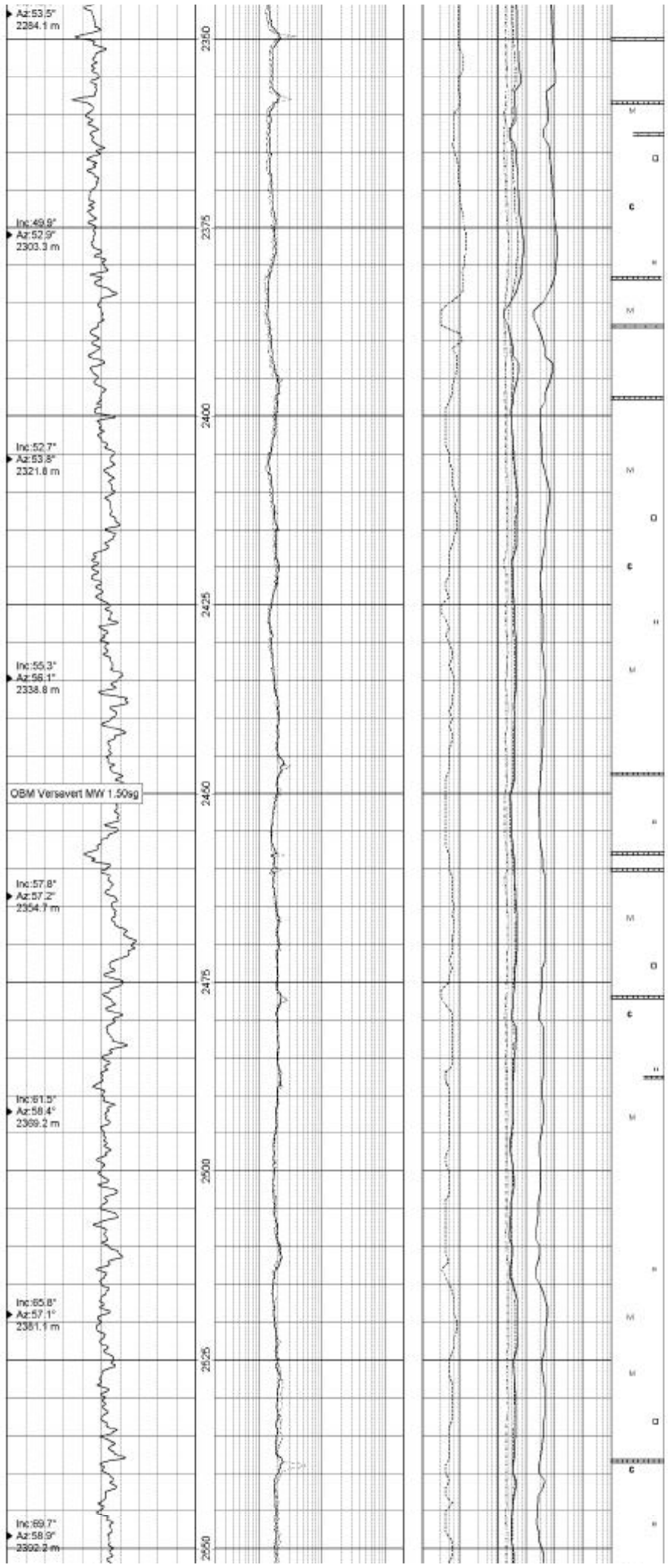
Dol: pl/dk yel brn, fri-hd, def, micro-crpxln.

Clst: gry brn-mod brn, frm-mod hd, def, non-mod calc, sli-mod silty, m micromic,

Clst: dk gry-olv blk, mod hd, brit-fri, def, non-sli calc, pt sli silty, r micromic, r carb.

Clst: bcm dk-m dk gry, pred non calc, else as 2165m.

Dol: pl/dk yel brn, fri-hd, def, micro-crpxln.



Ls: m gry, mod hd, def, crp-microxln, sli arg

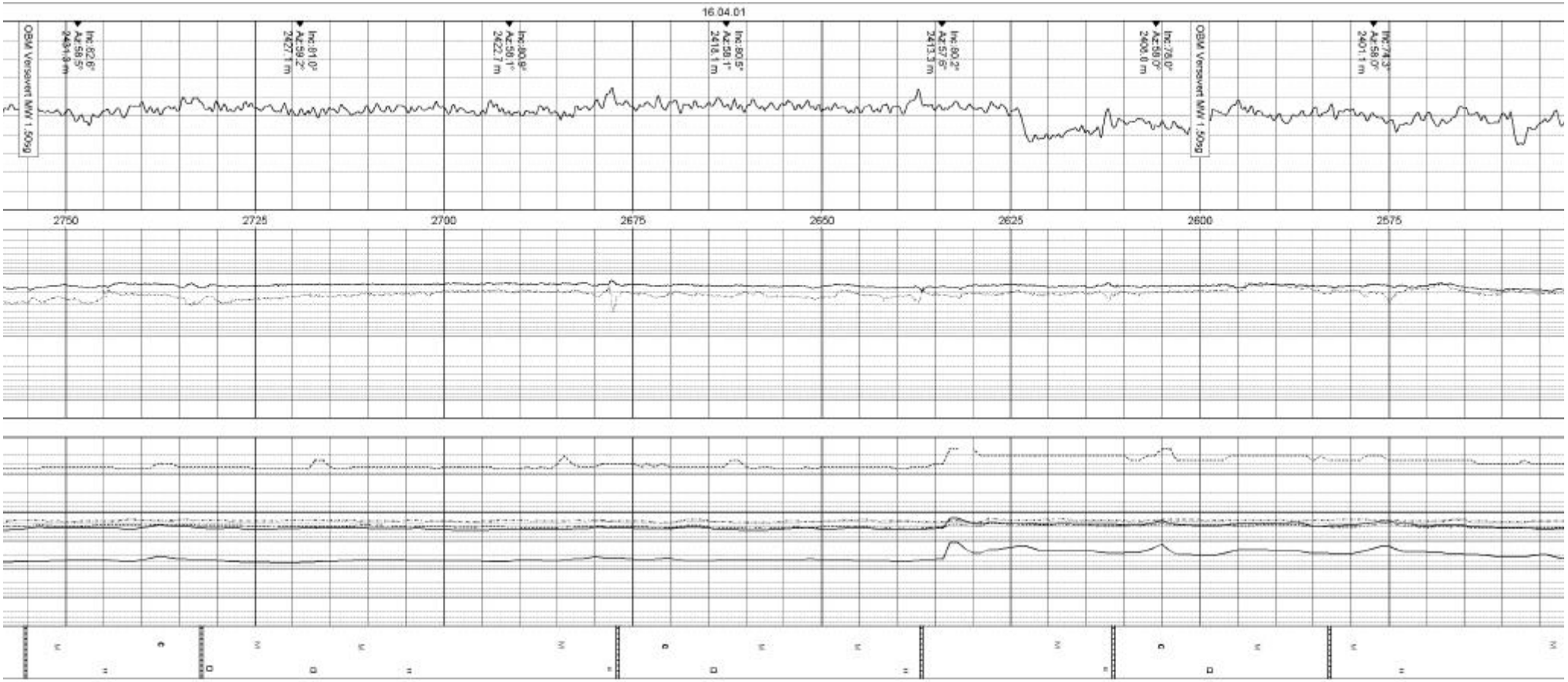
2460.0 - 2780.0 m

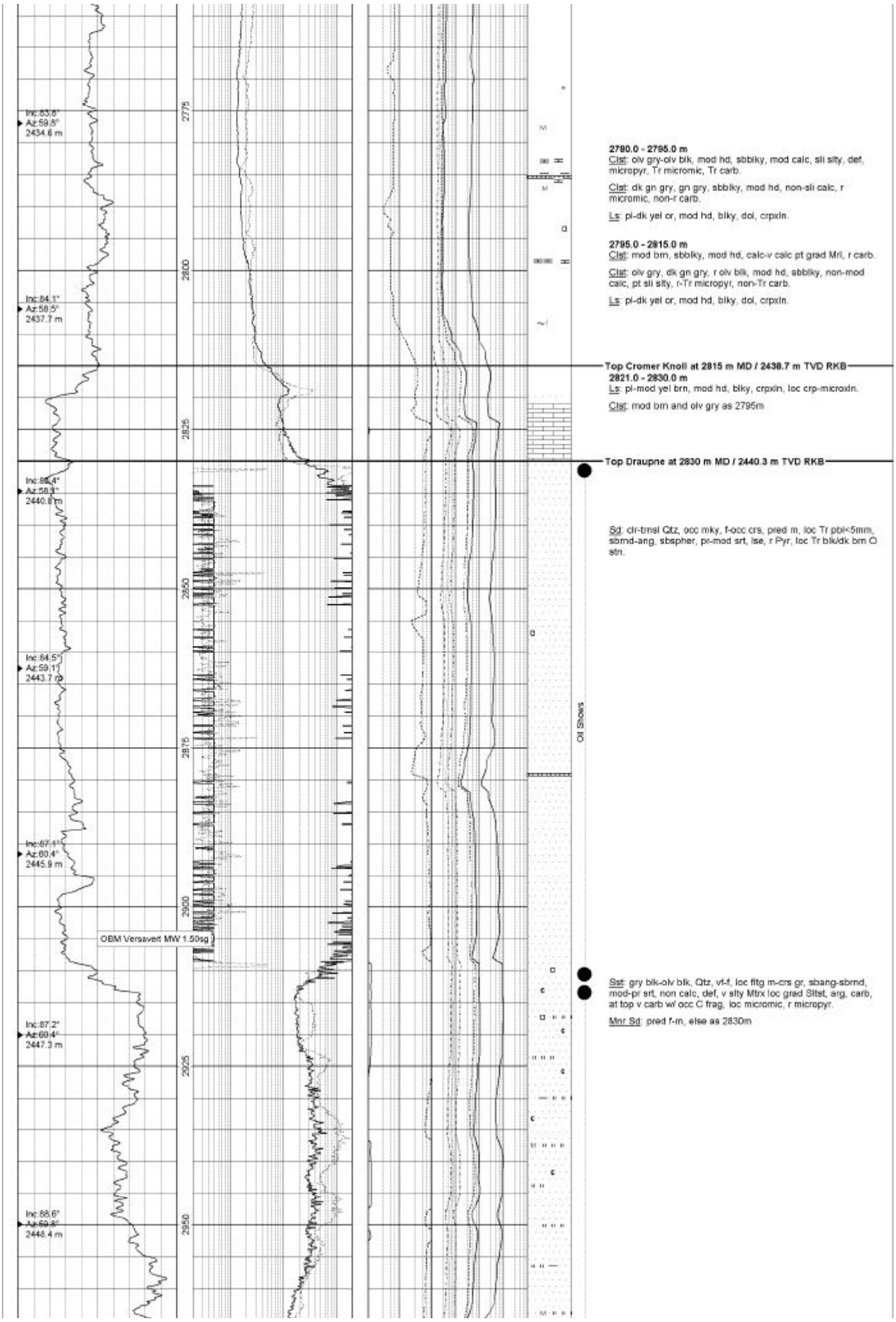
Clst: olv gry-olv blk, dk gry, frm-mod hd, sbblky, non-mod calc, sli slty, loc slty, brit-fri, def, micropyr, r micromic, Tr carb.

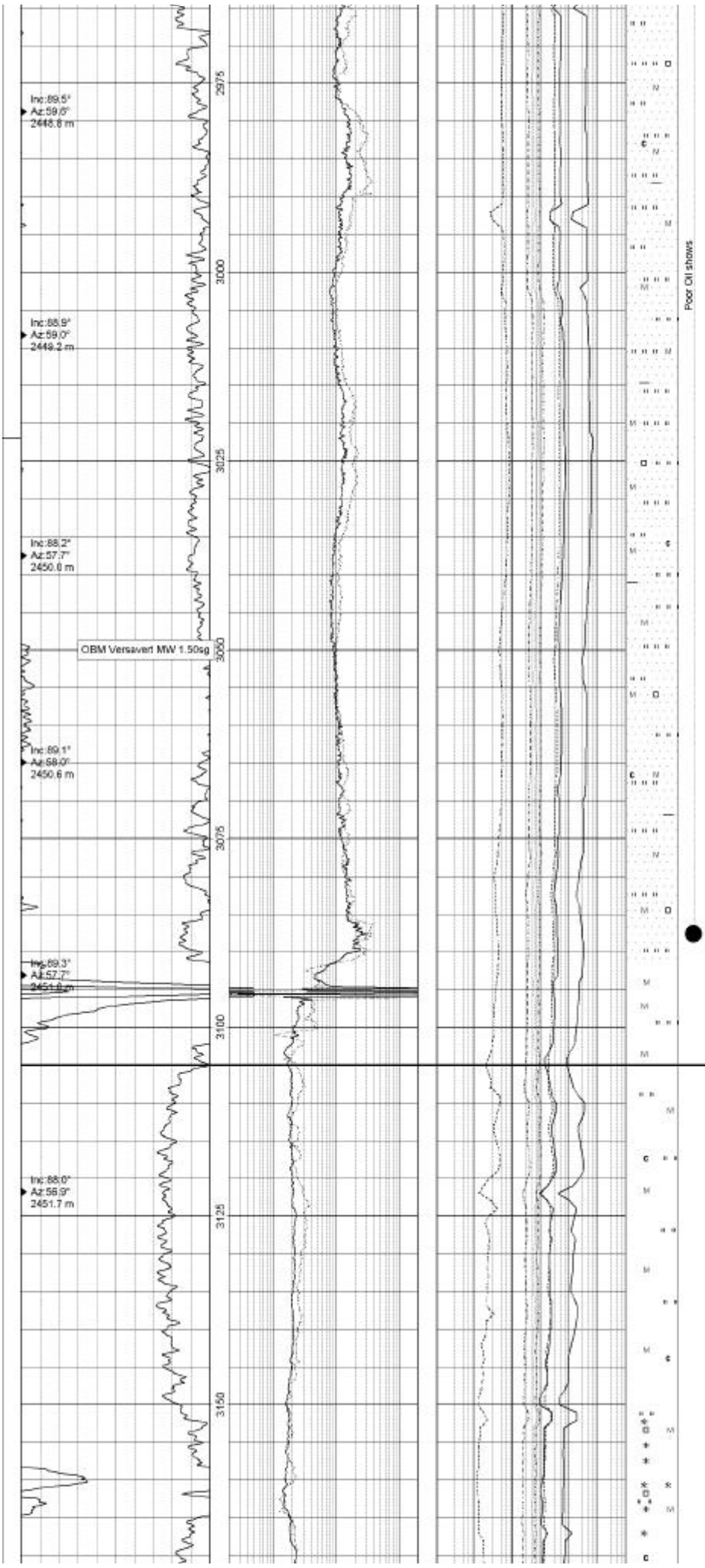
Ls: v pl or-pl yel or, dk yel brn, mod hd, blky, micro-crpxln, dol.

Ls: v lt gry, lt gry, sbblky-blky, mod hd, micro-crpxln, sli -loc v arg, loc v f sdy.

r Sst: v lt gry, clr-trnsl Qtz, v f-f, r crs, sbang-sbrnd, wl srt, calc, n.v.p., no shw.


16.04.01
OBM Versavert MW 1.505g
Inc:82.6°
Az:58.5°
2431.9 m
Inc:81.0°
Az:59.2°
2427.1 m
Inc:80.9°
Az:59.1°
2422.7 m
Inc:80.5°
Az:58.1°
2418.1 m
Inc:80.2°
Az:57.6°
2413.3 m
Inc:79.0°
Az:58.0°
2408.6 m
OBM Versavert MW 1.505g
Inc:74.3°
Az:58.0°
2401.1 m
2750
2725
2700
2675
2650
2625
2600
2575


Inc:83.6°
Az:59.8°
2434.6 m
Inc:84.1°
Az:58.5°
2437.7 m
Inc:86.4°
Az:58.3°
2440.8 m
Inc:84.5°
Az:59.1°
2443.7 m
Inc:87.4°
Az:60.4°
2445.9 m
Inc:87.2°
Az:60.4°
2447.3 m
Inc:86.6°
Az:59.8°
2448.4 m
2775
2800
2825
2850
2875
2900
2925
2950
OBM Versavert MW 1.50sg
Oil Shows
2780.0 - 2795.0 m
Clst: olv gry-olv blk, mod hd, sbblky, mod calc, sli silty, def, micropyr, Tr micromic, Tr carb.
Clst: dk gn gry, gn gry, sbblky, mod hd, non-sli calc, r micromic, non-r carb.
Ls: pl-dk yel or, mod hd, blky, dol, crpxln.
2795.0 - 2815.0 m
Clst: mod brn, sbblky, mod hd, calc-v calc pt grad Mrl, r carb.
Clst: olv gry, dk gn gry, r olv blk, mod hd, sbblky, non-mod calc, pt sli silty, r-Tr micropyr, non-Tr carb.
Ls: pl-dk yel or, mod hd, blky, dol, crpxln.
Top Cromer Knoll at 2815 m MD / 2438.7 m TVD RKB
2821.0 - 2830.0 m
Ls: pl-mod yel brn, mod hd, blky, crpxln, loc crp-microxln.
Clst: mod brn and olv gry as 2795m
Top Draupne at 2830 m MD / 2440.3 m TVD RKB
Sd: clr-trnsl Qtz, occ mky, f-occ crs, pred m, loc Tr pbl<5mm, sbrnd-ang, sbspher, pr-mod srt, lse, r Pyr, loc Tr blk/dk brn O stn.
Sst: gry blk-olv blk, Qtz, vf-f, loc fltg m-crs gr, sbang-sbrnd, mod-pr srt, non calc, def, v slty Mtrx loc grad Sltst, arg, carb, at top v carb w/ occ C frag, loc micromic, r micropyr.
Mnr Sd: pred f-m, else as 2830m



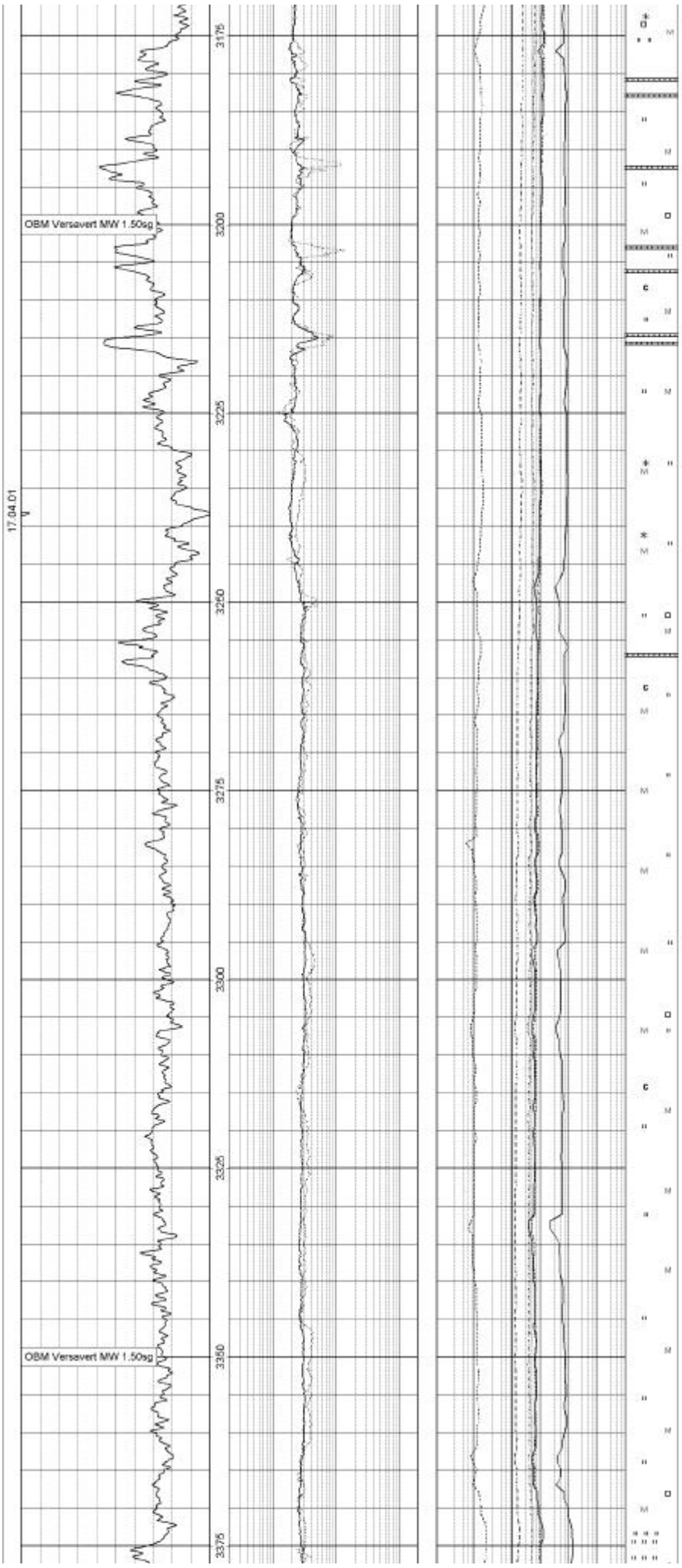
Sst: gen as 2910m bcm more slty and mic.

Clst: olv blk-m dk gry, mod hd, fri-brit, def, non calc, v slty grad Sltst, com micromic, Tr carb.

Top Heather at 3105 m MD / 2451.3 m TVD RKB

Clst: olv blk-m dk gry, mod hd, fri-brit, def, non calc, v slty grad Sltst, com micromic, Tr carb, loc abd Glauc.

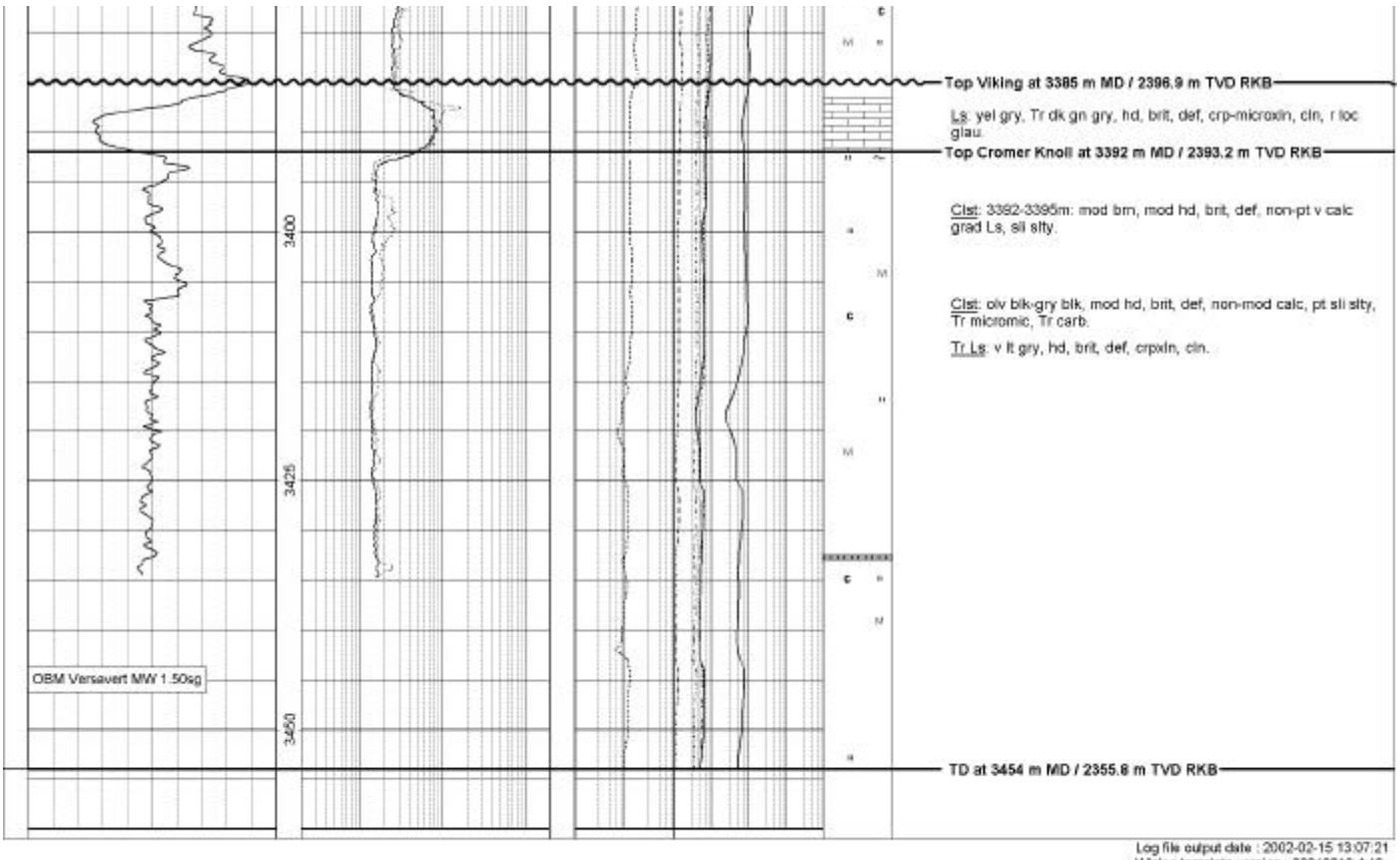
Clst: abd micropyr, Tr Pyr Nod, else as above



Clst: olv blk, mod hd, sbblky, non - sl calc, slty, micromic, micropyr, carb, loc Tr carb

Ls: dk yel brn - dsky yel brn, mod hd, blky, crpxln - microxln, sl arg, sl carb,

Clst: gen a.a: olv blk-gry blk, mod hd, fri-brit, def, non calc, slty occ grad Sltst, micromic, loc Tr micropyr, Tr carb.

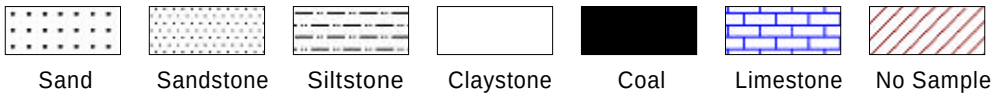


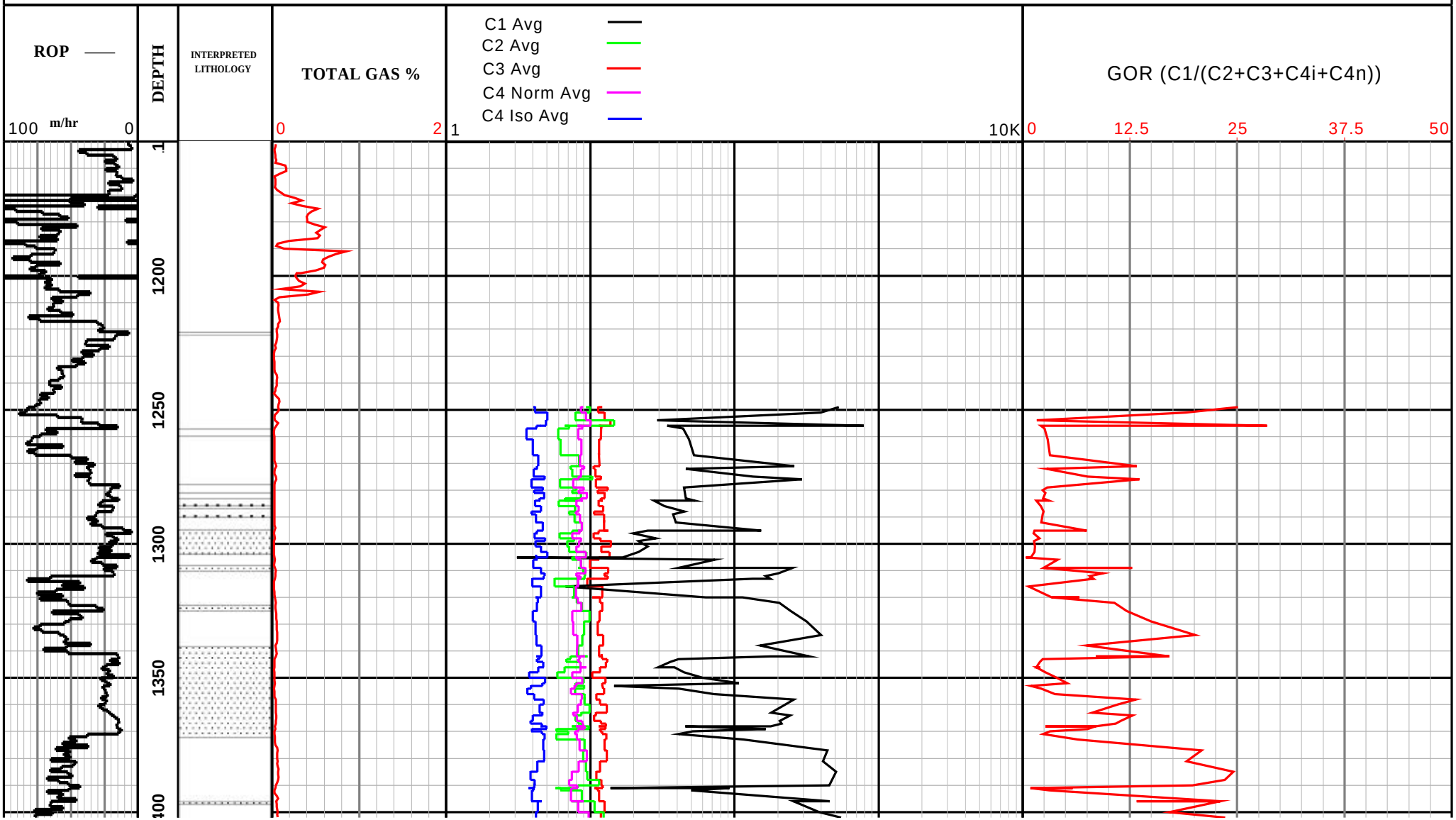
Log file output date : 2002-02-15 13:07:21
Winlog template version : 20010210-AJC

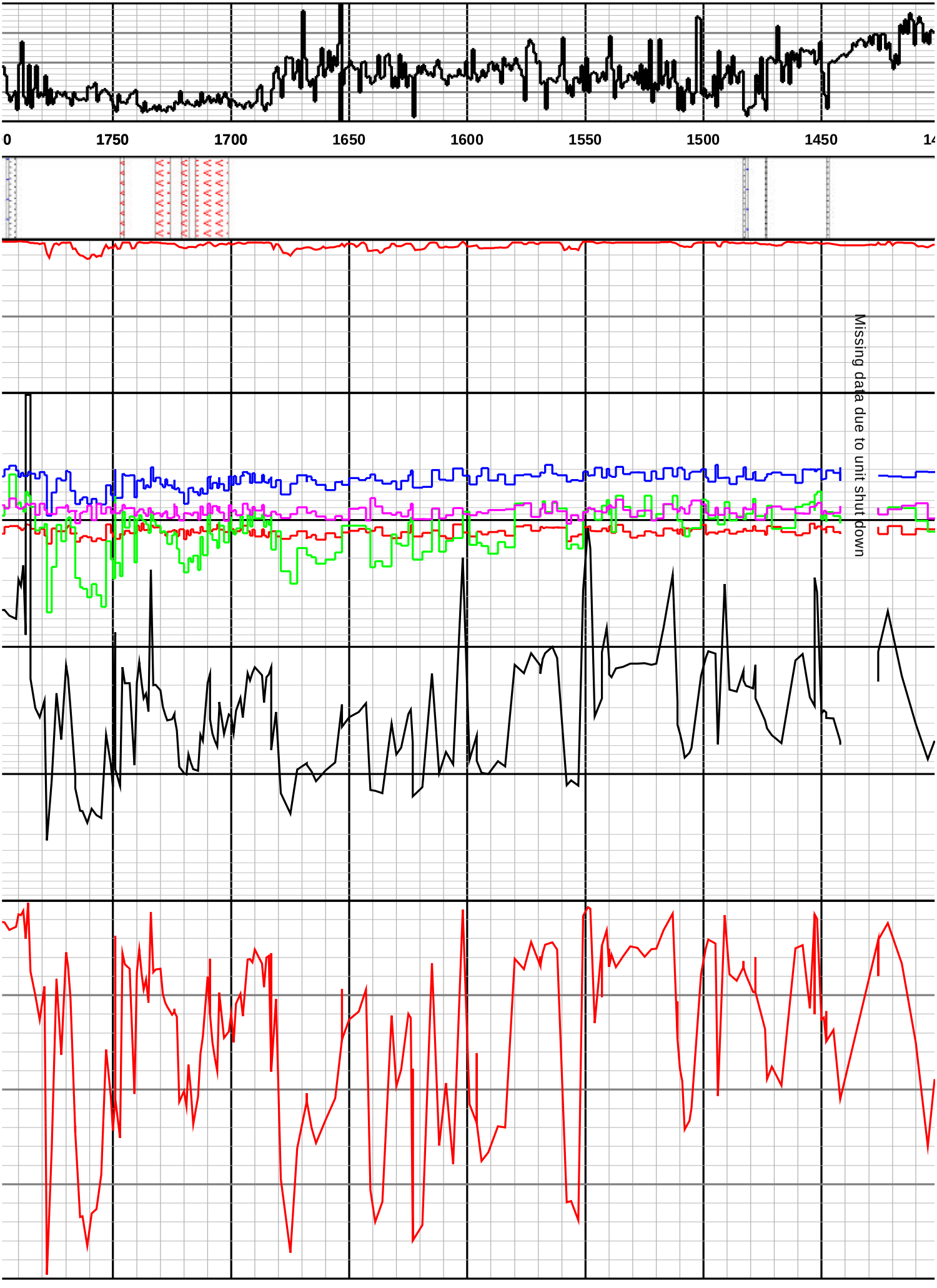
GAS RATIO LOG

34/7-31

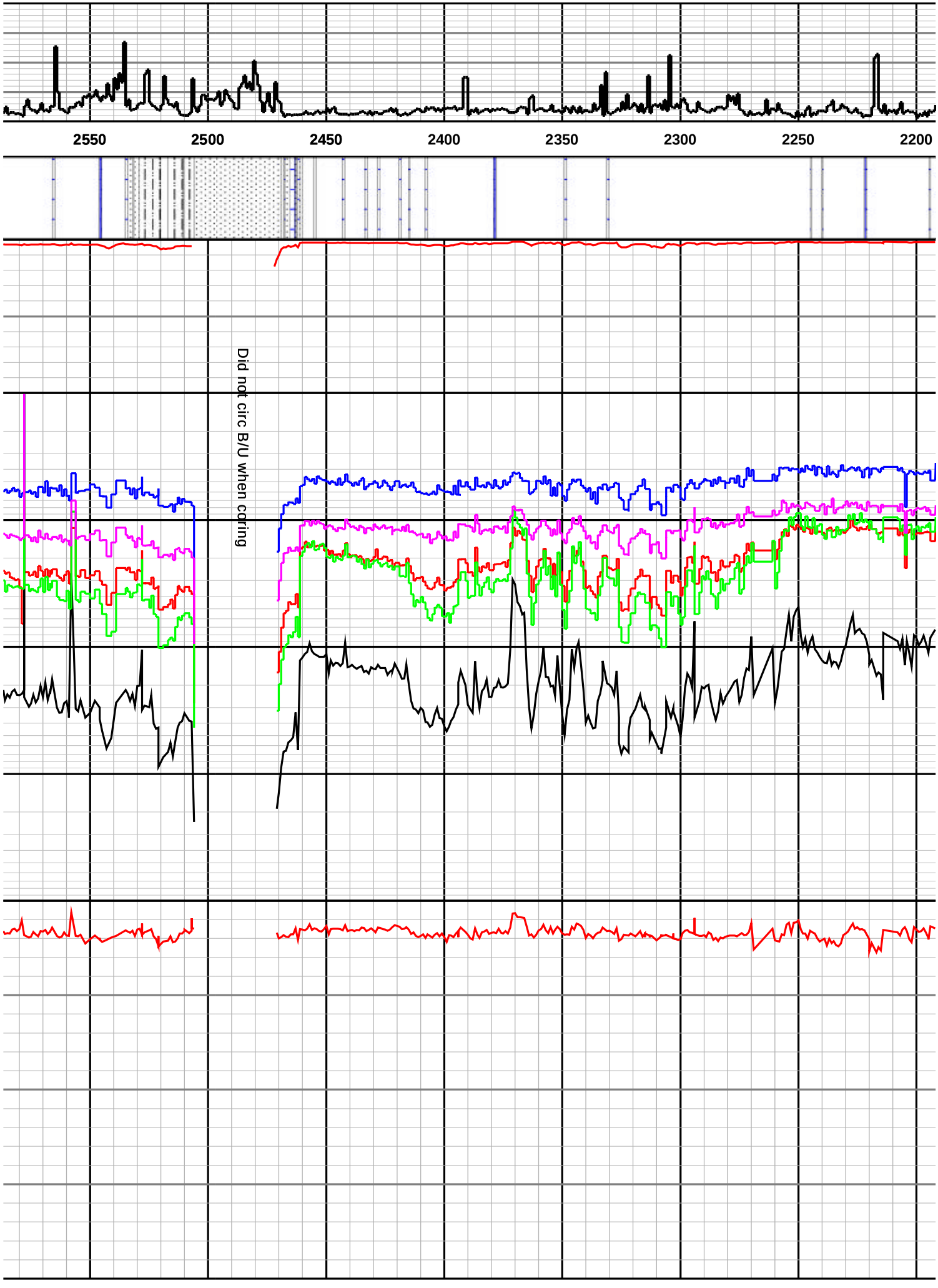
SCALE 1:2000

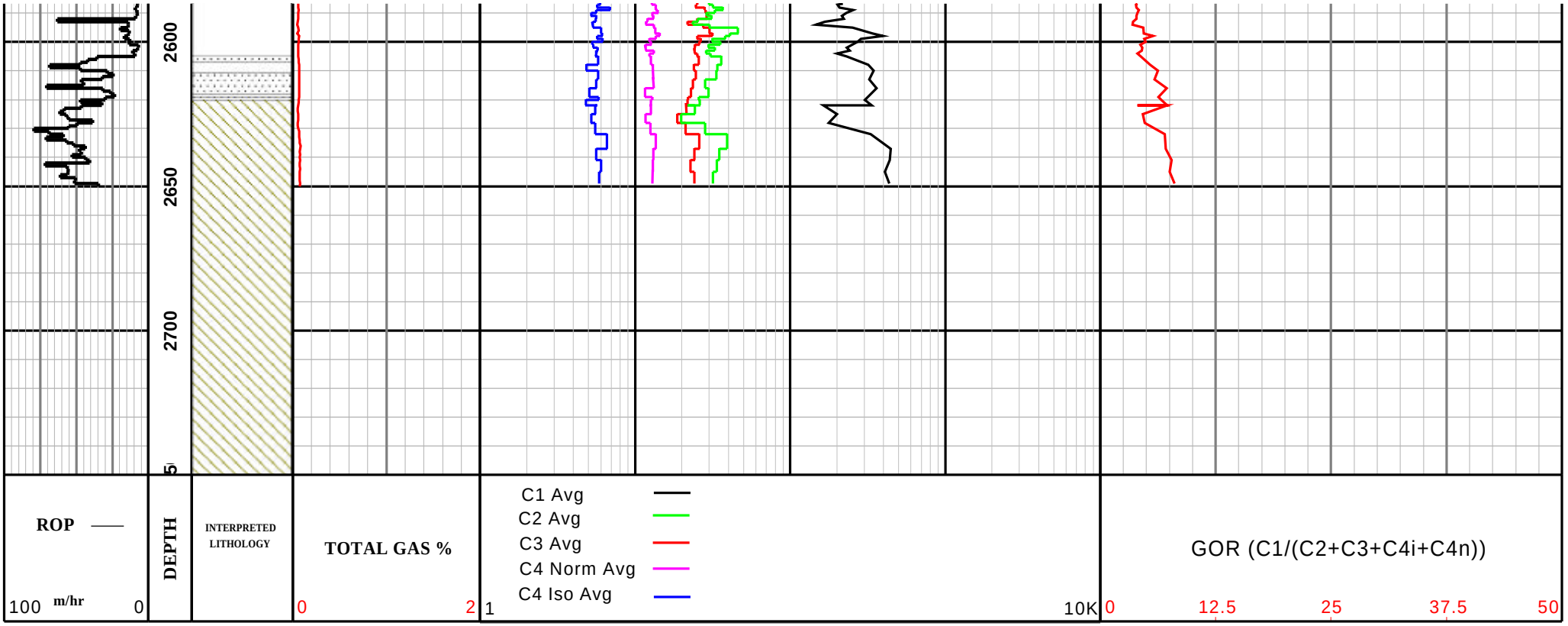





0
1750
1700
1650
1600
1550
1500
1450
Missing data due to unit shut down


2150
2100
2050
2000
1950
1900
1850
180


2550
2500
2450
2400
2350
2300
2250
2200
Did not circ B/U when coring

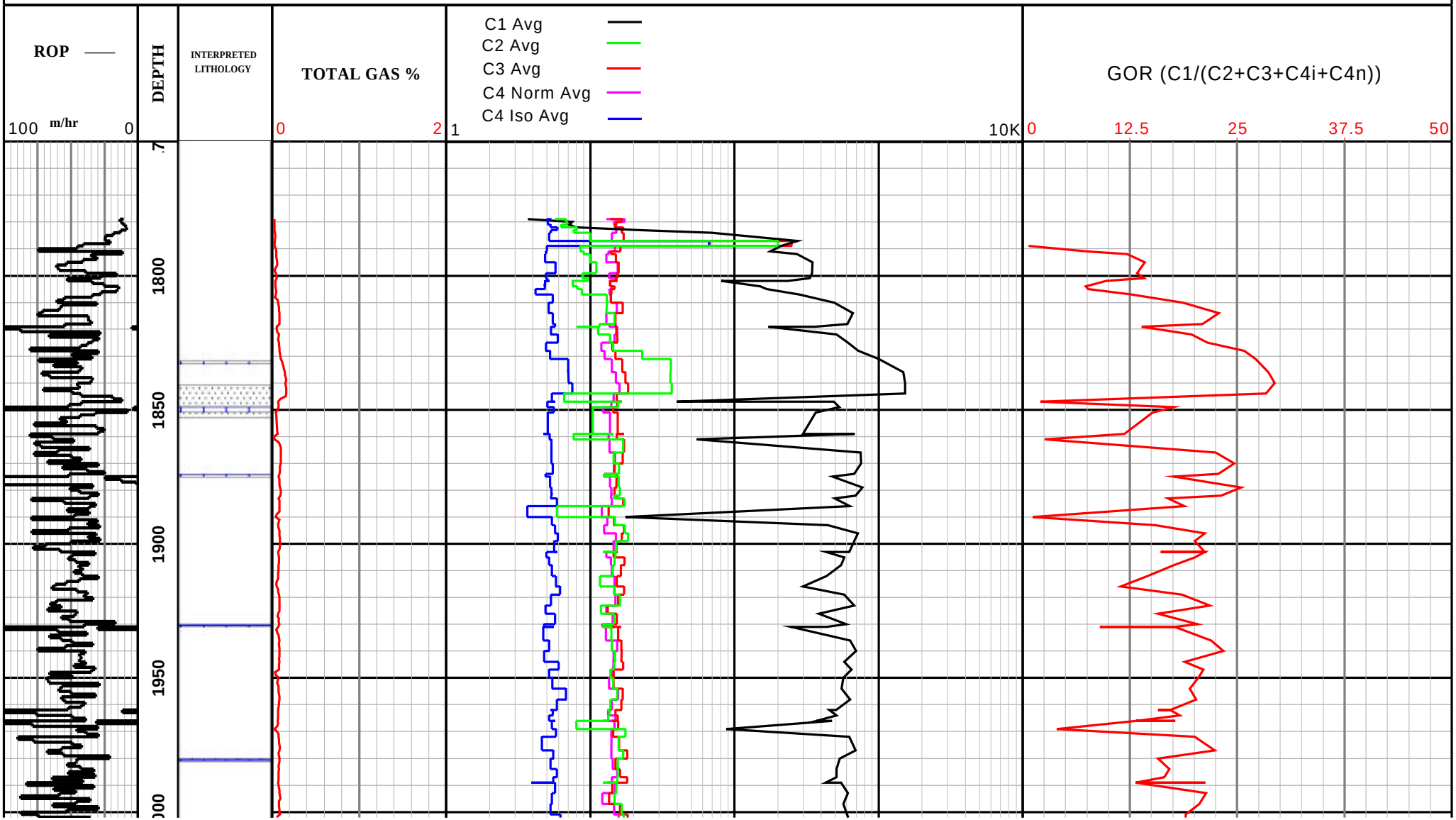

2600
2650
2700
ROP
100 m/hr 0
DEPTH
INTERPRETED LITHOLOGY
TOTAL GAS %
0 2
C1 Avg
C2 Avg
C3 Avg
C4 Norm Avg
C4 Iso Avg
1 10K
GOR (C1/(C2+C3+C4i+C4n))
0 12.5 25 37.5 50

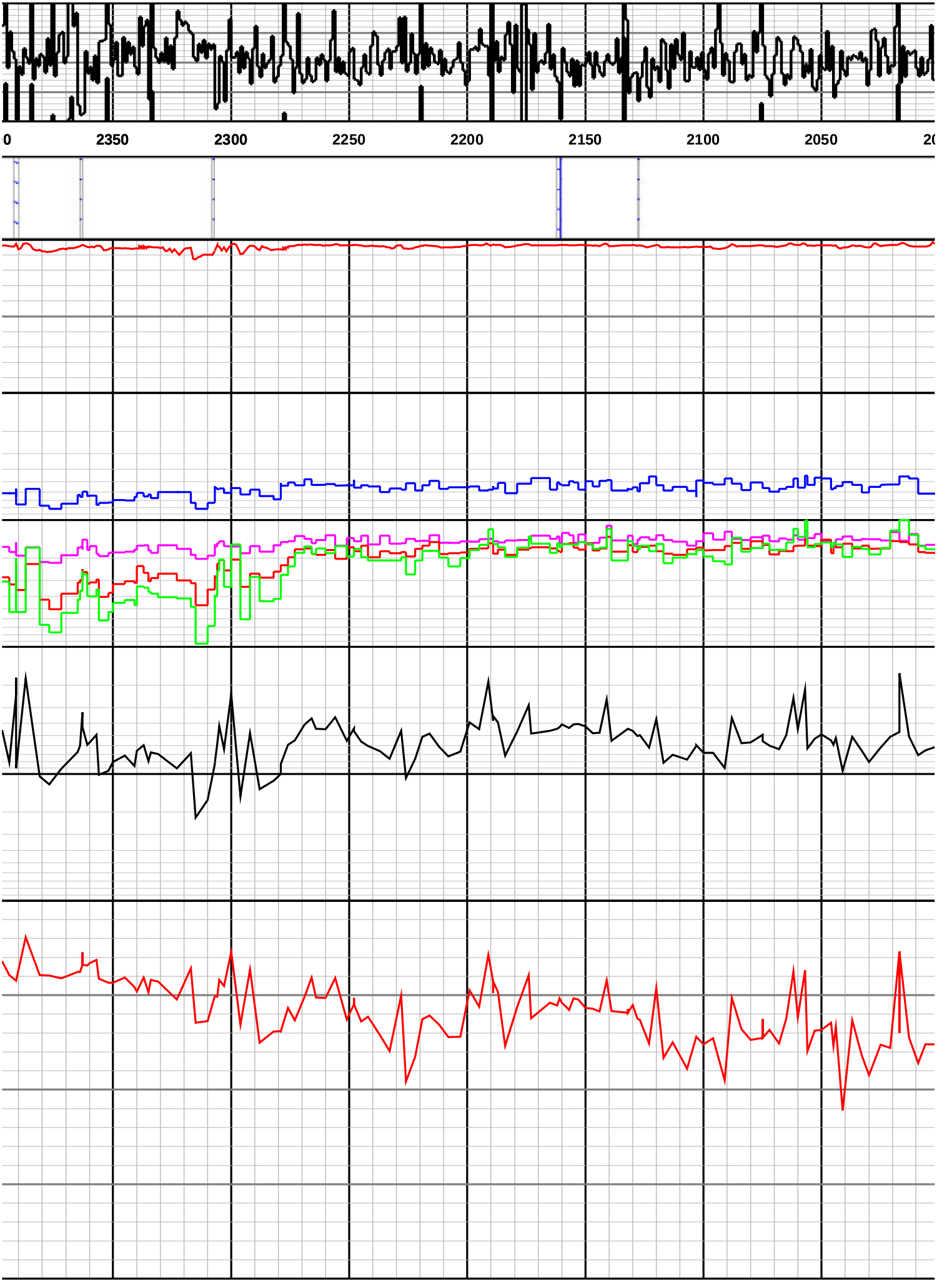
GAS RATIO LOG

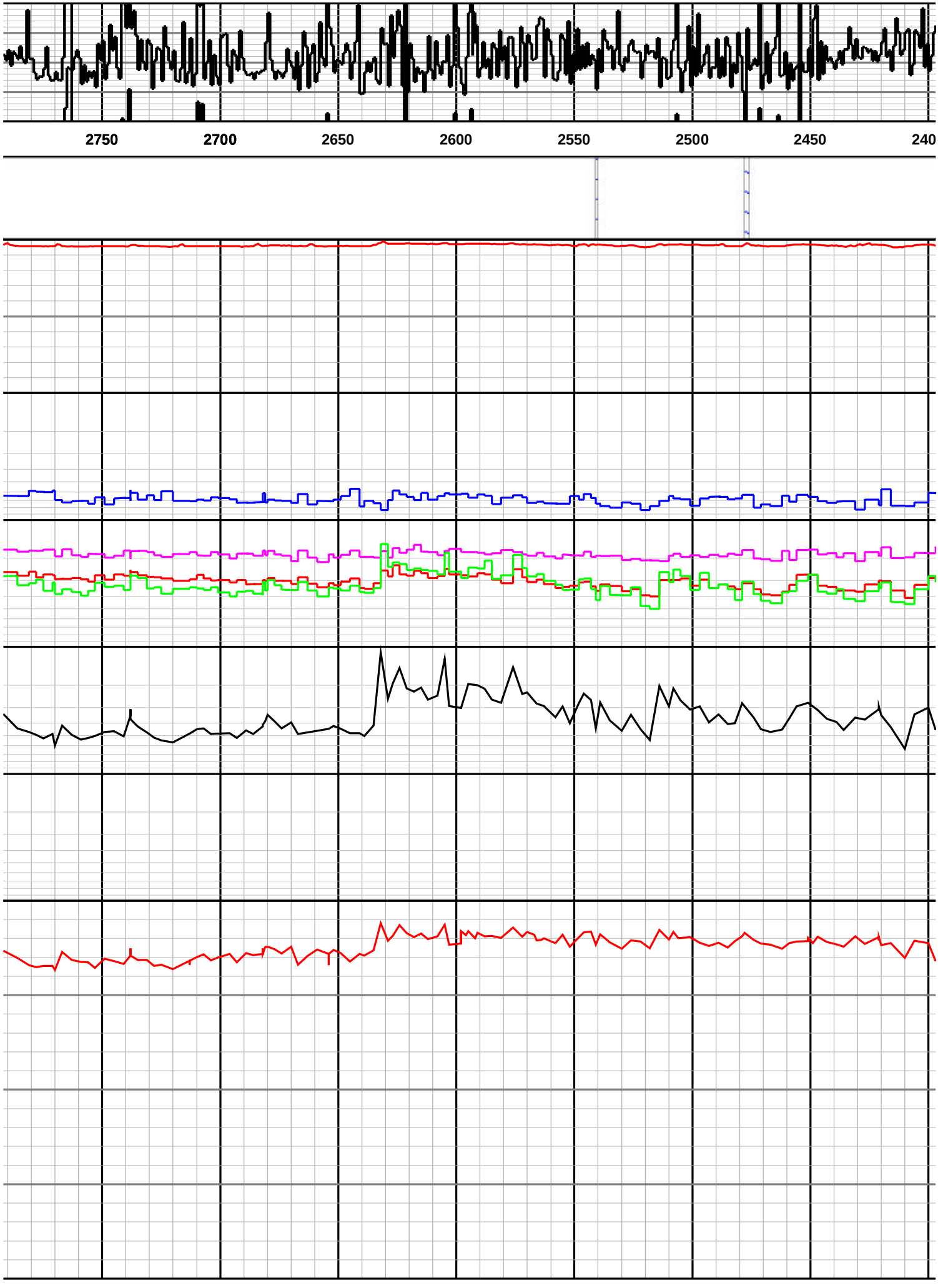
34/7-31 A

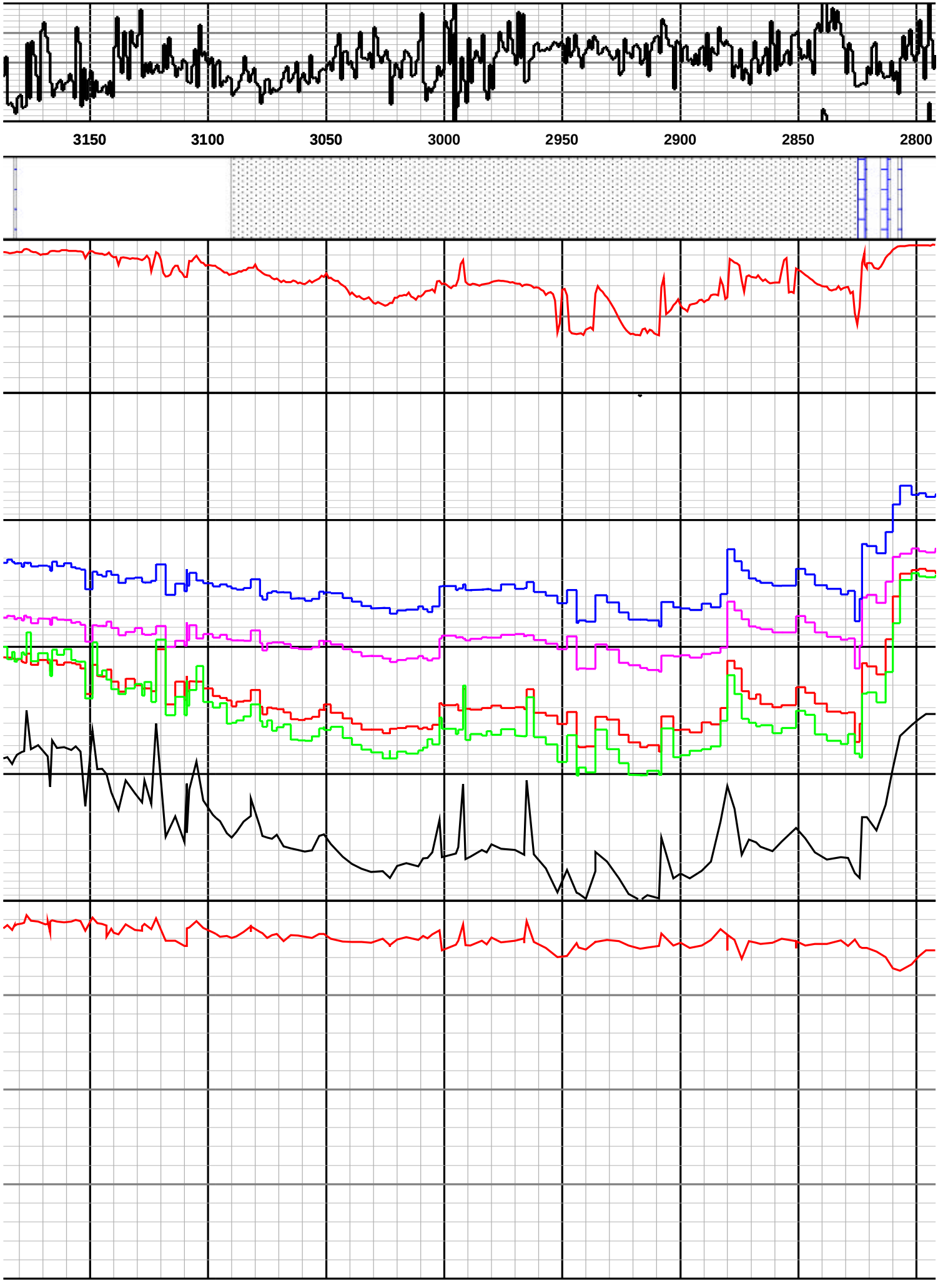
SCALE 1:2000

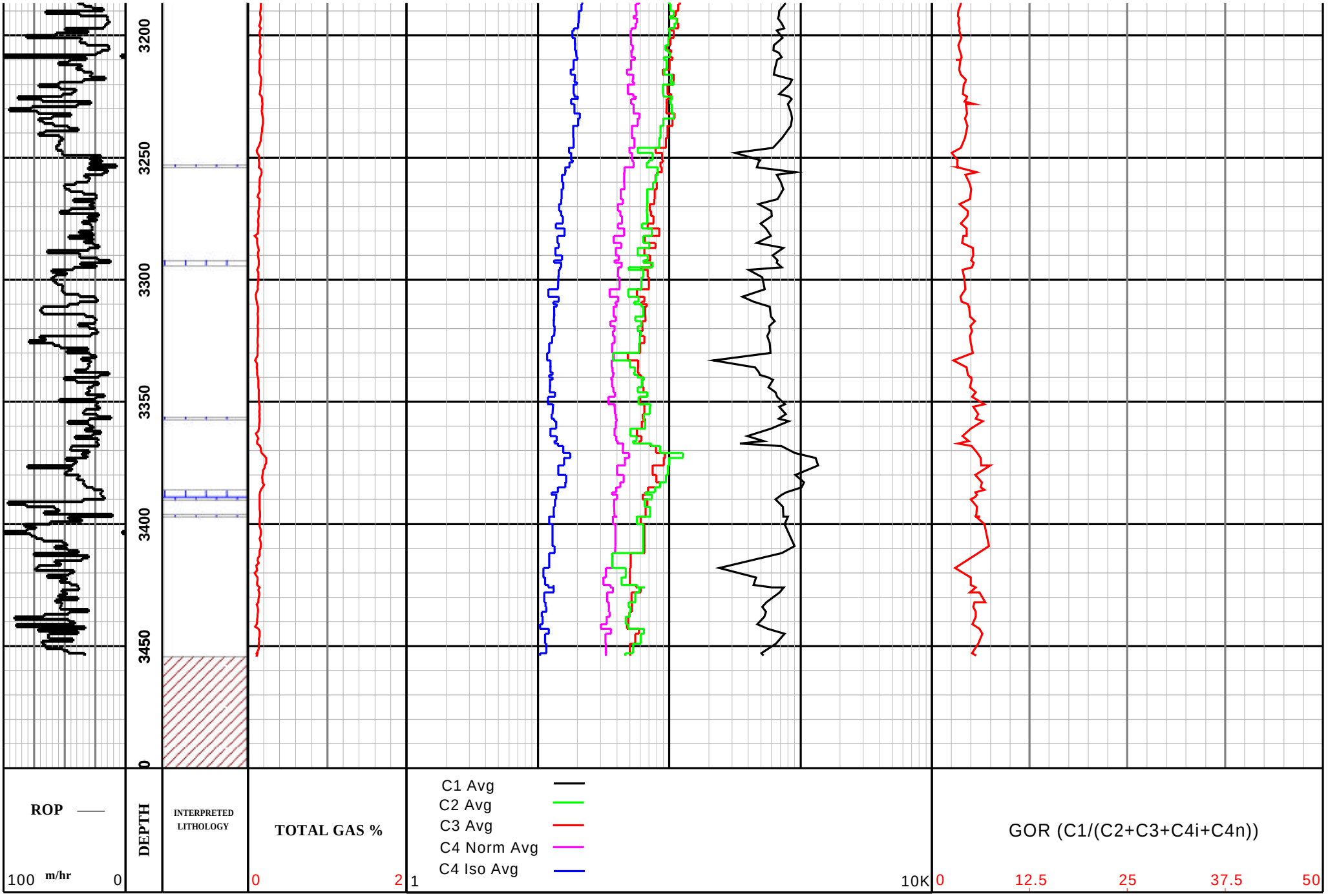
Sand | Sandstone | Siltstone | Claystone | Coal | Limestone | No Sample




0
2350
2300
2250
2200
2150
2100
2050


2750
2700
2650
2600
2550
2500
2450
240


3150
3100
3050
3000
2950
2900
2850
2800


ROP
100 m/hr 0
DEPTH
3200
3250
3300
3350
3400
3450
INTERPRETED LITHOLOGY
TOTAL GAS %
0 2
C1 Avg
C2 Avg
C3 Avg
C4 Norm Avg
C4 Iso Avg
1 10K
GOR (C1/(C2+C3+C4i+C4n))
0 12.5 25 37.5 50