FINAL WELL REPORT : 35/8-5 S
ENCLOSURE No. : 1
COMPLETION LOG

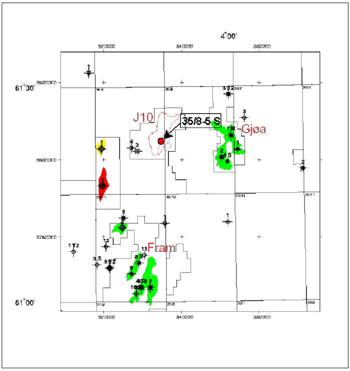
Composite Log

J10 Prospect

Scale: 1 / 500

Well: 35/8-5 S

Location Map



KB Elevation	29 m	**Country**	Norway
Water Depth	369 m MSL	**Licence**	PL 195
Depth Reference	RKB		
		Owners	Norsk Hydro ASA, Petoro, RWE-DEA
Total Depth (Driller)	4000 m MD RKB 3831.8 m TVD RKB		
Total Depth (Logger)	4009.5 m MD RKB		
		Field	SOGN
Formation at Total Depth	Rannoch	**Platform**	Deepsea Delta
Date Spudded	01.06.2003		
Date Reached TD	11.07.2003	**Drilling Contractor**	Odfjell Drilling
Date Completed	21.07.2003	**Mudlogging Company**	Baker Hughes Inteq
Well Status	P&A	**Logging Company**	Schlumberger Wireline
		MWD Company	Schlumberger D&M
Well Classification	Exploration	**Geologists**	B. Schønningsen, A. Scholze, K. Gran, F.Johansen E.Skottlien
Prepared by	Well site geologists		
Controlled by	K. Hevrøy		
Date	20.01.2004		

Well Coordinates	**Wellhead**		
	Geographical	61° 22' 40.50" N	03° 39' 13.22" E
	UTM	6 805 219.6 mN	534 935.0 mE

Output log file created : 2004-01-27 13:06:33
Winlog well ID : 35_8_5_S
Winlog template version : 20010309 - AJC

Casing Records

Diameter	Shoe depth m MD RKB	Shoe depth m TVD RKB
30" Casing shoe	458	458.0
20" Casing shoe	550	549.9
13 3/8" Casing shoe	1320.5	1320.0
9 5/8" Casing shoe	3258.5	3232.2

LOT / FIT

Type	Result SG	Depth m MD RKB	Depth m TVD RKB
FIT	1.25	561.0	561.0
FIT	1.58	1329.0	1328.5
LOT	2.05	1331.0	1330.5
FIT	1.80	3268.0	3239.1

Comments

There is a large depth discrepancy between LWD and wireline logs, varying from 6.5 to 10.6 m. In this completion log we have only used LWD logs and -depths. Table of the depth shifts is presented in the Final Well Report.

A shallow water flow was observed at 683m while drilling 12 1/4" pilot hole (returns to seabed)
Opened up to 26" hole, and 20" casing was set at 550m. Drilled 17" hole with returns below 550m.

Logs

Run no.	Log type	Logged interval
1	MWD: DIR	398 - 458 m
2	MWD: GR-RES-DIR-PRES	458 - 683 m
3	MWD: GR-RES-DIR-PRES	550 - 1326 m
4	MWD: GR-RES-DIR-PRES-SONIC	1320 - 2962 m
5	MWD: GR-RES-DIR-PRES-SONIC	2900 - 3265 m
6	LWD: GR-RES-DIR-SONIC-DEN-NEU	3265 - 3380 m

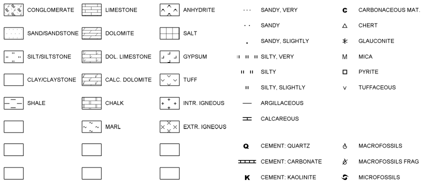
Cores

Core no.	Cored interval m MD RKB		Recovered interval m MD RKB		Rec. mMD	Rec. %
1	3381.0	3383.5	3381.0	3382.5	1.5	60.0
2	3383.5	3401.6	3383.5	3401.6	18.1	100.0
3	3401.6	3415.5	3401.6	3415.0	13.4	95.7
4	3415.5	3443.3	3415.5	3443.3	27.8	100.0
5	3845.0	3856.3	3845.0	3856.3	11.3	100.0
6	3856.3	3883.5	3856.3	3883.5	27.2	100.0

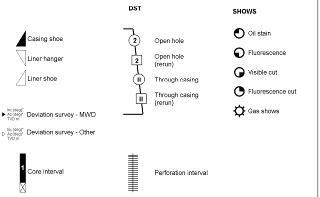
Pressure points (MDT)

Test no.	Depth m MD RKB	Depth m TVD RKB	Fmn. Press. SG	Test no.	Depth m MD RKB	Depth m TVD RKB	Fmn. Press. SG
6	3402.2	3348.2	1.42	44	3932.0	3776.7	1.40
19	3946.5	3788.4	1.39	45	3932.0	3776.7	1.40
20	3944.6	3786.9	1.39	46	3929.0	3774.2	1.40
21	3932.0	3776.7	1.39	47	3927.0	3772.6	1.40
22	3929.0	3774.2	1.40	52	3933.5	3777.9	1.40
23	3927.0	3772.6	1.40	53	3931.5	3776.3	1.40
39	3967.0	3805.1	1.39	64	3586.5	3497.1	1.32
40	3962.5	3801.4	1.39	65	3584.5	3495.5	1.33
41	3957.0	3796.9	1.39	67	3620.8	3524.9	1.32
42	3954.0	3794.5	1.39	68	3618.2	3522.8	1.32
43	3947.0	3788.8	1.39				

Lithology Legend

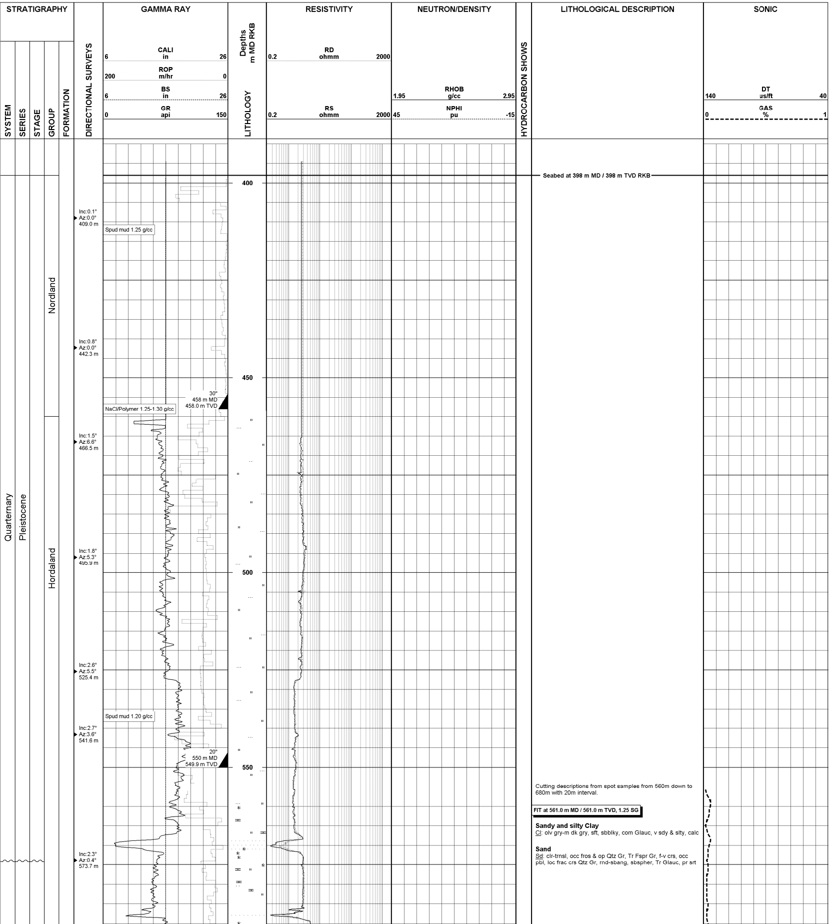


Symbol legend



Sidewall core
(No recovery)

RFT / MDT



Cutting descriptions from spot samples from 560m down to 680m with 20m interval.

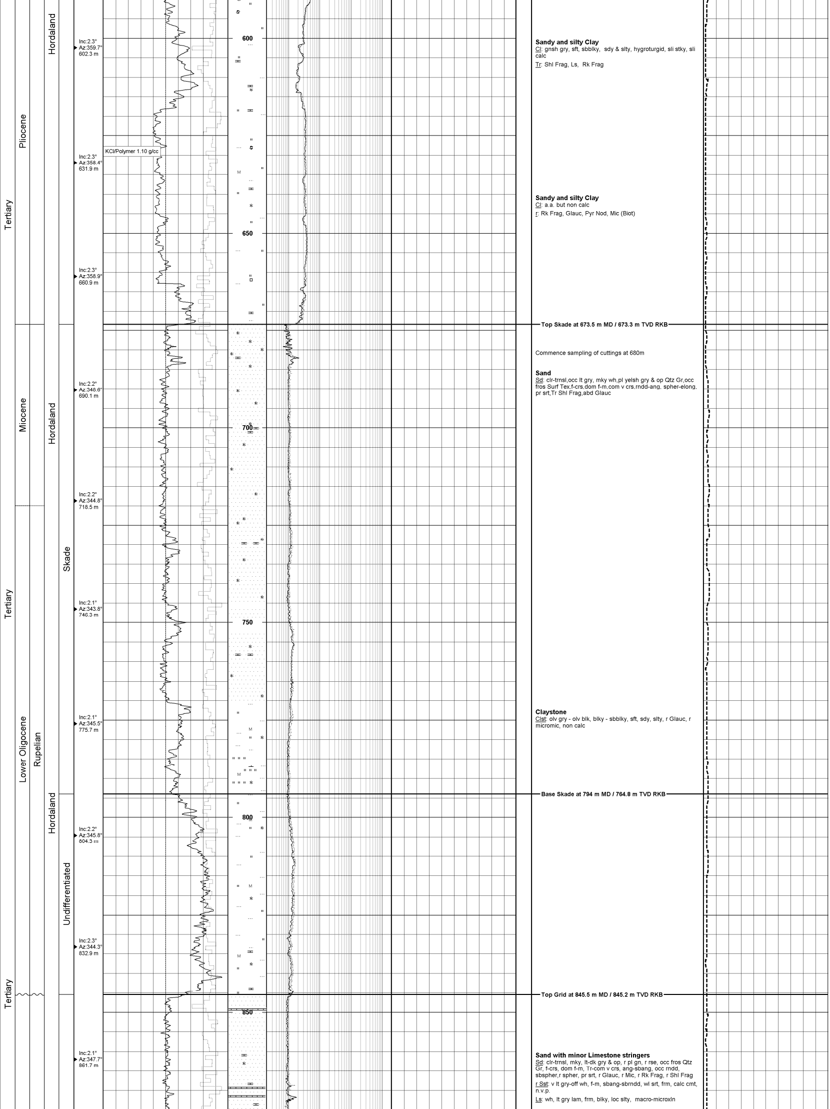
FIT at 561.0 m MD / 561.0 m TVD, 1.25 SG

Sandy and silty Clay

Cl: olv gry-m dk gry, sft, sbblky, com Glauc, v sdy & slty, calc

Sand

Sd: clr-trnsl, occ fros & op Qtz Gr, Tr Fspr Gr, f-v crs, occ pbl, loc frac crs Qtz Gr, rnd-sbang, sbspher, Tr Glauc, pr srt



Sandy and silty Clay
Cl: gnsh gry, sft, sbblky, sdy & slty, hygroturgid, sli stky, sli calc

Tr: Shl Frag, Ls, Rk Frag

Sandy and silty Clay
Cl: a.a. but non calc

r: Rk Frag, Glauc, Pyr Nod, Mic (Biot)

Top Skade at 673.5 m MD / 673.3 m TVD RKB

Commence sampling of cuttings at 680m

Sand
Sd: clr-trnsl,occ lt gry, mky wh,pl yelsh gry & op Qtz Gr,occ fros Surf Tex,f-crs,dom f-m,com v crs,rndd-ang, spher-elong, pr srt,Tr Shl Frag,abd Glauc

Claystone
Clst: olv gry - olv blk, blky - sbblky, sft, sdy, slty, r Glauc, r micromic, non calc

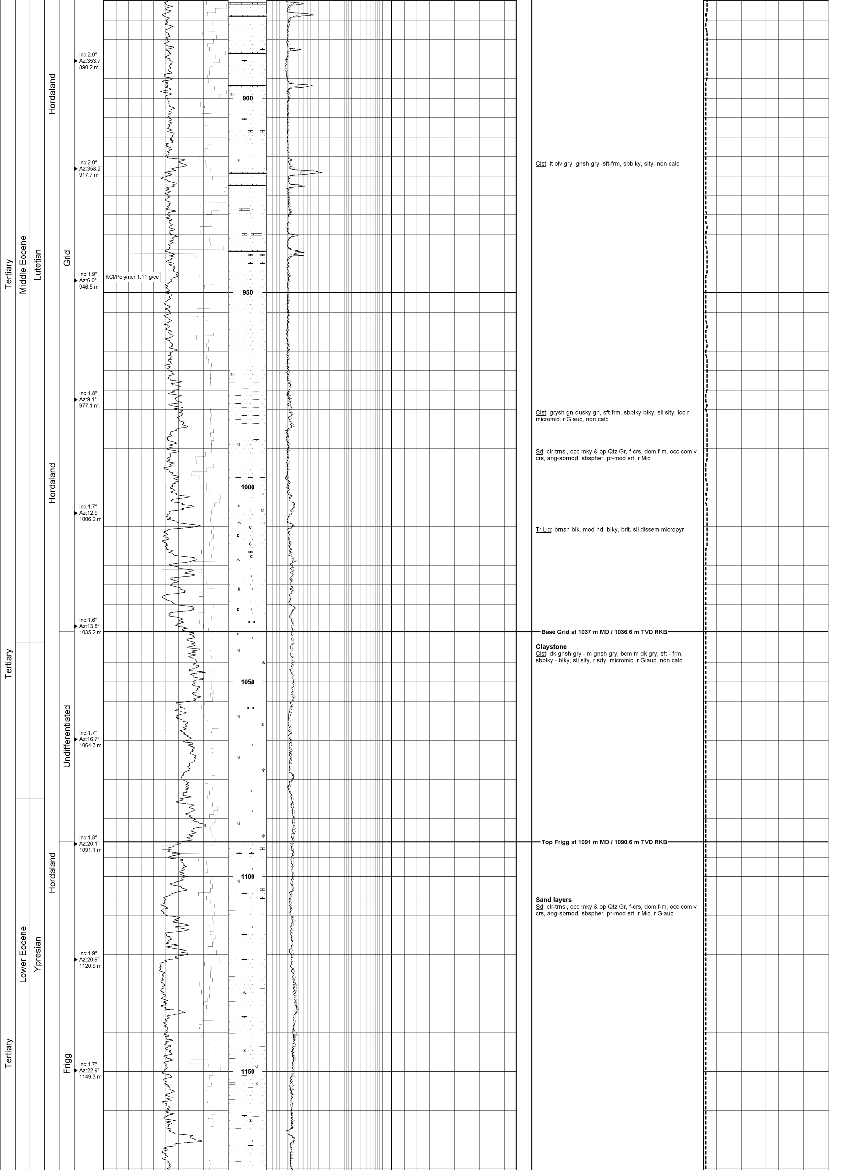
Base Skade at 794 m MD / 764.8 m TVD RKB

Top Grid at 845.5 m MD / 845.2 m TVD RKB

Sand with minor Limestone stringers
Sd: clr-trnsl, mky, lt-dk gry & op, r pl gn, r rse, occ fros Qtz Gr, f-crs, dom f-m, Tr-com v crs, ang-sbang, occ rndd, sbspher,r spher, pr srt, r Glauc, r Mic, r Rk Frag, r Shl Frag

r Sst: v lt gry-off wh, f-m, sbang-sbrndd, wl srt, frm, calc cmt, n.v.p.

Ls: wh, lt gry lam, frm, blky, loc slty, macro-microxln



Clst: lt olv gry, gnsh gry, sft-frm, sbblky, slty, non calc

Clst: grysh gn-dusky gn, sft-frm, sbblky-blky, sli slty, loc r micromic, r Glauc, non calc

Sd: clr-trnsl, occ mky & op Qtz Gr, f-crs, dom f-m, occ com v crs, ang-sbrndd, sbspher, pr-mod srt, r Mic

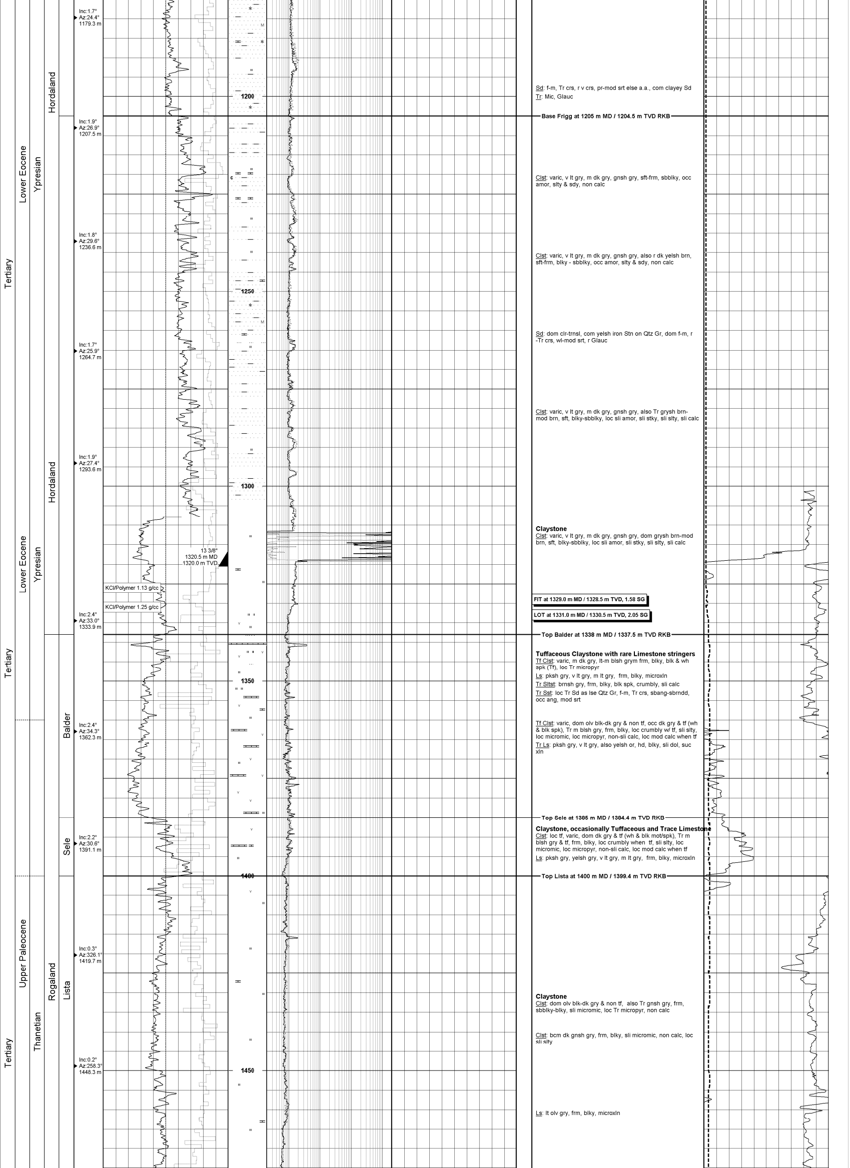
Tr Lig: brnsh blk, mod hd, blky, brit, sli dissem micropyr

Base Grid at 1037 m MD / 1036.6 m TVD RKB

Claystone
Clst: dk gnsh gry - m gnsh gry, bcm m dk gry, sft - frm, sbblky - blky, sli slty, r sdy, micromic, r Glauc, non calc

Top Frigg at 1091 m MD / 1090.6 m TVD RKB

Sand layers
Sd: clr-trnsl, occ mky & op Qtz Gr, f-crs, dom f-m, occ com v crs, ang-sbrndd, sbspher, pr-mod srt, r Mic, r Glauc



Sd: f-m, Tr crs, r v crs, pr-mod srt else a.a., com clayey Sd
Tr: Mic, Glauc

Base Frigg at 1205 m MD / 1204.5 m TVD RKB

Clst: varic, v lt gry, m dk gry, gnsh gry, sft-frm, sbblky, occ amor, slty & sdy, non calc

Clst: varic, v lt gry, m dk gry, gnsh gry, also r dk yelsh brn, sft-frm, blky - sbblky, occ amor, slty & sdy, non calc

Sd: dom clr-trnsl, com yelsh iron Stn on Qtz Gr, dom f-m, r -Tr crs, wl-mod srt, r Glauc

Clst: varic, v lt gry, m dk gry, gnsh gry, also Tr grysh brn-mod brn, sft, blky-sbblky, loc sli amor, sli stky, sli slty, sli calc

Claystone
Clst: varic, v lt gry, m dk gry, gnsh gry, dom grysh brn-mod brn, sft, blky-sbblky, loc sli amor, sli stky, sli slty, sli calc

FIT at 1329.0 m MD / 1328.5 m TVD, 1.58 SG

LOT at 1331.0 m MD / 1330.5 m TVD, 2.05 SG

Top Balder at 1338 m MD / 1337.5 m TVD RKB

Tuffaceous Claystone with rare Limestone stringers
Tf Clst: varic, m dk gry, lt-m blsh grym frm, blky, blk & wh spk (Tf), loc Tr micropyr

Ls: pksh gry, v lt gry, m lt gry, frm, blky, microxln

Tr Sltst: brnsh gry, frm, blky, blk spk, crumbly, sli calc

Tr Sst: loc Tr Sd as lse Qtz Gr, f-m, Tr crs, sbang-sbrndd, occ ang, mod srt

Tf Clst: varic, dom olv blk-dk gry & non tf, occ dk gry & tf (wh & blk spk), Tr m blsh gry, frm, blky, loc crumbly w/ tf, sli slty, loc micromic, loc micropyr, non-sli calc, loc mod calc when tf

Tr Ls: pksh gry, v lt gry, also yelsh or, hd, blky, sli dol, suc xln

Top Sele at 1385 m MD / 1384.4 m TVD RKB

Claystone, occasionally Tuffaceous and Trace Limestone
Clst: loc tf, varic, dom dk gry & tf (wh & blk mot/spk), Tr m blsh gry & tf, frm, blky, loc crumbly when tf, sli slty, loc micromic, loc micropyr, non-sli calc, loc mod calc when tf

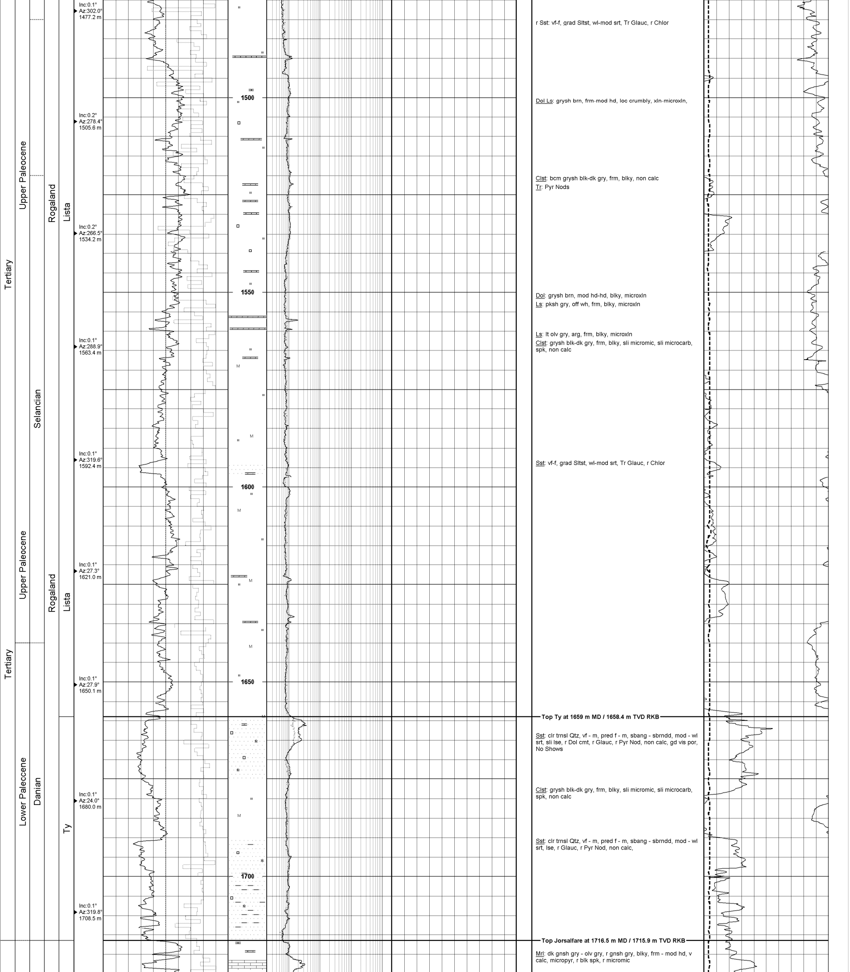
Ls: pksh gry, yelsh gry, v lt gry, m lt gry, frm, blky, microxln

Top Lista at 1400 m MD / 1399.4 m TVD RKB

Claystone
Clst: dom olv blk-dk gry & non tf, also Tr gnsh gry, frm, sbblky-blky, sli micromic, loc Tr micropyr, non calc

Clst: bcm dk gnsh gry, frm, blky, sli micromic, non calc, loc sli slty

Ls: lt olv gry, frm, blky, microxln



r Sst: vf-f, grad Sltst, wl-mod srt, Tr Glauc, r Chlor

Dol Ls: grysh brn, frm-mod hd, loc crumbly, xln-microxln,

Clst: bcm grysh blk-dk gry, frm, blky, non calc

Tr: Pyr Nods

Dol: grysh brn, mod hd-hd, blky, microxln

Ls: pksh gry, off wh, frm, blky, microxln

Ls: lt olv gry, arg, frm, blky, microxln

Clst: grysh blk-dk gry, frm, blky, sli micromic, sli microcarb, spk, non calc

Sst: vf-f, grad Sltst, wl-mod srt, Tr Glauc, r Chlor

Top Ty at 1659 m MD / 1658.4 m TVD RKB

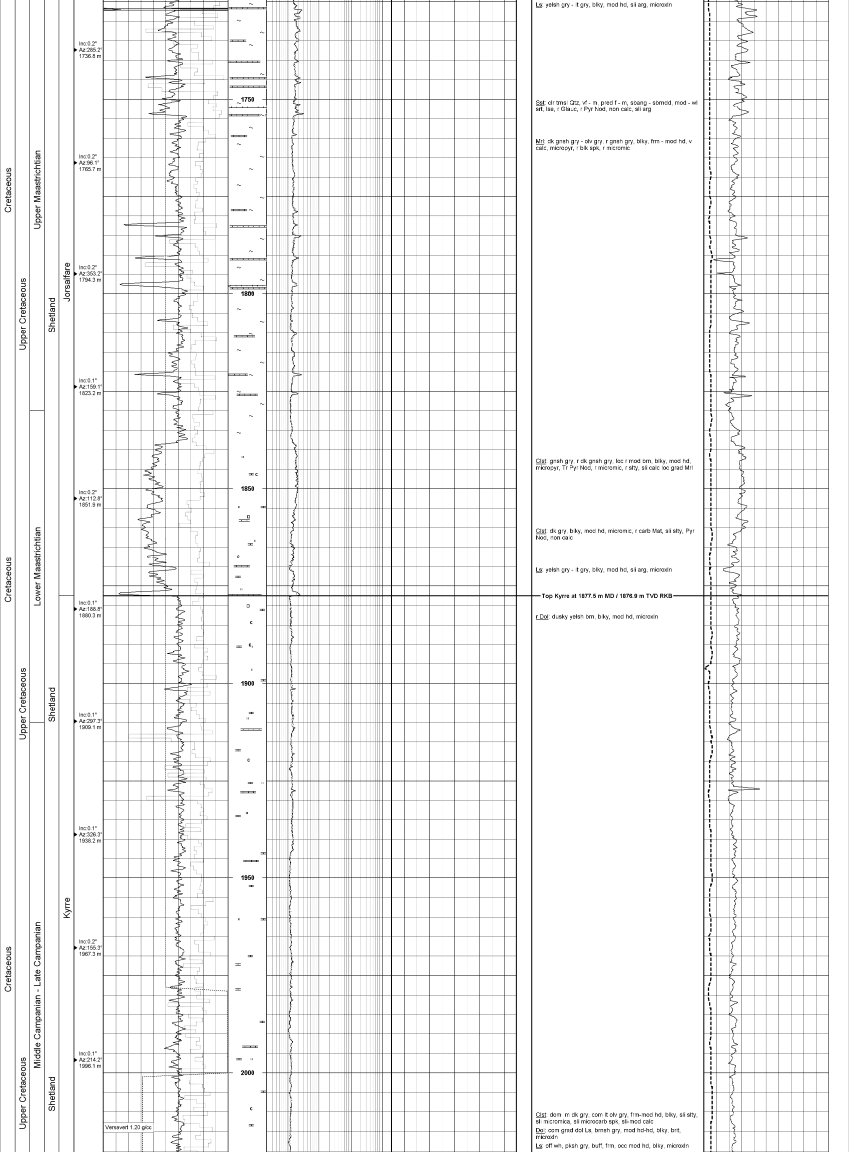
Sst: clr trnsl Qtz, vf - m, pred f - m, sbang - sbrndd, mod - wl srt, sli lse, r Dol cmt, r Glauc, r Pyr Nod, non calc, gd vis por, No Shows

Clst: grysh blk-dk gry, frm, blky, sli micromic, sli microcarb, spk, non calc

Sst: clr trnsl Qtz, vf - m, pred f - m, sbang - sbrndd, mod - wl srt, lse, r Glauc, r Pyr Nod, non calc,

Top Jorsalfare at 1716.5 m MD / 1715.9 m TVD RKB

Mrl: dk gnsh gry - olv gry, r gnsh gry, blky, frm - mod hd, v calc, micropyr, r blk spk, r micromic



Ls: yelsh gry - lt gry, blky, mod hd, sli arg, microxln

Sst: clr trnsl Qtz, vf - m, pred f - m, sbang - sbrndd, mod - wl srt, lse, r Glauc, r Pyr Nod, non calc, sli arg

Mrl: dk gnsh gry - olv gry, r gnsh gry, blky, frm - mod hd, v calc, micropyr, r blk spk, r micromic

Clst: gnsh gry, r dk gnsh gry, loc r mod brn, blky, mod hd, micropyr, Tr Pyr Nod, r micromic, r slty, sli calc loc grad Mrl

Clst: dk gry, blky, mod hd, micromic, r carb Mat, sli slty, Pyr Nod, non calc

Ls: yelsh gry - lt gry, blky, mod hd, sli arg, microxln

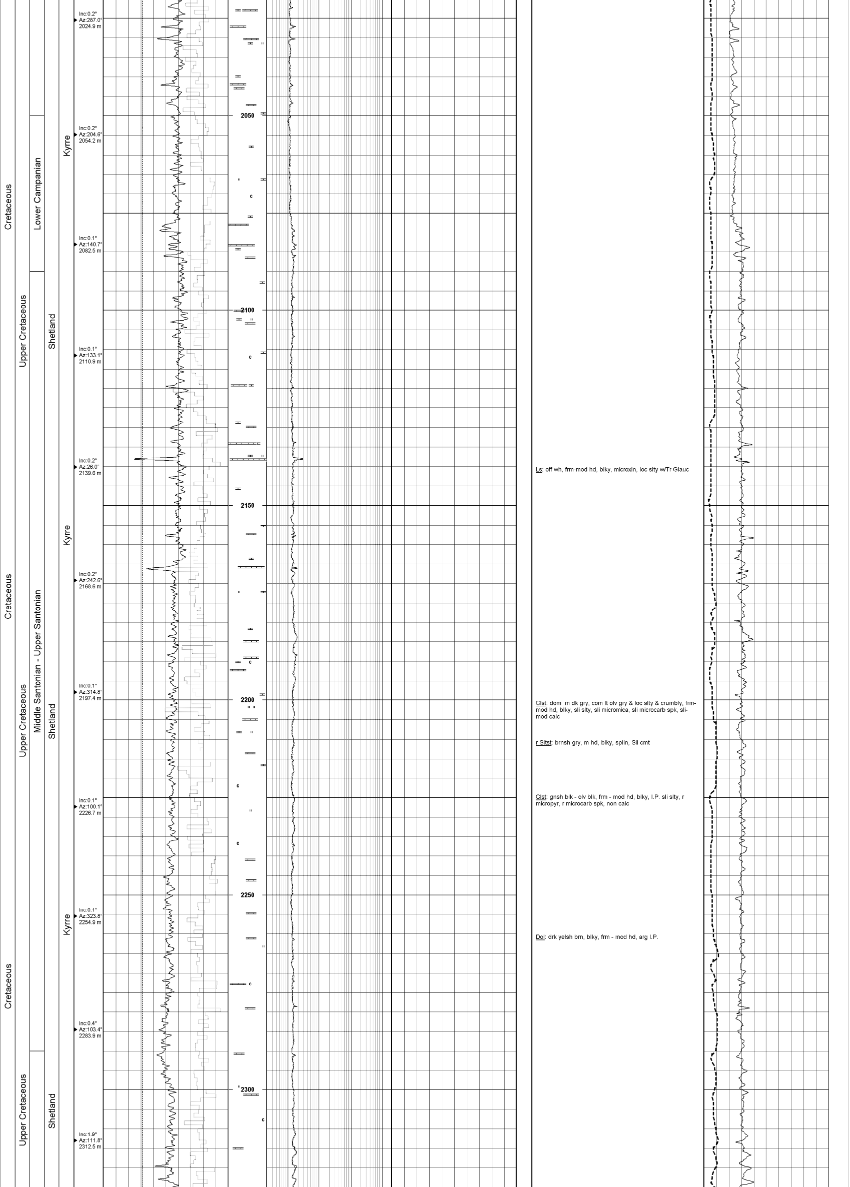
Top Kyrre at 1877.5 m MD / 1876.9 m TVD RKB

r Dol: dusky yelsh brn, blky, mod hd, microxln

Clst: dom m dk gry, com lt olv gry, frm-mod hd, blky, sli slty, sli micromica, sli microcarb spk, sli-mod calc

Dol: com grad dol Ls, brnsh gry, mod hd-hd, blky, brit, microxln

Ls: off wh, pksh gry, buff, frm, occ mod hd, blky, microxln



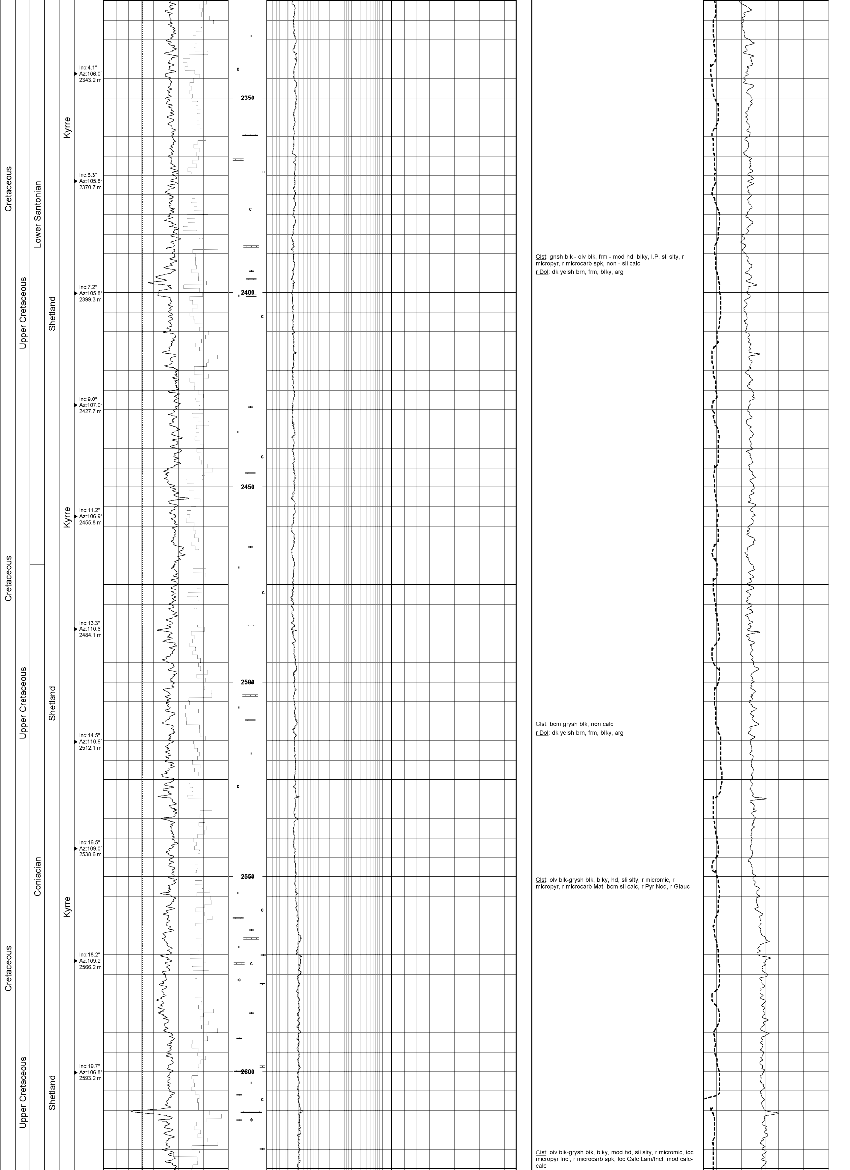
Ls: off wh, frm-mod hd, blky, microxln, loc slty w/Tr Glauc

Clst: dom m dk gry, com lt olv gry & loc slty & crumbly, frm-mod hd, blky, sli slty, sli micromica, sli microcarb spk, sli-mod calc

r Sltst: brnsh gry, m hd, blky, splin, Sil cmt

Clst: gnsh blk - olv blk, frm - mod hd, blky, I.P. sli slty, r micropyr, r microcarb spk, non calc

Dol: drk yelsh brn, blky, frm - mod hd, arg I.P.

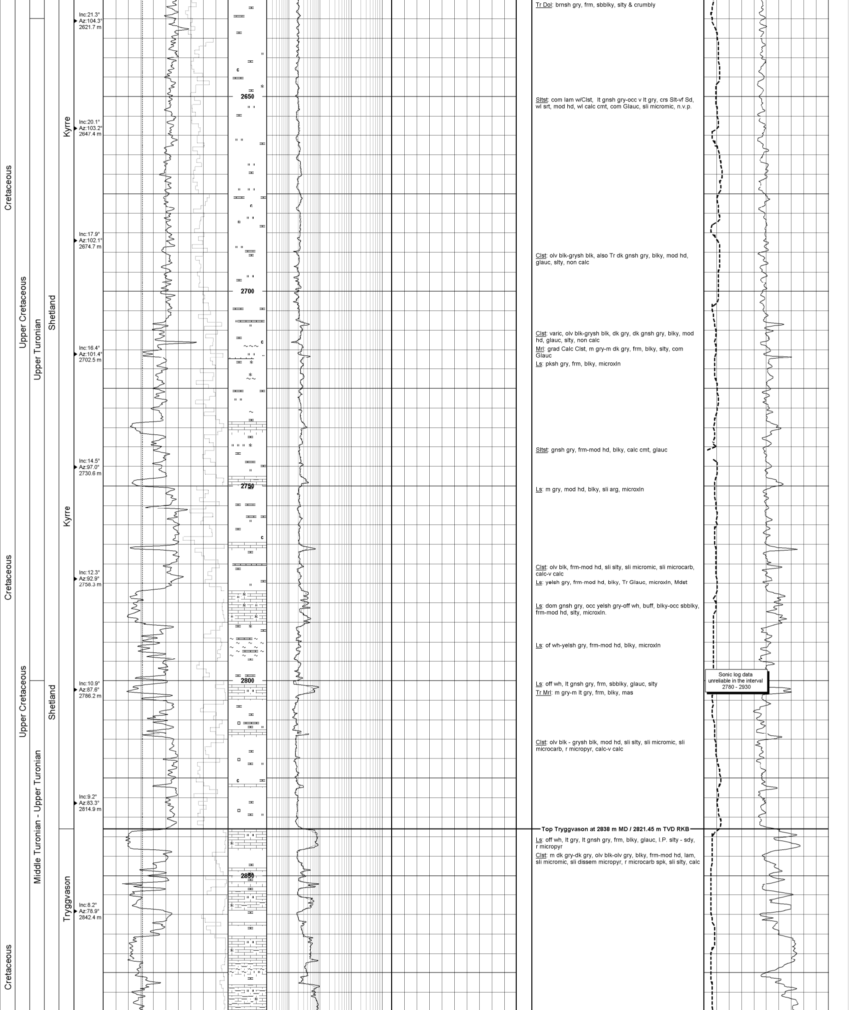


Clst: gnsh blk - olv blk, frm - mod hd, blky, I.P. sli slty, r micropyr, r microcarb spk, non - sli calc
r Dol: dk yelsh brn, frm, blky, arg

Clst: bcm grysh blk, non calc
r Dol: dk yelsh brn, frm, blky, arg

Clst: olv blk-grysh blk, blky, hd, sli slty, r micromic, r micropyr, r microcarb Mat, bcm sli calc, r Pyr Nod, r Glauc

Clst: olv blk-grysh blk, blky, mod hd, sli slty, r micromic, loc micropyr Incl, r microcarb spk, loc Calc Lam/Incl, mod calc-calc



Tr Dol: brnsh gry, frm, sbblky, slty & crumbly

Sltst: com lam w/Clst, lt gnsh gry-occ v lt gry, crs Slt-vf Sd, wl srt, mod hd, wl calc cmt, com Glauc, sli micromic, n.v.p.

Clst: olv blk-grysh blk, also Tr dk gnsh gry, blky, mod hd, glauc, slty, non calc

Clst: varic, olv blk-grysh blk, dk gry, dk gnsh gry, blky, mod hd, glauc, slty, non calc

Mrl: grad Calc Clst, m gry-m dk gry, frm, blky, slty, com Glauc

Ls: pksh gry, frm, blky, microxln

Sltst: gnsh gry, frm-mod hd, blky, calc cmt, glauc

Ls: m gry, mod hd, blky, sli arg, microxln

Clst: olv blk, frm-mod hd, sli slty, sli micromic, sli microcarb, calc-v calc

Ls: yelsh gry, frm-mod hd, blky, Tr Glauc, microxln, Mdst

Ls: dom gnsh gry, occ yelsh gry-off wh, buff, blky-occ sbblky, frm-mod hd, slty, microxln.

Ls: of wh-yelsh gry, frm-mod hd, blky, microxln

Sonic log data
unreliable in the interval
2780 - 2930

Ls: off wh, lt gnsh gry, frm, sbblky, glauc, slty

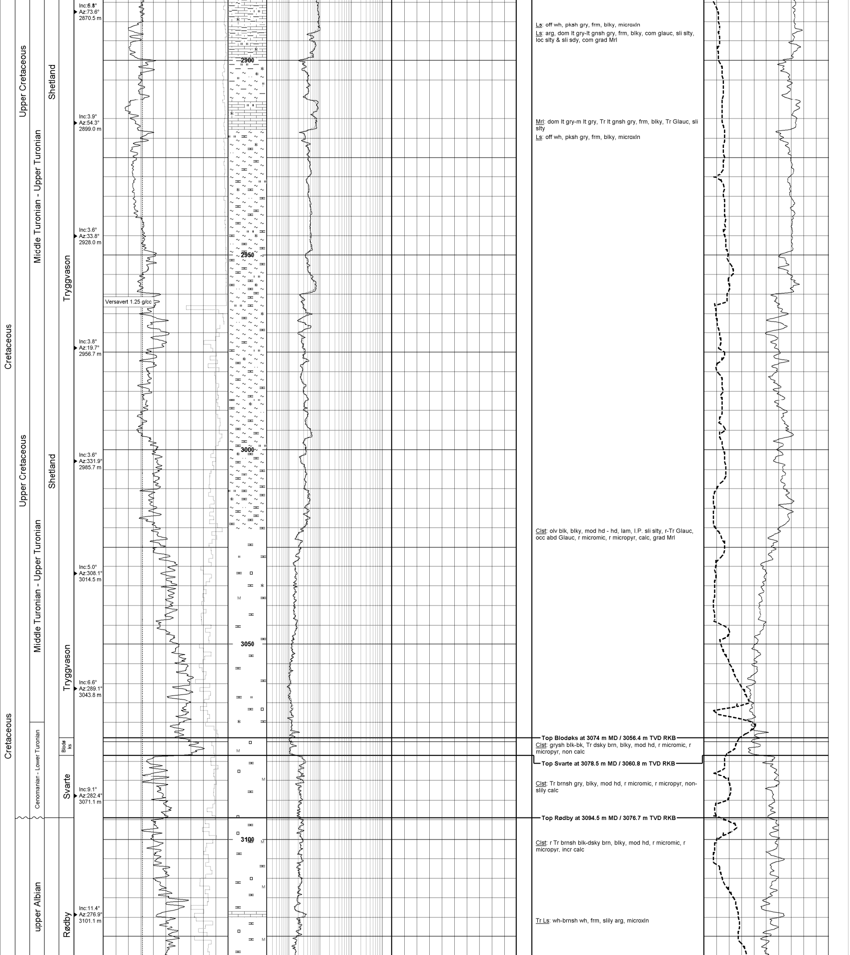
Tr Mrl: m gry-m lt gry, frm, blky, mas

Clst: olv blk - grysh blk, mod hd, sli slty, sli micromic, sli microcarb, r micropyr, calc-v calc

Top Tryggvason at 2838 m MD / 2821.45 m TVD RKB

Ls: off wh, lt gry, lt gnsh gry, frm, blky, glauc, I.P. slty - sdy, r micropyr

Clst: m dk gry-dk gry, olv blk-olv gry, blky, frm-mod hd, lam, sli micromic, sli dissem micropyr, r microcarb spk, sli slty, calc



Ls: off wh, pksh gry, frm, blky, microxln

Ls: arg, dom lt gry-lt gnsh gry, frm, blky, com glauc, sli slty, loc slty & sli sdy, com grad Mrl

Mrl: dom lt gry-m lt gry, Tr lt gnsh gry, frm, blky, Tr Glauc, sli slty

Ls: off wh, pksh gry, frm, blky, microxln

Clst: olv blk, blky, mod hd - hd, lam, I.P. sli slty, r-Tr Glauc, occ abd Glauc, r micromic, r micropyr, calc, grad Mrl

Top Blodøks at 3074 m MD / 3056.4 m TVD RKB

Clst: grysh blk-bk, Tr dsky brn, blky, mod hd, r micromic, r micropyr, non calc

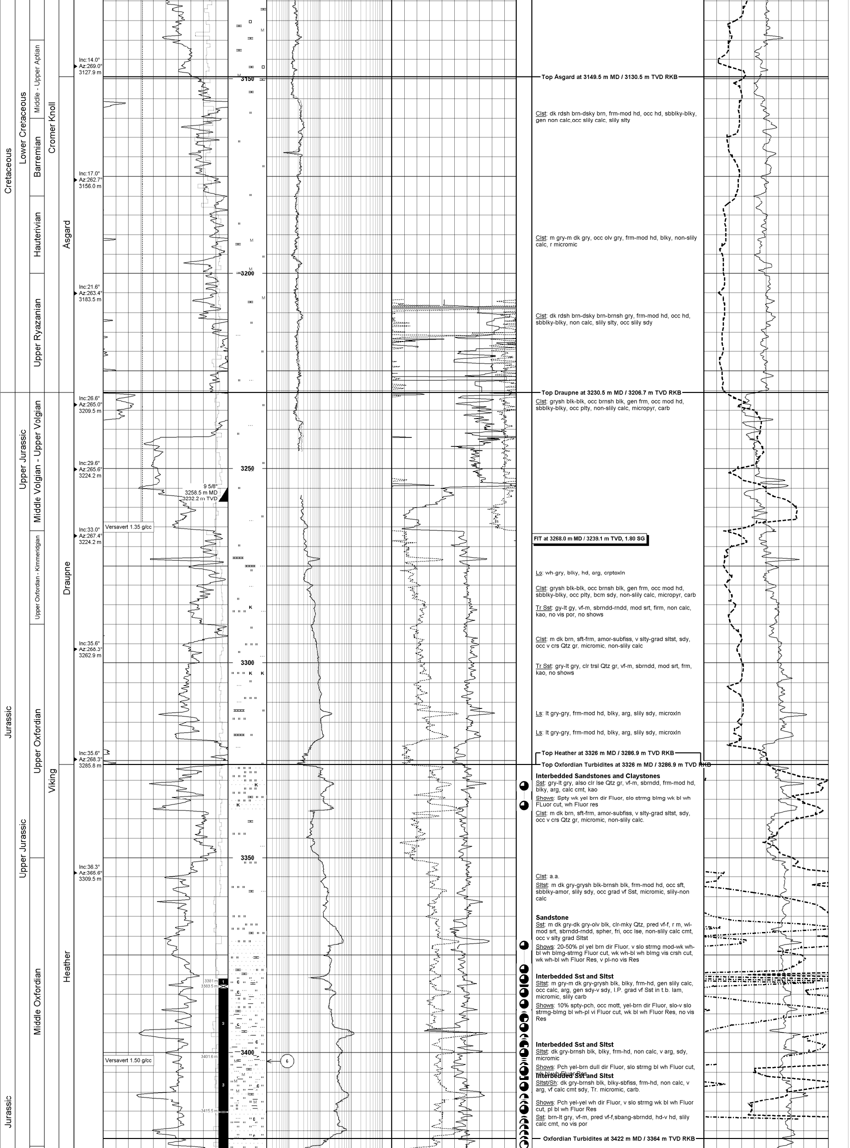
Top Svarte at 3078.5 m MD / 3060.8 m TVD RKB

Clst: Tr brnsh gry, blky, mod hd, r micromic, r micropyr, non-slily calc

Top Rødby at 3094.5 m MD / 3076.7 m TVD RKB

Clst: r Tr brnsh blk-dsky brn, blky, mod hd, r micromic, r micropyr, incr calc

Tr Ls: wh-brnsh wh, frm, slily arg, microxln



Top Åsgard at 3149.5 m MD / 3130.5 m TVD RKB

Clst: dk rdsh brn-dsky brn, frm-mod hd, occ hd, sbblky-blky, gen non calc,occ slily calc, slily slty

Clst: m gry-m dk gry, occ olv gry, frm-mod hd, blky, non-slily calc, r micromic

Clst: dk rdsh brn-dsky brn-brnsh gry, frm-mod hd, occ hd, sbblky-blky, non calc, slily slty, occ slily sdy

Top Draupne at 3230.5 m MD / 3206.7 m TVD RKB

Clst: grysh blk-blk, occ brnsh blk, gen frm, occ mod hd, sbblky-blky, occ plty, non-slily calc, micropyr, carb

FIT at 3268.0 m MD / 3239.1 m TVD, 1.80 SG

Ls: wh-gry, blky, hd, arg, crptoxln

Clst: grysh blk-blk, occ brnsh blk, gen frm, occ mod hd, sbblky-blky, occ plty, bcm sdy, non-slily calc, micropyr, carb

Tr Sst: gy-lt gy, vf-m, sbrndd-rndd, mod srt, firm, non calc, kao, no vis por, no shows

Clst: m dk brn, sft-frm, amor-subfiss, v slty-grad sltst, sdy, occ v crs Qtz gr, micromic, non-slily calc

Tr Sst: gry-lt gry, clr trsl Qtz gr, vf-m, sbrndd, mod srt, frm, kao, no shows

Ls: lt gry-gry, frm-mod hd, blky, arg, slily sdy, microxln

Ls: lt gry-gry, frm-mod hd, blky, arg, slily sdy, microxln

Top Heather at 3326 m MD / 3286.9 m TVD RKB

Top Oxfordian Turbidites at 3326 m MD / 3286.9 m TVD RKB

Interbedded Sandstones and Claystones

Sst: gry-lt gry, also clr lse Qtz gr, vf-m, sbrndd, frm-mod hd, blky, arg, calc cmt, kao

Shows: Spty wk yel brn dir Fluor, slo strmg blmg wk bl wh FLuor cut, wh Fluor res

Clst: m dk brn, sft-frm, amor-subfiss, v slty-grad sltst, sdy, occ v crs Qtz gr, micromic, non-slily calc.

Clst: a.a.

Sltst: m dk gry-grysh blk-brnsh blk, frm-mod hd, occ sft, sbblky-amor, slily sdy, occ grad vf Sst, micromic, slily-non calc

Sandstone

Sst: m dk gry-dk gry-olv blk, clr-mky Qtz, pred vf-f, r m, wl-mod srt, sbrndd-rndd, spher, fri, occ lse, non-slily calc cmt, occ v slty grad Sltst

Shows: 20-50% pl yel brn dir Fluor, v slo strmg mod-wk wh-bl wh blmg-strmg Fluor cut, wk wh-bl wh blmg vis crsh cut, wk wh-bl wh Fluor Res, v pl-no vis Res

Interbedded Sst and Sltst

Sltst: m gry-m dk gry-grysh blk, blky, frm-hd, gen slily calc, occ calc, arg, gen sdy-v sdy, I.P. grad vf Sst in t.b. lam, micromic, slily carb

Shows: 10% spty-pch, occ mott, yel-brn dir Fluor, slo-v slo strmg-blmg bl wh-pl vi Fluor cut, wk bl wh Fluor Res, no vis Res

Interbedded Sst and Sltst

Sltst: dk gry-brnsh blk, blky, frm-hd, non calc, v arg, sdy, micromic

Shows: Pch yel-brn dull dir Fluor, slo strmg bl wh Fluor cut, wk bl wh Fluor Res

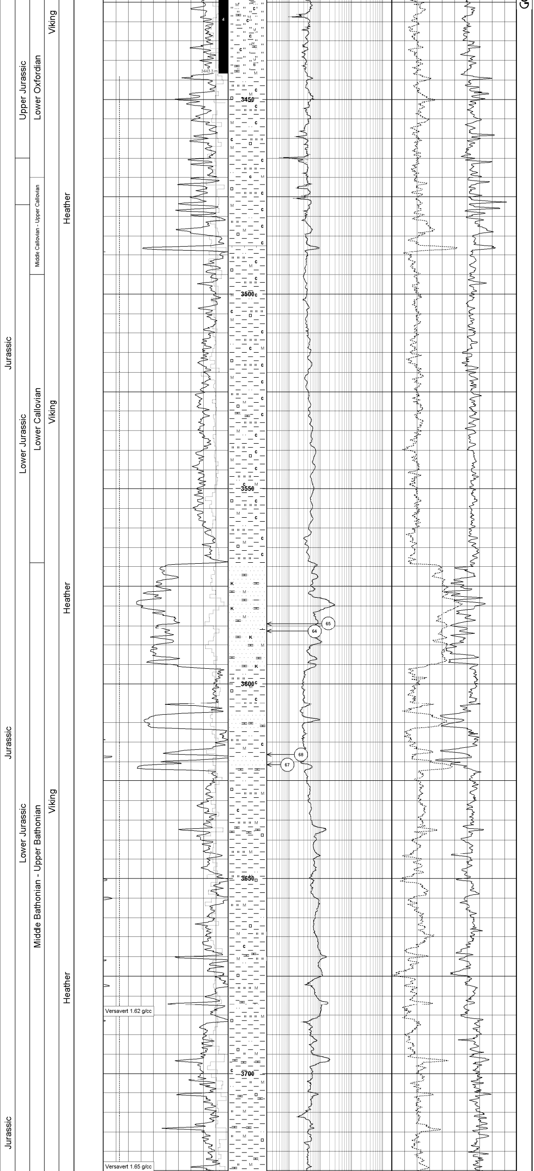
Interbedded Sst and Sltst

Sltst/Sh: dk gry-brnsh blk, blky-sbfiss, frm-hd, non calc, v arg, vf calc cmt sdy, Tr. micromic, carb.

Shows: Pch yel-yel wh dir Fluor, v slo strmg wk bl wh Fluor cut, pl bl wh Fluor Res

Sst: brn-lt gry, vf-m, pred vf-f,sbang-sbrndd, hd-v hd, slily calc cmt, no vis por

Oxfordian Turbidites at 3422 m MD / 3364 m TVD RKB



Sltst/Sh: dk gry-brnsh blk, fiss-blky, frm-hd, slily calc, v arg, micromic, carb.

Shale with minor Limestone stringers
Sh: dk gry-brnsh blk, frm-hd, fiss-blky, slily calc, v arg, vf sdy, v carb, micromic, micropyr.

Ls: lt brn-gry, frm-hd, blky, microxln, arg.

Shale with rare Limestone beds
Sh: dk gry-brnsh blk, frm-hd, fiss-blky, slily calc, v arg, vf sdy, v carb, micromic, micropyr.

Ls: lt brn-gry, frm-hd, blky, microxln, arg.

Sandstone with minor Shale beds
Sst: lt gry-med gry, occ med dk gry, clr trsl Qtz, ang-sbang, wl srt, sft-frm, occ mod hd, v calc cmt, Tr Kao, Tr micromic, i. p. arg, no vis Por.

Sh: dk gry-brnsh blk, bcm brn blk, frm-hd, fiss-blky, slily calc, v slty, grad sltst, vf sdy, v carb, micromic, r Tr Micropyr, occ Tr carb.

Shale with interbedded Sandstones
Sh: dk gry-brnsh blk, bcm brn blk, frm-hd, fiss-blky, slily calc, v slty, grad sltst, vf sdy, v carb, micromic, r Tr Micropyr, occ Tr carb.

Sst: lt gry-med gry, occ med dk gry, clr trsl Qtz, ang-sbang, wl srt, sft-frm, occ mod hd, v calc cmt, Tr Kao, Tr micromic, i. p. arg, n.v.p.

Sh: m dk gry-brn blk, frm-mod hard, sbfiss-fiss, occ blky, slty-v slty, occ grad Sltst, occ vf sdy, slily calc, micromic, Tr Micropyr, occ v carb.

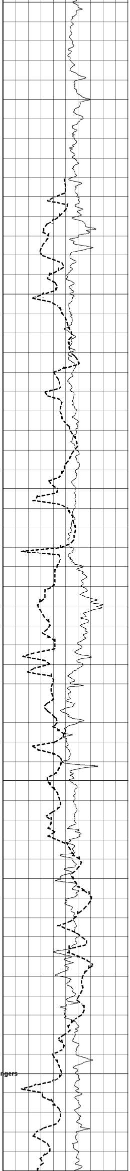
Shale with rare Limestone stringers
Sh: dk gry-brnsh blk, bcm brn blk, frm-hd, fiss-blky, slily calc, v slty, grad sltst, vf sdy, v carb, micromic, r Tr micropyr, occ Tr carb.

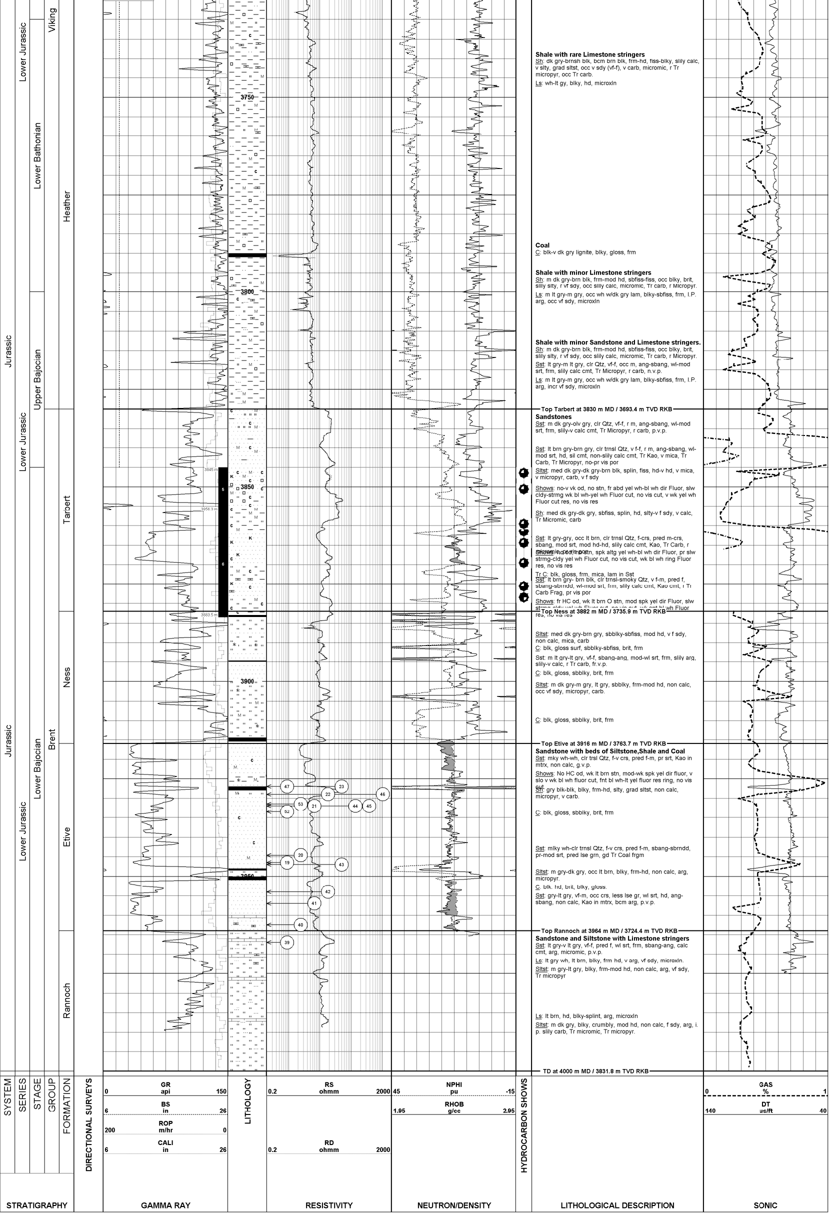
Ls: v lt gry-off wh, v lt yel brn, frm-hd, blky, microxln

Shale with interbedded Sandstone rare Limestone stringers
Sh: dk gry-brnsh blk, bcm brn blk, frm-hd, fiss-blky, slily calc, v slty, grad sltst, occ v sdy (vf-f), v carb, micromic, r Tr Micropyr, occ Tr carb.

Sst: dk brn-lt gry, also lse clr Qtz grn, vf-m, pred vf-f, mod-pr srt, sbang-sbrndd, mod srt, v arg, Kao

Ls: wh-lt gy, blky, hd, microxln





Shale with rare Limestone stringers

Sh: dk gry-brnsh blk, bcm brn blk, frm-hd, fiss-blky, slily calc, v slty, grad sltst, occ v sdy (vf-f), v carb, micromic, r Tr micropyr, occ Tr carb.

Ls: wh-lt gy, blky, hd, microxln

Coal

C: blk-v dk gry lignite, blky, gloss, frm

Shale with minor Limestone stringers

Sh: m dk gry-brn blk, frm-mod hd, sbfiss-fiss, occ blky, brit, slily slty, r vf sdy, occ slily calc, micromic, Tr carb, r Micropyr.

Ls: m lt gry-m gry, occ wh w/dk gry lam, blky-sbfiss, frm, I.P. arg, occ vf sdy, microxln

Shale with minor Sandstone and Limestone stringers.

Sh: m dk gry-brn blk, frm-mod hd, sbfiss-fiss, occ blky, brit, slily slty, r vf sdy, occ slily calc, micromic, Tr carb, r Micropyr.

Sst: lt gry-m lt gry, clr Qtz, vf-f, occ m, ang-sbang, wl-mod srt, frm, slily calc cmt, Tr Micropyr, r carb, n.v.p.

Ls: m lt gry-m gry, occ wh w/dk gry lam, blky-sbfiss, frm, I.P. arg, incr vf sdy, microxln

Top Tarbert at 3830 m MD / 3693.4 m TVD RKB

Sandstones

Sst: m dk gry-olv gry, clr Qtz, vf-f, r m, ang-sbang, wl-mod srt, frm, slily-v calc cmt, Tr Micropyr, r carb, p.v.p.

Sst: lt brn gry-brn gry, clr trnsl Qtz, v f-f, r m, ang-sbang, wl-mod srt, hd, sil cmt, non-slily calc cmt, Tr Kao, v mica, Tr Carb, Tr Micropyr, no-pr vis por

Sltst: med dk gry-dk gry-brn blk, splin, fiss, hd-v hd, v mica, v micropyr, carb, v f sdy

Shows: no-v vk od, no stn, fr abd yel wh-bl wh dir Fluor, slw cldy-strmg wk bl wh-yel wh Fluor cut, no vis cut, v wk yel wh Fluor cut res, no vis res

Sh: med dk gry-dk gry, sbfiss, splin, hd, slty-v f sdy, v calc, Tr Micromic, carb

Sst: lt gry-gry, occ lt brn, clr trnsl Qtz, f-crs, pred m-crs, sbang, mod srt, mod hd-hd, slily calc cmt, Kao, Tr Carb, r micromic, pr vis por

Shows: no od, no stn, spk altg yel wh-bl wh dir Fluor, pr slw strmg-cldy yel wh Fluor cut, no vis cut, wk bl wh ring Fluor res, no vis res

Tr C: blk, gloss, frm, mica, lam in Sst

Sst: lt brn gry- brn blk, clr trnsl-smoky Qtz, v f-m, pred f, sbang-sbrndd, wl-mod srt, frm, slily calc cmt, Kao cmt, r Tr Carb Frag, pr vis por

Shows: fr HC od, wk lt brn O stn, mod spk yel dir Fluor, slw strmg cldy yel wh Fluor cut, no vis cut, wk cnt bl wh Fluor res, no vis res

Top Ness at 3882 m MD / 3735.9 m TVD RKB

Sltst: med dk gry-brn gry, sbblky-sbfiss, mod hd, v f sdy, non calc, mica, carb

C: blk, gloss surf, sbblky-sbfiss, brit, frm

Sst: m lt gry-lt gry, vf-f, sbang-ang, mod-wl srt, frm, slily arg, slily-v calc, r Tr carb, fr.v.p.

C: blk, gloss, sbblky, brit, frm

Sltst: m dk gry-m gry, lt gry, sbblky, frm-mod hd, non calc, occ vf sdy, micropyr, carb.

C: blk, gloss, sbblky, brit, frm

Top Etive at 3916 m MD / 3763.7 m TVD RKB

Sandstone with beds of Siltstone,Shale and Coal

Sst: mky wh-wh, clr trsl Qtz, f-v crs, pred f-m, pr srt, Kao in mtrx, non calc, g.v.p.

Shows: No HC od, wk lt brn stn, mod-wk spk yel dir fluor, v slo v wk bl wh fluor cut, fnt bl wh-lt yel fluor res ring, no vis cut

Sh: gry blk-blk, blky, frm-hd, slty, grad sltst, non calc, micropyr, v carb.

C: blk, gloss, sbblky, brit, frm

Sst: mlky wh-clr trnsl Qtz, f-v crs, pred f-m, sbang-sbrndd, pr-mod srt, pred lse grn, gd Tr Coal frgm

Sltst: m gry-dk gry, occ lt brn, blky, frm-hd, non calc, arg, micropyr.

C. blk. hd, brit, blky, gloss.

Sst: gry-lt gry, vf-m, occ crs, less lse gr, wl srt, hd, ang-sbang, non calc, Kao in mtrx, bcm arg, p.v.p.

Top Rannoch at 3964 m MD / 3724.4 m TVD RKB

Sandstone and Siltstone with Limestone stringers

Sst: lt gry-v lt gry, vf-f, pred f, wl srt, frm, sbang-ang, calc cmt, arg, micromic, p.v.p.

Ls: lt gry wh, lt brn, blky, frm hd, v arg, vf sdy, microxln.

Sltst: m gry-lt gry, blky, frm-mod hd, non calc, arg, vf sdy, Tr micropyr

Ls: lt brn, hd, blky-splint, arg, microxln

Sltst: m dk gry, blky, crumbly, mod hd, non calc, f sdy, arg, i. p. slily carb, Tr micromic, Tr micropyr.

TD at 4000 m MD / 3831.8 m TVD RKB