Prepared by: Ole Jacob Sandal

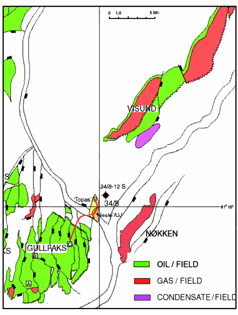
Controlled by: Magnar Saltnes

Date: 15.04 2005

WELL SUMMARY

GULLFAKS FIELD

Well: NO 34/10-48 S



WELL INFORMATION SUMMARY
GULLFAKS FIELD
WELL 34/10 – 48 S - TOPAS

LICENCE: PL050 / PL120

WELL TYPE: EXPLORATION WELL

SLOT CENTER: 6 787 105,10 mN 461 016,37 mE

RT-MSL: 84.1 m

SPUD DATE: 17.03.2004

COMPLETED: 22.12.2004

DRILLED RESERVOIRS
4363 – 4644 m MD (2599 - 2710 m TVD RKB) U2 (Lunde)
5161 – 6145 m MD (2887 - 2915 m TVD RKB) Topas
6240 – 6395 m MD (2915 - 2919 m TVD RKB) Nesle
6457 – 7305 m MD (2918 - 2933 m TVD RKB) Topas

CASING DEPTH (shoe):		
20"	1283 m MD/1162 m TVD RKB	**FIT:** 1.65 g/cm³
13 3/8"	2661 m MD/1720 m TVD RKB	**LOT:** 1.83 g/cm³
9 5/8"	5108 m MD/2876 m TVD RKB	**FIT:** 1.85 g/cm³

LOGGING MWD:		
17 ½" section	CDR	Anadrill/Schlumberger
12 ¼" section	ARC / ISONIC / ADN 8	Anadrill/Schlumberger
8 ½" section	ARC / ADN	Anadrill/Schlumberger

LOGGING WIRELINE:			
12 ¼" section	3670-5005 m MD	EMS/GR/MDT sample	Schlumberger
12 ¼" section	5005-2600 m MD	EMS/GR/MDT sample	Schlumberger
8 ½" section	5140-6413 m MD	MDT/ECS/CMR+	Schlumberger
8 ½" section	6413-5149 m MD	MDT/ECS/CMR+	Schlumberger

CORING :
Core # / Core Size: # 1 / 4" BHI
Interval: 5174 – 5207.15 m MD
Formation: Tarbert Formation, Brent Group
Cored / Recovery: 34 m / 33.15 m – 97.5 % recovery

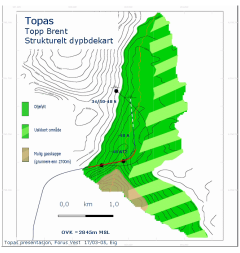
RESULTS

The main objective of the well 34/10-48 S was to test the hydrocarbon potential of the Brent Group in the Topas prospect. Secondary objectives were to test the hydrocarbon potential in 3 leads; the Nesle lead east of the Topas prospect, the U2 lead in the slope of the Gullfaks Horst and the upper Jurassic lead at the base of the main bounding fault, limiting the Gullfaks Structure to the east.

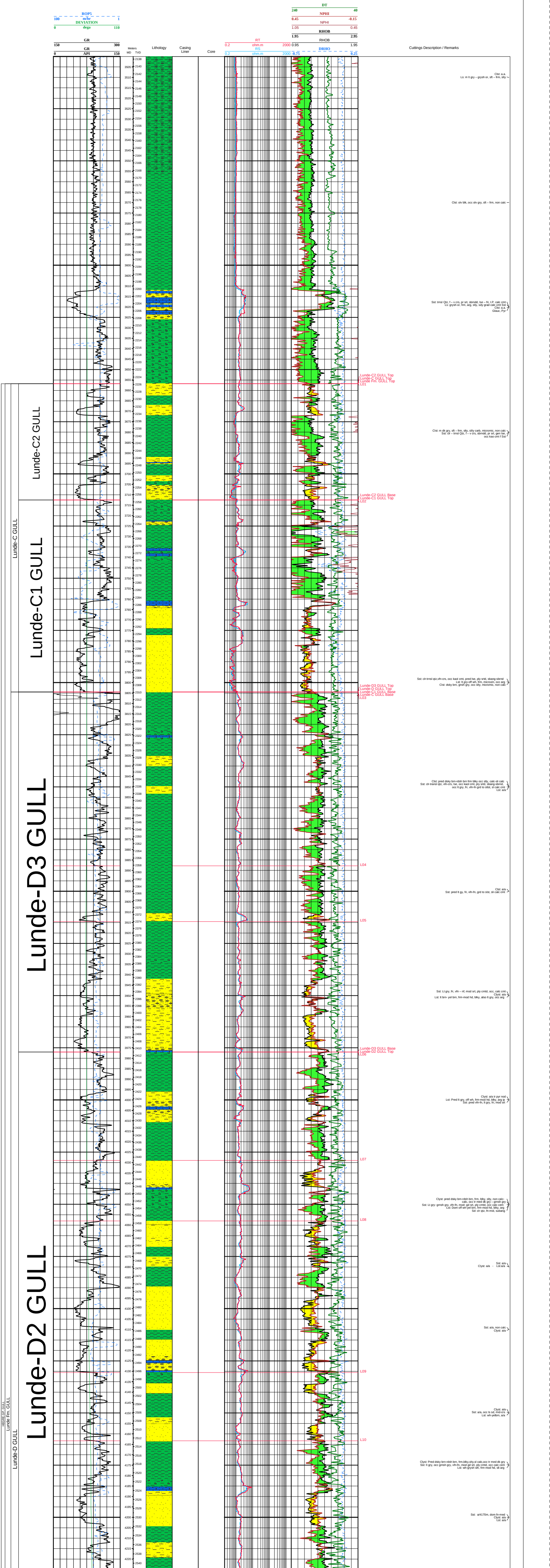
Well 34/10-48 S was drilled from the Gullfaks C platform, through the (1) U2 lead and (2) upper Jurassic sediments before drilling through the Brent Group in the (3) Topas prospect, through the (4) Nesle lead deposits, and at the end into the Brent Group / Topas area again.

1. The U2 lead north on the Gullfaks Structure turned out to consist of sands and shales of the Lunde Fm. The sands were hydrocarbon-filled from 4363 to 4644 m MD.
2. The lead in the prognosticated Upper Jurassic sediments at the base of the main bounding fault was not encountered. The well entered the Middle Jurassic Drake Fm on the other side of the fault and a water-filled Intra Drake sand was drilled some 250m into the Drake Fm.
3. The Topas prospect was encountered at 5161 m MD / 2887 m TVD RKB (45 m shallow compared to the map). Hydrocarbons were encountered in the Upper Brent Group, while the Middle and Lower Brent Group were water filled. The oil-water contact was found at 7135 m MD / 2846m TVD MSL, 64m shallow.
4. The Nesle Lead is interpreted to be of Upper Jurassic age, possible Heather formation. It was encountered @ 6145 – 6458 m MD (2915 – 2919 m TVD). The sandy intervals are hydrocarbon filled.

The main objective of the well, the Topas prospect, was achieved, as well as 2 out of 3 secondary objectives.



Topas presentasjon, Forus Vest 17/03-05, Eig



Cuttings Description / Remarks

Clst: a.a.
Ls: m lt gry – grysh or, sft – frm, slty

Clst: olv blk, occ olv gry, sft – frm, non calc

Sst: trnsl Qtz, f – v crs, pr srt, sbrndd, lse – fri, I.P. calc cmt
Ls: grysh or, frm, arg, slty, sdy grad calc cmt Sst
Clst: a.a.
Glauc, Pyr

Clst: m dk gry, sft – frm, slty, slily carb, micromic, non calc
Sst: clr – trnsl Qtz, f – v crs, sbrndd, pr srt, gen lse,
occ kao cmt f Sst

Sst: clr-trnsl qtz,vfn-crs, occ kaol cmt, pred lse, ply srtd, sbang-sbrnd
Lst: lt gry-off wh, frm, microxln, occ arg
Clst: dsky brn, gnsh gry, occ slty, micromic, non calc

Clst: pred dsky brn-rdsh brn frm blky occ slty, calc-sli calc
Sst: clr-transl qtz, vfn-crs, lse, occ kaol cmt, ply srtd, sbang-sbrnd,
occ lt gry, fri, vfn-fn grd to sltst, sl calc cmt
Lst: a/a

Clst: a/a
Sst: pred lt gy, fri, vfn-fn, grd to slst, sli calc cmt

Sst: Lt gry, fri, vfn – nf, mod srt, ply cmtd, occ, calc cmt
Clyst: a/a
Lst: lt brn- yel brn, frm-mod hd, blky, also lt gry, occ arg

Clyst: a/a tr pyr nod
Lst: Pred lt gry, off wh, frm-mod hd, blky, arg ip
Sst: pred vfn-fn, lt gry, fri, mod srt

Clyst: pred dsky brn-rdsh brn, frm, blky, slty, non calc-
calc, occ tr med dk gry – grnsh gry
Sst: Lt gry- grnsh gry, vfn-fn, mod- gd srt, ply cmtd, occ calc cem
Lst: Dom off wh-yel brn, frm-mod hd, blky, arg
Sd: clr qtz, fn-mid, subang

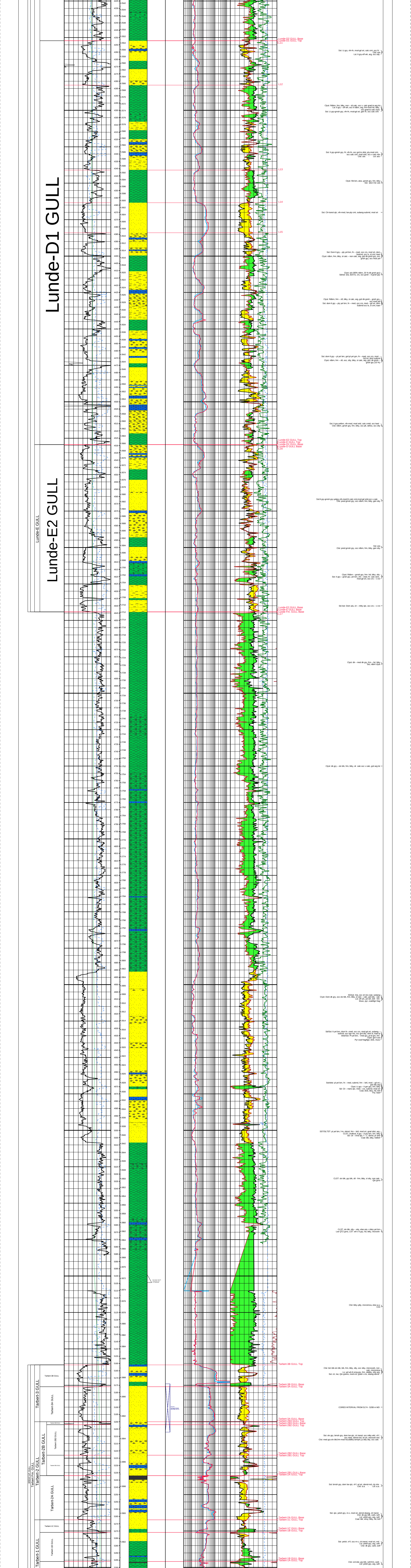
Sst: a/a
Clyst: a/a - Lst:a/a

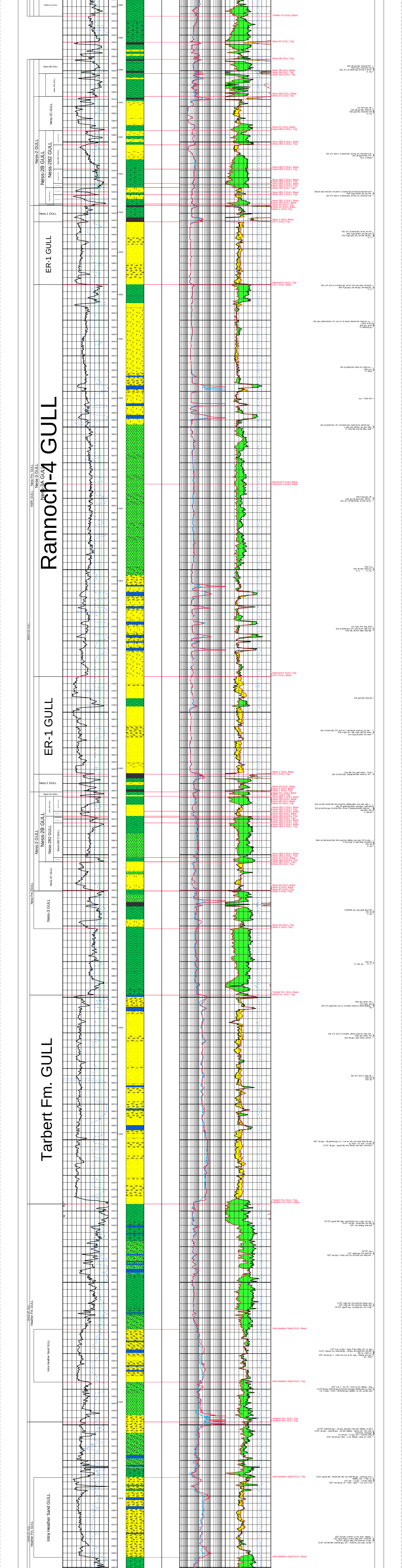
Sst: a/a, non calc
Clyst: a/a

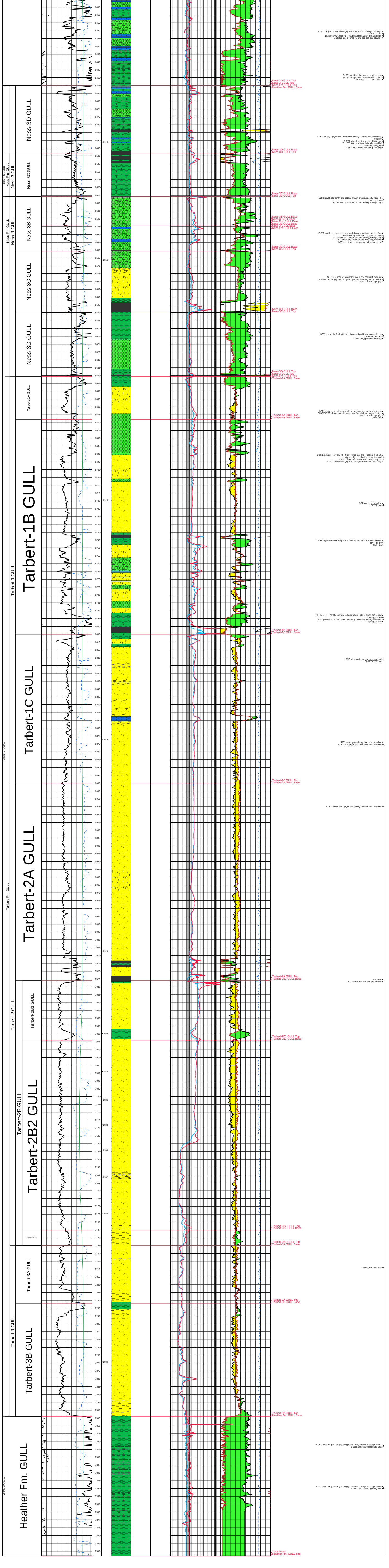
Clyst: a/a
Sst: a/a, occ ls sd, mid-crs
Lst: wh-yelbrn, a/a

Clyst: Pred dsky brn-rdsh brn, frm,blky,slty,sl calc,occ tr med dk gry
Sst: lt gry, occ grnsh gry, vfn-fn, mod gd srt, ply cmtd, occ calc cem
Lst: wh-grysh wh, frm-mod hd, slt arg

Sst: a/4170m, dom fn-med
Clyst: a/a
Lst: a/a

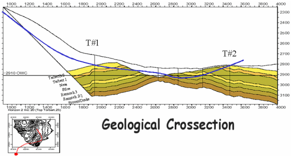




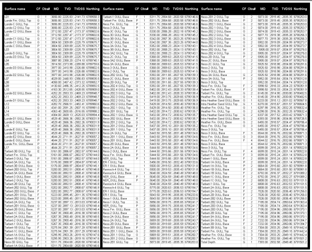


LITHOLOGY LEGEND

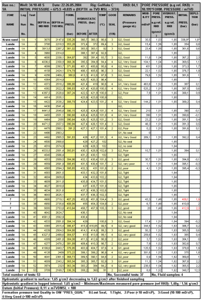
🟩	CLST-CALC-X	🟨	SST-X-ARG	🟩	CLST-X-CARB	🟩	SLTST-X-X
🟩	CLST-X-X	🟩	CLST.SDY-X-X	🟩	CLST.SDY-X-CARB	🟩	SLTST-CALC-X
🟨	SST-CALC-ARG	🟨	SST-X-X	🟩	CLST-X-SLTY	🟩	SLTST-X-CARB
🟦	CHK-X-X	🟨	SST-CALC-X	🟨	SST-X-SLTY	🟨	SST-X-CARB
🟩	CLST.SDY-X-CALC	⬛	C-X-X	🟨	SST-CALC-SLTY	🟦	LS-X-X



Geological Crossection



Surface name	CF	Obs#	MD	TVD	TVDSS	Northing	Surface name	CF	Obs#	MD	TVD	TVDSS	Northing	Surface name	CF	Obs#	MD	TVD	TVDSS	Northing



MDT Pressure Points 12 1/4" Section

Run no.: 1A	Well: 34/10-48 S Date: 22-26.05.2004 Rig: Gullfaks C RKB: 84,1 INITIAL PRESSURE = 675.5 +0.035 x (DEPTH m TVD MSL – 3724)	PORE PRESSURE (s.g ref. RKB) = 10.195*FORM. PRESSURE / mTVD

ZONE NAME	Log Run No.	Test No.	DEPTH m MD RKB	DEPTH m TVD MSL	FORM. PRESS. (bar)	HYDROSTATIC PRESS. (bar) BEFORE	AFTER	TEMP (°C)	GOOD SEAL (Y/N)	REMARKS (Pressure gauge id.)	MOB-ILITY mD/cP	PORE PRESS. s.g ref. RKB (g/cm3)	HYDROST. PRESS. s.g ref. RKB (g/cm3)	INITIAL PRESS. (bar)	DEPLE-TION (bar)

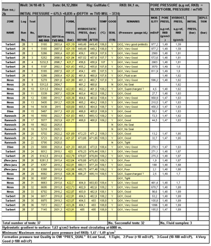
Total number of tests: 53 — No. Successful tests: 37 — No. Fluid samples: 4

Hydrostatic gradient to surface: 1,65 g/cm3 decreasing to 1,63 g/cm3 after finished sampling

Hydrostatic gradient in logged interval: 1,65 g/cm3 – Minimum/Maximum measured pore pressure (ref RKB): 1,48 / 1,56 g/cm3

Datum (Initial Pressure): 0,11 x mTVDMSL + 100

Formation pressure test Quality in OW "PRES_QUAL" 0:Lost Seal, 1:Tight, 2:Poor (<10 mD/cP), 3:Good (10-100 mD/cP), 4:Very Good (>100 mD/cP)



MDT Pressure Points 8 1/2" Section

Run no.: 2b	Well: 34/10-48 S Date: 04,12,2004 Rig: Gullfaks C RKB: 84,1 m, INITIAL PRESSURE = 675,5 +0,035 x (DEPTH m TVD MSL – 3724)	PORE PRESSURE (s,g ref, RKB) = 10,195*FORM, PRESSURE / mTVD

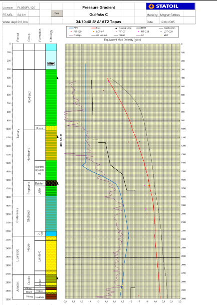
ZONE NAME	Log Run No,	Test No,	DEPTH m MD RKB	DEPTH m TVD MSL	FORM, PRESS, (bar)	HYDROSTATIC PRESS, (bar) BEFORE	AFTER	TEMP (°C)	GOOD SEAL (Y/N)	REMARKS (Pressure gauge id,)	MOB-ILITY mD/cP	PORE PRESS, s,g ref, RKB (g/cm3)	HYDROST, PRESS, s,g ref, RKB (g/cm3)	INITIAL PRESS, (bar)	DEPLE-TION (bar)

Total number of tests: 37 — No, Successful tests: 32 — No, Fluid samples: 3

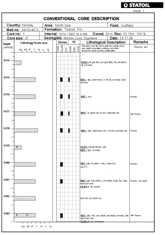
Hydrostatic gradient to surface: 1,63 g/cm3 before mud circulating at 6000 m,

Minimum/ Maximum measured pore pressure (ref RKB): 1,47 / 1,49 g/cm^3

Formation pressure test Quality in OW "PRES_QUAL" 0:Lost Seal, 1:Tight, 2:Poor (<10 mD/cP), 3:Good (10-100 mD/cP), 4:Very Good (>100 mD/cP)



Licence: PL050/PL120	**Pressure Gradient**	STATOIL	
RT-MSL: 84,1 m	**Gullfaks C**	Made by:	Magnar Sætnes
Water dept 216,9 m	**34/10-48 S/ A/ AT2 Topas**	Date:	19.04.2005



STATOIL

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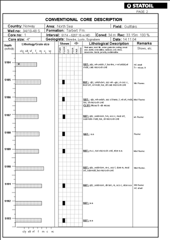
CONVENTIONAL CORE DESCRIPTION

Country: Norway	**Area:** North Sea	**Field:** Gullfaks
Well no: 34/10-48 S	**Formation:** Tarbert Fm.	
Core no: 1	**Interval:** 5174 – 5207.15 m MD	**Cored:** 34 m **Rec:** 33.15m 100 %
Core size: 4"	**Geologists:** Stænke, Lysle, Sygnabere	**Date:** 14.11.04

Depth (mRKB)	Lithology/Grain size	Shows	Lithological Description	Remarks Shows, etc.



STATOIL

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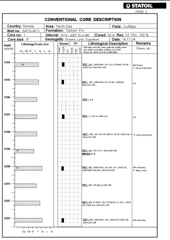
CONVENTIONAL CORE DESCRIPTION



STATOIL

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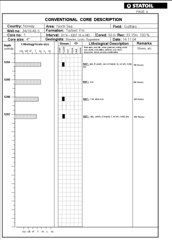
CONVENTIONAL CORE DESCRIPTION



STATOIL

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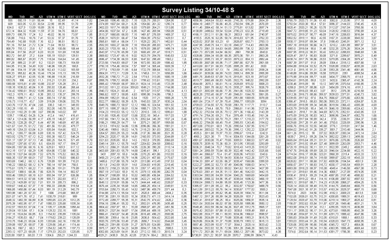
CONVENTIONAL CORE DESCRIPTION



Survey Listing 34/10-48 S

MD	TVD	INC	AZI	UTM N	UTM E	VERT SECT	DOG LEG	MD	TVD	INC	AZI	UTM N	UTM E	VERT SECT	DOG LEG	MD	TVD	INC	AZI	UTM N	UTM E	VERT SECT	DOG LEG	MD	TVD	INC	AZI	UTM N	UTM E	VERT SECT	DOG LEG