

G E U S

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GANT-1

**Sedimentology of the GANT-1 core drilled
by grønArctic Energy Inc., Tunorsuaq,
Nuussuaq, West Greenland
Dam, G.**

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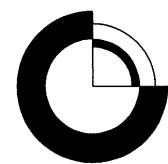


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Introduction

In May 1995 grønArctic Energy Inc., Canada, was awarded an exclusive licence to explore for hydrocarbons on the southern and western part of Nuussuaq. As part of the commitments under this licence three slim core wells (GANE#1, GANK#1 and GANT#1) were drilled in July and August 1995.

The GANT#1 well is situated in the valley Tunorsuaq about 11 km ESE from where the valley converge with the Itilli valley (Fig. 1). Drilling was carried out from July 14th – August 11th, 1995 by Petro Drilling Company, Ltd., Canada. A wire-line diamond drilling outfit (Longyear Fly-in model 44) was used. A total of 900.68 m (all sediments with only a few sills) with a recovery close to 100% was drilled in GANT#1 (Dahl *et al.*, 1995). The core diameter in GANT#1 is 63.5 mm (HQ rods) from 9.75 m to 247.19 m, and 47.6 mm (NQ rods) from 247.19 m to 900.68 m. All technical data from the drilling programme and drill site sampling programme are presented by Dahl *et al.* (1995).

The purpose of the GANT#1 well was to intersect the Cretaceous–Lower Tertiary succession on an anticlinal structure. The Geological Survey of Denmark and Greenland (GEUS) carried out the geological services at the well site which included the preparation of a preliminary geological description of the cores and collection of samples (Dahl *et al.*, 1995). This was followed by detailed sedimentological and organic geochemical analyses in Copenhagen. The organic geochemistry of sediments, oils and gases of the wells have been reported by Christiansen *et al.* (1996), and the present report should be read together with this. The palynostratigraphy of the cores will be reported by September 1st, 1997. The aim of the present report is to present a detailed sedimentological analysis of the core from GANT#1.

Geological setting

The margin of West Greenland was formed by extensional opening of the Labrador Sea in late Mesozoic–early Cenozoic time. A complex of linked basins stretches from the Labrador Sea to northern Baffin Bay (Rolle, 1985; Chalmers, 1991; Chalmers & Pulvertaft, 1993; Chalmers *et al.*, 1993). A conspicuous element of this tectonic framework is the Ungava transform fault system. This is a NE-trending zone of anastomosing strike-slip faults which accommodated different amounts of extension and rotational opening of Labrador Sea and Baffin Bay (Fig. 1). At its north-eastern end, much of the strike-slip motion associated with the Ungava fault is dispersed across an

array of small-scale strike-slip faults which encompass Disko and Nuussuaq. It has been suggested that the Nuussuaq Basin straddling Nuussuaq and northern Disko is a pull-apart basin formed by a wrench couple or releasing bend at the end of the Ungava fault zone (grønArctic, 1996).

The Albian–Paleocene succession is attributed to a protracted period of left-lateral wrench controlled subsidence (grønArctic, 1996). However, subsidence came to an abrupt end with regional uplift (Dam & Sønderholm, in press), followed by a short period of very rapid subsidence and extrusion of Paleocene hyaloclastites and succeeded by flood basalts. The regional uplift has been attributed to either major plate and stress field reorganisation (cf. Roest & Srivastava, 1989; Chalmers *et al.*, 1993; Chalmers & Laursen, 1995) or the arrival of a mantle plume to the base of the lithosphere (cf. Lawver & Müller, 1994).

The GANT#1 well is situated on an anticlinal in Tunorsuaq valley (Flemming G. Christiansen, pers. comm., 1996). The well penetrates sediments deposited on a major fault-controlled Upper Cretaceous–Paleocene slope (Dam & Sønderholm, 1994). Exposed sediments occur close to the well in the Tunorsuaq valley, in Itilli valley c. 11 km towards WNW (Dam & Sønderholm, 1994), and on the north coast of Nuussuaq, c. 6 km north of the well (Fig. 1).

Palynology and biostratigraphy

A palynological screening examination has not been carried out on samples from the GANT#1 core. A full palynological examination of the core will be completed by September 1st, 1997. However, three sections correlateable with the uppermost 525 m of the GANT#1 core, have been studied in outcrops on the north coast of Nuussuaq (Nøhr-Hansen, 1996). These sections are situated c. 6–7 km north of GANT#1 and show a comparable lithological development. Data from these sections suggest that the uppermost 525 m of GANT#1 has a Late Campanian–Maastrichtian, possibly Early Paleocene age. In GANT#1 an ammonite was found at 280 m depth. It has affinity to Upper Campanian–Maastrichtian *Scaphites* described by Birkelund (1965).

Facies description

In GANT#1 a total of 900.68 m succession were cored. The core is mainly made up of sediments, but twenty-three sills were also drilled. They are generally less than 1 m thick, but a few are up to 8 m thick. A preliminary facies description based on the well site descriptions was presented in the well summary report by Dahl *et al.* (1995). After the cores arrived at GEUS in

Copenhagen they were measured at scale 1:50 (Table 1). Six facies associations have been recognised (Fig. 2, Table 1). These are: 1) thinly interbedded sandstone and mudstone, 2) massive sandy mudstone, 3) massive muddy sandstone, 4) amalgamated sandstone and conglomerate, 5) single graded sandstone beds, 6) slumped beds. The uppermost 35 m of the core consists of quaternary cover.

Facies association 1: Thinly interbedded sandstone and mudstone

Description. This facies association dominates GANT#1, either as thick solitary units (35–127.3 m; 255.85–336.85 m; 338.1–340.5 m; 341.3–350.05 m; 351.5–359.7 m; 366.6–369.9 m; 373.75–382.2 m; 387.7–396.5 m; 397.8–439.7 m; 441.95–447.25 m; 453.95–454.5 m; 458.1–476.2 m; 482–485.45 m; 488–492.7 m; 496.85–501.95 m; 509.5–510.9 m; 514.7–535.45 m; 557.9–571.6 m (intruded by volcanic sill in 568.5–569.75 m); 632.3–635.6 m; 643.7–667.65 m; 672.25–672.5 m; 682–685 m; 698.05–738.5 m (intruded by volcanic sill in 714.35–717.3 m); 795.3–798.6 m; 853.55–900.68 (intruded by volcanic sill in 885.95–891.7 m), or interbedded with muddy sandstones of facies association 2 or 3 (382.2–387.7 m; 787.6–95.3 m; 798.6–800.35 m) (Fig. 2, Table 1). It consists of sharply based graded laminae and beds of fine- to very coarse-grained sandstone, capped by grey to black parallel laminated mudstone (Facies D of Mutti & Ricci Lucchi, 1972). The sandstone content ranges from 5 to 55 %. The sandstones are generally less than 5 cm thick, but range from 2 mm to 95 cm. The sandstones are well sorted and small mudstone rip-up clasts frequently occur both at the base and throughout the sandstones. Well-rounded pebbles occur in the thicker beds, and large mudstone and calcite clasts frequently occur in successions overlying amalgamated sandstones of facies association 4. Sedimentary structures include parallel lamination and cross-lamination. In thicker beds only dish structures are present. Cross-bedding has only been observed in one bed. Soft-sediment folds and finely disseminated plant debris are occasionally present.

The mudstones are grey to black and commonly consist of thin graded laminae, less than 1 cm thick. The grading of the mudstones is mainly observed as distinct colour changes. Otherwise the mudstones are parallel laminated without any obvious graded laminae. Finely disseminated plant debris, calcite, siderite and ankerite concretions are frequently present. The sediments are mainly non- to moderately bioturbated.

Trace fossils include escape burrows, *Planolites* isp, and *Helminthopsis horizontalis*. The succession just underneath the conglomerate in 255 m is rich in pyrite concretions and heavily bioturbated with *Helminthopsis horizontalis*.

The content of total organic carbon (TOC) is generally moderate to high (2.5% and 8%). The interval below 500 m is especially rich in TOC with most values above 5%. The Hydrogen Index (HI) varies from 50 to 140 (Christiansen *et al.*, 1996). Total sulphur values (TS) of mudstones generally range from 1% to 5% (Christiansen *et al.*, 1996). Occasionally, the mudstone is hard and brittle and broken into platelets, the surfaces of which are smooth and glasslike.

The thinly interbedded sandstone and mudstone association occurs in three kinds of successions. Either it occurs in thick successions with no systematic vertical variation of sandstone content or bed thickness, or in coarsening-upward successions or fining-upward successions. The coarsening-upward successions are most commonly underlying facies association 4 and associated with debris flow deposits of facies association 3. The fining-upward successions are commonly overlying amalgamated sandstones of facies association 4. The uppermost 93 m of the core show increasing fracturation (Table 1).

Interpretation. A marine depositional environment for these deposits is suggested by the find of an ammonite and by the high TS values compared to the TOC values. This interpretation is further substantiated by the palynological studies on the correlateable deposits on the north-coast of Nuussuaq by Nøhr-Hansen (1996). The thinly interbedded sandstone and mudstone association is interpreted as deposits of traction and fall-out processes associated with sedimentation from waning low-density turbidity currents. The grading of the mudstone laminae suggests that most of the mudstone also was deposited from waning low-density turbidity currents, otherwise the lamination of the mudstone suggests deposition from suspension. The general absence of benthic dwelling invertebrates suggests restricted oxygen conditions. The presence of sharp, flat based, normally graded, massive sandstones indicates that some of the sandstones were deposited from high-density turbidite currents (T_a , $T_{a,b}$ transitional to S_3 of Lowe, 1982). The successions characterised by a lack of systematic vertical variation suggest that these deposits were not confined by channel-levee systems, and that they most likely represent interchannel slope deposits or deposits laid down in lobe fringe areas. The coarsening-upward successions, commonly associated with deposits of facies association 3, are interpreted as deposits of small turbidite lobes, whereas the fining-upward

successions, associated with the underlying amalgamated sandstones of facies association 4, are interpreted as late infill of the turbidite channels. The increasing fracturation of the thinly interbedded mudstone and sandstone in the uppermost 93 m of the core is probably due to a combination of loading from the above volcanics, percolation of water from the nearby Tunorsuaq river and perma frost.

Facies association 2: Massive sandy mudstone

Description. This association is common in the middle and lower part of GANT#1 and occurs in either single units (336.85–338 m; 476.15–480.15 m; 485.45–488 m; 501.95–509.5 m; 510.9–514.7; 535.5–557.9 m; 603.5–614.65 m; 620–621.75 m; 626.4 m–632.75; 667.65–672.25 m; 672.45–673.95 m; 674.15–682 m; 685–687 m; 692.75–697.75 m; 800.35–822.8 m (intruded by volcanic sill in 806.9–807.55 m and 816.8–821.3 m); 824–828.6 m; 828.65–829.3 m; 829.7–853.55 m, or associated with deposits of facies association 3 and 5 (439.75–441.9 m; 493.15–496.85 m; 691.25–697.15 m; 622–623.65 m) (Fig. 2, Table 1).

The facies association consists of homogenised mudstone generally with floating evenly scattered sand grains, granules, calcite and ankerite clasts and plant debris, or mudstones with irregular, discontinuous sandstone stringers. Pyrite is occasionally present. Generally the sand content is less than 10 % but occasionally up to 30 %. The mudstones are generally non-bioturbated, but *Planolites* isp. has been observed. The mudstones occur in successions up to 24 m thick and are either interbedded with thinly interbedded sandstone and mudstone, or associated with massive muddy sandstones of facies association 3 underlying the amalgamated sandstones of facies association 4. Internal bedding surfaces have not been observed in the thicker units.

Interpretation. The characteristics of this facies association are typical of true debris-flow deposits in which cohesive, muddy matrix supports the clasts (e.g. Johnson, 1970). It has not been possible to outline individual beds in the thicker successions but these are probably made up of several units. The close association with facies association 1, 3 and 4 suggests that the debris flows were a result of retrogressive slumping on the slope.

Facies association 3: Massive muddy sandstone

Description. This facies association is common in the middle and lower part of GANT#1 and occurs in either single units (340.5–341.5 m; 350.05–351.5 m; 359.7–366.6 m; 369.9–373.75 m; 397.1–397.8 m; 447.25–452.95 m; 454.5–456.25 m; 457.65–458.1 m; 480.8–482 m; 597.15–603.45 m; 640–643.7 m; 687–690.65 m), or interbedded with deposits of facies association 1 (382.2–387.7 m; 656.25–660.55 m) and 2 (439.75–441.9 m; 493.15–496.85 m; 591.25–597.15 m; 622–623.65 m) (Fig. 2, Table 1).

The facies association consists of homogenised poorly sorted muddy sandstone with floating pebbles, calcite, ankerite and mudstone clasts and plant debris. The mud content is generally about 30 %, but ranges from 10 to 70%. The sandstones are medium to very coarse-grained, and the clasts are less than 5 cm across. The sandstones are non-bioturbated. The sandstones occur in successions up to 6 m thick. Bed thickness usually ranges between 3 cm and 50 cm, but beds up to 2.5 m have been recognised. Bed boundaries are usually sharp and non-erosive, however, when the beds occur in stacked successions it is not possible to recognise the boundaries. Some beds show coarse-tail grading, otherwise they are non-graded.

Interpretation. The characteristics of this facies association are typical of sandy and muddy debris flow deposits (e.g. Shanmugan *et al.*, 1995). It has not been possible to outline individual beds, however, the thick successions are probably made up of several beds. The thick successions of facies association 3 are underlying or associated with deposits underlying amalgamated sandstones and conglomerates of facies association 4. This suggests that the debris flow deposits formed from major retrogressive slumping on the slope, producing slump scars which later became the initial site for the turbidite channels.

Facies association 4: Amalgamated sandstones and conglomerates

This association consists of either amalgamated sandstones or amalgamated conglomerates grading upward into amalgamated sandstones. The amalgamated sandstones and conglomerates will be dealt with separately below.

Amalgamated sandstones

Description. The amalgamated sandstones occur in two thick units (127.3–255.8 m (intruded by volcanic sills in 200.55–204 m; 228.2–230.45 m; 234.6–237.6 m; 238.4–242.6 m) and 738.5–787.6 m (intruded by volcanic sills in 770.35–770.95 m; 759.65–761.35 m; 780.1–784.5 m) and two thinner units (571.7–582.55 m; and 635.6–640 m) (Fig. 2, Table 1).

The association is dominated by amalgamated normally graded pebbly sandstone beds (Fig. 2, Table 1). These are 0.1–4.25 m thick and have planar erosional bases. In vertical section, the beds show a general thinning- and fining-upward trend. The graded sandstone beds are commonly separated by thinly interbedded sandstone and mudstone and are composed of medium-grained to pebbly, very coarse-grained sandstone, locally with a pebble conglomerate at the base. Angular mudstone clasts range from a few millimetres to more than 5 cm across (diameter of the core), and subrounded to rounded basement clasts are up to 8 mm across. Clasts tend to occur relatively close to the base of the beds, but may also be concentrated along the top of the beds or floating throughout the sandstone beds. The sandstone beds are generally characterised by a transitional normal grading, but may also show a distinct bipartition between a basal coarse-grained division and a much finer-grained upper division. The boundary between the two divisions is sharp. The sandstones are predominantly structureless, but in some cases the uppermost part of the beds shows well-developed parallel lamination and cross lamination. The fine-grained caps are parallel laminated or cross-laminated. Dish structures, escape burrows and pyrite concretions commonly occur.

Interpretation. Analogous thick successions of amalgamated sandstones and mudstones have been observed in various turbidite basins and are characteristic of low-sinuosity channel facies (facies A and B of Mutti & Ricci Lucchi, 1972; Surlyk & Hurst, 1984; Shanmugan & Moiola, 1985, 1991; Surlyk, 1991) and have also been recorded in the Nuussuaq Basin by Dam & Sønderholm (1994). The graded massive sandstones, overlying a scoured surface, are attributed to rapid suspension deposition from sandy, high-density currents (R_3 and S_3 of Lowe, 1982). The large isolated clasts floating in the massive sandstones may have been transported along a rheological interface developing within high-density turbidity flows (Postma *et al.*, 1988). In some cases the deposition from high-density turbidites was followed by deposition of well-developed parallel-laminated and cross-laminated sandstones. They are attributed to late-stage, low-density residual currents which formed after deposition of the more coarse-grained high-density suspended-sediment load (cf.

Lowe, 1982). The sharp boundary between the massive and stratified division is thought to record a period of sediment by-pass associated with a hydraulic jump that transforms a supercritical high-density turbidity current into a subcritical, low-density turbidity current.

Amalgamated conglomerates

Description. Conglomerates only occur in the interval from 92.8 to 255.85 m associated with amalgamated sandstones and thinly interbedded sandstone and mudstone of facies association 1, forming an overall fining-upward succession (Fig. 2, Table 1). The conglomerates occur in beds up to 8 m thick. On the north coast of Nuussuaq the correlateable conglomerates are lenticular and laterally discontinuous or continuous. The lenticular beds are up to 50 m wide. The continuous beds can be followed for several hundred metres without any lateral termination. The conglomerates are poorly sorted and always contain a matrix of medium- to very coarse-grained sandstones or sandy mudstone. Both matrix and clast-supported beds occur. On the north-coast of Nuussuaq the conglomerates consist of quartzites (c. 41%), quartzitic grey sandstones (c. 34%), quartzitic red sandstones (c. 7%), chert (c. 4,5%), transported Maastrichtian (?ankerite) concretions, Maastrichtian mudstone intraclasts (c. 4,5%), granites (c. 1%), others (including Precambrian gneisses, Ordovician cherty ooidstones and poorly preserved marine bivalves and gastropods) (c. 4%) (unpublished data). The clasts are generally well-rounded, but the degree of rounding appears to be dependent on the source rock. The quartzites, cherts and granites are generally very well-rounded, whereas the foliated gneisses, sandstones and intraclasts tend to have more rounded, tabular shapes.

Classifying the conglomerates on the presence or absence of grading and stratification allows subdivision into ungraded, ungraded to normally graded and inverse graded conglomerates. The ungraded, disorganised conglomerates consist of internally chaotic, non-stratified clast- or matrix-supported conglomerate beds; on the north coast of Nuussuaq these conglomerates typically fill out erosional scours and boulders up to metre-size frequently occur at any level. In the GANT#1 core the matrix of this type of conglomerate consists of sandy mudstone and constitutes 20–50 % of the rock volume.

The ungraded to normally graded conglomerates occur as both clast- and matrix-supported conglomerates and constitute the main portion of the conglomerates in the core. The conglomerates are imbricated and are overlying erosional surfaces. They typically have an ungraded lower portion

overlain by a coarse-tail graded upper portion. On the north coast of Nuussuaq the clasts commonly show an α -axis imbrication or a bedding-parallel clast fabric.

Inverse graded conglomerates consist of matrix- and clast-supported pebble to cobble conglomerates showing coarse-tail inverse grading. On the north coast of Nuussuaq these conglomerates form sheetlike deposits.

Interpretation. The ungraded, disorganised conglomerate beds and the presence of a matrix composed of muddy sandstone suggest that these conglomerates were deposited from debris flows. The ungraded to normally graded, imbricated conglomerates are closely comparable to the graded-stratified conglomerates of Walker (1975) and Lowe's (1982) R_3S_1 divisions, suggesting deposition from high density turbidity currents. The presence of inverse graded conglomerates reflects the dominance of dispersive pressure, probably within a traction carpet at the base of a high-energy, high-concentrated turbidite currents (cf. Lowe, 1982).

Facies association 5: Single graded sandstone beds

Description. This facies association is rare and only occurs associated with debris flow deposits of facies association 2 and 3 (440.15–440.4 m; 614.65–614.75 m; 621.75–622 m; 673.75–674.15 m; several beds between 822.8 and 829.7 m) (Fig. 2, Table 1). It consists of single sharply based graded beds of fine- to pebbly coarse-grained sandstone. The sandstone beds are 5 to 30 cm thick and usually show well-developed normal grading. Sorting of the sandstones is generally good and angular mudstone rip-up clasts frequently occur at the base or throughout the laminae and beds. The beds are either massive or parallel laminated. One bed is inversely graded.

Interpretation. The single graded sandstone beds are similar to the thicker sandstone beds of the thinly interbedded sandstone and mudstone of facies association 1. The presence of normally graded, massive sandstones with sharp flat bases suggests deposition from sand-rich turbulent flows (S_3 of Lowe, 1982). The normally graded parallel laminated sandstones are interpreted as deposits of traction and fall-out processes associated with sedimentation from waning low-density turbidity currents.

The close association of these beds with relatively thick successions of mass flow deposits of facies association 2 and 3 suggests deposition from turbidite currents in slump scars on the slope.

Facies association 6: Slumped beds

Description. This association has only been recognised in three intervals in the lower part of GANT#1 (615–620 m; 626.5–632.3 m; 690.65–692.75 m) (Fig. 2, Table 1). The diagnostic feature of this association is a strongly rolled and contorted succession of thinly interbedded sandstone and mudstone of facies association 1. Fractures with calcite coatings and sandstone dykes are common within this association. These deposits are associated with debris flow deposits of facies association 2 and 3 and occurs in association with interchannel deposits of facies association 1 and just above the base of turbidite channel deposits.

Interpretation. The strongly rolled and contorted bedding of this facies association is attributed to slumping, a common feature of many slope deposits and also of the turbidite deposits in the Nuussuaq Basin (Dam & Sønderholm, 1994).

Vertical facies development and depositional environment

During Late Cretaceous–Early Paleocene time the northwestern part of Nuussuaq was characterised by deposition along a fault-controlled slope (Dam & Sønderholm, 1994). The sedimentary succession penetrated in GANT#1 is dominated by thinly interbedded interchannel turbidite sandstone and mudstone, mass flow deposits and amalgamated turbidite channel sandstones and conglomerates. The ammonite recorded and the total sulphur values (Christiansen *et al.*, 1996) suggest a marine depositional environment.

The lowermost part of the core (853.55–900.68 m) consists of thinly interbedded sandstone and mudstone of facies association 1 (Fig. 2, Table 1) with no major systematic vertical thickness variations, suggesting that they represent interchannel turbidite deposits. However, in the top of the succession, a number of thin fining-upward successions occurs, less than 1 m thick, which may be interpreted as small distributary channels on the slope.

The interchannel slope deposits are succeeded by a thick succession of mass flow deposits (787.6–853.55 m) (Fig. 2, Table 1). These deposits underlie a thick succession of turbidite channel deposits, suggesting that they formed by retrogradational slumping leaving a major slump scar that later became the site of a major turbidite slope channel. Similar deposits are very common in the Itilli succession (Dam & Sønderholm, 1994). The overlying turbidite channel succession (697.95–787.6 m) consists of a thick succession of amalgamated sandstones of facies association 4

succeeded by thinly interbedded sandstone and mudstone of facies association 1, showing an overall fining-upward trend (Fig. 2, Table 1). These deposits are interpreted to represent a major low-sinuosity distributary slope channel, similar to those found in the Itilli succession (Dam & Sønderholm, 1994). The distributary channel deposits are succeeded by a succession dominated by mass flow deposits (667.65–697.95 m), which may either be part of the channel fill or have formed by retrogradational slumping in an interchannel slope environment.

Between 643.7–667.65 m thinly interbedded sandstones and mudstones of facies association 1 are arranged in two thin coarsening-upward units (Fig. 2, Table 2). They are underlying a succession of small distributary turbidite channel deposits (643.7–5597.9 m), suggesting that they were deposited as small turbidite lobes, probably in an interdistributary channel environment.

The turbidite lobe deposits are succeeded by two minor distributary turbidite channel successions, each overlying mass flow deposits (560–643.7 m) (Fig. 2, Table 1). This relationship suggests that the mass flow deposits were a result of retrogradational slumping forming a major slump scar that later became site of a turbidite slope channel. Similar deposits are very common in the Itilli succession (Dam & Sønderholm, 1994), however, the present turbidite channel deposits are thinner (less than 22 m thick) and more fine-grained than those of the Itilli succession and those deeper down and higher up in the cored succession in GANT#1, suggesting that they represent minor distributary channels in a slope environment.

The turbidite channel deposits are succeeded by a thick succession of thinly interbedded sandstone and mudstone and mass flow deposits of facies association 1, 2 and 3 (560–255.85 m) (Fig. 2, Table 1). The succession shows no major systematic vertical thickness variations suggesting that these deposits were not confined by channel-levee systems, and that they most likely represent interchannel deposits. However, towards the top of the succession there is a tendency for the thinly interbedded sandstones and mudstones to become more fine-grained and the sandstones to be more thinly bedded. This is related to a decreasing frequency of mass flow deposits, suggesting a change from upper to middle slope environment to a middle to lower slope environment.

A major unconformity in 255.85 m separates the middle to lower slope deposits from the overlying amalgamated conglomerates and sandstones. This unconformity is related to a major tectonic episode and has been traced throughout the basin (Dam & Sønderholm, in press; Dam *et al.* submitted). The amalgamated conglomerates and sandstones are arranged in an overall fining-upward succession which grades into thinly interbedded sandstone and mudstone (92.8–255.85 m)

(Fig. 2, Table 1). These sediments were deposited in either a major submarine canyon or a major distributary slope channel and are succeeded by thinly interbedded sandstone and mudstone deposited in a middle to lower slope environment.

A very good correlation occurs between GANT#1 and the north coast of Nuussuaq (Kangilia and Annertuneq). On the north coast of Nuussuaq the exposed succession correlates with the uppermost 525 m of GANT#1. The thinly interbedded sandstone and mudstone deposits underneath the major unconformity 255.85 m (Fig. 2) correlate with the “Senonian black shales with concretions” of Rosenkrantz (1970). The amalgamated conglomerate and sandstone succession correlates with the “Conglomerate Member” of Rosenkrantz (1970). At Annertuneq the base of the “Conglomerate Member” is situated *c.* 280 m above sea-level and is *c.* 50 m thick. However, this member is *c.* 130 m thick in GANT#1. The overlying amalgamated sandstones and thinly interbedded sandstone and mudstone can be correlated with the “Fossil Wood Member” of Rosenkrantz (1970).

Hydrocarbon shows

During drilling gas percolated from the core at several levels (576 m, 650 m, 714 m, 722 m, 728 m, 767 m–771 m, and 774 m) and minor gas seepage occurred from the well at 247 m. Gas was circulated through the flarelne in 824 m, 895 m and 901 m (Dahl *et al.*, 1995). Bitumen was recorded in calcite-filled fractures at the well site, however, this was not confirmed during relogging of cores in Copenhagen. During relogging oil impregnation was discovered in a fracture in the centre of a thin dolerite sill at 610 m. Based on the present data, it is assumed that the oil was generated locally in the vicinity of the sill by the heat at the time of intrusion and that the oil later migrated into the centre of the sill through fractures (Christiansen *et al.*, 1996).

Conclusions

Based on the sedimentological analysis of the GANT#1 core, the following main conclusions can be drawn.

- A lithostratigraphical correlation between the north coast of Nuussuaq and the uppermost 525 m of the GANT#1 core is possible. The palynostratigraphical work on the north coast of Nuussuaq

by Nøhr-Hansen (1994) suggests that the uppermost 525 m of GANT#1 has a Late Campanian–Maastrichtian, possibly earliest Paleocene age. In GANT#1 an ammonite was found in 280 m with affinity to Late Campanian–Maastrichtian *Scaphites* described by Birkelund (1965).

- The cored sediments can be divided into 6 facies associations: 1) thinly interbedded sandstone and mudstone, 2) massive sandy mudstone, 3) massive muddy sandstone, 4) amalgamated sandstone and conglomerate, 5) single graded sandstone beds, 6) slumped beds. The uppermost 35 m of the core consist of Quaternary overburden. The depositional processes were dominated by low- and high-density turbidity currents, debris flow, slumps and fall-out from suspension. Deposition took place in a fault-controlled slope environment in canyons, major distributary feeder channels, small distributary feeder channels, small turbidite lobes and interdistributary channel areas. The facies associations not only reflect the morphological elements on the slope, but also major environmental changes due to tectonism. The ammonite, the total sulphur content and palynomorph assemblage in the equivalent deposits on the north coast of Nuussuaq indicate a marine depositional environment.
- During relogging of the sediments oil impregnation was discovered in a calcite-filled fracture in the centre of a dolerite sill. Based on the present data, it is assumed that the oil was generated locally by heating from the sill during intrusion into which the oil later migrated (Christiansen *et al.*, 1996).

Acknowledgements

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Figures

Fig. 1. Geological map of central West Greenland showing location of the GANT#1 well and other wells in the area. Based on maps from the Geological Survey of Greenland.

Fig. 2. Generalised log from the GANT#1 core.

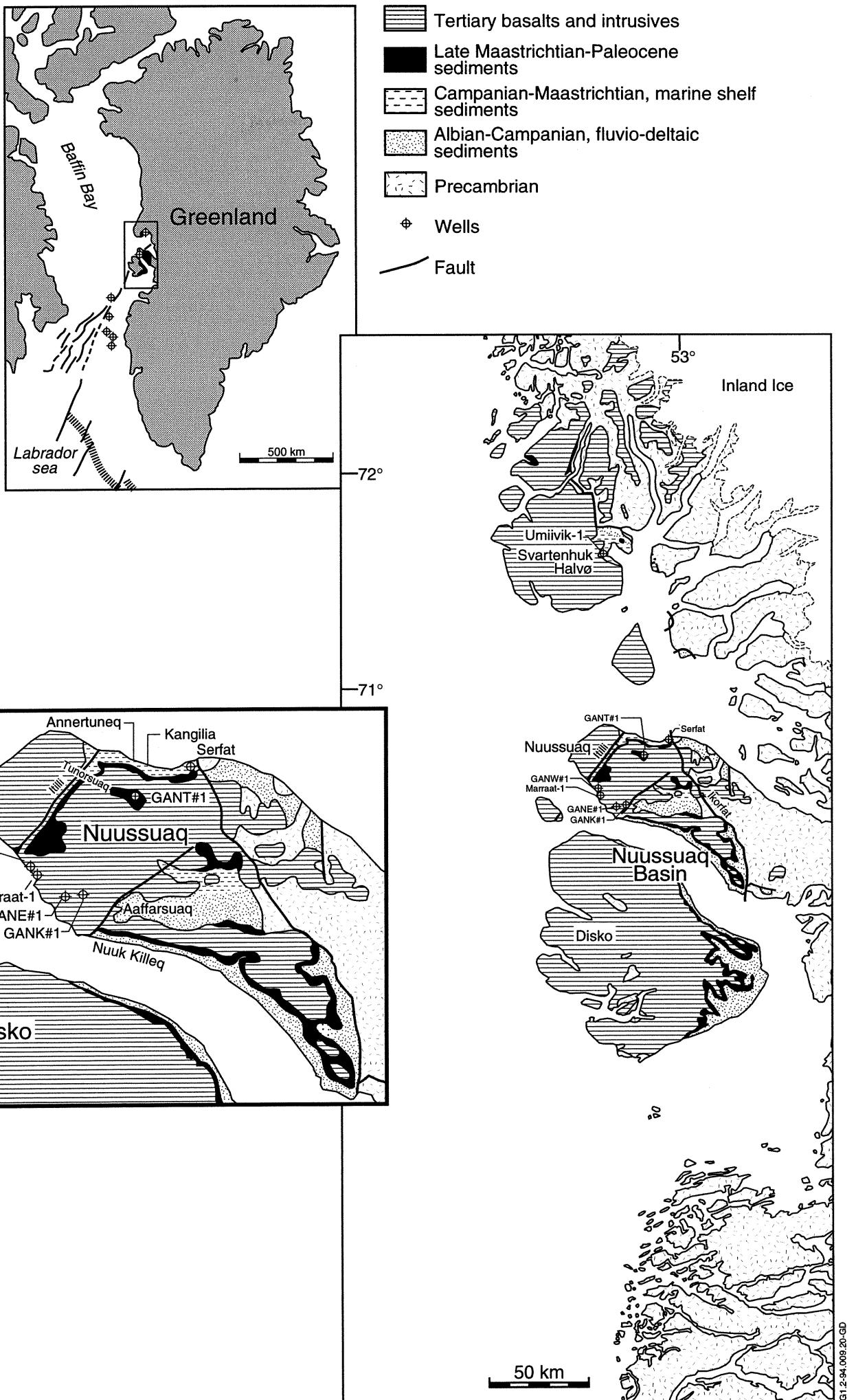
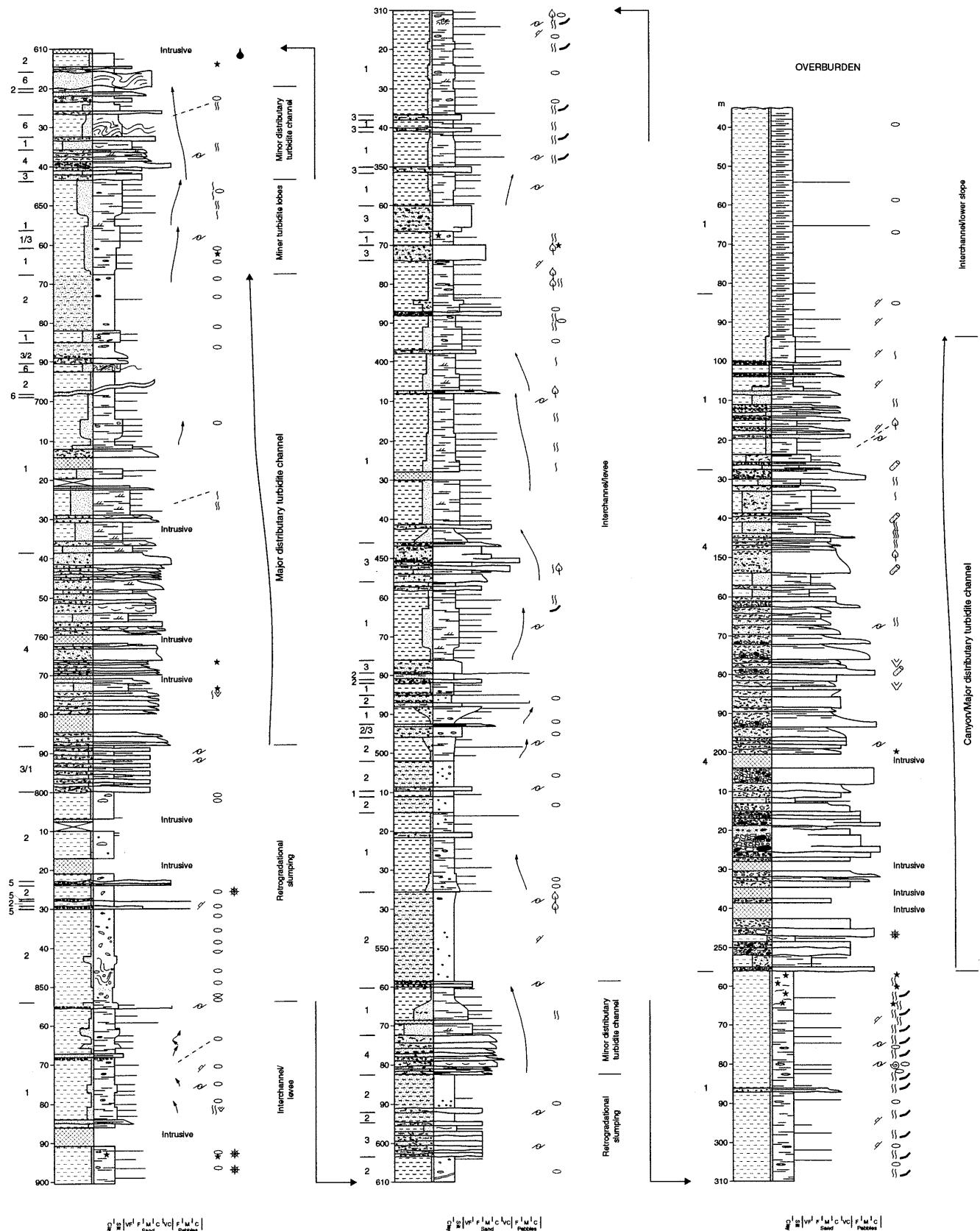


Fig. 1

GANT#1



LEGEND

Facies associations

- 1 Thinly interbedded sandstone and mudstone
- 2 Massive sandy mudstone
- 3 Massive muddy sandstone
- 4 Amalgamated sandstones and conglomerates
- 5 Single graded sandstone beds
- 6 Slumped beds

	Volcanic sills
	Clay and siltstone
	Muddy sandstone/sandy mudstone
	Sandstone
	Sandstone with pebbles and mudstone clasts
	Parallel lamination
	Slumping
	Disturbed bedding
	Cross-lamination
	Bioturbation
	Concretions
	Ammonite
	Bivalve
	Plant and wood fragments
	Logs
	Weakly bioturbated
	Moderately bioturbated
	Heavily bioturbated
	<i>Planolites</i> isp.
	<i>Helminthopsis horizontalis</i>
	Escape burrows
	Fractures
	Pyrite
	Oil
	Gas
	CU-succession
	FU-succession

Table 1

Table 1. Detailed sedimentological log of the GANT#1 core.

SHEET 1 OF 60

CORE DESCRIPTION
SEDIMENTOLOGICAL DATA SHEETTHE GEOLOGICAL SURVEY OF
DENMARK AND GREENLANDLOCALITY: 70°42.739' N
UTM COORDINATES: 53°36.621' W
ELEVATION: 385 mELEVATION OF DRILL FLOOR
ABOVE GROUND-LEVEL: 1.80 m
UNIT:
AGE:WELL NO: 439101
BOX NO: GAJST # 1
CORE DIAMETER: (cm/mm)
INTERVAL:SCALE: 1:50
DATE: 20/2-96 + 24/2
GEOLOGIST: C.D.

AGE	LITHOSTRATIGRAPHIC UNIT	BOX NO	DRILLER'S DEPTH REFERENCE TO.....	LITHOLOGY	GRAIN SIZE AND SEDIMENTARY STRUCTURES	BIOTURBATION/FOSSILS	COLOUR	REMARKS, DESCRIPTION AND INTERPRETATION											
								CLAY	SILT	0.025	0.125	0.25	0.5	1	2	8	PEBBLE	8	44
2921 890.52		Box # 270	889																
2928 892.45		Box # 271	890	No core															
2758 895.00	1	Box # 272	91	Intrusive															
2755 890.48		Box # 274	92																
			93																
			94																
			95																
			96																
			97																
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			99																
			100																
			101																
			102																
			103																
			104					M	W	P	G	B							

CORE DESCRIPTION
SEDIMENTOLOGICAL DATA SHEETTHE GEOLOGICAL SURVEY OF
DENMARK AND GREENLANDLOCALITY: 70° 42' 735" N
UTM COORDINATES: 55° 20' 621" X
ELEVATION: 385 mELEVATION OF DRILL FLOOR
ABOVE GROUND-LEVEL:
UNIT:
AGE:

1.80 m

WELL NO: 437101
BOX NO:
CORE DIAMETER:
INTERVAL:SCALE: 1:50
DATE: 1984
GEOLOGIST: G.L.

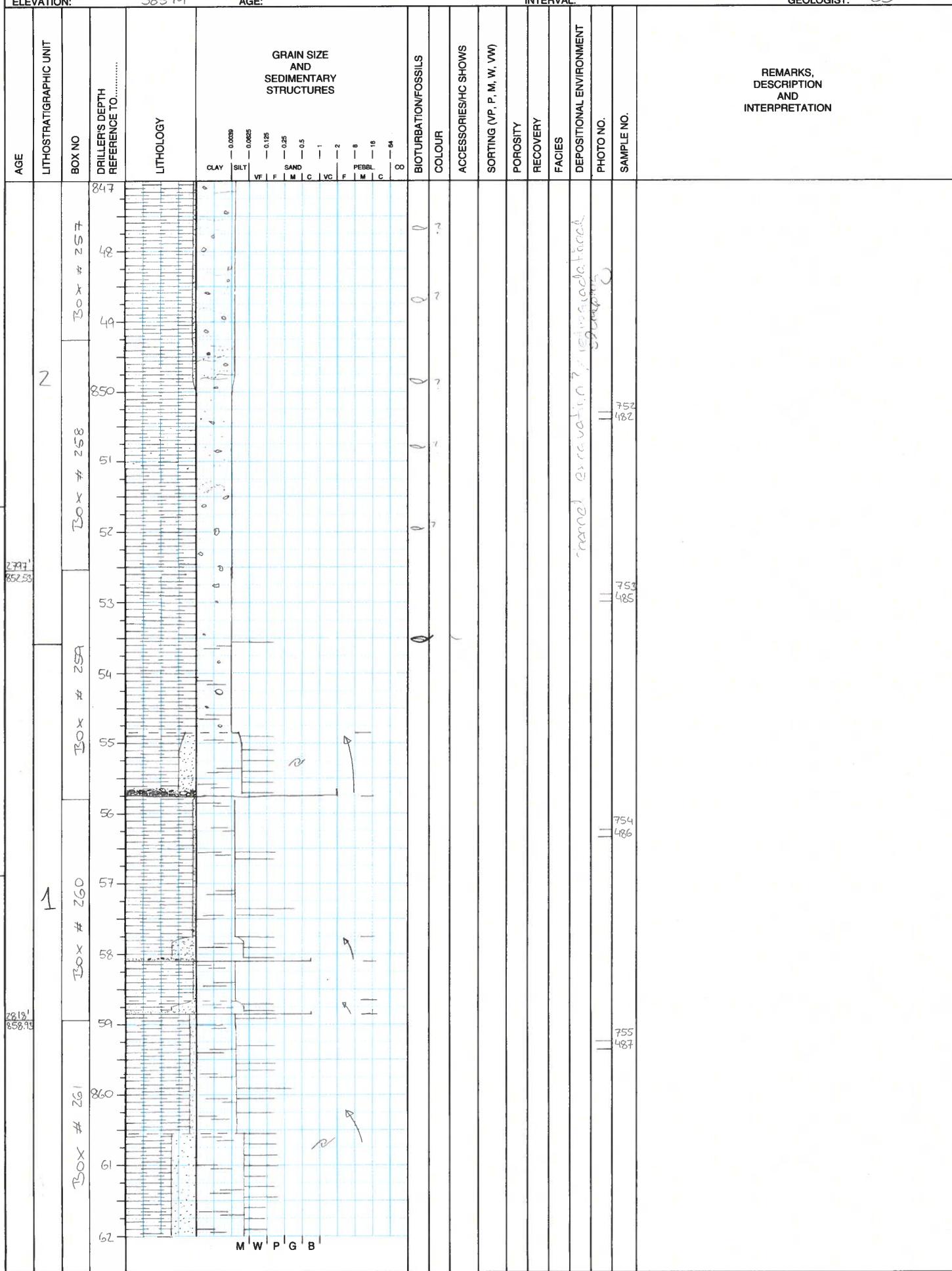
AGE	LITHOSTRATIGRAPHIC UNIT	BOX NO	DRILLER'S DEPTH REFERENCE TO.....	LITHOLOGY	GRAIN SIZE AND SEDIMENTARY STRUCTURES								BIOTURBATION/FOSSILS	COLOUR	ACCESSORIES/H.C SHOWS	SORTING (V.P., P.M., W, W)	POROSITY	RECOVERY	FACIES	DEPOSITIONAL ENVIRONMENT	PHOTO NO.	SAMPLE NO.	REMARKS, DESCRIPTION AND INTERPRETATION		
					CLAY	SILT	0.0039	0.0625	0.125	0.25	0.5	1													
285.1	285.04	267	265	265																					
285.04		267	265	265																					
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CORE DESCRIPTION
SEDIMENTOLOGICAL DATA SHEETTHE GEOLOGICAL SURVEY OF
DENMARK AND GREENLANDLOCALITY: $70^{\circ}42'739''N$
UTM COORDINATES: $53^{\circ}36.621'W$
ELEVATION: 385 MELEVATION OF DRILL FLOOR
ABOVE GROUND-LEVEL:
UNIT:
AGE:

1.80 m

WELL NO: 439101
BOX NO:
CORE DIAMETER:
INTERVAL:

(cm/mm)

SCALE: 1:50
DATE: 21/2-96
GEOLOGIST: GD

CORE DESCRIPTION SEDIMENTOLOGICAL DATA SHEET

LOCALITY: 70° 42.739' N
UTM COORDINATES: 53° 36.621' W
ELEVATION: 385 m

ELEVATION OF DRILL FLOOR
ABOVE GROUND-LEVEL:
UNIT:
AGE:

1.80 m

THE GEOLOGICAL SURVEY OF DENMARK AND GREENLAND

439101
GANT #1

(cm/mm)

(cm/mm)

(cm/mm)

(cm/mm)

SCALE: 1:50
DATE: 21/2-96 + 22/2
GEOLOGIST: GJ

CORE DESCRIPTION
SEDIMENTOLOGICAL DATA SHEETTHE GEOLOGICAL SURVEY OF
DENMARK AND GREENLANDLOCALITY: 70° 42.739' N
UTM COORDINATES: 53° 36.621' W
ELEVATION: 385 MELEVATION OF DRILL FLOOR
ABOVE GROUND-LEVEL: 1.80 m
UNIT: AGE:WELL NO: 439101
BOX NO:
CORE DIAMETER: (cm/mm)
INTERVAL:SCALE: 1:50
DATE: 23/2-96
GEOLOGIST: GD

AGE	LITHOSTRATIGRAPHIC UNIT	DRILLER'S DEPTH REFERENCE TO.....	LITHOLOGY	GRAIN SIZE AND SEDIMENTARY STRUCTURES	BIOTURBATION/FOSSILS	COLOUR	REMARKS, DESCRIPTION AND INTERPRETATION						
							ACCESSORIES/HC SHOWS	SORTING (V, P, M, W, VW)	POROSITY	RECOVERY	FACIES	DEPOSITIONAL ENVIRONMENT	PHOTO NO.
2535'	772.67		772										
			73										
			74										
			75										
			76										
			77										
			78										
			79										
			80										
			81										
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			84										
			85										
			86										
			87										
				M W P G B									
2535'	772.67		772										
			73										
			74										
			75										
			76										
			77										
			78										
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			81										
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2535'	772.67		772										
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2535'	772.67		772										
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2535'	772.67		772										
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2535'	772.67		772										
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			82										
			83				</td						

SHEET 11 OF 60

CORE DESCRIPTION

SEDIMENTOLOGICAL DATA SHEET

THE GEOLOGICAL SURVEY OF DENMARK AND GREENLAND

LOCALITY: 70°42.739'N
UTM COORDINATES: 53°36.621'W
ELEVATION: 785 M

LEVEL OF DRILL FLOOR
ABOVE GROUND-LEVEL:
UNIT:
AGE:

1.80 m

439101
GANT #1

cm/mm)

SCALE: 1:50
DATE: 5/3-96 + 6/3
GEOLOGIST: GD

ELEVATION:	AGE:	LITHOSTRATIGRAPHIC UNIT	GRAIN SIZE AND SEDIMENTARY STRUCTURES								INTERVAL	GEOLOGIST:
			DRILLER'S DEPTH REFERENCE TO.....									
AGE	LITHOSTRATIGRAPHIC UNIT	BOX NO	CLAY	SILT	V.F.	F	M	SAND	VC	PEBBL.	8	REMARKS, DESCRIPTION AND INTERPRETATION
24511 74708	4	BOX # 227	742									
24921 75347	4	BOX # 228	43									
24921 75347	4	BOX # 229	44									
24921 75347	4	BOX # 230	45									
24921 75347	4	BOX # 231	46									
24921 75347	4	BOX # 232	47									
24921 75347	4	BOX # 233	48									
24921 75347	4	BOX # 234	49									
24921 75347	4	BOX # 235	50									
24921 75347	4	BOX # 236	51									
24921 75347	4	BOX # 237	52									
24921 75347	4	BOX # 238	53									
24921 75347	4	BOX # 239	54									
24921 75347	4	BOX # 240	55									
24921 75347	4	BOX # 241	56									
24921 75347	4	BOX # 242	57									
			M	W	P	G	B					

SHEET 12 OF 60

CORE DESCRIPTION

SEDIMENTOLOGICAL DATA SHEET

LOCALITY: 70° 42.739' N
UTM COORDINATES: 53° 36.621' W
ELEVATION: 295 M

ELEVATION OF DRILL FLOOR
ABOVE GROUND-LEVEL:
UNIT:
AGE:

1.80 m

THE GEOLOGICAL SURVEY OF DENMARK AND GREENLAND

439101
GANT # 1

439101
WELL NO: GANT # 1
BOX NO:
CORE DIAMETER:
INTERVAL:

(cm/mm)

SCALE: 1:50
DATE: 6/3-96
GEOLOGIST: GD

CORE DESCRIPTION
SEDIMENTOLOGICAL DATA SHEETTHE GEOLOGICAL SURVEY OF
DENMARK AND GREENLANDLOCALITY: 70° 42.739' N
UTM COORDINATES: 53 36.621' W
ELEVATION: 285 mELEVATION OF DRILL FLOOR
ABOVE GROUND-LEVEL:
UNIT:
AGE:

1.80 m

WELL NO: 439101
BOX NO:
CORE DIAMETER:
INTERVAL:

(cm/mm)

SCALE: 1:50
DATE: 6/3-96 + 8/3
GEOLOGIST: GD

AGE	LITHOSTRATIGRAPHIC UNIT	BOX NO	DRILLER'S DEPTH REFERENCE TO.....	LITHOLOGY	GRAIN SIZE AND SEDIMENTARY STRUCTURES	BIOTURBATION/FOSSILS	COLOUR	ACCESSORIES/H C SHOWS	SORTING (V, P, M, W, VV)	POROSITY	RECOVERY	FACIES	DEPOSITIONAL ENVIRONMENT	PHOTO NO.	SAMPLE NO.	REMARKS, DESCRIPTION AND INTERPRETATION		
CLAY	SILT	0.0256	0.0252	0.25	0.5	1	2	PEBBL	8	16	32	64						
2342 7/5/84	712	712	712	712	712	712	712	712	712	712	712	712						
	17	17	17	17	17	17	17	17	17	17	17	17						
	18	18	18	18	18	18	18	18	18	18	18	18						
	19	19	19	19	19	19	19	19	19	19	19	19						
	20	20	20	20	20	20	20	20	20	20	20	20						
	21	21	21	21	21	21	21	21	21	21	21	21						
	22	22	22	22	22	22	22	22	22	22	22	22						
	23	23	23	23	23	23	23	23	23	23	23	23						
	24	24	24	24	24	24	24	24	24	24	24	24						
	25	25	25	25	25	25	25	25	25	25	25	25						
	26	26	26	26	26	26	26	26	26	26	26	26						
	27	27	27	27	27	27	27	27	27	27	27	27						
								M	W	P	G	B						

CORE DESCRIPTION SEDIMENTOLOGICAL DATA SHEET

LOCALITY: $70^{\circ} 42.739' N$
UTM COORDINATES: $53^{\circ} 36.621' W$
ELEVATION: 285 m

ELEVATION OF DRILL FLOOR
ABOVE GROUND-LEVEL:
UNIT:
AGE:

1.80 m

1808

THE GEOLOGICAL SURVEY OF DENMARK AND GREENLAND

439101
EANT #1

439101
WELL NO: GANT #1
BOX NO:
CORE DIAMETER:
INTERVAL:

(cm/mm)

SCALE: 1:50
DATE: 8/3-96
GEOLOGIST: GJ

AGE	LITHOSTRATIGRAPHIC UNIT	BOX NO	DRILLER'S DEPTH REFERENCE TO.....	GRAIN SIZE AND SEDIMENTARY STRUCTURES								REMARKS, DESCRIPTION AND INTERPRETATION									
				LITHOLOGY		CLAY		SILT		VF		F		M		C		VC		F	
6	N	Box # 213	697																		
700.74			214																		
700.74			215																		
707.4			216																		
707.4			217																		
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710			325																		
710			326		</																

SHEET 15 OF 60

CORE DESCRIPTION
SEDIMENTOLOGICAL DATA SHEET

**THE GEOLOGICAL SURVEY OF
DENMARK AND GREENLAND**

LOCALITY: 70°42'.739'N
UTM COORDINATES: 53°36.621'W
ELEVATION: 285 m

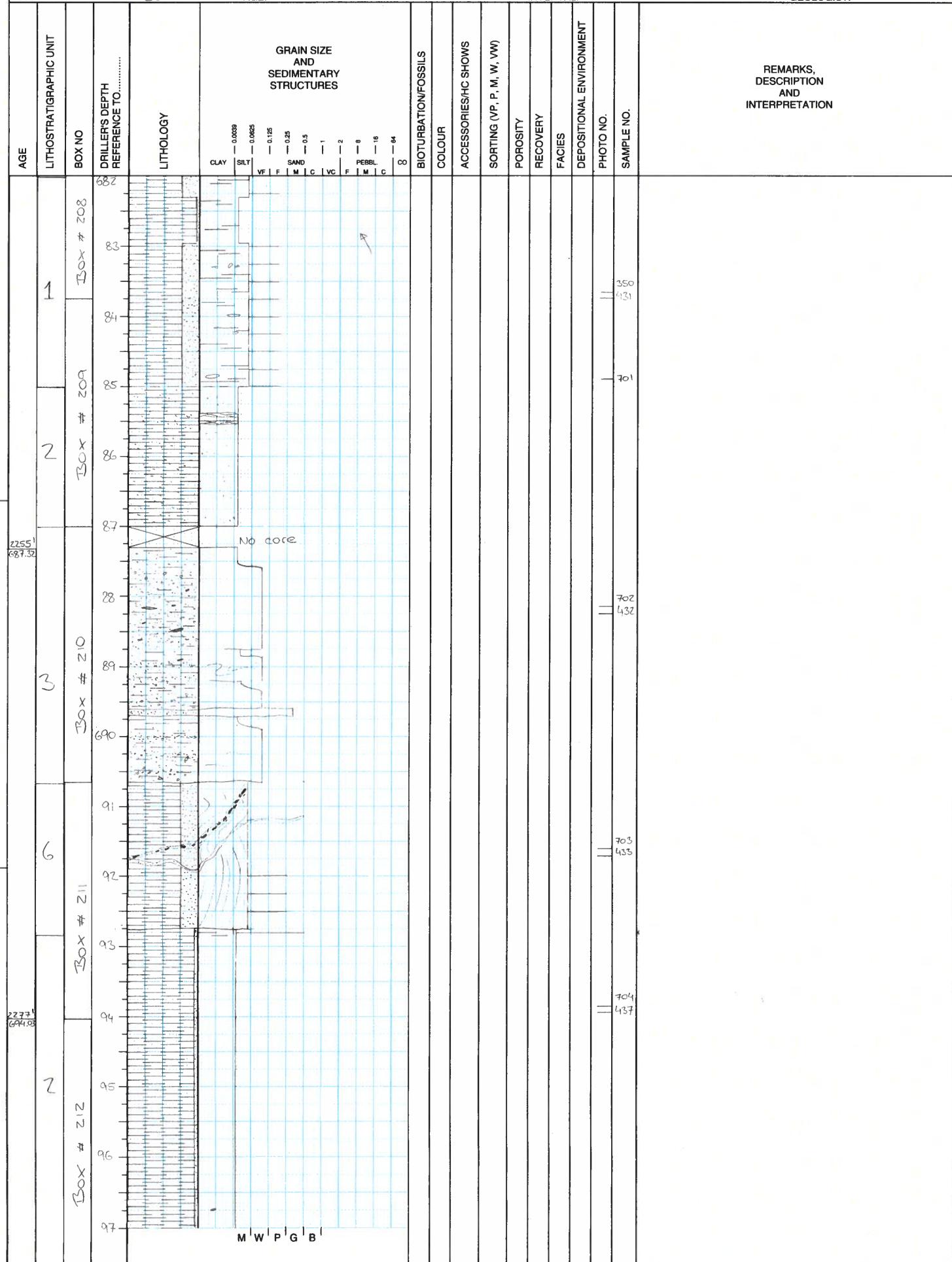
ELEVATION OF DRILL FLOOR
ABOVE GROUND-LEVEL:
UNIT:
AGE:

1.80m

WELL NO: 439101
GANT # 1
BOX NO:
CORE DIAMETER:
INTERVAL:

(cm/mm)

SCALE: 1:50
DATE: 8/3/96
GEOLOGIST: GD



SHEET 16 OF 60

CORE DESCRIPTION SEDIMENTOLOGICAL DATA SHEET

THE GEOLOGICAL SURVEY OF DENMARK AND GREENLAND

LOCALITY: 70° 42. 739' N
UTM COORDINATES: 53° 56. 621' W
ELEVATION: 2,85 m

ELEVATION OF DRILL FLOOR
ABOVE GROUND-LEVEL:
UNIT:
AGE:

1.80 m

434101
WELL NO: GANT # 1
BOX NO:
CORE DIAMETER:
INTERVAL:

(cm/mm)

SCALE:
DATE:
GEOLO

1:50
8/3 - 9/6 + 12/3
G.P.

CORE DESCRIPTION

SEDIMENTOLOGICAL DATA SHEET

THE GEOLOGICAL SURVEY OF DENMARK AND GREENLAND

LOCALITY: 70° 42.739' N
UTM COORDINATES: 53° 36.621' W
ELEVATION: 285 m

ELEVATION OF DRILL FLOOR
ABOVE GROUND-LEVEL:
UNIT:
AGE:

1.8cm

439101
WELL NO: GANT # 1
BOX NO:
CORE DIAMETER:
INTERVAL:

(cm/mm)

(cm/mm)

(cm/mm)

SCALE: 1:50
DATE: 12/13-96
GEOLOGIST: GR

CORE DESCRIPTION
SEDIMENTOLOGICAL DATA SHEETTHE GEOLOGICAL SURVEY OF
DENMARK AND GREENLAND

LOCALITY: $70^{\circ} 42.739' N$
 UTM COORDINATES: $53^{\circ} 36.621' W$
 ELEVATION: 285 m

ELEVATION OF DRILL FLOOR
 ABOVE GROUND-LEVEL:
 UNIT:
 AGE:

1.80 ~

WELL NO: 439101
 BOX NO:
 CORE DIAMETER:
 INTERVAL:

GANT # 1

(cm/mm)

SCALE: 1:50
 DATE: 12/3-96 + 13/3
 GEOLOGIST: GD

AGE	LITHOSTRATIGRAPHIC UNIT	BOX NO	DRILLER'S DEPTH REFERENCE TO.....	GRAIN SIZE AND SEDIMENTARY STRUCTURES	BIOTURBATION/FOSSILS	COLOUR	REMARKS, DESCRIPTION AND INTERPRETATION											
							VF	F	M	C	VC	F	M	C	VF	F	M	W
2129 ¹ (48.3)	1	Box # 197	Box # 198	Lithology														
2129 ¹ (48.3)	1	Box # 196	Box # 195															
2129 ¹ (48.3)	1	Box # 194	Box # 193															
2129 ¹ (48.3)	1	Box # 192	Box # 191															
2129 ¹ (48.3)	1	Box # 190	Box # 189															
2129 ¹ (48.3)	1	Box # 188	Box # 187															
2129 ¹ (48.3)	1	Box # 186	Box # 185															
2129 ¹ (48.3)	1	Box # 184	Box # 183															
2129 ¹ (48.3)	1	Box # 182	Box # 181															
2129 ¹ (48.3)	1	Box # 180	Box # 179															
2129 ¹ (48.3)	1	Box # 178	Box # 177															
2129 ¹ (48.3)	1	Box # 176	Box # 175															
2129 ¹ (48.3)	1	Box # 174	Box # 173															
2129 ¹ (48.3)	1	Box # 172	Box # 171															
2129 ¹ (48.3)	1	Box # 170	Box # 169															
2129 ¹ (48.3)	1	Box # 168	Box # 167															
2129 ¹ (48.3)	1	Box # 166	Box # 165															
2129 ¹ (48.3)	1	Box # 164	Box # 163															
2129 ¹ (48.3)	1	Box # 162	Box # 161															
2129 ¹ (48.3)	1	Box # 160	Box # 159															
2129 ¹ (48.3)	1	Box # 158	Box # 157															
2129 ¹ (48.3)	1	Box # 156	Box # 155															
2129 ¹ (48.3)	1	Box # 154	Box # 153															
2129 ¹ (48.3)	1	Box # 152	Box # 151															
2129 ¹ (48.3)	1	Box # 150	Box # 149															
2129 ¹ (48.3)	1	Box # 148	Box # 147															
2129 ¹ (48.3)	1	Box # 146	Box # 145															
2129 ¹ (48.3)	1	Box # 144	Box # 143															
2129 ¹ (48.3)	1	Box # 142	Box # 141															
2129 ¹ (48.3)	1	Box # 140	Box # 139															
2129 ¹ (48.3)	1	Box # 138	Box # 137															
2129 ¹ (48.3)	1	Box # 136	Box # 135															
2129 ¹ (48.3)	1	Box # 134	Box # 133															
2129 ¹ (48.3)	1	Box # 132	Box # 131															
2129 ¹ (48.3)	1	Box # 130	Box # 129															
2129 ¹ (48.3)	1	Box # 128	Box # 127															
2129 ¹ (48.3)	1	Box # 126	Box # 125															
2129 ¹ (48.3)	1	Box # 124	Box # 123															
2129 ¹ (48.3)	1	Box # 122	Box # 121															
2129 ¹ (48.3)	1	Box # 120	Box # 119															
2129 ¹ (48.3)	1	Box # 118	Box # 117															
2129 ¹ (48.3)	1	Box # 116	Box # 115															
2129 ¹ (48.3)	1	Box # 114	Box # 113															
2129 ¹ (48.3)	1	Box # 112	Box # 111															
2129 ¹ (48.3)	1	Box # 110	Box # 109															
2129 ¹ (48.3)	1	Box # 108	Box # 107															
2129 ¹ (48.3)	1	Box # 106	Box # 105															
2129 ¹ (48.3)	1	Box # 104	Box # 103															
2129 ¹ (48.3)	1	Box # 102	Box # 101															
2129 ¹ (48.3)	1	Box # 100	Box # 99															
2129 ¹ (48.3)	1	Box # 98	Box # 97															
2129 ¹ (48.3)	1	Box # 96	Box # 95															
2129 ¹ (48.3)	1	Box # 94	Box # 93															
2129 ¹ (48.3)	1	Box # 92	Box # 91															
2129 ¹ (48.3)	1	Box # 90	Box # 89															
2129 ¹ (48.3)	1	Box # 88	Box # 87															
2129 ¹ (48.3)	1	Box # 86	Box # 85															
2129 ¹ (48.3)	1	Box # 84	Box # 83															
2129 ¹ (48.3)	1	Box # 82	Box # 81															
2129 ¹ (48.3)	1	Box # 80	Box # 79															
2129 ¹ (48.3)	1	Box # 78	Box # 77															
2129 ¹ (48.3)	1	Box # 76	Box # 75															
2129 ¹ (48.3)	1	Box # 74	Box # 73															
2129 ¹ (48.3)	1	Box # 72	Box # 71															
2129 ¹ (48.3)	1	Box # 70	Box # 69															
2129 ¹ (48.3)	1	Box # 68	Box # 67															
2129 ¹ (48.3)	1	Box # 66	Box # 65															
2129 ¹ (48.3)	1	Box # 64	Box # 63															
2129 ¹ (48.3)	1	Box # 62	Box # 61															
2129 ¹ (48.3)	1	Box # 60	Box # 59															
2129 ¹ (48.3)	1	Box # 58	Box # 57															
2129 ¹ (48.3)	1	Box # 56	Box # 55															
2129 ¹ (48.3)	1	Box # 54	Box # 53															
2129 ¹ (48.3)	1	Box # 52	Box # 51															
2129 ¹ (48.3)	1	Box # 50	Box # 49															
2129 ¹ (48.3)	1	Box # 48	Box # 47															
2129 ¹ (48.3)	1	Box # 46	Box # 45															
2129 ¹ (48.3)	1	Box # 44	Box # 43															
2129 ¹ (48.3)	1	Box # 42	Box # 41															
2129 ¹ (48.3)	1	Box # 40	Box # 39															
2129 ¹ (48.3)	1	Box # 38	Box # 37															
2129 ¹ (48.3)	1	Box # 36	Box # 35															
2129 ¹ (48.3)	1	Box # 34	Box # 33															
2129 ¹ (48.3)	1	Box # 32	Box # 31															
2129 ¹ (48.3)	1	Box # 30	Box # 29															
2129 ¹ (48.3)	1	Box # 28	Box # 27															
2129 ¹ (48.3)	1																	

CORE DESCRIPTION
 SEDIMENTOLOGICAL DATA SHEET

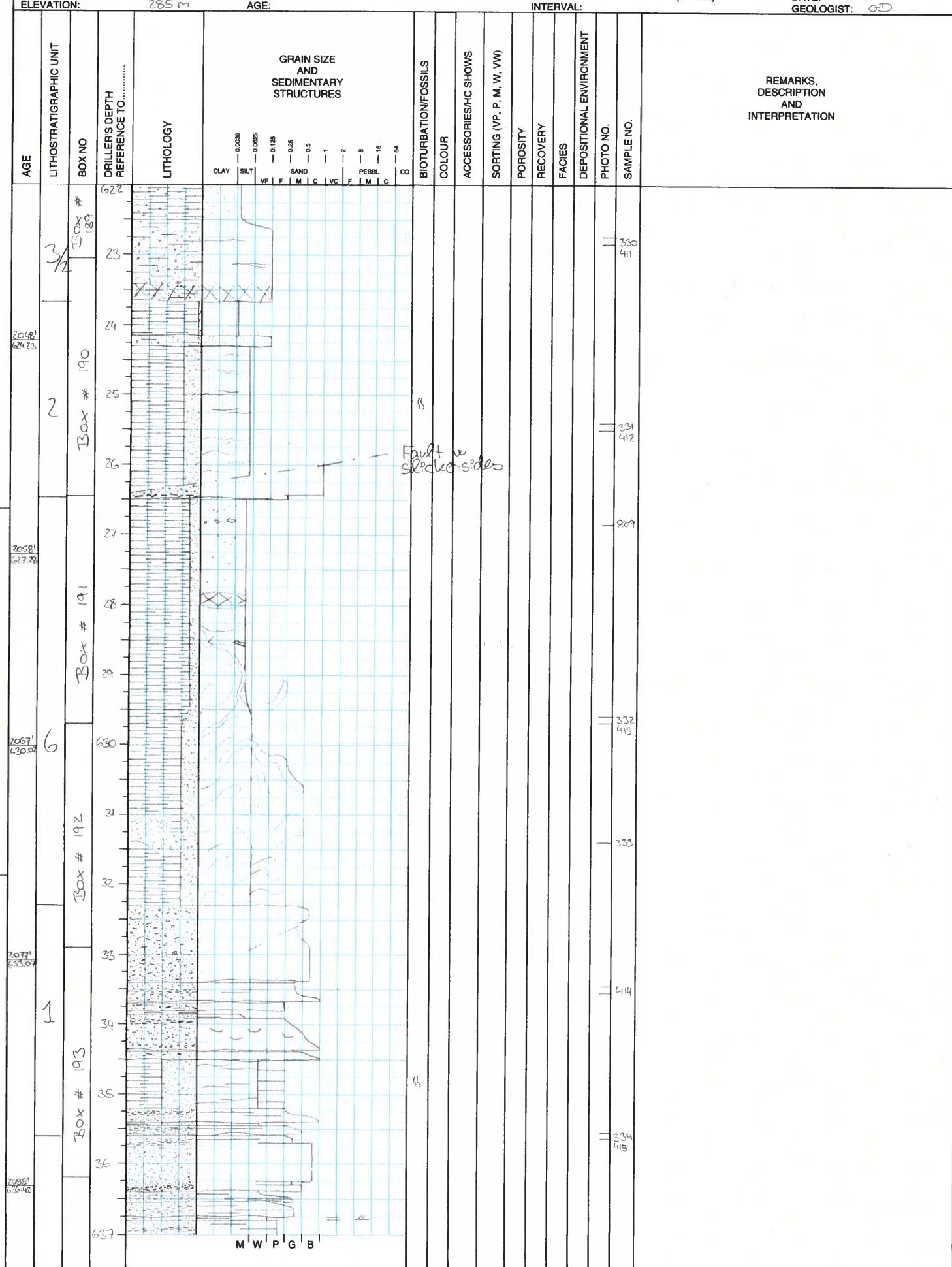
**THE GEOLOGICAL SURVEY OF
DENMARK AND GREENLAND**

 LOCALITY: 70° 42.739' N
 UTM COORDINATES: 55° 36.621' W
 ELEVATION: 285 m

 ELEVATION OF DRILL FLOOR
 ABOVE GROUND-LEVEL:
 UNIT:
 AGE:

1.80m

 WELL NO: 439101
 BOX NO: GANT #1
 CORE DIAMETER: (cm/mm)
 INTERVAL:

 SCALE: 1:50
 DATE: 13/3-96
 GEOLOGIST: GD


CORE DESCRIPTION SEDIMENTOLOGICAL DATA SHEET

THE GEOLOGICAL SURVEY OF DENMARK AND GREENLAND

LOCALITY: 70° 42.739' N
UTM COORDINATES: 53° 36.621' W
ELEVATION: 285 m

ELEVATION OF DRILL FLOOR
ABOVE GROUND-LEVEL:
UNIT:
AGE:

180m

WELL NO: 439101
BOX NO: GANT # 1
CORE DIAMETER:

(cm/mm)

(cm/mm)

CHWIMM

(cm/mm)

SCALE: 1:50
DATE: 13/3-96
GEOLOGIST: GR

ELEVATION:	AGE:	LITHOSTRATIGRAPHIC UNIT	BOX NO.	DRILLER'S DEPTH REFERENCE TO.....	GRAIN SIZE AND SEDIMENTARY STRUCTURES	LITHOLOGY	INTERVAL:										BIOTURBATION/FOSILS	COLOUR	ACCESSORIES/HC SHOWS	SORTING (V.P., P.M., W.W.)	POROSITY	RECOVERY	FACIES	DEPOSITIONAL ENVIRONMENT	PHOTO NO.	SAMPLE NO.	REMARKS, DESCRIPTION AND INTERPRETATION	
							CLAY	SILT	— 0.0039	— 0.0625	— 0.125	— 0.25	— 0.5	— 1	— 2	— 6	— 16	— 64	8									
2835 m 6.11.12	Box # 187	Z	Box # 186	Box # 185	607	607																						
2805 m 6.11.12	Box # 188	Z	Box # 189	Box # 187	608	608																						
2815 m 6.11.12	Box # 189	Z	Box # 188	Box # 187	609	609																						
2825 m 6.11.12	Box # 190	Z	Box # 189	Box # 188	610	610																						
2835 m 6.11.12	Box # 191	Z	Box # 190	Box # 189	611	611																						
2845 m 6.11.12	Box # 192	Z	Box # 191	Box # 190	612	612																						
2855 m 6.11.12	Box # 193	Z	Box # 192	Box # 191	613	613																						
2865 m 6.11.12	Box # 194	Z	Box # 193	Box # 192	614	614																						
2875 m 6.11.12	Box # 195	Z	Box # 194	Box # 193	615	615																						
2885 m 6.11.12	Box # 196	Z	Box # 195	Box # 194	616	616																						
2895 m 6.11.12	Box # 197	Z	Box # 196	Box # 195	617	617																						
2905 m 6.11.12	Box # 198	Z	Box # 197	Box # 196	618	618																						
2915 m 6.11.12	Box # 199	Z	Box # 198	Box # 197	619	619																						
2925 m 6.11.12	Box # 200	Z	Box # 199	Box # 198	620	620																						
2935 m 6.11.12	Box # 201	Z	Box # 200	Box # 199	621	621																						
2945 m 6.11.12	Box # 202	Z	Box # 201	Box # 199	622	622																						
2955 m 6.11.12	Box # 203	Z	Box # 202	Box # 199	623	623																						
2965 m 6.11.12	Box # 204	Z	Box # 203	Box # 199	624	624																						
2975 m 6.11.12	Box # 205	Z	Box # 204	Box # 199	625	625																						
2985 m 6.11.12	Box # 206	Z	Box # 205	Box # 199	626	626																						
2995 m 6.11.12	Box # 207	Z	Box # 206	Box # 199	627	627																						
3005 m 6.11.12	Box # 208	Z	Box # 207	Box # 199	628	628																						
3015 m 6.11.12	Box # 209	Z	Box # 208	Box # 199	629	629																						
3025 m 6.11.12	Box # 210	Z	Box # 209	Box # 199	630	630																						
3035 m 6.11.12	Box # 211	Z	Box # 210	Box # 199	631	631																						
3045 m 6.11.12	Box # 212	Z	Box # 211	Box # 199	632	632																						
3055 m 6.11.12	Box # 213	Z	Box # 212	Box # 199	633	633																						
3065 m 6.11.12	Box # 214	Z	Box # 213	Box # 199	634	634																						
3075 m 6.11.12	Box # 215	Z	Box # 214	Box # 199	635	635																						
3085 m 6.11.12	Box # 216	Z	Box # 215	Box # 199	636	636																						
3095 m 6.11.12	Box # 217	Z	Box # 216	Box # 199	637	637																						
3105 m 6.11.12	Box # 218	Z	Box # 217	Box # 199	638	638																						
3115 m 6.11.12	Box # 219	Z	Box # 218	Box # 199	639	639																						
3125 m 6.11.12	Box # 220	Z	Box # 219	Box # 199	640	640																						
3135 m 6.11.12	Box # 221	Z	Box # 220	Box # 199	641	641																						
3145 m 6.11.12	Box # 222	Z	Box # 221	Box # 199	642	642																						
3155 m 6.11.12	Box # 223	Z	Box # 222	Box # 199	643	643																						
3165 m 6.11.12	Box # 224	Z	Box # 223	Box # 199	644	644																						
3175 m 6.11.12	Box # 225	Z	Box # 224	Box # 199	645	645																						
3185 m 6.11.12	Box # 226	Z	Box # 225	Box # 199	646	646																						
3195 m 6.11.12	Box # 227	Z	Box # 226	Box # 199	647	647																						
3205 m 6.11.12	Box # 228	Z	Box # 227	Box # 199	648	648																						
3215 m 6.11.12	Box # 229	Z	Box # 228	Box # 199	649	649																						
3225 m 6.11.12	Box # 230	Z	Box # 229	Box # 199	650	650																						
3235 m 6.11.12	Box # 231	Z	Box # 230	Box # 199	651	651																						
3245 m 6.11.12	Box # 232	Z	Box # 231	Box # 199	652	652																						
3255 m 6.11.12	Box # 233	Z	Box # 232	Box # 199	653	653																						
3265 m 6.11.12	Box # 234	Z	Box # 233	Box # 199	654	654																						
3275 m 6.11.12	Box # 235	Z	Box # 234	Box # 199	655	655																						
3285 m 6.11.12	Box # 236	Z	Box # 235	Box # 199	656	656																						
3295 m 6.11.12	Box # 237	Z	Box # 236	Box # 199	657	657																						
3305 m 6.11.12	Box # 238	Z	Box # 237	Box # 199	658	658																						
3315 m 6.11.12	Box # 239	Z	Box # 238	Box # 199	659	659																						
3325 m 6.11.12	Box # 240	Z	Box # 239	Box # 199	660	660																						
3335 m 6.11.12	Box # 241	Z	Box # 240	Box # 199	661	661																						
3345 m 6.11.12	Box # 242	Z	Box # 241	Box # 199	662	662																						
3355 m 6.11.12	Box # 243	Z	Box # 242	Box # 199	663	663																						
3365 m 6.11.12	Box # 244	Z	Box # 243	Box # 199	664	664																						
3375 m 6.11.12	Box # 245	Z	Box # 244	Box # 199	665	665																						
3385 m 6.11.12	Box # 246	Z	Box # 245	Box # 199	666	666																						
3395 m 6.11.12	Box # 247	Z	Box # 246	Box # 199	667	667																						
3405 m 6.11.12	Box # 248	Z	Box # 247	Box # 199	668	668																						
3415 m 6.11.12	Box # 249	Z	Box # 248	Box # 199	669	669																						
3425 m 6.11.12	Box # 250	Z	Box # 249	Box # 199	670	670																						
3435 m 6.11.12	Box # 251	Z	Box # 250	Box # 199	671	671																						
3445 m 6.11.12	Box # 252	Z	Box # 251	Box # 199	672	672																						
3455 m 6.11.12	Box # 253	Z	Box # 252	Box # 199	673	673																						

CORE DESCRIPTION
SEDIMENTOLOGICAL DATA SHEETTHE GEOLOGICAL SURVEY OF
DENMARK AND GREENLANDLOCALITY: 70° 42.739' N
UTM COORDINATES: 53° 36.621' W
ELEVATION: 285 mELEVATION OF DRILL FLOOR
ABOVE GROUND-LEVEL:
UNIT:
AGE:

1.80 m

WELL NO: 439101
GANT # 1
BOX NO:
CORE DIAMETER:
INTERVAL:

(cm/mm)

SCALE: 1:50
DATE: 13/3-96 + 14/5
GEOLOGIST: GD

AGE	LITHOSTRATIGRAPHIC UNIT	BOX NO	DRILLER'S DEPTH REFERENCE TO.....	LITHOLOGY	GRAIN SIZE AND SEDIMENTARY STRUCTURES	BIOTURBATION/FOSSILS	REMARKS, DESCRIPTION AND INTERPRETATION					
							CLAY	SILT	0.0025	0.125	0.25	0.5
19441 59253	7/1	Box # 120	592	592								
			93									
			94									
			95									
			96									
			97									
			98									
19451 594879	3	Box # 182	99	99								
		Box # 183	600	600								
			01									
			02									
			03									
			04									
PBS 1 60502	2	Box # 184	05	No core								
			06									
			07				M	W	P	G	B	

SHEET 22 OF 60

CORE DESCRIPTION SEDIMENTOLOGICAL DATA SHEET

THE GEOLOGICAL SURVEY OF DENMARK AND GREENLAND

LOCALITY: 70° 42. 739' N
UTM COORDINATES: 53° 36.621' W
ELEVATION: 285 m

ELEVATION OF DRILL FLOOR
ABOVE GROUND-LEVEL:
UNIT:
AGE:

1.80 ~

439101
GANT #1

SCALE: 1:50
DATE: 14/3 - 96
GEOLOGIST: GD

ELEVATION:		AGE:	LITHOSTRATIGRAPHIC UNIT		GEOLOGIST: GD	
AGE	LITHOSTRATIGRAPHIC UNIT	BOX NO.	DRILLER'S DEPTH REFERENCE TO.....	GRAIN SIZE AND SEDIMENTARY STRUCTURES	INTERVAL:	REMARKS, DESCRIPTION AND INTERPRETATION
1915' 583.08'	7	Box # 176	577 - 81'	LITHOLOGY	CLAY — 0.0039 SILT — 0.0625 VF — 0.125 F — 0.25 M — 0.5 C — 1 VC — 2 PEBBL. — 6 F — 8 M — 16 C — 32	BIOTURBATION/FOSSILS
1924' 586.54'	2	Box # 177	81' - 92'		COLOUR	ACCESSORIES/HC SHOWS
1925'		Box # 178	92' - 95'		SORTING (V.P., P.M., W, V.W)	POROSITY
1915'		Box # 179	95' - 100'		RECOVERY	FACIES
1925'			100' - 102'		DEPOSITIONAL ENVIRONMENT	
			102' - 104'		PHOTO NO.	SAMPLE NO.
			104' - 106'			
			106' - 108'			
			108' - 110'			
			110' - 112'			
			112' - 114'			
			114' - 116'			
			116' - 118'			
			118' - 120'			
			120' - 122'			
			122' - 124'			
			124' - 126'			
			126' - 128'			
			128' - 130'			
			130' - 132'			
			132' - 134'			
			134' - 136'			
			136' - 138'			
			138' - 140'			
			140' - 142'			
			142' - 144'			
			144' - 146'			
			146' - 148'			
			148' - 150'			
			150' - 152'			
			152' - 154'			
			154' - 156'			
			156' - 158'			
			158' - 160'			
			160' - 162'			
			162' - 164'			
			164' - 166'			
			166' - 168'			
			168' - 170'			
			170' - 172'			
			172' - 174'			
			174' - 176'			
			176' - 178'			
			178' - 180'			
			180' - 182'			
			182' - 184'			
			184' - 186'			
			186' - 188'			
			188' - 190'			
			190' - 192'			
			192' - 194'			
			194' - 196'			
			196' - 198'			
			198' - 200'			
			200' - 202'			
			202' - 204'			
			204' - 206'			
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			216' - 218'			
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			230' - 232'			
			232' - 234'			
			234' - 236'			
			236' - 238'			
			238' - 240'			
			240' - 242'			
			242' - 244'			
			244' - 246'			
			246' - 248'			
			248' - 250'			
			250' - 252'			
			252' - 254'			
			254' - 256'			
			256' - 258'			
			258' - 260'			
			260' - 262'			
			262' - 264'			
			264' - 266'			
			266' - 268'			
			268' - 270'			
			270' - 272'			
			272' - 274'			
			274' - 276'			
			276' - 278'			
			278' - 280'			
			280' - 282'			
			282' - 284'			
			284' - 286'			
			286' - 288'			
			288' - 290'			
			290' - 292'			
			292' - 294'			
			294' - 296'			
			296' - 298'			
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			300' - 302'			
			302' - 304'			
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			308' - 310'			
			310' - 312'			
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			318' - 320'			
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			324' - 326'			
			326' - 328'			
			328' - 330'			
			330' - 332'			
			332' - 334'			
			334' - 336'			
			336' - 338'			
			338' - 340'			
			340' - 342'			
			342' - 344'			
			344' - 346'			
			346' - 348'			
			348' - 350'			
			350' - 352'			
			352' - 354'			
			354' - 356'			
			356' - 358'			
			358' - 360'			
			360' - 362'			
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			368' - 370'			
			370' - 372'			
			372' - 374'			
			374' - 376'			
			376' - 378'			
			378' - 380'			
			380' - 382'			
			382' - 384'			
			384' - 386'			
			386' - 388'			
			388' - 390'			
			390' - 392'			
			392' - 394'			
			394' - 396'			
			396' - 398'			
			398' - 400'			

SHEET 23 OF 60

CORE DESCRIPTION

SEDIMENTOLOGICAL DATA SHEET

THE GEOLOGICAL SURVEY OF DENMARK AND GREENLAND

LOCALITY: 70° 42.739' N
UTM COORDINATES: 53° 26.621' W
ELEVATION: 785 m

LEVEL OF DRILL FLOOR
ABOVE GROUND-LEVEL:
UNIT:
AGE:

1.80 m

439101
WELL NO: GANT # 1
BOX NO:
CORE DIAMETER:
INTERVAL:

(cm/mm)

(cm/mm)

SCALE:
DATE: 10
GEOLOGIST:

1:50
14/3 - 96 + 15/3
G+

LITHOSTRATIGRAPHIC UNIT

AGE	LITHOSTRATIGRAPHIC UNIT	BOX NO	GRAIN SIZE AND SEDIMENTARY STRUCTURES						BIOTURBATION/FOSILS	COLOUR	ACCESSORIES/HC SHOWS	INTERVAL:	REMARKS, DESCRIPTION AND INTERPRETATION	
			CLAY	SILT	V.F.	F	M	C						VC
1852 ¹ 564.14	1	562												
1871 ¹ 571.20	4	563												
		564												
		565												
		566												
		567												
		568												
		569												
		570												
		571												
		572												
		573												
		574												
		575												
		576												
		577												
			M	W	P	G	B							

DRILLER'S DEPTH
REFERENCE TO.....

REMARKS,
DESCRIPTION
AND
INTERPRETATION

CORE DESCRIPTION
SEDIMENTOLOGICAL DATA SHEETTHE GEOLOGICAL SURVEY OF
DENMARK AND GREENLANDLOCALITY: 70°42.739'N
UTM COORDINATES: 53°36.621'W
ELEVATION: 285 mELEVATION OF DRILL FLOOR
ABOVE GROUND-LEVEL:
UNIT:
AGE:

1.80 m

WELL NO: 439101
BOX NO:
CORE DIAMETER:
INTERVAL:

(cm/mm)

SCALE: 1:50
DATE: 15/3-96
GEOLOGIST: GD

AGE	LITHOSTRATIGRAPHIC UNIT	BOX NO	DRILLER'S DEPTH REFERENCE TO.....	LITHOLOGY	GRAIN SIZE AND SEDIMENTARY STRUCTURES	BIOTURBATION/FOSSILS	COLOUR	REMARKS, DESCRIPTION AND INTERPRETATION						
								CLAY	SILT	— 0.0625	— 0.125	— 0.25	— 0.5	— 1
18111 55119	2	Box # 168	Box # 169	Box # 170	547	548	549	550	551	552	553	554	555	556
18311 55859	1	Box # 170			557	558	559	560	561	562	563	564	565	566
					567	568	569	570	571	572	573	574	575	576
					577	578	579	580	581	582	583	584	585	586
					587	588	589	590	591	592	593	594	595	596
					597	598	599	600	601	602	603	604	605	606
					607	608	609	610	611	612	613	614	615	616
					617	618	619	620	621	622	623	624	625	626
					M	W	P	G	B					

CORE DESCRIPTION SEDIMENTOLOGICAL DATA SHEET

THE GEOLOGICAL SURVEY OF DENMARK AND GREENLAND

LOCALITY:	70° 42.739' N	ELEVATION OF DRILL FLOOR
UTM COORDINATES:	53° 36.621' W	ABOVE GROUND-LEVEL: 1.80 m
ELEVATION:	285 ~	UNIT:
		AGE:

439101
WELL NO: GANT # 1
BOX NO:
CORE DIAMETER:
INTERVAL:

SCALE: 1:50
DATE: 15/3-96
GEOLOGIST: G.I.

SHEET 26 OF 60

CORE DESCRIPTION SEDIMENTOLOGICAL DATA SHEET

THE GEOLOGICAL SURVEY OF DENMARK AND GREENLAND

LOCALITY: $70^{\circ}42.739'N$
UTM COORDINATES: $53^{\circ}36.621'W$
ELEVATION: 285 m

ELEVATION OF DRILL FLOOR
ABOVE GROUND-LEVEL: 1.80 m
UNIT:
AGE:

439101
WELL NO: GANT #1
BOX NO:
CORE DIAMETER:
INTERVAL:

SCALE: 1:50
DATE: 15/3-9G + 1813
GEOLOGIST: G.R.

AGE	LITHOSTRATIGRAPHIC UNIT	AGE:	INTERVAL:	GEOLOGIST:
	BOX NO.	DRILLER'S DEPTH REFERENCE TO.....		REMARKS, DESCRIPTION AND INTERPRETATION
1697' 517.25	Box # 157	517		
1717' 523.34	Box # 158	18 - 21		
1727' 526.39	Box # 159	22 - 25		
1737' 529.44	Box # 160	26 - 29		
	Box # 161	30 - 31		
		532	M W P G B	
				209 378
				300
				370
				301 380
				302 382

CORE DESCRIPTION SEDIMENTOLOGICAL DATA SHEET

LOCALITY: 70°42.739' N
UTM COORDINATES: 53°36.621' W
ELEVATION: 285 M

ELEVATION OF DRILL FLOOR
ABOVE GROUND-LEVEL:
UNIT:
AGE:

180 ~

UTM COC
ELEMENTS

70°42.739' N
53°36.621' W
295 m

ELEVATION OF DRILL FLOOR
ABOVE GROUND-LEVEL:
UNIT:
AGE:

180 m

WELL NO: GANT #1
BOX NO:
CORE DIAMETER:
INTERVAL:

THE GEOLOGICAL SURVEY OF DENMARK AND GREENLAND

SCALE: 1:50
DATE: 1813-96
GEOLOGIST: G.D.

CORE DESCRIPTION SEDIMENTOLOGICAL DATA SHEET

LOCALITY: 70°42.739' N
UTM COORDINATES: 53°36.621' W
ELEVATION: 285 m

ELEVATION OF DRILL FLOOR
ABOVE GROUND-LEVEL:
UNIT:
AGE:

1.80 m

439101
GANT # 1

THE GEOLOGICAL SURVEY OF DENMARK AND GREENLAND

(cm/mm)

SCALE: 1:50
DATE: 19/3-96
GEOLOGIST: G.D.

SHEET 30 OF 60

CORE DESCRIPTION SEDIMENTOLOGICAL DATA SHEET

LOCALITY: 70° 42.739' N
UTM COORDINATES: 53° 36.621' W
ELEVATION: 285 m

ELEVATION OF DRILL FLOOR
ABOVE GROUND-LEVEL:
UNIT:
AGE:

1.800

439101
GANIT #

THE GEOLOGICAL SURVEY OF DENMARK AND GREENLAND

SCALE: 1:50
DATE: 1913-96
GEOLOGIST: G.D.

SHEET 31 OF 60

CORE DESCRIPTION SEDIMENTOLOGICAL DATA SHEET

THE GEOLOGICAL SURVEY OF DENMARK AND GREENLAND

LOCALITY: 70°42.739'N
UTM COORDINATES: 53°36.621'W
ELEVATION: 285 m

ELEVATION OF DRILL FLOOR
ABOVE GROUND-LEVEL:
UNIT:
AGE:

1.80 m

439101
GANT #1

6

SCALE: 1:50
DATE: 1913 - 96
GEOLOGIST: G.D.

CORE DESCRIPTION SEDIMENTOLOGICAL DATA SHEET

THE GEOLOGICAL SURVEY OF DENMARK AND GREENLAND

LOCALITY: 70°42.739' N
UTM COORDINATES: 53°36.621' W
ELEVATION: 285 m

ELEVATION OF DRILL FLOOR
ABOVE GROUND-LEVEL:
UNIT:
AGE:

180m

439101
WELL NO: GANT #1
BOX NO:
CORE DIAMETER:
INTERVAL:

(cm/mm)

SCALE: 1:50
DATE: 20/3-96
GEOLOGIST: G.P.

CORE DESCRIPTION SEDIMENTOLOGICAL DATA SHEET

THE GEOLOGICAL SURVEY OF DENMARK AND GREENLAND

LOCALITY: 70° 42.739' N
UTM COORDINATES: 53° 36.621' W
ELEVATION: 285 m

LEVEL OF DRILL FLOOR
ABOVE GROUND-LEVEL:
UNIT:
AGE:

1.80 m

439101
GANT #1

NT # 1

(cm/mm)

SCALE: 1:50
DATE: 20/3-96
GEOLOGIST: G.I.

SHEET 34 OF 60

CORE DESCRIPTION SEDIMENTOLOGICAL DATA SHEET

THE GEOLOGICAL SURVEY OF DENMARK AND GREENLAND

LOCALITY: 70°42.739' N
UTM COORDINATES: 53°36.621' W
ELEVATION: 285 M

LEVEL OF DRILL FLOOR
ABOVE GROUND-LEVEL:
UNIT:
AGE:

1.80 m

439101
GANT # 1

SCALE: 1:50
DATE: 2013-96 + Z113
GEOLOGIST: GR

CORE DESCRIPTION

SEDIMENTOLOGICAL DATA SHEET

LOCALITY: 70° 42.739' N ELEVATION OF DRILL FLOOR
UTM COORDINATES: 53° 36.621' W ABOVE GROUND-LEVEL:
ELEVATION: 285 m UNIT:
AGE:

1.80 m

439101
WELL NO: GANT # 1
BOX NO:
CORE DIAMETER:
INTERVAL:

THE GEOLOGICAL SURVEY OF DENMARK AND GREENLAND

SCALE: 1:50
DATE: 2/13-96
GEOLOGIST: SD

CORE DESCRIPTION
SEDIMENTOLOGICAL DATA SHEETTHE GEOLOGICAL SURVEY OF
DENMARK AND GREENLAND

LOCALITY: $70^{\circ} 42' 7.39'' N$
 UTM COORDINATES: $53^{\circ} 36' GZ 1' W$
 ELEVATION: 285 m

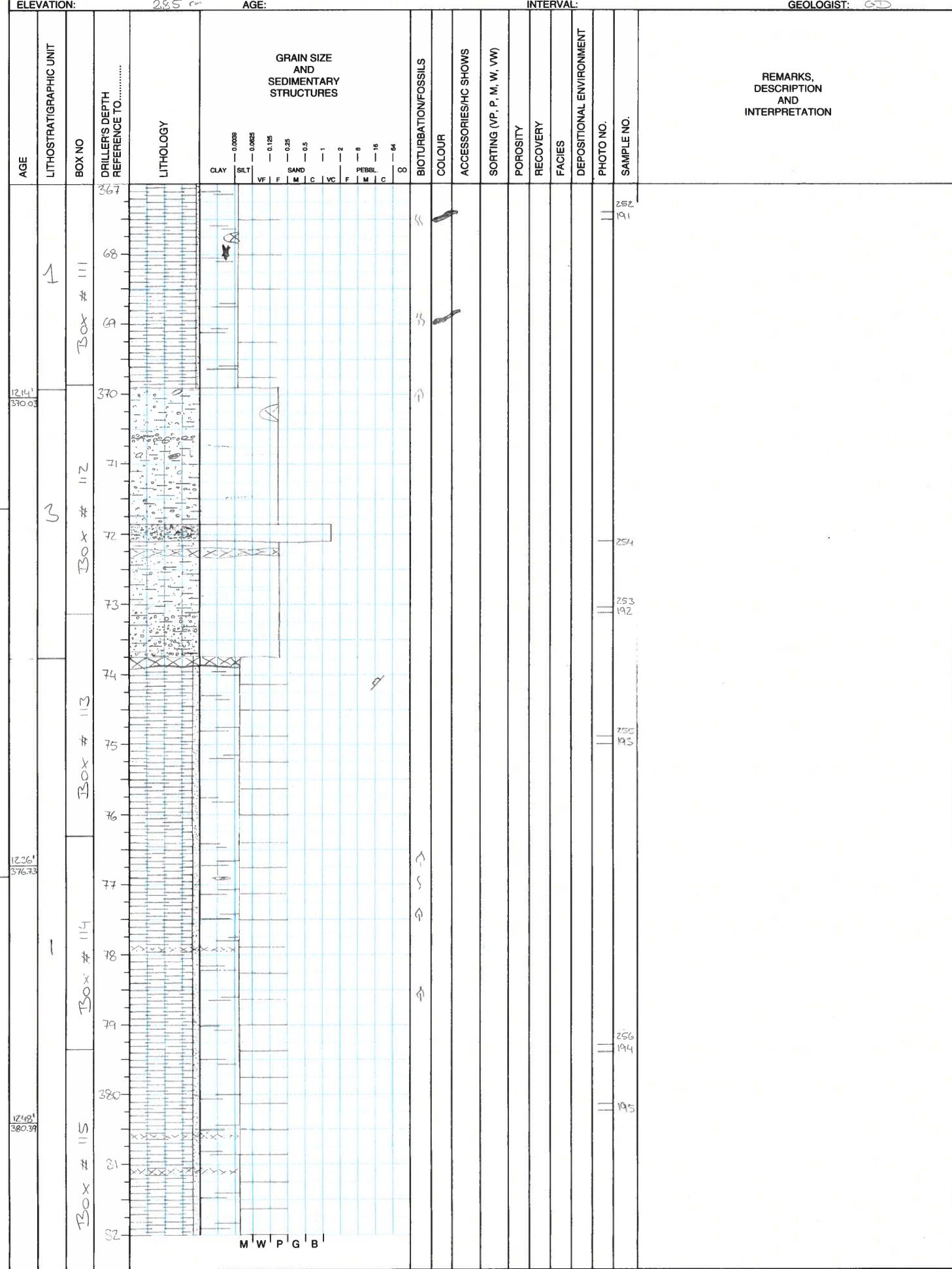
ELEVATION OF DRILL FLOOR
ABOVE GROUND-LEVEL:
UNIT:
AGE:

1.80 m

WELL NO: 439101
BOX NO:
CORE DIAMETER:
INTERVAL:

(cm/mm)

SCALE: 1:50
DATE: 21/3-96
GEOLOGIST: GD



CORE DESCRIPTION SEDIMENTOLOGICAL DATA SHEET

LOCALITY: 70° 42.739' N
UTM COORDINATES: 53° 36.621' W
ELEVATION: 2,85 m

ELEVATION OF DRILL FLOOR
ABOVE GROUND-LEVEL:
UNIT:
AGE:

1.80 m

439101
GANT #1

THE GEOLOGICAL SURVEY OF DENMARK AND GREENLAND

SCALE: 1:50
DATE: 21/3-96
GEOLOGIST: GD

SHEET 38 OF 60

CORE DESCRIPTION SEDIMENTOLOGICAL DATA SHEET

THE GEOLOGICAL SURVEY OF DENMARK AND GREENLAND

LOCALITY: 70° 42. 739' N
UTM COORDINATES: 53° 36. 621' W
ELEVATION: 285 m

ELEVATION OF DRILL FLOOR
ABOVE GROUND-LEVEL:
UNIT:
AGE:

1.80 m

439101
6415#

WELL NO: GANT #1
BOX NO:
CORE DIAMETER:
INTERVAL:

SCALE: 1:50
DATE: 21/3-96 + 22/3
GEOLOGIST: G.D.

SHEET 40 OF 60

CORE DESCRIPTION SEDIMENTOLOGICAL DATA SHEET

THE GEOLOGICAL SURVEY OF DENMARK AND GREENLAND

LOCALITY: 70° 42.739' N
UTM COORDINATES: 53° 36.621' W
ELEVATION: 285 M

**LEVEL OF DRILL FLOOR
ABOVE GROUND-LEVEL:
UNIT:**

1.80 ~

439101
GANT*

SCALE: 1:50
DATE: 22/3 - 96
GEOLOGIST: GD

CORE DESCRIPTION SEDIMENTOLOGICAL DATA SHEET

THE GEOLOGICAL SURVEY OF DENMARK AND GREENLAND

LOCALITY: 70° 42.739' N
UTM COORDINATES: 53° 36.621' W
ELEVATION: 7.85 m

ELEVATION OF DRILL FLOOR
ABOVE GROUND-LEVEL:
UNIT:
AGE:

1.80 m

439.101
GAIJS # 1

■

WELL NO: GALT # 1
BOX NO:
CORE DIAMETER:
INTERVAL:

(cm/mm)

SCALE: 1:50
DATE: 22/3-96
GEOLOGIST: G.D.

SHEET 42 OF 60

CORE DESCRIPTION

SEDIMENTOLOGICAL DATA SHEET

THE GEOLOGICAL SURVEY OF DENMARK AND GREENLAND

LOCALITY: 70°42.750'N
UTM COORDINATES: 53°36.621'W
ELEVATION: 285 m

LEVEL OF DRILL FLOOR
ABOVE GROUND-LEVEL:
UNIT:
AGE:

1.80 m

439101

WELL NO: GANT # 1
BOX NO:
CORE DIAMETER:
INTERVAL:

SCALE: 1:50
DATE: 25/3-96 + 24/3
GEOLOGIST: GD

SHEET 43 OF 60

CORE DESCRIPTION

SEDIMENTOLOGICAL DATA SHEET

THE GEOLOGICAL SURVEY OF DENMARK AND GREENLAND

LOCALITY: 70° 42.739' N
UTM COORDINATES: 53° 36.621' W
ELEVATION: 285 m

LEVEL OF DRILL FLOOR
ABOVE GROUND-LEVEL:
UNIT:
AGE:

1.80 m

439101
G-41157

WELL NO: GANT # 1
BOX NO:
CORE DIAMETER:
INTERVAL:

(cm/mm)

SCALE: 1:50
DATE: 26/3-96
GEOLOGIST: GD

ELEVATION:		AGE:	INTERVAL:		GEOLOGIST:	
AGE	LITHOSTRATIGRAPHIC UNIT	DRILLER'S DEPTH REFERENCE TO.....				
BOX NO.	LITHOLOGY	CLAY VF F M C VC	SILT — 0.0059 — 0.0025 — 0.0125 — 0.025 — 0.5	SAND — 1 — 2 — 8 — 18 — 64	PEBBL F M C	REMARKS, DESCRIPTION AND INTERPRETATION
877' 267.31	1	262 # 3 Box # 79				
897' 273.41	2	263 # 3 Box # 80				
	3	264 # 3 Box # 81				
	4	265 # 3 Box # 82				
	5	266 # 3 Box # 83				
	6	267 # 3 Box # 84				
	7	268 # 3 Box # 85				
	8	269 # 3 Box # 86				
	9	270 # 3 Box # 87				
	10	271 # 3 Box # 88				
	11	272 # 3 Box # 89				
	12	273 # 3 Box # 90				
	13	274 # 3 Box # 91				
	14	275 # 3 Box # 92				
	15	276 # 3 Box # 93				
	16	277 # 3 Box # 94	M W P G B			

SHEET 44 OF 60

CORE DESCRIPTION

SEDIMENTOLOGICAL DATA SHEET

THE GEOLOGICAL SURVEY OF DENMARK AND GREENLAND

LOCALITY: $70^{\circ} 42.739'N$
UTM COORDINATES: $53^{\circ} 36.621'W$
ELEVATION: 285 m

ELEVATION OF DRILL FLOOR
ABOVE GROUND-LEVEL:
UNIT:
AGE:

1.80 m

WELL NO: GANT # 1
BOX NO:
CORE DIAMETER:
INTERVAL:

SCALE: 1:50
DATE: 26/3-96
GEOLOGIST: G.D.

SHEET 45 OF 60

CORE DESCRIPTION SEDIMENTOLOGICAL DATA SHEET

THE GEOLOGICAL SURVEY OF DENMARK AND GREENLAND

LOCALITY: 70° 42.739' N
UTM COORDINATES: 53° 36.621' W
ELEVATION: 285 m

LEVEL OF DRILL FLOOR
ABOVE GROUND-LEVEL:
UNIT:
AGE:

1.80 3

439101
GANT #1

(cm/mm)

SCALE:

1 : 50

26/3 - AG + Z7/
T: GD

SCALE:
DATE: 26
GEOLOGIST:

ELEVATION:	AGE:	LITHOSTRATIGRAPHIC UNIT	DRILLER'S DEPTH REFERENCE TO.....	GRAIN SIZE AND SEDIMENTARY STRUCTURES								INTERVAL:				REMARKS, DESCRIPTION AND INTERPRETATION	GEOLOGIST: G.D.									
				CLAY	SILT	VF	F	M	C	VC	PEBBL	2	8	16	64	COLOUR	ACCESSORIES/H.C SHOWS	SORTING (V.P, M, W, V.W)	POROSITY	RECOVERY	FACIES	DEPOSITIONAL ENVIRONMENT	PHOTO NO.	SAMPLE NO.		
777'	236.93	Box # 69	234	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	147	30	148	149
787'	239.88	Box # 70	234	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	147	30	148	149
797'	242.83	Box # 71	234	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	147	30	148	149
807'	245.87	Box # 72	234	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	147	30	148	149
811'	247.19	Box # 73	234	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	147	30	148	149

CORE DESCRIPTION
 SEDIMENTOLOGICAL DATA SHEET

**THE GEOLOGICAL SURVEY OF
DENMARK AND GREENLAND**

 LOCALITY: $70^{\circ} 42' E$, $73^{\circ} 11' N$
 UTM COORDINATES: $53^{\circ} 36' E$, $62^{\circ} 1' W$
 ELEVATION: $285 m$

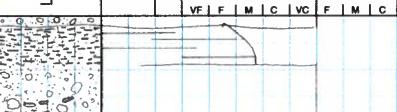
 ELEVATION OF DRILL FLOOR
 ABOVE GROUND-LEVEL:
 UNIT:
 AGE:

180 m

 WELL NO: 439101
 BOX NO:
 CORE DIAMETER:
 INTERVAL:

(cm/mm)

 SCALE: 1:50
 DATE: 27/3 - 96
 GEOLOGIST: GJ

AGE	LITHOSTRATIGRAPHIC UNIT	BOX NO	DRILLER'S DEPTH REFERENCE TO.....	LITHOLOGY	GRAIN SIZE AND SEDIMENTARY STRUCTURES	BIOTURBATION/FOSSILS	COLOUR	ACCESSORIES/HC SHOWS	SORTING (V.P., P, M, W, WV)	POROSITY	RECOVERY	FACIES	DEPOSITIONAL ENVIRONMENT	REMARKS, DESCRIPTION AND INTERPRETATION				
														91	92	93	94	
723 ¹ 221.59	4	Box # 64	219															
737 ¹ 224.64	4	Box # 65	220															
742 ¹ 227.69	4	Box # 66	221															
747 ¹ 227.69	4	Box # 67	222															
757 ¹ 230.78	4	Box # 68	223															
767 ¹ 233.78	4	Box # 69	224															
		Box X #	225															
		Box X #	226															
		Box X #	227															
		Box X #	228															
		Box X #	229															
		Box X #	230															
		Box X #	231															
		Box X #	232															
		Box X #	233															
		Box X #	234															

M | W | P | G | B |

CORE DESCRIPTION

SEDIMENTOLOGICAL DATA SHEET

THE GEOLOGICAL SURVEY OF DENMARK AND GREENLAND

LOCALITY: 70° 42.739' N
UTM COORDINATES: 53° 36.621' W
ELEVATION: 285 m

ELEVATION OF DRILL FLOOR
ABOVE GROUND-LEVEL:
UNIT:
AGE:

1.80 m

439101
WELL NO: GANT #1
BOX NO:
CORE DIAMETER:
INTERVAL:

(cm/mm)

SCALE:
DATE:
GEOLO

1:50
27/3-96
G-D

ELEVATION:		AGE:	LITHOSTRATIGRAPHIC UNIT						GEOLOGIST:	
AGE	LITHOSTRATIGRAPHIC UNIT		BOX NO.	DRILLER'S DEPTH REFERENCE TO.....	REMARKS, DESCRIPTION AND INTERPRETATION					
677'	206.56		Box # 59	204						
627'	209.10		Box # 60	?						
617'	212.45		Box # 61	?						
707'	215.59		Box # 62	?						
717'	218.54		Box # 63	?						
			Box # 64	?						
			Box # 65	?						
			Box # 66	?						
			Box # 67	?						
			Box # 68	?						
			Box # 69	?						
			Box # 70	?						
			Box # 71	?						
			Box # 72	?						
			Box # 73	?						
			Box # 74	?						
			Box # 75	?						
			Box # 76	?						
			Box # 77	?						
			Box # 78	?						
			Box # 79	?						
			Box # 80	?						
			Box # 81	?						
			Box # 82	?						
			Box # 83	?						
			Box # 84	?						
			Box # 85	?						
			Box # 86	?						
			Box # 87	?						
			Box # 88	?						
			Box # 89	?						
			Box # 90	?						
			Box # 91	?						
			Box # 92	?						
			Box # 93	?						
			Box # 94	?						
			Box # 95	?						
			Box # 96	?						
			Box # 97	?						
			Box # 98	?						
			Box # 99	?						
			Box # 100	?						
			Box # 101	?						
			Box # 102	?						
			Box # 103	?						
			Box # 104	?						
			Box # 105	?						
			Box # 106	?						
			Box # 107	?						
			Box # 108	?						
			Box # 109	?						
			Box # 110	?						
			Box # 111	?						
			Box # 112	?						
			Box # 113	?						
			Box # 114	?						
			Box # 115	?						
			Box # 116	?						
			Box # 117	?						
			Box # 118	?						
			Box # 119	?						
			Box # 120	?						
			Box # 121	?						
			Box # 122	?						
			Box # 123	?						
			Box # 124	?						
			Box # 125	?						
			Box # 126	?						
			Box # 127	?						
			Box # 128	?						
			Box # 129	?						
			Box # 130	?						
			Box # 131	?						
			Box # 132	?						
			Box # 133	?						
			Box # 134	?						
			Box # 135	?						
			Box # 136	?						
			Box # 137	?						
			Box # 138	?						
			Box # 139	?						
			Box # 140	?						
			Box # 141	?						
			Box # 142	?						
			Box # 143	?						
			Box # 144	?						
			Box # 145	?						
			Box # 146	?						
			Box # 147	?						
			Box # 148	?						
			Box # 149	?						
			Box # 150	?						
			Box # 151	?						
			Box # 152	?						
			Box # 153	?						
			Box # 154	?						
			Box # 155	?						
			Box # 156	?						
			Box # 157	?						
			Box # 158	?						
			Box # 159	?						
			Box # 160	?						
			Box # 161	?						
			Box # 162	?						
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SHEET 49 OF 60

CORE DESCRIPTION SEDIMENTOLOGICAL DATA SHEET

THE GEOLOGICAL SURVEY OF DENMARK AND GREENLAND

LOCALITY: 70°42.739' N
UTM COORDINATES: 53°36.621' W
ELEVATION: 285 m

ELEVATION OF DRILL FLOOR
ABOVE GROUND-LEVEL:
UNIT:
AGE:

1.80 m

439101
6454

WELL NO: GANT # 1
BOX NO:
CORE DIAMETER:
INTERVAL:

SCALE: 1:50
DATE: 28/3-96
GEOLOGIST: S.P.

GRAIN SIZE
AND
SEDIMENTARY
STRUCTURES

ELEVATION:	AGE:	LITHOSTRATIGRAPHIC UNIT	BOX NO	DRILLER'S DEPTH REFERENCE TO.....										INTERVAL:										GEOLOGIST: GD											
				CLAY	SILT	— 0.0059	VF	F	M	SAND	— 0.0625	C	VC	F	PEBBL.	— 0.125	M	C	— 0.25	— 0.5	— 1	— 2	— 6		— 16	— 64	BIOTURBATION/FOSILS	COLOUR	ACCESSORIES/HO SHOWS	SORTING (V.P., P.M., W, W)	POROSITY	RECOVERY	FACIES	DEPOSITIONAL ENVIRONMENT	PHOTO NO.
581'	177.09		Box # 51	30 x # 50	174	175	16	77	78	79	80	190	81	82	83	84	85	86	87	88	89	189	M W P G B	G	G	G	45	128	46	130	131	127	124	123	
591'	180.14	4	Box # 52	30 x # 51	174	175	16	77	78	79	80	190	81	82	83	84	85	86	87	88	89	189	M W P G B	G	G	G	45	128	46	130	131	127	124	123	
597'	181.97		Box # 53	30 x # 52	174	175	16	77	78	79	80	190	81	82	83	84	85	86	87	88	89	189	M W P G B	G	G	G	45	128	46	130	131	127	124	123	
607'	185.01		Box # 54	30 x # 53	174	175	16	77	78	79	80	190	81	82	83	84	85	86	87	88	89	189	M W P G B	G	G	G	45	128	46	130	131	127	124	123	
617'	188.02		Box # 55	30 x # 54	174	175	16	77	78	79	80	190	81	82	83	84	85	86	87	88	89	189	M W P G B	G	G	G	45	128	46	130	131	127	124	123	

REMARKS,
DESCRIPTION
AND
INTERPRETATION

SHEET 50 OF 60

CORE DESCRIPTION
SEDIMENTOLOGICAL DATA SHEET

**THE GEOLOGICAL SURVEY OF
DENMARK AND GREENLAND**

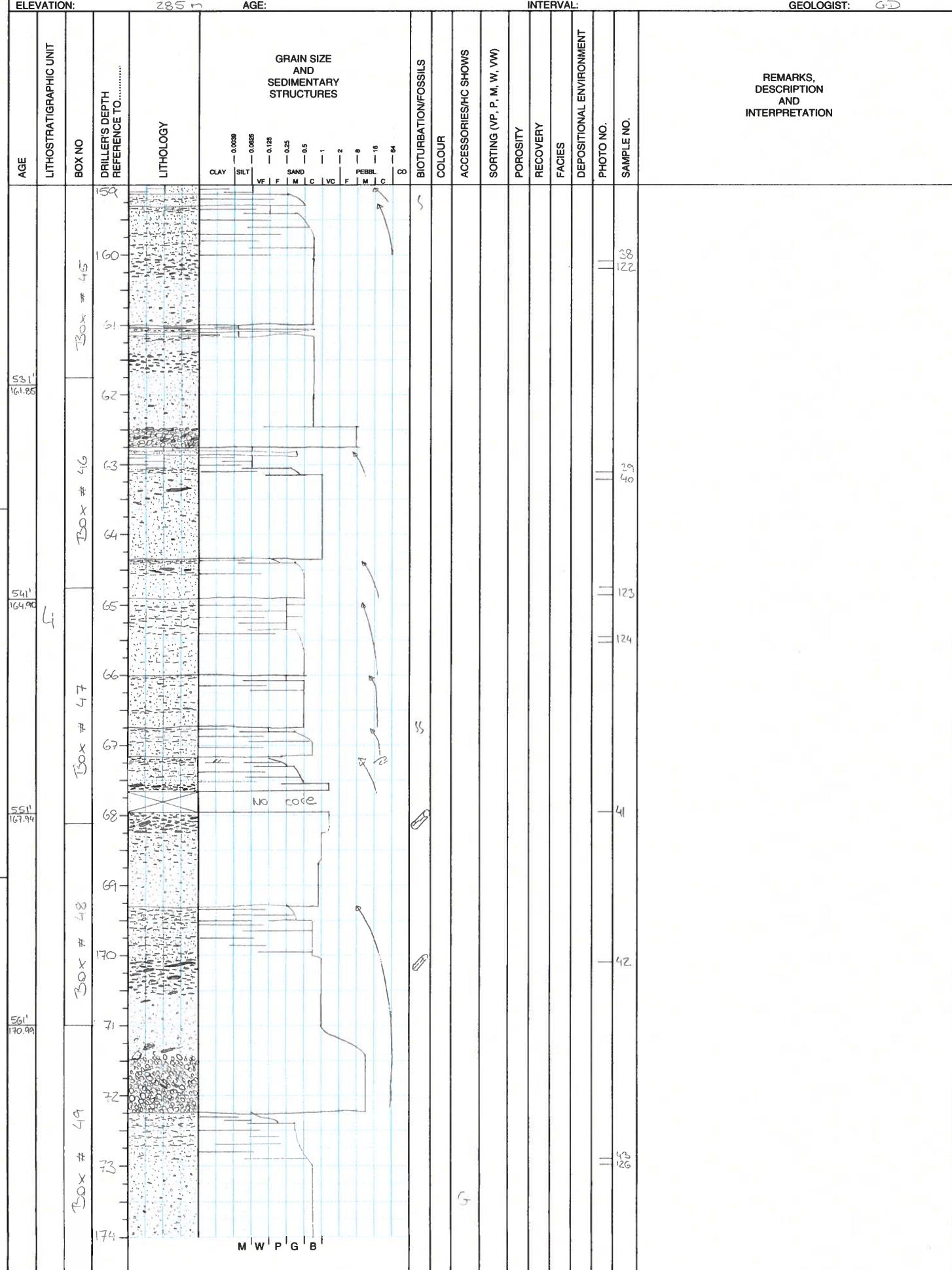
LOCALITY: 70° 42.739' N
UTM COORDINATES: 53° 36.621' W
ELEVATION: 285 m

ELEVATION OF DRILL FLOOR
ABOVE GROUND-LEVEL:
UNIT:
AGE:

1.80 ~

WELL NO: 439101
BOX NO:
CORE DIAMETER: (cm/mm)
INTERVAL:

SCALE: 1:50
DATE: 28/3 - 96 + 29/3
GEOLOGIST: GD



SHEET 51 OF 60

CORE DESCRIPTION

SEDIMENTOLOGICAL DATA SHEET

THE GEOLOGICAL SURVEY OF DENMARK AND GREENLAND

LOCALITY: 70°42.739'N
UTM COORDINATES: 53°36.621'W
ELEVATION: 785 m

ELEVATION OF DRILL FLOOR
ABOVE GROUND-LEVEL:
UNIT:
AGE:

1.80m

439101
GANT #1

WELL NO: GANT #1
BOX NO:
CORE DIAMETER:
INTERVAL:

SCALE: 1:50
DATE: 29/3-96
GEOLOGIST: GJ

SHEET 52 OF 60

CORE DESCRIPTION SEDIMENTOLOGICAL DATA SHEET

THE GEOLOGICAL SURVEY OF DENMARK AND GREENLAND

LOCALITY: 70° 42.739' N
UTM COORDINATES: 53° 36.621' W
ELEVATION: 285 m

LEVEL OF DRILL FLOOR
ABOVE GROUND-LEVEL:
UNIT:
AGE:

180m

439101
GANIT #1

39:01

1

(cm/mm)

SCALE:

1:5

$$29/3 - 9G + 1/6$$

CORE DESCRIPTION

SEDIMENTOLOGICAL DATA SHEET

THE GEOLOGICAL SURVEY OF DENMARK AND GREENLAND

LOCALITY: 70°42..739'N
UTM COORDINATES: 53°36.621'W
ELEVATION: 285 M

ELEVATION OF DRILL FLOOR
ABOVE GROUND-LEVEL:
UNIT:
AGE:

1.80 m

439101
WELL NO: GANT # 1
BOX NO:
CORE DIAMETER:
INTERVAL:

(cm/mm)

SCALE: 1:50
DATE: 1/4-96
GEOLOGIST: G.D.

ELEVATION:	AGE:	INTERVAL:	GEOLOGIST:
	285 M		GD
377'			
114.91			
	AGE	LITHOSTRATIGRAPHIC UNIT	
		BOX NO	
		DRILLER'S DEPTH REFERENCE TO.....	
		LITHOLOGY	REMARKS, DESCRIPTION AND INTERPRETATION
		GRAIN SIZE AND SEDIMENTARY STRUCTURES	
		CLAY — 0.0059 SILT — 0.0265 VF F — 0.125 SAND — 0.25 C — 0.5 VC — 1 F — 2 PEBBL M — 6 C — 16 — 64	
387'			
117.96			
	1	Box # 31	
		Box # 32	
		Box # 33	
		Box # 34	
		Box # 35	
407'			
174.95			
417'			
172.91			
			Bioturbation/Fossils
			COLOUR
			ACCESSORIES/HC SHOWS
			SORTING (V.P, P, M, W, V.W)
			POROSITY
			RECOVERY
			FACIES
			DEPOSITIONAL ENVIRONMENT
			PHOTO NO.
			SAMPLE NO.
114			
15			
16			
17			
18			
19			
20			
21			
22			
23			
24			
25			
26			
27			
28			
129			
M W P G B			

CORE DESCRIPTION

SEDIMENTOLOGICAL DATA SHEET

THE GEOLOGICAL SURVEY OF DENMARK AND GREENLAND

LOCALITY: 70°42.739' N
UTM COORDINATES: 53°36.621' W
ELEVATION: 285 M

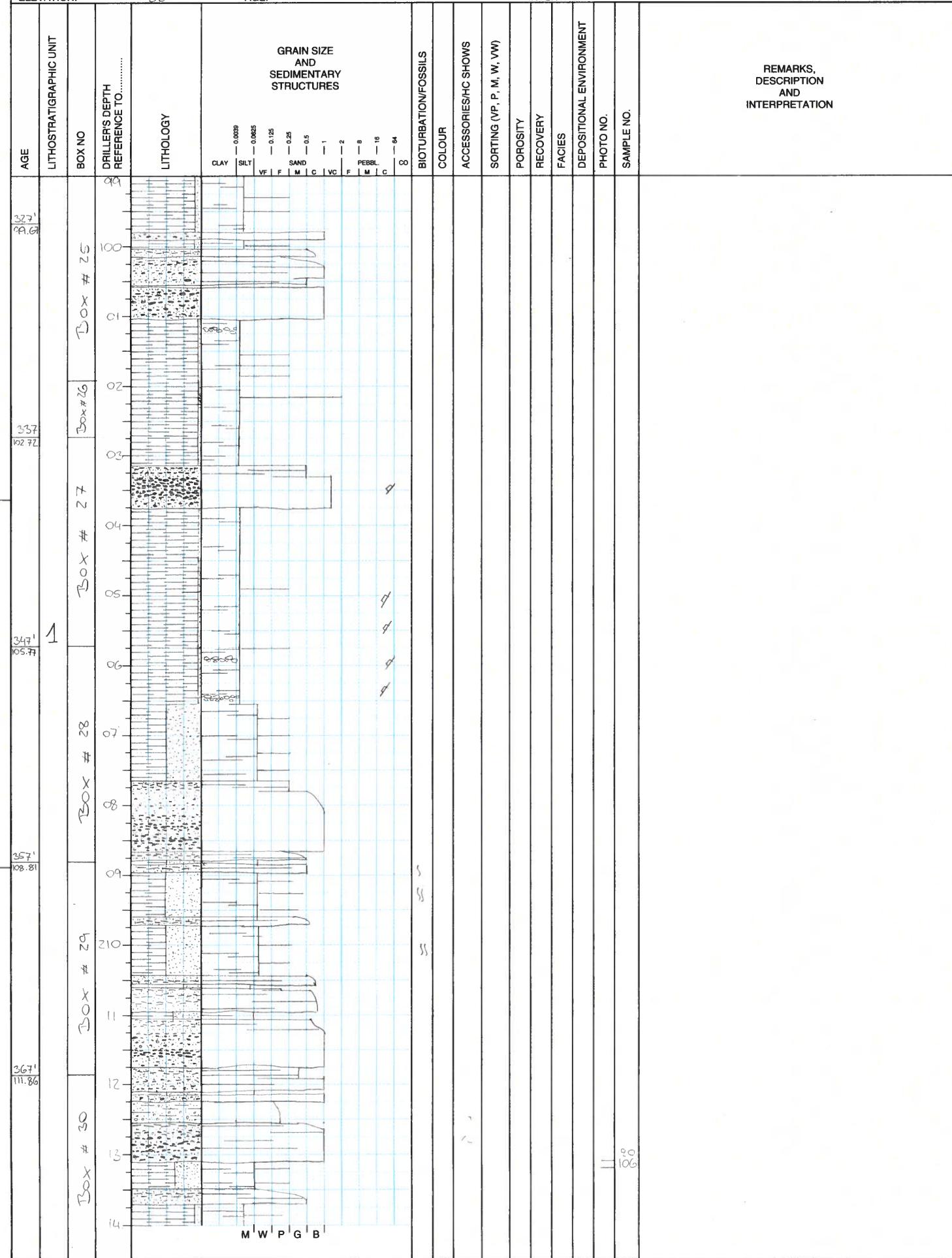
ELEVATION OF DRILL FLOOR
ABOVE GROUND-LEVEL:
UNIT:
AGE:

180 m

434101
WELL NO: GANT #1
BOX NO:
CORE DIAMETER:
INTERVAL:

cm/mm)

SCALE: 1:50
DATE: 1/4-96 - 214
GEOLOGIST: GD

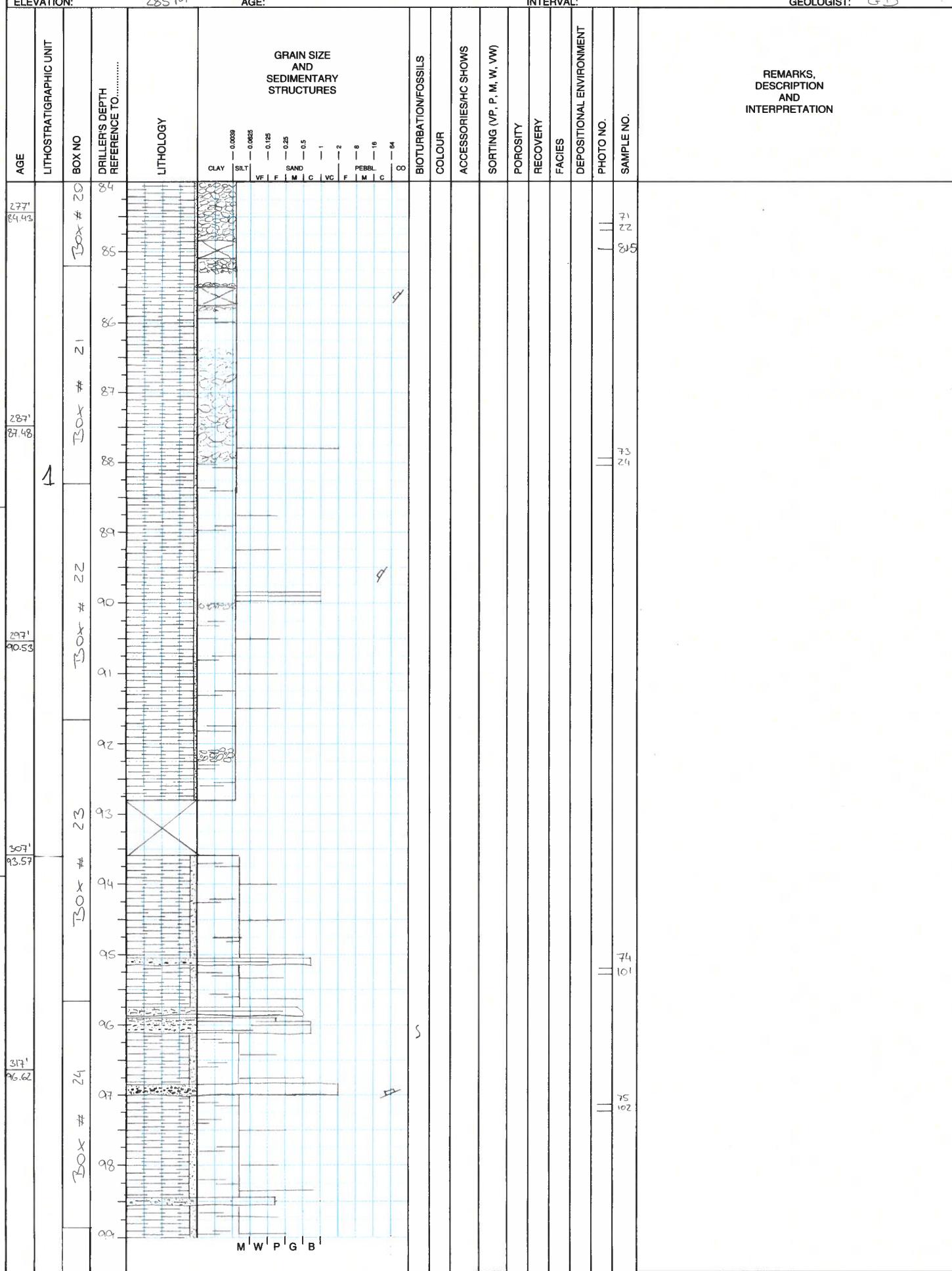


CORE DESCRIPTION
SEDIMENTOLOGICAL DATA SHEETTHE GEOLOGICAL SURVEY OF
DENMARK AND GREENLANDLOCALITY: 70°42' 739' N
UTM COORDINATES: 53°36' 621' W
ELEVATION: 285 mELEVATION OF DRILL FLOOR
ABOVE GROUND-LEVEL:
UNIT:
AGE:

180 m

WELL NO: 439101
BOX NO:
CORE DIAMETER:
INTERVAL:

(cm/mm)

SCALE: 1:50
DATE: 2/4-96
GEOLOGIST: GD

SHEET 56 OF 60

CORE DESCRIPTION

SEDIMENTOLOGICAL DATA SHEET

THE GEOLOGICAL SURVEY OF DENMARK AND GREENLAND

LOCALITY: 70°42.739' N
UTM COORDINATES: 53°36.621' W
ELEVATION: 285 m

LEVEL OF DRILL FLOOR
ABOVE GROUND-LEVEL:
UNIT:
AGE:

1.80 m

439101
GANT#1

459101
GANT #1

(cm/mm)

SCALE: 1:50
DATE: 3/4-96
GEOLOGIST: GJ

CORE DESCRIPTION SEDIMENTOLOGICAL DATA SHEET

THE GEOLOGICAL SURVEY OF DENMARK AND GREENLAND

LOCALITY: 70° 42.739' N
UTM COORDINATES: 53° 36.621' W
ELEVATION: 285 m

ELEVATION OF DRILL FLOOR
ABOVE GROUND-LEVEL:
UNIT:
AGE:

180 m

439101
GANT #1

45101
GANT#1

(cm/mm)

SCALE:
DATE:
GEOLOG

1:50
3/4 AG
GD

SHEET 59 OF 60

CORE DESCRIPTION SEDIMENTOLOGICAL DATA SHEET

THE GEOLOGICAL SURVEY OF DENMARK AND GREENLAND

LOCALITY: 70°42' 739' N
UTM COORDINATES: 53°36' 621' W
ELEVATION: 285 M

LEVEL OF DRILL FLOOR
ABOVE GROUND-LEVEL:
UNIT:
AGE:

1.80 m

439101
GANT # 1

WELL NO: GANT # 1
BOX NO:
CORE DIAMETER:
INTERVAL:

(cm/mm)

SCALE: 1:50
DATE: 3/4-96
GEOLOGIST: G.D.

SHEET 60 OF 60

CORE DESCRIPTION

SEDIMENTOLOGICAL DATA SHEET

THE GEOLOGICAL SURVEY OF DENMARK AND GREENLAND

LOCALITY: 70° 42.739' N
UTM COORDINATES: 53° 36.621' W
ELEVATION: 285

ELEVATION OF DRILL FLOOR
ABOVE GROUND-LEVEL:
UNIT:
AGE:

1.80 ~

439101
GANIT #

(cm/mm)

(cm/mm)

(cm/mm)

(cm/mm)

(Continued)

(Continued)

SCALE: 1:50
DATE: 9/4-96
GEOLOGIST: G.D.

1.50
14-96
GTD