DANMARKS OG GRØNLANDS GEOLOGISKE UNDERSØGELSE RAPPORT 2012/55

The Albjära-1, Gislövshammar-2 and Fågeltofta-2 scientific wells, Scania, southern Sweden

Biostratigraphy, log correlation and TOC analysis

Niels H. Schovsbo & Arne T. Nielsen

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Released 30-06-2017

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1. Introduction

The Albjära-1, Fågeltofta-2 and Gislövshammar-2 wells (Figure 1) were drilled as part of several source rock evaluation projects funded by the Danish Energy Agency (EFP research grants), the Pre-Westphalien Source Rock Project (PREWSOR), the University of Copenhagen and the Geological Museum in the 1990'thies (Buchardt et al. 1997). The wells have been the study subject of a range of scientific disciplines including organic and inorganic geochemistry, palaeontology, stratigraphy and sedimentology.

This report summarises part of the work done on the wells including biostratigraphy, log stratigraphy and source rock screening. In preparation of this report the log stratigraphy have been updated and a high resolution TOC profile has been measured through the *Peltura* superzones in the Fågeltofta-2 well in order to examine the short term variability of the TOC content.

The presented log stratigraphy for Scania includes other wells penetrating the Alum Shale Formation viz. the Skelbro-2 and Billegrav-2 wells, Bornholm (Schovsbo et al. 2011) and the Slagelse-1, Zeeland, (Schovsbo 2011a) and the Terne-1, Kattegat, (Schovsbo 2011b) wells (Figure 1).

Data in this report includes: well summary information, biostratigraphical division, log stratigraphy, correlation between the well, 824 TOC analysis measured in the wells and down hole logs measured in the bore holes. All data are included on the attached CD in digital form.

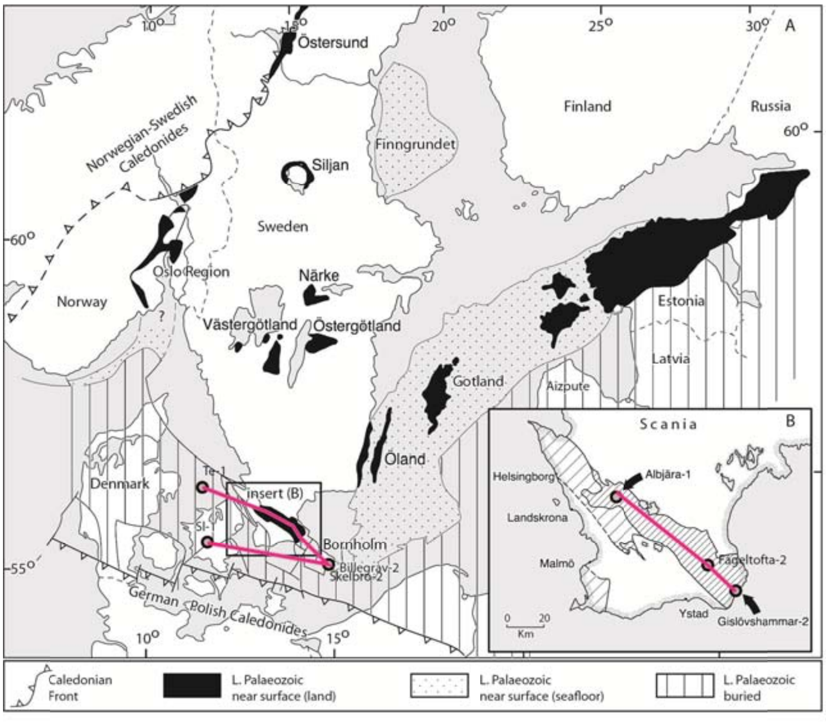

Figure 1. Location of the Albjära-1, Fågeltofta-2 and Gislövshammar-2 wells in Sweden (Scania) and the Terne-1, Slagelse-1 Skelbro-2 and Billegrav-2 wells in Denmark. Red lines indicate the geoprofiles presented in Figures 14 and 15. Modified from Buchardt et al. (1997).

2. Well Summary Sheet for Albjära-1

Common well Name:	Albjära-1
Location:	Scania (Sweden), 5 km NE of Svalöv
Drill Position, Lat, long:	55.9340; 13.1814
Elevation:	Approximately 100 m above sea level
Reference grid:	wgs84
TD:	237.4 m
Formation at TD:	Hardeberga Fm
Drilling type:	Diamond coring
Core diameter:	5.5 cm
Core barrel length:	3 m
Recovery:	almost 100%
Drilling fluids:	Fresh water with no additives
Casing:	Steel casing (0- 3 m)
Drilling company:	Fakse Kalk A/S, Hovedgade 13, 4654 Fakse Ladeplads
Drilling date:	Phase 1: in September 1991 and phase 2 in September 1997
Logging:	Gamma and formation resistivity and temperature logs
Purpose:	Scientific
Well site geologist:	Arne Thorshøj Nielsen, Geological Museum University of Copenhagen
Tops:	Komstad: 104.75 m Tøyen Shale: 107.5 m Bjørkåsholmen Fm: 134.64 m Alum Shale: 134.94 m Hardeberga Fm: 232.54 m
TOC:	211 Leco type analyses measured at the University of Copenhagen and at GEUS
References:	Maletz (1995), Lauridsen (2000), Schovsbo (2003)
Core-log depth shift:	In general 35 cm between core (shallow level) and log (deeper level) depth.

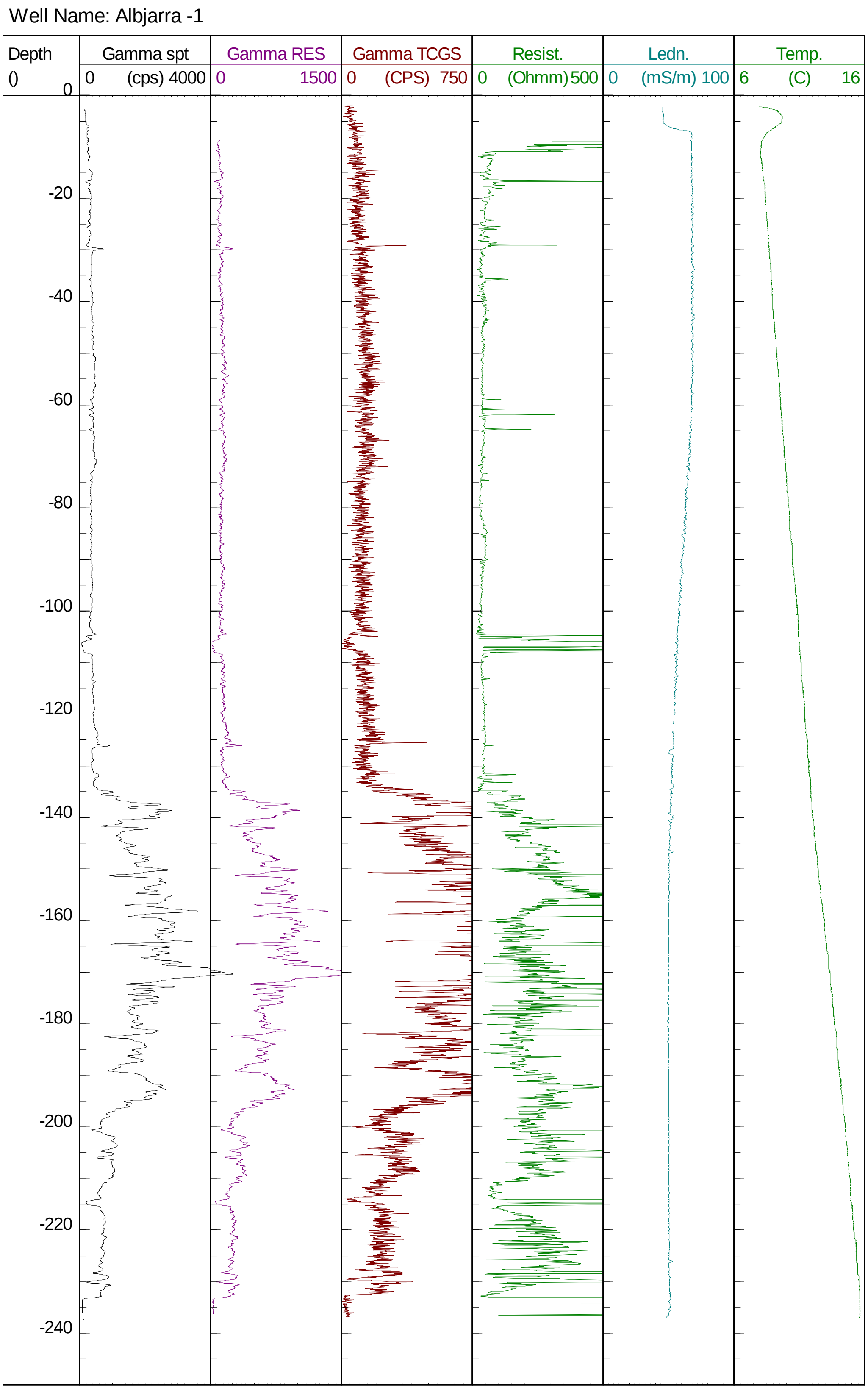

Figure 2. Down hole logs in the Albjära-1 bore hole. A digital version of the logs is included on the attached CD.

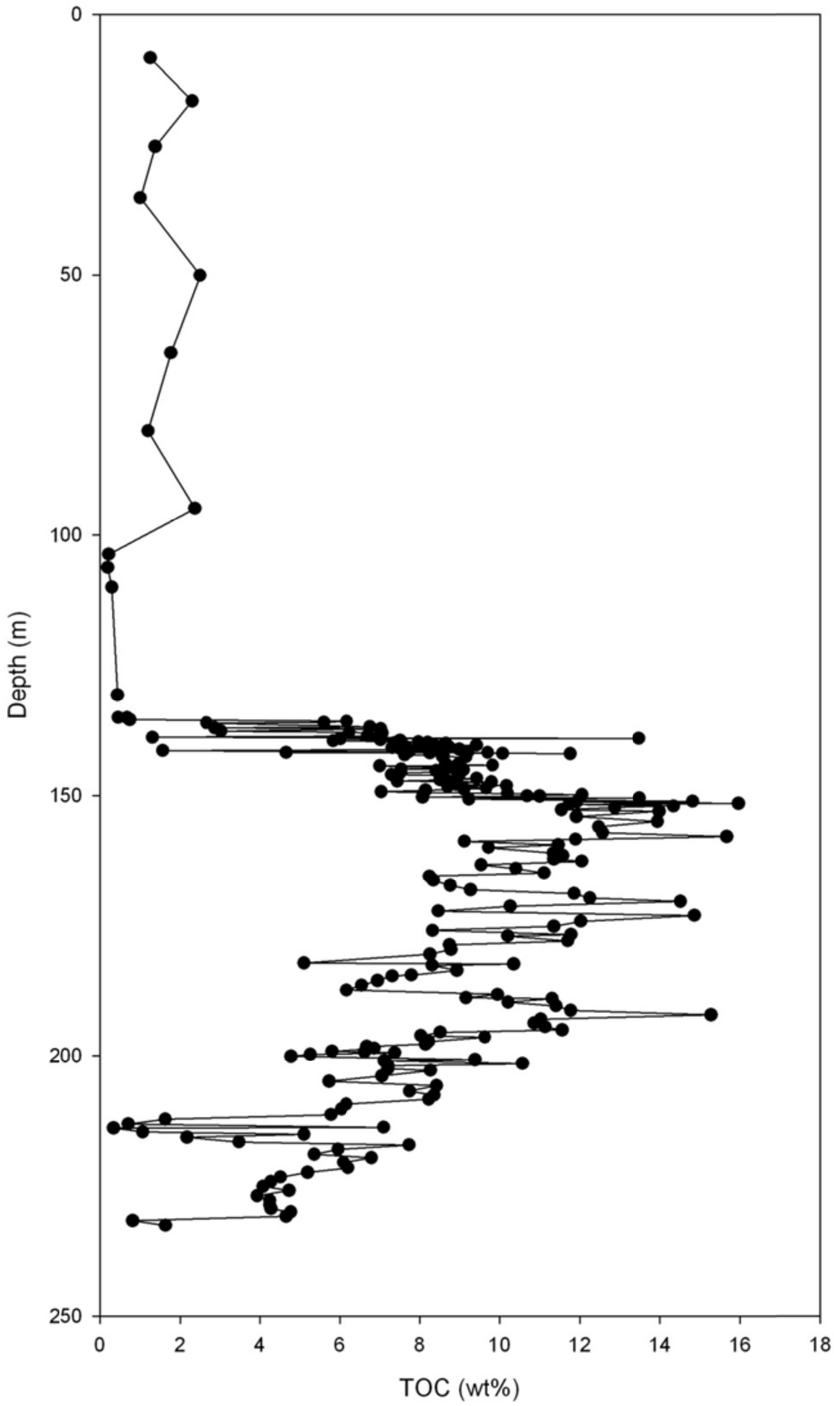

Figure 3. TOC measurements in the Albjära-1 core.

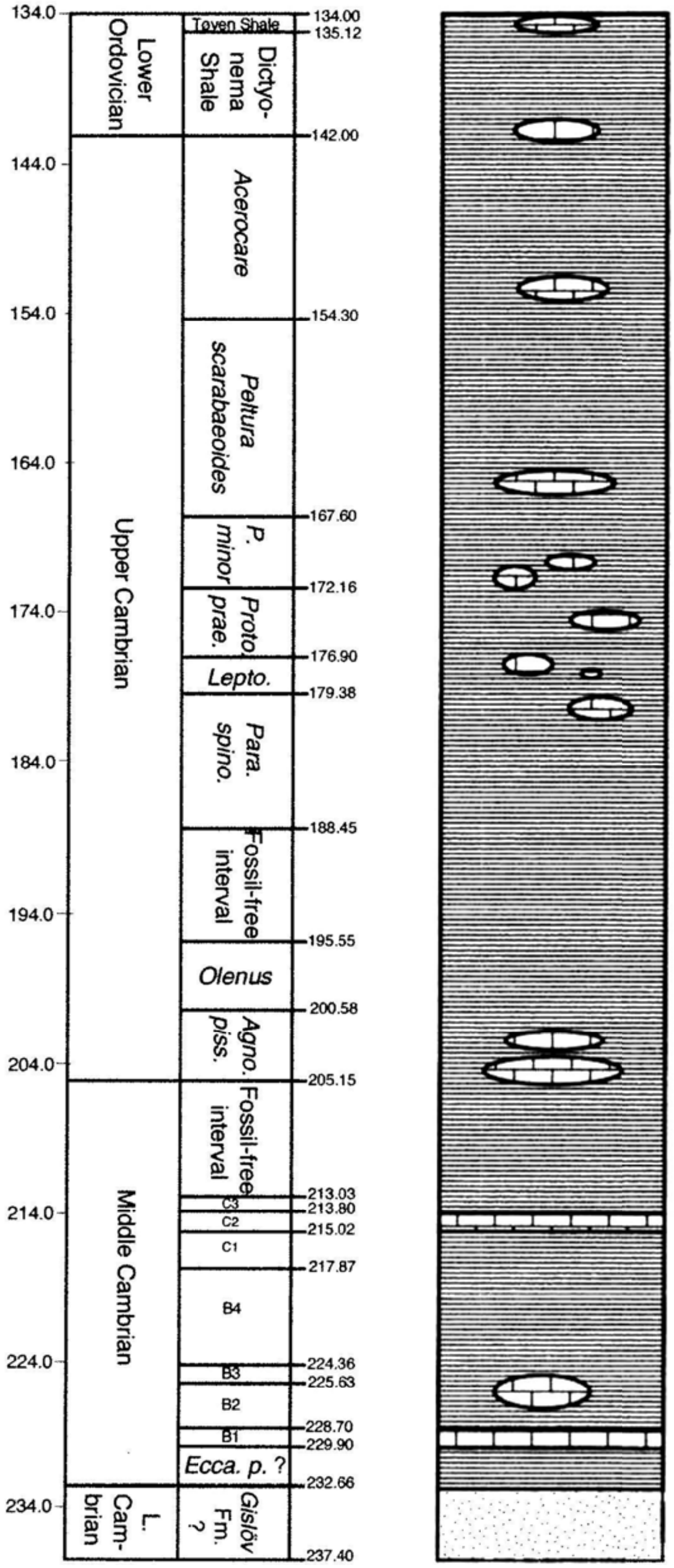

Figure 4. Stratigraphy of the Alum Shale interval in the Albjära-1 well. From Lauridsen (2000). Zones B1-C3 refer to the terminology of Westergård (1946). The interval hesitantly assigned to the *Eccaparadoxides pinus* Zone represents the *Triplagnostus gibbus* Zone (= B1). The basal sandstone represents the Hardeberga Fm; the Gislöv Fm is not developed at the drill-site. In modern terminology the Upper Cambrian is referred to as the Furongian; it starts at the base of the *Olenus* Superzone.

3. Well Summary Sheet for Fågeltofta-2

Well Name:	Fågeltofta-2
Location:	Immediately West of the village of Bondrum near Fågeltofta church, Scania, southern Sweden. The well is located within an abandoned Komstad limestone quarry.
Drill Position, Lat, long:	55.395; 14.03
Elevation:	132 m above sea level
Reference grid:	wgs84
TD:	122.3 m (logger), 121.75 m (core depth)
Formation at TD:	Læså Fm (Rispebjerg Mbr)
Drilling type:	Diamond coring
Core diameter:	5.5 cm
Core barrel length:	3 m
Recovery:	Near full recovery 100%
Drilling fluids:	Fresh water no additives
Casing:	Steel casing in the quaternary sediments + 1 m bedrock (0-6 m).
Drilling company:	Fakse Kalk A/S, Hovedgade 13, 4654 Fakse Ladeplads
Drilling date:	October 1997
Logging:	Gamma ray, formation resistivity, induction and temperature
Purpose:	Scientific
Well site geologist:	Arne Thorshøj Nielsen, Geological Museum University of Copenhagen
Tops:	Top Komstad Limestone: 4.78 m Top Tøyen Shale: 14.1 m Top Alum Shale: 21.25 m Top Gislöv Fm: 116.2 m Top Læså Fm: 120.95 m
TOC:	231 sample of TOC, Leco type analyses measured at the University of Copenhagen
References:	Christensen (2003)
Core-log depth shift:	Varies between +55- -55 cm. At TD the log read 122.3 m and the driller reports a TD of 121.75 m (55 cm difference and the log depth are deeper). This depth shift appear to be applicable to about 70 m. Above this level the depth difference varies between 35 to 55 cm (shallower loggers depth compared to core depth). This suggests that there is a previous un-notified depth error in the recording of the core depth. The shift in depth (from -55 to +55 cm core shift) occurs at about +70 m of depth. A detailed account for the this awaits a re-description of the core.

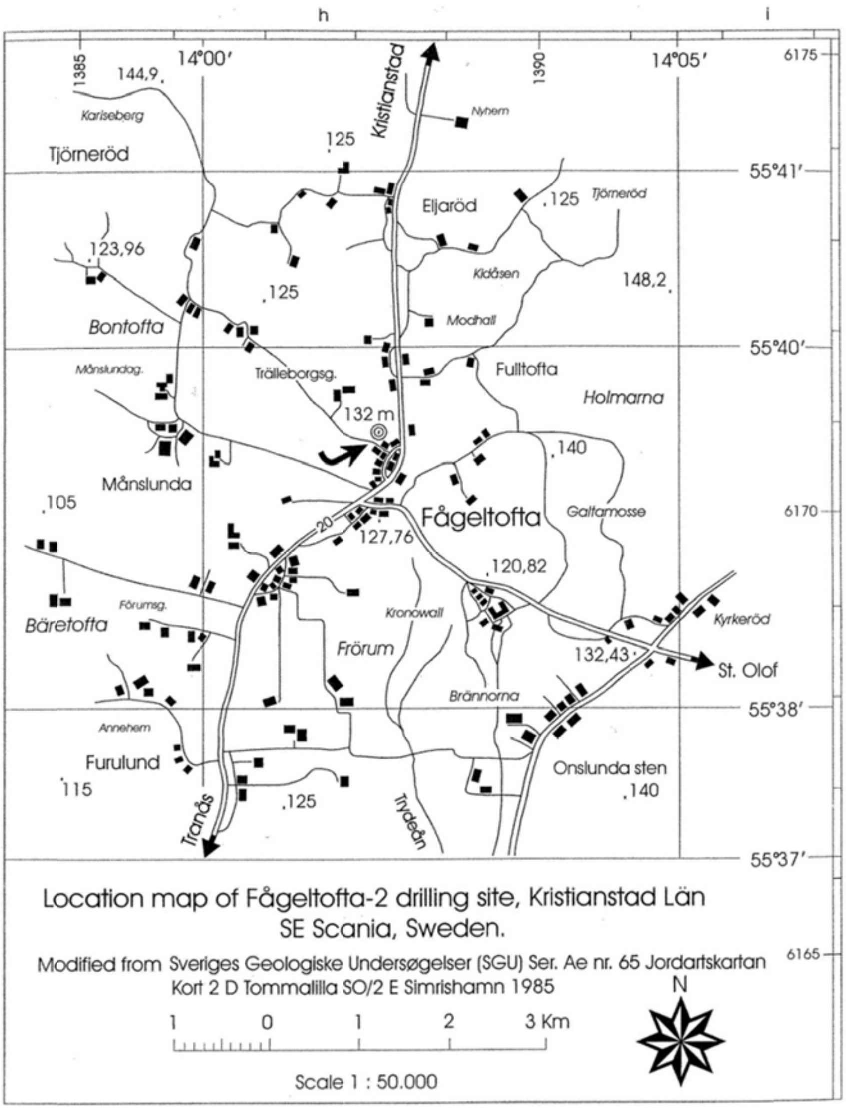

Figure 5. Sketch map showing the location of the Fågeltofta-2 well. From Christensen (2003).

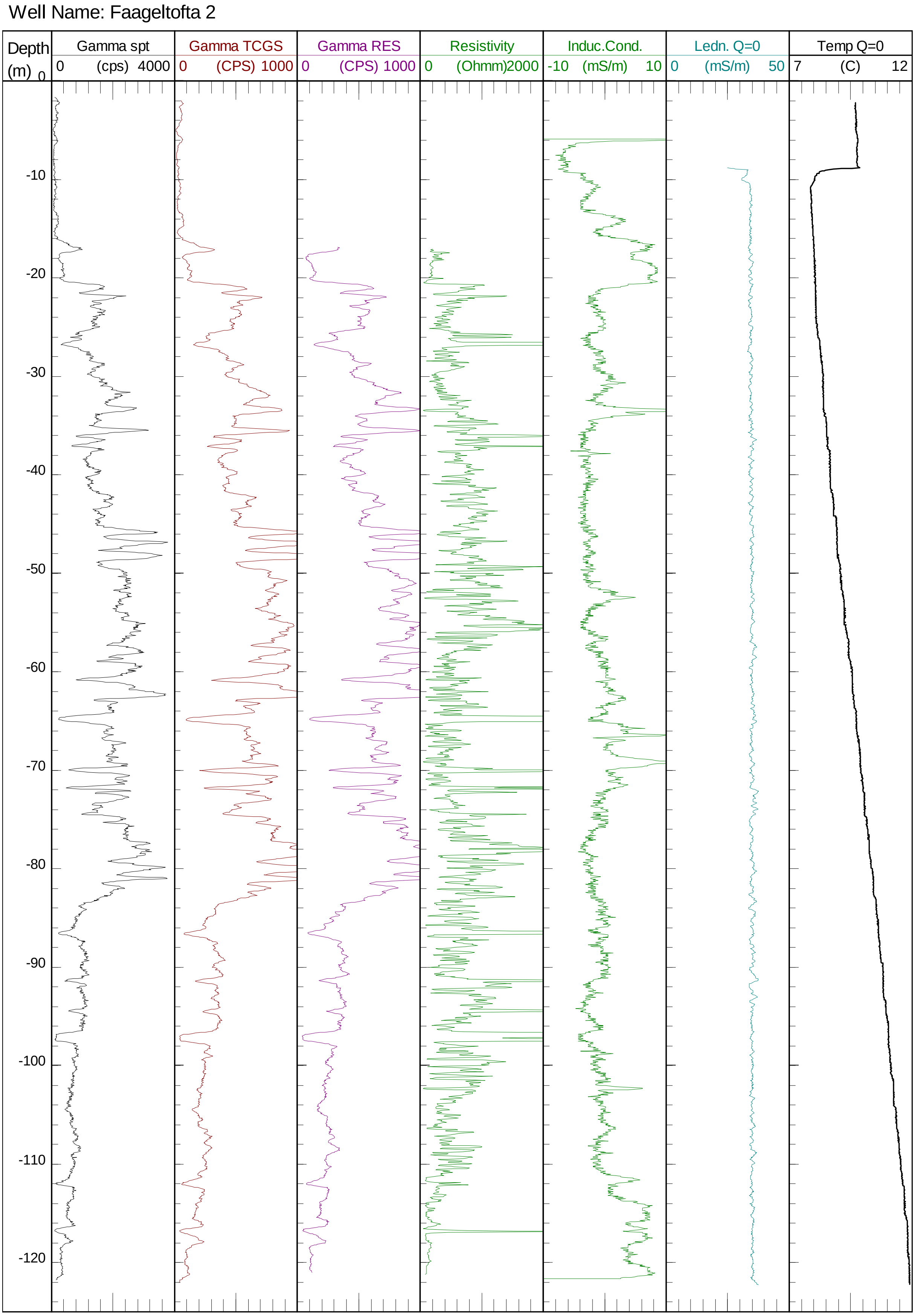

Figure 6. Down hole logs in the Fågeltofta-2 well. A digital version of the logs is included on the attached CD.

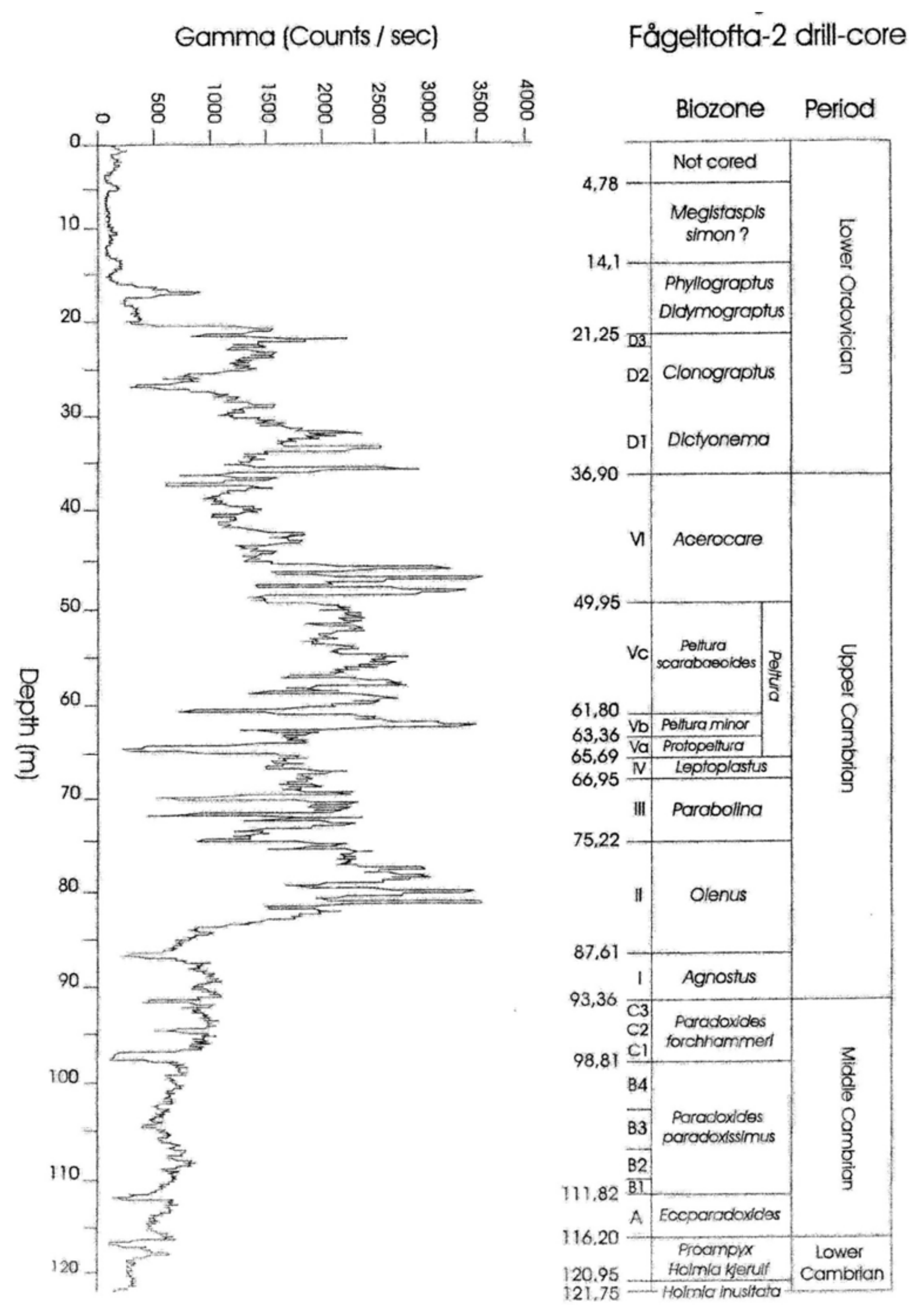

Figure 7. Gamma ray curve and biostratigraphy of the Fågeltofta-2 well. From Christensen (2003). Zones A to C3 refer to the terminology of Westergård (1946). The interval assigned to the *Eccaparadoxides* Zone (A) represents zone B1 or B2. The Komstad Limestone and likely also the uppermost part of the Tøyen Shale are now assigned to the Middle Ordovician. No Bjørkåsholmen Fm (Ceratopyge Limestone) is developed at the drill site. Comparison with a nearby water well indicates that c. 7 m of Alum Shale is faulted out immediately above the Gislöv Fm and the Forsemölla Limestone and lower part of zone B1 are missing in the core.

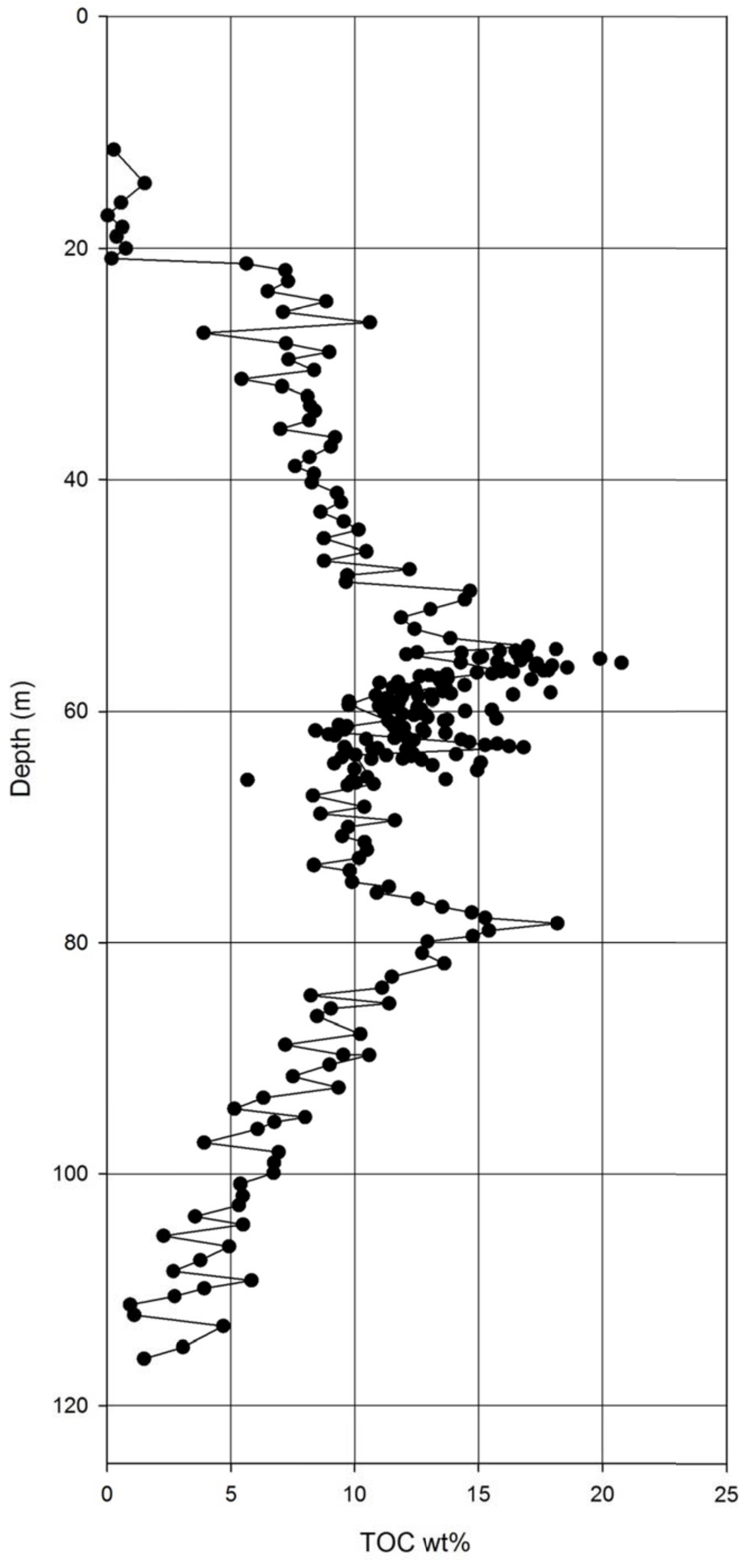

Figure 8. TOC measurements in the Fågeltofta-2 core.

4. Well summary Sheet for Gislövshammar-2

Common well Name:	Gislövshammar-2
Location:	Scania, Southern Sweden, near the town of Gislövshammar
Drill Position, Lat, long:	55.4787, 14.2979
Elevation:	Approximately 2 m above sea level.
Reference grid:	wgs84
TD:	105.9, bedrock (Komstad Limestone) encountered from 2 m below surface
Formation at TD:	Gislöv Fm
Drilling type:	Diamond coring.
Core diameter:	5.5 cm
Core barrel length:	3 m
Recovery:	From below 2.5 m: 100%
Drilling fluids:	Sea-water with no additives.
Casing:	Steel casing in the quaternary sediments + 1 m bedrock (0-3 m).
Drilling company:	Fakse Kalk A/S, Hovedgade 13, 4654 Fakse Ladeplads.
Drilling date:	11th -18th December 1991
Logging:	Gamma and induction logs made. Logging conducted on the 17th December before drilling was completed (at 91.2 m). Induction log ceased function at 72 m.
Purpose:	Scientific
Well site geologist:	Arne Thorshøj Nielsen, Geological Museum University of Copenhagen.
Tops:	Tøyen Shale: 4.0 m, Alum Shale: 23.2 m. Gislöv Fm: 103.1 m Læså Fm: 105.2 m
TOC:	382 sample of TOC, Leco type analysis measured at the University of Copenhagen.
Reference:	Nielsen & Buchardt (1993), Buchardt et al. (1997), Schovsbo (2001, 2003)
Core to depth shift:	0.2 cm. loggers depth are more shallow than core depth.

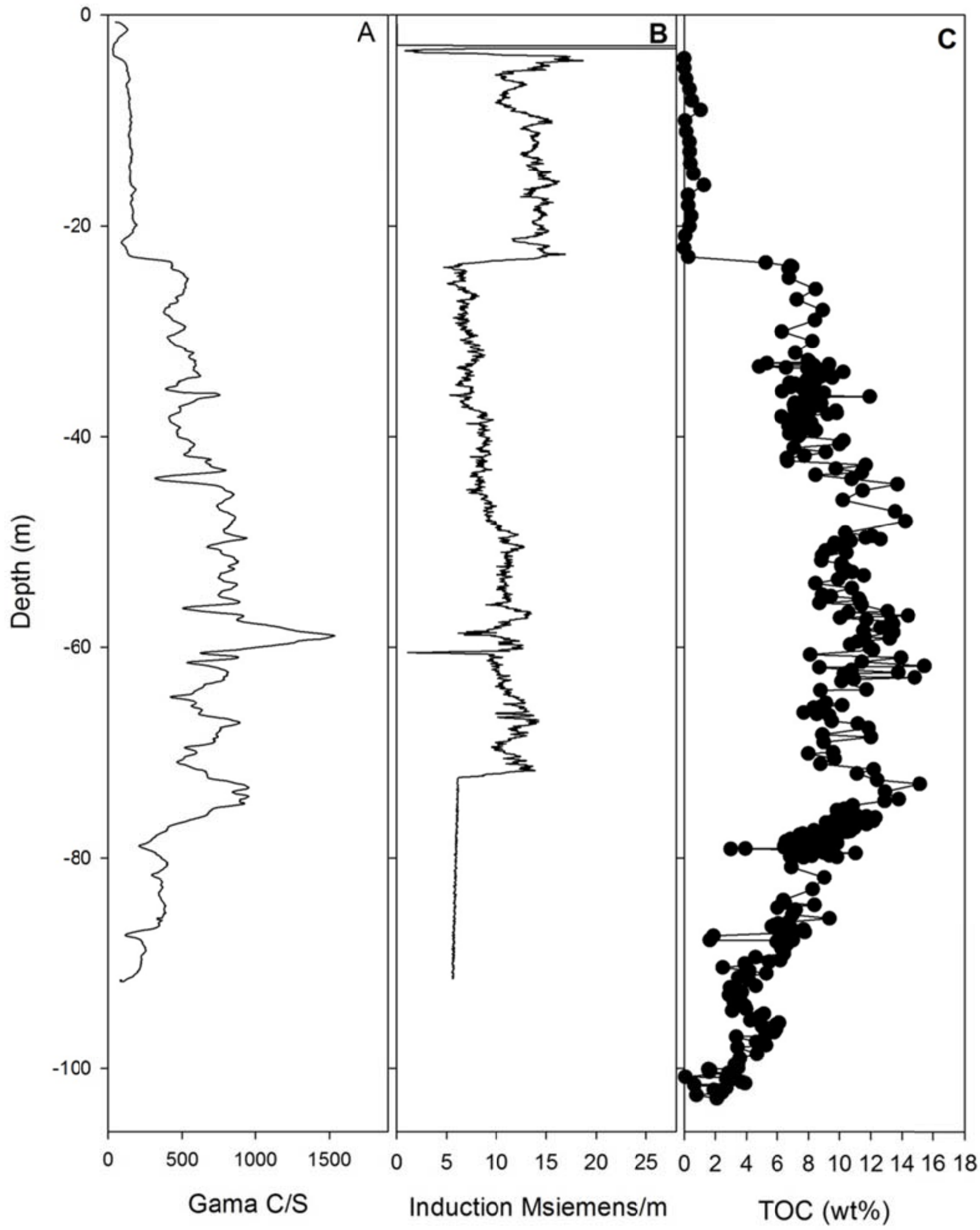

Figure 9. (A) Gamma ray log, (B) induction log and (C) TOC analysis in the Gislövshammar-2 well. The well was logged when it was drilled to 92 m. No logs were obtained for the deepest part of the well. The induction log ceased to function below 72 m.

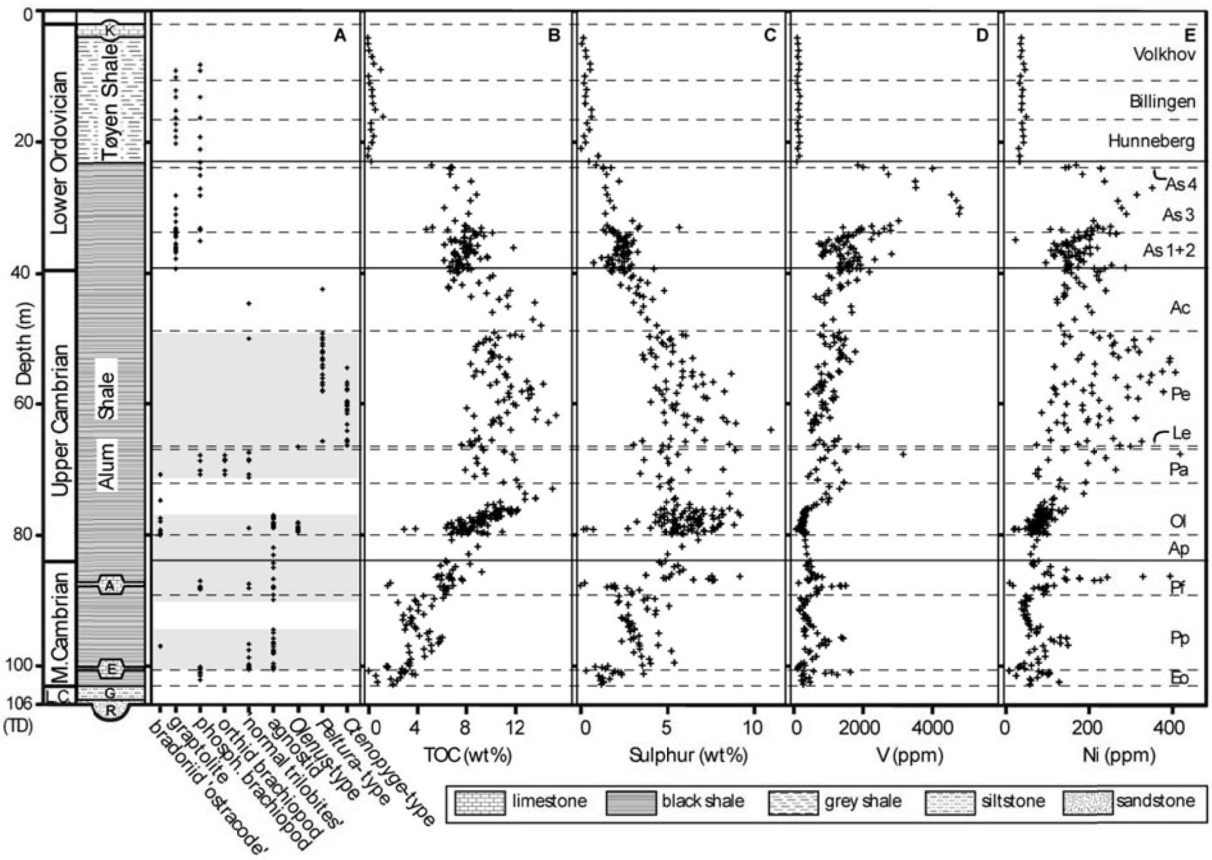

Figure 10. Profiles through the Alum Shale Formation in the Gislövshammar-2 drill core of Scania, southern Sweden, showing (A) fossil content (grey shading indicates trilobitic intervals), (B) total organic carbon (TOC), (C) total sulphur, (D) vanadium and (E) nickel concentrations. Lithological units in log: R, Rispebjerg Sandstone; G, Gislöv Formation; E, Exsulans Limestone; A, Andrarum Limestone; K, Komstad Limestone. Biostratigraphy (Westergård 1946; Henningsmoen 1957) is shown on right: Eo, *Eccaparadoxides oelandicus* Stage; Pp, *Paradoxides paradoxissimus* Stage; Pf, *Paradoxides forchhammeri* Stage; Ap, *Agnostus pisiformis* Zone; Ol, *Olenus* Zone; Pa, *Parabolina* Zone; Le, *Leptoplastus* Zone; Pe, *Peltura* Zone; Ac, *Acerocare* Zone; As 1-4, Tremadoc graptolite assemblages according to Cooper (1999). From Schovsbo (2001). Note that the stratigraphy has been revised by Nielsen & Schovsbo (2006) and therefore there is a slight update of the stratigraphy in this report compared to that of Schovsbo (2001).

5. Stratigraphy

The stratigraphy of the Alum Shale Formation has recently been reviewed by Nielsen & Schovsbo (2006). Their proposed bio- and lithostratigraphy for the formation is adopted in this report and presented in Figures 11 and 12. The biostratigraphical investigations of the cores have been based on fossils identified on existing core faces and no systematic search for fossils in the cores have been undertaken apart for the *Olenus* Zone interval in the Gislövshammar-2 well (Schovsbo 2000) and the *Peltura* interval in the Fågeltofta-2 well (Christensen 2003).

The biostratigraphical division and the occurrence of fossils in the wells has been described by Nielsen & Buchardt (1993), Maletz (1995), Lauridsen (2000), Schovsbo (2000, 2001) and Christensen (2003). A summary of the biostratigraphy and occurrence of selected index fossils are presented in Appendix D. Following the stratigraphical nomenclature the base of a biozone is identified as the first occurrence of the index fossil. Unfosiliferous (barren) intervals are thus assigned to the top of the zone.

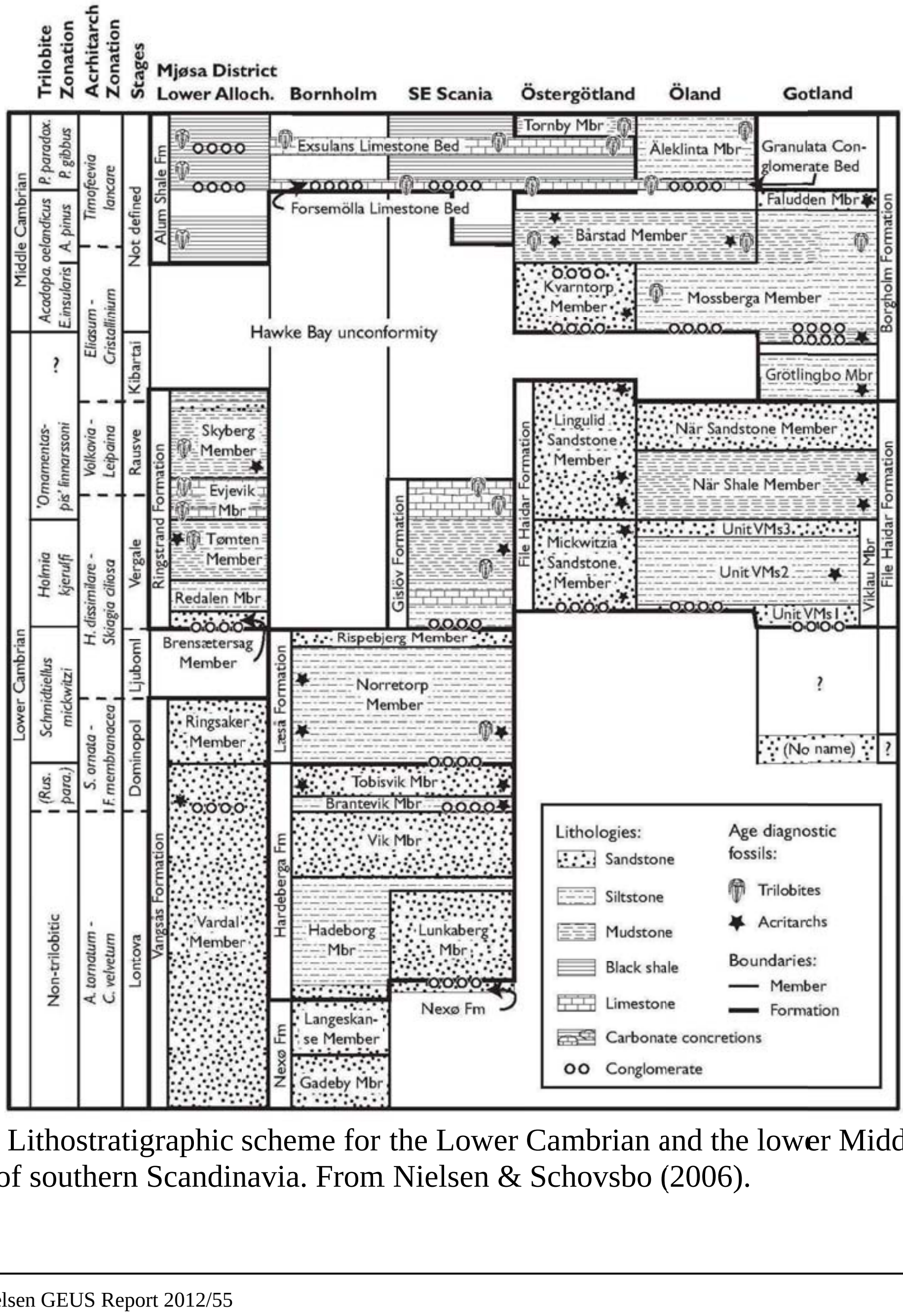

Figure 11. Lithostratigraphic scheme for the Lower Cambrian and the lower Middle Cambrian of southern Scandinavia. From Nielsen & Schovsbo (2006).

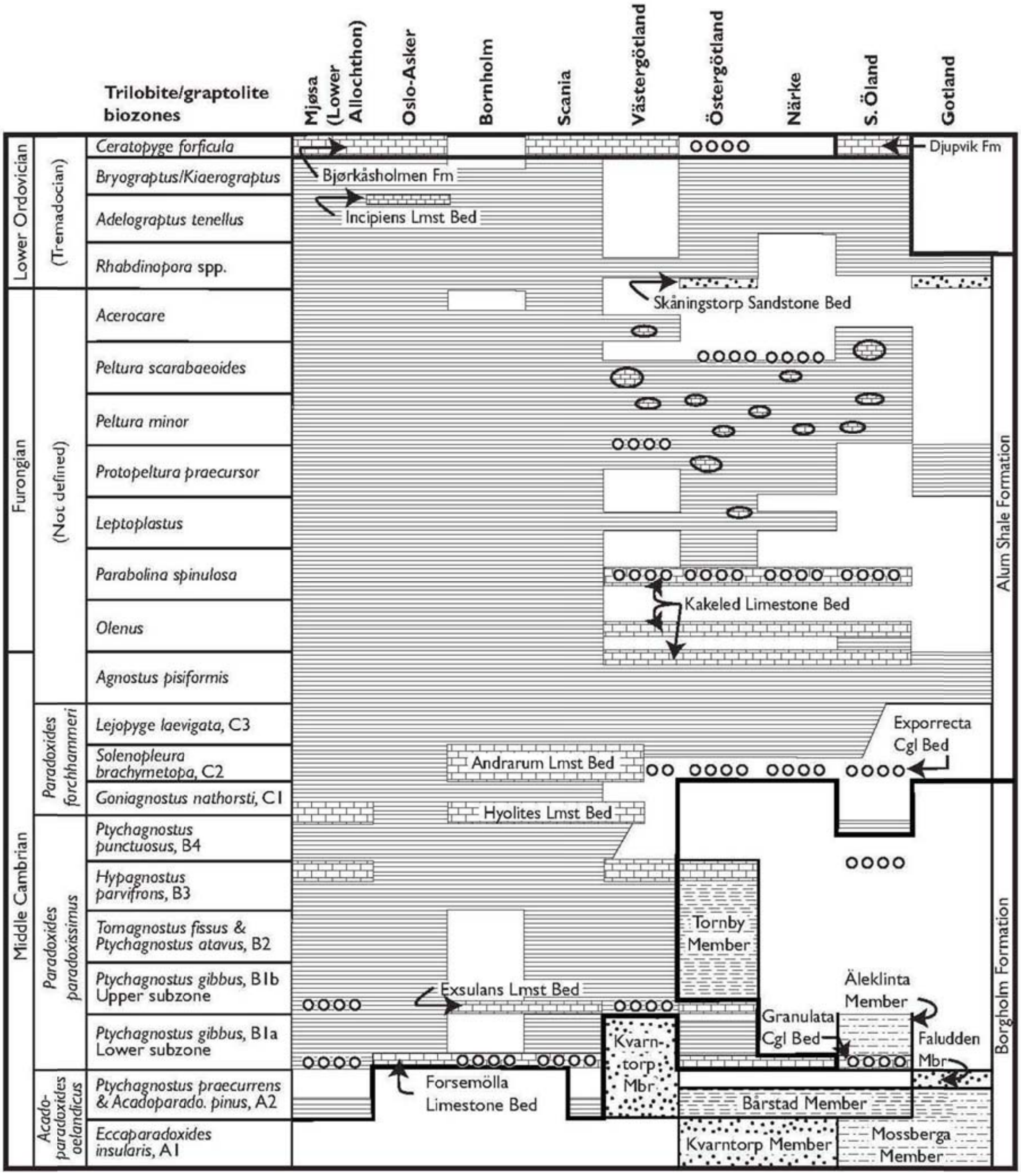

Figure 12. Lithostratigraphic scheme for the Middle Cambrian, Furongian and Lower Ordovician (Tremadocian) of southern Scandinavia. A very sophisticated biostratigraphy has been established for the Middle Cambrian and Furongian based on agnostid and olenid trilobites (Westergård 1946,1947; Henningsmoen 1957). From Nielsen & Schovsbo (2006). Terfelt et al. (2008, 2011) proposed elevating the c. 32 Furongian trilobite subzones to zonal rank and abandone the old biozone terminology. We here accept the changed ranking of the former subzones, but maintain the classical zones as superzones.

No major unconformities have been identified *within* the Alum Shale sequence and hence the shale in the wells represents more or less continuous sedimentation. This is in accordance with the rather deep water setting that these wells represent, the coeval strata of central Sweden are much more incomplete (Figure 12). The Alum Shale in all wells are of 'the outer shelf type' of Schovsbo (2002) characterised by only scattered occurrence of diagenetic carbonate concretions and primary carbonate beds, especially in the Furongian (Figure 12). In all wells the regional limestone markers (Forsemölla, Exsulans and Andrarum) in the Middle Cambrian have been identified (except that the Forsemölla Lmst is faulted in the Fågeltofta-2 core).

Major unconformities bound the base of the Alum Shale Formation in Southern Scandinavia (Figure 11). In general the base of the formation gets progressively older from the Terne-1 well (no biostratigraphical ages) and to the Bornholm/Slagelse area. This on-lapping reflects progressive subsidence in the aftermath of the regional uplift referred to as the Hawke Bay Event (Nielsen & Schovsbo 2006, 2011).

On Bornholm and in the Slagelse-1 well the Alum Shale is overlain by Upper Ordovician shales, locally with the Middle Ordovician Komstad limestone in between (Figure 13). The intervening extensive hiatus reflects a period of uplift and erosion possibly due to adjustment of the plate margin (Stouge & Nielsen 2003). In Scania a hiatus on top of the Alum Shale is present in the Gislövshammar-2 and the Fågeltofta-2 wells whereas the Alum Shale is capped by the Bjørkåsholmen Formation in the Albjära-1 well (Figures 13 and 14).

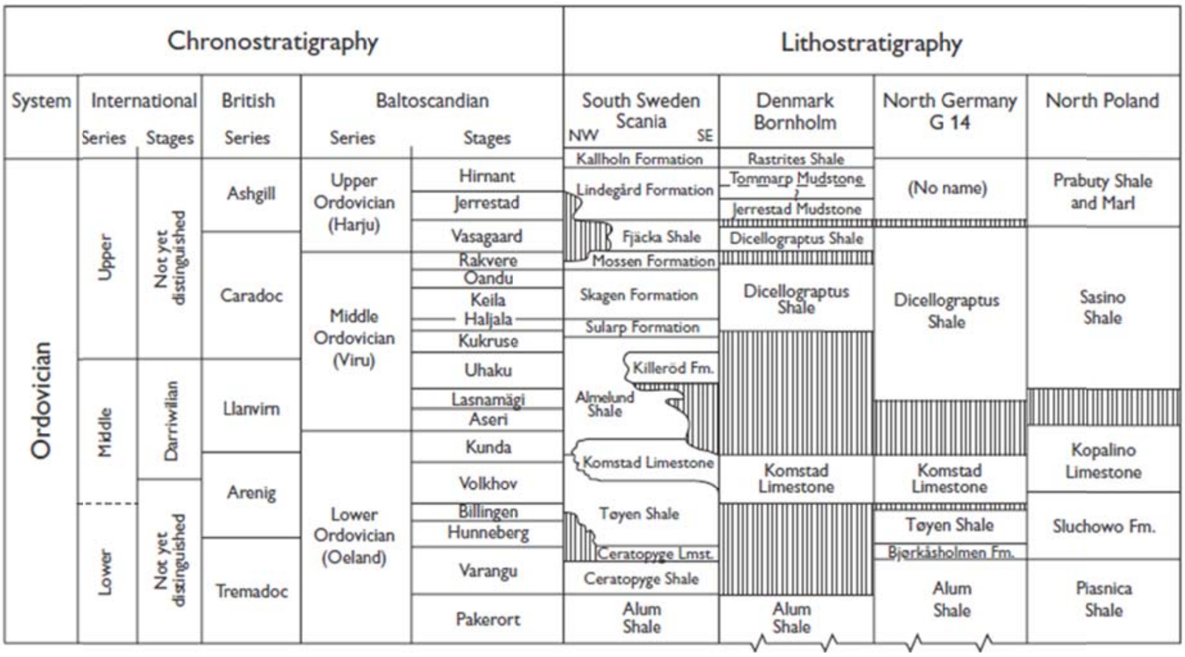

Figure 13. Stratigraphy of Scania, Bornholm, northern Germany (G14) and northern Poland with indications of main lithologies. From Stouge & Nielsen (2003).

6. Correlation

A correlation based on the gamma ray curve is presented in Figures 14 and 15. The correlation is made in accordance with the biostratigraphical data available (Appendix D). In general there is a very good agreement between the base of a bio-zone and a characteristic feature on the gamma log curve (typical local minimum) and hence no separate gamma ray based units have been erected in this study. This is also because of the high number of biozones in the formation that divides the shale into units each typically 4-10 m thick (Table 2). The Gr correlation obviously allows for a more fine-tuned correlation between the wells (Figures 14 and 15) but currently this has not been needed.

The depth of the log picks in the wells are presented in Table 1. Log picks are named in the Alum Shale according to biozones (Figure 12). The log-pick near the base of a zone is named 'base_*zone name* i.e. the log pick near the base of the *Olenus* Superzone is termed 'base_olenus'.

Correlation between the Terne-1, Albjära-1, Fågeltofta-2, Gislövshammar-2, Billegrav-2 and Slagelse-2 wells

The geoprofile in Figure 14 shows an approximate NW–SW profile extending from the Terne-1 well in the Kattegat area to the Billegrav-2 well on Bornholm (note that the Slagelse-1 well lies W of the Billegrav-2 well (Figure 1)). Within the profile the largest variation in thickness are seen within the Middle Cambrian and Lower Ordovician intervals whereas the Furongian interval only shows modest thickness reduction from West to East.

Correlation between the Albjära-1, Fågeltofta-2, Gislövshammar-2 and Billegrav-2 wells

Internal variation in the zonal thickness can be seen in Scania although the general picture is a remarkable uniformity of zonal thickness (Figure 15). The *Protopeltura praecursor* Superzone in the Fågeltofta-2 well is thinner than in the two other wells.

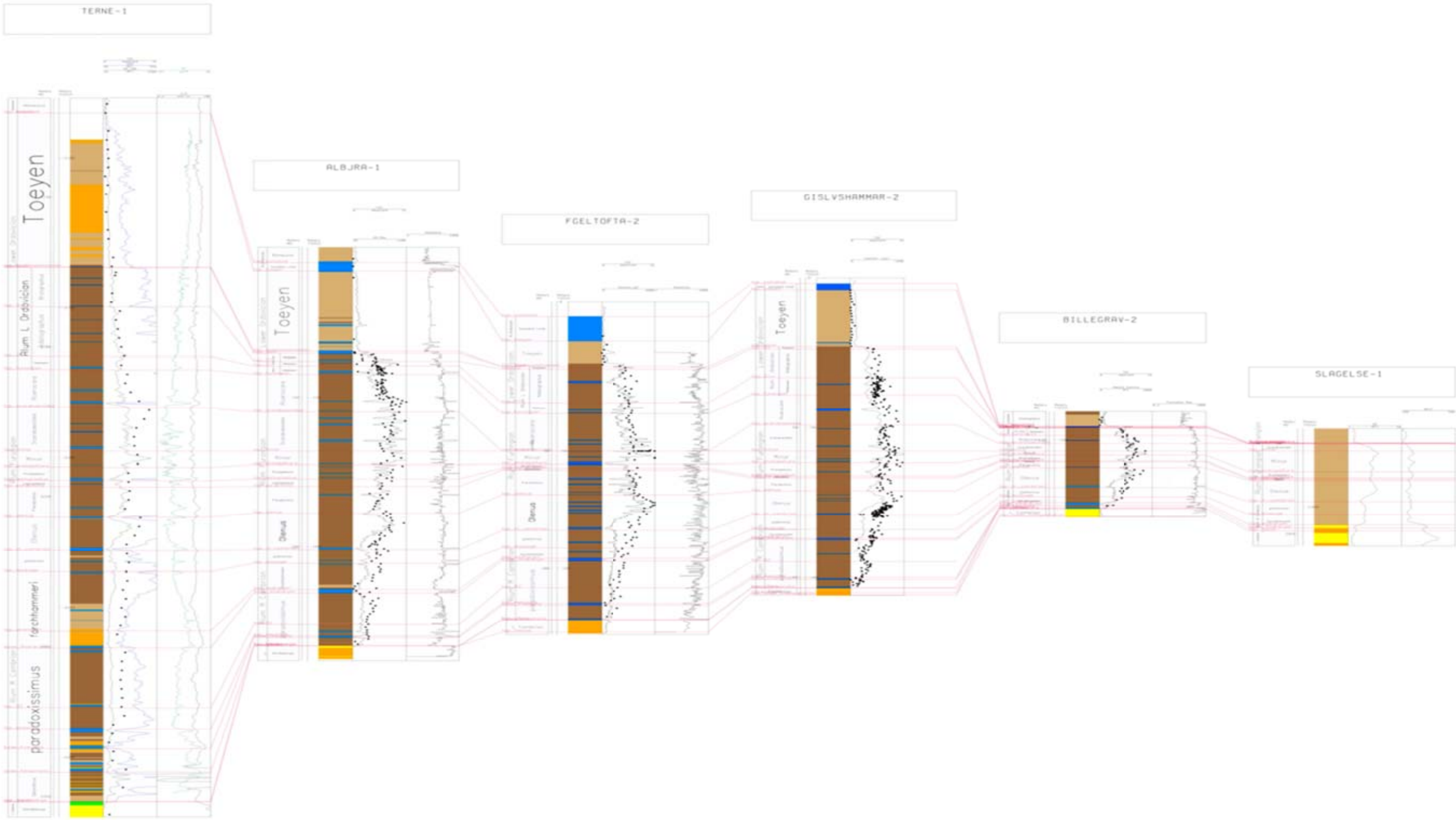

Figure 14. Log correlation panel of the Alum Shale showing the Terne-1, Albjära-1, Fågeltofta-2, Gislövshammar-2, Billegrav-2 and Slagelse-1 wells. The profile is oriented approximately NW-SE. For location of the wells and the profile see Figure 1. The profile has been ‘flattened ‘on the base of the *Peltura scarabaroides* Superzone.

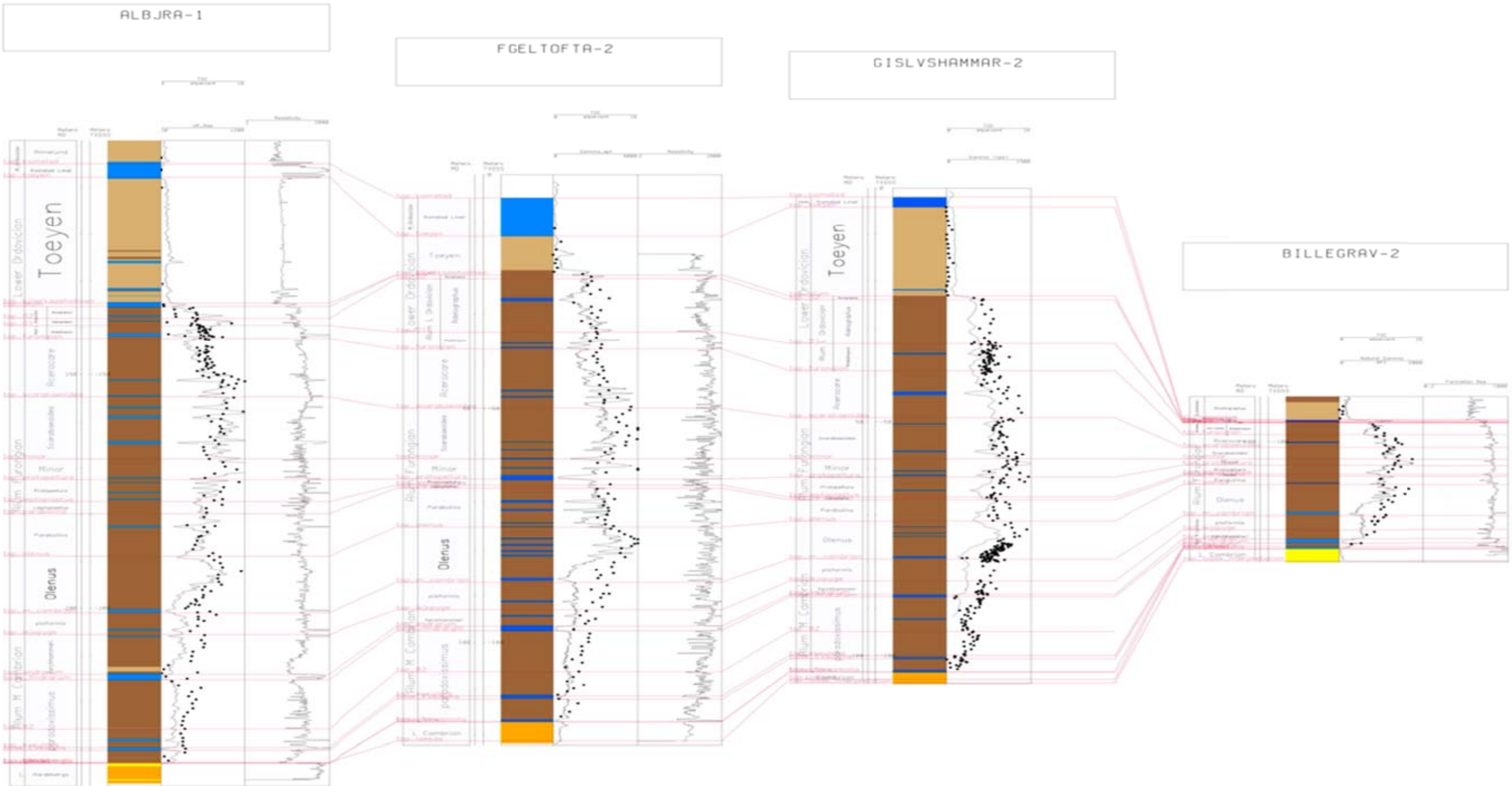

Figure 15. Log correlation panel of the Alum Shale showing the Albjära-1, Fågeltofta-2, Gislövshammar-2 and Billegrav-2 wells. The profile is oriented approximately NW-SE. For location of the wells and the profile see Figure 1. The profile has been ‘flattened ‘on the base of the *Peltura scarabaroides* Superzone.

Table 1. Pick depth table for the investigated wells. Depths are in logger's depth.

Pick_name	TERNE-1	ALBJÄRA-1	FÅGELTOFTA-2	GISLÖVSHAMMAR-2	BILLEGRAV-2	SKELBRO-2	SLAGELSE-1
T_Prezechstein	2312.7						2625.8
Top_rastrites	2755.7				0.0		
F5	2812.6				10.4		
F4	2857.6				31.7		
F3	2938.0				45.7		2903.0
F2	2958.2				55.7		
Base_Silurian	2977.4				60.2		
F1	2981.9				61.1		
E3	2991.8				63.9		
E2	3000.7				68.7		2919.6
E1	3024.3				73.8		2919.7
U_Ordovician	3088.1	10.9			95.3		
top_komstad	3122.0	105.0	4.8	1.9	95.4	2.7	2919.8
top_toeyen	3122.0	107.8	14.1	4.1	95.8	8.5	
top_bjoerkaasholmen	3173.2	134.7	21.4	23.1			
top_alum	3173.5	135.2	21.4	23.1	95.8	8.5	2919.9
top_D2	3186.6	138.0	22.4	23.9	95.9		
top_D1	3203.2	139.5	33.7	33.3	96.0		
top_furongian	3207.6	142.3	37.3	39.1	98.5	11.6	2919.7
top_scarabaeoides	3220.2	154.9	50.0	49.1	101.2	14.5	2919.9
top_minor	3234.8	168.4	60.8	57.9	103.7	18.9	2922.3
top_protopeltura	3240.2	172.5	65.2	61.9	105.1	23.6	2929.2
top_leptoplastus	3244.6	177.3	66.4	66.1	107.0	25.9	2931.1
top_parabolina	3246.7	179.8	67.1	66.5	107.4	26.2	2931.6
top_olenus	3256.8	188.8	75.4	71.2	109.2	26.6	2932.0
top_m_cambrian	3268.0	201.0	87.3	79.3	115.8	34.2	2939.1
top_lejopyge	3274.9	205.5	93.1	84.1	118.9	37.2	2943.6
top_andrarum	3294.8	214.1	96.7	87.0	120.8	40.2	2947.0
base_Andrarum	3300.5	215.3	97.5	87.5	121.7	41.0	2948.1
top_B2	3320.4	225.9	106.3	94.8			
top_exsulans	3327.5	229.7	111.9	99.9	123.0	41.6	
base_Exsulans	3334.1	233.0	112.3	100.7	122.4	42.0	
base_forsamolla	3341.8	233.0	117.0	103.5			
top_gislov	3351.7	233.0	117.0	103.5	122.8		2949.0
top_laesaa		233.0	121.2	105.1	122.8		2957.7
top_Hardeberga	3351.8	233.0					2969.8

7. Distribution of TOC in the Alum Shale

The average TOC content within the formations and biozones encountered in the Albjära-1, Fågeltofta-2 and Gislövshammar-2 wells is presented in Table 2. Since the cores are not sampled with equal sample distance the average TOC content in the biozone have been calculated on TOC profiles that have been re-sampled to a 20 cm sample spacing for all wells. The resampled TOC profiles are included in the Appendix folders on the attached CD.

The average TOC content in the Alum Shale Formation range between 8.2-8.8% TOC in the wells (Table 2). The stratigraphical interval with highest TOC content is the Furongian that has an average between 10.1-11.3% TOC and within the Furongian the most TOC enriched biozone is the *Peltura minor* Superzone which has an average between 11.4-12.1% TOC. The lowest average TOC content in the Furongian is within the *Parabolina spinolosa* Superzone (7.8-9.9% TOC) followed by the *Acerocare* Superzone (9.8-10.6% TOC).

The average TOC content in the Tremadocian part of the Alum Shale Formation ranges between 6.2-7.7% in the wells (Table 2). The highest average TOC content is measured in the *Rhapdinopora* graptolite Zone (6.5-8.3% TOC) and the lowest average TOC content is measured in the *Bryograptus* graptolite Zone (4.4-5.0% TOC). In the Middle Cambrian the average TOC content ranges between 5.1-5.4%. Highest average TOC values are observed in the *Agnostus pisiformis* Zone (7.2-8.8% TOC) and lowest average TOC content occur in the *Paradoxides paradoxissimus* Superzone (3.9-4.4% TOC).

The TOC variation in the *Peltura* superzones in the Fågeltofta-2 well

The gamma ray curve and a detailed profile of the TOC variation in the Alum Shale belonging to the *Peltura* superzones in the Fågeltofta-2 well is presented in Figure 16. In the well the GR curve has been shifted 55 cm to deeper levels. The adjustment is made by comparing the depth of carbonate concretions from the sedimentological description of the core (Christensen 2003) with lows in the GR curve.

From Figure 16 it is evident that there is a rather good fit between the GR curve and the TOC content. It is also clear that the slight variation in the GR curve actually reflect variations in the TOC content and not just the presence or absence of carbonate concretions. The carbonate concretions appear, however, to occur in shale intervals characterised by low TOC content (Figure 16).

The TOC variation in the *Peltura* superzones exhibits several local maxima and has an overall cyclic appearance (Figure 16). High TOC values occur in the middle part of the *P. minor* Superzone. The increase in TOC content is sharp at the base of the excursion whereas the TOC gradually returns to lower values in the upper part of the *P. minor* Superzone. The *P. minor* Superzone is characterised by abundant pyrite pseudomorphs after barite crystals (Figure 16) and the interval also contains carbonate in fractures or fossil shell beds (Christensen 2003).

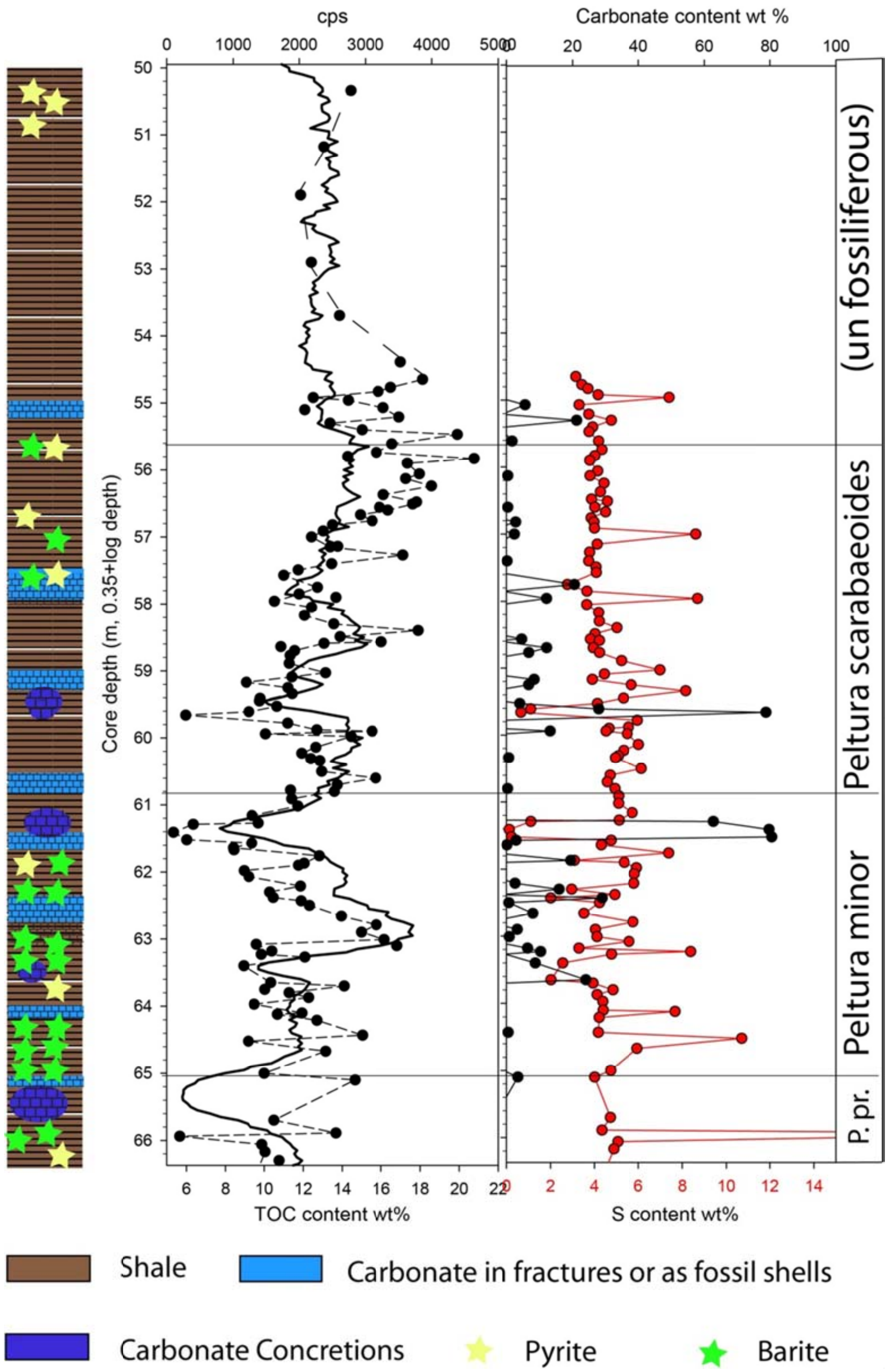

Figure 16. Detail of the TOC, gamma ray, sulphur and carbonate variation within the *Peltura* superzones in the Fågeltofta-2 well. The lithological column is slightly modified after Christensen (2003). P.pr: *Protopeltura praecursor.*

In the *P. scarabaeoides* Superzone high TOC values occur in the basal part, middle part and in the topmost part of the fossiliferous interval of the superzone (Figure 16). In the *P. scarabaeoides* Superzone the TOC variation appears less abrupt compared to the variation seen in the *P. minor* Superzone.

Christensen (2003) made a comprehensive documentation of the fossil content in the *Peltura* superzones and also dealt with the palaeoecological implications. The shale belonging to the *Peltura* superzones is characterised by a specialised fauna dominated by pelagic or nektobenthic trilobites probably reflecting a hostile bottom water environment (Schovsbo 2001). Nevertheless, Christensen (2003) documented intervals in the *Peltura* superzones that do contain benthic faunal elements such as brachiopods and trilobites normally associated with more oxygenated depositional environments.

In Figure 17 the occurrence of more oxygen demanding faunal types in the *Peltura* superzones is compared with the TOC and Gamma ray variation. It appears that intervals characterised by low TOC content also tend to contain faunal types that are of more oxygen demanding types. The depositional significance of the faunal types associated with the TOC rich intervals is currently being analysed in detail. At this point of the investigation it is suggested that the depositional environment had a control on the TOC variation and that the TOC cycles reflect changes in the oxygenation level of the bottom waters. Such systematic relationship is in excellent agreement with the regional significance in the TOC variation that can be traced over long distances in the basin (e.g. Schovsbo 2002). Accordingly external forcing (sea level?) probably induced these variations.

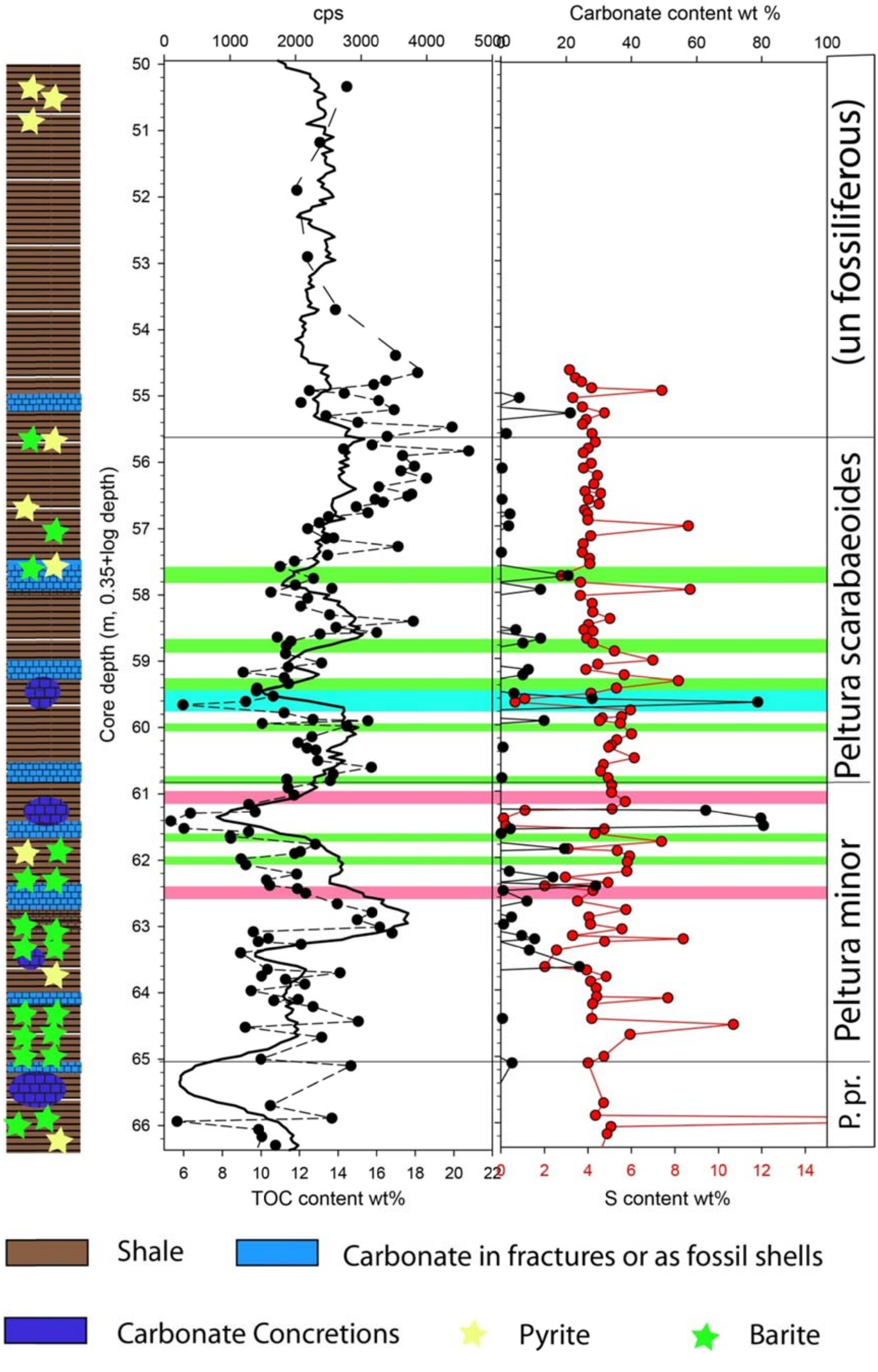

Figure 17. Same figure as Figure 16. Colour bars indicate the presence of more oxygen demanding faunal types in the core (after Christensen 2003). Colours, green: brachiopod; red: *Parabolina* type trilobites and light blue: agnostid trilobites.

8. Relationship between TOC and gamma ray response

Analysis of spectral gamma ray curves from the Terne-1, Skelbro-2 and Billegrav-2 wells has shown that the vast majority of the energy in the GR response is associated with uranium in the shale. Schovsbo (2002) has shown that the TOC and uranium content is closely correlated although the mode of enrichment varies between different parts of the formation.

In order to be able to calculate the TOC content from the gamma ray curve the relationship between TOC measured in the core samples and the gamma ray curve has been investigated in the Fågeltofta-2 and Albjära-1 wells (Figure 18).

The relationship was established by first calibrating the depth shift between loggers and drillers' depths for the wells followed by a baseline shift of the GR curve. The GR reading was interpolated to the depth position of the core sample.

The obtained relationships between gamma ray log and TOC content (Figure 18) have been applied to the wells and the calculated TOC is compared to the actually measured TOC samples in Figures 19 and 20. The correlation between gamma ray response and TOC has been modelled by using a power function whereby the different modes of enrichments in the shale can be captured (Schovsbo 2002).

In general there is a good fit between the calculated and measured TOC content. From Figure 19 and 20 it is clear that that there are parts of the formation where the calculated TOC is consistently higher or lower than measured. This suggests that the U/TOC may vary more than expected. It is thus recommended to have several log based approached (i.e. sonic and or resistivity) when modelling of the TOC content is needed.

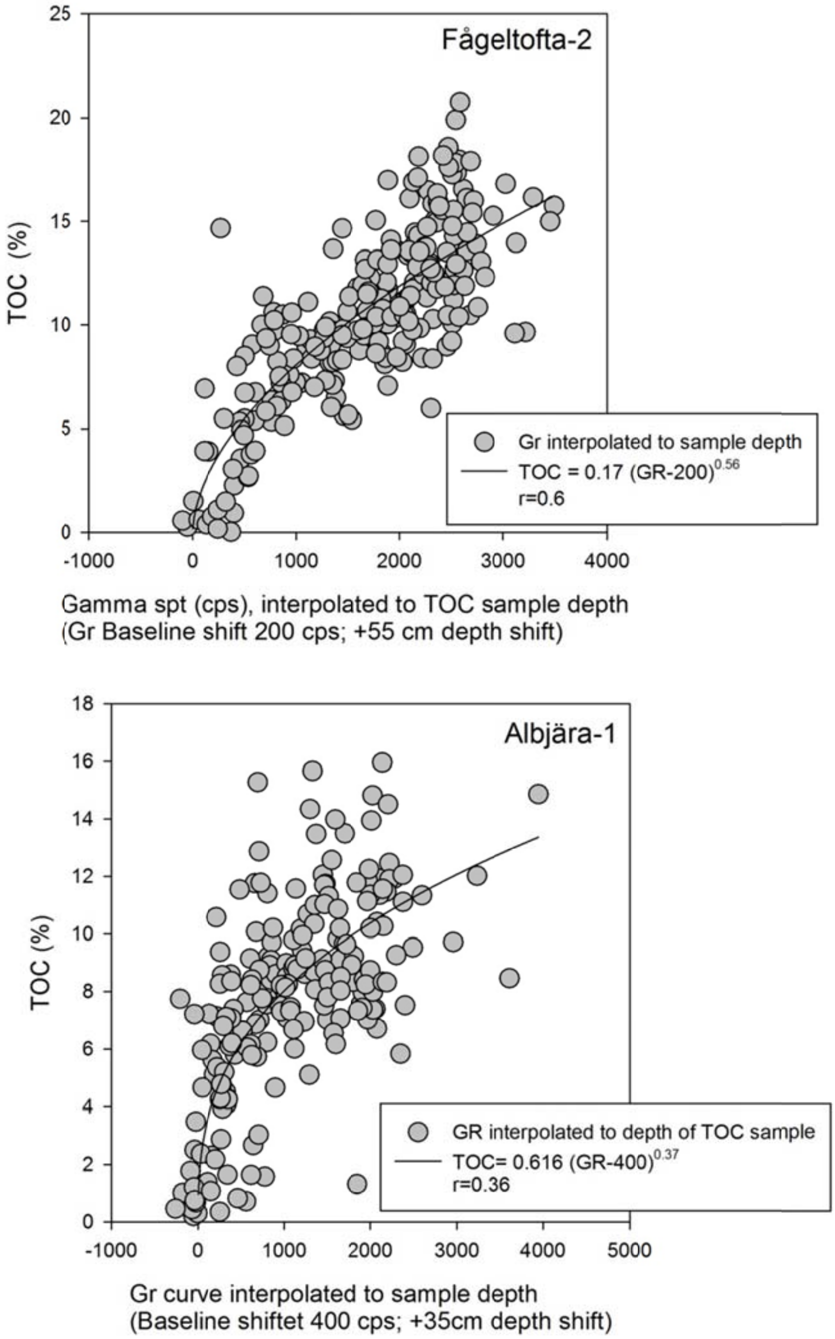

Figure 18. Relationship between TOC and gammay ray for (top) the Fågeltofta-2 well and (base) the Albjära-1 well. The relationship between gamma ray and TOC is controlled by the enrichment of uranium and is modelled using a power function.

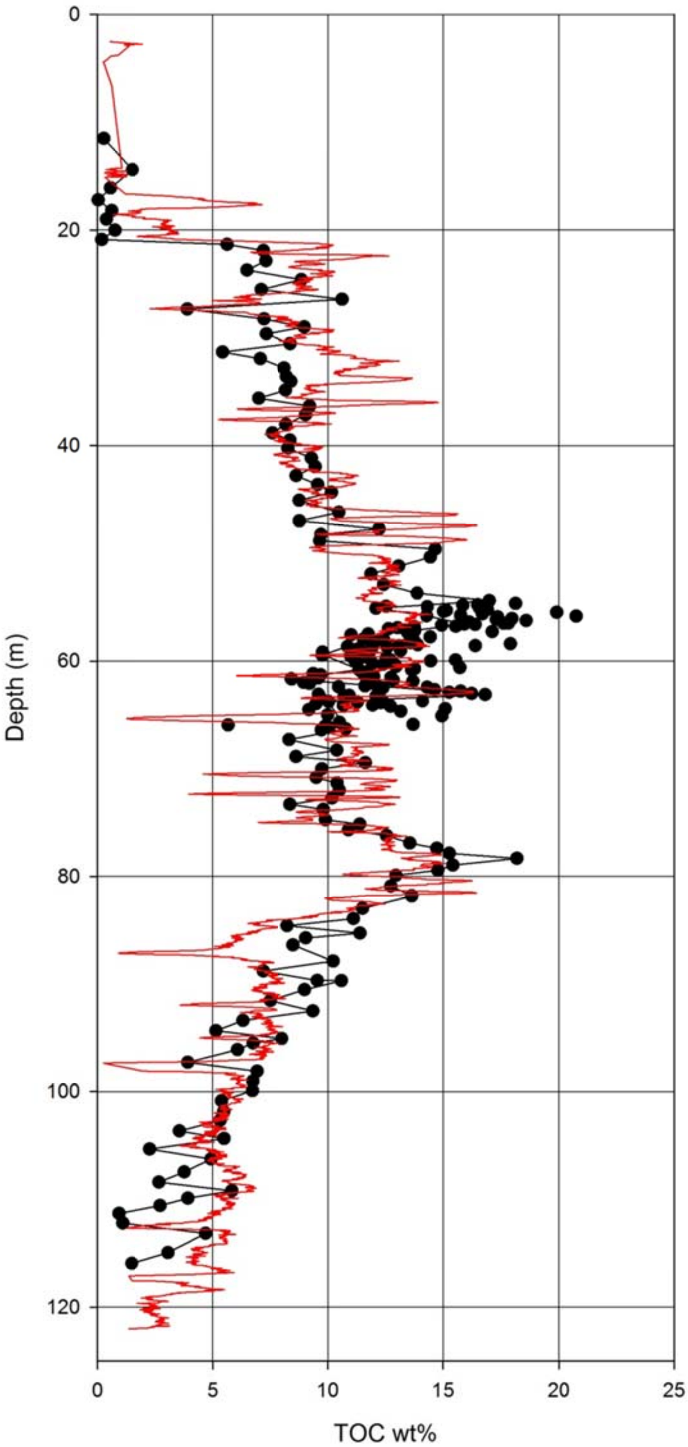

Figure 19. Comparison between measured TOC profile in the Fågeltofta-2 well and TOC calculated from the GR curve (red line). The majority of the gamma ray energy is associated with uranium and the difference between measured and calculated TOC content can be interpreted as a quick estimate of the U/TOC ratio.

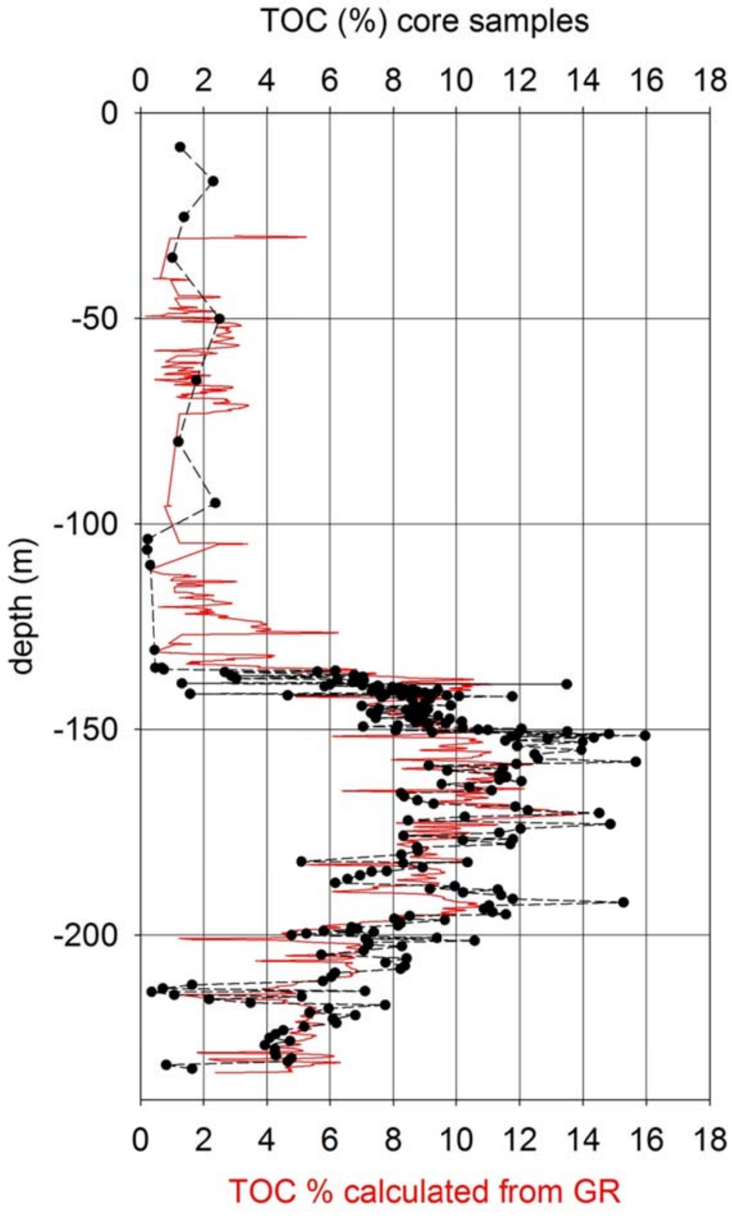

Figure 20. Comparison between measured TOC profile in the Albjära-1 well and TOC calculated from the GR curve (red line). The majority of the gamma ray energy is associated with uranium and the difference between measured and calculated TOC content can be interpreted as a quick estimate of the U/TOC ratio.

Table 2. The average TOC content in biozones and main lithological units.

Formation/age	**Albjära-1**					**Fågeltofta-2**					**Gislövshammar-2**				
	Thick. m	**Avg TOC**	**STD TOC**	**Max TOC**	**Min TOC**	**Thick. m**	**Avg TOC**	**STD TOC**	**Max TOC**	**Min TOC**	**Thick. m**	**Avg TOC**	**STD TOC**	**Max TOC**	**Min TOC**
Almelund Shale	105.0	1.7	0.5	2.5	0.2										
Komstad Lmst	3.0	0									4.0	0			
Tøyen Shale	27.0	0.4	0.1	0.5	0.2	7.0	0.6	0.4	1.5	0.0	19.0	0.4	0.3	1.2	0.0
Bjørkåsholmen Fm	1.0	0				0					0.0				
Alum Shale:	**97.8**	**8.2**	**3.2**	**15.3**	**0.5**	**95.6**	**8.8**	**3.4**	**17.8**	**0.3**	**80.4**	**8.4**	**3.0**	**15.5**	**0.2**
Tremadoc	**7.0**	**6.2**	**2.6**	**11.8**	**0.7**	**16**	**7.41**	**1.68**	**10.5**	**0.3**	**16.0**	**7.7**	**1.2**	**11.9**	**2.7**
Bryograptus	3.0	4.4	2.0	7.1	0.7	1	4.69	2.91	7.25	0.3	0.8	5.0	1.8	6.9	2.7
Adelograptus	2.0	5.4	2.4	11.8	0.7	11.3	7.5	1.18	10.5	4.1	9.4	7.6	0.7	8.9	6.2
Rhapdinopora	2.5	6.5	2.3	11.8	1.7	3.6	8.3	0.57	9.18	7.0	5.9	8.2	1.1	11.9	5.5
Furongian	**58.7**	**10.1**	**2.2**	**15.3**	**4.9**	**41**	**11.3**	**2.23**	**17.8**	**7.6**	**40.2**	**10.7**	**1.8**	**15.5**	**6.5**
Acerocare	12.6	10.2	2.1	14.3	7.3	12.7	9.75	1.57	14.7	7.6	10.0	10.6	2.2	14.2	6.7
Peltura scarabaeoides	13.5	10.6	2.0	15.3	7.3	10.8	13	1.74	16.9	9.8	8.8	10.6	1.4	14.3	8.8
Peltura minor	4.1	11.5	1.7	14.3	8.8	4.4	11.4	2.19	16.2	8.6	4.0	12.1	1.5	15.5	9.1
Protopeltura praecursor	4.8	11.5	1.6	14.6	8.7	1.2	10.6	0.1	10.8	10.5	4.4	10.1	1.4	13.8	8.4
Leptoplastus	2.5	10.4	1.1	11.5	8.7	0.7	9.55	0.5	10.1	9.1	0.2	8.4	0.5	8.7	8.0
Parabolina spinulosa	9.0	7.8	1.2	10.0	5.4	8.3	9.9	0.72	11.3	8.5	4.7	9.8	0.9	11.7	8.3
Olenus	12.2	10.2	2.4	14.9	4.9	11.9	12.3	2.4	17.8	8.4	8.1	11.0	2.1	15.2	6.5
Mid Cambrian	**32.0**	**5.3**	**2.1**	**10.4**	**0.5**	**29.7**	**5.39**	**2.26**	**10.4**	**0.9**	**24.2**	**5.1**	**2.2**	**8.9**	**0.2**
Agnostus pisiformis	4.5	7.2	1.2	10.4	4.9	5.8	8.75	0.86	10.4	7.2	4.8	7.8	0.7	8.9	6.4
Paradoxides forchhammeri	9.8	5.9	2.4	8.4	0.7	4.4	6.4	0.81	7.69	5.3	3.0	6.5	2.0	8.9	1.8
Paradoxides paradoxissimus	17.7	4.4	1.6	7.4	0.5	19.5	4.3	1.55	6.88	0.9	16.1	3.9	1.4	6.6	0.2

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10. Data included on the attached CD

Attached to this report is a CD that contains the following:

1. In folder Appendix are digital versions of well logs, TOC measurements and TOC curve resampled to 20 cm sample interval for the Albjära-1, Fågeltofta-2 and Gislövshammar-2 well.
    a. Albjära-1 well data
    b. Fågeltofta-2 well data
    c. Gislövshammar-2 well data
    d. Biostratigraphical data on the wells
    e. Selected geoprofiles in high resolution pdf file versions
2. In folder *Literature* are pdf documents of the literature if the literature source is an open access source
3. In folder *table* are Excel files with the data presented in the report tables
4. A pdf version of this report *Scientific wells in Scania.pdf*

Appendix A: TOC measurements in Albjära-1

Stratigraphy	Sample	Top (m)	Base (m)	TOC %	TS %
Almelund			8.3	1.3	1.2
Almelund	79.01		16.6	2.3	1.3
Almelund	79.011		25.3	1.4	3.6
Almelund	79.012		35.2	1.0	0.5
Almelund	79.013		50.1	2.5	1.2
Almelund	79.014		65	1.8	1.0
Almelund	79.015		80	1.2	0.9
Almelund	79.016		94.9	2.4	1.1
Almelund	79.017		103.7	0.2	0.1
Komstad	79.018		106.25	0.2	0.0
Tøyen Shale	79.019		110	0.3	0.0
Tøyen Shale	79.02		130.7	0.4	0.0
Alum Shale	79.021		135	0.5	0.7
Alum Shale	109.408	135.02	135.03	0.7	0.4
Alum Shale	109.406	135.39	135.4	0.7	0.7
Alum Shale	109.405	135.7	135.71	6.2	1.5
Alum Shale	97.157	135.89	135.91	5.6	0.9
Alum Shale	109.404	136.03	136.04	2.7	1.3
Alum Shale	109.402	136.75	136.76	6.8	2.0
Alum Shale	97.158	136.97	137	2.9	1.1
Alum Shale	109.4	137.2	137.21	7.0	3.9
Alum Shale	109.399	137.6	137.61	3.0	0.2
Alum Shale	109.398	137.82	137.83	6.2	0.4
Alum Shale	97.159	137.97	138	7.1	2.6
Alum Shale	109.401	138.17	138.19	7.0	2.5
Alum Shale	109.397	138.55	138.56	6.7	0.2
Alum Shale	109.396	138.81	138.82	1.3	0.5
Alum Shale	97.16	139	139.03	13.5	2.2
Alum Shale	109.395	139.06	139.07	6.0	4.3
Alum Shale	109.393	139.29	139.3	7.0	2.9
Alum Shale	109.392	139.39	139.4	7.5	2.0
Alum Shale	109.391	139.49	139.5	5.8	3.5
Alum Shale	109.39	139.6	139.61	7.5	0.9
Alum Shale	109.389	139.69	139.7	8.0	2.0
Alum Shale	109.388	139.82	139.83	8.2	1.4
Alum Shale	109.387	139.88	139.89	7.4	2.0
Alum Shale	97.161	139.95	139.97	7.4	1.8
Alum Shale	109.385	140.15	140.16	7.4	2.3
Alum Shale	109.384	140.23	140.24	8.6	2.3
Alum Shale	109.383	140.33	140.34	9.4	3.0

Stratigraphy	Sample	Top (m)	Base (m)	TOC %	TS %
Alum Shale	109.382	140.43	140.44	8.3	2.7
Alum Shale	109.381	140.51	140.52	8.4	2.7
Alum Shale	109.38	140.64	140.65	8.0	3.4
Alum Shale	79.022		140.7	8.7	3.7
Alum Shale	109.379	140.79	140.8	7.3	2.4
Alum Shale	109.378	140.91	140.92	7.5	2.2
Alum Shale	109.377	140.99	141	8.7	2.5
Alum Shale	97.162	141	141.1	8.5	2.4
Alum Shale	109.376	141.1	141.11	9.0	3.1
Alum Shale	109.375	141.35	141.36	1.6	0.1
Alum Shale	109.374	141.55	141.56	7.7	3.0
Alum Shale	109.368	142.14	141.64	9.2	3.1
Alum Shale	109.373	141.72	141.73	4.7	3.5
Alum Shale	109.369	142.08	141.74	9.7	4.1
Alum Shale	109.37	141.99	141.8	8.3	2.2
Alum Shale	109.371	141.89	141.9	10.1	2.6
Alum Shale	109.372	141.82	141.98	11.8	3.0
Alum Shale	97.163	142.15	142.2	7.6	3.4
Alum Shale	109.367	142.35	142.36	8.6	3.0
Alum Shale	109.366	143	142.5	8.6	2.9
Alum Shale	109.365	144.59	142.59	9.2	3.0
Alum Shale	97.164		143.95	8.7	3.5
Alum Shale	109.364	144.02	144.03	9.0	3.4
Alum Shale	109.363	144.18	144.19	9.8	2.8
Alum Shale	97.165	144.27	144.28	7.0	2.2
Alum Shale	109.362	144.65	144.66	8.7	3.4
Alum Shale	109.361	144.92	144.93	7.5	2.3
Alum Shale	109.36	145.08	145.09	9.1	3.1
Alum Shale	97.166	145.18	145.2	8.9	3.6
Alum Shale	letgas 6		145.25	8.4	3.8
Alum Shale	109.359	145.42	145.43	8.6	3.7
Alum Shale	109.358	145.66	145.69	7.5	2.9
Alum Shale	97.167	145.97	146	7.3	2.5
Alum Shale	109.357	146.16	146.17	9.0	3.6
Alum Shale	109.356	146.62	146.63	8.6	3.7
Alum Shale	109.355	146.7	146.71	9.4	3.3
Alum Shale	97.168	146.98	147	8.5	3.3
Alum Shale	109.354	147.24	147.25	7.4	2.6
Alum Shale	109.353	147.41	147.42	9.8	3.8
Alum Shale	109.352	147.57	147.58	8.8	4.2
Alum Shale	109.351	147.89	147.9	8.9	3.7
Alum Shale	97.169	148.05	148.1	10.2	3.6
Alum Shale	109.2	148.27	148.28	8.7	3.7

Stratigraphy	Sample	Top (m)	Base (m)	TOC %	TS %
Alum Shale	109.199	148.56	148.57	9.7	4.1
Alum Shale	109.198	148.8	148.81	9.1	3.7
Alum Shale	109.197	148.99	149	8.1	3.6
Alum Shale	97.17	149.2	149.3	7.0	3.8
Alum Shale	109.196	149.59	149.6	10.2	3.1
Alum Shale	109.195	149.83	149.84	12.1	3.6
Alum Shale	97.171	149.99	150.06	10.7	4.5
Alum Shale	109.194	150.12	150.13	11.0	4.3
Alum Shale	109.193	150.3	150.31	8.1	3.8
Alum Shale	79.023		150.5	13.5	4.0
Alum Shale	109.192	150.68	150.69	9.2	3.5
Alum Shale	109.191	151.1	151.11	14.8	3.5
Alum Shale	97.172	151.23	151.25	11.9	4.0
Alum Shale	109.19	151.49	151.51	16.0	3.1
Alum Shale	109.189	151.68	151.69	11.7	7.1
Alum Shale	97.173		152.01	14.4	3.7
Alum Shale	109.188	152.3	152.31	12.9	3.5
Alum Shale	109.187	152.7	152.71	11.5	3.5
Alum Shale	97.174	153	153.03	14.0	4.1
Alum Shale	97.175	154.02	154.07	11.9	4.5
Alum Shale	97.176	154.97	155	13.9	5.1
Alum Shale	97.177	156.04	156.05	12.5	4.9
Alum Shale	97.178	157.13	157.16	12.6	4.8
Alum Shale	97.179	157.8	157.9	15.7	4.9
Alum Shale	79.024		158.4	11.9	6.4
Alum Shale	112.240		158.80	9.1	4.5
Alum Shale	112.239		159.48	11.5	4.4
Alum Shale	112.238		160.01	9.7	4.7
Alum Shale	112.237		161.03	11.3	5.4
Alum Shale	112.236		161.55	11.6	4.4
Alum Shale	112.235		162.23	11.4	4.5
Alum Shale	112.234		162.63	12.1	4.7
Alum Shale	112.233		163.31	9.5	5.0
Alum Shale	112.232		164.03	10.4	5.2
Alum Shale	112.231		164.85	11.1	4.7
Alum Shale	112.230		165.51	8.2	4.6
Alum Shale	112.229		166.28	8.3	5.0
Alum Shale	112.228		167.26	8.8	4.6
Alum Shale	112.227		168.09	9.3	6.7
Alum Shale	112.226		168.81	11.9	5.5
Alum Shale	112.225		169.70	12.3	6.1
Alum Shale	112.224		170.35	14.5	5.2
Alum Shale	112.223		171.25	10.3	6.0

Stratigraphy	Sample	Top (m)	Base (m)	TOC %	TS %
Alum Shale	112.222		172.16	8.5	5.3
Alum Shale	112.221		173.04	14.9	4.8
Alum Shale	112.220		174.15	12.0	4.6
Alum Shale	112.219		175.13	11.4	5.3
Alum Shale	112.218		175.92	8.3	11.8
Alum Shale	112.217		176.70	11.8	6.7
Alum Shale	112.216		176.96	10.2	4.7
Alum Shale	112.215		177.91	11.7	4.9
Alum Shale	112.214		178.67	8.7	5.5
Alum Shale	112.213		179.57	8.8	5.5
Alum Shale	112.212		180.45	8.3	4.7
Alum Shale	112.210		182.17	5.1	2.6
Alum Shale	112.211		182.35	10.4	5.5
Alum Shale	112.209		182.59	8.3	3.1
Alum Shale	112.208		183.59	8.9	4.2
Alum Shale	112.207		184.49	7.8	5.1
Alum Shale	112.206		184.63	7.3	5.4
Alum Shale	112.205		185.51	7.0	4.9
Alum Shale	112.204		186.42	6.6	4.0
Alum Shale	112.203		187.34	6.2	5.3
Alum Shale	112.192		188.18	10.0	5.0
Alum Shale	112.191		188.81	9.2	4.1
Alum Shale	112.190		188.97	11.3	2.4
Alum Shale	112.189		189.67	10.2	8.7
Alum Shale	112.188		190.34	11.4	4.6
Alum Shale	112.187		191.25	11.8	5.7
Alum Shale	112.186		192.09	15.3	4.6
Alum Shale	112.185		192.87	11.0	4.5
Alum Shale	112.184		193.67	10.9	3.8
Alum Shale	112.183		194.41	11.1	5.7
Alum Shale	112.202		195.00	11.6	4.2
Alum Shale	112.182		195.41	8.5	3.0
Alum Shale	112.201		196.08	8.0	5.4
Alum Shale	112.181		196.37	9.6	4.3
Alum Shale	112.180		197.20	8.2	4.0
Alum Shale	112.200		197.71	8.1	4.7
Alum Shale	112.179		198.14	6.7	4.9
Alum Shale	112.199		198.53	6.9	3.2
Alum Shale	112.178		199.06	5.8	3.2
Alum Shale	112.198		199.24	6.6	3.7
Alum Shale	112.197		199.34	7.4	3.8
Alum Shale	112.196		199.68	5.3	2.3
Alum Shale	112.177		200.05	4.8	3.4

Stratigraphy	Sample	Top (m)	Base (m)	TOC %	TS %
Alum Shale	112.195		200.73	9.4	5.1
Alum Shale	112.176		200.93	7.1	3.8
Alum Shale	112.194		201.43	10.6	6.2
Alum Shale	112.175		201.85	7.2	4.7
Alum Shale	112.193		202.40	7.2	6.8
Alum Shale	112.174		202.74	8.3	4.8
Alum Shale	112.173		203.82	7.1	7.0
Alum Shale	112.172		204.83	5.7	4.8
Alum Shale	112.171		205.69	8.4	6.6
Alum Shale	112.170		206.75	7.8	4.7
Alum Shale	112.169		207.52	8.4	4.6
Alum Shale	112.168		208.28	8.2	5.9
Alum Shale	112.167		209.23	6.2	5.1
Alum Shale	112.166		210.20	6.0	5.5
Alum Shale	112.165		211.26	5.8	6.0
Alum Shale	112.164		212.14	1.6	1.8
Alum Shale	112.163		213.03	0.7	1.2
Alum Shale	112.162		213.69	7.1	4.6
Alum Shale	112.161		213.85	0.3	0.2
Alum Shale	112.160		214.58	1.1	0.7
Alum Shale	112.159		215.02	5.1	15.0
Alum Shale	112.158		215.61	2.2	0.7
Alum Shale	112.157		216.51	3.5	2.2
Alum Shale	112.156		217.05	7.7	2.1
Alum Shale	112.155		217.88	6.0	1.8
Alum Shale	112.154		218.87	5.4	1.7
Alum Shale	112.153		219.55	6.8	3.2
Alum Shale	112.152		220.42	6.1	3.2
Alum Shale	112.151		221.46	6.2	2.9
Alum Shale	112.150		222.32	5.2	2.3
Alum Shale	112.149		223.22	4.5	1.8
Alum Shale	112.148		224.13	4.3	1.4
Alum Shale	112.147		225.06	4.1	2.2
Alum Shale	112.146		225.82	4.7	3.4
Alum Shale	112.145		226.83	3.9	2.4
Alum Shale	112.144		227.77	4.3	4.3
Alum Shale	112.143		228.56	4.3	3.9
Alum Shale	112.142		229.32	4.3	1.8
Alum Shale	112.141		229.96	4.8	1.6
Alum Shale	112.140		230.78	4.7	2.3
Alum Shale	112.139		231.61	0.8	2.5
Alum Shale	112.138		232.53	1.6	1.1

Appendix B: TOC measurements in Fågeltofta-2

Stratigraphy	Sample	Top (m)	Base (m)	TOC%	TS%	Carb%
Komstad Lmst	112.090	11.50	11.51	0.3	0.0	
Tøyen Shale	112.089	14.40	14.41	1.5	0.3	
Tøyen Shale	112.088	16.08	16.09	0.6	0.1	
Tøyen Shale	112.087	17.20	17.21	0.0	0.5	
Tøyen Shale	112.086	18.19	18.20	0.6	0.3	
Tøyen Shale	112.085	18.99	19.00	0.4	0.2	
Tøyen Shale	112.084	20.00	20.01	0.8	0.1	
Tøyen Shale	112.082	20.87	20.88	0.2	0.1	
Alum Shale	112.083	21.32	21.34	5.6	1.3	
Alum Shale	112.081	21.89	21.90	7.2	2.3	
Alum Shale	112.080	22.84	22.85	7.3	0.7	
Alum Shale	112.079	23.71	23.72	6.5	1.2	
Alum Shale	112.078	24.59	24.60	8.9	1.5	
Alum Shale	112.077	25.52	25.53	7.1	1.8	
Alum Shale	112.076	26.41	26.42	10.6	1.3	
Alum Shale	112.075	27.33	27.34	3.9	2.3	
Alum Shale	112.074	28.23	28.24	7.2	3.8	
Alum Shale	112.073	28.98	28.99	9.0	1.5	
Alum Shale	112.072	29.62	29.63	7.3	1.1	
Alum Shale	112.071	30.54	30.55	8.4	1.1	
Alum Shale	112.070	31.32	31.33	5.4	1.0	
Alum Shale	112.069	31.93	31.94	7.1	1.3	
Alum Shale	112.068	32.80	32.81	8.1	2.1	
Alum Shale	112.067	33.60	33.61	8.2	1.2	
Alum Shale	112.066	34.03	34.04	8.4	1.2	
Alum Shale	112.065	34.85	34.86	8.2	1.9	
Alum Shale	112.064	35.6	35.61	7.0	2.4	
Alum Shale	112.063	36.33	36.34	9.2	2.2	
Alum Shale	112.062	37.12	37.13	9.0	3.3	
Alum Shale	112.061	38.04	38.05	8.2	3.2	
Alum Shale	112.060	38.82	38.83	7.6	2.0	
Alum Shale	112.059	39.49	39.5	8.4	1.6	
Alum Shale	112.058	40.24	40.25	8.3	2.4	
Alum Shale	112.057	41.15	41.16	9.3	1.9	
Alum Shale	112.056	41.94	41.95	9.5	2.5	
Alum Shale	112.055	42.79	42.80	8.6	2.3	
Alum Shale	112.054	43.61	43.62	9.6	2.8	
Alum Shale	112.053	44.34	44.35	10.2	2.9	
Alum Shale	112.052	45.08	45.09	8.8	2.8	
Alum Shale	112.051	46.19	46.20	10.5	2.5	
Alum Shale	112.050	46.98	46.99	8.8	2.3	
Alum Shale	112.049	47.71	47.72	12.2	6.5	

Stratigraphy	Sample	Top (m)	Base (m)	TOC%	TS%	Carb%
Alum Shale	112.048	48.23	48.24	9.7	3.1	
Alum Shale	112.047	48.81	48.82	9.6	3.4	
Alum Shale	112.046	49.59	49.60	14.7	3.3	
Alum Shale	112.045	50.33	50.34	14.5	3.1	
Alum Shale	112.044	51.17	51.18	13.1	3.6	
Alum Shale	112.043	51.89	51.90	11.9	3.2	
Alum Shale	112.042	52.89	52.90	12.4	2.7	
Alum Shale	112.041	53.69	53.70	13.9	3.2	
Alum Shale	112.040	54.38	54.39	17.0	3.6	
Alum Shale	1001		54.65	18.1	3.1	0.0
Alum Shale	1002		54.77	16.5	3.4	0.0
Alum Shale	1003		54.83	15.8	3.7	0.0
Alum Shale	1004		54.92	12.5	4.2	0.0
Alum Shale	1005		54.96	14.3	7.4	0.0
Alum Shale	1006		55.07	16.1	3.3	5.6
Alum Shale	112.039	55.09	55.10	12.1	4.2	
Alum Shale	1007		55.21	16.9	3.7	0.0
Alum Shale	1008		55.3	13.4	4.8	21.2
Alum Shale	1009		55.4	15.0	3.9	0.0
Alum Shale	1010		55.47	19.9	3.7	0.0
Alum Shale	1011		55.61	16.6	4.2	1.7
Alum Shale	1012		55.74	15.8	4.3	0.0
Alum Shale	112.038	55.79	55.80	14.3	3.8	
Alum Shale	1013		55.83	20.8	4.0	0.0
Alum Shale	1014		55.9	17.4	3.8	0.0
Alum Shale	1015		56.06	18.0	4.1	0.0
Alum Shale	1016		56.13	17.3	3.8	0.4
Alum Shale	1017		56.24	18.6	4.4	0.0
Alum Shale	1018		56.37	16.1	4.3	0.0
Alum Shale	1019		56.48	17.8	3.9	0.0
Alum Shale	1020		56.51	17.6	4.6	0.0
Alum Shale	112.037	56.55	56.56	15.9	3.8	
Alum Shale	1021		56.6	16.4	4.0	0.4
Alum Shale	1022		56.67	14.9	4.5	0.0
Alum Shale	1023		56.76	15.5	3.8	0.0
Alum Shale	1024		56.82	13.5	4.0	2.8
Alum Shale	1025		56.91	13.0	4.0	0.0
Alum Shale	1026		57	12.4	8.6	2.4
Alum Shale	112.036	57.13	57.14	13.8	3.9	
Alum Shale	1027		57.15	13.4	4.1	0.0
Alum Shale	1028		57.27	17.1	3.8	0.0
Alum Shale	1029		57.4	13.5	3.7	0.2
Alum Shale	1030		57.49	11.7	4.1	0.0
Alum Shale	1031		57.57	11.0	4.1	0.0

Stratigraphy	Sample	Top (m)	Base (m)	TOC%	TS%	Carb%
Alum Shale	1032		57.75	12.7	2.8	20.6
Alum Shale	1033		57.85	11.8	3.7	0.0
Alum Shale	112.035	57.89	57.90	13.7	4.1	
Alum Shale	1034		57.96	10.5	8.7	12.1
Alum Shale	1035		58.05	12.4	3.6	0.0
Alum Shale	1036		58.17	12.1	4.2	0.0
Alum Shale	1037		58.3	13.6	4.2	0.0
Alum Shale	1038		58.4	17.9	5.0	0.0
Alum Shale	1039		58.49	13.9	4.0	0.0
Alum Shale	1040		58.57	16.0	3.8	4.6
Alum Shale	1041		58.59	13.1	4.2	0.0
Alum Shale	112.034	58.63	58.64	10.9	4.3	
Alum Shale	1042		58.7	11.6	3.9	12.1
Alum Shale	1043		58.77	11.3	4.2	6.7
Alum Shale	1044		58.89	11.3	5.2	0.0
Alum Shale	1045		59.03	13.1	7.0	0.0
Alum Shale	1046		59.09	11.4	4.5	0.0
Alum Shale	1047		59.17	9.1	3.9	8.4
Alum Shale	1048		59.25	11.2	5.7	6.7
Alum Shale	1049		59.34	11.4	8.2	0.0
Alum Shale	112.033	59.40	59.41	9.8	5.5	
Alum Shale	1050		59.45	9.8	5.3	0.0
Alum Shale	1051		59.53	10.6	4.1	4.0
Alum Shale	1052		59.61	9.2	1.1	27.9
Alum Shale	1053		59.66	6.0	0.7	78.8
Alum Shale	1054		59.78	11.2	6.0	0.0
Alum Shale	1055		59.88	12.7	5.6	0.0
Alum Shale	1056		59.9	15.5	4.7	0.0
Alum Shale	1057		59.94	10.1	4.5	13.2
Alum Shale	1058		59.98	14.5	5.5	0.0
Alum Shale	1059		60.14	12.6	6.0	0.0
Alum Shale	1060		60.23	11.9	5.3	0.0
Alum Shale	1061		60.31	12.4	5.1	0.0
Alum Shale	1062		60.34	12.9	5.0	0.6
Alum Shale	1063		60.5	12.9	6.1	0.0
Alum Shale	1064		60.6	15.7	4.7	0.0
Alum Shale	1065		60.7	13.7	4.6	0.0
Alum Shale	112.031	60.77	60.78	11.3	5.3	
Alum Shale	1066		60.8	13.6	4.9	0.3
Alum Shale	1067		60.91	11.4	5.1	0.0
Alum Shale	1068		61.02	11.7	5.1	0.0
Alum Shale	1069		61.16	9.4	5.7	0.0
Alum Shale	1070		61.27	9.7	5.1	0.0
Alum Shale	1071		61.29	6.3	1.1	62.7

Stratigraphy	Sample	Top (m)	Base (m)	TOC%	TS%	Carb%
Alum Shale	1072		61.41	5.3	0.1	79.7
Alum Shale	1073		61.52	6.0	0.2	80.5
Alum Shale	1074		61.57	9.4	4.8	2.9
Alum Shale	1075		61.64	8.4	4.3	0.1
Alum Shale	112.030	61.66	61.67	8.4	4.6	
Alum Shale	1076		61.76	12.8	7.4	0.0
Alum Shale	1077		61.87	12.1	3.1	19.5
Alum Shale	1078		61.9	11.8	5.4	0.0
Alum Shale	1079		61.98	9.0	5.9	0.0
Alum Shale	1080		62.07	9.2	5.8	0.0
Alum Shale	1081		62.21	11.9	5.8	2.6
Alum Shale	1082		62.3	10.3	3.0	15.9
Alum Shale	1083		62.38	10.5	4.9	0.0
Alum Shale	1084		62.43	11.9	2.0	29.0
Alum Shale	1085		62.5	12.3	4.2	0.7
Alum Shale	1086		62.66	14.0	3.5	8.0
Alum Shale	1087		62.79	15.8	5.8	0.0
Alum Shale	1088		62.9	15.0	4.0	3.2
Alum Shale	1089		63.01	16.2	4.1	0.8
Alum Shale	1090		63.08	9.6	5.6	0.0
Alum Shale	112.028	63.09	63.10	16.8	4.9	
Alum Shale	1091		63.18	10.4	3.3	6.4
Alum Shale	1092		63.23	9.8	8.4	10.3
Alum Shale	1093		63.27	12.1	4.8	0.0
Alum Shale	1094		63.4	8.9	2.5	8.7
Alum Shale	1095		63.65	10.3	2.0	24.0
Alum Shale	1096		63.7	14.1	3.9	0.0
Alum Shale	112.027	63.74	63.75	10.0	4.9	
Alum Shale	1097		63.8	11.3	4.8	0.0
Alum Shale	1098		63.87	12.3	4.1	0.0
Alum Shale	1099		63.97	9.5	4.4	0.0
Alum Shale	1100		64.1	11.9	4.4	0.0
Alum Shale	1101		64.12	10.7	7.7	0.0
Alum Shale	1102		64.21	12.7	4.2	0.0
Alum Shale	1103		64.43	15.0	4.2	0.5
Alum Shale	1104		64.52	9.2	10.7	0.0
Alum Shale	1105		64.67	13.2	5.9	0.0
Alum Shale	1106		65	10.0	4.7	0.0
Alum Shale	1107		65.1	14.7	4.0	3.4
Alum Shale	1108		65.7	10.5	4.7	0.0
Alum Shale	1109		65.89	13.7	4.3	0.0
Alum Shale	1110		65.94	5.7	26.2	0.0
Alum Shale	1111		66.06	9.9	5.1	0.0
Alum Shale	1112		66.17	10.0	4.9	0.0

Stratigraphy	Sample	Top (m)	Base (m)	TOC%	TS%	Carb%
Alum Shale	112.023	66.29	66.30	10.8	5.4	
Alum Shale	1113		66.4	9.7	4.6	0.0
Alum Shale	112.022	67.29	67.30	8.3	6.5	
Alum Shale	112.021	68.27	68.28	10.4	5.4	
Alum Shale	112.020	68.86	68.87	8.6	5.9	
Alum Shale	112.019	69.44	69.45	11.6	6.1	
Alum Shale	112.018	70.01	70.02	9.7	5.1	
Alum Shale	112.017	70.80	70.81	9.5	4.4	
Alum Shale	112.016	71.31	71.33	10.4	4.3	
Alum Shale	112.015	71.99	72.00	10.5	5.8	
Alum Shale	112.014	72.70	72.71	10.2	4.5	
Alum Shale	112.013	73.29	73.30	8.4	4.8	
Alum Shale	112.012	73.77	73.78	9.8	4.7	
Alum Shale	112.011	74.72	74.74	9.9	4.6	
Alum Shale	112.010	75.13	75.14	11.4	3.8	
Alum Shale	112.009	75.67	75.68	10.9	6.2	
Alum Shale	112.008	76.20	76.21	12.5	4.5	
Alum Shale	112.007	76.89	76.90	13.5	3.8	
Alum Shale	112.006	77.38	77.39	14.7	5.6	
Alum Shale	112.005	77.84	77.85	15.3	4.8	
Alum Shale	112.004	78.31	78.32	18.2	5.8	
Alum Shale	112.003	78.94	78.95	15.4	4.1	
Alum Shale	112.002	79.41	79.42	14.8	4.8	
Alum Shale	112.001	79.89	79.90	12.9	6.2	
Alum Shale	112.091	80.89	80.90	12.7	6.3	
Alum Shale	112.092	81.79	81.80	13.6	4.2	
Alum Shale	112.093	82.94	82.95	11.5	7.1	
Alum Shale	112.094	83.89	83.90	11.1	5.4	
Alum Shale	112.095	84.55	84.56	8.2	4.9	
Alum Shale	112.096	85.25	85.26	11.4	4.8	
Alum Shale	112.097	85.70	85.71	9.0	5.7	
Alum Shale	112.098	86.35	86.36	8.5	7.1	
Alum Shale	112.100	87.86	87.87	10.2	4.4	
Alum Shale	112.101	88.78	88.79	7.2	8.1	
Alum Shale	112.102	89.66	89.67	9.5	1.4	
Alum Shale	112.103	89.67	89.68	10.6	4.6	
Alum Shale	112.137	90.51	90.52	9.0	5.6	
Alum Shale	112.136	91.52	91.53	7.5	3.2	
Alum Shale	112.135	92.50	92.51	9.3	4.3	
Alum Shale	112.134	93.38	93.39	6.3	1.6	
Alum Shale	112.133	94.33	94.34	5.1	2.0	
Alum Shale	112.132	95.07	95.08	8.0	7.0	
Alum Shale	112.131	95.49	95.50	6.7	5.3	
Alum Shale	112.130	96.09	96.10	6.1	4.7	

Stratigraphy	Sample	Top (m)	Base (m)	TOC%	TS%	Carb%
Alum Shale	112.129	97.27	97.28	3.9	0.6	
Alum Shale	112.128	98.10	98.11	6.9	2.2	
Alum Shale	112.127	99.02	99.03	6.7	2.6	
Alum Shale	112.126	99.91	99.92	6.7	3.6	
Alum Shale	112.125	100.84	100.85	5.4	3.3	
Alum Shale	112.124	101.85	101.86	5.5	2.7	
Alum Shale	112.123	102.67	102.68	5.3	2.1	
Alum Shale	112.122	103.64	103.65	3.6	2.2	
Alum Shale	112.121	104.35	104.36	5.5	2.2	
Alum Shale	112.120	105.33	105.34	2.3	2.9	
Alum Shale	112.119	106.25	106.26	4.9	3.7	
Alum Shale	112.118	107.44	107.45	3.8	2.4	
Alum Shale	112.117	108.39	108.40	2.7	2.0	
Alum Shale	112.116	109.19	109.20	5.8	3.6	
Alum Shale	112.115	109.89	109.90	3.9	2.4	
Alum Shale	112.114	110.56	110.57	2.7	2.4	
Alum Shale	112.113	111.30	111.31	0.9	0.8	
Alum Shale	112.112	112.19	112.20	1.1	4.3	
Alum Shale	112.111	113.14	113.15	4.7	2.8	
Alum Shale	112.110	114.94	114.95	3.1	1.4	
Alum Shale	112.109	115.94	115.95	1.5	2.0	

Appendix C: TOC measurements Gislövshammar-2

Stratigraphy	Sample	Top (m)	Base (m)	TOC%	TS%
Tøyen Shale	89.955	4.00	4.10	0.0	0.2
Tøyen Shale	89.954	4.99	5.00	0.0	0.1
Tøyen Shale	89.953	5.98	6.03	0.1	0.3
Tøyen Shale	89.952	6.96	7.00	0.3	0.4
Tøyen Shale	89.951	8.04	8.08	0.5	0.6
Tøyen Shale	89.95	8.94	8.98	1.1	0.6
Tøyen Shale	89.949	9.97	10.00	0.1	0.3
Tøyen Shale	89.948	10.99	11.04	0.1	0.2
Tøyen Shale	89.947	11.98	12.02	0.3	0.4
Tøyen Shale	89.946	12.89	12.94	0.4	0.3
Tøyen Shale	89.945	14.03	14.08	0.4	0.3
Tøyen Shale	89.944	14.97	15.02	0.6	0.7
Tøyen Shale	89.943	16.06	16.11	1.3	0.7
Tøyen Shale	89.942	17.01	17.05	0.3	0.4
Tøyen Shale	89.941	17.94	18.04	0.3	0.6
Tøyen Shale	89.94	19.01	19.06	0.5	0.2
Tøyen Shale	89.939	20.02	20.04	0.3	0.3
Tøyen Shale	89.938	20.93	20.94	0.1	0.1
Tøyen Shale	89.937	22.07	22.09	0.0	1.1
Tøyen Shale	89.936	22.90	22.93	0.3	0.5
Alum Shale	91.743	23.46	23.49	5.2	0.9
Alum Shale	91.744	23.78	23.79	6.9	1.4
Alum Shale	91.745	23.86	23.87	7.0	1.8
Alum Shale	89.935	24.00	24.03	6.7	1.4
Alum Shale	89.934	24.90	24.92	6.7	1.5
Alum Shale	89.933	25.97	26.00	8.5	2.3
Alum Shale	89.932	26.96	26.98	7.3	1.5
Alum Shale	89.931	27.97	28.00	8.9	1.6
Alum Shale	89.93	28.93	28.95	8.4	1.7
Alum Shale	89.929	30.02	30.04	6.3	2.0
Alum Shale	89.928	30.94	30.96	8.2	1.5
Alum Shale	89.927	32.04	32.06	7.2	3.0
Alum Shale	109.139	32.75	32.76	8.0	1.6
Alum Shale	89.926	32.90	32.92	8.1	3.4
Alum Shale	109.14	33.03	33.04	5.3	5.7
Alum Shale	109.141	33.14	33.15	9.3	1.7
Alum Shale	109.142	33.24	33.25	8.3	3.3
Alum Shale	109.143	33.35	33.36	4.8	1.9
Alum Shale	109.144	33.45	33.46	6.6	1.4
Alum Shale	109.145	33.53	33.54	7.9	1.9

Stratigraphy	Sample	Top (m)	Base (m)	TOC%	TS%
Alum Shale	109.146	33.65	33.66	8.7	1.9
Alum Shale	109.147	33.77	33.78	9.3	1.5
Alum Shale	89.925	33.85	33.88	10.2	2.2
Alum Shale	109.148	34.00	34.02	8.8	2.0
Alum Shale	109.149	34.20	34.21	8.9	2.9
Alum Shale	109.15	34.30	34.31	8.8	2.2
Alum Shale	109.151	34.40	34.41	9.5	2.7
Alum Shale	109.152	34.58	34.59	7.9	2.3
Alum Shale	109.153	34.67	34.69	7.9	2.6
Alum Shale	109.154	34.79	34.80	8.4	2.3
Alum Shale	109.155	34.88	34.90	6.8	2.3
Alum Shale	109.156	34.98	34.99	7.1	2.3
Alum Shale	89.924	35.08	35.10	7.2	3.1
Alum Shale	109.157	35.20	35.21	7.9	2.6
Alum Shale	109.158	35.29	35.30	6.9	2.2
Alum Shale	109.159	35.39	35.40	7.6	2.7
Alum Shale	109.16	35.50	35.51	7.9	2.8
Alum Shale	109.161	35.60	35.61	8.3	3.0
Alum Shale	109.162	35.70	35.71	6.3	2.6
Alum Shale	89.957	35.80	35.85	9.0	2.5
Alum Shale	109.163	35.90	35.91	8.4	2.5
Alum Shale	89.923	35.97	36.00	8.1	2.8
Alum Shale	109.164	36.10	36.11	8.1	2.1
Alum Shale	109.165	36.19	36.20	11.9	2.3
Alum Shale	109.166	36.27	36.29	7.8	2.5
Alum Shale	109.167	36.39	36.40	8.5	2.2
Alum Shale	109.168	36.49	36.50	8.4	2.1
Alum Shale	109.169	36.57	36.59	8.4	2.1
Alum Shale	109.17	36.67	36.68	8.1	2.5
Alum Shale	109.171	36.79	36.80	7.1	2.8
Alum Shale	109.172	36.84	36.85	8.8	3.3
Alum Shale	109.173	36.90	36.91	8.0	2.8
Alum Shale	89.922	36.94	36.97	7.1	2.9
Alum Shale	109.174	37.02	37.03	8.8	2.7
Alum Shale	109.175	37.12	37.13	7.1	2.1
Alum Shale	109.176	37.19	37.20	8.1	2.0
Alum Shale	109.179	37.26	37.27	8.2	2.4
Alum Shale	109.18	37.34	37.35	7.1	2.5
Alum Shale	109.181	37.46	37.47	7.4	2.5
Alum Shale	109.182	37.54	37.55	9.8	2.6
Alum Shale	109.183	37.64	37.65	8.1	1.6
Alum Shale	109.184	37.74	37.75	9.8	1.3
Alum Shale	109.185	37.86	37.87	9.2	2.8

Stratigraphy	Sample	Top (m)	Base (m)	TOC%	TS%
Alum Shale	109.186	37.99	38.00	7.6	1.9
Alum Shale	89.921	38.09	38.11	6.3	2.2
Alum Shale	109.177	38.20	38.21	7.2	1.6
Alum Shale	109.178	38.30	38.31	7.0	2.6
Alum Shale	109.117	38.47	38.48	7.5	0.8
Alum Shale	109.137	38.57	38.58	7.5	1.9
Alum Shale	109.136	38.67	38.68	8.2	1.9
Alum Shale	109.135	38.78	38.79	7.7	3.0
Alum Shale	109.138	38.86	38.87	7.4	1.5
Alum Shale	89.92	38.93	38.97	6.7	2.4
Alum Shale	109.134	39.06	39.07	7.9	2.0
Alum Shale	109.133	39.16	39.17	8.3	2.8
Alum Shale	109.118	39.27	39.28	7.8	2.9
Alum Shale	109.132	39.32	39.33	8.2	4.3
Alum Shale	109.131	39.40	39.41	8.5	2.5
Alum Shale	109.13	39.50	39.51	7.3	2.3
Alum Shale	109.129	39.59	39.60	7.0	1.8
Alum Shale	109.119	39.69	39.70	6.8	2.6
Alum Shale	109.128	39.81	39.82	7.5	1.9
Alum Shale	89.919	39.93	39.96	7.4	2.6
Alum Shale	109.12	40.36	40.37	10.2	3.1
Alum Shale	109.121	40.70	40.71	10.0	2.9
Alum Shale	89.918	41.00	41.05	7.1	3.5
Alum Shale	109.122	41.46	41.47	9.1	3.9
Alum Shale	109.123	41.80	41.81	7.7	2.3
Alum Shale	89.917	42.02	42.04	6.6	3.3
Alum Shale	109.124	42.30	42.31	6.7	2.8
Alum Shale	109.125	42.67	42.68	11.7	4.9
Alum Shale	89.916	43.03	43.05	9.8	3.2
Alum Shale	109.126	43.38	43.40	11.4	3.5
Alum Shale	109.127	43.61	43.62	8.5	3.7
Alum Shale	89.915	43.97	44.02	10.8	4.2
Alum Shale	91.749	44.50	44.51	13.7	3.1
Alum Shale	89.914	45.08	45.10	11.5	3.7
Alum Shale	89.913	45.98	46.00	10.2	3.5
Alum Shale	89.912	47.08	47.10	13.6	3.9
Alum Shale	89.911	48.00	48.02	14.2	4.4
Alum Shale	89.91	49.10	49.12	10.4	4.7
Alum Shale	109.104	49.40	49.41	12.1	5.9
Alum Shale	109.105	49.57	49.58	11.7	6.1
Alum Shale	109.106	49.72	49.73	12.6	4.0
Alum Shale	109.107	49.89	49.90	10.7	4.5
Alum Shale	89.909	50.05	50.08	9.7	5.3

Stratigraphy	Sample	Top (m)	Base (m)	TOC%	TS%
Alum Shale	109.108	50.19	50.20	10.0	5.2
Alum Shale	109.11	50.60	50.61	9.5	4.7
Alum Shale	109.109	50.80	50.81	9.1	4.8
Alum Shale	89.908	50.97	51.02	10.4	5.4
Alum Shale	109.111	51.29	51.30	8.9	5.0
Alum Shale	109.112	51.74	51.76	8.8	4.1
Alum Shale	89.907	52.01	52.05	10.1	5.4
Alum Shale	109.114	52.30	52.31	10.1	4.1
Alum Shale	109.113	52.55	52.56	10.4	3.6
Alum Shale	109.115	52.85	52.86	10.8	4.4
Alum Shale	89.906	53.02	53.04	10.2	6.5
Alum Shale	109.443	53.19	53.20	11.5	3.7
Alum Shale	109.444	53.55	53.56	9.9	5.9
Alum Shale	89.905	53.91	53.94	8.5	5.3
Alum Shale	109.445	54.38	54.39	10.8	4.3
Alum Shale	89.904	55.00	55.02	8.9	5.9
Alum Shale	109.448	55.15	55.16	9.4	6.5
Alum Shale	109.449	55.39	55.40	11.2	8.7
Alum Shale	109.451	55.55	55.56	11.3	7.1
Alum Shale	109.452	55.80	55.81	8.7	6.5
Alum Shale	89.903	55.95	55.98	11.4	5.9
Alum Shale	109.453	56.59	56.60	13.1	5.0
Alum Shale	109.454	56.69	56.70	10.6	7.7
Alum Shale	89.902	56.99	57.01	14.4	7.1
Alum Shale	109.455	57.20	57.21	10.0	5.8
Alum Shale	109.456	57.38	57.39	11.7	6.7
Alum Shale	109.415	57.55	57.56	13.3	4.4
Alum Shale	109.414	57.79	57.80	13.4	5.0
Alum Shale	109.413	57.96	57.97	13.2	4.6
Alum Shale	89.901	58.11	58.13	12.6	8.3
Alum Shale	89.958	58.35	58.40	11.5	5.6
Alum Shale	109.417	58.58	58.59	13.4	4.7
Alum Shale	93.3	58.99	59.02	11.6	7.2
Alum Shale	109.43	59.18	59.19	13.2	7.3
Alum Shale	89.959	59.34	59.47	11.2	4.9
Alum Shale	109.432	59.74	59.75	10.7	4.1
Alum Shale	93.299	60.02	60.05	11.9	5.6
Alum Shale	109.418	60.25	60.26	12.1	5.3
Alum Shale	109.433	60.70	60.71	8.1	5.4
Alum Shale	93.298	60.80	61.00	13.9	5.5
Alum Shale	109.116	61.39	61.40	11.4	4.8
Alum Shale	109.412	61.79	61.80	15.5	6.0
Alum Shale	109.41	61.90	61.92	8.7	6.2

Stratigraphy	Sample	Top (m)	Base (m)	TOC%	TS%
Alum Shale	93.297	62.14	62.18	10.8	8.3
Alum Shale	109.411	62.39	62.40	13.8	6.8
Alum Shale	109.409	62.50	62.52	10.3	7.0
Alum Shale	109.421	62.78	62.79	10.3	8.5
Alum Shale	109.434	62.88	62.89	14.8	4.9
Alum Shale	93.296	63.00	63.05	10.9	9.0
Alum Shale	109.419	63.23	63.24	10.1	6.1
Alum Shale	93.295	64.00	64.03	11.7	11.0
Alum Shale	109.423	64.09	64.10	8.8	6.6
Alum Shale	93.294	65.28	65.30	9.1	5.3
Alum Shale	109.485	65.52	65.53	10.2	7.2
Alum Shale	109.486	65.64	65.65	8.8	3.6
Alum Shale	109.428	65.75	65.76	8.4	6.1
Alum Shale	93.293	66.12	66.15	8.5	8.6
Alum Shale	109.435	66.22	66.23	7.7	3.1
Alum Shale	109.429	66.35	66.36	8.5	4.8
Alum Shale	109.436	66.49	66.50	9.3	5.1
Alum Shale	93.292	67.00	67.03	9.5	9.0
Alum Shale	109.438	67.26	67.27	11.2	4.6
Alum Shale	93.291	67.68	67.70	11.9	5.7
Alum Shale	109.439	68.30	68.31	8.9	5.0
Alum Shale	109.44	68.55	68.56	12.0	3.7
Alum Shale	93.29	69.00	69.03	9.0	5.1
Alum Shale	109.441	69.99	70.00	9.6	8.3
Alum Shale	93.289	70.08	70.10	8.0	6.3
Alum Shale	109.442	70.60	70.61	9.7	3.5
Alum Shale	93.288	71.06	71.08	8.8	4.6
Alum Shale	109.48	71.59	71.61	12.2	5.3
Alum Shale	93.287	71.97	72.00	11.1	5.2
Alum Shale	109.481	72.60	72.61	12.4	4.6
Alum Shale	93.286	72.96	72.99	15.2	5.3
Alum Shale	109.482	73.70	73.72	12.9	8.6
Alum Shale	93.285	74.41	74.43	13.8	5.5
Alum Shale	109.483	74.59	74.60	12.9	5.4
Alum Shale	93.284	75.00	75.02	10.8	5.0
Alum Shale	109.484	75.35	75.36	10.3	6.3
Alum Shale	91.747	75.47	75.48	9.8	5.6
Alum Shale	93.283	75.90	75.92	10.5	6.3
Alum Shale	106.223	75.97	75.98	10.9	8.6
Alum Shale	106.224	76.02	76.03	11.1	4.9
Alum Shale	106.225	76.06	76.07	11.7	7.7
Alum Shale	106.226	76.12	76.13	11.8	7.1
Alum Shale	106.227	76.17	76.18	12.3	4.6

Stratigraphy	Sample	Top (m)	Base (m)	TOC%	TS%
Alum Shale	106.228	76.22	76.23	11.5	5.5
Alum Shale	106.229	76.28	76.29	12.2	6.7
Alum Shale	106.23	76.31	76.32	10.6	8.2
Alum Shale	106.231	76.39	76.40	9.7	6.1
Alum Shale	106.232	76.44	76.45	11.6	6.6
Alum Shale	106.233	76.48	76.49	12.2	6.7
Alum Shale	106.234	76.60	76.61	10.7	9.1
Alum Shale	106.235	76.64	76.65	9.1	5.0
Alum Shale	106.236	76.71	76.72	10.3	6.6
Alum Shale	106.237	76.75	76.76	9.4	5.9
Alum Shale	106.238	76.79	76.80	11.7	7.1
Alum Shale	106.239	76.85	76.86	10.6	8.2
Alum Shale	106.24	76.89	76.89	10.5	5.4
Alum Shale	106.24	76.90	76.90	9.5	4.4
Alum Shale	93.282	76.95	76.97	9.7	8.3
Alum Shale	106.241	77.02	77.02	10.1	9.2
Alum Shale	106.242	77.07	77.08	10.0	7.6
Alum Shale	106.243	77.13	77.14	10.9	4.8
Alum Shale	106.244	77.16	77.17	10.9	7.0
Alum Shale	106.245	77.20	77.21	9.5	4.9
Alum Shale	106.246	77.21	77.22	10.5	6.3
Alum Shale	106.247	77.27	77.28	9.0	4.6
Alum Shale	106.248	77.33	77.34	9.7	8.0
Alum Shale	91.748	77.37	77.38	10.6	5.8
Alum Shale	106.249	77.38	77.39	8.4	6.3
Alum Shale	106.25	77.45	77.46	10.7	6.6
Alum Shale	109.001	77.51	77.52	10.5	6.9
Alum Shale	109.004	77.56	77.57	10.1	7.7
Alum Shale	109.005	77.63	77.64	9.3	6.9
Alum Shale	109.012	77.66	77.67	9.3	5.5
Alum Shale	109.011	77.69	77.70	7.6	6.6
Alum Shale	109.01	77.72	77.73	9.1	6.2
Alum Shale	109.009	77.75	77.77	8.7	5.1
Alum Shale	109.008	77.80	77.81	7.4	5.5
Alum Shale	109.007	77.87	77.88	9.4	6.9
Alum Shale	109.006	77.93	77.94	9.0	6.9
Alum Shale	109.003	77.97	77.98	8.7	4.5
Alum Shale	109.002	78.02	78.03	9.0	3.3
Alum Shale	93.281	78.06	78.08	7.7	5.4
Alum Shale	106.222	78.10	78.11	8.5	4.3
Alum Shale	106.221	78.15	78.16	9.6	6.7
Alum Shale	106.22	78.20	78.21	6.9	7.0
Alum Shale	106.219	78.24	78.25	9.0	4.8

Stratigraphy	Sample	Top (m)	Base (m)	TOC%	TS%
Alum Shale	106.218	78.29	78.30	8.0	8.1
Alum Shale	106.217	78.34	78.35	9.3	5.6
Alum Shale	106.216	78.39	78.40	9.4	6.9
Alum Shale	106.215	78.43	78.44	6.6	6.4
Alum Shale	106.214	78.44	78.45	9.2	8.1
Alum Shale	106.213	78.50	78.51	7.6	8.9
Alum Shale	106.212	78.57	78.58	9.8	5.6
Alum Shale	106.211	78.61	78.62	7.8	6.4
Alum Shale	106.21	78.65	78.66	7.8	4.7
Alum Shale	106.209	78.66	78.67	8.5	6.8
Alum Shale	91.75	78.71	78.72	7.7	5.8
Alum Shale	106.208	78.77	78.77	8.7	6.0
Alum Shale	106.207	78.81	78.82	7.1	7.9
Alum Shale	106.206	78.87	78.88	6.5	7.7
Alum Shale	106.205	78.92	78.93	7.9	5.4
Alum Shale	106.204	78.95	78.97	7.0	4.1
Alum Shale	93.28	78.98	79.00	6.5	5.7
Alum Shale	106.203	79.01	79.02	8.5	6.5
Alum Shale	106.202	79.04	79.05	8.5	2.8
Alum Shale	106.201	79.10	79.11	3.9	0.4
Alum Shale	106.3	79.14	79.15	3.0	0.2
Alum Shale	106.299	79.19	79.20	7.3	0.8
Alum Shale	106.298	79.20	79.20	8.4	7.8
Alum Shale	106.297	79.23	79.24	8.1	5.4
Alum Shale	106.296	79.27	79.28	7.8	6.2
Alum Shale	106.295	79.32	79.33	8.2	7.2
Alum Shale	106.294	79.38	79.39	7.5	5.4
Alum Shale	106.293	79.43	79.44	8.3	6.5
Alum Shale	106.292	79.47	79.48	8.2	7.2
Alum Shale	106.291	79.48	79.49	9.0	7.6
Alum Shale	106.29	79.53	79.54	11.0	4.9
Alum Shale	106.289	79.58	79.59	7.0	5.0
Alum Shale	106.288	79.63	79.64	9.5	5.4
Alum Shale	106.287	79.68	79.69	7.3	5.6
Alum Shale	106.286	79.74	79.75	9.3	6.8
Alum Shale	106.285	79.79	79.80	8.2	5.9
Alum Shale	106.284	79.84	79.85	6.8	6.0
Alum Shale	106.283	79.89	79.91	9.8	6.0
Alum Shale	93.279	79.92	79.95	7.7	5.3
Alum Shale	93.278	80.81	80.86	6.9	6.8
Alum Shale	93.277	81.83	81.85	9.0	5.9
Alum Shale	93.276	82.95	82.97	8.3	5.1
Alum Shale	93.275	83.99	84.01	6.4	4.9

Stratigraphy	Sample	Top (m)	Base (m)	TOC%	TS%
Alum Shale	109.101	84.24	84.25	6.5	4.6
Alum Shale	109.102	84.46	84.47	8.4	4.7
Alum Shale	109.103	84.73	84.74	6.0	5.7
Alum Shale	93.274	84.90	84.92	7.2	5.5
Alum Shale	109.049	85.38	85.39	7.0	6.0
Alum Shale	109.048	85.73	85.74	9.4	5.7
Alum Shale	93.273	86.05	86.08	6.7	5.3
Alum Shale	109.047	86.22	86.23	6.1	3.8
Alum Shale	109.042	86.37	86.38	5.8	7.6
Alum Shale	109.041	86.41	86.42	6.7	9.2
Alum Shale	109.043	86.49	86.50	5.6	5.2
Alum Shale	109.044	86.63	86.64	6.9	4.8
Alum Shale	109.045	86.69	86.70	6.6	5.0
Alum Shale	109.046	86.79	86.80	7.7	7.4
Alum Shale	93.272	86.90	86.92	6.0	6.6
Alum Shale	109.039	86.95	86.96	7.0	7.8
Alum Shale	109.04	87.03	87.04	7.8	7.6
Alum Shale	109.038	87.39	87.40	1.9	0.3
Alum Shale	109.037	87.79	87.80	1.6	0.0
Alum Shale	109.029	87.80	87.81	7.0	2.0
Alum Shale	93.271	87.88	87.90	6.3	1.8
Alum Shale	109.03	87.96	87.97	5.9	2.0
Alum Shale	109.031	88.04	88.05	6.2	1.6
Alum Shale	109.032	88.19	88.20	6.6	2.7
Alum Shale	109.033	88.24	88.25	6.5	2.0
Alum Shale	109.034	88.50	88.51	6.2	3.4
Alum Shale	109.028	88.74	88.75	6.4	3.0
Alum Shale	93.27	89.08	89.10	6.4	3.0
Alum Shale	109.027	89.42	89.43	4.6	2.3
Alum Shale	109.026	89.71	89.72	6.2	3.9
Alum Shale	109.457	89.86	89.87	5.5	4.3
Alum Shale	93.269	90.01	90.04	3.9	3.7
Alum Shale	109.458	90.20	90.21	4.0	2.3
Alum Shale	109.459	90.40	90.41	2.5	2.2
Alum Shale	109.46	90.72	90.73	4.2	2.8
Alum Shale	93.268	90.94	90.97	5.3	5.2
Alum Shale	109.461	91.36	91.37	3.5	3.9
Alum Shale	109.462	91.57	91.58	4.1	4.4
Alum Shale	109.463	92.10	92.15	4.6	4.3
Alum Shale	93.267	92.30	92.32	2.9	2.8
Alum Shale	109.464	92.64	92.65	3.6	2.4
Alum Shale	109.465	92.73	92.74	3.7	2.4
Alum Shale	93.266	92.98	93.01	2.9	2.6

Stratigraphy	Sample	Top (m)	Base (m)	TOC%	TS%
Alum Shale	109.466	93.19	93.20	3.5	2.8
Alum Shale	109.467	93.52	93.53	3.6	3.0
Alum Shale	109.468	93.75	93.76	3.2	2.9
Alum Shale	93.265	94.02	94.05	3.9	2.8
Alum Shale	109.469	94.34	94.35	4.0	3.1
Alum Shale	109.47	94.50	94.51	3.1	3.1
Alum Shale	109.471	94.79	94.80	5.1	2.9
Alum Shale	93.264	95.00	95.02	4.9	4.5
Alum Shale	109.472	95.42	95.43	4.3	3.4
Alum Shale	109.473	95.65	95.66	6.1	3.1
Alum Shale	109.474	95.80	95.81	5.9	3.1
Alum Shale	93.263	95.97	96.00	5.0	2.9
Alum Shale	109.475	96.27	96.28	5.9	2.4
Alum Shale	109.476	96.55	96.56	5.8	3.4
Alum Shale	109.477	96.87	96.88	5.2	4.5
Alum Shale	93.262	96.96	96.99	3.3	3.4
Alum Shale	109.478	97.48	97.49	4.6	3.4
Alum Shale	109.479	97.78	97.79	5.2	5.3
Alum Shale	93.261	97.98	98.00	3.4	3.1
Alum Shale	109.487	98.62	98.63	4.7	3.5
Alum Shale	93.26	98.99	99.03	3.6	4.0
Alum Shale	109.488	99.56	99.57	3.5	5.5
Alum Shale	109.024	99.64	99.65	3.3	4.1
Alum Shale	93.259	99.92	99.95	3.5	3.6
Alum Shale	109.022	100.07	100.08	1.6	1.6
Alum Shale	109.023	100.16	100.17	1.7	0.9
Alum Shale	109.05	100.33	100.34	1.6	1.3
Alum Shale	109.036	100.44	100.45	2.8	1.5
Alum Shale	109.018	100.80	100.81	0.1	0.4
Alum Shale	109.019	100.85	100.86	3.1	2.0
Alum Shale	93.258	100.97	101.00	2.7	2.2
Alum Shale	109.02	101.06	101.07	3.0	2.4
Alum Shale	109.021	101.20	101.21	2.8	1.9
Alum Shale	109.015	101.28	101.29	3.7	3.7
Alum Shale	109.025	101.41	101.42	3.9	2.4
Alum Shale	109.016	101.56	101.57	0.7	1.1
Alum Shale	109.017	101.85	101.86	2.7	1.3
Alum Shale	93.257	102.00	102.05	1.9	1.7
Alum Shale	109.014	102.29	102.30	2.4	1.2
Alum Shale	109.035	102.53	102.53	0.8	1.4
Alum Shale	93.256	102.81	102.86	2.1	1.2

Appendix D: Biostratigraphical data on the wells

Units	Picks/Units	Formation/age	Albjära-1		Fågeltofta-2		Gislövshammar-2	
			m, core	log_Pick	m, core	log_Pick	m, core	log_Pick
	U_Ordovician	**Almelund Shale**	10.58	10.9				
		Caradoc						
		Nemagraptus gracilis	-?-32.40					
		Llanvirn	?32.40-104.75					
		H. teretiusculus	?-32.40-44.66					
		P. distichus	44.66-53.00					
		Pterograptus elegans	53.00-71.50					
		Nicholsonograptus fasiculatus	71.50-90.80					
		Holmograptus lentus	90.80-104.75					
	Almelund Shale	Arenig	104.74-?				2.1-23.3	
	top_komstad	Komstad	104.75-107.5	105.0	4.78-14.1	4.4	2.1-3.98	1.9
	top_toeyen	Tøyen Shale	107.50-134.64	107.8	14.1-20.7	13.9	3.98-23.2	4.1
		Tremadoc						
		Volkov					3.98-11	
		D. hirundo					3.98-11	
		Billingen					11-17	
		P. ang. elongatus					11-13	
	Tøyen Shale	P. densus					13-17	
		Hunneberg					17-23.2	
		D. balticus					17- 20	
		T.phyllograptus					20-22.50	
		H.copiosus					--	
		A. murrayi + K.supremus					22.50-23.2	
	top_bjoerkaasholmen	**Bjørkåsholmen (Ceratopyge Limestone)**	134.64-134.94	134.7	-	21.4	-	23.1

Units	Picks/Units	Formation/age	Albjära-1		Fågeltofta-2		Gislövshammar-2	
			m, core	log_Pick	m, core	log_Pick	m, core	log_Pick
Tremadoc	top_alum	**Alum Shale**	134.94-232.54	135.2	21.25-116.2	21.4	23.2-103.1	23.1
		Tremadoc (part)	134.94-141.8		21.25-36.90		23.2-39.5	
		D3	135.12-137.8		21.25-		23.2-23.8	
	Bryograptus							
	top_D2	**D2**	137.8-139.2	138.0		22.4	23.8-33.5	23.9
	Adelograptus							
	top_D1	**D1**	139.2-141.8	139.5	-36.9	33.7	33.5-39.5	33.3
	Rhapdinopora							
Furongian	top_furongian	**Furongian**	141.8-200.58	142.3	36.9-87.61	37.3	39.5-79.76	39.1
		Acerocare	141.8-154.3		36.9-49.95		39.5-48.8	
	Acerocare Zone	*Acerocare ecorne*	+				+/-	
		Westergaardia	+				?-42.31-?	
		Peltura costata	+				+	
		Peltura transiens	+				+	
		(Westergaardia lata, sp)					-42.31-	
		(P. heres, spp.)	-152.5-				-43.75- 44.2-	
		(Euloma primodale sp.)					-44.5-	
		Peltura Zones	154.3-176.9		49.95-66.37		48.8-66.3	
	top_scarabaeoides	***Peltura scarabaeoides Vc***	154.3-167.6	154.9	49.95-60.37	50.0	48.8-58.05	49.1
	Peltura scarabaoides Zone	*Fossil free interval*			49-95-55.25			
		Parabolina megalops	154.3-156.3		55.25-56.95		48.8-49.85	
		Parabolina lobata	?-156.35-?		56.95-		49.85- 51.85?	
		Ctenopyge linnarssoni	?				?-57.65-?	

Units	Picks/Units	Formation/age	Albjära-1		Fågeltofta-2		Gislövshammar-2	
			m, core	log_Pick	m, core	log_Pick	m, core	log_Pick
Furongian	**Peltura scarabaoides Zone**	*Ctenopyge bisculcata*	?				?-66.3	
		(Rondatus?)					-54.80-	
		(P. megalops spp.)	-154.35-		51.85-58.05		-48.8-	
		(P. lobata, spp.)	-156.35-				-49.90-	
		(P.sca. westergaardia, spp.)					51.76 - 55.45	
		(C. linnarssoni, spp.)					-57.65; 57-	
		first Peltura spp.					-56.6-	
	top_minor	***Peltura minor Vb***	167.6-172.16	168.4	60.37-65.04	60.8	58.05-62.05	57.9
	Peltura minor Zone	*Ctenopyge affinis*						
		Ctenopyge tumida					-58.21-	
		Ctenopyge spectabilis					-60.0-60.5-	
		Ctenopyge similis						
		(Ctenopyge sp.)					-58.05-	
		(C. angusta ?)					60-61.40?	
		P. acutidens			60.20			
	top_protopeltura	***Protopeltura praecursor Va***	172.16-176.90	172.5	65.04-66.37	65.2	62.05-66.3	61.9
	Protopeltura	*Ctenopyge flagellifera*					63.05-64.29	
		Ctenopyge postcurrens					64.37-64.66-	
		Leptoplastus neglectus					+	
		Protopeltura holtendahli						
		Protopeltura broeggeri						
		C. drysognensis sp.					64.24;64.29	

Units	Picks/Units	Formation/age	Albjära-1		Fågeltofta-2		Gislövshammar-2	
			m, core	log_Pick	m, core	log_Pick	m, core	log_Pick
Furongian	**Protopeltura**	*C. postcurrense sp.*					64.38; 64.66	
		(C. neglecta spp.)					-66.25-	
		(C. postcurrens, spp.)					-65-	
		Protopeltura præecursor					-64.24-	
	top_leptoplastus	***Leptoplastus***	176.9-179.38	177.3	66.37-66.95	66.4	66.3-66.89	66.1
	Leptoplastus	*?C. angustatus*			61.28-64.85			
		(Leptoplastus sp.)			65.8-61.28		-66.7-	
	top_parabolina	***Parabolina spinulosa***	179.38-188.45	179.8	66.95-75.22	67.1	?-66.89-ca 71.5	66.5
	Parabolina Zone	*Parabolina spinolosa*					66.89-?	
		Parabolina brevispina					?-71.05-71.5	
		(P. spinulosa spp.)					-66.89; 66.9-	
		(P. brevispina sp.)					-71.05-	
		(Orusia sp.)			68.87-70.81		67.7-70.0	
		leiostracus pusillius					-70.61-	
		Protopeltura aciculata						
	top_olenus	***Olenus***	188.45-200.58	188.8	75.22-87.61	75.4	ca 71.5-79.76?	71.2
	Olenus Zone	*Olenus scanicus*					+/-	
		Olenus dentalus					+/-	
		Olenus attenuatus					77.88?-78.16	
		Olenus wahlenbergi					78.16-78.93	

Units	Picks/Units	Formation/age	Albjära-1		Fågeltofta-2		Gislövshammar-2	
			m, core	log_Pick	m, core	log_Pick	m, core	log_Pick
		Olenus truncatus					78.93-79.20	
		Olenus gibbosus	-200.58		86.96		79.20-79.76?	
		(Olenus spp.)					76.95-79.76	
	top_m_Cambrian	Mid Cambrian	200.58-232.66	201.0	87.61-116.2	87.3	79.76-103.1	79,3
		Agnostus pisiformis	200.58-205.15		87.61-93.36		ca 81.2-ca 84	
	Pisiformis	*(A. pisiformis sp.)*					81.8-83.45	
	top_lejopyge	*Paradoxides forchhammeri*	205.15-217.87	205.5	93.36-98.81	93.1	ca 84-88.3	84,1
P. forch-hammeri		*C3 Lejopyge laevigata*	205.15-213.80				84.9-87.2	
		(L.laevigata)					-85.1-	
		(Hypagnostus)					-86.65-	
	top_andrarum	**Andrarum lmst + Hyolites lmst bed**	213.85-215.0	214.1	96.5-97.8	96.7	87.2-87.8	87,0
	base_andrarum	*Jincella brachymetopa*		215.3		97.5		87,5
		C1 T. lundgreni & G. nathorsti	215.02-217.87				87.8-88.3	
		(L. laevigata, sp.)					-85.1-	
		(Hypagnostus sp.)					-86.65-	
P. paradoxis-simus								
		Paradoxides paradoxissimus	217.87-229.90		98.81-111.82		88.3-100.6	
		B4 Ptychagnostus punctuosus	217.87-224-36				88.3-92	
		B3 Hypagnostus parvifrons	224.36-225.63				92-95.4	

Units	**Picks/Units**	**Formation/age**	**Albjära-1**		**Fågeltofta-2**		**Gislövshammar-2**	
			m, core	log_Pick	m, core	log_Pick	m, core	log_Pick
P. paradoxis-simus	top_B2	*B2 Tomagnostus fissus. Ptychagnostus atavus*	225.63-228.70	225.9		106.3	95.4-100.2	94.8
		B1 Triplagnostus gibbus	228.70-229.90				100.2-100.6	
	top_exsulans	**Exsulans limestone**	229.34-229.91	229.7	110.9-112.0	111.9	100.6-100.8	99.9
	base_exsulans			230.3		112.3		100.7
		Shale	229.90-232.50	233.0	111.82-116.2	117.0	100.8-103.1	103.5
	top_Forsemolla	***Forsemölla Lmst***	232.50-232.54	233.0		117.0		103.5
	base_Forsemolla			233.0		117.0		103.5
	top_gislov	Lower Cambrium	232.54-237.40	233.2	116.2-121.75	117.0		103.5
		Gislöv Fm			116.2-120.95		103.1-105.2	
	top_laesaa	**Læså Fm**		233.2	120.95-121.75	121.2	105.2-105.9	105.1
	top_hardeberga	**Hardeberga Fm**	232.54-237.40	233.2				