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Tittel

The Kolsvik Au-As-deposit, Bindal, north-central Norway. I: Corelogs.

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Sammendrag

The report presents the corelog for 47 diamond-drillholes (total corelength: 3430 m) drilled by A.S. Sulfidmalm and Terra Mining A/S in the periods 1980-82 and 1985-86, respectively. From the corelogs, the summary corelog-diagrams and the drillhole profiles several conclusions can be drawn regarding ore control and ore genesis. The native gold being generally fine-grained is strongly intergrown with arsenopyrite and is only locally found as tiny visible grains. Mineralisation of economic potential occurs along a system of brittle dextral shear zones at the margin of the Early Silurian Oksdal granite massif. The mineralisation constitutes fracture fillings, veins and breccias of arsenopyrite which nearly invariably are hosted by the competent granitoids and pre-existing quartz veins along the shear zones. Although not much can be said about average ore grades the deposit is estimated to have a total reserve potential in the range 550 000-850 000 tonnes for a 1 m wide and 100 m deep ore zone with ore density of 2,75 tonnes/m3. 250 000 tonnes of this preliminary estimate probably contain enough gold for small scale mining. Further work is recommended.

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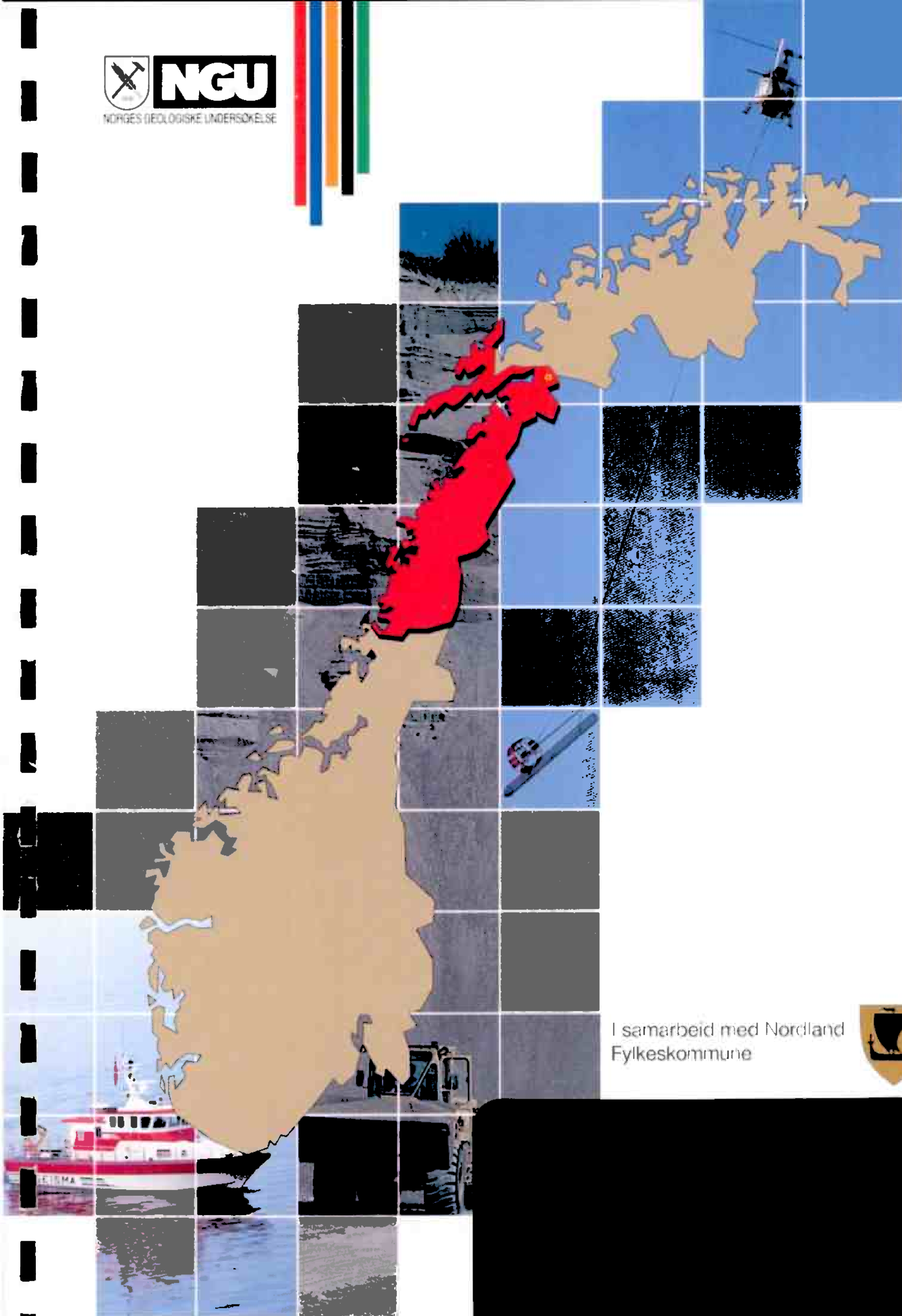

I samarbeid med Nordland Fylkeskommune

NORDLANDSPROGRAMMET 1992 - 2000

NGU REPORT 93.003

The Kolsvik Au-As-deposit, Bindal, North-Central Norway. I: Corelogs

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REPORT

Report no. 93.003	ISSN 0800-3416	Grading: Open

Title:
The Kolsvik Au-As-deposit, Bindal, North-Central Norway. I: Corelogs.

Author: Peter M. Ihlen	Client: NTNF - NGU
County: Nordland	Commune: Bindal
Map-sheet name (M=1:250.000) Mosjøen	Map-sheet no. and name (M=1:50.000) 1825-2 Majafjellet
Deposit name and grid-reference: Kolsvik: 33-397250.7229300	Number of pages: 322 Price: 432,- Map enclosures: 2

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Summary:
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Keywords: Bedrock geology, ore geology, caledonides, gold deposit, shear zone, corelogs and ore potential.

Keywords: Berggrunnsgeologi	Gullforekomst	Malmpotensiale
Malmgeologi	Skjærsone	
Kaledonidene	Borhullslogg	Fagrapport

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FIGURES

SAMMENDRAG

Denne rapport er skrevet på engelsk for å nå et bredere publikum og er først og fremst rettet mot utenlandske bergverksselskap og investorer.

Rapporten gir en detaljert beskrivelse av kjerner fra 42 borhull påsatt i forbindelse med prospekteringsarbeider utført av A/S Sulfidmalm (1980-82) og Terra Mining Norge A/S (1985-86). Det ble totalt boret 47 hull med en samlet lengde på 4048 m. Kjerner med en samlet lengde på 3430 m er logget ved NGU Geodatasenter Løkken hvor kjernene er lagret. Data fra borhullsloggene i appendixet er sammenstillet i forenklet form i borkjerne-diagrammet og borhulls-profilet for hvert borhull. På grunnlag av borhullsloggene er det trukket en rekke konklusjoner med hensyn til dannelsen av gullmineraliseringene og utviklingen av assosierte magmatiske, hydrotermale og tektoniske prosesser (Tabell 1. Tectonic, intrusive and hydrothermal events in the evolution of the Kolsvik Au-As deposit). En foreløpig vurdering av mulige tonnasjer av gullmalm er også gitt sammen med anbefalinger for videre arbeid.

Kolsvik gull-arsenkis-forekomst som ble funnet av gårdbruker Konrad Kolsvik i 1910 ble gjenstand for flere perioder med prospekteringsarbeider etter at det ble påvist gull i 1925. De fleste av stollene og sjakten vist i tegning 93.003-02 ble laget i 1930-årene da det svenske gruveselskapet Boliden foretok undersøkelser. Oppgangen stoll ble sprengt ut i 1986 av Terra Mining A/S i et forsøk på å teste gull-innholdet i den nedre del av F-sonen.

Forekomsten ligger ca. 5 km sør for Kolsvik Kraftstasjon ved Kolsvikbogen på sørsiden av Tosenfjorden (Fig. 1). Kolsvikbogen kan nås med skyssbåt fra Terråk og Lande i forbindelse med daglig transport av arbeidere til og fra kraftstasjonen som drives av Nord-Trøndelag Elektrisitetsverk og Helgeland Kraftlag. Fra kraftstasjonen går det en dårlig grusvei opp til de gamle gruvene.

Gull-arsenkis mineraliseringen er knyttet til et system av forkastninger som gjennomsetter intrusiver, migmatittiske gneiser, kalksilikatgneiser, amfibolitter, glimmerskifre, amfibol-førende biotittgneiser og marmorer på grensen av Oksdal granittmassiv (Fig. 2-5 og tegning 93.003-01). Granittmassivet er dominert av grå to-glimmer granitter med inneslutninger av gabbro, monzodioritt og kvartsmonzonitt. Eldre intrusiver som granodiorittiske øyegneiser og biotitt-rike anatektiske granitter/tonalitter finnes bare i suprakrustalene. Sentralt i forekomsten opptrer sene intrusjoner av hvite leukokratiske muskovitt granitter som danner linseformede kropper og gjennomsettende ganger og som ofte er vertsbergart for mineraliseringen.

Forkastningsplanene og foliasjonsplanene og båndingen i de metasedimentære bergarter viser normalt moderat til steilt østlig fall. Bergartene langs forkastningsplanene viser tegn til både duktil (plastisk) og sprø deformasjon. Kolsvikbogen-Ringvann forkastningssone (KRFZ) som mineraliseringen synes knyttet til viser dekstrale forskyvninger (sideveis mot høyre). Sonen er forskjøvet i forbindelse med de yngre forkastningssonene (Finnlia-

Oksdal, FOFS og Tverrelva-Stavvassfjell, TSFS) som er normale forkastninger med en antatt dekstral forskyvningskomponent.

Gullmineraliseringen består hovedsakelig av arsenkis og gedigent gull som er det eneste økonomisk utnyttbare mineral. Gullet som er legert med 4-30 % sølv finnes vanligvis intimt sammenvokst med arsenkis i form av 0,001-0,01 mm store inneslutninger og 0,01-0,2 mm store korn langs kanten av arsenkis krystallene og mellom disse. Synlig gull er stedvis tilstede som 0,2-1 mm store korn i arsenkis-fattige kvartsganger (Klondyke-Søndre Skarstoll, C2-gangen, K-sonen over Kløfta og Storsteinen). Arsenkis-årene inneholder også små mengder svovelkis, blyglans, scheelitt, magnetkis, kopperkis, vismutglans, gedigen vismut, kobellitt ($Pb_5 (Bi,Sb)_8 S_8$), giessenitt ($Pb_{18}Cu_2Bi_{12}Sb_3S_{60}$), markasitt, rutil, thoritt, uraninitt, molybdenglans og flere ukjente Bi-Sb-sulfosalter, Bi-tellurider og AuBi-sulfid. Den intime sammenvoksning mellom gedigent gull og arsenkis og mangelen på gull langs sprekker i kataklastisk arsenkis antyder at de ble utfelt mer eller mindre samtidig.

Arsenkisen finnes som massive til semi-massive årer, slirer og breksjesement og dessuten som sprekkebelegg og som disseminasjon i breksjegrunnmasse. Den ledsages sjelden av gangmineraler som kvarts. Bare lokalt er arsenkis utfelt sammen med kvarts som sprekkefyllinger og breksjematriks. I 99,5 % av tilfellene er arsenkis funnet som årer i granittiske mylonitter og i breksjerte og fragmenterte intrusiver og pre-eksisterende kvartsganger. De inkompetente suprakrustale bergartene har oppført seg plastisk under den sprø deformasjonen av de kompetente bergartene, dvs. granitoidene og assosierte kvartsganger. Dette betyr at mineraliseringen både er strukturelt og litologisk kontrollert.

De fleste bergartene viser tegn til gjennomgripende og/eller sprekkebundet hydrotermal omvandling slik som skarnifisering, silisifisering, granitt-bleking (nedbryting av biotitt), muskovittisering, serisittomvandling, klorittisering, epidotisering, rød hematittisering av granittene og leiromvandling. Arsenkisårene fører ingen klar sidesteinsomvandling, men synes tidsmessig å være knyttet til en sen periode med silisifisering og serisittomvandling som pre-daterer dannelsen av de sene forkastningene (FOFS-TSFS) med assosiert klorittomvandling.

De rikeste og mest kontinuerlige mineraliseringene opptrer langs forkastningene tilhørende KRFS og noen meter inn i den oppsprukkete sidestein. Av de tidligere definerte malmsoner (Fig. 6 og 7) er det spesielt F- og C-sonen som har driftspotensialer. F-sonen omfatter et system av forkastninger (F1 til F11) hvorav minst 7 har muligheter for å føre kontinuerlig mineralisering. Analyser av borkjernene fra disse soner gir mange steder økonomiske gehalter (større enn 7 gram/tonn gull) over 1-3 m skjæringslengder (Tabell 3. Potential tonnages of the individual fault-related ore zones). Dette gjelder spesielt i den søndre halvdel av C-sonen og langs F4-forkastningen hvor en samlet tonnasje på ca. 250 000 tonn kan opptre med økonomiske gehalter over 2 m mektighet og ned til 100 m dyp.

Et anslag av potensielle tonnasjer langs de enkelte forkastninger er basert på 1 m mektighet av malmsonen, 2,75 tonn/m³ egenvekt av malmen og 100 m utstrekning mot dypet langs malmplatens fall. De kjente deler av forekomsten utenom B-sonen med lave gullverdier har et potensiale på ca. 550 000 tonn hvis gullinnholdet kan påvises å overstige et økonomisk utnyttbart nivå. Hvis også mulige forlengelser av D-, F- og K-sonen som ikke er undersøkt med kjerneboringer tas med i beregningene vil den potensielle tonnasje stige med ca. 175 000 tonn. Tonnasje-tallene kan fordobles hvis mektigheten av malmsonene økes til 2 m.

Malmreserver av disse størrelser er klart interessante med hensyn til økonomisk drift i liten til mellomstor skala. Det anbefales derfor at forekomsten undersøkes videre med analysering av eksisterende borkjerner (spesielt forkastningene med sidestein), avdekking og prøvetakning av C-sonen så langt nord som mulig, grøfting og prøvetakning i A-, B- og B7-sonen og kjerneboring som skal teste mulige forlengelser av D-, F- og K-sonen samt kontinuiteten av de allerede påviste malmsoner. Undersøkelsesprogrammet har en maksimums kostnadsramme på 5 millioner kroner avhengig av antall kjerneprøver som analyseres, tetthet av prøvetaknignsprofiler i A, B og C sonene og lengden og antallet av kjerneborhull. Dette vil bli behandlet i mer detalj i neste rapport.

1 INTRODUCTION

The Kolsvik Au-As deposit is situated at 65°10'5"N and 12°48'28"E in the Bindal Commune, Nordland County, north-central Norway (Fig. 1 and 2). It outcrops in the steep scree covered hillsides of the Bogadalen valley about 5 km south of the quay at the Kolsvikbogen bay on the southern side of the Tosenfjord.

The Kolsvikbogen quay can be reached by boat from Lande and the commune centre at Terråk which have road connections with the towns of Brønnøysund, Mosjøen, Namsos and Trondheim. The boat is operated by Nord-Trøndelag Elektrisitetsverk and Helgeland Kraftlag in conjunction with daily transport of workers to the Kolsvik hydro-electric powerstation situated 1 km up the Bogadalen valley (Fig. 3). A good quality road leads up to the powerstation from where a dirt road to the old exploration adits was built in 1985.

The claims on the deposit will be held by the Norwegian State until September 1994. A/S Sulfidmalm a subsidiary of Falconbridge leased the mineral rights for a five years period in 1979. These were later taken over by Terra Mining Norge A/S (50 % owned by Norsk Hydro a.s.) in 1985. In May 1988 A/S Bindal Gruver leased the rights for a five years period and applied in September 1993 for a new one year leasing period.

Since the first discovery by a local farmer, Konrad Kolsvik, in 1910, several periodes of exploration have taken place. The first coredrilling was carried out by the Swedish mining company Boliden in the thirties when 3 holes were drilled. All of the exploration adits (9) with cross-sections measuring 1,5 x 1,8 m^2 and a shaft were made during this period. The Geological Survey of Norway (NGU) drilled a few holes in 1962. The location and orientation of the drillholes from the Boliden period are well known (Plate 2), but not from NGU's drilling. Only the cores from one of NGU's drillholes are available.

In 1980-82 A/S Sulfidmalm drilled 36 holes with a total length of 3333 m and varying between 6 m and 271,65 m with most of them around 100 m. Previously there existed no detailed log for these holes. Simplified logs exist for DDH 1 to DDH 20 in Sivertsen (1981) and Sivertsen et al. (1982).

In 1985-86 Terra Mining A/S drilled 13 holes all with lengths of less than 100 m, in a total of 715 m. In the Commissioner of Mines' archives (Report BV 578) there exist simplified corelogs for four of these holes (DDH 50-54). The company also blasted a 30 m long adit (4 x 4 m^2) in order to test the ore grades in the lower part of the F ore zone as defined by A/S Sulfidmalm. The ore grades were clearly too low to encourage further investigation.

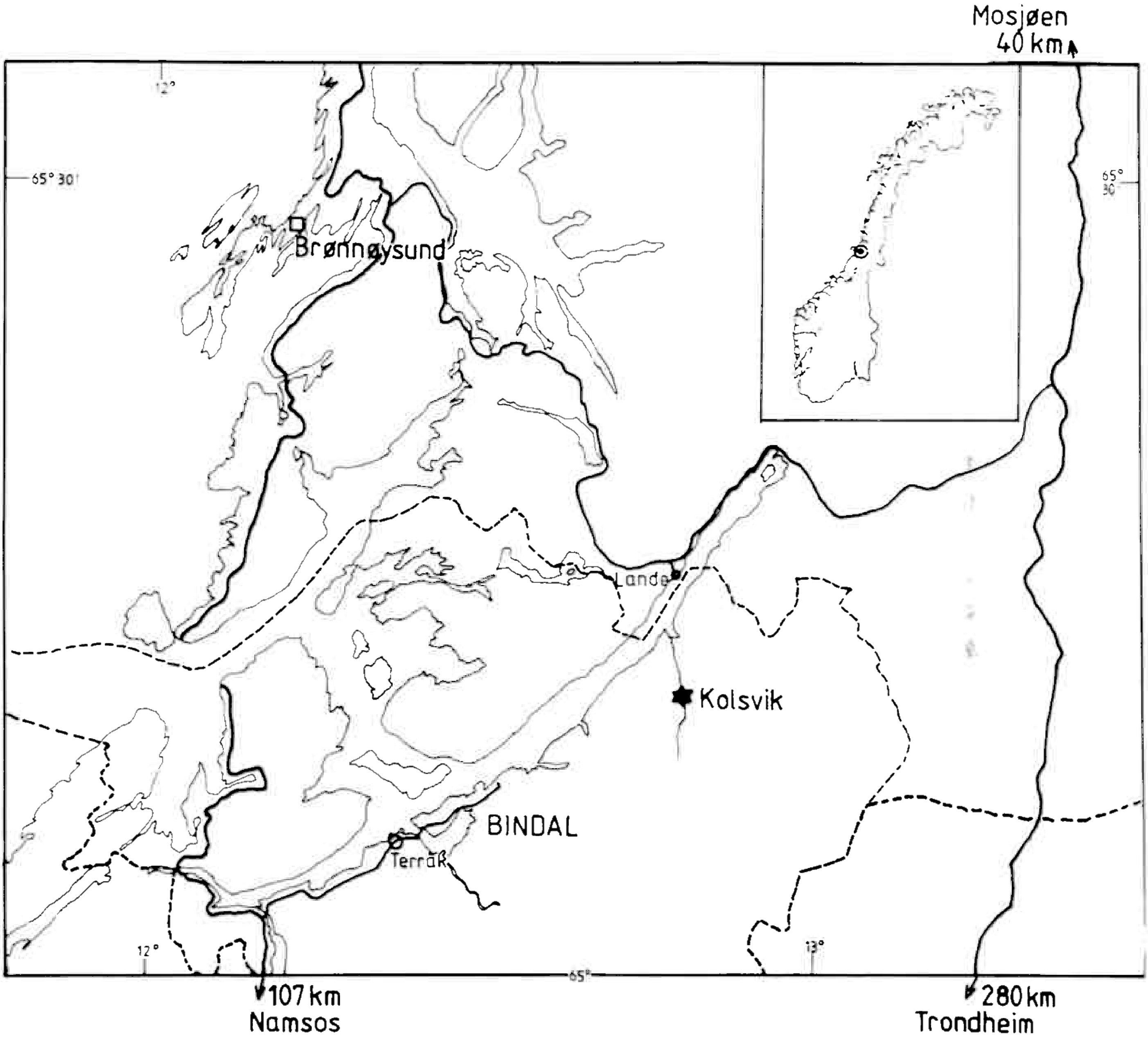


Fig. 1. Map showing the location of the Kolsvik deposit in southern Helgeland. The main roads and community centres are shown together with the border of the Bindal Commune and southern border of Nordland County (Heavy dashed lines).

In 1986 NGU started a geological survey of the deposit in connection with a research program on the geology and geneses of epigenetic gold deposits in the Norwegian Caledonides. The work was carried out in collaboration with scientists at the University of Oslo and with financial support from The Royal Norwegian Council for Scientific and Industrial Research (NTNF) and the communes in the Helgeland Region. Since there existed no open file reports on the deposit and only a short contribution to the geology had been given (Nixon et al. 1985) it was found necessary to remap the deposit. The geological mapping was mainly carried out by the present author in the summers of 1986 and -87. The lack of any proper topographical maps covering the deposit made it necessary to set up a grid net (25 m x 25 m) for the mapping.

The NTNF-supported research program ended in 1989. Encouraged by renewed interest in exploring the area, i.e. by A/S Bindal Gruver and Bindal commune, NGU prolonged its work for a three year period until the end of 1992. During this period all the accessible exploration adits were remapped and ore samples were collected from a number of rediscovered ore zones.

During the summer 1992 the area was photographed from the air in order to contruct an 1:1000 scale topographic map with 1 m contours and which covers an area of 700 m x 1300 m with the longest dimension in N-S direction. All the drillhole collars, NGU's grid points and fix-points for the adits were plotted in by a surveyor from the commune office at Terråk. The geology was later transfered from the grid map to the new topographical map shown in plate 1 (Tegning nr. 93.003-01). The drillholes and adits are depicted in plate 2 (Tegning nr. 93.003-02).

All the cores (3430 m) described in the appendix of this report are stored at NGU's Geodata Centre at Løkken, 70 km south of Trondheim. The ore grade values given in the summary corelog-diagrams are taken from the Commissioner of Mines reports BV 553 (Sivertsen and Mjelde 1983) and BV 578. The simplified corelog-diagrams for DDH 50-56 are taken from BV 577 and BV 578. The location and orientation of DDH 55 and 56 are very approximate as shown in BV 578.

The aim of this report is primarily to give a detailed description of the cores as a basis for the definition of potential ore reserves and ore controlling parametres and secondarily for the construction of a deposit model.
Since genetic models will change with time the author has attempted to use non-genetic or pure descriptive terms in the corelog.

The different types of information appearing from the corelog will be dealt with in more detail in forthcoming reports including the ore potential (Ihlen 1995a) and the geology of the deposit (Ihlen 1995b). The latter will contain all the necessary documentation and references for statements made in the first two reports.

The cores were logged by the author over a 6 weeks period. All the figures and maps were drawn up by Leif Furuhaug and Astri Hemming whereas the report and appendix were typed by Gunn Sandvik. Senior geologist Carl O. Mathisen corrected the English text whereas Professor Arne Bjørlykke reviewed the first draft of the report.

2 GEOLOGICAL OUTLINE

The deposit is situated in the contact-zone of **the Oksdal granite massif** (Nordgulen 1992, Nordgulen and Sundvoll 1992) which is assumed to be of Early Silurian age (Nordgulen et al. 1993). It forms part of the Bindal Batholith covering large areas in the Helgeland Nappe Complex (Fig. 2) which constitutes the Uppermost Allochthon in the Caledonides of north-central Norway (Gee et al. 1985; Stephens et al. 1985). The geological evolution of the deposit is shown in Table 1.

The composite Oksdal granite intrudes the medium-grade rocks of the Grytendal Complex, the Bogadal Formation and the Tosenfjord group (Fig. 3) which are found as numerous inclusions in the granites near the roof of the massif. In the deposit the granite intrusives are comprised by medium- to coarse-grained grey biotite-bearing quartz monzonites and light grey two-mica granites, the latter representing the main intrusive phase. In the central part of the deposit occurs a late phase of white leucocratic muscovite granite with variable grain size and biotite content, ranging from aplitic types through medium-grained types to pegmatites.

The supracrustal country-rocks include marbles, amphibolites, amphibole-biotite gneisses, biotite gneisses and calc-silicate gneisses of **the Bogadal Formation** (Fig. 4) as well as migmatitic sillimanite-kyanite-biotite gneisses of **the Grytendal Complex**. The migmatites also contain irregular bodies of biotite-rich anatectic granites and thin zones of calc-silicate gneisses, amphibolites, mica schists and marbles. Sill-like bodies of granodiorititic augengneisses occur inside the Bogadalen Formation whereas monzodiorite bodies and sills are found in both of the main units.

A reconstruction of the pre-intrusive position of the supracrustal rocks (Fig. 5) show that the Bogadal Formation originally occupied the core of an isoclinal D2-fold with N-S striking axial plane dipping 50-70°E. The foliation and banding in the wallrocks therefore dip mainly towards the east except locally where later open folds have formed during the D3-deformation or in association with movements (drag) along the shear zones. In connection with these N- to NE-plunging (10°-30°) folds westerly dipping foliation/banding may be found.

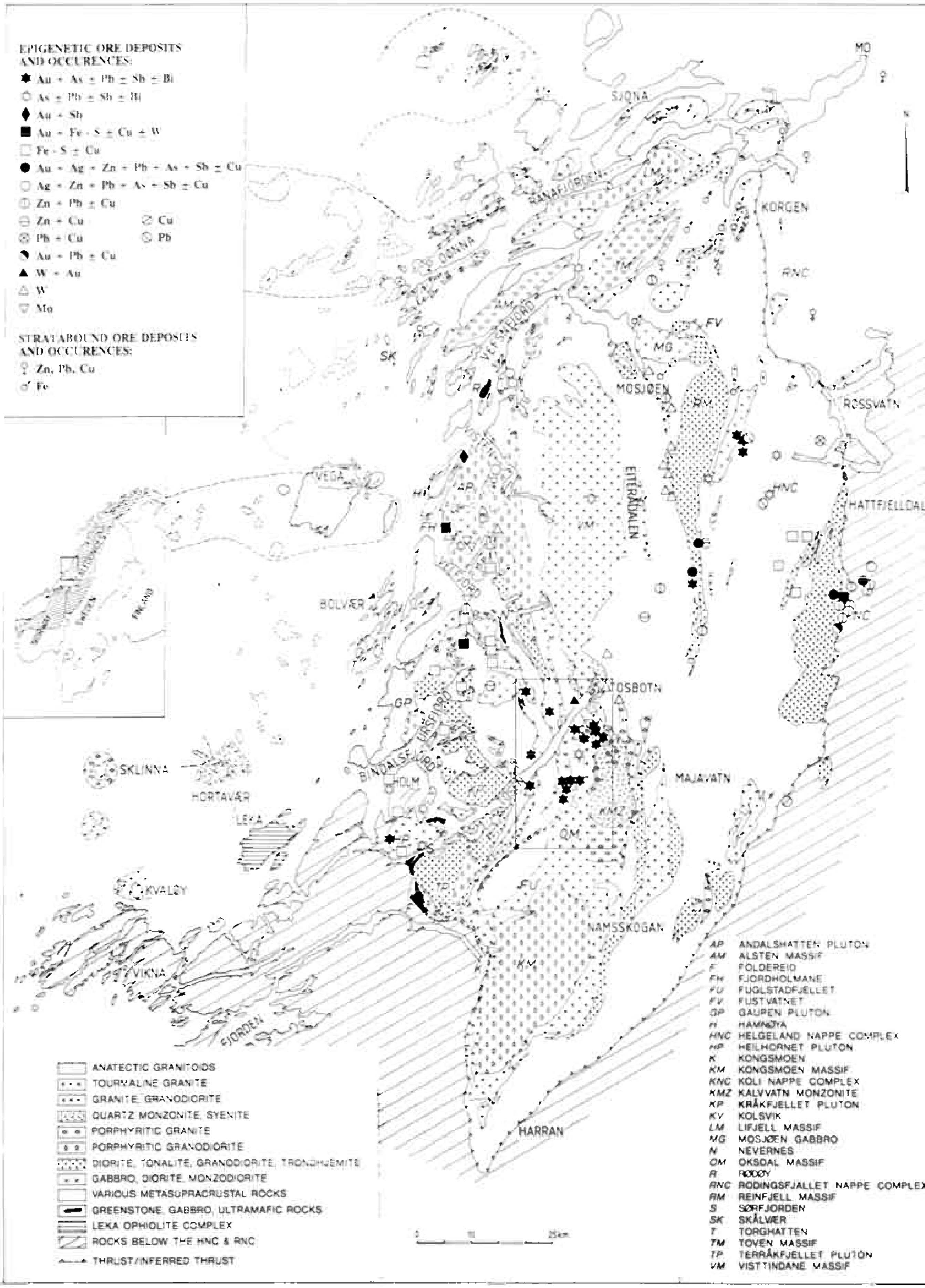
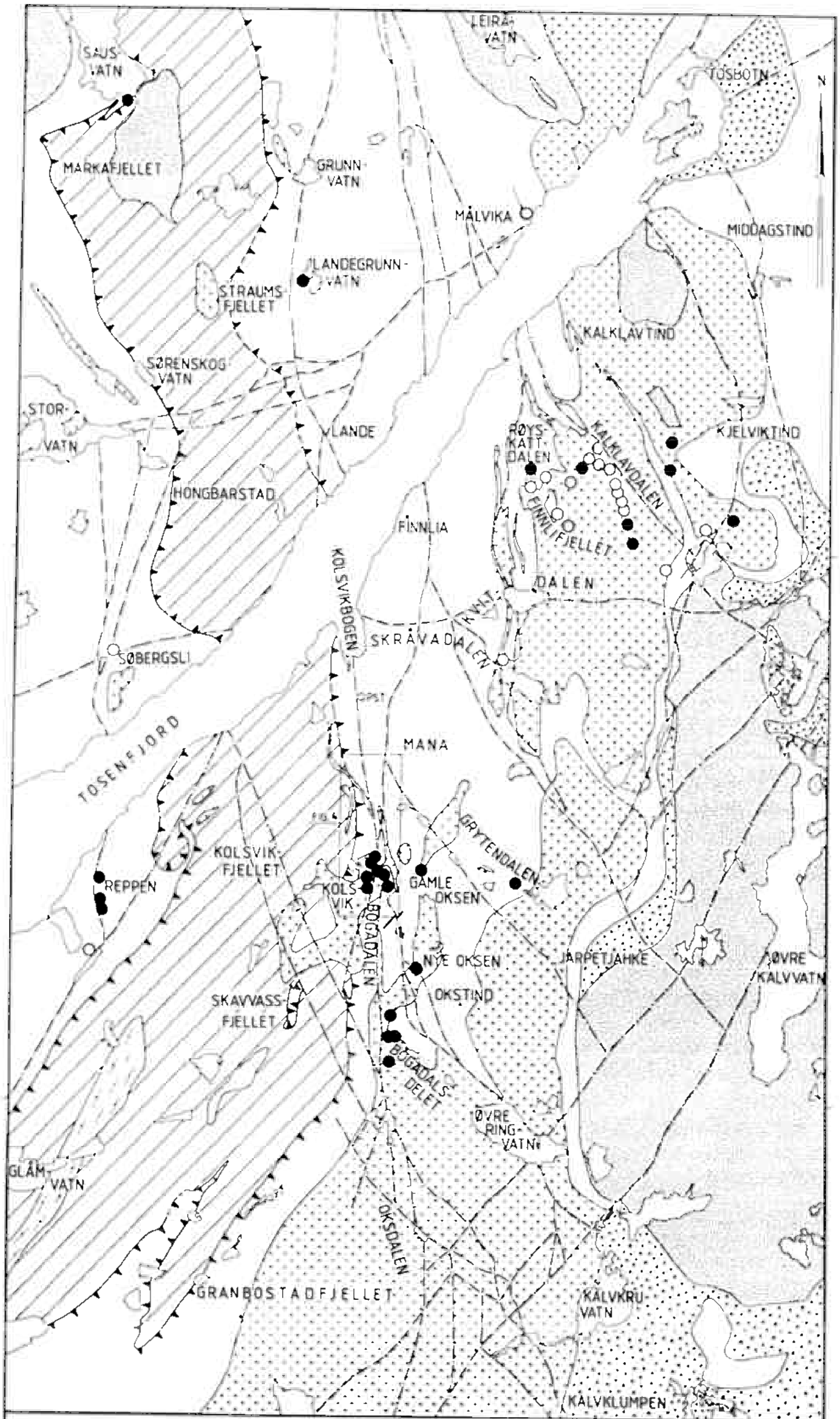


Fig. 2. Map showing the distribution of epigenetic ore deposits spatially associated with the Bindal Batholith. The geology is taken from Nordgulen (1992).The location of Fig. 3 is shown as a rectangle.

Table 1. **Tectonic, intrusive and hydrothermal events in the evolution of the Kolsvik Au-As deposit**

TECTONIC	INTRUSIVE	HYDROTHERMAL
D6: Late faulting. Development of early breccias and late crush zones along reactivated faults.		**Clay gouge** formation and argillic alteration. **Stilbite-calcite-chlorite** cemented breccias and veins with brick-red envelopes.
D5: Normal faulting. Semi-ductile deformation along fault planes. Mylonite formation in W-LG and ductile shearing of fragments in cataclasites and breccias. Main movements along FOFZ and TSFZ. Reactivation of KRFZ and shearing of ore veins.		**Red granite alteration.** Quartz-chlorite and/or epidote veins. **Pyrite deposition.** **Chlorite alteration,** veining and cementation of breccias. Chlorite-sericite veining and alteration.
D4: Strike-slip faulting. Semi-brittle dextral shearing with associated cataclases, brecciation and opening of tension gashes along the KRFZ and related splays.	Meta-dolerite dykes.	**Gold-arsenopyrite ± quartz** veining and breccia cementation. **Sericite alteration.** **Quartz-muscovite** veining and associated muscovite alteration. Biotite alteration of monzodiorites.
	White aplo-granite dykes. Pegmatites.	**Milky quartz veins.** Soot-grey alteration. - Bleaching
D3: Late Scandian deformation. Open folds with N- to NE-plunging (0°-30°) axes and boudinaged granite dykes. Mylonites formed along high-angle faults (E dip) and low-angle (W dip) quartz veins. EARLY DEVONIAN	**White leuco-granite,** partly biotite-spotted (W-LG).	
SCANDIAN COLLISION EARLY SILURIAN	**Quartz-rich leuco-granite** **Two-mica granite** Pegmatite dykes **Quartz monzonite** **Monzodiorite**	**Quartz veining and bleaching.** **Skarn alteration** (gr.-cpx.) with associated pyrrhotite-chalcopyrite dissemination. Late pyritisation and retrogradation.
LATE ORDOVICIAN **D2: Nappe stacking.** Isoclinal folding with associated nappe imbrication under medium-grade metamorphism.	**Anatectic granite**	
	Porphyritic granodiorite	



LEGEND:

- DOLERITE DYKE
- TWO MICA GRANITES (OKSDAL MASSIF)
- GABBRO MONZODIORITES
- PORPHYRITIC BIOTITE GRANITE
- TONALITE TRONDHJEMITE
- TOSENFJORD GROUP — SERPENTINITES AND GABBROS OVERLAIN BY CONGLOMERATES, PSAMMITES SCHISTS, CALCSILICATE GNEISSES, MARBLES AND AMPHIBOLITES
- GRYTENDAL COMPLEX — MIGMATITIC TWO-MICA GNEISSES, WITH UNITS OF MARBLES, CALCSILICATE GNEISSES, AMPHIBOLITES AND QUARTZITES
- D2 THRUST ZONE, BARS ON THE OVERLAYING NAPPE, CERTAIN/UNCERTAIN
- FAULT- AND FRACTURE ZONES WITH KINEMATIC VECTORS (DEXTRAL)
- REPORTED GOLD MINERALIZATION
- SURVEYED GOLD MINERALIZATION
- SCHEELITE-BEARING SKARN (MÅLVIKA)
- PST HYDRO-ELECTRIC POWERSTATION

0 1 2 3 4 5 km

Fig. 3: Simplified geological map of the Tosenfjord area showing the distribution of gold deposits and location of fig. 4. The geology is based on Nordgulen et. al. (1992), Ø. Nordgulen, pers. comm. (1992) and mapping by the author.

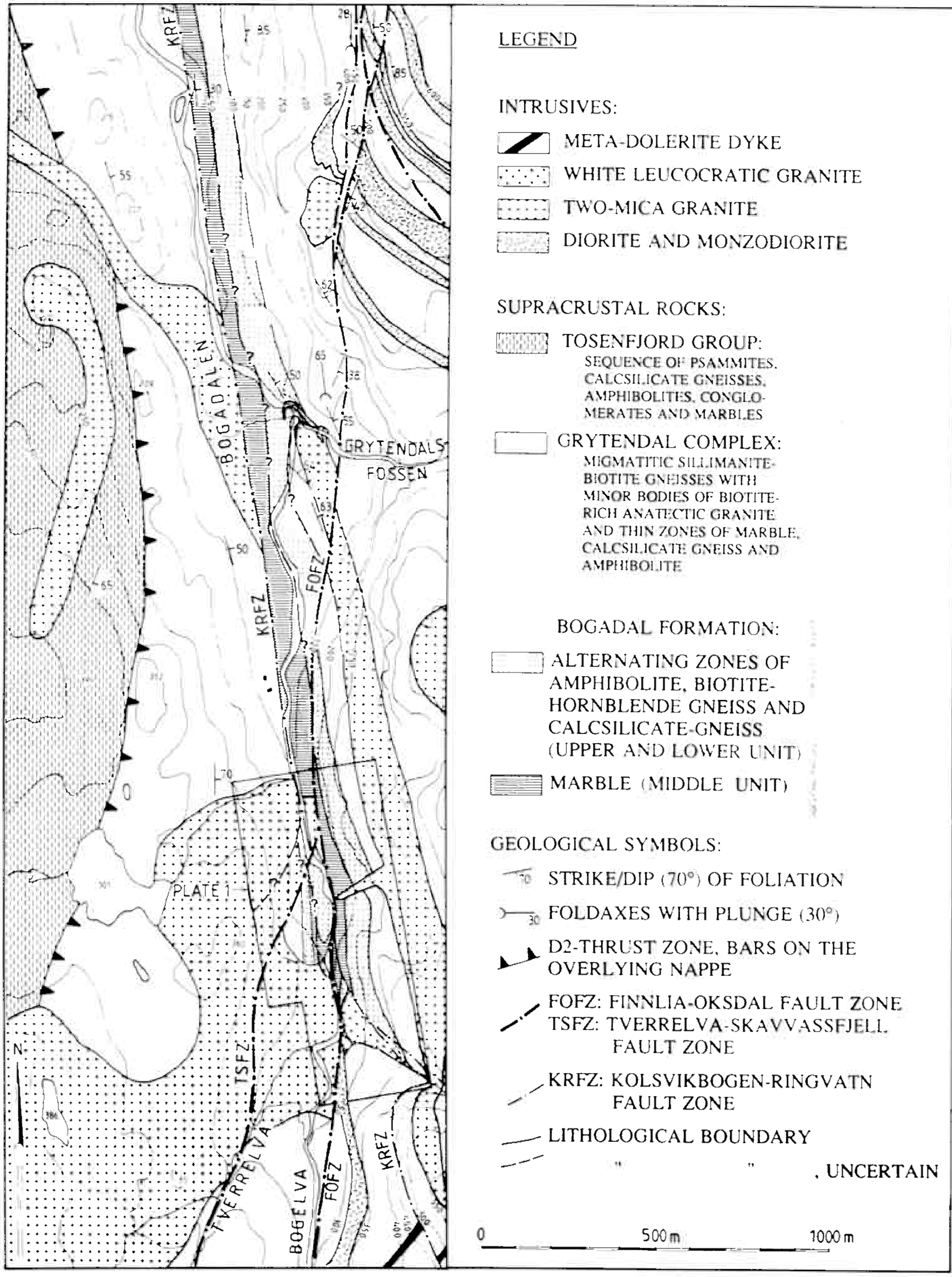


Fig. 4. Geological map of the Bogadalen valley with the location of plates 1 and 2 covering the Kolsvik deposit.

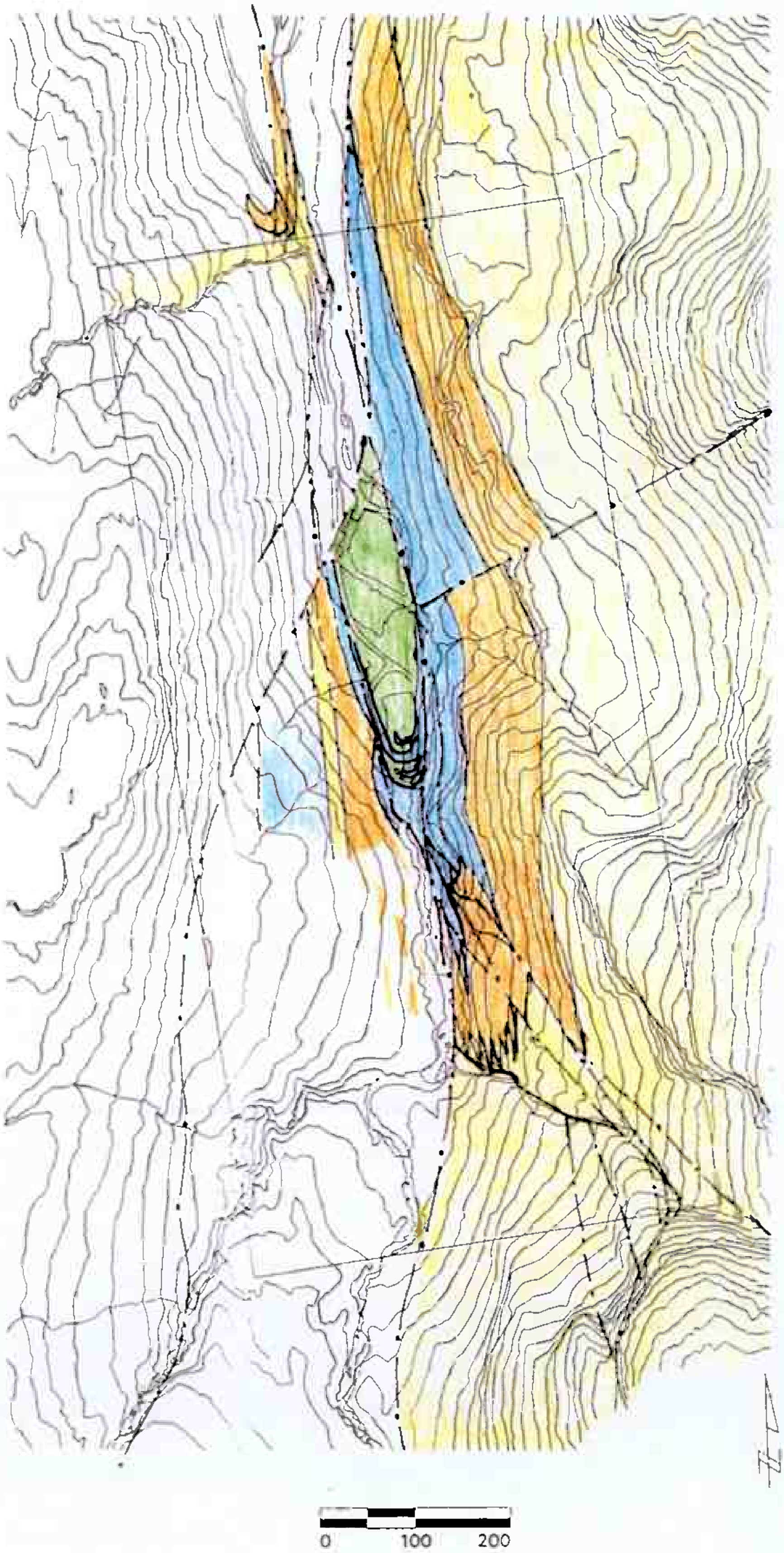


Fig. 5. The major supracrustal units in the faulted isoclinal D2-synform in the centre of the Kolsvik deposit. The reconstruction was made by removing the intrusive rocks. Green: Interlayered migmatites, calc-silicate gneisses, amphibolites, biotite gneisses/-schists and amphibole-biotite gneisses. Blue: Banded calcite marbles. Brown: Interlayered amphibolites and amphibole- biotite gneisses with thin marble units. Yellow: Migmatitic kyanite- biotite gneisses.

The ore mineralisation is structurally controlled by a ductile to brittle high-angle shear zone called the Kolsvikbogen-Ringvann fault zone (KRFZ). It shows dextral displacements of a metadolerite dyke in the southern part of the area (Fig. 4). It is characterised by the presence of early formed mylonites which are cut by fault breccias with associated Au-As-mineralisation. The KRFZ also appears to have controlled the injection of the leucocratic granites occurring in the central part of the deposit where they constitute an important host-rock for the mineralisation. They may represent one of several possible sources for the gold-bearing solutions.

The gold mineralisation is mainly comprised of arsenopyrite and with native gold containing 4-30% Ag as the only economic important mineral. The native gold may locally occur as visible grains (0,2-1 mm) in sheared and fractured quartz veins, but is most commonly encountered as microscopic grains (1-50 μm) intimately intergrown with arsenopyrite. The arsenopyrite veins also contain subordinate to accessory amounts of pyrite, galena, scheelite, pyrrhotite, chalcopyrite, bismuthinite, native bismuth, marcasite, kobellite ($Pb_5(Bi,Sb)_8S_8$), giessenite ($Pb_{18}Cu_2Bi_{12}Sb_3S_{60}$), rutile, thorite, uraninite, molybdenite and several unknown Bi-Sb-sulphides, Bi-tellurides and a AuBi-sulphide.

The intimate intergrowth of native gold and arsenopyrite containing abundant inclusions of native gold and the rare occurrence of native gold along fractures in cataclastic arsenopyrite may indicate that the native gold was coeval with the precipitation of arsenopyrite.

The arsenopyrite occurs most commonly as massive to semi-massive veins, veinlets and irregular aggregates. In addition it is found as joint-coatings and as dissemination and semi-massive matrix in breccias and ultracataclasites. It is usually not accompanied by any gangue minerals such as quartz. The Au-As-mineralisation is nearly invariably associated with mylonitic, brecciated and/or fractured granites and quartz veins therein. Locally these sheared, massive to vuggy quartz veins occur in some of the monzodiorites, amphibolites and on rare occassions in the migmatites. The incompetent supracrustal rocks which behaved more ductilly during the shearing/faulting contain generally no mineralisation. This emphasizes both the lithological and the structural control of the Au-As-mineralisation being mainly hosted by the granites and pre-existing quartz veins along the fault structures.

Most of the rocks in the deposits show variable signs of pervasive to fracture bound hydrothermal alteration. It includes skarnification of the marbles, silicification of the granites, bleaching of the two-mica granites (dissolution and replacement of biotite by muscovite), muscovitisation of the granites, quartz-sericite alteration of especially the leucocratic granites, ankerite veining, chloritisation, argilitisation connected with fault gouges and chlorite-calcite-stilbite and epidote veins with associated red colouration of the granites. The mineralisation seem to post-date the sericite-alteration event and pre-date late chlorite alteration (Table 1).

The richest and most continuous Au-As mineralisation occurs along the KRFZ and associated splays. It may extend for several metres into the granitic wallrocks on both sides of the fault-plane. Sheared and brecciated quartz lenses and veins with a thickness of less than 1 m are developed along the faults. They occur especially in areas where the fault-planes change direction or splays deflect from the main structures. These mineralized quartz veins frequently contain visible gold.

The orientation of the shear zones on a local scale is often found to be governed by lithological contacts and pre-existing quartz veins leading to the development of anastomostic systems of faults. Such systems with abundant splays are common in areas with many xenoliths, interdigitating contacts and quartz veins as in the C- and F-zone.

The mineralisation that occurs associated with the KRFZ has previously been subdivided into a number of **ore zones** which were labelled in alphabetic order, i.e. the B-, C-, D-, E- and F-zone. The location of these zones coincide roughly with the presently defined, fault-related ore zones and therefore are labelled in accordance with the old system. The ore zone at Kløfta canyon is introduced as the K-zone by the present author. As despicted in Fig. 6 there also exist other ore zones peripherally to the KRFZ. These include the A1-, A2-, B8-, B7- and E-zone.

The ore zones along the KRFZ are assumed to be off-set by the younger semi-ductile **Finnlia-Oksdal fault zone (FOFZ)** and its splay termed **the Tverrelva-Skavvassfjell fault zone (TSFZ)**. These fault zones are characterised by the presence of clay-gouge, strong chlorite alteration and chlorite and calcite-stilbite in veins and breccias with associated red colouration of the feldspar in the wallrocks. No mineralisation has so far been encountered along these faults which nevertheless may have been initiated as fracture zones during the development of the KRFZ.

The kinematic vectors describing the displacements along the FOFZ and TSFZ are difficult to assess. Probably they represent high-angle reverse faults with dextral displacements like the KRFZ. If this is the case it means that the K-, C- and B-zone originally represented one continuous ore zone deflecting from the F-zone (incl. the D-zone) at the Humpvann creek and the Storstein adit (Fig. 7).

All the major fault zones show steep easterly dips, i.e. $70^\circ \pm 15^\circ$. Locally, however, there occur thin mylonites along sheared quartz veins with steep ($70^\circ \pm 10^\circ$) to flat ($30^\circ \pm 10^\circ$) westerly dips.

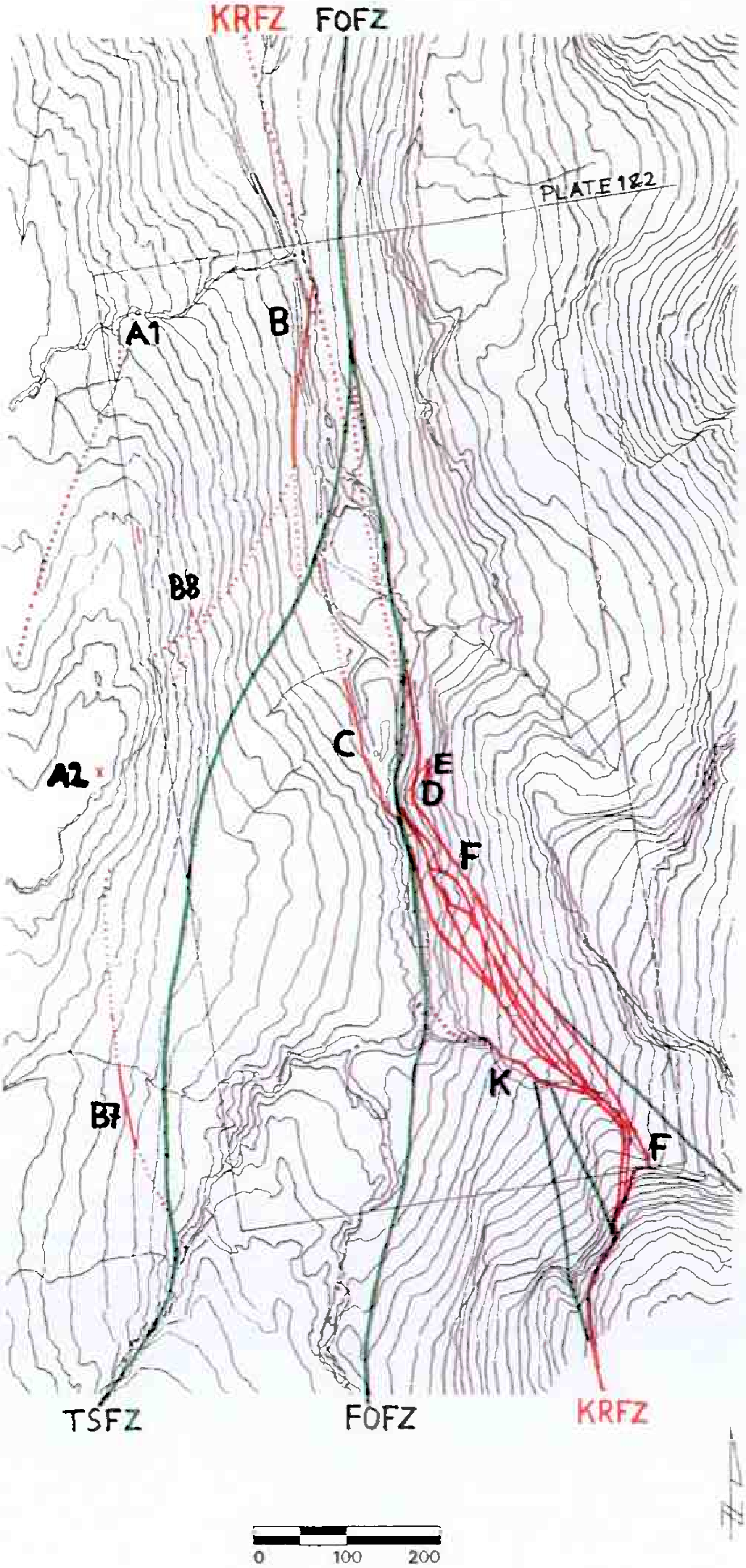


Fig. 6. Distribution of fault-related ore zones in the Kolsvik deposit. The red lines indicate ore zones with known mineralisation or their very probable extensions whereas the red dotted lines indicate postulated extensions of the ore zones. The green lines show the location of the late faults, e.g. FOFZ and TSFZ.

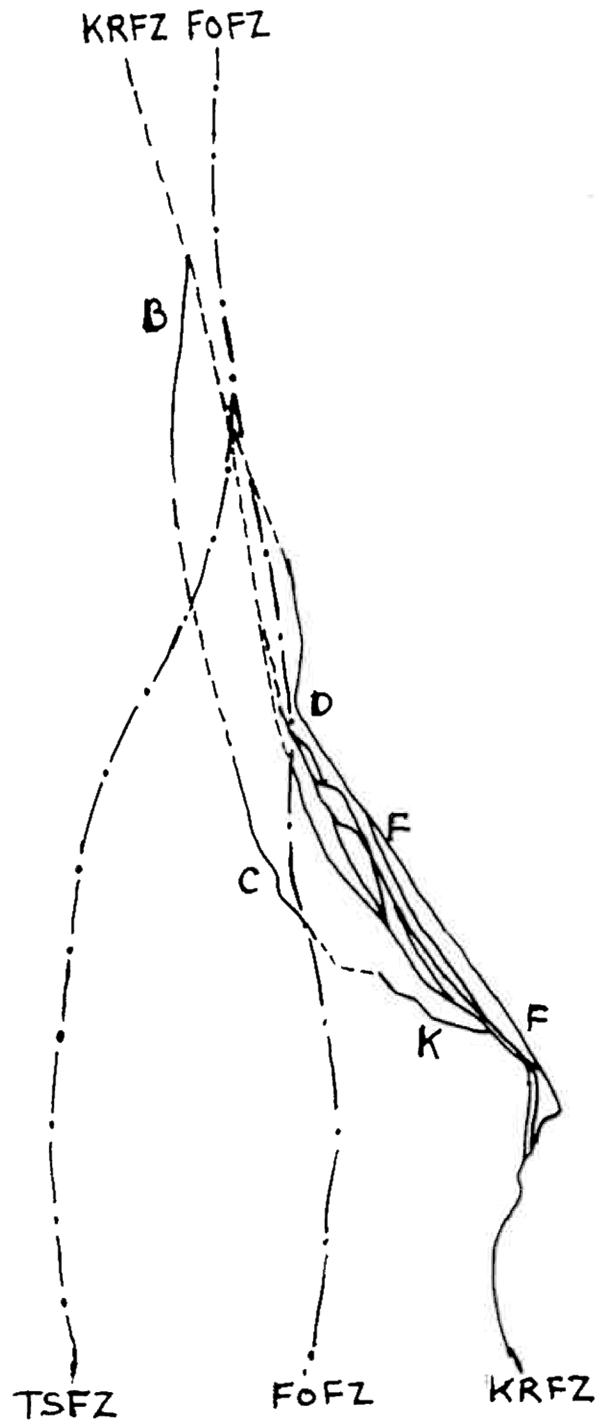


Fig. 7. Schematic sketch of the ore zones along the KRFZ prior to postulated displacements by the FOFZ and TSFZ.

The latest activity affecting the fault zones is related to extensional tectonics and the formation of normal **faults** with associated ductile shearing. These high- to low-angle faults are developed along a number of reactivated structures including mineralised ones. The arsenopyrite along these faults is strongly cataclastic and is locally replaced by pyrite or marcasite intergrown with thorite and uraninite.

3 DATA PRESENTATION

The present report deals with corelogs for 47 drillholes with a total length of 4048 m. Five of these logs are presented in a simplified manner since there exist no cores and the information is taken from previous logs and photographs given in the Commissioner of Mines reports BV 577 and BV 578. The corelogs for the different drillholes are listed in numerical order in the appendix.

The position of the individual drillholes and their horizontal projections are given in plate 2 (Tegning nr. 93.003-02) where also the exploration adits are depicted. Most of the presently exposed drillhole collars have been surveyed from six fix-points located along the western side of the Bogadalen valley. The fix-points are marked with aluminum bolts in the field. Some of the drillhole collars (DDH 2, 3, 4, 11, 21, 24, 31 and 34) were surveyed by compass whereas the position of the collars for DDH 5, 6, 12, 13, 15, 16, 17, 18, 19, 20, 22, 26, 27, 29, 32, 34, 41, 55 and 56 was taken from an old topographic map in Sivertsen and Mjelde (1983) and BV 578. The position of these drillhole collars, which have become covered by alluvium, soil scree, roads and spoil heaps is therefore not very accurate. The azimuths of DDH 26, 29 and 41 are taken from the old maps. The inclination of DDH 41 is estimated. Information about the azimuths and inclinations of DDH 55 and 56 was obtained from M. Larsen (pers. comm., 1994).

All the drillcores were logged twice and some of the fault intersections (DDH 21, 23, 24 and 25) three times.

The data acquired for each of the holes are presented in the appendix as **a summary corelog-diagram**, **a drillhole profile** showing the geological interpretation and **tables with detailed descriptions of the cores**. Some comments are given below to each of these ways of presenting the data.

3.1 Summary corelog-diagram

The diagram is constructed in such manner as to show the main protoliths in the drillhole prior to the effect of hydrothermal alteration and veining and the location of ductile to brittle structures. These data can be compared with the results of the gold analyses to get some ideas about parametres controlling the gold deposition.

Drillholes (DDH 50-56) with non or few cores available are presented as simplified corelog-diagrams constructed from datalogs and photographs given in the reports BV 577 and BV 578, respectively.

The following main types of **hydrothermal alteration and veins** have been distinguished:

- **ARG**: Argillic alteration of fault gouges and adjacent wallrocks.

- **RED**: Areas with pink leuco-granites and two-mica granites including brick-red colouration in association with stilbite and epidote veins (see below).

- **ST**: Stilbite ± calcite veins invariably carrying brick-red envelopes.

- **CHL**: Chloritisation of mafic rocks and pervasive replacement of brecciated granites in association with chlorite veins, shear zones and chlorite-cemented breccias.

- **SER**: Pervasive to fracture bound sericite alteration.

- **Q**: Quartz veins and silicification. In areas with a dense network of quartz veins or where the quartz forms the breccia cement the wallrocks may become strongly silicified. Horizontal lines indicate < 0,5 m quartz veins.

- **SK**: Skarn alteration in marbles.

- **BL**: Pervasive to fracture bound transformation of the grey granites into pale greyish white types. This bleaching is probably due to replacement of biotite by muscovite and to dissolution of biotite.

- **AS**: The occurrence of arsenopyrite as grains, dissemination, veinlets and veins.

Only areas with strong alteration are indicated in the diagram.
Zones with muscovite alteration and ankerite (i.e. carbonate with brown tarnish) veins as well as soot-grey alteration occur only very locally and have therefore been excluded from the diagram.

The protolith represents the original rocks prior to hydrothermal alteration. The given intervals for the different rocks in the column give the dominant protolith since most of

the rocks contain variably density of granitic veins and dykes and the supracrustals carry different types of subordinate interbanded lithologies. Strongly interbanded rocks (11 B and 13 B) are marked with H- i.e. heterogeneous. The pinkish grey hybrid
e two-mica granite (4) has been defined as a protolith. Its genesis, however, like the pink leucocratic granites and pegmatites, is somewhat enigmatic. They may have orginated as separate intrusive phases and/or through interaction with hydrothermal solutions leading to oxidation of ferric iron in the feldspar lattice and exsolution of sub-microscopic hematite. Both the two-mica granites (3) and the leuco-granites (1) are comprised of several intrusive phases (see p. 29-34).

The fault **structures** met with in the cores include both ductile and brittle types. Where both of these types are found the term **shear zone (SH)** is used. The term **ultra-cataclasite (CT)** comprises dark fine-grained rocks which locally may contain small fragments of the protolith. Most of the zones designated **crush zones (CR)** are composed of an incoherent mass of fragments in a matrix of rock-flour, or frequently as clay gouge. Where the rock-flour matrix is missing the term **fracture zone (FRZ)** is used. **Chlorite crackle breccia (CBR)** is used for zones where the rocks contain a very dense network of chlorite veins and chlorite coated hairline fractures delineating undisplaced fragments.

The breccias (BR) include rock-flour breccias with cm to dm sized fragments in a dark, fine-grained rock-flour matrix cemented by fine-grained quartz. Depending on the quartz: rock-flour ratio the breccia may grade into more light coloured quartz breccias. Chlorite- and stilbite-breccias are also designated according to the dominating mineral in the breccia matrix.

The gold grades given on the right-hand side of the diagram are taken from the Commissioner of Mines report BV 553 (Sivertsen and Mjelde 1983) and BV 578. The grades are presented as y = log (1000 · analytical value in g/t). The stippled lines at 5 g/t and 10 g/t give the approximate lower range for economic ore grades according to present prices. The width of the different columns in the gold-grade histogram depict the length of analysed sections. Neighboring analyses with the same gold values are separated by vertical lines in the histogram. Analytical values reported as below detection limit (< 0,3 ppm, < 0,6 ppm etc.) are arbitrarely set at 0,013 g/t (i.e. the smallest unit on the logarithmic paper) and as not detected gold at 0,011 g/t.

3.2 Drillhole profiles

The vertical geological sections through each of the drillholes or through several drillholes in the same profile present the sub-surface geology in a schematic manner. This is caused by the multitude of possible interpretations of the dip and outline of the different lithologies (especially the intrusive bodies) and structures. Since the high-grade gold mineralisation apparently occurs associated with the major fault structures efforts have been made to give the most realistic impression of these.

All the profiles, like the map in plate 2, are drawn on a 1:1000 scale. The geological profiles are constructed in accordance with surface observations and the geology in neighbouring profiles. As can be seen, the profiles give a more detailed impression of the geology than the bedrock map (Plate 1), where several lithologies have been combined in one mappable unit. All the profiles are viewed towards the north.

Profiles have not been made for DDH 50-56 since the position of the fault intersections is not indicated in the datalogs (BV 578) and the lithologies are difficult to interpret from datalogs and photographs (BV 577).

3.3 Corelog tables

The table containing the description of the cores from the individual drillholes starts with a heading where the following technical information is found.

- Drillhole number.
- Ore zone drilled.
- Company doing the exploration.
- The year that the drilling took place.
- The azimuth of the drillholes measured from true north.
- The inclination of the drillhole.
- The total length of the drillhole.
- The length of the horizontal projection.
- The length of the vertical projection.
- The core dimension.
- The location of the drillhole according to the national geographical coordinate system (NGO) where Y gives the E-W coordinates and X the N-S coordinates in coordinate zone D.
- The UTM-coordinates (ED 50) represent the international geographical system taken from the M711 serie of the 1:50 000 map sheets (i.e. Majafjellet 1825-2).
- The altitude of the drillhole collar in metres above sea level (m.a.s.l.).

All dimensions mentioned in the text are in accordance with the metric system. The NGO-coordinates (Y, X) and altitudes given with one rather than three decimal digets means that the accurate position of the drillhole is uncertain because its location was determined by compass or taken from old maps.

The tables are separated into the following columns:

- **Depth** in the drillhole to the upper and lower boundary of the lithological unit.

- **Length** of the intersected lithology. Units less than 1 m long have been avoided wherever possible.

- **Lithology** i.e. the dominant lithology intersected. The lithologies are the same as those shown in the profiles. The abbreviation CM (cores missing) means that all the cores in the interval have been removed for analytical purposes or have been lost during transport and storage. CL means coreloss during drilling.

- **Measured structures** i.e. the angle of selected planar structures measured relative to the axes of the hole. Negative angle means that the planar structure falls opposite to neighbouring structures.

- **Ore mineralisation** i.e. the location and petrography of encountered ore mineralisation.

- **Petrography** of the cores is based on macroscopic and hand-lens observations. It gives a more detailed description of the lithologies, the contact relationships, the structures and the hydrothermal alteration and veins. It is not always possible to avoid the use of genetic terms like inclusions and dykes. Such terms have only been used when the age relationships are known from field observations. The distinction between monzodiorite and amphibolite is not always clear. The monzodiorites intrude the amphibolites of the supracrustal sequence, which may be found as inclusions. Some of the amphibolites found in the cores may, however, represent sheared monzodiorites.

4 RESULTS

The corelogs give valuable information about the sub-surface geology, the composition of the different lithological units, the continuity and dip of the different fault structures, the temporal relationships between the different intrusives, the hydrothermal activity and factors controlling the distribution of gold. In addition, the assessment of previous drill-programs is important in order to take lesson from previous exploration efforts in defining economic ore zones. Such an evaluation is necessary for the planning of new exploration campaigns.

4.1 Assessment of previous drill-programs

Most prospecting companies use some sort of conceptual ore-deposit model as a basis for their exploration. In the Kolsvik case it is not apparent from the somewhat erractic distribution of drillholes what type of basic ideas A/S Sulfidmalm and Terra Mining A/S. had for their exploration. Although the topography and steep scree covered hillsides put some limits to systematic drilling the distribution of drillholes in the C-zone indicates that A/S Sulfidmalm had no basic ideas about where they would expect to find ore concentrations. This is emphasized by DDH 22 and DDH 33 and 33 B positioned under the Boliden and Mannerheim adits, respectively, where channel- and chip-sampling only showed uneconomic mineralisation. In addition the cores from several drillholes, i.e. DDH 5, 6, 14, 21 B, 30, 32, 33 and 35 was not analysed, for some unknown reason.

The geological maps and profiles which are available from the A/S Sulfidmalm exploration period (1979-85) are much less detailed than those presented in this report. In their maps and profiles the bedrocks are separated into three main units i.e. 1) light coloured granites, 2) dark grey monzodiorites, amphibolites and variable gneisses and 3) marbles. This simplification makes it impossible to detect the fault displacements, especially in the F-zone. Although their maps show the location and orientation of numerous shear, breccia and fracture zones and all of the major mineralised fault zones (Seksa-Klondyke and Storstein-Tostein) none of this information has apparently been used in defining possible ore zones and in placing drillholes to test their continuity below surface. This is also made difficult by the use of single drillholes in areas with overburden (e.g. DDH 8).

The lack of detailed corelogs for the drillholes, the exchange of drillhole numbers between holes in the same profile (DDH 5 and 6), variable corelengths (0,25 m - 20 m) analysed, unanalysed sections of good arsenopyrite mineralisation (e.g. DDH 25), the lack of systematic analysis of all the cores in the holes, no investigation of the covariance between As and Au and no measurements of drillhole deviation (clearly apparent from DDH 14 and 36) show that the drilling was not followed up properly.

The ore zones defined by A/S Sulfidmalm are therefore based on analytical results alone and not on a combination of geological reasoning and gold analyses, which is the most commonly used approach in defining ore zones. Therefore, the previously defined ore zones represent areas where gold-bearing arsenopyrite mineralisation occurs most abundantly, but without considering the continuity of individual zones.

Terra Mining A/S seems to have used the same type of approach as A/S Sulfidmalm. The drillholes were data-logged in a very simple manner, and important fault zones were overlooked. Both companies seem to have neglected that most of the high-grade gold mineralisation at the surface represent vein mineralisation occurring along major structures, thereby classifying the Kolsvik deposit as a vein deposit. This is particularly apparent from the position of the Oppgangen exploration adit driven into the lower part of the F ore zone as defined by A/S Sulfidmalm. No economic ores were detected in the adit which is located in the area between the two major fault structures, F1 and F8 (plate 2). Both of these contain exposed gold-arsenopyrite mineralisation just outside the entrance to the adit.

The length of the vertical projections given in the corelogs and Fig. 8, 9 and 10 show that nearly all of the drillholes terminated at a depth of less than 100 m below surface. About 60 % of the holes intersect the presently defined ore strucutres (Table 2) and their distribution (Fig. 8-10) clearly indicates that more systematic drilling is necessary to properly define ore zones with high economic potential suitable for test-mining. When calculating possible ore reservers it should be kept in mind that deviation of the drillholes (e.g. DDH 14) has not been measured.

4.2 Geological relationships

The corelogs show that the lithological units depicted on the geological map can be separated into a number of sub-units.

The temporal relationships between the different tectonic, intrusive and hydrothermal events (see Table 1) as can be deduced from the drillcores are given below.

4.2.1 Intrusive rocks

The leucocratic granites depicted as a single bedrock unit in plate 1 comprise a number of separate intrusive phases. The fine- (<1 mm) to medium-grained (1-3 mm) equigranular types often have a massive appearance and a texture resembling aplites, and therefore terms like aplo-granite, aplite and aplitic have been used in the corelog. All of them are composed of quartz, perthitic orthoclase, microcline, oligoclase, muscovite and small amounts of biotite, some altered to chlorite.

White, medium- to coarse-grained leuco-granites (W-LG) are the dominant type along the F- and K-zone where **biotite-free varieties** may grade into **biotite-spotted types** containing scattered 2-10 mm spherical to lens shaped aggregates of biotite (e.g. in DDH 36 at 103,35-105,50). The latter type occurs frequently in the contact-zone of amphibolites and amphibole-biotite gneisses (e.g. in DDH 12 and 13) and it may contain larger lens-shaped aggregates and inclusions of biotite and amphibole defining a crude

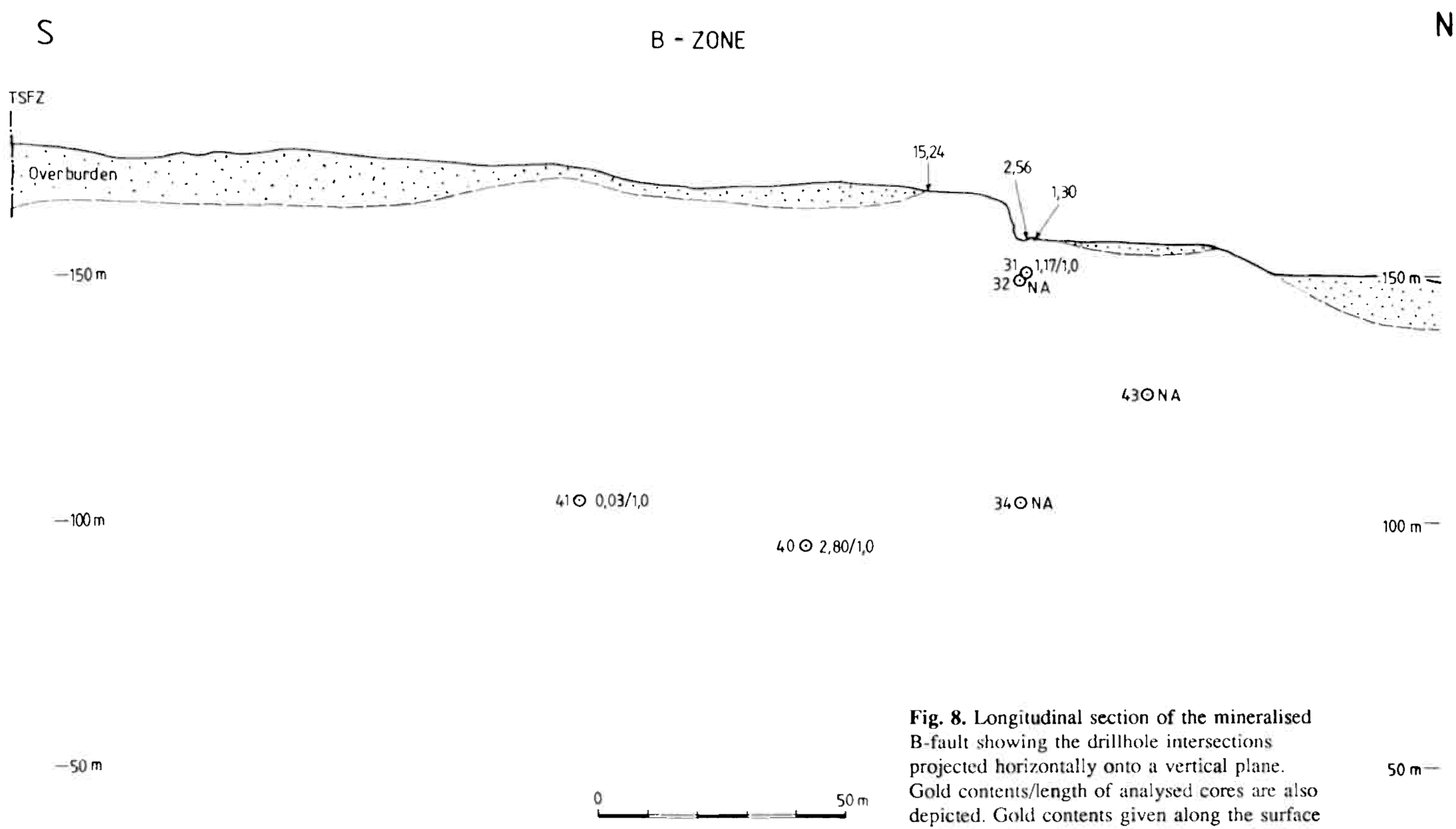


Fig. 8. Longitudinal section of the mineralised B-fault showing the drillhole intersections projected horizontally onto a vertical plane. Gold contents/length of analysed cores are also depicted. Gold contents given along the surface are for 2-3 kg chip samples. NA = Not Assayed.

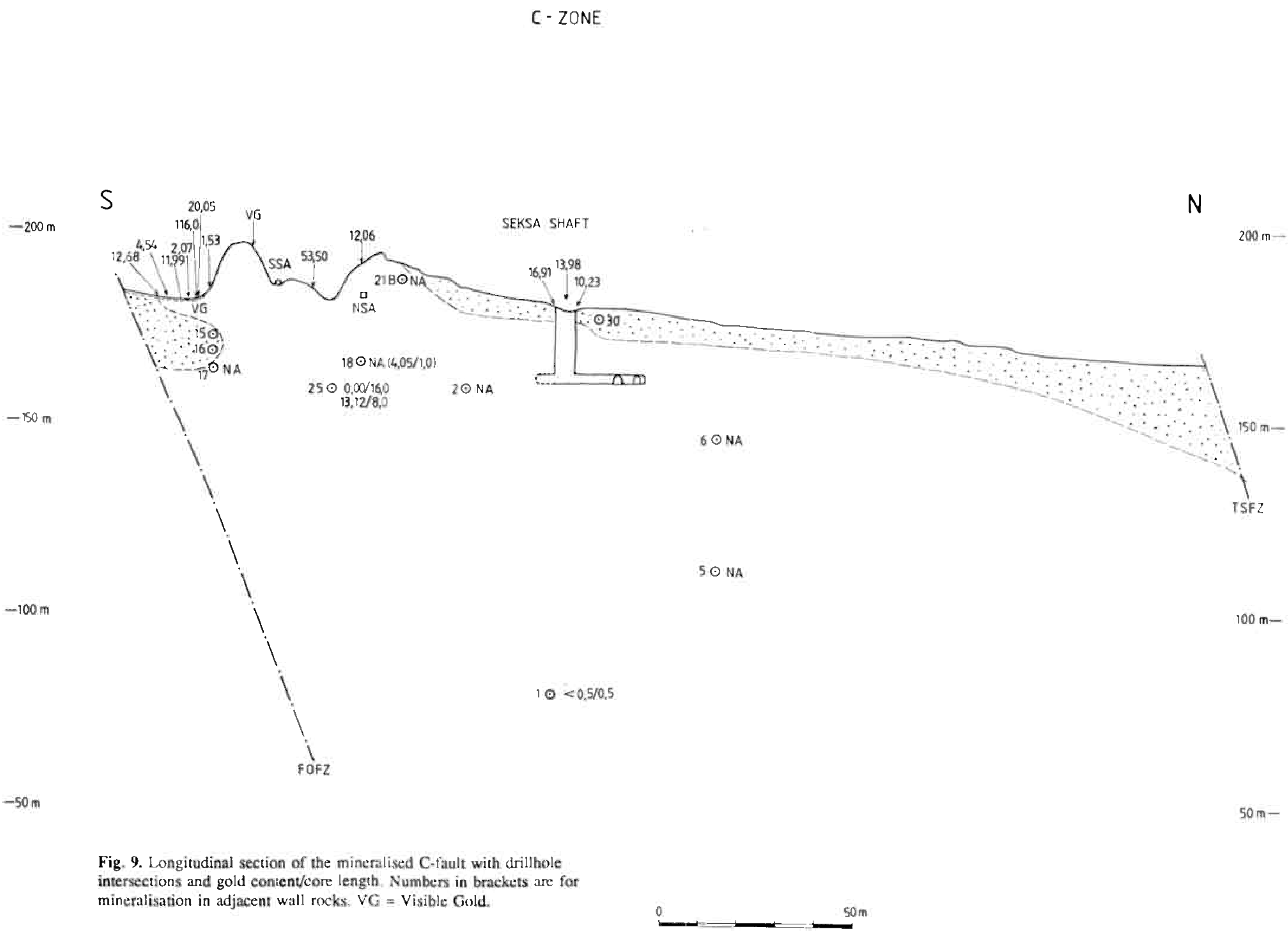


Fig. 9. Longitudinal section of the mineralised C-fault with drillhole intersections and gold content/core length. Numbers in brackets are for mineralisation in adjacent wall rocks. VG = Visible Gold.

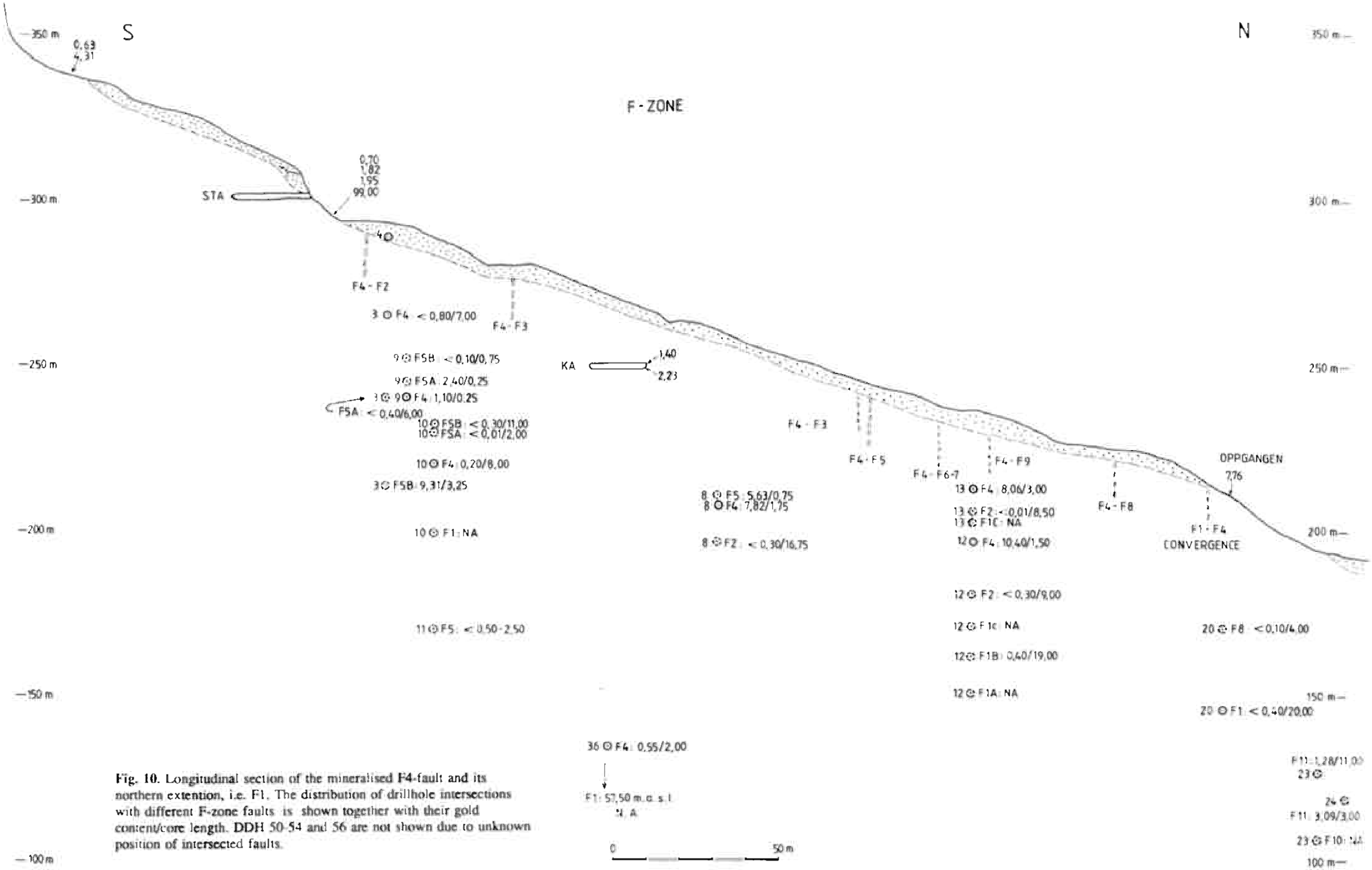


Fig. 10. Longitudinal section of the mineralised F4-fault and its northern extention, i.e. F1. The distribution of drillhole intersections with different F-zone faults is shown together with their gold content/core length. DDH 50-54 and 56 are not shown due to unknown position of intersected faults.

planar fabric (e.g. in DDH 53 and 54). There exist several generations of **white granite pegmatites (W-P)** and **pegmatitic granites** with variable content of biotite and muscovite (Table 1). The largest volumes of these rocks seem related to the W-LG (e.g. in DDH 14 and 36), which can be observed to grade into very coarse-grained granite in DDH 54 (41,70-43,60). In a number of cases, however, the W-LG is cut by 5-50 cm wide **dykes of pegmatite** (e.g. in DDH 10 and 54). **Dykes of fine-grained white aplite or aplogranite** are also found in the W-LG (e.g. in DDH 9, 36 and 53).

The intrusive phases mentioned above are less widespread in the B- and C-zone. In these zones they only form small bodies and dykes cutting the light grey two-mica granites (e.g. in DDH 42 and 43) and the hybrid pinkish grey two-mica granites (e.g. in DDH 1, 2, 22, 26 and 21).

The pink, medium-grained leucocratic granites (P-LG) are mainly located to the area between and immediately adjacent to the FOFZ and TSFZ and occur widespread along the C-zone, i.e. along the footwall of the FOFZ. Although the P-LG is characterized by its pink feldspar and the occurrence of numerous transparent bluish grey to milky quartz veins, it bears strong textural resemblance with several varieties of the W-LG. Both in outcrops and drillcores it is possible to observe gradational contacts between white and pink, medium-grained leucogranites (e.g. in DDH 1, 5, 6, 15, 22 and 27). The P-LG is also found to be cut by dykes containing segregations of pink pegmatite as well as pink aplite dykes, locally porphyritic with 1-2 mm feldspar phenocrysts (e.g. at 55,40-,60; 69,30-,55 and 86,15-,80 in DDH 15). In addition the occurrences of pink biotite-spotted leuco-granites (e.g. at 67,90-70,00 and 111,30-112,05 in DDH 25 and at 13,65-,95 and 87,65-88,70 in DDH 26) and the existence of strong quartz veining straddling the gradational boundary between the W-LG and P-LG (e.g. at 35,95-36,80 in DDH 15) suggest that at least parts of the P-LG represent a hydrothermally altered variety of the W-LG.

In some areas, like the western and southern side of Skarshaug (Plate 1), occurs a light pinkish grey biotite-poor two-mica granite with abundant quartz-rich pegmatite segregations and quartz veins (see DDH 1 and 2). In places the granite contains biotite-free domains resembling a normal P-LG or W-LG. The disappearance of biotite may be due to bleaching, being beautifully exposed at the entrance of the Boliden adit where the pinkish grey hybrid two-mica granite (HTG) over a distance of 10 m grades into a quartz-rich (silicified?) pink leuco-granite exposed along the river. The contact is found at 4,15 m in DDH 22. Along the TSFZ in DDH 21 the P-LG contain frequent small biotite-bearing domains indicative of unbleached remnants of HTG.

Both the P-LG and HTG outside the Boliden adit contain abundant quartz veins and veinlets which frequently carry massive arsenopyrite bands or aggregates. One of the larger ones (dipping 30° W) can be followed across the transitional contact between the granites and into the Boliden adit, where it is cut by a meter-wide dyke of partly biotite-spotted W-LG. In DDH 22 the sub-surface extension of the dyke is found at 9,00-10,10 m where it lacks biotite. The dyke contact exposed in the adit also cuts other quartz gash-veins locally containing arsenopyrite in the HTG wallrock.

These observations may suggest that the P-LG in the cliffs along the river south of Nordre Skarstoll adit (Plate 1) represent a mixture of P-LG and totally bleached HTG or are composed solely of the latter. Secondly, it shows that the partly biotite-spotted W-LG is synchronous or postdates the hydrothermal activity leading to the development of quartz veins and bleached granites. If the P-LG in the C-zone is not the result of pervasive bleaching of the HTG, it must then represent either an early intrusive phase of the leucogranites or a late leucocratic phase of the two-mica granites. The author believes that the P-LG in the C-zone and the W-LG along the KRFZ south of Storstein represent bleached varieties of the two-mica granites.

The light grey, medium-grained two-mica granite (GTG) is the main intrusive phase in the ore area. It is an equigranular rock composed of quartz, orthoclase, microcline, oligoclase, biotite and muscovite. In DDH 41 and 42 a darker phase can be distinguished from the normal type, whereas a more leucocratic biotite-poor variety occurs on the ridge west of Storstein and Tostein in the upper F-zone. In DDH 14 in the latter area it alternates with the ordinary GTG, locally becoming more coarse-grained.

Similar leucocratic GTG with a white massive appearance and very low content of evenly distributed flakes of fine-grained biotite is found along Helveteslia (DDH 12, 13, 53 and 54) and in the LG body at Østlia above Stupet (Plate 1). At the surface these more leucocratic varieties are difficult to distinguish from the ordinary W-LG especially if bleaching has occurred.

The pinkish grey, hybrid two-mica granite (HTG) characterised by its pinkish grey mottled appearance bears strong textural and mineralogical resemblance to the GTG, including the invariable presence of bleached zones. It usually contains small grey domains of the GTG which has gradational boundaries to the surrounding pink HTG.

It is suggested that the HTG represents a pink coloured variety of the GTG caused by pervasive hydrothermal alteration along the FOFZ and TSFZ. However, the possibility that the HTG is a separate intrusive phase cannot be totally excluded.

The grey quartz monzonite (GQM), being medium- to coarse-grained, has a colour intermediate between the normal GTG and the dark grey monzodiorites. The equigranular rock contains biotite, but only minor amounts of muscovite. The quartz monzonite is well exposed along the creek above the Kløfta canyon where it is cut by numerous dykes of GTG and W-LG. The GQM constitutes important units in DDH 3,10 and 25 whereas DDH 1, 2 and 40 only intersect subordinate zones. In addition most sections of GTG in the drillcores include some small xenoliths of GQM.

The dark greenish grey monzodiorites (MD) form east dipping sheets which are well exposed along the Humpelva river north of the B-zone and along the creek at the upper F-zone. In both areas it is clearly visible that the MD is intruded by the GTG and in many cases occurs as small xenoliths and larger rafts in the GTG. The ordinary MD is a medium-grained equigranular rock composed of oligoclase-andesine, hornblende, biotite and small amounts of quartz and orthoclase. It may grade into varieties containing dispersed grains (1-3 mm) of brownish red garnet, as in most of the B-zone drillholes. Coarse-grained monzodiorites with a "salt and pepper" or gabbro-like appearance are transected locally as in DDH 14 (17,45-38,40) and DDH 42 (56,20-,95). Transitional contacts may indicate that the coarse-grained MD represents segregations and not inclusions. A number of the monzodiorites have hornblende lineation, but only rarely, as in some of the shear zones, is a crude foliation developed. Therefore most angles given in the column: "Measured Structures" are the angle of the lineation and not the foliation (FL).

Drillholes in both the F- and B-zone (i.e. DDH 14, 31, 32, 34, 35, 40, 41, 42 and 43) intersect monzodiorites with abundant dykes and veins of GTG, LG and/or pegmatite. In addition, thin zones of GQM, probably representing dykes, are found in the MD (e.g. at 20,70-,85 and 30,65-,85 in DDH 31, at 14,10-16,35 in DDH 32, at 86,70-88,10 in DDH 35 and at 43,40-46,50 in DDH 41).

The grey granodioritic orthogneisses (GGO) include augen textured types with flattened augens of K-feldspar (max. 15 mm) grading into more equigranular types with 5-10 mm rectangular to equant white feldspars. The augens and porphyries are set in a coarse- to medium-grained matrix of quartz, oligoclase, orthoclase and microcline with biotite defining a crude foliation. An intermediate type with scattered flattened porphyries is found in DDH 21 (141,85-151,90), where it contains lenses and inclusion-like schlieren of amphibolite and amphibole-biotite gneisses. A similar type is also found at 20,55-23,05 in DDH 5. A typical augen-gneiss is intersected in DDH 12 at 45,80-52,65. Further down the hole at 78,05-82,90 a more equigranular type occurs with up to 20 cm wide zones of calc-silicate and biotite-amphibole gneisses. This type bear some resemblance to the more leucocratic varities of the anatectic granites. The granodioritic orthogneisses forming intercalations or sills in the amphibolite-biotite gneiss sequence along the hanging-wall of the F-zone seem from field-evidence to pre-date most of the intrusives, even the monzodiorites along the southern edge of Platået.

Dark grey, biotite-rich anatectic granites (BAG) occur as variously sized and shaped bodies intermingled with the migmatitic sillimanite-kyanite-biotite gneisses which they frequently grade into. The term anatectic is adopted from Nordgulen (1992) for similar looking rocks elsewhere in the Bindal Batholith. They appear more heterogeneous at the surface than in the drillcores, where the numerous slabs and plate-formed inclusions of migmatite, biotite schists, amphibolite or calc-silicate gneisses are described as bands or thin zones. These bands or inclusions are engulfed in a biotite-rich tonalitic matrix containing variable density of 5-15 mm white equant to rectangular feldspar (mainly plagioclase). Depending on the biotite to porphyritic feldspar ratio, the rocks may grade from porphyritic biotite gneisses to coarse-grained equigranular tonalites. Some varietes also contain abundant K-feldspar, therefore the term granite. The anatectic granites form prominent lithological units in the drillholes of the upper F-zone (DDH 3,4,8,9,10,11,14 and 36) where the migmatites also are common. The anatectic granites seem to pre-date most of the other intrusives except for the granodioritic orthogneisses, which never have been found in contact with the granite.

4.2.2 Supracrustal rocks

The supracrustal rocks will be described in accordance with their tectonostratigraphic position in the isoclinal D2 synform defined by the various lithologies of the **Bogadalen Formation** (Fig. 5).

The rocks in the core of the synform represent a heterogeneous sequence of strongly interlayered bluish grey migmatitic kyanite-biotite gneisses, biotite-rich anatectic granites, marbles, amphibolites, amphibole-biotite gneisses, biotite gneisses and calc-silicate gneisses. They are best studied in DDH 1,2,5 and 6 where the intersections of different units have lengths of 1-4 m (max. 7,5 m). Most of them show a banded structure on 1-5 cm scale and have gradational contacts with each other. Some of the more strongly heterogeneous sequences, undividable on a meter scale, have been named according to the dominant lithology and with a prefix (H-) indicating the strongly heterogeneous nature of the unit.

The dark to light green banded calc-silicate gneisses (CGN) are one of the characteristic lithologies in the Skarshaug area, and a good intersection of these gneisses are found at 26,50-34,00 in DDH 1. The gneisses are generally fine to medium-grained and show colour-banding in green due mainly to variable proportions of plagioclase, diopside and retrograde amphibole. More coarse-grained bands containing brownish garnet are widespread. More quartz-rich to quartzitic bands and even psammitic units are typical for the southern part of Skarshaug. Calc-silicate gneisses with quartzitic bands are intersected at 26,50-31,70 in DDH 1. The gneisses becomes more biotite-rich in approaching interlayered units of biotite gneisses another characteristic unit in DDH 1,5 and 6.

The green calcareous schist (CSCH) found in DDH 19 (38,10-39,60) contains calcite, chlorite and calc-silicates. It is strongly schistose and sheared and may represent a mylonitic variety of the CGN.

The dark brownish grey biotite gneisses (BGN) grading into schistose types are generally medium- to coarse-grained with dark brown biotite as the dominant rock-forming mineral. The amount of quartz and feldspar is usually low and close to the boundary between micaceous schist and gneiss. The type section at 38,60-41,90 in DDH 1 contains bands of calc-silicate gneisses, a typical feature for the BGN.

The grey to bluish grey marbles (M) representing **the middle member of the Bogadalen Formation** are best preserved in DDH 5,6,19 and 30. The banded marbles, being composed mainly of calcite, show colour-banding and lithological banding due to 1-50 cm thick intercalations of mainly calc-silicate gneisses and amphibolite. The former may carry a seam of reaction skarn (garnet-diopside-epidote) at the contact with the marbles. Marbles replaced by skarn will be treated under hydrothermal alteration.

The upper member of the Bogadalen Formation is comprised of interlayered amphibolites and amphibole-biotite gneisses, with calc-silicate gneisses, marbles, biotite gneisses and migmatitic kyanite-biotite gneisses as additional minor units. The best sections of these rocks are found in DDH 8,12,13 and 20 of the F-zone (mainly ABGN) and DDH 26,29 and 30 of the C-zone (mainly A).

The dark green and fine- to medium-grained amphibolites (A) are either massive (DDH 30: 56,35-59,60) and DDH 29: 23,20-26,25) or porphyritic with 5 mm white feldspars (DDH 30: 42,50-48,10) or with 0,1 - 1 mm x 3-6 mm black hornblende needles (DDH 26: 64,35-77,50). Amphibolites with zonal development of hornblende porphyritic texture can be studied at 44,50-52,40 in DDH 26. At 15,50-16,35 in DDH 26 the amphibolite becomes more biotite-rich and grades from amphibole-biotite gneiss into thin bands of biotite gneiss.

The dark grey to dark brownish grey amphibole-biotite gneisses (ABGN) occur widespread in DDH 20,12 and 13. They are fine- to medium-grained and contain highly variable proportions of amphibole and biotite, i.e. they range from biotite-bearing amphibolites to biotite schists. They frequently carry thin bands of calcsilicate gneisses, biotite gneisses and migmatites (DDH 13: 38,90-48,70). In addition, thin zones of granodioritic orthogneisses and thin feldspar porphyritic (1-5 mm) zones locally grading into equigranular granodiorites? may occur (DDH 12: 54,65-73,20).

The dark grey, coarse-grained and migmatitic biotite gneisses (MBGN) of the **Grytendal Complex** are mainly found in DDH 3,8,10,11,14 and 36 intersecting the Upper F-zone. They contain variably sized neosome veins and lenses (1-5 cm thick) separated by paleosomes and mesosomes with biotite, kyanite, almandine and locally fibrolitic sillimanite as important constitutents. Garnetiferous types can be studied in DDH 8 (28,65-32,10) and DDH 36 (168,60-170,85). The migmatites contain locally bands of amphibolite (DDH 36: 21,95-24,60), calc-silicate gneisses (DDH 10: 9,05-14,05) and coarse-grained skarn (DDH 8: 22,25-,40 and DDH 11: 23,60-,20). The migmatitic biotite gneisses met with in DDH 5 and 6 of the C-zone are more highly strained with strongly flattened neosome schlieren (1-5 mm). In addition they may contain kyanite-rich bands (DDH 5: 10,40-11,20).

The dark grey to greyish green micaschists (MSCH) of DDH 3 (30,95-35,70 and 40,10-41,55) are rich in muscovite. They contain zones with white feldspar crystals and show gradational contacts with BAG. The single occurrence of this rock type and its close proximity to the F4-fault may indicate that it represents a hydrothermally altered biotite schist and/or anatectic granite (see p. 46).

4.2.3 Structures and tectonites

The drillhole profiles show that both the KRFZ and FOFZ-TSFZ comprise a complex system of ductile and brittle fault structures. The apparently simple system of ore zones (B, C and F) defined by Sivertsen and Mjelde (1983) is found to be related to the KRFZ. Of these only the B- and C-zone and possibly the K-zone can be called simple in a structural sense. Although early formed mylonites occur along parts of both the B- and C-zone, the ore mineralisation seems originally related to one continuous linear fault with few deflections and splays (B1 and B2 in DDH 41 and 42). This stands in strong contrast to the F-zone where the ore mineralisation is apparently related to a number of parallel and anastomising system of faults (F1-F11, Plate 2), which seem to converge at depth (about 120 m below surface in DDH 36).

The FOFZ-TSFZ (Profiles DDH 26-29 and 15-21), being characterized by the widespread occurrence of chlorite-cemented fault breccias, may also be called structurally simple, although complex fault structures are locally present such as at the intersection between the FOFZ and the KRFZ (see profiles DDH 21-23 and DDH 21-24).

Small scale fold structures is frequently observed in the cores and especially those intersecting the migmatitic gneisses and the marbles. Except for the local development of Z-type folds along one of the ductile shear zones (DDH 40: 51,45-53,05) such kinematic indicatores are nearly invariably absent. Since the orientation of foldaxes and lineations cannot be determined from the cores they will not be dealt with in further detail.

The tectonites related to the different fault systems were formed repeatedly in response to a continuous process of faulting, giving rise to polyphasal tectonites. However, in order to clarify the different episodes of tectonite formation or fault displacement, emphasis will be laid on the end-member tectonites which developed under both ductile and brittle conditions. The individual types will be described in order of decreasing age and as listed below.

Ductile tectonites (oldest):
- Thick mylonite zones in granites, mafic rocks and carbonates.

Brittle tectonites:
- Ultracataclasites.
- Rock-flour breccias.
- Quartz breccias.
- Chlorite breccias.

Ductile tectonites:
- Thin mylonite zones along normal faults.
- Mylonitic cataclasites.

Brittle tectonites:
- Stilbite-calcite breccias.
- Fault gouge.

Except for the distinction between an early and a late ductile deformation episode, the rest of the age relationships given above are possible to determine from core observations.

The separation between an early and a late ductile phase is based on the occurrence of granitic mylonites being cut by a body of white leucogranite (W-LG) in the B-zone adit. In the Boliden adit a dyke of similar appearance (see p. 33-34) cuts mylonitic quartz veins and their thin envelopes of granitic mylonites. The W-LG dyke is, however, displaced along several low-angle and W-dipping fault planes showing downward movements of the hangingwall block, i.e. normal faulting. The W-LG along the fault planes is transformed into a finely laminated mylonite (10 cm zone) which is also dragged out into two oppositely pointing tails from the dyke contacts.

Due to difficulties in disinguishing early and late mylonites in the cores they will be treated together in the description below.

A zone of **granitic mylonites** is well exposed in the cliffs above the B-zone adit and in the roadcuts to the north. The best intersections of the mylonite zone are found in DDH 31 (4,60-18,25) and DDH 32 (6,80-12,55). It is developed in a light grey two-mica granite with quartz veins and pegmatite dykes. In the mylonite zone and its immediate surroundings the granite is strongly bleached. The mylonites have a pinkish grey, fine-grained and strongly schistose or foliated appearance. They are also characterised by a dense set of parallel shear planes coated by white mica and containing lenses of platy quartz. Pre-existing quartz veins and pegmatites have been smeared out and occur as strongly foliated and laminated lenses. At the surface, the mylonites are deformed into open buckle folds with sub-horizontal NNW-SSE trending axes. The mylonites in the C-zone can be studied in DDH 6 (24,70-27,55 and 34,90-36,80). Ultramylonites are rarely found (e.g. DDH 15: 37,65-,85).

Some granitic mylonites are developed along lithological discontinuities like quartz veins (e.g. DH 15: 23,65-24,00, DDH 17: 40,60-47,55, DDH 25: 41,60-42,60 and DDH 27: 27,50-29,80), granite dykes (e.g. DDH 1: 52,70-53,00) and lithological boundaries (e.g. DDH 42: 55,20-,25).

Mafic mylonites found in amphibolites, monzodiorites, amphibole-biotite gneiss and calc-silicate gneisses appear as fine-grained, foliated amphibolites or as strongly schistose chlorite schists. The former type can best be distinguished from the normal amphibolites when occurring in monzodiorites with ascicular hornblende aggregates which become strongly transposed (e.g. DDH 32: 23,00-,30 and 24,20-,50) or as strongly foliated zones with shear folds developed inside equigranular monzodiorites (DDH 40: 51,45-53,05). Mylonitisation is also apparent in intrusion breccias of MD, GTG, W-LG and/or W-P (e.g. DDH 35: 61,60-61,85 and DDH 31: 32,45-39,95). In addition mafic mylonites are developed in mafic inclusions occurring in the mylonite zone along the B-zone (e.g. DDH 31: 9,40-10,70).

The chloritic schistose mylonites of the C-zone can be studied in DDH 1 (48,85-55,40) where ductile shearing has occurred in amphibolites, marbles, calc-silicate gneisses and biotite gneisses. Chlorite schists, assumed to represent mafic mylonites, are also intersected in DDH 8 (58,75-59,70), DDH 19 (44,10-45,70), DDH 21 (134,80-135,00), DDH 23 (130,90-133,00) and DDH 25 (106,45-107,30). Typical for most of these is that they show chloritic slickensides and contain abundant chlorite veins and veinlets.

Carbonate mylonites are well developed in the marbles of the C- and D-zone (DDH 6, 17, 19, 25 and 30). They have a finely banded/laminated structure (0,5-3 mm), bending around necked and often elliptical boudins of calc-silicate gneisses. In DDH 19 the mylonitic fabric is only developed in the marbles and not in the adjacent pink leuco-granites, which also carry inclusions of carbonate mylonites. In DDH 6 (20,95-36,80) and DDH 25 (111,70-114,70) both the marbles and their leuco-granite wallrocks are affected by mylonitisation.

The brittle tectonites occur along the high-angle faults which at the B-zone adit cut across the more low-dipping zone of granitic mylonites. The wide zone of carbonate mylonites in the D-zone prospect (Plate 2) is in a similar manner cut by the F1-zone fault. Most of the brittle tectonites rarely exceeds 2 m in width and are normally 0,5-1 m wide. 1-10 cm wide breccia and ultracataclasite veins are, however, not uncommon in the granites. In contrast to the fault related tectonites they rarely extend for more than a few metres along strike.

Ultracataclasites include dark grey to black massive and fine-grained rocks which may contain some scattered fragments (approx. <5 %) of the protoliths. Most of the ultracataclasites probably represent the fault plane where maximum crushing and attrition took place. Fault-planes with ultracataclasites are found in DDH 1, 3, 5, 9, 10, 12, 13, 19, 21, 23, 30 and 36, where they form part of both the KRFZ and FOFZ-TSFZ. The ultracataclasites carry mostly sub-angular to sub-rounded fragments of hydrothermal quartz, feldspar and leuco-granites. They are usually found together with (e.g. DDH 12 and 23) or grades into (e.g. DDH 1, 3 and 12) other types of cataclasites, namely tectonic breccias. These will be designated according to the dominant type of matrix. Most of them are mono-lithological in the sense that they only contain fragments of one lithology.

The rock-flour breccias carry a dark grey to grey matrix of crushed rocks cemented by mainly fine-grained quartz. The sub-angular to rounded fragments in the breccia can be composed of leuco-granites (DDH 3: 87,40-88,25, DDH 10: 83,15-84,60 and DDH 8: 55,75-56,30), calc-silicate gneisses (DDH 6: 45,75-47,15), amphibolites (DDH 19: 42,35-,70; 47,00-,75 and 48,25-,30) and migmatitic biotite gneisses (DDH 36: 36,50-,70). Poly-lithological breccias are transected in DDH 4 (68,10-,45) and DDH 19 (41,55-42,10). Both contain fragments of hydrothermal quartz, whereas the latter also contains fragments of black ultracataclasites.

When the matrix becomes light grey due to increasing amount of fine-grained quartz the brittle tectonite is termed quartz breccia. **Quartz breccias**, mostly occurring in the leuco-granites, often carry strongly silicified granite fragments, as can be studied in DDH 23 (90,25-93,35) and DDH 24 (101,90-102,85; 104,00-105,20 and 111,20-113,70). In addition fragments of milky quartz veins can be found (DDH 23: 90,25-93,35). Strong silicification is also found associated with a quartz breccia cutting amphibole-biotite gneisses in DDH 12 (40,00-,70). At the surface the quartz breccia veins also contain finely disseminated arsenopyrite in the matrix (Nebba, Ottar and Storstein). The quartz breccias are cut by chlorite veins and chlorite-breccia veins (DDH 23: 117,45-,50) which may contain fragments of the quartz breccias (DDH 24: 112,60-,95 and 113,20-,55). In both DDH 23 and 24 it is quite apparent that the chlorite brecciation and alteration followed an early stage of quartz cementation and silicification.

Chlorite breccias being common along most fault zones are especially well developed along the FOFZ (DDH 23 and 24) and the TSFZ (DDH 21). The chlorite-cemented breccias often carry pervasively chlorite-altered fragments (DDH 23: 87,15-,70 and DDH 24: 102,85-104,00) and may grade into zones where the matrix becomes negligible but where the pervasive alteration still prevails (DDH 21: 135,00-141,85). Dark green ultracataclasites probably containing abundant chlorite are found in DDH 12 (41,75-42,25) and DDH 21 (137,00-,10 and 139,40-,55). Along the KRFZ chlorite breccias are less prevalent but occur for instance in DDH 1 (49,10-52,25) where several dykes of leuco-granites situated in strongly sheared amphibolites have become brecciated. In DDH 12 (83,65-84,00) the chlorite breccia is developed in garnet skarn. In addition, thin zones of chlorite crackle-breccias (see p. 25) are invariably present in all of the drillholes and in all lithologies.

In a number of intersections the ultracataclasites and breccias appear to have been affected by a **late(r) episode of ductile shearing**. This is apparent in DDH 23 (93,35-94,70), DDH 24 (13,55) and DDH 21 (139,70-140,90) where the chlorite breccias contain zones with flame-like or flaser structures due to shearing and flattening of variably chlorite-altered fragments. Locally these zones grade into dark green mylonites. Even chlorite crackle-breccias, frequently being located to the margins of granite dykes, show signs of ductile shearing (e.g. DDH 5: 72,15-73,60). The ultracataclasites intersected in DDH 3 (26,10-27,80 and 28,95-29,70) also progressively exhibit sheared and flattened clasts in approaching the individual fault planes.

Undeformed orange stilbite-calcite-chlorite veins cut the sheared chlorite breccias in DDH 23 (93,35-,45). This indicates that the **stilbite breccias,** being widespread in the D-zone (DDH 19), post-date the main chlorite breccia event. Breccia veins cemented by stilbite, calcite and locally chlorite are developed in carbonate mylonites occurring at 39,60-,70; 40,80-41,10 and 43,60-,80 in DDH 19 and in altered amphibolite with leuco-granite dykes at 112,40-,65 in DDH 1.

Incohesive breccias or fault gouges, composed of crushed wallrocks in a rock-flour matrix, are developed along a number of intersected fault planes (DDH 1, 5, 6, 8, 9, 11, 12 and 42) where clay alteration and formation of clay gouges also take place (see p. 49). Crush zones with fragments of quartz- and stilbite-calcite- veins are locally encountered. (e.g. DDH 5: 19,55-,90 and DDH 1: 25,05-26,50).

4.2.4 Hydrothermal alteration and veins

Different types of hydrothermal alteration and veins, some of them previously mentioned in the text, are found in the fractured rocks along the fault zones. The temporal relationships between the end-member types depicted in the summary corelog diagrams are not easily assessed from the drillcores alone. This is due to the frequent lack of crosscutting relationships and the heterogeneous distribution of the various types. In addition, some of the minerals (e.g. quartz, chlorite and epidote) precipitated repeatedly and thereby belong to several of the paragenetic stages. However, by using some information from surface observations, it is possible to make a chronological subdivision of the various hydrothermal events as listed below in order of decreasing age.

Emplacement of the Oksdal granite massif	
- Skarn alteration.	Pyrrhotite, chalcopyrite and/or pyrite
- Main bleaching.	
- Early episode of quartz veining.	Scheelite
Ductile shearing.	
Emplacement of white leuco-granites.	
- Soot-grey alteration.	
- Intermediate episode of quartz veining.	
- Muscovite alteration and quartz-muscovite veining.	
Brittle shearing.	
- Late episode of quartz veining.	
- Sericite alteration.	Gold-arsenopyrite
- Chlorite alteration and veining.	Pyrite
Extensional ductile shearing and fracturing.	
- Ankerite veining.	
- Epidote alteration and veining.	
- Quartz-chlorite veins and alteration.	Pyrite
- Red granite-alteration.	
Brittle deformation.	
- Stilbite-calcite veining.	
- Clay alteration.	

Skarn alteration is best developed in the calcite marbles of the C-zone (DDH 21B and 26) where it occurs at the contact with variably bleached two-mica granites and leuco-granites. The skarns have a massive appearance. Only locally are mineral banded types developed (e.g. DDH 21B). They show colours in shades of brown and green depending on the amount of garnet and green calc-silicates. The latter include hedenbergite, clinozoisite and idocrase as well as epidote, actionlite and chlorite formed during later retrogradation. Quartz filling interstics, cavities and fractures is a common feature, e.g. in DDH 21B (5,30-,95 and 11,65-,75) and DDH 30 (17,60).

The skarns are cut by dykes of variably bleached GTG (DDH 21B: 12,75-13,10) and HTG (DDH 26: 12,70-13,15) as well as pegmatite (DDH 26: 12,60-,70) and LG (DDH 21B: 4,45-,55). Since the skarn alteration is the only alteration type cut by dykes of two-mica granites it is assumed that they are coeval with the emplacement of the Oksdal granite massif.

Bleaching is used as a general term for a process where the granitoids (mainly GTG and HTG and less commonly GQM and MD) becomes pale or bleached due to zonal disappearance of dark minerals, particularly biotite. One type of bleaching found as envelopes on quartz (e.g. DDH 20: 21,05-23,80 and DDH 36: 48,55-49,90) and quartz-muscovite veins (e.g. DDH 30: 36,00-42,45 and DDH 40: 43,70-49,90) is caused by silicification and dissolution of biotite and/or replacement of biotite by muscovite. In addition most granite mylonites appear bleached due to replacement of biotite by white mica (e.g. DDH 31: 2,80-9,40).

However, the main type of bleaching invariably present in the drillholes occurs normally as 1-20 cm wide zones with irregular and diffusely delineated borders towards the two-mica granites (e.g. DDH 1: 87,90-89,40). It is normally not centered on any mineral-filled fractures. Wider zones of bleaching reaching several metres frequently contain 1-5 cm large biotite-bearing domains texturally resembling the ordinary two-mica granites (e.g. DDH 20: 76,20-77,50 and DDH 32: 6,80-10,85). The distinct igneous texture of the two-mica granites becomes more nebulous in the bleached zones. The clear outlines of the quartz and feldspar grains seem to be gradually erased, leaving an apparently massive and fine-grained rock resembling aplitic dykes. Microscopic examination of the bleached zones and their borders has so far not revealed any major differences in texture, grainsize, mineralogy or modal compositon in the rocks. The only difference is the presence or absence of biotite. The contacts with the GTG and HTG appear gradational even under the microscope.

Although aplitic dykes of W-LG clearly exist (e.g. DDH 36: 17,50-18,00), a number of them may represent bleached zones. The corelog for DDH 22 (C-zone), which intersecs the rocks below the Boliden adit, describes the presence of numerous thin (< 45 cm) aplitic dykes of P-LG occurring in variably bleached HTG at 10,10-15,00 and 20,00-34,50. Detailed mapping of the Boliden adit and the cliffs along the drillhole profile has, however, not revealed any such aplitic veins and dykes. The HTG along the profile only carries a network of pink bleached zones with variable density and width and with an appearance resembling the pink leuco-granites at the riverbank (see profile DDH 22-27 and DDH 15-21). The gradational boundary between pink, massive, aplite-like leuco-granites and bleached HTG can be studied in DDH 24 at 80,80-114,70. Except for the breccia zones this section bears a strong resemblance with the contact zone outside the Boliden adit.

At the moment there exist several possibilities regarding the genesis of the bleached zones. The gradational and diffusely delineated borders of the bleached zones indicate an alteration process, whereas the lack of fracture controll points towards intrusive processes. Further work on the petrography and petrochemistry of the bleached zones may hopefully lead to a more firm conclusion.

Soot-grey alteration zones are locally present in the granitoids. They may occur as cm-wide zones cutting bleached GTG (e.g. DDH 6: 86,40-,70) or as wider zones in W-LG (e.g. DDH 12: 113,60-70) and GQM (e.g. DDH 3: 23,10-25,75). The alteration is not easily recognized except where it is pervasive as in DDH 3 (88,25-89,25) and DDH 4 (69,00-70,25; 78,05-78,95 and 80,30-83,10). Microscopic examination of a soot-grey W-LG along the margin of a milky quartz vein in the K-zone reveals a recrystallised rock enriched in quartz, microcline and fine-grained biotite. The fine-grained disperson of biotite causes the sooty appearance of the rock. The alteration has in a number of cases been erroneously described as greenish grey chlorite alteration, which represents a more widespread type.

Quartz veins were formed repeatedly and occur in most of the lithologies along the fault zones. They can roughly be subdivided into massive, transparent and glassy types and massive to vuggy milky types. Intermediate types are also present, especially in the shear zones. Depending on their temporal relation to the different deformation episodes, i.e. early and late ductile shearing and brittle faulting, they can be classified as early, intermediate and late quartz veins. The distinction between these is, however, difficult on the basis of drillcore observations alone.

The glassy quartz veins are generally thin (< 15 cm) and were mainly formed during the early and late episode of quartz veining. The early veins locally contain coarse-grained K-feldspar along their margins. The glassy quartz veins occur scattered in most of the granites, which locally carry meter-wide zones with more intense veining (e.g. DDH 15: 35,15-36,80 and DDH 18: 35,30-36,50). In some of these zones the wallrocks may be silicified (e.g. DDH 25: 98,35-100,20 and DDH 27: 5,00-9,25). However, the most intense silicification is found associated with the quartz breccias of DDH 12, 23 and 24 (see p. 41), being formed during the late episode of quartz veining and brecciation. Glassy quartz veins are also found inside some of the mylonite zones, where they have suffered ductile shearing and were transformed into shear-banded or laminated veins (e.g. DDH 31: 2,80-9,40).

The milky quartz veins are usually thicker and form up to meter wide lenses located in tension gashes along or in close proximity to the fault planes (e.g. DDH 3: 37,10-40,10 and 41,55-42,30; DDH 10: 41,30-43,05 and DDH 15: 31,10-32,05). They are representatives of the intermediate stage of quartz veining, cutting the early granite mylonites of the B-zone (DDH 32: 6,45-6,80) and occurring as fragments in the ultracataclasites along the fault planes (DDH 12: 41,75-42,25). The latter situation is beautifully exposed outside the Storsteinen adit (Plate 2). A number of these milky quartz veins have become fractured and sheared and contain veins of arsenopyrite (e.g. DDH 11: 108,40-117,60). They post-date the W-LG (e.g. DDH 8: 58,75-59,30 and DDH 9: 69,40-,55) and show gradation to muscovite-bearing types (e.g. DDH 25: 41,60-42,60).

Muscovite alteration occurs locally in the two-mica granites and leuco-granites, where they form light to dark bronze-coloured zones rarely exceeding 25 cm in width (e.g. DDH 8: 20,40-,65; DDH 23: 61,95-62,05 and DDH 53: 36,30-,40). Occasionally the muscovite zones are strongly foliated when situated close to granite mylonites (e.g. DDH 31: 15,45-20,70), or transformed into phyllonites (e.g. DDH 40: 45,95-46,10). Muscovite-rich W-LG dykes probably representing muscovitization are found in GTG (e.g. DDH 40: 54,50-,60), BAG (e.g. DDH 4: 28,25-29,45) and MBGN (e.g. DDH 11: 35,25-38,55). The two-mica schists (MSCH) intersected in DDH 3 (30,95-35,70 and 40,10-41,55) contain porphyritic white feldspar crystals similar to the adjacent BAG which they show gradational contacts with. Although the schists have the appearance of muscovite-altered biotite gneisses and anatectic granites the presence of unaltered dykes of GTG and GQM may indicate a metamorphic petrogeneses.

Muscovite and quartz-muscovite veins have widespread occurrence in the granites. They are usually less than 20 mm wide and are characterised by their comb texture or growth of muscovite books and **milky** quartz crystals normal to the walls of the vein. Normally they have muscovite-rich rims around a central vein of quartz. Frequently the veins are only partly sealed, leaving open cavities in the centre of the veins and between the crystals. Locally these cavities are filled with arsenopyrite, pyrite, chlorite and/or calcite. Although they may be enveloped by up to 50 mm wide zones of muscovite-altered granites (e.g. DDH 19: 27,90-28,50 and DDH 35: 73,25-,45 and 74,80-75,30) they also cut such alteration zones (DDH 32: 31,65-33,45). Microscopic examination of quartz-muscovite and milky quartz veins cutting monzodiorites and amphibolites (e.g. DDH 25) has revealed envelopes of pervasive biotite alteration of the mafic minerals, i.e. hornblende and magmatic/metamorphic biotite. In some cases the muscovite-alteration zones becomes more fine-grained and yellowgreen in colour, probably due to superimposed sericite alteration (e.g. DDH 42: 65,05-66,00).

Sericite alteration is nearly invariably present in the W-LG where it is easily recognised by its yellow-green colour. The alteration is related to hairline sericite coated fissures which normally are enveloped by 1-5 cm wide zones of pervasive alteration. The density of the fracture-bound alteration varies considerably from scattered thin alteration zones (e.g. DDH 20: 3,70-17,45 and DDH 54: 68,70-72,65) to a more dense system of wider zones (e.g. DDH 8: 74,00-80,30 and DDH 29: 35,75-37,75) locally coalescing into nearly meter-wide, pervasively altered zones (e.g. DDH 8: 69,70-71,60). Also the W-LG dykes and locally the adjacent wallrocks contain sericite alteration (e.g. DDH 2: 51,05-,80 in HTG and DDH 24: 15,00-,40 in A).

Sericite alteration zones also occur, though less widespread, in W-P (DDH 12: 123,30-124,45), P-LG (DDH 25: 114,95-115,10), HTG (DDH 18: 71,05-84,95), B-GTG (DDH 53: 68,90-70,80) and GQM (DDH 10: 87,20-98,15). Alteration of biotite to chlorite is commonly found where the sericite alteration zones intersect biotite-bearing rocks such as GQM, GTG, HTG and biotite-spotted W-LG.

Sericite veins and alteration zones are also observed to cut ultracataclasites (DDH 12: 97,00-97,55) and granite mylonites (DDH 5: 40,00-,90). Granite mylonites with sericite alteration zones orientated parallel to the shear planes are intersected at 28,10-29,80 in DDH 27.

Locally the sericite alteration occur as envelopes on chlorite and/or calcite filled fractures (DDH 11: 87,45-90,55 and DDH 36: 45,10-,25), pointing to the younger age of the latter two minerals.

Dark green chlorite veins and veinlets are invariably present in the drillholes and in all types of lithologies. They occur as scattered chlorite-coated fractures (e.g. DDH 22: 20,00-34,50 in GTG) and as more dense veining grading into chlorite crackle-breccias (e.g. DDH 30: 52,05-56,35). **Pervasive dark green chlorite alteration** is mainly developed close to the ductile and brittle shear zones, where mafic mylonites are transformed into chlorite schists (see p. 40) and brecciated granites have become cemented by chlorite and pervasively altered (DDH 23-24, see p. 42). The chlorite breccias occurring in the latter drillholes were preceeded by quartz breccias and an intermediate type of quartz-chlorite breccias. **Quartz-chlorite veins** are elsewhere quite common and frequently carry greenish grey envelopes of chlorite alteration (e.g. DDH 2: 56,30-60,75 in MD and DDH 21: 94,10-96,20 in MD), which also may occur without any apparent association with quartz-chlorite veins (e.g. DDH 31: 30,20-,95).

Ankerite veins with brown tarnish are found scattered along the fault zones. Strong veining (1-5 mm) is encountered in the ABGN of DDH 12 (102,70-105,70) and DDH 13 (58,20-,70), in A of DDH 8 (80,30-88,35) and in sheared milky quartz of DDH 3 (27,80-28,60). The veins are locally surrounded by sericite alteration (e.g. DDH 9: 85,85) and greyish green chlorite-altered MD (e.g. DDH 14: 34,60-35,00). They may accompany chlorite as veins and breccia matrix (e.g. DDH 8: 74,00-80,30; DDH 9: 84,75-87,00 and DDH 11: 127,50-134,35) and occur together with stilbite (DDH 13: 46,85). Brownish chlorite-ankerite altered A and ABGN are interseted in DDH 19 (41,55-42,90; 45,70-46,50 and 50,40-54,25).

Epidote alteration and veins accompanied by some quartz and chlorite are only occasionally encountered in the drillcores, mainly in the B-zone. The grass-green veins are invariably connected to the MD and A, where they form scattered hairlines and up to 5 mm veins and veinlets (e.g. DDH 32: 18,80-24,90 and DDH 35: 27,00-32,00). Thin mafic mylonites with epidote veins mainly along the shear planes occur at 27,50 and 31,00-33,90 in DDH 40. Fracture controlled pervasive epidotisation (< 20 cm zones) is intersected in DDH 34 (66,25-67,35) and DDH 42 (60,90-61,00). Pervasive alteration zones are also encountered in CGN (e.g. DDH 41: 19,00-,95) and mafic mylonites (e.g. DDH 34: 25,65-,95). The temporal position of the epidote veins in the parageneses is still undetermined.

Red feldspar alteration commonly occurs as envelopes on stilbite-calcite and stilbite-chlorite veins in LG (e.g. DDH 6: 18,00-19,00), HTG (e.g. DDH 24: 26,00-33,00), GQM (e.g. DDH 42: 36,35-37,10), MD (e.g. DDH 26: 23,80-24,55), BAG (e.g. DDH 10: 44,90 and 46,00) and MBGN (e.g. DDH 6: 54,10-56,85). Rarely the red alteration are found associated with epidote and/or chlorite veins (e.g. DDH 26: 70,70-71,30). The stilbite-calcite $\pm$ chlorite veins with brick-red envelopes invariably present along the different faults do not seem to have a direct spatial relationship with the pervasive red feldspar alteration developed along the FOFZ and TSFZ and associated splays where the HTG is developed. The stilbite veins are believed to represent a somewhat younger hydrothermal event.

Stilbite-calcite veins are invariably present in the drillholes and frequently in close proximity to the faults. The orange-red veins, often with associated brick-red envelopes, are characterized by their zonal development, i.e. fractures lined by orange-stilbite and with core of white laminiform calcite. Some veins also show early precipitation of dark green chlorite along their margins. Good examples of the veins and stilbite cemented-breccias are found in DDH 19. Although stilbite and calcite frequently form composite veins, they also exist as monomineralic stilbite (e.g. DDH 18: 46,00-52,00 and DDH 27: 27,50-29,80) and calcite veins (e.g. DDH 5: 75,10-79,30; DDH 11: 74,30-,40 and DDH 15: 61,70-62,05). The stilbite veins are assumed to post-date the chlorite alteration and veining and pre-date the clay alteration (see p. 42) which terminates the hydrothermal activity.

Clay alteration is developed along some of the fault planes, i.e. mainly those associated with late normal faulting (see p. 42). Clay gouges with associated clay-altered wallrocks are best developed in DDH 42 (30,00-33,00) and DDH 25 (106,85-107,30).

4.2.5 Ore mineralisation

The ore mineralisation is comprised of pyrite, pyrrhotite, arsenopyrite and native gold as well as minor scheelite (see Table 1 and p. 43). The first two are best developed in the skarns of the C- and E-zone, whereas arsenopyrite is found widespread as fracture filling in the granites and associated quartz veins. The native gold, the only economic important constitutent, is found intergrown with arsenopyrite (see p. 19) or occurs as visible grains (< 1 mm) in arsenopyrite-poor milky quartz veins.

The Fe-sulphide mineralisation is comprised of pyrite, pyrrhotite and chalcopyrite, representing several episodes of ore formation. It is best developed in the mafic lithologies including skarns and calc-silicate gneisses. In the clinopyroxene-actinolite skarn of DDH 11 (23,00-23,70) **pyrrhotite and minor chalcopyrite** form interstitial aggregates together with quartz and biotite. These sulphides are also encountered as fine-grained dissemination and veinlets in bands of biotite amphibolite (22,20-,60) and calc-silicate gneiss (28,70-,60 and 31,90-32,00) in the surrounding MBGN, A and BAG. Pyrrhotite - chlorite coated fissures are on rare occasions encountered in W-LG dykes GTG (DDH 8: 5,32-5,65) and BAG (DDH 11: 43,85-44,10 and 65,00-,25).

Pyrite sporadically occurs as dissemination and scattered crystals in the mafic rocks, including MD (e.g. DDH 34: 47,50-48,00 and DDH 40: 27,85-31,00), A (e.g. DDH 32: 11,10-12,10 and DDH 34: 20,10-,65) and CGN (e.g. DDH 1: 30,70-,80 and DDH 42: 25,00-28,00). Dissemination in the granites is rarely encountered (e.g. DDH 1: 64,95-65,00 in HTG). The highest concentration of pyrite occurs in the garnet-hedenbergite-clinozoisite-hornblende skarn of DDH 21B (4,65-5,30; 5,95-6,40 and 6,90-10,65), where it forms coarse aggregates, disseminated grains and fissure coatings. The dissemination and veinlets of pyrite in the MD of DDH 42 (55,80-57,65) are cut by thin white pegmatite dykes, indicating an early periode of pyrite deposition.

Possibly later episodes of minor pyrite deposition are represented by pyrite stringers and grains along shear planes in mafic mylonites (e.g. DDH 1: 50,35-,70 and DDH 31: 9,85-10,25), by pyrite dissemination in greyish green chlorite-alteration (e.g. DDH 16: 21,15-,35 in MD and DDH 32: 24,45 in GGO), by pyrite-chlorite veins and veinlets in various granitoids and gneisses (e.g. DDH 35: 33,80 in W-LG, DDH 42: 58,20-,80 in aplite veined GTG and DDH 1: 40,80-41,90 in BGN) and by thin quartz and quartz-muscovite veins (locally sheared) with pyrite as dissemination, veinlets and fissure coatings (e.g. DDH 1: 28,45-,80; DDH 25: 23,00-25,70 and DDH 40: 49,90-53,75 and 57,75-

,85). Some of the pyrite-bearing quartz veins contain locally calcite (e.g. DDH: 11,40-,95).

Scheelite has not been looked for in the cores by UV-lamp. At the surface it is only locally present and mainly occurs along early glassy quartz veins. Microscopic examination of scheelite mineralisation along mylonitic quartz veins in the Boliden adit shows that the coarse scheelite grains are strongly deformed along crosscutting shear planes which are overgrown by undeformed idiomorphic crystals of arsenpyrite. This indicates that the scheelite was formed in association with the two-mica granites prior to the early phase of ductile shearing.

The arsenopyrite with associated native gold occurs as massive to semi-massive veins, veinlets and breccias in fractured granites and quartz veins as well as dissemination in leuco-granites, cataclasites and quartz veins. 38,5 % of the about 400 registered occurrences of arsenopyrite mineralisation in the cores are hosted by quartz veins and 61 % by various types of granitoid bodies and dykes. Only 0,5 % of them are hosted by supracrustals, mainly amphibolite. 15 % of the quartz veins, mainly occurring in the granitoids, are ductilly deformed both prior and subsequent to the arsenopyrite mineralisation. The granitoids hosting the arsenopyrite veins are mainly leuco-granites (44,5 %) variably bleached two-mica granites (GTG+HTG, 44,5 %), pegmatites (5 %) and quartz monzonites (3 %). The various types of arsenopyrite-bearing veins can best be studied in the drillholes intersecting the fractured and quartz veined granites and monzodiorites of the C-zone, i.e. DDH 15, 23, 24 and 25.

The massive to semi-massive arsenopyrite veins and veinlets hosted by the fractured and partly sheared granitoids are the dominant mineralisation type. They are characterised by the lack of accompaning gangue minerals and any specific type of wallrock alteration. They are normally 1-20 mm wide and up to several meters long. They generally occur as scattered veins and veinlets (e.g. DDH 4: 13,80-20,15), locally forming a network of arsenopyrite coated fissures (e.g. DDH 3: 22,45-23,10 and DDH 15: 24,00-,45). Crackle-breccias and breccia veins (1-40 cm wide) with wallrock fragments in a matrix of arsenopyrite are also present (e.g. DDH 4: 29,05-,45; DDH 23: 102,65-,90 and DDH 25: 104,80-105,20). Weak dissemination of arsenopyrite grains and aggregates is only locally developed and mainly in the unaltered leuco-granites (e.g. DDH 2: 5,30-,60 and DDH 21: 9,00-10,00). Another widespread type of dissemination is found in the matrix of ultracataclasites (e.g. DDH 3: 89,25-90,00) and rock-flour breccias with variable contents of quartz cement (e.g. 66,00-,25; DDH 12: 98,90-99,40 and DDH 23: 114,65-115,00). Bluish grey to steel grey and possibly silicified zones with fine-grained arsenopyrite occur at the surface in extension of some of the breccia veins. In the drillholes they appear for instance at 76,85-,90 and 78,95-79,70 in DDH 5, at 114,65-115,00 in DDH 23 and at 48,85 in DDH 42.

The arsenopyrite veins may locally be surrounded by bleached granites (e.g. DDH 33B: 5,45-,90), soot-grey alteration (e.g. DDH 3: 17,40-19,20), muscovitisation (e.g. DDH 22: 23,90), sericite alteration (e.g. DDH 4: 17,95-19,30) and greyish green chlorite alteration (e.g. DDH 10: 39,50). In addition, a small fraction of the numerously occurring chlorite and quartz-chlorite veins carry some grains and aggregates of arsenopyrite (e.g. DDH 23: 115,70-,95; DDH 24: 34,00 and DDH 29: 11,15).

Arsenopyrite-bearing quartz veins are the second most important type of mineralisation. They carry 0,1-20 mm thick veins, veinlets and disseminated grains and aggregates of arsenopyrite which are frequently located at their margin(s) and immediate wallrocks. The mineralised quartz veins include thin veins of grey glassy quartz (e.g. DDH 1: 44,25-48,60; DDH 15: 35,95-36,80 and DDH 27: 5,70-9,20) and veins of milky quartz (e.g. DDH 11: 108,70-117,60; DDH 13: 40,90-41,30 and DDH 32: 6,70-,80), locally with halo of disseminated arsenopyrite crystals in the wallrocks (e.g. DDH 25: 20,65-,85 and 41,20). 15 % of the mineralised veins in the cores are quartz-muscovite veins. They carry stringers, scattered aggregates and disseminated grains of arsenopyrite which mainly occur along the core of vuggy quartz (e.g. DDH 5: 77,45-78,15; DDH 20: 39,40 and DDH 32: 17,10-18,20). Occasionally the central part of the vein is totally composed of arsenopyrite being rimmed by muscovite.

Observations at the surface clearly indicate that a number of the quartz veins, both early glassy and late milky types, were super-imposed by fracture controlled arsenopyrite mineralisation. This is also evident from some of the cores which show strongly quartz veined leuco-granites with crosscutting arsenopyrite veins and breccias (DDH 15: 23,30-,40 and DDH 25: 104,80-105,20), quartz-vein margins cut by arsenopyrite-sealed fractures (DDH 1: 51,00-,05; DDH 22: 23,50-,65 and DDH 27: 32,25) and arsenopyrite occurring along transverse fractures or a network of fractures in the quartz veins (DDH 11: 116,05-117,30 and DDH 27: 38,60).

About 15 % of the mineralised quartz veins show signs of ductile shearing (e.g. DDH 15: 41,70; DDH 27: 25,30 and DDH 41: 37,50; 42,15; 43,40 and 54,20). It is, however, difficult to assess the age of the mineralisation in relation to the shearing events. This is mainly caused by the parallel-orientation of the shearplanes (following the quartz veins) and the arsenopyrite veins, and the restricted thickness of the ore veins which rarely show development of shear bands or zones of cataclasis. The best example of a pre-shearing mineralisation is found in DDH 32 (10,70-,95) where a 5 cm wide arsenopyrite-quartz vein is located at the contact between bleached GTG and HTG. Mylonitisation affecting the HTG dies out in the centre of the arsenopyrite-quartz veins leaving the other half and the GTG nearly unaffected. The deformed part of the vein shows development of shearbands with strong cataclases of the arsenopyrite.

Examples of arsenopyrite veins unaffected by shearing are more common. These include networks of arsenopyrite coated fissures in granite mylonites (DDH 40: 24,35-,50), an arsenopyrite-quartz-muscovite vein cutting a shear zone in MD (DDH 32: 23,10), mylonitic quartz veins with margins transected by arsenopyrite filled fissures (DDH 23: 40,00-,40) and granite mylonites with sheared quartz veins, both containing arsenopyrite veinlets cutting the shearplanes (DDH 31: 7,65-8,00).

Some of the arsenopyrite may occasionally occur together with pyrite (e.g. DDH 13: 52,05-,10; DDH 16: 56,25 and DDH 35: 17,65-,35). Microscopic examination of such mineralisation reveals that most of the pyrite occurs associated with late quartz-chlorite veins partly intersecting the arsenopyrite aggregates.

The arsenopyrite mineralisation is therefore assumed to mainly pre-date the chlorite alteration and veining as well as the late episode of extensional ductile shearing. It seems in most cases to post-date the episode of brittle dextral shearing and faulting and is mainly associated with the late quartz veining stage which locally (Oppgangen adit) is coeval with the sericite alteration (see p. 43).

4.2.6 Gold distribution and ore control

A comparison of ore grades with different types of hydrothermal alteration, veins and arsenopyrite mineralisation in the summary corelog-diagram is made difficult by the variable length of the analysed sections and missing cores (CM). In spite of this there seems to exist no systematic visual covariance between strong hydrothermal alteration and veining and the ore grades in the diagram. The covariance between registered arsenopyrite and high gold values (> 1 g/t Au) seems to be quite good (no arsenic analyses of the cores), although high gold values also are present in areas with no visible arsenopyrite, (e.g. DDH 12, 13, 17, 24 and 27). This is due to the presence of native gold occurring alone or intergrown with very fine-grained arsenopyrite. Visible grains of native gold have so far been encountered several places in the C-zone (the Klondyke - N. Skarstoll quartz vein including the intersection in DDH 55, the C2 quartz vein and quartz veins in DDH 15 locally giving 777 g/t), in the quartz veins of the K-zone and in the mineralised ultracataclasite at Storstein, Upper F-zone.

The presence of Fe-sulphide mineralisation has not been given in the summary corelog-diagrams. However, a number of samples of pyrrhotite-chalcopyrite and/or pyrite mineralised skarns and quartz veins have been collected at the surface for analytical purposes. None of these samples gave gold values above 0,02 g/t.

The lack of systematic analyses of all the drill-cores, including all the major faults, makes any correlation of structures and ore grades difficult. From the summary corelog-diagram it seems that the high-grade sections in the drillholes of the F- and K-zone are more related to the major faults than the sections of the C-zone which include mineralisation associated with a network of minor structures in the granites on the footwall side of the C-fault. This difference is caused by the dominance of supracrustal rocks (which generally contain no arsenopyrite mineralisation) in the F- and K-zone and the low number of analysed drillholes intersecting the C-fault and its associated system of milky quartz veins (Klondyke vein) which frequently contain visible gold at the surface.

The B-fault and adjacent granites also contain anomalous gold contents, although only 39 sections have been analysed, all of them yielding less than 3 g/t gold.

The gold distribution seems to be controlled both by major and minor structures. The latter occur most densely along the major faults, where they cut quartz veined and fractured granitoids. A large part of the native gold is found associated with arsenopyrite veins, which in 99,5 % of the registered cases occur in granitoids and quartz veins, i.e. competent rocks. This means that there also exists a strong lithological control on the gold mineralisation which, therefore should not be expected to occur along fault structures cutting incompetent supracrustal rocks with no quartz veins or granite dykes.

The factors controlling the location of the Kolsvik deposit to that particular section of the KRFZ, which can be followed for more than 13 km, are still unclear. All along the fault zone occur sections with milky quartz veins, mylonites and ultracataclasites, the latter frequently being developed in the quartz veins. The only other mineralisation along the KRFZ is the Nye Oksen deposit situated about 2 km SSE of the Upper F-zone (Fig. 3). This occurs in a strongly bleached and sericite altered two-mica granite containing a network of massive arsenopyrite veinlets. Sericite alteration is not found along the KRFZ outside the Kolsvik and Nye Oksen deposit. In the Kolsvik deposit it seems that the sericite alteration is spatially associated with bodies, sheets and dykes of W-LG, being less abundant in the B- and Upper F-zone (Storstein-Tostein, Plate 1) where the gold grades apparently decrease. This means that one of the mechanisms for the ore formation could be that the structurally controlled intrusion of leuco-granites gave off **gold-bearing magmatic solutions** during crystallization and created thermal gradients which controlled the circulation of fluids along fractures where hydrothermal alteration took place.

Most of the gold-rich arsenopyrite deposits in the Helgeland region and in the Bindal district (Fig. 2 and 3) are located at the contact between granite massifs and supracrustal rocks. The latter rocks are intersected by numerous granite dykes and frequently form variably sized xenoliths and roof pendants in the adjacent granite. Although sericite alteration is found in a number of these deposits leuco-granites occur less regularly. Another feature is that the gold content and the amount of arsenopyrite veins decrease

away from the contact, i.e. low gold contents in the interior part of the granites as well as in supracrustal rocks at a distance from the contact. **These features should be borne in mind when planning further exploration on the Kolsvik deposit.**
The increased amount of arsenopyrite veins in the contact zone is probably caused by a heterogenous stress set up in the xenolith-rich granite, leading to the development of a system of differently orientated fractures and faults. If the arsenopyrite and gold are precipitated from **metamorphic solutions** their location would be controlled by the presence of permeable structures at the time of fluid migration and by the presence of incompetent supracrustal rocks responding ductilely to any brittle deformation in the granites. This means that the supracrustals above the granite contact in certain areas could have acted as a low-permeable cap rock trapping the fluids.

The nearly invariable presence of sericite alteration in the gold-rich deposits may have some bearing on their formation. Sericite alteration is commonly encountered in deposits which were formed under the influence of meteoric waters in the hydrothermal plumbing system, e.g. porphyry-type Cu- and Mo-deposits (Taylor 1974, Cathles 1977) and mesothermal Au-deposits (Nesbitt et al. 1986). It may therefore be speculated as to whether the native gold and associated sulphides precipitated as a response to mixing of metamorphic and meteoric waters.

5 PRELIMINARY ASSESSMENT OF THE ORE POTENTIAL

Some comments on the possible economic potential of the drilled ore zones are warranted. The total economic potential of the deposit will be dealt with in a later report (Ihlen 1995a), which will also discuss the gold distribution at the surface and possible ore potential in the A- and B7-zone (Fig. 6) as well as in the western and northern extension of the K- and D-zone, respectively.

The main use of the available drillcores and the analytical results is to determine the vertical and lateral continuity of the ore zones and to estimate average ore grades. An ore zone in this connection represents a mineralised (i.e. presence of arsenopyrite and/or gold contents above 1 g/t) **volume of rock which has dimensions (width, depth and strike length) suitable for mining, if sufficient ore grades can be proved.**
Although fracture-controlled gold-arsenopyrite mineralisation is found over large areas in association with the fault zones, not all of them can be said to represent part of a potentially economic ore zone. Gold analyses of mineralisation at the surface have revealed a number of high-grade veins and breccia-veins. However, those occurring at a distance from any of the main faults (e.g. Ottar) have too small dimensions to represent an ore potential. Potentially mineable ore zones have, in the authors opinion, so far only

been recognised in relation to faults and their immediate fractured and/or quartz veined wallrocks. High-grade zones intersected at some distance from the faults (e.g. in DDH 10, 13 and 25) should therefore be treated with caution in ore reserve calculations.

The continuity of the fault-related ore zones is not always simple to assess. The fault structures and associated tectonites are easily distinguished during corelogging. The problem is, however, not the continuity of the faults, but the continuity of the spatially associated mineralisation. The mineralisation can be defined by the presence of arsenopyrite (no arsenic analyses performed), which is the main carrier of native gold (see p. 53), and by high gold values. The main obstacle in defining continuously mineralised ore zones from the drillcores is the strong lithological control of the mineralisation, i.e. cores containing supracrustal rocks with no quartz veins or granitic dykes along the faults will probably contain no gold. The assessment of continuity is also made difficult by the presence of fine-grained and nearly invisible arsenopyrite in the dark coloured ultracataclasites, the extremely long sections analysed (16 m in DDH 25), missing cores and the unanalysed to partly analysed drillcores from a number of fault intersections. Additional problems are the widely spaced drillholes in areas with overburden and common use of single holes rather than drillhole-fans in areas with overburden.

The gold grades of different sections across the defined faults are summarised in table 2. It shows, together with the arsenopyrite distribution in the summary corelog-diagram, that the TSFZ (DDH 21, 26, 30 and 42) with associated chlorite alteration is unmineralised or has low contents of gold. This is also the case for parts of the FOFZ (e.g. DDH 19), but not where arsenopyrite-bearing quartz-breccia zones with associated silicification occur, as in DDH 23, 24 and 25. The first two yielded 1,28 g/t Au over 11 m and 3,09 g/t Au over 3 m respectively and may represent part of the F11-fault tectonites or some other fault breccia being offset and incooperated into the FOFZ, where it became superimposed by chlorite alteration. The silicified breccias in DDH 25 may represent the continuation of the F8- or F10-fault.

The B-, C- and K-zone seem to be reasonably continuous in respect to the presence of arsenopyrite and/or analytical gold. The B-zone is characterised by the presence of mineralised mylonites whereas the K-zone is distinguished by mineralised quartz veins along the fault. The C-fault is intersected by 7 drillholes, but only 3 of these intersections are fully analysed. No gold was detected in two of the intersections. This is assumed to be caused by the very long analytical section (16 m) used in DDH 25 and the presence of supracrustals at the intersected part of the fault zone in DDH 1. The frequently occurring milky quartz veins with visible gold along the C-fault at the surface are not detected in the drillholes by means of extreme gold values. A possible exception is DDH 55, which was drilled below Klondyke. The drillhole intersected a mineralised zone at 5,70-7,00 m which contained visible gold and a gold content of 125 g/t. (BV 578). On the footwall side of this zone, which probably is related to the C-fault, the gold values ranged from 0,28 g/t to

9,10 g/t with an average of 3,11 g/t over 3,40 m. The average for the whole section (5,70-10,40 m) is 27,49 g/t.

The F-zone (Plate 2) is comprised by a system of anastomosing faults (F1 to F11), which in the Upper F-zone seem to converge at a depth of 120-130 m below the surface (see drillhole profile DDH 36). The major faults with associated minor splays (F1A-C, F5A-B) have, with the exception of F3, F6 and F7 which represent near surface deflections of the F4 and F5, potential for ore mineralisation down to a depth of at least 100 m. The faults intersected by the drillholes are mainly F1, F2, F4 and F5, whereas F8, 10 and 11 are intersected in DDH 20, 23 and 24, respectively (Table 2). Continuous mineralisation seems to exist at least along F4 and F5. Especially the F4 ore structure contains economic gold grades (7,82 g/t in DDH 8, 8,06 g/t in DDH 13 and 10,40 g/t in DDH 12) over 1,5-3 m sections. All the available cores from the F5 ore structure contain arsenopyrite, though the gold grades are below 5,63 g/t. This is primarily caused by the length of the analysed sections (15,75 m in DDH 9 and 11 m in DDH 10). An interesting feature found in DDH 12 and 13 is the lack of registered arsenopyrite in the sections with high gold grades. This means that the native gold either occurs alone or, most probably, is associated with very fine-grained arsenopyrite easily overlooked in the dark coloured tectonites.

DDH 50-54 in the Lower F-zone also contain 1 m sections with high to intermediate gold grades. Since only simplified corelogs exist for these drillholes (BV 578) it is not possible to determine the mineralisation types and the location of intersected fault planes. The gold mineralisation in DDH 50 (0,62 g/t at 3,6-4,6 m and 1,96 g/t at 5,5-6,5 m), DDH 51 (2,52 g/t at 3,3-4,1 m and 4,16 g/t at 8,6-9,5 m) and DDH 52 (Av. 2,76 g/t at 29,3-33,0 m, 3,84 g/t at 45,5-46,5 m and 4,40 g/t at 48,5-49,3 m) is possibly related to the F10-fault and associated splays. The high gold grades in DDH 53 (14,80 g/t at 60,4-61,4 m and 12,40 g/t at 63,25-64,25 m) and DDH 54 (20,50 g/t at 82,5-83,5 m, 27,20 g/t at 83,5-84,4 m and 4,21 g/t at 84,4-85,4 m) may be related to mineralisation along the F4-fault and associated splays.

The presence and continuity of gold mineralisation along the F1 and F2 faults are difficult to assess. Although arsenopyrite is present in some of the fault tectonites most of the intersections have not been analysed for gold or they are represented by analytical sections having lengths of 8,5-20 m and giving less than 0,4 g/t Au.

Although minor arsenopyrite occurs associated with the F8, F10 and F11 tectonites at the surface and partly in the drillcores, nothing much can be said about the continuity of the mineralisation. This is mainly due to the few drillhole intersections and limited amount of available cores.

Table 2: Gold contents (g/t) in analysed drillcore sections across defined faults (Plate 2). The interval for the fault intersection is estimated where cores are missing (CM). No faults intersected in DDH 14, 15, 16, 21B, 22, 27, 29, 33, 33B and 35.
Average values in bold type with number of samples in brackets.
N.A. = Not Assayed, LF = Late Fault, W = West and E = East.

DDH	INTERSECTED FAULTS		ANALYSED SECTION INTERVAL	ANALYSED SECTION LENGTH	GOLD CONT.
43	B1	32,55-32,75			N.A.
32	B1	11,40-12,55			N.A.
31	B1	7,40-9,40	7,00-8,00 8,00-9,00 9,00-10,00	1,00 1,00 1,00	1,17 0,14 0,23
34	B1	53,95-54,00			N.A.
40	B1	68,60-69,60	68,60-69,60	1,00	2,80
41	B1	61,50-62,50	61,00-63,00	2,00	**0,03** (2)
41	B2	64,00-65,00	64,00-65,00	1,00	0,04
6	C	44,90-47,15			N.A.
5	C	CM. 72,00-73,00			N.A.
1	C	112,40-114,20	112,00-112,50 112,50-114,20	0,50 1,70	<0,50 N.A.
2	C	CM. 39,00-41,00			N.A.
18	C	CM. 24,00-26,00	24,00-26,50 26,50-27,50 27,50-28,50 28,50-29,00	2,50 1,00 1,00 0,50	N.A. **4,05** (2) **6,00** (2) 1,20
25	C	64,95-66,10	50,00-66,00	16,00	0,0X
17	C	18,55-19,45			N.A.
30	C-splay	21,00-22,10			N.A.
20	F1	54,60-56,75	47,00-67,00	20,00	<0,40
12	F1A	114,30-114,80			N.A.

Cont.: Table 2.

DDH	INTERSECTED FAULTS		ANALYSED SECTION		GOLD CONT.
			INTERVAL	LENGTH	
36	F1	248,00-249,10			N.A.
10	F1	CL. 120,50-122,50			N.A.
12	F1B	97,00-99,90	84,00-103,00	19,00	0,40
13	F1C	57,55-58,70			N.A.
12	F1C	78,85-79,35			N.A.
13	F2	48,30-48,70	41,50-50,00	8,50	0,0X
12	F2	68,20-68,90	66,00-75,00	9,00	<0,30
8	F2	74,20-74,45	62,25-79,00	16,75	<0,30
13	F4	30,45-31,00	30,00-31,00 31,00-32,00 32,00-33,00	1,00 1,00 1,00	**9,50** (2) **13,10** (2) **1,60** (2)
12	F4B	38,60-41,00	38,00-39,00 39,00-40,00 40,00-41,00 41,00-41,50	1,00 1,00 1,00 0,50	2,56 0,13 **15,10** (2) 1,00
12	F4A	41,75-42,25	41,50-45,00	3,50	0,40
8	F4	58,75-59,70	58,50-59,50 59,50-60,25	1,00 0,75	**11,28** (4) **3,23** (3)
36	F4	CM. 121,50-123,50	121,50-122,00 122,00-123,00 123,00-124,00	0,50 1,00 1,00	N.A. 0,28 0,83
10	F4	83,15-86,90	80,00-88,00	8,00	0,20
9	F4	68,55-69,65	68,00-68,25 68,25-80,00	0,25 11,75	1,10 <0,20
3	F4	26,10-28,95	23,00-30,00	7,00	<0,80
8	F5	55,75-56,30	55,50-56,25 56,25-58,50	0,75 2,25	**5,63** (3) <0,60

Cont.: Table 2.

DDH	INTERSECTED FAULTS		ANALYSED SECTION		GOLD CONT.
			INTERVAL	LENGTH	
10	F5A	CM. 72,00-74,00	72,00-74,00	2,00	0,0X
11	F5	117,60-127,50	117,60-119,00 119,00-120,00 120,00-121,50	1,40 1,00 1,50	N.A. <0,50 0,10
9	F5A	59,25-65,20	48,00-63,75 63,75-64,00 64,00-68,00	15,75 0,25 4,00	<0,50 2,40 <0,20
3	F5A	52,60-53,25	52,60-53,00 53,00-57,00	0,40 4,00	N.A. <0,40
10	F5B	CM. 67,00-68,00	59,00-70,00	11,00	<0,30
9	F5B/K	CL. 45,75-48,00	45,00-45,75 45,75-48,00	0,75 2,25	<0,10 N.A.
3	F5B	89,25-90,00	87,50-88,50 88,50-89,25 89,50-90,75	1,00 0,75 1,25	**11,05 (4)** **6,60 (3)** **9,43 (4)**
20	F8	21,35-21,45	18,00-22,00	4,00	<0,10
23	F10	122,85-128,80			N.A.
24	F11?/ FOFZ	99,45-140,70	99,45-100,00 100,00-104,00 104,00-107,00 107,00-128,00 128,00-140,70	0,55 4,00 3,00 21,00 12,70	N.A. **0,16 (4)** **3,09 (3)** **0,18 (3)** N.A.
23	F11?/ FOFZ	83,70-122,10	83,00-94,00 94,00-105,00 105,00-110,00 110,00-122,10	11,00 11,00 5,00 12,10	**0,13 (3)** **1,28 (11)** 0,08 N.A.
10	K	41,30-43,05	40,00-43,00	3,00	0,10

Cont.: Table 2.

DDH	INTERSECTED FAULTS		ANALYSED SECTION		GOLD CONT.
			INTERVAL	LENGTH	
11	K	108,40-117,60	103,50-114,00 114,00-115,00 115,00-116,00 116,00-117,00 117,00-118,00 118,00-119,00	10,50 1,00 1,00 1,00 1,00 1,00	0,70 **1,55** (2) **0,95** (2) **2,41** (2) **9,98** (2) 2,00
9	K/F5B	CL. 45,75-48,00	45,00-45,75 45,75-48,00	0,75 2,25	<0,10 N.A.
4	K	16,20-18,50	15,00-17,00 17,00-18,00 18,00-18,50	2,00 1,00 0,50	<0,40 **4,05** (4) **1,00** (2)
25	FOFZ	100,20-111,50			N.A.
19	FOFZ	25,25-52,50			N.A.
42	TSFZ	25,00-32,65	25,00-33,00 33,00-36,00	8,00 3,00	N.A. 0,05
30	TSFZ	59,60-62,95			N.A.
26	TSFZ	88,70-89,40	75,00-91,00	16,00	0,0X
21	TSFZ	130,45-141,85	135,00-145,00	10,00	0,0X
9	LF-E	CM. 14,45-18,00			N.A.
4	LF-E	68,10-68,45			N.A.
4	LF-W	79,95-80,05			N.A.

The assessment of average gold grades in the presently defined ore zones is made difficult by the small number of analyses from the intersected faults and the small volumes of the ore zones contained in the cores, which upon analyses cannot average out the general presence of "nugget effects".

The term **"nugget effect"** refers to erratic high (analytical) values that are related to the presence of local concentrations of the material of interest (Vallée et al. 1993), in this case gold. However, the definition of nugget effect is directly related to the scale of observation (Journal and Huijbregts 1978). The nugget effect can be quantified from the sampling and assaying data by geostatistical methods (variograms) (e.g. Deutsch 1989, Fytas et al. 1990 and Healey 1993) and especially in cases where exploration mining and bulk sampling have taken place. It is comprised of several components (Vallee et al. 1993) as given below.

Natural nugget effects:

- Mineralogical component.
  Spotty distribution of gold both as coarse visible grains and as accumulation of grains on a microscopic scale.

- Geological component.
  Heterogeneous distribution of the minerals due to banding, ore zonation and variable density of ore veins and veinlets.

Introduced nugget effects (Human nugget effects)

- Sample acquisition component.
  Additional variability can be introduced through sampling, handling and shipment.

- Sample preparation component.
  Splitting and sample reduction procedures and contamination between samples during crushing and milling.

- Assaying component.
  The use of different analytical methods and labs.

Only the natural nugget effects will be dealt with in this report. The degree of variability in the analytical values gives an indirect measure of the nugget effect. The histograms in Fig. 11 showing the frequence of different gold contents in the analysed sections of the drillcores show very few extreme values (e.g. 125 g/t and 777 g/t in DDH 55 and 15,

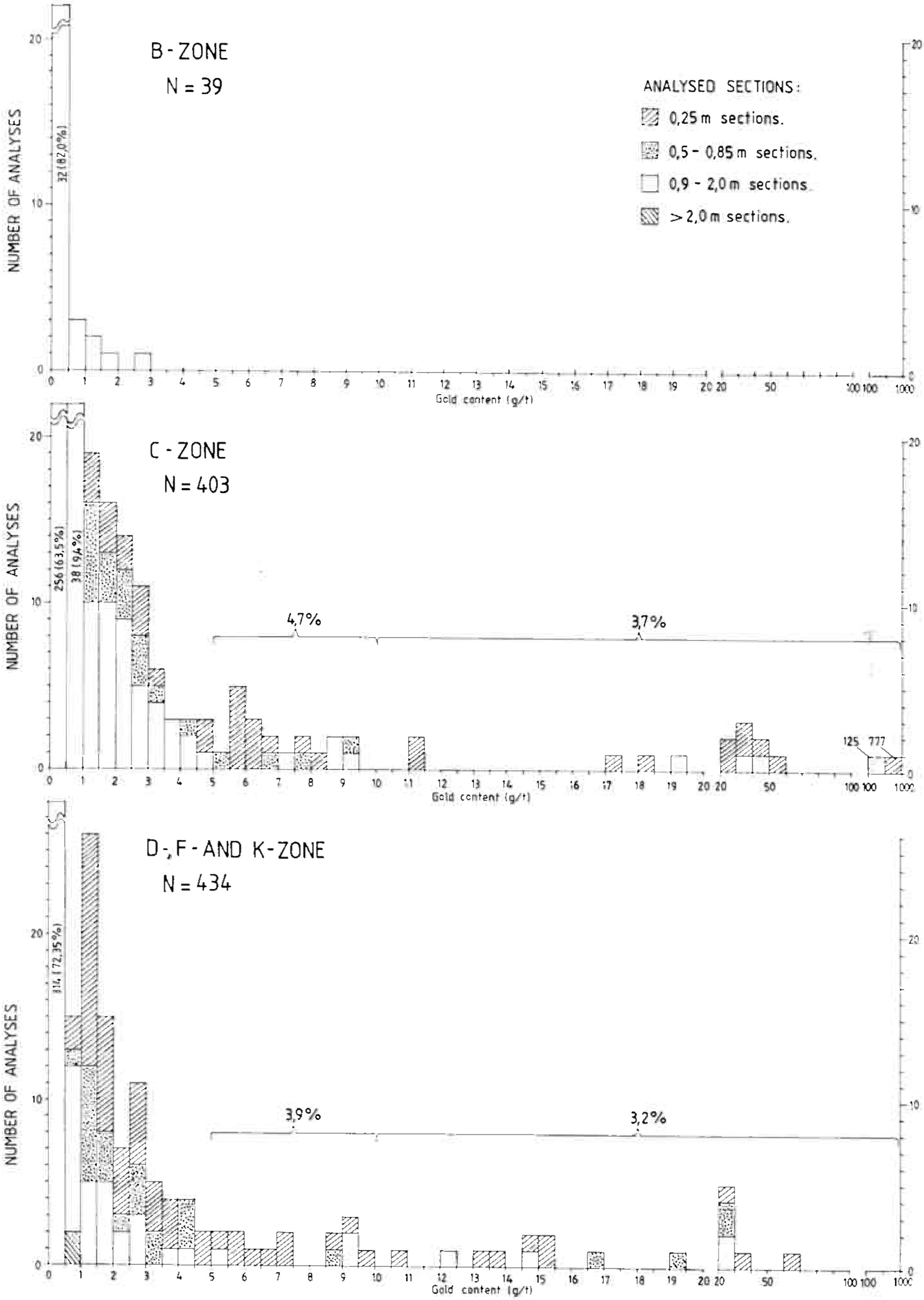


Fig. 11. Histogram showing the frequence of gold contents in drillholes of different lengths from the B-, C- and F-K-zone.

respectively). This is also the case for the surface samples which give a similar spread. The number of high values (N=4 for values >50 g/t Au) relative to the total number of analysed sections (N=876) give no clear evidence for pronounced nugget effects. This is also supported by the general occurrence of fine-grained native gold in the ores with grainsize in the range 1-50 μm. Even the visible gold is relatively fine-grained, rarely exceeding 0,5 mm.

Several methods have been introduced to reduce the influence of the nugget effect or extreme values on the averages calculated from gold values in drillcores. The methods are empirical and the correction procedure will therefore differ from mine to mine or deposit to deposit. The standard procedures often followed by the mining industry to overcome the nugget effects in average grade calculations, are according to Fytas et al. (1990), to:

1) Ignore extreme values completely if they exceed certain empirical limits.

2) Treat extreme values unreduced with the rest of the data, but afterward apply an empirical corrective factor (dilution factor) to the estimated reserves. The factor is usually derived from actual production results.

3) Reduce the extreme values to a maximum value that is derived from bulk samples or from actual production results in the case of a producing mine.

If the extreme values are not reduced in some way it will inevitably lead to overestimation of average grades. In the present report average ore grades are calculated in accordance with the last mentioned procedure, i.e. 3). The extreme values exceeding two standard deviations above the arithmetic average are reduced to the arithmethic average. A new average is then recalculated using these reduced values or so-called "cut values". This method of estimating average ore grades from core analyses was successfully applied to the ores in the Biddjovagge Au-Cu-mine, N-Norway. (A. Bjørlykke, pers. comm., 1994).

Sivertsen and Mjelde (1983) calculated an average of 2,09 g/t for 131 drillcore sections in 8 holes in the F-zone and 1,46 g/t for 634 samples from 10 drillholes and adits in the C-zone. They argued that the average gold grade of these ore zones, having a tonnage potential of some 2 Mt, should be multiplied by 2 or 3 in order to get a true average. They based their argument on a purely theoretical grain-distribution model which does not describe any real variance (nugget effect) in variably sized samples taken at the same locality in different parts of the exposed ore zones. In this context it should be remembered that only two bulk samples (100 kg each) have so far been collected from the C-zone (Klondyke with 39,1 g/t Au) and F-zone (Storstein with 7,77 g/t Au), though Sivertsen and Mjelde (1983) also mention that 80-100 kg samples returning 6-12 g/t Au were taken out from the C- and F-zone by A/S Kolsvik Malmfelter in the period 1935-36.

In the authors opinion the outcrops at Klondyke and Storstein represent the richest surface part of the C- and F-zone, respectively.
"Cut values" have apparently not been used by Sivertsen and Mjelde (1983) in their ore grade calculations. If "cut values" are introduced the estimated true averages would rather decrease than increase relative to their calculated averages, i.e. 2,09 g/t and 1,46 g/t. This means that the C- and F-zone as defined by Sivertsen and Mjelde (1983) are too low-grade to represent any major ore potential.

Terra Mining A/S reduced the width of the C- and F-zone as defined by A/S Sulfidmalm to 2 m. The ore reserve calculations using an ore density of 2,65 t/m^3 gave a total of 190 000 tonnes with 5,70-6,20 g/t. Additional ore potential at depth was estimated at 115 000 tonnes (M. Larsen, pers. comm., 1994).

It is evident from Table 2 that the number analyses from most of the fault-related ore zones are too small for making a realistic estimate of average gold grades. If values from drillcore sections exceeding 3 m in length are excluded, then the following average grades appear (number of analyses in brackets): **B1 = 0,87 g/t (5), C = 27,25 g/t (6), F4 = 7,05g/t (17), F5A = 1,36 g/t (6), F5B = 6,77 g/t (4) and K = 2,20 g/t (10)**. Most of the gold values used in the calculations represent 1 m sections. The average for the C- and F5B-zone is strongly influenced by DDH 55 (125 g/t Au) and DDH 3 (av. 9,03 g/t over 3 m), respectively . Sections exceeding 3 m in length contain, with one exception (DDH 23), less than 1 g/t.

The true width of the high-grade ore zones along the KRFZ are probably in the range 1-3 m, though measurements of drillhole deviation are lacking. Wider ore zones may locally be present as in the Storstein area where the rocks between the F4 and F5 faults are strongly fractured and mineralised. A similar area is also encountered at the mouth of the Boliden adit where the footwall zone of the C-fault contains abundant quartz veins with gold-arsenopyrite mineralisation and locally visible gold (DDH 15 and 55). The drillholes in the area between the S. Skarstoll and Tanner adits (DDH 25 to DDH 24) have spotty high gold grades up to 10 m from the main ore structure, the C-fault (DDH 15, 16, 17, 25 and 55). Parts of this may have high enough ore grades for mining, giving an additional contribution to the potential tonnages calculated in Table 3.

The potential tonnages calculated for the fault related ore zones are shown in Table 3. The calculations are based on rectangles with one side following the surface slope. It is assumed that the ore mineralisation is continuous along the strike and the dip of the faults, and that it extends down dip for 100 m. An average thickness of 1 m is used for the individual ore zones to allow for their pinch and swell nature, i.e. thicknesses of 1-3 m in competent rocks (intrusives and quartz veins) and absent to very thin in incompentent supracrustal rocks. The calculations have been made for ore densities of 2,75 tonnes/m^3

and 2,85 tonnes/m³. The 0,1 tonnes/m³ increase in density raises the potential tonnages by 3,6 %. The numbers given in the text below are based on a density of 2,75 tonnes/m³ and represent a calculation for the KRFZ between the bottom of the Storstein adit and the fault intersection 80 m north of the B-zone adit.

Table 3: Potential tonnages of the individual fault-related ore zones. The calculations are based on a width of 1 m and 100 m extension down the dip of the ore zones.

ORE ZONE	AVERAGE SLOPE	HORIZ. LENGTH	POTENTIAL TONNAGES	
			D:2,75 tonnes/m³	D=2,85 tonnes/m³
B and B1	SH	280 m	77 000	79 800
C	"	280 m	77 000	79 800
D-extension	"	350 m	96 250	99 750
F1 and D	19,8°	410 m	119 830	124 190
F2	14,9°	215 m	61 180	63 410
F4	19,2°	310 m	90 270	93 550
F5	21,8°	205 m	60 720	62 930
F8	29,2°	105 m	33 080	34 280
F10	20,0°	200 m	58 530	60 660
F11	24,2°	160 m	48 240	49 990
F8-10-11-ext.	SH	290 m	79 750	82 650
K	25°	105 m	31 860	33 020
K-extension	SH	65 m	17 870	18 520
Total potential tonnage			851 580	882 550

The D-extension includes the shortest of the two fault segments between FOFZ and TSFZ and the KRFZ extension north of TSFZ and up to the B-fault intersection. The F8-10-11-extension is represented by the longest of the two fault segments between FOFZ and TSFZ. SH = sub-horizontal.

The deposit contains a potential of 850 000 metric tonnes or 650 000 tonnes if the postulated extensions of the D-, F- and K-fault are excluded. These numbers will be doubled if the average width of the ore zones is increased to 2 m. The presently defined ore structures in the C- and F-zone may have a potential of 77 000 tonnes and 471 850 tonnes respectively, or a total of about 550 000 tonnes. The postulated extensions of the D- and F-zone faults northwards along the FOFZ may contain 176 000 tonnes or more depending on their true lengths.

The calculation of potential tonnages does not consider whether the ore grades are economic or not. It only consider the presence of a continuous volume of rock which has the best probability of containing economic gold grades. The low gold contents of the B-zone (Fig. 7) may indicate that this zone has low economic potential. The exposed part of the C-zone (Klondyke-Seksa, 120 m) and drillholes in the F4-zone contain economic gold grades in 1-3,5 m sections (see Fig. 9-10). If an average width of 1 m is used in the calculations for these two segments they give probable reserves of around 167 000 tonnes. This estimate is comparable to that obtained by Terra Mining A/S for the C- and F-zone (2 m width), i.e. a total of 305 000 tonnes

If the main fault zones are ranged according to their economic potential, the F-zone and its postulated northern extensions would have the highest ore potential, whereas the C-zone would have an intermediate potential and the K- and B-zone a low to very low potential. Additional ore reserves may be present along the A- and B7-zone as well as along the extension of the KRFZ north of the B-fault intersection. Other deposits such as the Reppen and Finnlifjell deposits, which may contribute with ores to a central ore-dressing plant in Bogadalen valley, will not be dealt with in this report.

6 RECOMMENDATIONS

The potential tonnages in the range of 650 000 to 850 000 tonnes of which 167 000 tonnes with probable economic grades occur along the C- and F4-fault and suggest that there may exist ore reserves for a small to intermediate scale mine-operation. Further follow-up is therefore recommended.

The drillhole profiles, the drillhole distribution (Fig. 8-10) and the postulated fault-extensions clearly indicate that more coredrilling is necessary to better define the orientation and direction of the faults and to separate unmineralised to weakly mineralised fault structures from well mineralised ones, as well as testing the ore grade distri-bution and the existence of the postulated fault extensions. In addition it is necessary to do systematic sampling at the surface along some of the accessible ore structures, like the B- and C-zone, in order to get better figures for the coefficients of variation or nugget effects and thereby obtaining better basis for trimming extreme gold values in the grade calculations.

The exploration program proposed below consists of a number of steps, where each step is dependent on the results of the preceding one. All work should be focused on defining probable ore reserves in the Kolsvik deposit before considering additional ore reserves along the extensions of the KRFZ and along the major structures at Finnlifjell and

Reppen.The following steps are recommended for the exploration program.

A. Analysis of available drillcores.

All potential ore structures or faults and their immediately adjacent wallrocks should be reanalysed for Au, As and S on 1 m. core-sections. This would make calculations of average grades much easier than with the presently heterogeneous datasets. 600 analyses are necessary to cover the ore structures in the C-, F- and K-zone and to check the potential for ores along the FOFZ and TSFZ.

Sample preparation:	*NOK*	*60.000,-*
Analyses:	*"*	*90.000,-*
Total costs:	*NOK*	*150.000,-*

B. Stripping and trenching along the C- and B-zone.

The C-zone fault and adjacent wallrocks should be stripped for overburden by an excavator. The stripping should take place from the S. Skarstoll adit and at least beyond the Seksa shaft. Three trenches should also be dug across the scree covered B-fault in the extension of DDH 40, 41 and 42. The ore structures along the faults should be sampled in a systematic manner both along channels cut by diamond saw and by blasting out large bulk samples (100 kg). The exposed parts of the B- and C-zone should be sampled at regular intervals of 5 m; i.e. about 300 samples in 1 m sections. Some short diamond drillholes should also be made along the sampled sections (if possible) in order to get the best figures for sample variance or nugget effects. It is recommended to read Vallée and Côte (1992), Vallée et al. (1992) and Vallée et al. (1993) when planning the surface sampling and eventually a later diamond-drilling program. These authors give valuable information on how to minimize the human nugget effect. Diamond drilling cost is not included in the costs below.

Excavation:	*NOK*	*30.000,-*
Sampling and handling:		*200.000,-*
Freight:	*"*	*20.000,-*
Gold-assaying (300 samples):	*"*	*45.000,-*
Total costs:	*NOK*	*295.000,-*

C. Diamond-drilling

The ore structures, mainly in the F-, C- and K-zone, should be intersected at regular intervals both along strike and dip. 100 m intervals with approximately 25 m between the

intersections down dip are proposed for the F- and C-zone and their postulated extensions which have to be tested. 50 m between the drillhole fans is proposed for the K-zone. Any drilling in the B-zone must depend on the results from the C-zone and from the surface sampling. Drillhole deviation must be measured for all the holes. The core dimension should be in the order of 46mm to 62 mm.
Cost: NOK 3 - 4 Mill.

D. Ore potential in the A- and B7-zones.
If the above mentioned work gives positive results the program should be ended by testing the meter-wide A and B7 zones, where local high concentrations of gold occur (up to 1200 g/t in B7). None of them have exposed strike dimensions (A=10 m, B7=75 m) indicative of large tonnage potentials. Since both are accessible with an excavator they should first be stripped of overburden, which is generally thin. If the strike length and width of the ore zones have potentially economic dimensions channel sampling and analytical work should be carried out.

Excavation:	*NOK*	*20.000,-*
Sampling and handling:	*"*	*200.000,-*
Freight:	*"*	*10.000,-*
Assaying (150 sampels):	*"*	*22.500,-*
Total costs:	*NOK*	*252.500,-*

The exploration program has a total estimated cost of NOK 4.700.000,-.

The expenditures given above are all approximate figures since they will be strongly dependent on how the work is organized, total number of analysed drillcore-sections, the number of sampling points, the spacing of the drillhole profiles and the distance to the ore structures from the drill-site. The estimated costs for sampling, handling and sample preparation are based on NGU's prices, whereas the assaying cost is based on ACME prices for 1994.

7 CONCLUSIONS

The corelogging has given valuable information about the subsurface geology and the location of faults with associated gold-arsenopyrite mineralisation. The following conclusions can be drawn from the corelogs and the summary corelog-diagrams, together with some observations made at the surface and from microscopic examinations of the cores:

- The Kolsvik deposit is located along the contact zone of the Oksdal granite massif, where the mineralisation occurs spatially associated with intrusive bodies, sheets and dykes of white leuco-granites.

- The mineralisation consists mainly of native gold and arsenopyrite with minor associated pyrite, scheelite, galena, chalcopyrite, molybdenite, bismuthinite, native bismuth, Pb-Cu-Bi-Sb-sulfosalts, Bi-tellurides, rutile, uraninite, thorite and marcasite.

- The mineralisation is structurally controlled by the Kolsvikbogen-Ringvann fault zone (KRFZ), a high-angle dextral fault system with early mylonites, intermediate brittle tectonites and late ductile tectonites related to extensional tectonics.

- The arsenopyrite is found as massive to semi-massive veins filling fractures and breccias veins in the rocks adjacent to the faults. The arsenopyrite is only locally accompanied by any coprecipitated gangue minerals such as quartz.

- The mineralisation is nearly invariably hosted by granitoids, pre-existing quartz veins and ultracataclasites. Only 0,5 % of the mineralisation occurs in supracrustal rocks, indicating a strong lithological control by the competent rocks.

- The mineralisation and gold grades show no direct relation to the widespread fracture-bound hydrothermal alteration. The most important types are skarn alteration, bleaching, silicification, sericite alteration, chloritisation and late red colouration of the granites.

- Native gold and arsenopyrite are intimately intergrown, and only in certain areas is native gold found as visible grains in milky quartz veins with only trace amounts of arsenopyrite.

- The native gold is generally fine-grained. Its grain size can roughly be separated into three populations, i.e. inclusions in arsenopyrite (1-10 μm), interstitial grains in arsenopyrite aggregates (50-100 μm) and visible grains in quartz partly intergrown with very fine-grained arsenopyrite (200-1000 μm).

- The mineralisation event post-dates the intrusion of the white leuco-granites and is temporally associated with an episode of brittle dextral shearing. The arsenopyrite deposition seems coeval with late quartz veins and breccias which locally crosscut sericite-alteration zones.

- Cataclasis of the arsenopyrite veins occurred during a late episode of ductile shearing, being associated with the late development of some major faults with a dextral component (Finnlia-Oksdal and Tverrelva-Skavvassfjell fault zones) offsetting the mineralised fault system (KRFZ).

- The deposit is estimated to have potentially 650 000-850 000 metric tonnes of crude ore, based on zone-widths of 1 m, 100 m down dip and an ore density of 2,75 ton/m^3. Only 167 000 tonnes occurring along the F4-fault and the southern half of the C-fault have so far revealed economic ore grades (> 7 g/t) over 1-3 m sections.

- It is recommended that the deposit is followed up by systematic re-analyses of available cores from the fault intersections, systematic sampling at the surface along stripped parts of the C- and B-faults as well as the A- and B7-veins and diamond drilling at regular intervals along the mineralised fault zones and their postulated extensions.

- Such an exploration program will have a budget of approximately NOK 4.700.000,- when diamond drilling of the A- and B7-zone is excluded.

Norges geologiske undersøkelse 05.12.94

Peter M. Ihlen

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LIST OF ABBREVIATIONS USED IN THE TEXT

A	=	amphibolite
ABGN	=	amphibole-biotite gneiss
BAG	=	biotite-rich anatectic granite
BGN	=	biotite gneiss
B-GTG	=	bleached light-grey two-mica granite
CGN	=	calc-silitcate gneiss
CSCH	=	calcareous schist
DDH	=	diamond drillhole
FOFZ	=	Finnlia-Oksdal fault zone
GGO	=	grey granodioritic orthogneiss
GTG	=	light grey two-mica granite
GQM	=	grey quartz monzonite
H-	=	heterogeneous
HTG	=	pinkish grey hybrid two-mica granite
KRFZ	=	Kolsvikbogen-Ringvatn fault zone
M	=	marble
MBGN	=	migmatitic biotite gneiss
MD	=	monzodiorite
MSCH	=	two-mica schist
P-LG	=	pink leucocratic granite
TSFZ	=	Tverrelva-Skavassfjell fault zone
W-LG	=	white leucocratic granite
W-P	=	white pegmatite

APPENDIX

with

summary corelog-diagrams
drillhole profiles and corelogs

LEGEND FOR PROTOLITH-COLUMN IN CORELOG DIAGRAMS AND FOR DRILLHOLE PROFILES:

(diagonal hatching)	Cores missing (CM); Lost during transport or used for analyses.
(reverse diagonal hatching)	Coreloss during drilling (CL).
(stippled)	Overburden and/or coreloss in surface weathered rocks.
(solid black)	Hydrothermal quartz-vein or -lens.
1	Pink to greyish white and fine- to medium-grained leucocratic granite, locally coarse-grained.
2	Pink to greyish white pegmatite and pegmatitic granite.
3	Light grey medium-grained two-mica granite, locally coarse-grained.
4	Pink to pinkish grey medium-grained two-mica granite, locally coarse-grained.
5	Grey medium-grained biotite-quartz monzonite.
6	Dark grey medium-grained monzodiorite, locally fine- or coarse-grained.
7	Grey medium- to coarse-grained granodioritic orthogneiss, often with augen texture.
8	Dark grey, medium- to coarse-grained and biotite-rich anatectic granite.
9	Intrusion breccia.
10	Amphibolite.
11	Dark grey amphibole-biotite gneiss. 11B: Heterogeneous.
12	Dark grey biotite gneiss.
13	Greenish calc-silicate gneiss. 13B: Heterogeneous.
14	Greenish calcareous schist.
15	Dark grey micaschist/-gneiss.
16	Grey to bluish grey calcite marble. 16B: Garnet-clinopyroxene skarn.
17	Grey migmatitic biotite gneiss.
18	Undifferentiated granites.
19	Undifferentiated supracrustal rocks and dark granitoids.

LEGEND FOR CORELOG DIAGRAMS

HYDROTHERMAL ALTERATION AND VEINS:

ARG. : Argillic alteration, usually pervasive.

RED. : Red to pink colouration of feldspar.

ST. : Stilbite veins.

CHL. : Chloritic alteration and chlorite veins.

SER. : Sericitic alteration, fracture-bound to pervasive.

Q. : Quartz veins and lenses, locally associated silicification.

SK. : Skarn alteration, pervasive.

BL. : Zonal to pervasive bleaching, i.e. breakdown of biotite.

AS. : Arsenopyrite mineralisation.

Moderate to strong veining, alteration and bleaching, including total red colouration of granite.

Irregularly distributed domains with red feldspar.

Evenly distributed veins and dissemination of arsenopyrite/individual points of arsenopyrite mineralisation, larger ones indicate wider individual zones.

STRUCTURES:

BR. : Breccia zones.

CBR. : Crackle-breccia zone.

CT. : Cataclasite zone.

CR. : Crush zone.

Small letters for zones of less than 0,5 m.

FRZ. : Fracture zone.

MY : Mylonite zone.

qmy : Mylonite zone (<0,5 m) along quartz vein.

SH. : Semiductile shear zone.

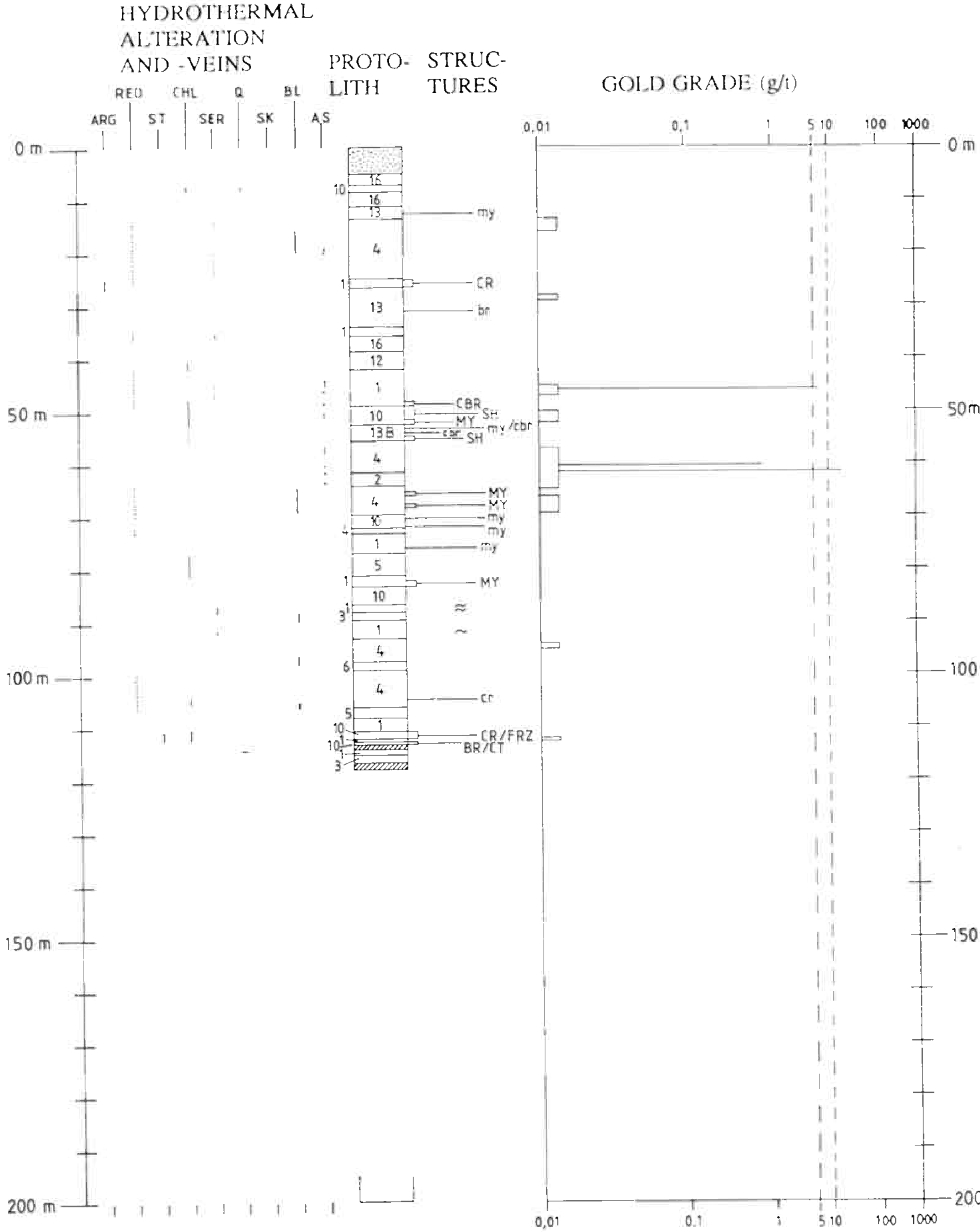
: Weakly foliated rocks outside main shear zones.

: Strongly foliated rocks outside main shear zones.

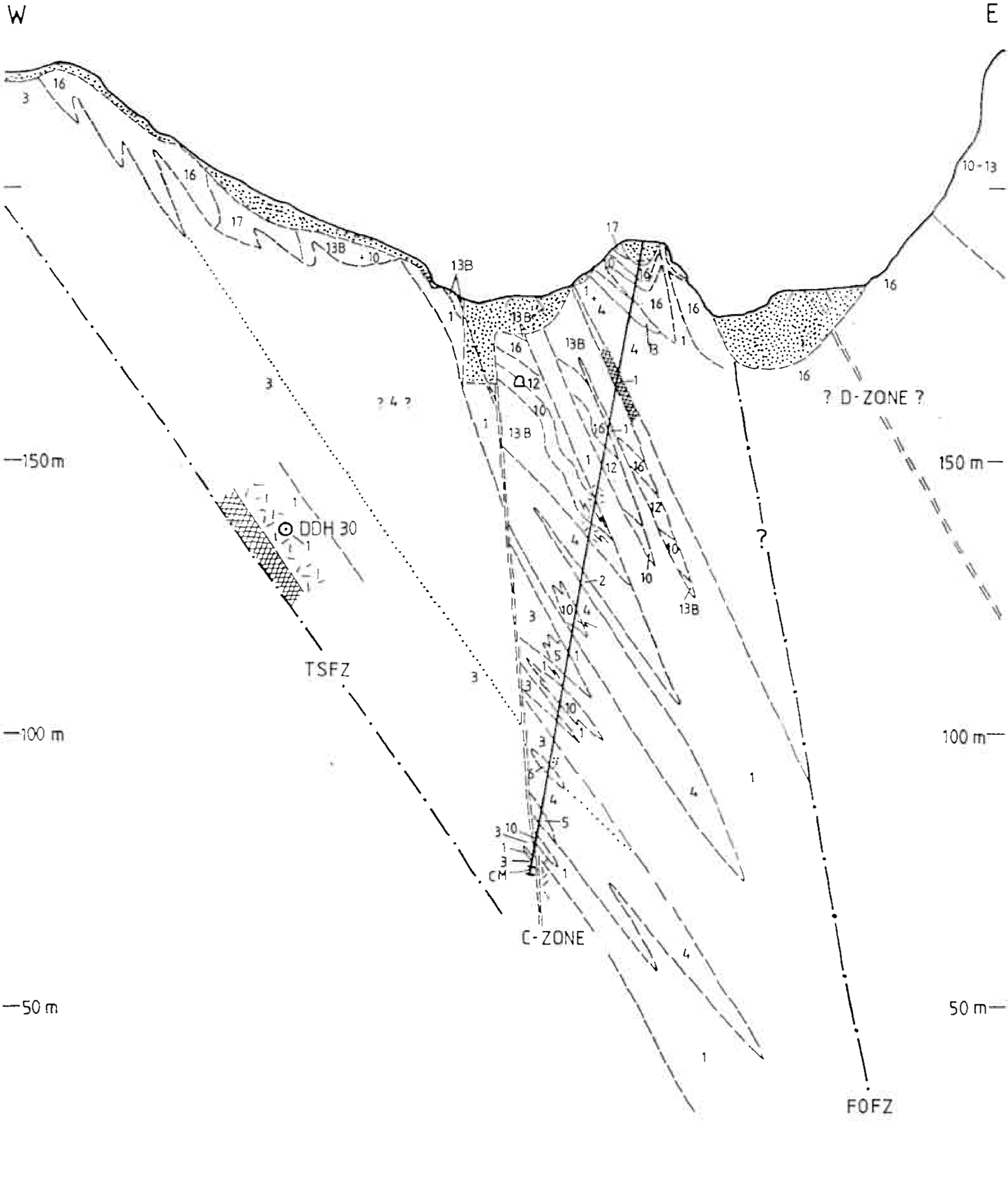
ABBREVIATIONS IN CORELOG TEXT

Aggr.	= aggregate
Alt.	= alteration
Amph.	= amphibolite
Apl.	= aplite
Aspy.	= arsenopyrite
Assoc.	= association
Bio.	= biotite
Chl.	= chlorite
Coarse-gr.	= coarse-grained
Coat.	= coating
Cp	= chalcopyrite
Cpx	= clinopyroxene
Diss.	= dissemination
Ep.	= epidote
Fine-gr.	= fine-grained
Fol.	= foliation
Fract.	= fracture
Hbl.	= hornblende/amphibole
Incl.	= inclusion
Medium-gr.	= medium-grained
Migm.	= migmatite
Musc.	= muscovite
Pegm.	= pegmatite
Plag.	= plagioclase
Po.	= pyrrhotite
Py.	= pyrite
Q	= quartz
X(X)	= crystal(s)
$\pm$	= sometimes

SUMMARY CORELOG-DIAGRAM: DDH 1



PROFILE: DDH 1



DRILLHOLE No.: 1 AZIMUTH: 274° INCLINATION: 80° LENGTH: 117,80 m Horiz.: 20,45 m Vert.: 116,00 m CORE DIM.: 46 mm
LOCATION: B-ZONE
COMPANY: A/S SULFIDMALM NGO-COORD.:Y: -19337,660 X: 798943,993 ZONE: D ALTITUDE: 190,533 m.a.s.l.
YEAR: 1980 UTM-COORD.,E: 397230 N: 7229400 ZONE: 33

DEPTH (metres)		LENGTH	LITHOLOGY	MEASURED STRUCTURES			ORE MINERALIZATION			PETROGRAPHY
From	To			Type	Angle w. core	Depth	From	To	Type	
0,00	5,00	5,00	OB/CL							
5,00	7,10	2,10	M	LL FL LL	60° 75° 50°	5,45 6,25 6,60				Banded bluish grey calcite marble with thicker bands of calc-silicate gneiss (5,00-,20) and amphibolite with abundant 1-2 mm q.veinlets (6,00-6,40). The marble is cut by bleached GTG- (5,20-,30) and white chlorite veined LG-(7,00-,10) dykes.
7,10	8,30	1,20	A	FL "	40° 65°	7,35 7,65				Amphibolite and dark grey bio.-amph. gneiss with network of 1-10 mm q. veins with greyish green chlorite - quartz altered envelopes down to 7,75. coarse-grained granodiorite zone at 7,40-,60. White LG dyke at 8,05-,15,
8,30	11,20	2,90	M	LL	60° 50° 50°	8,85 9,60 10,10				Bluish grey banded marble with 1-5 cm calc-silicate bands and locally amphibolite bands. Pink pegmatite vein at 10,80-,85.
11,20	13,50	2,30	CGN	FL LL "	85° 0° 30°	12,45 12,90 13,25				Dark greenish and fine-grained calc-silicate gneiss. Banding on 1-15 mm scale. Strongly foliated at 12,45-,50. Calcite bearing variety at marble contact i.e. 11,20-,70. Cut by granodiorite vein at 11,40-,50 and by several 4-5 cm wide GTG- and LG veins, especially above 12,75.

LITHOLOGIES: A: = amphibolite; ABGN = dark grey amphibole-biotite gneiss; BAG = dark grey biotite-rich anatectic granite; BGN = dark grey biotite gneiss; CGN = greenish calc-silicate gneiss; CL = coreloss; CM = cores missing; CSCH = calcareous schist; GQM = dark grey biotite-quartz monzonite; GGO = grey granodioritic orthogneiss; GTG = grey medium-grained two-mica granite; HTG = hybrid pinkish grey medium-grained two-mica granite; IB = intrusion breccia; LG = leucocratic granite; M = calcite marble; MBGN = migmatitic biotite gneiss; MD = dark grey monzodiorite; MSCH = micaschist/-gneiss; OB/CL = overburden and/or coreloss in surface weathered rocks; P = pegmatite and pegmatitic granite; Q = hydrothermal quartz-vein or -lens; SK = skarn-altered marble. Prefixes: B- = bleached; BR- = brecciated; CT- = cataclastic; CR- = crushed; G- = garnetiferous; H- = heterogeneous; i.e. strong interbanding with other lithologies; HA- = hydrothermally altered; MY- = mylonitic; P- = pink; PP- = porphyritic; SH- = semiductilly sheared; W- = white to greyish white.

DDH: 1

DEPTH (metres)		LENGTH	LITHOLOGY	MEASURED STRUCTURES			ORE MINERALIZATION			PETROGRAPHY
From	To			Type	Angle w. core	Depth	From	To	Type	
13,50	24,70	11,20	HTG	A-V	20°	19,80		19,50 19,80	7 mm q.vein with 1x10 mm aspy. aggr. Aspy. fract. coating.	Coarse-grained light grey to pink hybrid TG with some scattered flakes (0,5-1 mm) of biotite. It is cut by abundant dykes of pegmatite and massive fine- to medium-grained white LG. Pegmatites at 14,90-15,05; 15,45-,50; 16,80-,85; 18,55-,60; 17,40-,50; 18,75-,95 and 19,90-20,10. White LG dykes partly sericite-altered (SA) at 22,55-23,00 and 23,25-,70 (20 mm SA). The HTG show strong bleaching in assoc. with the dykes between 15,40 and 19,75, moderate zonal (1-8 cm) bleaching elsewhere.
24,70	26,50	1,80	CR-LG							White fine- to medium-grained LG with a massive appearance. Fractured and locally strongly sericite-altered in assoc. with q. vein at 25,80-,85. Crush zone with clay gouge and some scattered 1-5 mm calcite-stilbite veins in the fragmented LG occurs at 25,05-26,50.
26,50	34,00	7,50	CGN	LL " " " " " SP LL	0° 20° 20° 35° 10° 60° 60° 50°	26,55 26,95 27,20 27,40 27,95 29,50 30,75 31,60	28,45 30,70	28,80 30,80	Py. coated fract. in 1-2 cm q.veins. Py. diss. assoc. with fractures along LG dyke margin.	Light to dark greenish grey calc-silicate gneiss, mainly fine-grained. Banding on scale 1-50 mm. Quartz-rich folded layers are common down to 31,70 whereas biotite-rich gneisses become important in the lower part, 32,50-34,00. More coarse-grained porous zone at 32,00-,50. The CGN is cut by white to pink LG dykes and veins at 28,90-29,25, 30,80-31,20, 32,35-,40 and 32,50-33,25. The latter contain dark chlorite-altered granodio. incl. at 32,60-,65. Several 3 cm wide chlorite-cemented breccia zones with fragments of LG and vein quartz occur at 30,80-31,20. The lower part of the CGN (32,50-34,00) is strongly infiltrated by LG and GTG dykes and veins being cut by some 1-5 cm calcite and stilbite veinlets. Granodiorite dyke at 33,75-34,00.

STRUCTURES: BV = breccia vein; FL = foliation; LB = lithological boundary; LL = metamorphic banding and/or primary lithological layering; MY = mylonite foliation; SP = semiductile shear plane; V = mineral veins with prefixes: AN- = ankerite; CA- = calcite; CHL- = chlorite; MY- = mylonitic; Q- = quartz; SR- = sericite; ST- = stilbite.

DDH: 1

DEPTH (metres)		LENGTH	LITHO-LOGY	MEASURED STRUCTURES			ORE MINERALIZATION			PETROGRAPHY
From	To			Type	Angle w. core	Depth	From	To	Type	
34,00	35,55	1,55	LG							Massive white to pink medium-grained LG containing some 1-5 mm calcite and locally stilbite veins. Moderate sericite alteration at 35,20-,55.
35,55	38,60	3,05	M	LL " " " " "	40° 60° 60° 35° 75° 55°	35,80 35,95 36,25 37,50 37,95 38,50				Interbanded calcite marble and calc-silicate gneiss. The marble shows 1-20 mm colourbanding in shades of grey and blue whereas the gneiss shows mineralbanding on scale 1-10 cm. CGN zone at 35,55-36,00 (with thin granodiorite sills) and at 37,00-,60 (with a few 5 mm q. veins).
38,60	41,90	3,30	BGN	FL	55°	40,60	40,80	41,90	Py.coating on chlorite fractures.	Dark grey biotite gneiss with more greenish CGN zones. These zones contain abundant chlorite-coated fractures and slickensides. LG dyke at 41,40-,55.
41,90	48,85	6,95	LG					44,25 44,40 44,95 45,10 46,00 48,60	Q. vein with aspy. veinlet, max. 2 mm. "	Fine- to medium-grained and white to pink LG with some 1-10 cm remnants/incl. containing biotite flakes. Incl. of granite veined BGN at 43,60 - 44,00. Scattered 1-3 cm q.veins especially between 44,50 and 46,70. Increasing number of chlorite-coated fractures from 47,40 and grading into chlorite crackle breccias occuring at 48,25-,85.
48,85	52,50	3,65	SH-A	MY "	30° 50°	51,95 52,10	50,35 51,00	50,70 51,05	Fracture and fol. plans with py. coat. and diss.xx. Fractured q. veins cut by 10 mm massive aspy. vein surrounded by diss. of 1 mm aspy xx.	Sheared and fractured amphibolite retrograded to dark green chlorite schist. The schist contains massive, fine-grained and pink LG dykes which are intensely fractured, brecciated and cemented by chlorite. The LG dykes occur at 49,00-,10; 49,40-,50; 49,65-,70; 49,95-50,10 and 51,60-52,25. The latter is a granitic mylonite containg abundant chlorite-coated fractures in a 10 cm wide zone along its upper and lower contact.

STRUCTURES: BV = breccia vein; FL = foliation; LB = lithological boundary; LL = metamorphic banding and/or primary lithological layering; MY = mylonite foliation; SP = semiductile shear plane; V = mineral veins with prefixes: AN- = ankerite; CA- = calcite; CHL- = chlorite; MY- = mylonitic; Q- = quartz; SR- = sericite; ST- = stilbite.

DDH: 1

DEPTH (metres)		LENGTH	LITHOLOGY	MEASURED STRUCTURES			ORE MINERALIZATION			PETROGRAPHY
From	To			Type	Angle w. core	Depth	From	To	Type	
52,50	55,40	2,90	SH-H-CGN	MY	60°	52,95				Sheared and fractured dark greenish calc-silicate gneiss, dominantly fine-grained. It contains some bands of marble (52,50-,70 and 53,20-,80) and becomes more biotite-rich and schistose in the lower part, i.e. 54,75-55,40. It is cut by pink aplitic LG dykes and veins, the thickest occurring at 52,70-53,00, 54,00-,15 and 55,00-,20. The former dyke is mylonitic and is overprinted by chlorite- and calcite veinlets showing highest density along the upper- and lower dyke/mylonite margin. Chlorite-coated fractures are also common in the other dykes. Strong fragmentation of the CGN with associated calcite-stilbite veins is found at 53,00-,20.
55,40	61,50	6,10	HTG	V	10°	57,60		56,70 56,80 57,30 57,50 57,60 60,10 60,20 61,40	Aspy.-coated fract. " " " 1 mm q-aspy. vein. 5 mm aspy. veinlet. 1 mm aspy. veinlet. Aspy. coat. fract. Two 5 and 10 mm q. veins wide aspy. schlieren Q.-vein with 10 mm aspy. aggr. and hairline aspy. veinlets.	Medium-grained and pink to light grey hybrid TG with abundant pegmatite and pink aplite veins surrounded by strongly bleached granite. The thicker pegmatites occur at 55,65-57,00; 57,30-,60 and 58,50-59,25. Scattered chlorite veinlets especially around incl. of biotite-amphibole gneiss at 60,40-61,00. Low density of 1-30 mm q. veins.
61,50	64,10	2,60	W-P					63,25	5 mm q. vein with aspy. fract. and diss. along the vein margin.	Quartz-rich white pegmatite.
64,10	69,40	5,30	HTG				64,95	65,00	Py. diss.	Medium-grained and pink to light grey hybrid TG with inclusions of granite-veined and strongly foliated amphibolite at 65,25-,75 and 67,40-68,10. The granite is moderately to strongly bleached in association with pegmatite and aplitic LG veins. Some scattered chlorite veinlets and q.veins.

STRUCTURES: BV = breccia vein; FL = foliation; LB = lithological boundary; LL = metamorphic banding and/or primary lithological layering; MY = mylonite foliation; SP = semiductile shear plane; V = mineral veins with prefixes: AN- = ankerite; CA- = calcite; CHL- = chlorite; MY- = mylonitic; Q- = quartz; SR- = sericite; ST- = stilbite.

DDH: 1

DEPTH (metres)		LENGTH	LITHO-LOGY	MEASURED STRUCTURES			ORE MINERALIZATION			PETROGRAPHY
From	To			Type	Angle w. core	Depth	From	To	Type	
69,40	72,20	2,80	A	FL " " MY	30° 30° 65° 80°	70,65 71,40 71,70 71,95				Fine-grained amphibolite cut by grey TG veins (1-5 mm) and dykes of monzodiorite at 70,00-,20 and 71,60-72,00. The latter dykes are foliated and show transformation to mylonites along their margins. The MD dykes contain locally 1-5 mm calcite veins with envelopes of greyish green chlorite alteration.
72,20	73,00	0,80	HTG							Pinkish grey, moderately bleached and medium-grained hybrid TG with some LG veins. Inclusion of dark grey quartz monzonite at 72,85-73,00 showing greyish green chlorite alteration (10-20 mm) around chlorite veins.
73,00	76,80	3,80	W-LG	MY	30°	75,60				White medium- to coarse-grained LG with remnants of dark grey quartz monzonite at 76,50-,70. Mylonite development at 75,50-,70. The quartz monzonite contains scattered 1-5 mm q. veins and zones containing some 1-5 mm fracture-bound sericite alteration (75,60-,75 and 76,70-,80).
76,80	80,90	4,10	GQM							Dark grey medium-grained biotite-quartz monzonite. The quartz monzonite contains a sparse network of chlorite-filled fractures surrounded by 10-20 mm wide zones of soot-grey alteration. It is cut by pink aplitic LG veins at 77,50-,60; 78,20-,25; 79,55-,60; 79,80-,95 and 80,25-,40.
80,90	82,95	2,05	W-LG	MY	50°	81,10				White medium-grained and massive LG with grey diffusely delineated incl. of GQM at 81,90-82,15 with 10 mm greyish green chlorite alteration zones. Strongly bleached and aplite-veined GTG at 82,15-,65. Weak fracture-bound sericite alteration at 82,65-,95. Mylonitic granite partly sericite-altered at 80,90-81,90.

STRUCTURES: BV = breccia vein; FL = foliation; LB = lithological boundary; LL = metamorphic banding and/or primary lithological layering; MY = mylonite foliation; SP = semiductile shear plane; V = mineral veins with prefixes: AN- = ankerite; CA- = calcite; CHL- = chlorite; MY- = mylonitic; Q- = quartz; SR- = sericite; ST- = stilbite.

DDH: 1

DEPTH (metres)		LENGTH	LITHOLOGY	MEASURED STRUCTURES			ORE MINERALIZATION			PETROGRAPHY
From	To			Type	Angle w. core	Depth	From	To	Type	
82,95	86,65	3,70	A	FL	30°	84,35				Fine-grained amphibolite cut by weakly foliated MD dykes at 83,95-84,40 and 85,55-,75 and several 5-15 cm white and pink aplite dykes.
86,65	87,90	1,25	W-LG	FL	45°	87,60				White, medium-grained and foliated LG with sericite alteration. A few cm. large mafic inclusions.
87,90	89,40	1,50	B-GTG							Grey, medium-grained TG which is strongly bleached along a network of 1-3 cm zones. Foliated down to 88,20. Pink pegmatite at 88,40-,65. Some scattered q. veins.
89,40	92,95	3,55	W-LG	FL	40°	91,80				White, massive and medium-grained LG with dark biotite aggregates and chlorite veinlets adjacent to inclusion of MD at 90,20-,23 and 90,40-,50 and to amphibolite incl. at 90,70-,90; 91,05-,40 and 92,20-,95. The granite is foliated at 91,40-92,00. Fracture-bound sericite alteration is common at 91,50-92,00. Small bleached inclusions of GTG occur locally.
92,95	97,55	4,60	HTG							Medium- to coarse-grained light grey and pinkish TG. Moderate density of 2-10 cm wide bleached zones except below 96,00 where strong.
97,55	99,00	1,45	MD							Medium-grained monzodiorite cut by some 1-5 cm wide LG veins.
99,00	106,00	7,00	HTG							Grey and greyish pink medium-grained TG with inclusions of monzodiorite (102,25-,28) and amphibolite (103,60-104,00 and 104,40-,75). The lower amph. incl. is strongly chlorite-altered with 15 mm calcite-stilbite veins. The alteration occurs around a crush zone (104,50-,60). The adjacent granite contains abundant chlorite veinlets. The HTG is strongly bleached at the lower contact, i.e. 105,50-106,00, but shows elsewhere moderate zonal bleaching. It contains scattred 2-20 mm q. veins, calcite ± stilbite veinlets and some 5-10 cm aplite dykes.

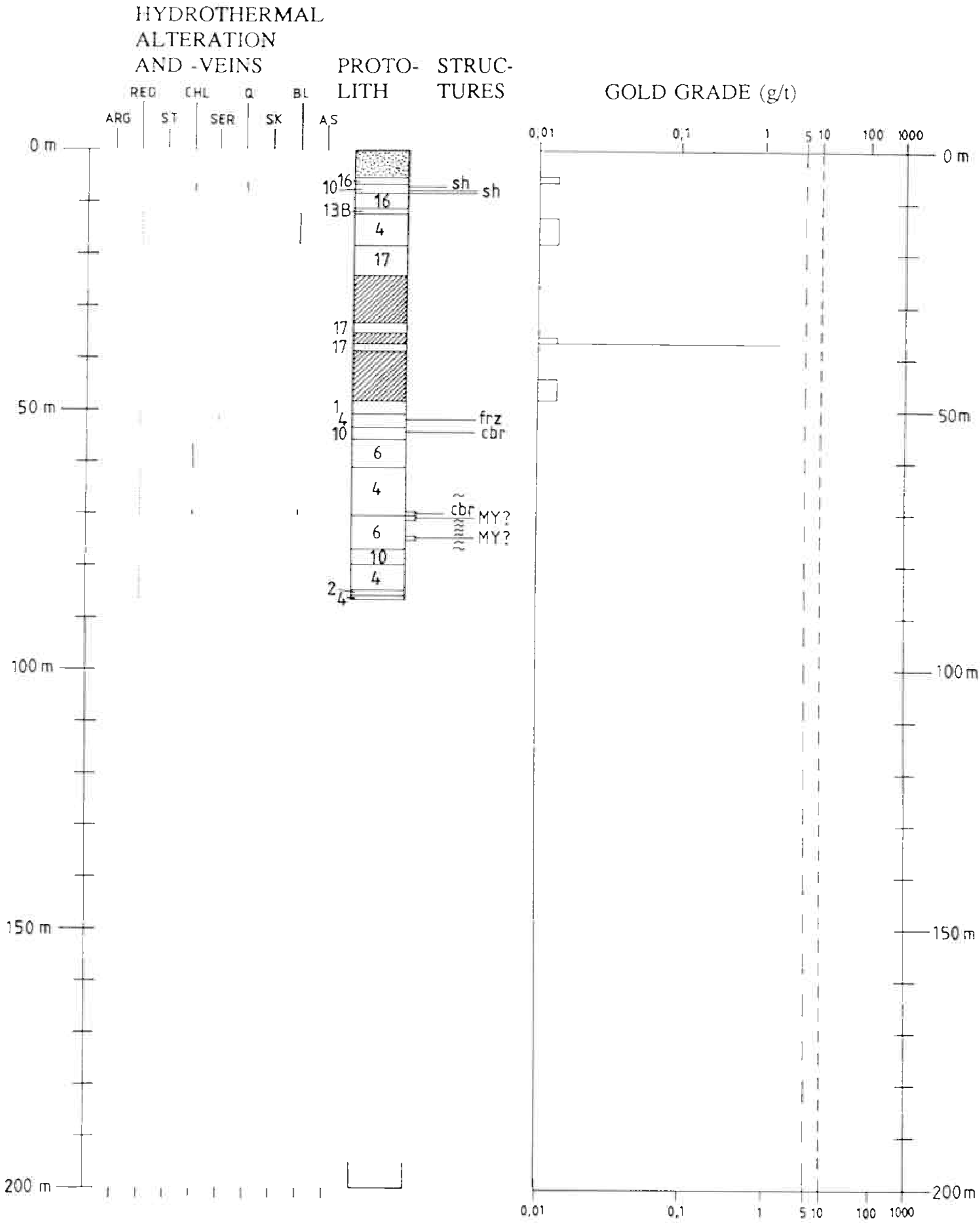
STRUCTURES: BV = breccia vein; FL = foliation; LB = lithological boundary; LL = metamorphic banding and/or primary lithological layering; MY = mylonite foliation; SP = semiductile shear plane; V = mineral veins with prefixes: AN- = ankerite; CA- = calcite; CHL- = chlorite; MY- = mylonitic; Q- = quartz; SR- = sericite; ST- = stilbite.

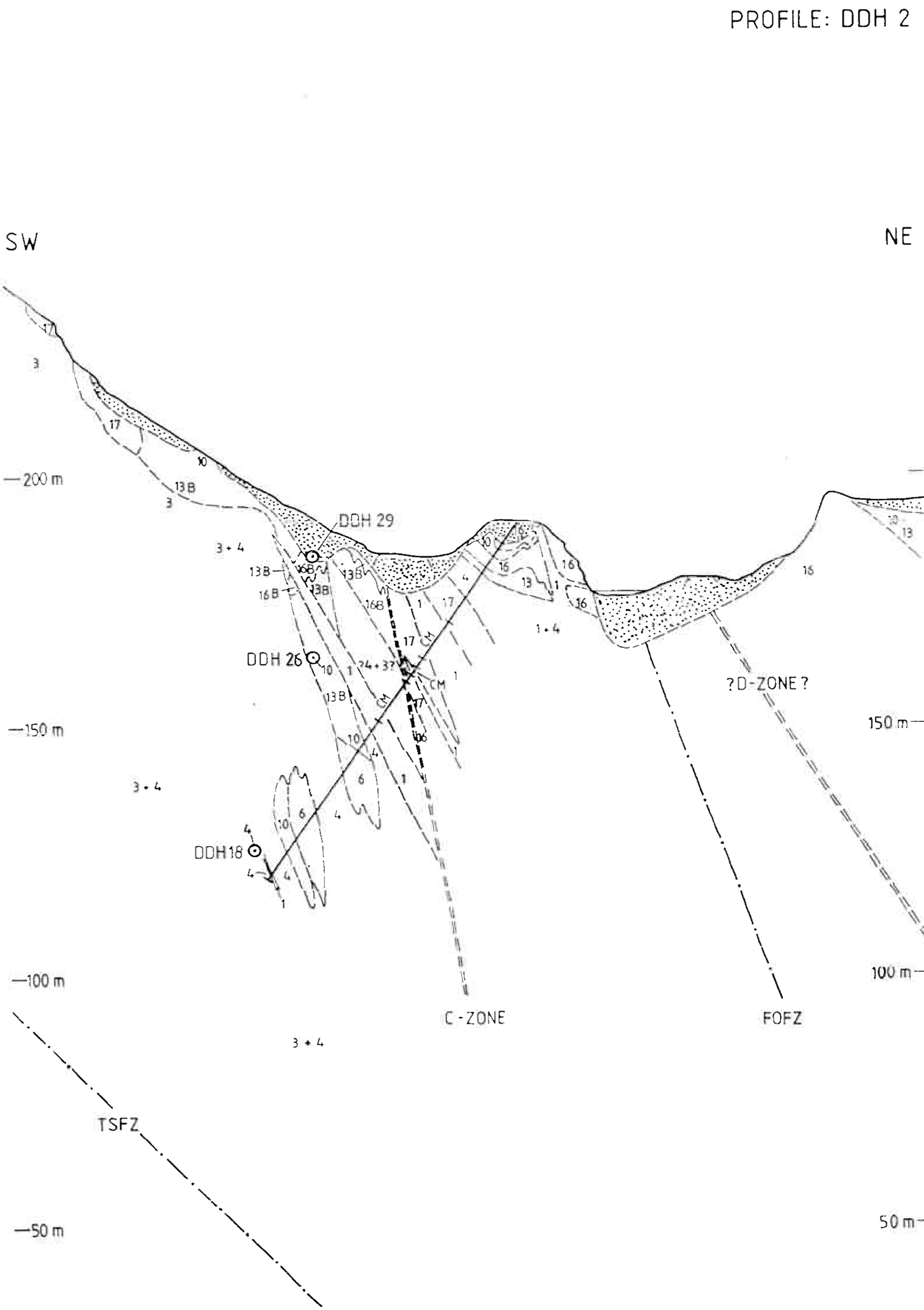
DDH: 1

DEPTH (metres)		LENGTH	LITHO-LOGY	MEASURED STRUCTURES			ORE MINERALIZATION			PETROGRAPHY
From	To			Type	Angle w. core	Depth	From	To	Type	
106,00	108,25	2,25	GQM							Dark grey medium-grained biotite-quartz monzonite moderately bleached and cut by a white pegmatite dyke at 106,95-107,30.
108,25	110,60	2,35	LG							White to pink medium-grained LG with some small inclusions of bleached GTG and a few fracture-bound sericite alteration zones (1-10 mm).
110,60	111,90	1,30	CR-A							Chlorite-altered and strongly fractured amphibolite cut by a crush zone at 111,25-,50. Abundant 0,5-1 mm stilbite and/or calcite veins and veinlets.
111,90	112,40	0,50	P-LG							Pink medium-grained LG with some chlorite-coated fractures.
112,40	113,00	0,60	BR-A							Stilbite and calcite cemented breccia with 1-10 mm fragments of LG (down to 112,65) and altered amphibolite. The lowest 5 cm is composed of a dark ultracataclasite with 1-2 mm angular fragments of quartz in a fine-grained matrix.
113,00	114,00	1,00	CM							Cores missing.
114,00	114,20	0,20	Q							Vein of milky quartz.
114,20	115,25	1,05	LG							Pinkish to white and fine- to medium-grained LG with some small inclusions of strongly bleached GTG.
115,25	116,50	1,25	GTG							Grey medium-grained TG with moderate density of 1-3 cm wide bleached zones.
116,50	117,80	1,30	CM							Cores missing.

STRUCTURES: BV = breccia vein; FL = foliation; LB = lithological boundary; LL = metamorphic banding and/or primary lithological layering; MY = mylonite foliation; SP = semiductile shear plane; V = mineral veins with prefixes: AN- = ankerite; CA- = calcite; CHL- = chlorite; MY- = mylonitic; Q- = quartz; SR- = sericite; ST- = stilbite.

SUMMARY CORELOG-DIAGRAM: DDH 2





PROFILE: DDH 2
SW
NE
200 m
150 m
100 m
50 m
150 m
100 m
50 m
DDH 29
DDH 26
DDH 18
?D-ZONE?
C-ZONE
FOFZ
TSFZ
3 + 4
1 + 4

DRILLHOLE No.: 2 AZIMUTH: 227° INCLINATION: 55° LENGTH: 86,30 m Horiz.: 49,50 m Vert.: 70,70 m CORE DIM.: 46 mm
LOCATION: C-ZONE
COMPANY: A/S SULFIDMALM NGO-COORD.:Y: -19337,7 X: 798943,9 ZONE: D ALTITUDE: 190,5 m.a.s.l.
YEAR: 1980 UTM-COORD.,E: 397230 N: 7229400 ZONE: 33

DEPTH (metres)		LENGTH	LITHOLOGY	MEASURED STRUCTURES			ORE MINERALIZATION			PETROGRAPHY
From	To			Type	Angle w. core	Depth	From	To	Type	
0,00	5,30	5,30	OB/CL							
5,30	5,60	0,30	P-P				5,30	5,60	Diss. aspy. aggr. (3-7 mm)	Pink pegmatite.
5,60	6,40	0,80	M	LL	50°	6,30				Interbedded marble and calc-silicate gneiss (5,60-,90 and 6,35-,40). The upper CGN zone contains abundant q.veins. The marble shows colourbanding (1-5 mm) in shades of grey.
6,40	8,15	1,75	A	FL SP FL	30° 90° 85°	6,90 6,93 8,05				Amphibolite with abundant q.veins and thin granite dykes cut by strongly chloritised fracture- and shear-zones at 6,50-,75; 7,50-,70 and 7,85-8,05. It also contains some scattered 1-10 mm calcite-stilbite veins.
8,15	10,95	2,80	M	LL " "	85° 55° 50°	8,60 9,90 10,80				Grey colour-banded (3-10 mm) marble with some 5-20 cm calc-silicate bands and 3-10 mm stilbite veins.
10,95	12,00	1,05	H-CGN	LL	70°	11,95				Banded calc-silicate gneiss with some 10-20 mm marble bands. The upper part (10,95-11,55) is more biotite-rich (BGN) and contains some 2-3 cm wide concordant coarse-grained granodiorite veins.

LITHOLOGIES: A: = amphibolite; ABGN = dark grey amphibole-biotite gneiss; BAG = dark grey biotite-rich anatectic granite; BGN = dark grey biotite gneiss; CGN = greenish calc-silicate gneiss; CL = coreloss; CM = cores missing; CSCH = calcareous schist; GQM = dark grey biotite-quartz monzonite; GGO = grey granodioritic orthogneiss; GTG = grey medium-grained two-mica granite; HTG = hybrid pinkish grey medium-grained two-mica granite; IB = intrusion breccia; LG = leucocratic granite; M = calcite marble; MBGN = migmatitic biotite gneiss; MD = dark grey monzodiorite; MSCH = micaschist/-gneiss; OB/CL = overburden and/or coreloss in surface weathered rocks; P = pegmatite and pegmatitic granite; Q = hydrothermal quartz-vein or -lens; SK = skarn-altered marble. Prefixes: B- = bleached; BR- = brecciated; CT- = cataclastic; CR- = crushed; G- = garnetiferous; H- = heterogeneous; i.e. strong interbanding with other lithologies; HA- = hydrothermally altered; MY- = mylonitic; P- = pink; PP- = porphyritic; SH- = semiductilly sheared; W- = white to greyish white.

DDH: 2

DEPTH (metres)		LENGTH	LITHOLOGY	MEASURED STRUCTURES			ORE MINERALIZATION			PETROGRAPHY
From	To			Type	Angle w. core	Depth	From	To	Type	
12,00	18,00	6,00	HTG							Pink medium-grained hybrid TG infiltrated by pink pegmatite and pegmatitic granite veins and segregations. Strongly bleached with some 1-2 cm zones containing biotites. More biotite-rich greyish incl. at 14,30-,50.
18,00	24,00	6,00	MBGN	Fl	60° 45° 50° 10° 15° 25° 65°	18,25 18,80 20,10 20,80 21,10 21,80 23,95				Dark grey, biotite-rich and folded migmatitic gneiss with 1-20 mm wide leuco-some schlieren. Locally thin (5 cm) amphibolite bands. LG veins at 19,50-,55; 22,25-,30 and 22,35-,40.
24,00	33,00	9,00	CM							
33,00	35,00	2,00	MBGN	LL FL	55° 55°	33,50 34,25				Grey migmatitic biotite gneiss with 1-5 cm wide leucosome schlieren. 5 cm calc-silicate gneiss band at 33,50. It is cut by white muscovite-rich LG veins at 33,15-,25; 34,25-,30 and 34,95-35,00.
35,00	37,00	2,00	CM							
37,00	38,40	1,40	MBGN							Grey migmatitic and folded biotite gneiss with fine-grained biotite-bearing CGN at 37,70-,90. Greyish red somewhat bleached granodiorite at 37,40-,65 and pinkish grey aplitic LG at 38,00-,40.
38,40	48,00	9,60	CM							

STRUCTURES: BV = breccia vein; FL = foliation; LB = lithological boundary; LL = metamorphic banding and/or primary lithological layering; MY = mylonite foliation; SP = semiductile shear plane; V = mineral veins with prefixes: AN- = ankerite; CA- = calcite; CHL- = chlorite; MY- = mylonitic; Q- = quartz; SR- = sericite; ST- = stilbite.

DDH: 2

DEPTH (metres)		LENGTH	LITHOLOGY	MEASURED STRUCTURES			ORE MINERALIZATION			PETROGRAPHY
From	To			Type	Angle w. core	Depth	From	To	Type	
48,00	50,45	2,45	W-LG							White medium-grained LG with incl. of amphibolite at 48,35-,40; 48,55-,60 and 48,80-,82. The LG is cut by pink pegmatite dykes (e.g. 48,00-,30) and 1-3 cm aplite veins. It contains sparse zones of sericite alteration.
50,45	53,30	2,85	HTG							Pinkish grey medium-grained hybrid TG with small amphibolite inclusions at 51,45-,50. The granite contains light grey and more biotite-rich zones at 50,85-51,05 and 52,00-,50. It is cut by numerous 2-5 cm wide and pink aplitic veins. White aplitic LG with abundant sericite-altered fracture zones occurs at 51,05-,80.
53,30	55,40	2,10	A							Fine-grained amphibolite cut by dykes of GTG at 53,50-,55 and HTG at 53,65-,70; 53,80-,90 (with chloritic crackle breccia), 53,95-54,10 and 54,90-55,40.
55,40	60,75	5,35	MD	LB	85°	55,40				Medium-grained monzodiorite with some amphibolite inclusions (1-5 cm). The MD is cut by thin aplite and pegmatite veins and thicker variably bleached and chlorite-altered dykes of GTG and HTG (56,40-,50; 56,85-57,20; 57,35-,40;57,65-58,50). Greenish grey chlorite alteration zones are common below 56,30 where also scattered q-chlorite- and stilbite-calcite veins occur.
60,75	70,25	9,50	HTG	FL	45°	65,80				Grey to pinkish biotite-poor TG with moderate zonal bleaching. Strong bleaching is seen at 69,00-70,20 in connection with numerous aplite veins. Mixed pegmatite-aplite dyke occurs at 65,20-,70 in contact with a foliated granite variety with 1x10 mm biotite aggregates (65,70-66,10). The granites contain scattered stilbite ± calcite- and q.veins (1-5 mm). In addition a chlorite crackle breccia occurs at 69,50-70,00.

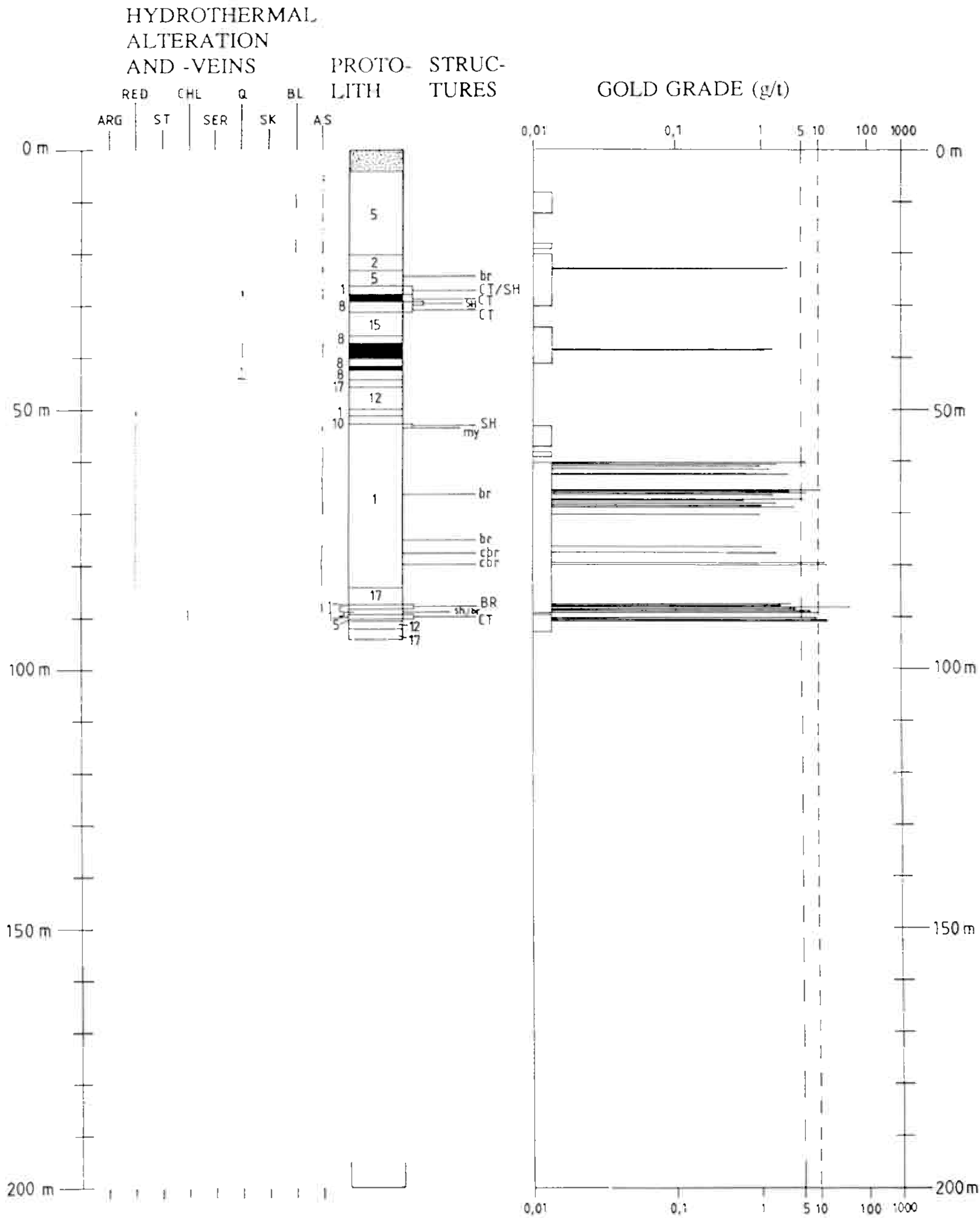
STRUCTURES: BV = breccia vein; FL = foliation; LB = lithological boundary; LL = metamorphic banding and/or primary lithological layering; MY = mylonite foliation; SP = semiductile shear plane; V = mineral veins with prefixes: AN- = ankerite; CA- = calcite; CHL- = chlorite; MY- = mylonitic; Q- = quartz; SR- = sericite; ST- = stilbite.

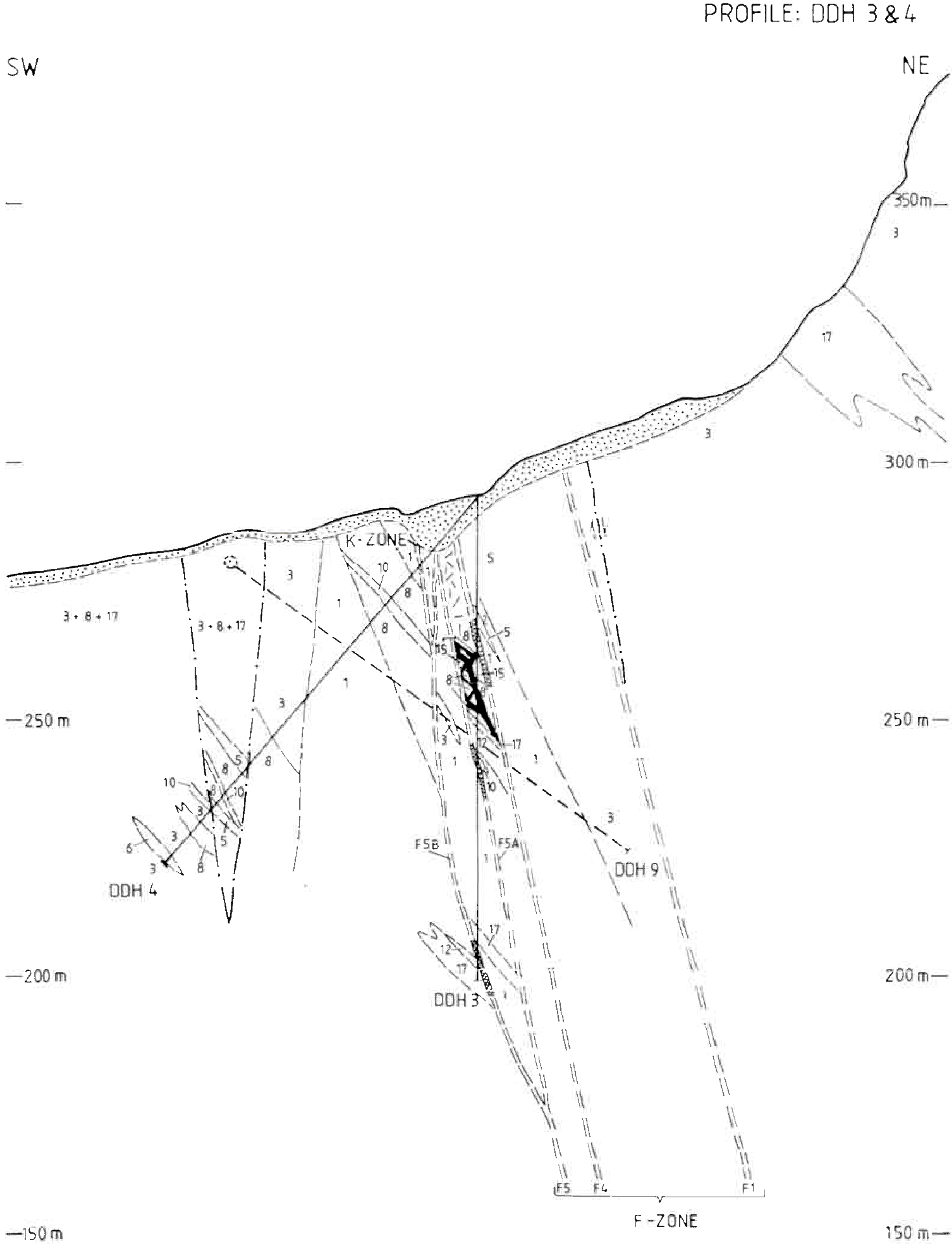
DDH: 2

DEPTH (metres)		LENGTH	LITHOLOGY	MEASURED STRUCTURES			ORE MINERALIZATION			PETROGRAPHY
From	To			Type	Angle w. core	Depth	From	To	Type	
70,25	76,40	6,15	MD	FL	35°	74,80				Medium-grained foliated monzodiorite with up to 1-2 x 3-6 mm hbl. needles and grading into fine-grained amphibolites at 70,25-71,10 and 74,25-,70. It is cut by dykes of HTG (70,30-,35; 76,60-,85) and white LG (72,35-,85 and 74,05-,25). Locally greyish green chlorite alteration is found associated with calcite veinlets (1 mm). Sparse veins (1-10 mm) of stilbite ± calcite are also seen.
76,40	79,55	3,15	A	FL	55°	77,20				Fine-grained amphibolite cut by dykes of HTG (77,40-78,00 and 79,45-,50) and bleached GTG (78,10-,15).
79,55	84,45	4,90	HTG							Pink to pinkish grey medium-grained TG with moderate zonal bleaching in association with aplite veins frequently having sericite alteration (2-30 mm) along fractures. The widest alteration zone occurs at 80,05-,15.
84,45	85,50	1,05	P-P					84,80 85,40	5 mm q.-aspy vein 10 mm q. " "	Pink pegmatitic granite and pegmatite.
85,50	86,30	0,80	HTG							Pink to pinkish grey medium-grained TG with moderate zonal bleaching and some thin aplite dykes with sparse fracture-bound sericite alteration.

STRUCTURES: BV = breccia vein; FL = foliation; LB = lithological boundary; LL = metamorphic banding and/or primary lithological layering; MY = mylonite foliation; SP = semiductile shear plane; V = mineral veins with prefixes: AN- = ankerite; CA- = calcite; CHL- = chlorite; MY- = mylonitic; Q- = quartz; SR- = sericite; ST- = stilbite.

SUMMARY CORELOG-DIAGRAM: DDH 3




PROFILE: DDH 3 & 4
SW
NE
350m
300m
250 m
200 m
150 m
K-ZONE
3 + 8 + 17
3 + 8 + 17
DDH 4
DDH 3
DDH 9
F5B
F5A
F5
F4
F1
F-ZONE

DRILLHOLE No.: 3 AZIMUTH: INCLINATION: 90° LENGTH: 94,20 m Horiz.: 0,00 m Vert.: 94,20 m CORE DIM.: 46 mm
LOCATION: F-ZONE
COMPANY: A/S SULFIDMALM NGO-COORD.:Y: -19143,0 X: 798607,5 ZONE: D ALTITUDE: 293,5 m.a.s.l.
YEAR: 1980 UTM-COORD.,E: 397390 N: 7229050 ZONE: 33

DEPTH (metres)		LENGTH	LITHOLOGY	MEASURED STRUCTURES			ORE MINERALIZATION			PETROGRAPHY
From	To			Type	Angle w. core	Depth	From	To	Type	
0,00	4,00	4,00	OB/CL							
4,00	19,95	15,95	GQM	FL	50°	4,65	5,10	5,45	Scattered hairline aspy. veins.	Dark grey medium-grained biotite-quartz monzonite with some lighter soot-grey diffusely delineated zones (0,5-10 cm bleaching) often as envelopes on 1-2 mm muscovite veins and chlorite and ?arsenpyrite? coated fractures. Dense zonal bleaching at 8,20-11,35 and 17,10-19,60. The quartz monzonite is foliated and is cut by veins (0,5-5 cm) and dykes of GTG (4,00-,15; 12,65-13,40; 15,65-,90 and 19,60-,95) and some white aplitic LG veins.
				"	50°	6,05				
				"	45°	7,75		7,70	Hairline aspy. vein.	
				"	60°	12,40	8,30	11,20	Scattered aspy. veins.	
				"	45°	14,50	12,30	13,40	" " "	
				"	55°	16,90		15,15	Hairline aspy. vein.	
								15,90	" " "	
							17,40	19,20	Scattered aspy. veins.	
19,95	23,10	3,15	W-P				22,45	23,10	Dense network of hairline veins of aspy.	White pegmatite and pegmatitic granite.
23,10	26,10	3,00	HA-GQM							Dark medium-grained biotite-quartz monzonite being bluish soot-grey due to hydrothermal alteration and ?dissemination of fine-grained aspy?. More normal appearance below 25,75. 10 cm breccia zone with 5 mm white feldspar fragments in a fine-grained dark matrix (24,20).
26,10	27,80	1,70	CT-W-LG	SP	30°	26,95	26,95	27,10	Scattered grains (< 1 mm) of aspy.	Grey to dark grey ultracataclasite. It carries flattened and sheared fragments (1 cm) of grayish aplitic LG in a black fine-grained matrix at 26,95-27,10.
				"	40°	27,10				

LITHOLOGIES: A: = amphibolite; ABGN = dark grey amphibole-biotite gneiss; BAG = dark grey biotite-rich anatectic granite; BGN = dark grey biotite gneiss; CGN = greenish calc-silicate gneiss; CL = coreloss; CM = cores missing; CSCH = calcareous schist; GQM = dark grey biotite-quartz monzonite; GGO = grey granodioritic orthogneiss; GTG = grey medium-grained two-mica granite; HTG = hybrid pinkish grey medium-grained two-mica granite; IB = intrusion breccia; LG = leucocratic granite; M = calcite marble; MBGN = migmatitic biotite gneiss; MD = dark grey monzodiorite; MSCH = micaschist/-gneiss; OB/CL = overburden and/or coreloss in surface weathered rocks; P = pegmatite and pegmatitic granite; Q = hydrothermal quartz-vein or -lens; SK = skarn-altered marble. Prefixes: B- = bleached; BR- = brecciated; CT- = cataclastic; CR- = crushed; G- = garnetiferous; H- = heterogeneous; i.e. strong interbanding with other lithologies; HA- = hydrothermally altered; MY- = mylonitic; P- = pink; PP- = porphyritic; SH- = semiductilly sheared; W- = white to greyish white.

DDH: 3

DEPTH (metres)		LENGTH	LITHOLOGY	MEASURED STRUCTURES			ORE MINERALIZATION			PETROGRAPHY
From	To			Type	Angle w. core	Depth	From	To	Type	
27,80	28,95	1,15	CT-Q				27,80	28,50	Scattered 0,5-1 mm aspy. veins.	Brownish white sheared quartz with light brown veins (2-10 mm) of sericite-muscovite-ankerite. Black cataclastic q. at the lower contact (28,60-,95).
28,95	30,95	2,00	CT-BAG	SP "	20° 20°	29,05 29,20				Black ultracataclasite with 1-20 mm fragments of white feldspar which are flatened above 29,70. Probably deformed biotite-rich anatectic granite.
30,95	32,75	1,80	MSCH	FL LB	30° 30°	31,10 32,65				Dark grey to greyish green muscovite-biotite schist with gradual borders with BAG. It is cut by a dyke of GQM at 30,95-31,30 and carries a band of BAG at 32,65-,75. The rock may represent muscovite alteration.
32,75	35,70	2,95	PP-MSCH	FL	30°	35,10	35,00	35,70	Scattered chlorite veins (<3 mm) with py.xx and aggregates.	Dark grey muscovite-biotite schist with 2-10 mm equant to rectangular porphyries of white feldspar. It grades into a massive and weakly banded variety at 35,00-,70. It is cut by a dyke of light grey TG at 33,65-,90 and some 1 cm aplitic veins. ?Muscovite-altered BAG?
35,70	37,10	1,40	HA-BAG				36,20	36,50	Scattered chlorite-py. veins.	Hydrothermally altered light bluish grey anatectic granite with 1-10 mm white feldspars. It carries chlorite veinlets and a milky q. vein with muscovite stringers at 35,80-,95.
37,10	40,10	3,00	Q				37,10 38,15	38,15 40,10	Abundant 1-2 mm aspy. veins and irregular, up to 30 mm aggr. controlled by fractures and grain-boundaries. Scattered 1-2 mm aspy. veinlets.	Milky quartz with rafts of muscovite-biotite schist at 37,30-,60; 39,50-,65 and 38,00-,05.

STRUCTURES: BV = breccia vein; FL = foliation; LB = lithological boundary; LL = metamorphic banding and/or primary lithological layering; MY = mylonite foliation; SP = semiductile shear plane; V = mineral veins with prefixes: AN- = ankerite; CA- = calcite; CHL- = chlorite; MY- = mylonitic; Q- = quartz; SR- = sericite; ST- = stilbite.

DDH: 3

DEPTH (metres)		LENGTH	LITHOLOGY	MEASURED STRUCTURES			ORE MINERALIZATION			PETROGRAPHY
From	To			Type	Angle w. core	Depth	From	To	Type	
40,10	41,55	1,45	HA-BAG	Fl	25°	41,30				Grey muscovite-altered anatectic granite.
41,55	42,30	0,75	Q							Milky quartz.
42,30	44,00	1,70	BAG							Dark grey biotite-rich anatectic granite with grey muscovite-rich matrix at 43,05-,65. Milky quartz-vein at 43,65-,95.
44,00	45,60	1,60	MBGN	Fl	30°	44,60				Leucosome rich migmatitic biotite gneiss with narrow zones of foliated BAG. It is cut by biotite-spotted white aplitic LG dyke at 45,30-,50.
45,60	49,80	4,20	BGN	FL " "	20° 30° 30°	46,80 47,05 49,60				Dark fine-grained and massive biotite gneiss with a few 5-10 cm amphibolite bands. Scattered 1-5 cm white aplite veins and some 2-10 cm greyish green chlorite alteration zones.
49,80	50,90	1,10	LG							Light grey to pink and fine- to medium-grained LG with some cm-wide biotite-bearing domains. It is cut by some 1-2 cm aplite veins and contains an inclusion of BAG (49,80-50,10) and GQM (50,10-,85). The LG carries a few 5 mm sericite alteration zones.
50,90	52,60	1,70	A	FL	30° 25°	51,80 52,40	51,20	51,45	A few hairline aspy. veins.	Fine-grained hornblende porphyritic amphibolite with 0,5 x 2-5 mm^2 hornblende needles along the foliation. It is cut by dykes of pegmatite (e.g. 51,00-,10) and a white biotite-spotted aplite with chlorite veinlets and 0,1-1 mm q. veins.

STRUCTURES: BV = breccia vein; FL = foliation; LB = lithological boundary; LL = metamorphic banding and/or primary lithological layering; MY = mylonite foliation; SP = semiductile shear plane; V = mineral veins with prefixes: AN- = ankerite; CA- = calcite; CHL- = chlorite; MY- = mylonitic; Q- = quartz; SR- = sericite; ST- = stilbite.

DDH: 3

DEPTH (metres)		LENGTH	LITHOLOGY	MEASURED STRUCTURES			ORE MINERALIZATION			PETROGRAPHY
From	To			Type	Angle w. core	Depth	From	To	Type	
52,60	84,25	31,60	LG	SP MY	55° 35	52,90 53,25	53,25 57,25 66,00 66,25 69,90 75,60 77,40 77,50 79,50 79,80	53,85 66,00 66,25 69,90 70,20 77,40 77,50 79,50 79,80 84,25	A few hairline aspy. veins. Abundant aspy. ± py. veins decreasing down-wards. Aspy. diss. in rock-flour breccia veins. Some scattered aspy. veins. Bluish grey aspy. diss. Some hairline aspy. veins. Aspy. crackle breccia. Some aspy. veinlets Aspy. crackle breccia and diss. Scattered hairline aspy. veins.	Greyish white to pink and fine- to medium-grained leucogranite dominated by aplite at 57,25-80,00 and with abundant dykes elsewhere. The LG contains inclusions of GQM (69,70-,85 and 78,40-,90), BAG (53,85-54,30 and 82,95-83,25) fine-grained BGN (61,60-62,00), strongly bleached GTG (81,05-,20 and 82,00-83,00, number of small incl.). The upper contact zone at 52,60-53,25 is comprised of sheared and hydrothermally altered bluish grey GQM with a 2 cm mylonite zone at 53,25. The aplites carry scattered chlorite veins, 10-20 mm sericite alteration zones (57,25-59,50) and rock-flour breccia veins (66,00-,25 and 74,90-75,25).
84,25	87,40	3,15	G-MBGN	FL " "	40° 30° 65°	85,10 86,30 86,55				Garnet-bearing migmatitic biotite gneiss with felsic melanosome bands with granular texture. Locally chlorite sealed joints with greyish green chloritised envelopes.
87,40	88,25	0,85	BR-LG				87,40	88,25	Some aspy. sealed joints 1-2 mm aspy. veins.	Grey to dark grey rock-flour breccia with cm. large aplite fragments. It occurs in a white breccia veined LG which contains inclusions of GQM and MBGN (e.g. 87,70-88,25).
88,25	89,25	1,00	HA-GQM	SP/BV	5°	88,85				Dark soot-grey and altered GQM with a few 2-3 cm aplite veins and a quartz-vein at 88,75-,85. The lower contact of the q.vein is represented by a narrow sheared breccia zone with flatened fragments.

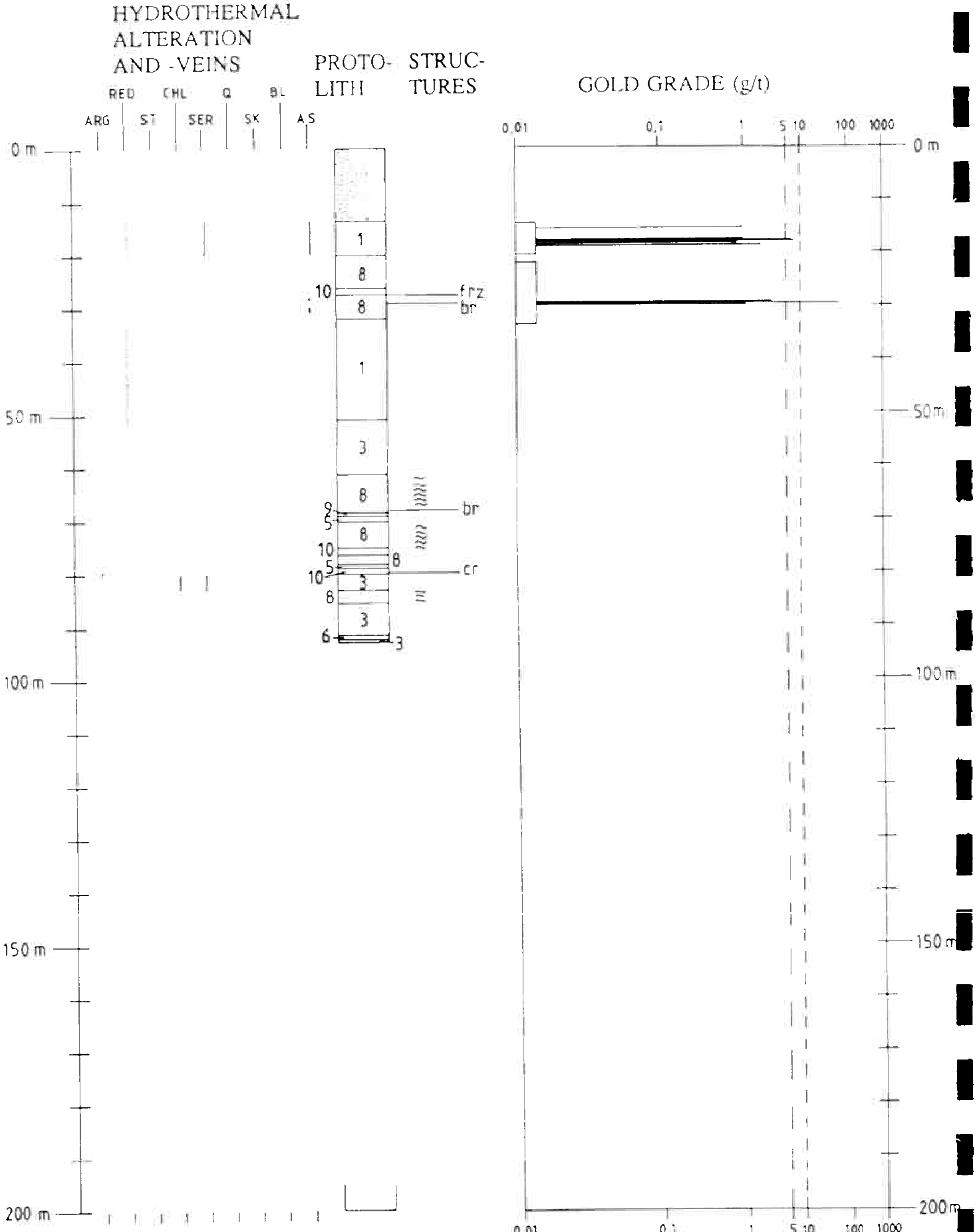
STRUCTURES: BV = breccia vein; FL = foliation; LB = lithological boundary; LL = metamorphic banding and/or primary lithological layering; MY = mylonite foliation; SP = semiductile shear plane; V = mineral veins with prefixes: AN- = ankerite; CA- = calcite; CHL- = chlorite; MY- = mylonitic; Q- = quartz; SR- = sericite; ST- = stilbite.

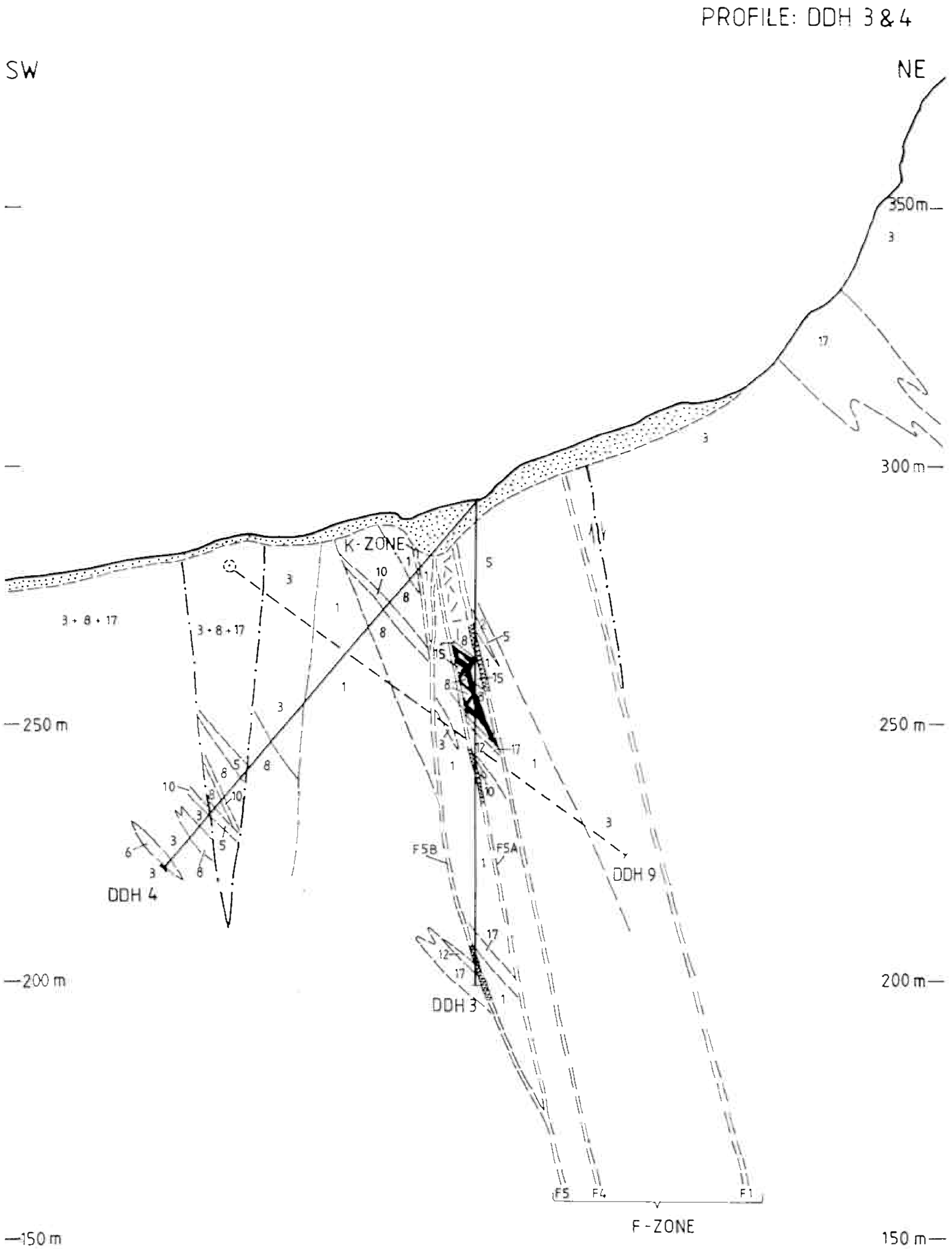
DDH: 3

DEPTH (metres)		LENGTH	LITHOLOGY	MEASURED STRUCTURES			ORE MINERALIZATION			PETROGRAPHY
From	To			Type	Angle w. core	Depth	From	To	Type	
89,25	90,00	0,75	CT-LG				89,25	90,00	Weak aspy. diss.	Black ultracataclasite with 1 cm fragments of greyish white LG.
90,00	90,65	0,65	HA-GQM				90,10	90,60	Low-angle q. vein (10 mm with 5 mm aspy. rim.)	Greyish green chloritised GQM cut by medium-grained white LG (90,35-,55) with some chlorite sealed joints.
90,65	92,05	1,40	BGN							Fine-grained biotite gneiss cut by chlorite veined aplitic LG (91,10-,30) and greyish green chloritised GQM (91,60-,80 and 92,00-,05).
92,05	94,20	2,15	G-MBGN	FL " "	30° 60° 60°	92,30 93,30 93,75				Garnetiferous migmatitic biotite gneiss with fine-grained biotite gneiss zones at 92,40-,70 and 93,10-,25. It is cut by a white aplitic LG dyke at 92,80-93,00. The gneisses carry some chlorite veins with 1-2 mm chloritised rims.

STRUCTURES: BV = breccia vein; FL = foliation; LB = lithological boundary; LL = metamorphic banding and/or primary lithological layering; MY = mylonite foliation; SP = semiductile shear plane; V = mineral veins with prefixes: AN- = ankerite; CA- = calcite; CHL- = chlorite; MY- = mylonitic; Q- = quartz; SR- = sericite; ST- = stilbite.

SUMMARY CORELOG-DIAGRAM: DDH 4





PROFILE: DDH 3 & 4
SW
NE
350m
300 m
250 m
200 m
150 m
K-ZONE
3 + 8 + 17
DDH 4
DDH 3
DDH 9
F5B
F5A
F5
F4
F1
F-ZONE

DRILLHOLE No.: 4 AZIMUTH: 226° INCLINATION: 50° LENGTH: 93,05 m Horiz.: 59,80 m Vert.: 71,30 m CORE DIM.: 46 mm
LOCATION: F-ZONE
COMPANY: A/S SULFIDMALM NGO-COORD.:Y: -19144,0 X: 798608,5 ZONE: D ALTITUDE: 293,5 m.a.s.l.
YEAR: 1980 UTM-COORD.,E: 397390 N: 7229050 ZONE: 33

DEPTH (metres)		LENGTH	LITHOLOGY	MEASURED STRUCTURES			ORE MINERALIZATION			PETROGRAPHY
From	To			Type	Angle w. core	Depth	From	To	Type	
0,00	13,70	13,70	OB/CL							
13,70	20,15	6,45	LG				13,80 14,15 14,25 17,35 17,95 19,95	14,15 14,25 17,35 17,95 19,30 20,15	Scattered aspy. sealed fractures. Abundant aspy. veins (1-5 mm). Scattered aspy. sealed fractures and thin veinlets. Q. veins with 5-10 mm aspy. rims and diss. Abundant (<5 mm) aspy. veins. Some 1-10 mm aspy. veins	Pink to greyish white fine-grained aplitic LG with inclusions of BAG (13,70-,80 and 19,30-,95), and small remnants of bleached GTG and GQM. The aplite also contains narrow zones of muscovite-rich medium-grained LG. Fracture-bound sericite alteration is widespread becoming intense at 16,20-,60 and 17,35-,95. The latter zone also contains abundant 5-30 mm q. veins. Nearly pervasive sericite alteration at 17,95-18,50. Soot-grey alteration zones at 17,70 and chlorite alteration zones at 19,50.
20,15	26,35	6,20	BAG	FL	40°	21,90				Biotite-rich anatectic granite with some dark amphibolitic zones (10 cm). It is cut by veins (0,5-5 cm) of white coarse-grained LG and GTG and dykes of GTG with biotite schlieren (20,30-,95) and white medium-grained LG (25,95-26,35). The veins and dykes show weak fracture-bound sericite alteration, some chlorite sealed fractures and a q.-musc. vein.
26,35	27,65	1,30	A							Amphibolite with lower 25 cm being strongly fractured.

LITHOLOGIES: A: = amphibolite; ABGN = dark grey amphibole-biotite gneiss; BAG = dark grey biotite-rich anatectic granite; BGN = dark grey biotite gneiss; CGN = greenish calc-silicate gneiss; CL = coreloss; CM = cores missing; CSCH = calcareous schist; GQM = dark grey biotite-quartz monzonite; GGO = grey granodioritic orthogneiss; GTG = grey medium-grained two-mica granite; HTG = hybrid pinkish grey medium-grained two-mica granite; IB = intrusion breccia; LG = leucocratic granite; M = calcite marble; MBGN = migmatitic biotite gneiss; MD = dark grey monzodiorite; MSCH = micaschist/-gneiss; OB/CL = overburden and/or coreloss in surface weathered rocks; P = pegmatite and pegmatitic granite; Q = hydrothermal quartz-vein or -lens; SK = skarn-altered marble. Prefixes: B- = bleached; BR- = brecciated; CT- = cataclastic; CR- = crushed; G- = garnetiferous; H- = heterogeneous; i.e. strong interbanding with other lithologies; HA- = hydrothermally altered; MY- = mylonitic; P- = pink; PP- = porphyritic; SH- = semiductilly sheared; W- = white to greyish white.

DDH: 4

DEPTH (metres)		LENGTH	LITHOLOGY	MEASURED STRUCTURES			ORE MINERALIZATION			PETROGRAPHY
From	To			Type	Angle w. core	Depth	From	To	Type	
27,65	32,10	4,45	BAG				 29,05	28,25 29,45	Aplite contact with aspy. sealed fractures. Aspy. cemented breccia (29,10-,30) with up to 5 mm fragm. of LG and q. and being surrounded by aspy. veinlets.	Biotite-rich anatectic granite with biotite-amphibole gneiss zone at 30,60-31,00. It is cut by veins and dykes of white aplitic LG with weak fracture-bound sericite alteration (27,90-28,00 and 29,05-,45), white medium-grained muscovite-rich LG (28,25-,35) and biotite-spotted aplitic LG (31,00-,10).
32,10	51,10	19,00	LG							Greyish white to pink and fine- to medium-grained LG. Greyish white type between 32,10 and 40,85 where small inclusions (5 cm) of bleached GTG and GQM are common together with amphibolite at 36,80-34,20; 40,40-,45 and 40,70-,80. The pink aplitic LG below 40,85 contains abundantly similar "ghosts" of GTG and GQM at 48,20-51,10. The granite carries scattered chlorite sealed fractures and q. veins (5-50 mm) and some pegmatite veins.
51,10	61,35	10,25	GTG							Light grey to grey medium-grained TG with weak to moderate bleaching along irregular 1-20 cm zones. BAG inclusions at 58,90-59,05. The granite contains scattered muscovite- and sericite-alteration veins.
61,35	68,45	7,10	BAG	FL LB " LL FL LL FL " " BV	40° 60° 50° 40° 40° 50° 50° 40° 45° 30°	61,50 61,90 62,75 64,30 64,40 64,50 64,70 65,10 67,45 68,45				Foliated biotite-rich anatectic granite with biotite-amphibole schist zone at 64,30-,50. The granite is cut by dykes of bleached GTG (62,25-,75), white biotite-spotted aplitic LG (61,45-,90) and thin veins (2 cm) of muscovite-rich LG. At the lower contact occurs a polylithological breccia (68,10-,45) with fragments mainly BAG and subordinate fragments of hydrothermal quartz (68,10-,15) and granite.

STRUCTURES: BV = breccia vein; FL = foliation; LB = lithological boundary; LL = metamorphic banding and/or primary lithological layering; MY = mylonite foliation; SP = semiductile shear plane; V = mineral veins with prefixes: AN- = ankerite; CA- = calcite; CHL- = chlorite; MY- = mylonitic; Q- = quartz; SR- = sericite; ST- = stilbite.

DDH: 4

DEPTH (metres)		LENGTH	LITHOLOGY	MEASURED STRUCTURES			ORE MINERALIZATION			PETROGRAPHY
From	To			Type	Angle w. core	Depth	From	To	Type	
68,45	69,00	0,55	IB							Intrusion breccia with alternating 5 cm zones of white LG, amphibolite and bleached GTG and GQM.
69,00	70,25	1,25	HA-GQM							Dark grey medium-grained quartz monzonite hydrothermally altered to a massive soot-grey rock at 69,00-70,00.
70,25	75,00	4,75	BAG	FL LL FL	45° 40° 30°	70,60 72,80 73,30				Foliated biotite-rich anatectic granite with a thin (3 cm) amphibolite zone at 72,80. It is cut by veins (1-2 cm) and dykes of GTG (71,00-,25 and 71,40-,70) which contain some sericite-altered and bleached zones.
75,00	76,30	1,30	A							Medium-grained amphibolite.
76,30	78,05	1,75	BAG							Biotite-rich anatectic granite cut by 1-5 cm veins of GTG, GQM and LG.
78,05	78,95	0,90	GQM	LB	45°	78,95				Dark soot-grey and altered grey medium-grained biotite-quartz monzonite with a massive appearance. It is cut by cm. veins of GTG and a GTG dyke at 78,05-,30.
78,95	80,30	1,35	A							Diffusely banded amphibolite cut by abundant 10 cm dykes of LG and GTG at 79,50-80,30. Clay gouge with stilbite veined fragments at 79,95-80,05.
80,30	83,10	2,80	GTG							Soot-grey and altered medium-grained TG with a massive appearance containing an inclusion of amphibolite at 81,40-,70. Some irregular bleached zones (1-5 cm) along the granite contacts and along healed fractures. Chlorite sealed fractures and 5-100 mm sericite alteration zones are common. Light coloured zones at 81,15-,40; 82,40-83,10 and 85,10-,40 around q.-chl.-ep. veins.

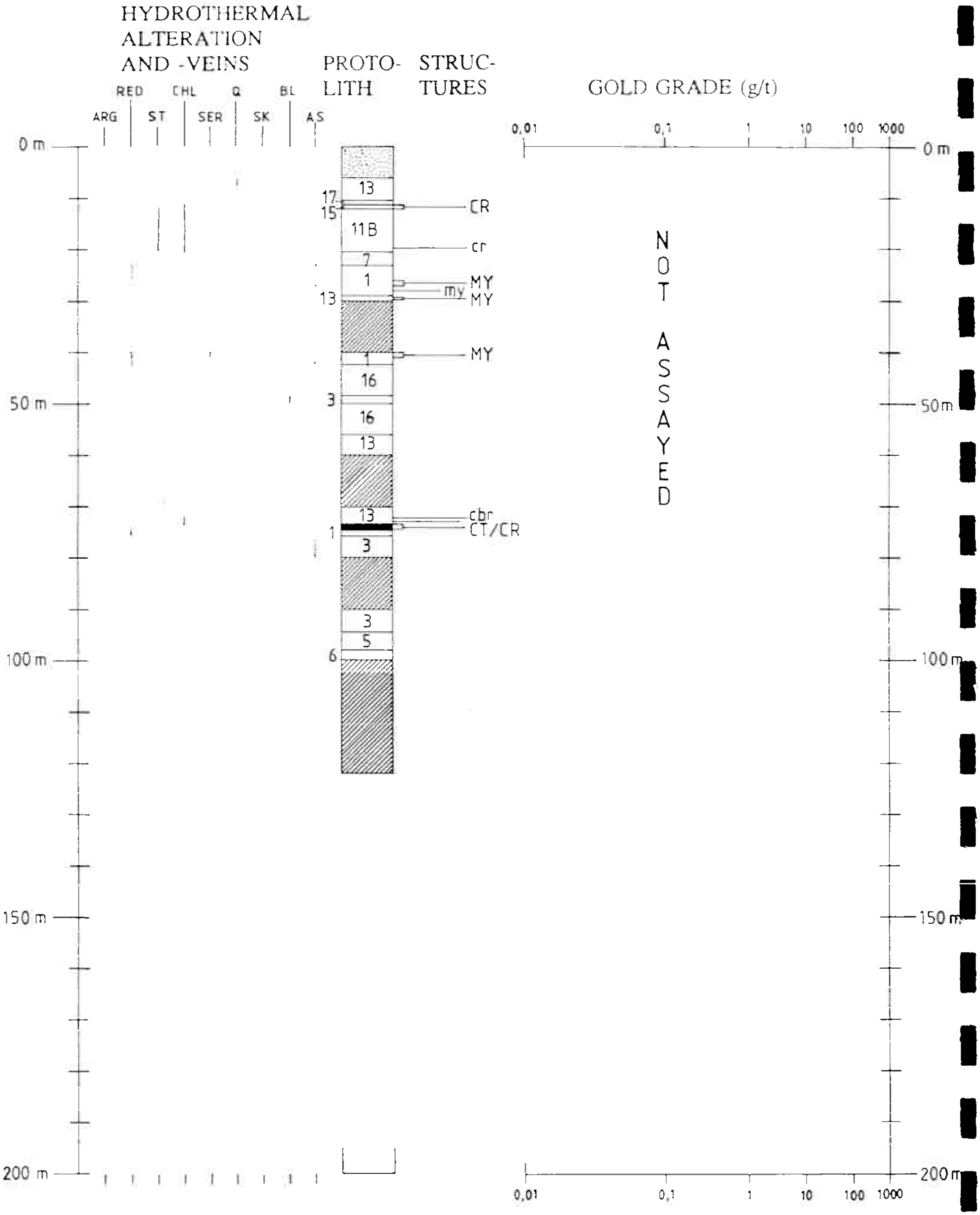
STRUCTURES: BV = breccia vein; FL = foliation; LB = lithological boundary; LL = metamorphic banding and/or primary lithological layering; MY = mylonite foliation; SP = semiductile shear plane; V = mineral veins with prefixes: AN- = ankerite; CA- = calcite; CHL- = chlorite; MY- = mylonitic; Q- = quartz; SR- = sericite; ST- = stilbite.

DDH: 4

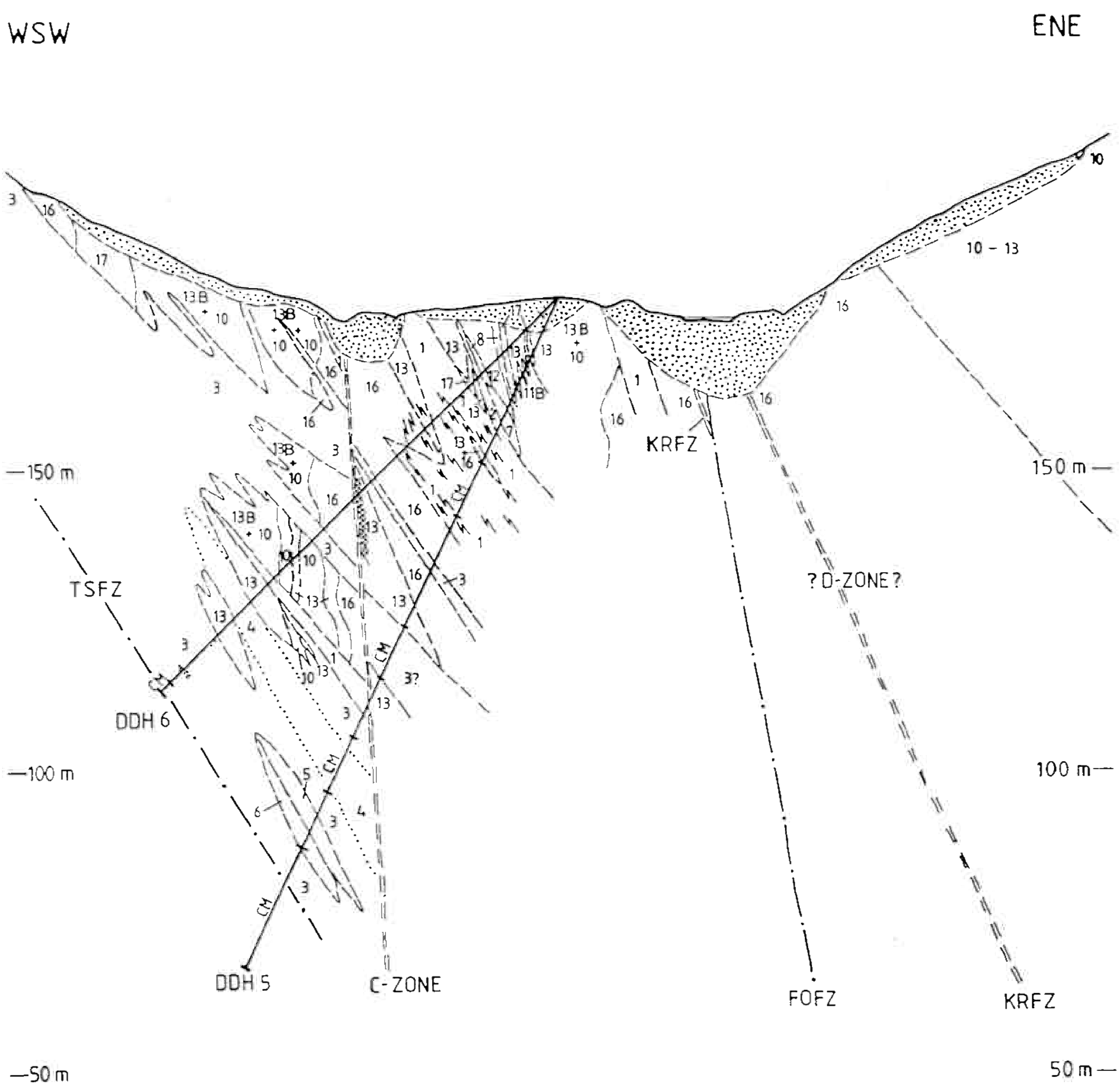
DEPTH (metres)		LENGTH	LITHOLOGY	MEASURED STRUCTURES			ORE MINERALIZATION			PETROGRAPHY
From	To			Type	Angle w. core	Depth	From	To	Type	
83,10	85,65	3,55	BAG	FL "	55° 50°	84,05 84,75				Weakly foliated biotite-rich anatectic granite with alternating zones of calc-silicate gneiss and biotite schist at 83,60-84,30. It is cut by 0,5-2 cm LG veins and coarse-grained dykes of GTG (83,40-,60) and coarse-grained muscovite-rich LG (85,10-,40).
85,65	91,65	6,00	GTG							Grey medium-grained TG cut by some 1-10 cm white LG veins. Amphibolite inclusions at 89,35-,50 and 89,65-,85. A few 10 mm smoky q. veins at 91,25-,50.
91,65	92,65	1,00	MD							Medium-grained monzodiorite.
92,65	93,05	0,40	GTG							Grey medium-grained TG with an amphibolite inclusion at 93,02-,05.

STRUCTURES: BV = breccia vein; FL = foliation; LB = lithological boundary; LL = metamorphic banding and/or primary lithological layering; MY = mylonite foliation; SP = semiductile shear plane; V = mineral veins with prefixes: AN- = ankerite; CA- = calcite; CHL- = chlorite; MY- = mylonitic; Q- = quartz; SR- = sericite; ST- = stilbite.

SUMMARY CORELOG-DIAGRAM: DDH 5



PROFILE: DDH 5 & 6



DRILLHOLE No.: 5 | AZIMUTH: 262° | INCLINATION: 65° | LENGTH: 122,00 m | Horiz.: 51,55 m | Vert.: 110,55 m | CORE DIM.: 36 mm
LOCATION: C-ZONE
COMPANY: A/S SULFIDMALM | NGO-COORD.:Y: -19341,5 | X: 798991,5 | ZONE: D | ALTITUDE: 178,5 m.a.s.l.
YEAR: 1981 | UTM-COORD.,E: 397220 | N: 7229450 | ZONE: 33

DEPTH (metres)		LENGTH	LITHOLOGY	MEASURED STRUCTURES			ORE MINERALIZATION			PETROGRAPHY
From	To			Type	Angle w. core	Depth	From	To	Type	
0,00	6,30	6,30	OB/CL							
6,30	10,40	4,10	CGN	LL "	50° 50°	8,45 9,20		8,45	Py. coating on foliation plane.	Dark green fine- to medium-grained calc-silicate gneiss partly banded with alternating bands dominated by green diopside, dark biotite and/or brownish red garnet. Quartz infiltration and veining at 6,60-7,50; 7,95-8,40 and 10,10-,30.
10,40	11,20	0,80	MBGN	FL	30°	10.90				Migmatitic biotite gneiss with bluish kyanite-rich bands, biotite-rich paleosome and white feldspatic neosome veins/schlieren.
11,20	11,95	0,75	CR-MSCH						Py. along chlorite- and calcite-quartz-veins.	Crush zone with muscovite powder and crushed fine-grained grey rock with calcite - quartz-veins and chlorite-coated fractures. From 11,40 to 11,95 strongly fractured dark bio.-musc. gneiss with 1 mm calcite veins and 1-3 cm white LG veins.

LITHOLOGIES: A: = amphibolite; ABGN = dark grey amphibole-biotite gneiss; BAG = dark grey biotite-rich anatectic granite; BGN = dark grey biotite gneiss; CGN = greenish calc-silicate gneiss; CL = coreloss; CM = cores missing; CSCH = calcareous schist; GQM = dark grey biotite-quartz monzonite; GGO = grey granodioritic orthogneiss; GTG = grey medium-grained two-mica granite; HTG = hybrid pinkish grey medium-grained two-mica granite; IB = intrusion breccia; LG = leucocratic granite; M = calcite marble; MBGN = migmatitic biotite gneiss; MD = dark grey monzodiorite; MSCH = micaschist/-gneiss; OB/CL = overburden and/or coreloss in surface weathered rocks; P = pegmatite and pegmatitic granite; Q = hydrothermal quartz-vein or -lens; SK = skarn-altered marble. Prefixes: B- = bleached; BR- = brecciated; CT- = cataclastic; CR- = crushed; G- = garnetiferous; H- = heterogeneous; i.e. strong interbanding with other lithologies; HA- = hydrothermally altered; MY- = mylonitic; P- = pink; PP- = porphyritic; SH- = semiductilly sheared; W- = white to greyish white.

DDH: 5

DEPTH (metres)		LENGTH	LITHOLOGY	MEASURED STRUCTURES			ORE MINERALIZATION			PETROGRAPHY
From	To			Type	Angle w. core	Depth	From	To	Type	
11,95	20,55	8,60	H-ABGN	LL " " FL "	10° 25° 60° 70° 40°	14,30 15,25 17,60 18,65 20,40				Fine-grained heterogeneous dark grey biotite-amphibole gneiss with banded zones of lighter grey and green calc-silicate gneisses (13,00-,40; 13,95-14,65; 15,45-16,85; 17,45-,85 and 18,80-19,50). Dark grey zones of biotite gneiss with 10 cm feldspar porphyroblastic veins, gneisses containing abundant biotite schlieren and quartz-veins and gneisses with 1 x 10-20 mm quartzo-feldspatic lenses and more coarse-grained veins (1-5 cm) occur at 11,95-12,55; 18,60-,80 and 19,55-20,55, respectively. All the gneisses contain abundant 1-5 mm veins and fracture coatings of calcite and/or red stilbite and are variably chloritzed along fractures giving a light greenish grey colour to the rock. A chloritised and silicified granite dyke occurs at 17,85-18,60. Crush zone with 10 mm calcite-stilbite and quartz-veins are found at 19,55-,90.
20,55	23,05	2,50	GGO	FL	50°	21,75				Variably foliated grey granodioritc gneiss with some 5-10 mm feldspar augen. It is cut by a red LG vein (22,70-,85). The rocks contain scattered 1-5 mm red stilbite veins.
23,05	29,00	5,95	LG	MY	60°	26,35	23,10	23,35 27,35	1-10 mm q.-aspy. veins. Two hairline aspy. veins.	Pink to white leucocratic granite with variable texture. Pink pegmatitic to coarse-gr. granite with bleached granodioritic gneiss inclusions and some chlorite fractures occurs at 23,05-24,45 followed by a white medium-gr. with scattered red stilbite-coated fractures (24,45-25,80). A more pink fine-to medium-gr. aplo-granite are found at 25,80-26,25. It is fractured and in part silicified in association with q. veins which are cut by chlorite-coated fractures. White to light grey medium-gr. granite with local pink segregations or dykes of pegmatite occupies the rest of the LG body down to 29,00. It contain scattered chlorite veins. Ductile shearing with the formation of mylonites with sericite/musc. coated shear planes are found at 26,00-27,15 and 27,95-28,15.

STRUCTURES: BV = breccia vein; FL = foliation; LB = lithological boundary; LL = metamorphic banding and/or primary lithological layering; MY = mylonite foliation; SP = semiductile shear plane; V = mineral veins with prefixes: AN- = ankerite; CA- = calcite; CHL- = chlorite; MY- = mylonitic; Q- = quartz; SR- = sericite; ST- = stilbite.

DDH: 5

DEPTH (metres)		LENGTH	LITHOLOGY	MEASURED STRUCTURES			ORE MINERALIZATION			PETROGRAPHY
From	To			Type	Angle w. core	Depth	From	To	Type	
29,00	30,00	1,00	CGN	MY	60°	29,50				Fine-medium-gr. greenish calc-silicate gneiss with a mylonitic and finely banded marble horizon at 29,30-,80. The gneiss and marble contain abundant calcite veins and veinlets (1-2 mm).
30,00	40,00	10,00	CM							
40,00	42,50	2,50	LG					42,30	1 mm aspy. veinlet.	White to pink leucocratic granite with pegmatitic segregations and veins at 41,40-,90. The granite grades into mylonites at 40,00-,90 where fracture-bound sericite alteration (1-2 cm) occurs abundantly.
42,50	48,60	6,10	M	LL " " LB	30° 50° 50° 50°	48,50 50,60 53,10 56,30				Light grey to bluish grey calcite marble, massive to faintly banded. Some scattered calc-silicate bands and zones of dark biotite gneiss/schist with calc-silicate bands (45,00-,65 and 46,50-,90). The marble is cut by 0,1-0,35 mm wide dykes (1-2 pr. m) of fine-gr. pink aplogranites and pegmatites.
48,60	50,10	1,50	B-GTG							Strongly bleached grey TG dyke.
50,10	56,30	6,20	M							Light grey to bluish grey calcite marble.
56,30	60,00	3,70	CGN	LL	70°	57,00				Fine-grained massive to weakly banded greenish calc-silicate gneiss with garnet and thin zones of epidotisation. Dark grey bio.-amph. gneiss with calc-silicate band occurs at 57,80-58,50. The gneisses is cut by dykes of white LG and grey bleached GTG. Thin dykes occurs abundatly from 56,90 to 58,85.
60,00	70,00	10,00	CM							

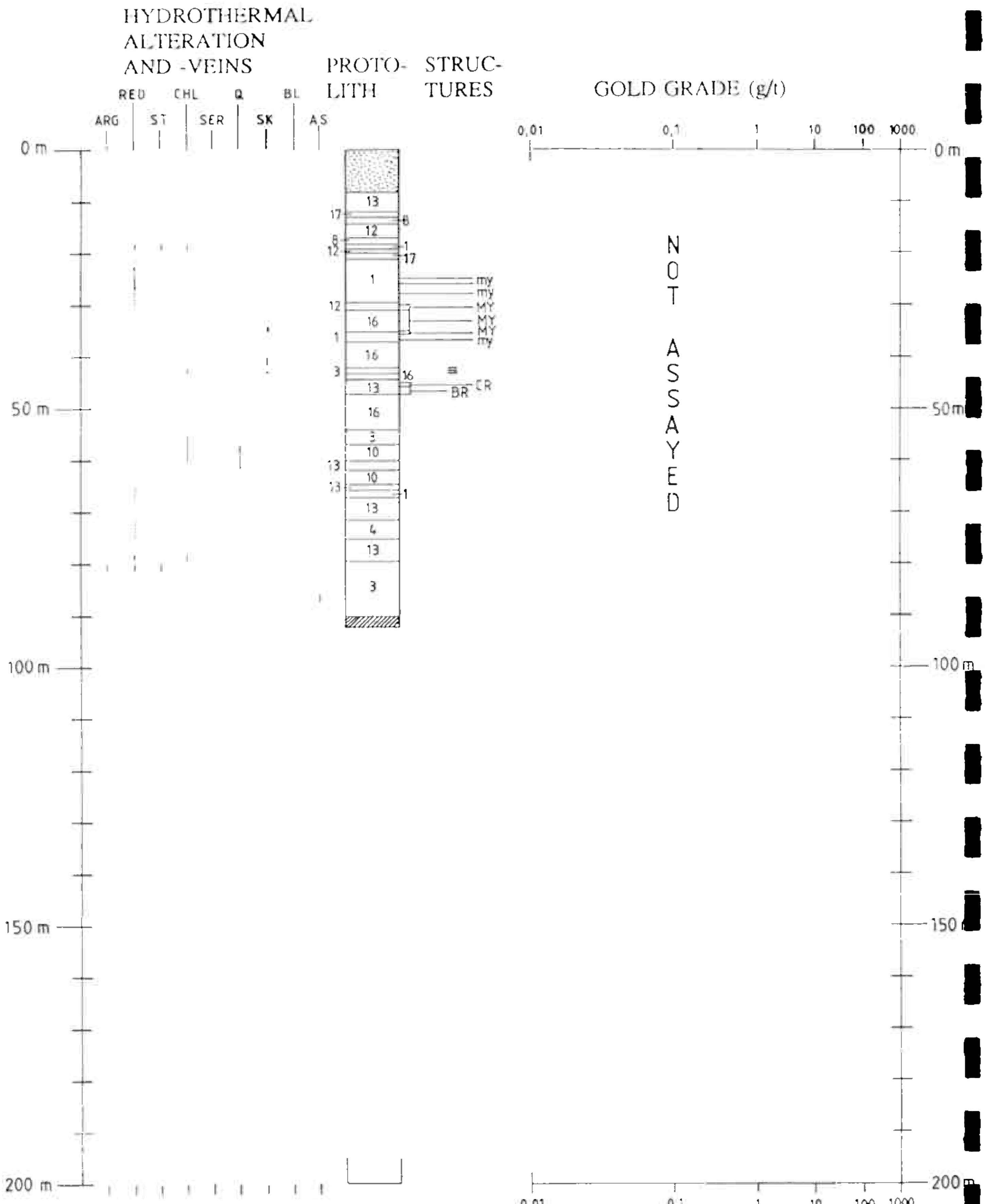
STRUCTURES: BV = breccia vein; FL = foliation; LB = lithological boundary; LL = metamorphic banding and/or primary lithological layering; MY = mylonite foliation; SP = semiductile shear plane; V = mineral veins with prefixes: AN- = ankerite; CA- = calcite; CHL- = chlorite; MY- = mylonitic; Q- = quartz; SR- = sericite; ST- = stilbite.

DDH: 5

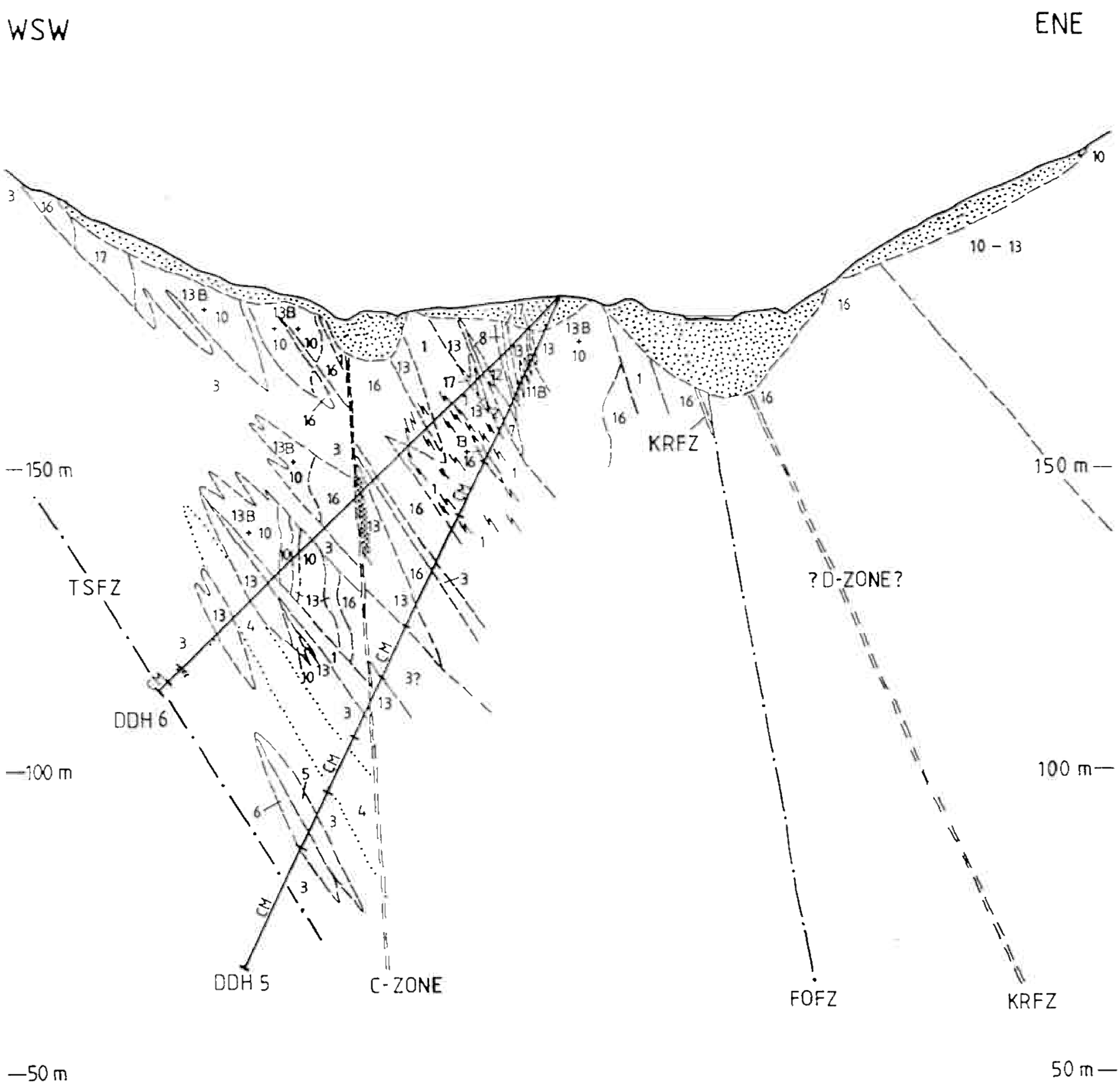
DEPTH (metres)		LENGTH	LITHO-LOGY	MEASURED STRUCTURES			ORE MINERALIZATION			PETROGRAPHY
From	To			Type	Angle w. core	Depth	From	To	Type	
70,00	73,60	3,60	CGN							Fine- to medium-gr. dark greenish grey calc-silicate gneiss cut by thin pink LG dykes. Abundant dykes with chlorite crackle breccias along their margin occur at 72,15-,50, 73,00-,15 and 73,30-,60. The granites and breccias are frequently sheared along the contacts.
73,60	74,40	0,80	CT-Q							Dark grey fine-grained ultracataclasite grading into crush zone below 73,80. The crush zone is composed of small fragments (< 5 mm) and rock flour of cataclastic q.vein.
74,40	75,70	1,30	P-LG							Pink medium-grained leucocratic granite with a pegmatite vein at 75,30-,40. It contains scattered 1-2 mm q.veins and is silicified at 75,00-,20.
75,70	80,00	4,30	GTG	LB Q-V	5° 5°	77,90 79,50	76,85 78,95 77,45	76,90 79,70 78,15	1 cm low-angle, bluish grey zone with fine-gr. aspy diss. " " " " " 1-2 cm low-angle q.-musc.-aspy. vein.	Grey medium-grained two-mica granite with some 1-5 cm pegmatite dykes and 1-10 mm q. veins. Inclusion of medium-gr. calc-silicate gneiss at 75,70-76,40. Pink colouration occurs at 76,55-,75.
80,00	90,00	10,00	CM							
90,00	94,45	4,45	GTG							Grey two-mica granite containing inclusions of monzodiorite (90,10-,12; 90,20-,30; 91,20-,35; 91,50-,55 and 92,25-,35) and dark grey biotite-quartz monzonite (91,35-,45; 91,55-,60; 91,80-92,75 and 92,90-,93). Soot-grey alteration at 94,40.
94,45	98,10	3,65	GQM	LB	50°	94,45				Dark grey biotite-quartz monzonite with white pegmatite - (96,50-,65) and grey TG - (96,15-,30) dykes.
98,10	100,00	1,90	MD	LB "	70° ÷60°	99,55 99,85				Monzodiorite cut by grey TG dykes at 99,55-,85 and 99,95-100,00. Gradual border with GQM.
100,00	122,00	22,00	CM							

STRUCTURES: BV = breccia vein; FL = foliation; LB = lithological boundary; LL = metamorphic banding and/or primary lithological layering; MY = mylonite foliation; SP = semiductile shear plane; V = mineral veins with prefixes: AN- = ankerite; CA- = calcite; CHL- = chlorite; MY- = mylonitic; Q- = quartz; SR- = sericite; ST- = stilbite.

SUMMARY CORELOG-DIAGRAM: DDH 6



PROFILE: DDH 5 & 6



DRILLHOLE No.: 6 AZIMUTH: 262° INCLINATION: 45° LENGTH: 92,00 m Horiz.: 65,05 m Vert.: 65,05 m CORE DIM.: 36 mm
LOCATION: C-ZONE
COMPANY: A/S SULFIDMALM NGO-COORD.:Y: -19341,5 X: 798991,5 ZONE: D ALTITUDE: 178,5 m.a.s.l.
YEAR: 1981 UTM-COORD.,E: 397220 N: 7229450 ZONE: 33

DEPTH (metres)		LENGTH	LITHOLOGY	MEASURED STRUCTURES			ORE MINERALIZATION			PETROGRAPHY
From	To			Type	Angle w. core	Depth	From	To	Type	
0,00	8,00	8,00	OB/CL							
8,00	11,80	3,80	CGN	LL " "	45° 30° ÷30°	9,65 10,50 10,70				Light greenish grey banded (0,5-5 cm) calc-silicate gneiss with 0,5-5 cm white LG veins and scattered chlorite ± calcite veinlets. Quartz-veins and segregations in granular BAG at 8,00-,20.
11,80	12,75	0,95	MBGN	FL LB	40° 40°	12,20 12,75				Dark grey biotite gneiss with thin neosome schlieren.
12,75	14,15	1,40	BAG							Dark grey coarse-grained biotite-rich anatectic granite with white K-feldspar porphyries (5-10 mm). Equig. granular matrix with euhedral feldspar and interstititial quartz and biotite. Irregular soot-grey alteration and greyish green chloritised zones.
14,15	16,70	2,55	BGN	FL " "	30° 35° 35°	14,80 15,10 15,30				Dark soot-grey fine-grained quartzo-feldspatic biotite gneiss with light grey calc-silicate (diopside-plagioclase) lenses (15,50-,80 and 16,30-,45). Some BAG veins (1-3 cm) down to 15,30.
16,70	18,00	1,30	BAG							Grey coarse-grained BAG which is porphyritic and with biotite-rich schlieren and inclusions. Some calcite filled fractures.

LITHOLOGIES: A: = amphibolite; ABGN = dark grey amphibole-biotite gneiss; BAG = dark grey biotite-rich anatectic granite; BGN = dark grey biotite gneiss; CGN = greenish calc-silicate gneiss; CL = coreloss; CM = cores missing; CSCH = calcareous schist; GQM = dark grey biotite-quartz monzonite; GGO = grey granodioritic orthogneiss; GTG = grey medium-grained two-mica granite; HTG = hybrid pinkish grey medium-grained two-mica granite; IB = intrusion breccia; LG = leucocratic granite; M = calcite marble; MBGN = migmatitic biotite gneiss; MD = dark grey monzodiorite; MSCH = micaschist/-gneiss; OB/CL = overburden and/or coreloss in surface weathered rocks; P = pegmatite and pegmatitic granite; Q = hydrothermal quartz-vein or -lens; SK = skarn-altered marble. Prefixes: B- = bleached; BR- = brecciated; CT- = cataclastic; CR- = crushed; G- = garnetiferous; H- = heterogeneous; i.e. strong interbanding with other lithologies; HA- = hydrothermally altered; MY- = mylonitic; P- = pink; PP- = porphyritic; SH- = semiductilly sheared; W- = white to greyish white.

DDH: 6

DEPTH (metres)		LENGTH	LITHOLOGY	MEASURED STRUCTURES			ORE MINERALIZATION			PETROGRAPHY
From	To			Type	Angle w. core	Depth	From	To	Type	
18,00	19,00	1,00	P-LG							Red coarse-grained leucocratic granite with 1-40 mm red calcite-stilbite and stilbite-chlorite veins with red envelopes.
19,00	19,85	0,85	BGN	LB	55°	19,80				Dark grey to greenish grey fine-grained quartzofeldspatic biotite gneiss with dark biotite-rich and greenish calc-silicate bands (2-15 cm).
19,85	20,95	1,10	MBGN	FL	70°	19,95				Dark grey biotite gneiss with thin neosome schlieren and scattered calcite-stilbite veinlets with red envelopes. The paleosome and neosome are banded on 1-5 mm scale. Grey medium-grained granite at 20,15-,30.
20,95	29,40	8,45	LG				20,95	24,65	Scattered 1 mm aspy. veinslets.	White to pink leucocratic granite, fine- to coarse-grained, with zonal development of mylonites (24,70-,25; 25,60-26,00 and 27,40-,55). Red LG dominating between 24,50 and 26,80. The granite contains some muscovite-rich zones (e.g. 22,95-23,10 and 27,70-,75) and scattered 1-5 mm q.-musc. veins and stilbite veinlets with thin red envelopes.
29,40	30,80	1,40	MY-BGN	MY	60°	30,60				Dark grey banded (1-5 cm) biotite gneiss with bluish ? kyanite ? schlieren and calc-silicate bands (< 20 cm). More fine-grained and mylonitic with flaser structure between 29,80 and 30,80.
30,80	34,90	4,10	MY-M	MY " "	50° 50° 60°	31,40 32,20 33,90				Grey and bluish grey mylonitic calcite marble with elliptical and spherical calc-silicate augen. Garnet-clinopyroxene - epidote skarn at the contact with the LG at 34,60-,90. Strong mylonitic lamination at 33,70-34,35. Grey granite veins at 36,60-,95 and white LG veins at 32,70-,85 and 33,35-,65.

STRUCTURES: BV = breccia vein; FL = foliation; LB = lithological boundary; LL = metamorphic banding and/or primary lithological layering; MY = mylonite foliation; SP = semiductile shear plane; V = mineral veins with prefixes: AN- = ankerite; CA- = calcite; CHL- = chlorite; MY- = mylonitic; Q- = quartz; SR- = sericite; ST- = stilbite.

DDH: 6

DEPTH (metres)		LENGTH	LITHOLOGY	MEASURED STRUCTURES			ORE MINERALIZATION			PETROGRAPHY
From	To			Type	Angle w. core	Depth	From	To	Type	
34,90	36,80	1,90	W-LG	MY "	30° 30°	35,25 36,60				White muscovite-rich LG. Mylonitic granite at 34,90-35,40 and 36,60-,80. Scattered 1-20 mm q.- and q.-musc. veins and fractures with sericite-altered envelopes (yellow-green).
36,80	41,90	5,10	M	LL " "	50° 60° 0°	37,50 38,80 39,30				Grey calc-silicate banded (1-10 cm) marble cut by a few grey TG veins (2-7 cm). Clinopyroxene - garnet skarn with q. segregations at 40,25-41,20. Greenish calc-silicate gneiss at 41,45-,90.
41,90	43,00	1,10	GTG							Grey weakly foliated TG with marble incl. at 42,15-,17 and 42,75-,80. Weak greenish grey chlorite alteration mainly affecting the biotite.
43,00	44,30	1,30	M							Grey marble with epidote- and diopside-rich bands (1-10 mm).
44,30	44,90	0,60	CGN							Dark greenish calc-silicate gneiss with up to 5 cm wide light brown garnet-rich bands.
44,90	45,75	0,85	CR-CGN							Crushed calc-silicate gneiss.
45,75	47,15	1,40	BR-CGN							Breccia with 1-10 mm rounded fragments of calc-silicate gneiss. Locally 20 cm fragments of marble (46,50-,70).
47,15	54,10	6,95	M	LL " " "	35° 70° 75° 60°	47,55 49,50 51,15 53,20				Grey to bluish grey, massive and colour-banded marble cut by white quartz-rich pegmatite at 48,10-,90 and white LG veins at 50,60-,70; 50,90-,95; 51,20-,25; 51,65-,70 and 52,55-,60.

STRUCTURES: BV = breccia vein; FL = foliation; LB = lithological boundary; LL = metamorphic banding and/or primary lithological layering; MY = mylonite foliation; SP = semiductile shear plane; V = mineral veins with prefixes: AN- = ankerite; CA- = calcite; CHL- = chlorite; MY- = mylonitic; Q- = quartz; SR- = sericite; ST- = stilbite.

DDH: 6

DEPTH (metres)		LENGTH	LITHOLOGY	MEASURED STRUCTURES			ORE MINERALIZATION			PETROGRAPHY
From	To			Type	Angle w. core	Depth	From	To	Type	
54,10	56,85	2,75	GTG	FL	20°	56,40				Grey weakly foliated GTG. Moderately bleached and chlorite-veined from 55,20 to 56,85. Scattered stilbite veins (1-2 mm) with red envelopes.
56,85	60,20	3,35	A	FL	50° 30°	57,00 57,20				Fine- to coarse-grained amphibolite with chlorite-coated fractures and foliation planes. Relativ dense network of 1-10 mm veins of q. and LG. 30 cm LG dyke at 59,65-,95. Fine- to medium-gr. amphibolite 56,85-57,70; Medium- to coarse-grained amph: 57,70-58,75; fine- to medium-gr. amph.: 58,75-59,65 and fine-grained amph.: 59,95-60,20.
60,20	61,70	1,50	CGN							Banded calc-silicate gneiss with network of LG and q. veins.
61,70	64,60	2,90	A	FL "	30° 40°	63,25 64,40				Coarse- (61,70-63,55) and fine-grained (63,55-64,60) amphibolite.
64,60	65,65	1,05	CGN							Fine-grained dark greenish calc-silicate gneiss with coarse-grained clinopyroxene - garnet zone (64,80-65,00) along the margin of a grey foliated and chloritised TG dyke (64,60-64,80).
65,65	67,20	1,55	LG							Pink to white weakly sericite-altered leucocratic granite (medium- to coarse-grained) with small calc-silicate inclusion (66,30-,50) and a few 5-10 mm q.veins.
67,20	71,35	4,15	CGN							Dark greenish grey calc-silicate gneiss cut by fine- to medium-grained white fractured and chloritised LG (67,70-68,10), pink aplitic LG with scattered chlorite veinlets (68,80-70,00) and pink medium-gr. LG (70,25-,55).

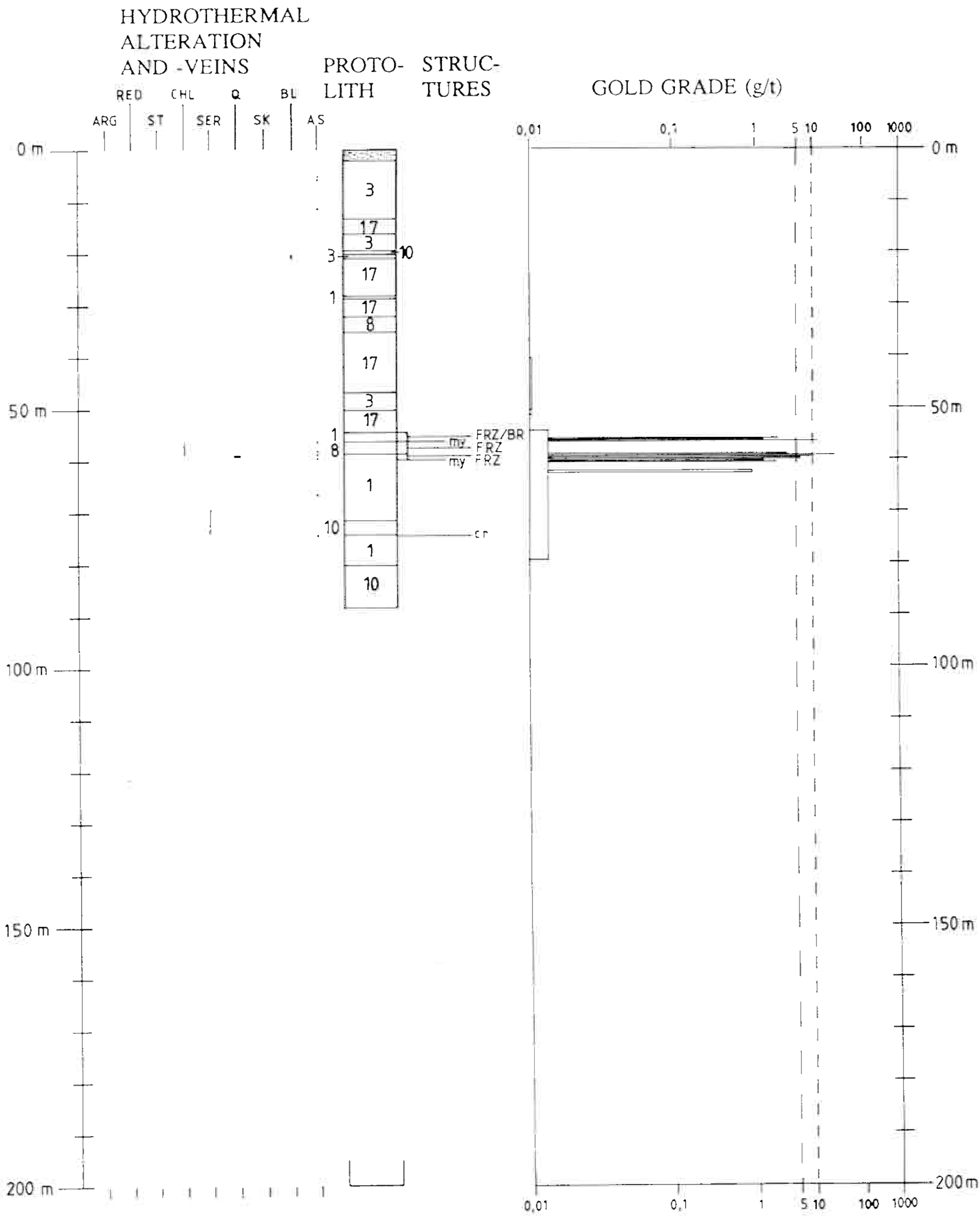
STRUCTURES: BV = breccia vein; FL = foliation; LB = lithological boundary; LL = metamorphic banding and/or primary lithological layering; MY = mylonite foliation; SP = semiductile shear plane; V = mineral veins with prefixes: AN- = ankerite; CA- = calcite; CHL- = chlorite; MY- = mylonitic; Q- = quartz; SR- = sericite; ST- = stilbite.

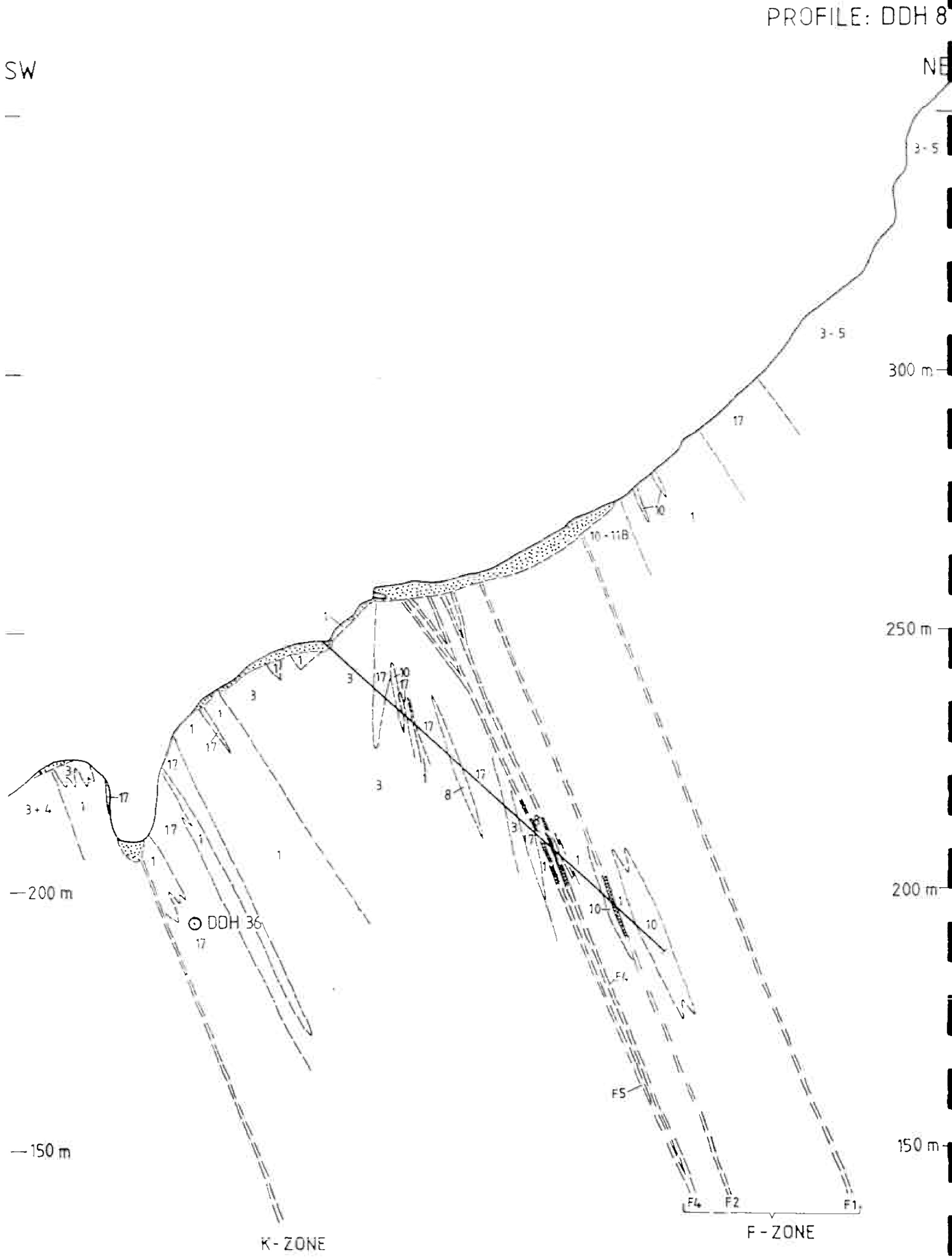
DDH: 6

DEPTH (metres)		LENGTH	LITHOLOGY	MEASURED STRUCTURES			ORE MINERALIZATION			PETROGRAPHY
From	To			Type	Angle w. core	Depth	From	To	Type	
71,35	75,10	3,75	HTG							Hybrid grey to pink medium-gr. two-mica granite with aplite and pegmatite veins. Calc-silicate gneisses (73,15-,25 and 73,45-,50) flanking grey bleached quartz monzonite. Scattered chlorite veinlets.
75,10	79,30	4,20	CGN	LL "	60° 40°	75,90 77,10				Dark greenish grey weakly banded to massive calc-silicate gneiss with grey TG at 75,30-,35. Scattered chlorite and calcite veinlets. Pink medium-grained LG with network of pink aplitic veins at 75,10-,80. Abundant 0,1-1 mm chlorite veins and veinlets in the aplite.
79,30	90,00	10,70	GTG							Grey medium-gr. variably bleached two mica granite. Moderate soot-grey alteration at 79,30-,50 and strong at 86,40-,70. Red porous stilbite- and clay altered granite at 80,00-,70. White aplitic LG at 86,70-87,00 elsewhere some 1-3 cm veins. Some scattered stilbite veinlets at 82,00-,10.
90,00	92,00	2,00	CM							

STRUCTURES: BV = breccia vein; FL = foliation; LB = lithological boundary; LL = metamorphic banding and/or primary lithological layering; MY = mylonite foliation; SP = semiductile shear plane; V = mineral veins with prefixes: AN- = ankerite; CA- = calcite; CHL- = chlorite; MY- = mylonitic; Q- = quartz; SR- = sericite; ST- = stilbite.

SUMMARY CORELOG-DIAGRAM: DDH 8




PROFILE: DDH 8
SW
NE
3 - 5
3 - 5
300 m
17
10
1
10 - 11B
250 m
1
17
1
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3
17
10
17
17
1
3 + 4
1
17
1
1
17
3
1
17
8
17
3
17
1
1
1
1
1
17
10
1
10
200 m
200 m
DDH 36
17
F4
F5
150 m
150 m
F4
F2
F1
K - ZONE
F - ZONE

DRILLHOLE No.: 8 AZIMUTH: 50° INCLINATION: 43° LENGTH: 88,35 m Horiz.: 64,60 m Vert.: 60,25 m CORE DIM.: 36 mm
LOCATION: F-ZONE
COMPANY: A/S SULFIDMALM NGO-COORD.:Y: - 19228,750 X: 798666,505 ZONE: D ALTITUDE: 248,429 m.a.s.l.
YEAR: 1981 UTM-COORD.,E: 397300 N: -7229110 ZONE: 33

DEPTH (metres)		LENGTH	LITHOLOGY	MEASURED STRUCTURES			ORE MINERALIZATION			PETROGRAPHY
From	To			Type	Angle w. core	Depth	From	To	Type	
0,00	2,00	2,00	OB/CL							
2,00	13,20	11,20	GTG	Q-V	55°	11,10		5,32 5,65 11,10	Po. coated fissure. " " " Aspy.-q. vein (3 mm).	Light grey medium-grained granite with variable density of 1-20 cm bleached zones. Strong bleaching at 5,45-,70; 7,85-8,15; 9,80-10,20 and 13,00-,20 some representing envelopes around 0,1-5 mm q. veins. Scattered sericite alteration zones (5-10 mm) the widest occurring inside a white aplite dyke (5,50-,70).
13,20	16,10	2,90	MBGN	LB FL " " LB	50° 50° 30° 0° 55°	13,20 13,65 14,25 15,50 16,10				Folded migmatitic biotite gneiss with 1-3 cm neosome veins. Open folds.
16,10	19,40	3,30	GTG	Q-V	30°	17,85				Light grey medium-grained TG cut by some 1-2 cm white LG veins. Bleaching associated with scattered q. veins and muscovite-rich zones e.g. 16,10-,35; 17,80-,90. It contains variably sized inclusions of migm. biotite gneis 16,85-17,05 and 18,80-19,40.
19,40	20,20	0,80	A	LB	25°	19,40				Fine-grained amphibolite cut by some GTG veins.
20,20	20,65	0,45	B-GTG	LB	45°	20,65				Nearly totally bleached TG with strong muscovitization at 20,40-,65.

LITHOLOGIES: A: = amphibolite; ABGN = dark grey amphibole-biotite gneiss; BAG = dark grey biotite-rich anatectic granite; BGN = dark grey biotite gneiss; CGN = greenish calc-silicate gneiss; CL = coreloss; CM = cores missing; CSCH = calcareous schist; GQM = dark grey biotite-quartz monzonite; GGO = grey granodioritic orthogneiss; GTG = grey medium-grained two-mica granite; HTG = hybrid pinkish grey medium-grained two-mica granite; IB = intrusion breccia; LG = leucocratic granite; M = calcite marble; MBGN = migmatitic biotite gneiss; MD = dark grey monzodiorite; MSCH = micaschist/-gneiss; OB/CL = overburden and/or coreloss in surface weathered rocks; P = pegmatite and pegmatitic granite; Q = hydrothermal quartz-vein or -lens; SK = skarn-altered marble. Prefixes: B- = bleached; BR- = brecciated; CT- = cataclastic; CR- = crushed; G- = garnetiferous; H- = heterogeneous; i.e. strong interbanding with other lithologies; HA- = hydrothermally altered; MY- = mylonitic; P- = pink; PP- = porphyritic; SH- = semiductilly sheared; W- = white to greyish white.

DDH: 8

DEPTH (metres)		LENGTH	LITHOLOGY	MEASURED STRUCTURES			ORE MINERALIZATION			PETROGRAPHY
From	To			Type	Angle w. core	Depth	From	To	Type	
20,65	27,90	7,25	MBGN	FL " " "	20° 30° 30° 40°	20,85 22,80 24,85 26,80				Migmatitic biotite gneiss with some granular biotite-rich granite zones (5 cm) and a nearly monomineralic garnet band (22,25-,40) being retrograded to chlorite + q. along a calcite vein (2 mm). It is cut by dykes of GTG (21,20-,40) and white biotite-spotted LG (22,00-,25) with a 1 mm sericite alteration zone. The gneiss is locally folded.
27,90	28,65	0,75	W-LG	LB	50°	28,65				White biotite-spotted aplitic LG with a narrow sericite alteration zone.
28,65	32,10	3,45	G-MBGN	FL LB	30° 30°	30,80 32,10				Garnetiferous migmatitic biotite gneiss with open folds. The garnet content decreases below 31,15.
32,10	35,30	3,20	BAG	LB	35°	35,30				Dark coarse-grained biotite-rich anatectic granite with granular texture. Biotite schlieren are common at 33,45-34,65 where the gneiss grades into a more migmatite looking rock. It is cut at a low angle (5°-10°) by white biotite-spotted aplitic LG veins (5-15 cm) with a few sericite alteration zones.
35,30	46,70	11,40	MBGN	FL " "	25° 30° 30°	36,40 37,80 39,25				Migmatitic biotite gneiss with up to 20 cm thick paleosome bands. It is cut at an low angle by 1-5 cm thick veins of white aplitic LG (max. at 46,05-,20) locally containing abundant muscovite and by GTG (40,30-,40). It also carries some thin amphibolite bands e.g. 46,20-,70.
46,70	50,05	3,35	GTG							Light grey medium-grained TG with GQM inclusions at 47,20-,75. It is cut by veins (1-2 cm) and dykes of white aplitic LG (46,95-47,15; 48,40-,65 and 49,55-50,05) contains some fracture-bound sericite alteration.
50,05	54,45	4,40	MBGN	FL "	30° 55°	52,30 52,80				Migmatitic biotite gneiss with a few white LG veins.

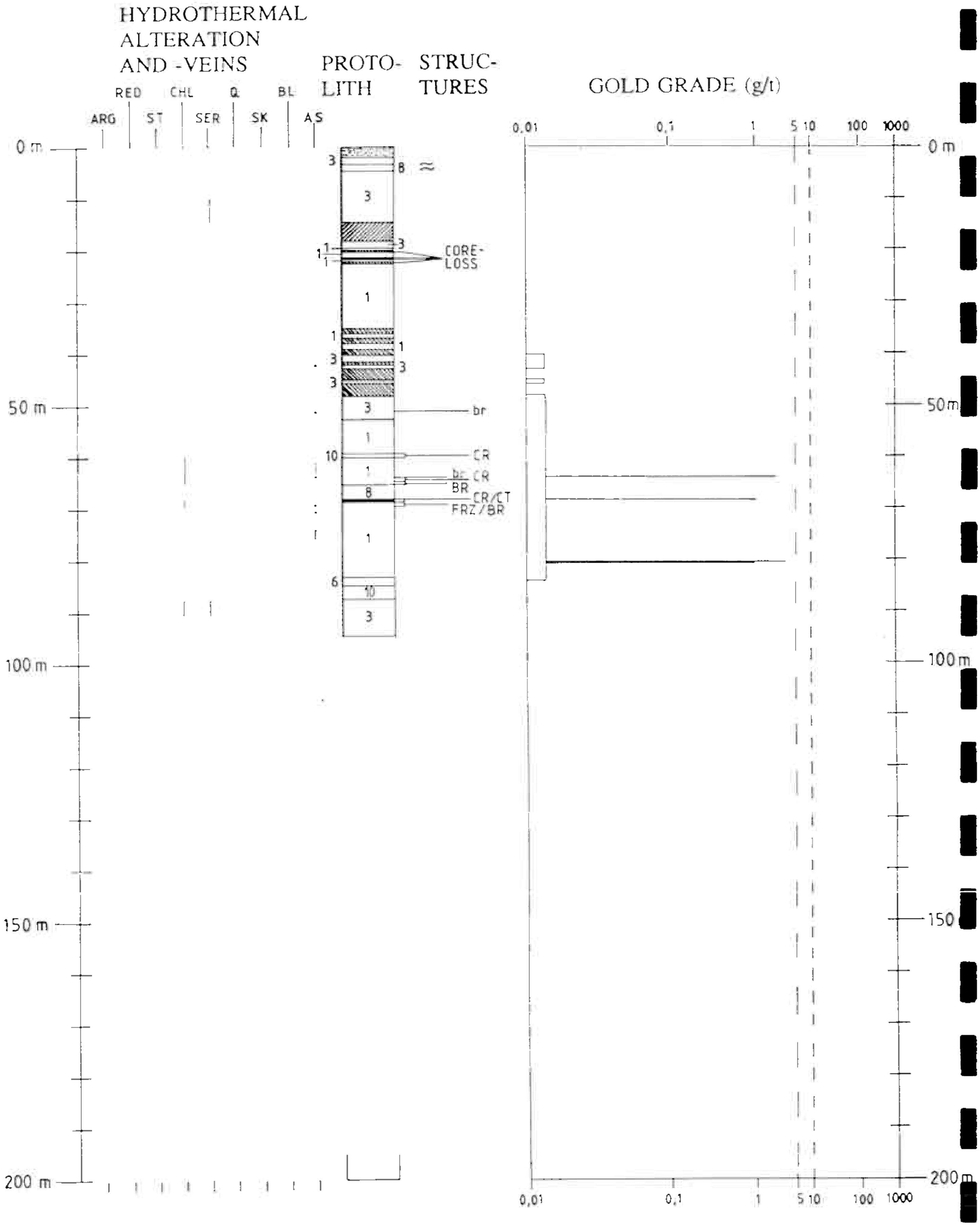
STRUCTURES: BV = breccia vein; FL = foliation; LB = lithological boundary; LL = metamorphic banding and/or primary lithological layering; MY = mylonite foliation; SP = semiductile shear plane; V = mineral veins with prefixes: AN- = ankerite; CA- = calcite; CHL- = chlorite; MY- = mylonitic; Q- = quartz; SR- = sericite; ST- = stilbite.

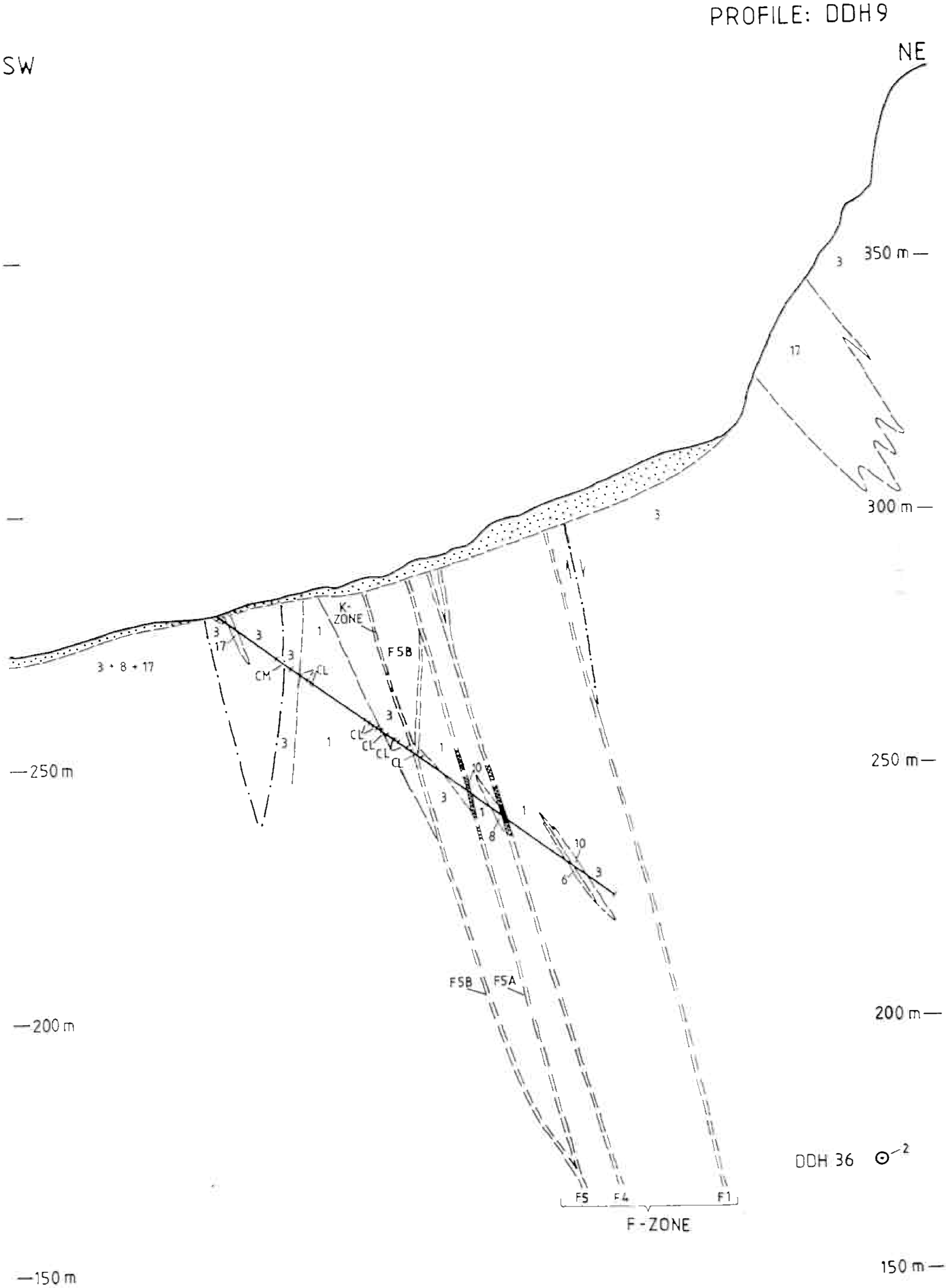
DDH: 8

DEPTH (metres)		LENGTH	LITHOLOGY	MEASURED STRUCTURES			ORE MINERALIZATION			PETROGRAPHY
From	To			Type	Angle w. core	Depth	From	To	Type	
54,45	56,30	1,85	W-LG	MY	30°	56,20		56,25	Aspy.-coated shear plane.	White aplitic LG with abundant bleached inclusions of GTG. A few chlorite veinlets. It becomes strongly fractured and brecciated at 55,75-56,30 where the granite is transformed into a mylonite at 56,00-,20.
56,30	58,50	2,20	BAG					58,00	Aspy.-coated fissure.	Fragmented biotite-rich anatectic granite with some 20-30 mm q. veins and abundant chlorite veins.
58,50	71,60	13,10	W-LG	MY	25°	59,45	 59,00	58,60 59,30 66,60	Aspy. veinlet. Fine-gr. aspy. diss. in q. Aspy.-coated fissure.	White aplitic LG with some scattered chlorite veinlets. It is cut by a milky q. vein at 58,75-59,30 becoming fragmented and bluish grey below 59,00. The granite along the lower vein contact is a mylonite (59,30-,70) with a strongly sheared amphibolite inclusion at 59,55-,70. The granite below the mylonite zone carries scattered 1-10 mm sericite alteration zones coalescing into more pervasively altered areas below 69,70. Another amphibolite inclusion is found at 64,55-65,00.
71,60	74,00	2,40	A							Greyish green, chlorite-altered and fine-grained amphibolite with scattered 1-2 mm veinlets of brown weathering ankerite.
74,00	80,30	6,30	W-LG					74,15	Aspy.-coated fissure.	White aplitic leucogranite with small inclusions (1-5 cm) of bleached GTG, larger ones at 60,70-61,10; 61,85-62,50 and 62,95-63,10. It carries moderate density of 5-50 mm sericite alteration zones and scattered 1-2 mm veins of calcite, chlorite and ankerite. The latter is found mainly below 79,20. A crush zone consisting of rock flour are found at 74,20-,45.
80,30	88,35	8,05	A	FL " "	30° 20° 50°	82,85 86,10 86,75				Fine-grained amphibolite infiltrated by a dense system of white LG veins (0,5-15 cm). 3-5 cm zones with abundant brown ankerite veins, e.g. at 80,65.

STRUCTURES: BV = breccia vein; FL = foliation; LB = lithological boundary; LL = metamorphic banding and/or primary lithological layering; MY = mylonite foliation; SP = semiductile shear plane; V = mineral veins with prefixes: AN- = ankerite; CA- = calcite; CHL- = chlorite; MY- = mylonitic; Q- = quartz; SR- = sericite; ST- = stilbite.

SUMMARY CORELOG-DIAGRAM: DDH 9




PROFILE: DDH9
SW
NE
350 m
300 m
250 m
200 m
150 m
250 m
200 m
150 m
3 + 8 + 17
17
K-ZONE
F5B
F5A
CM
CL
DDH 36
F5
F4
F1
F-ZONE

DRILLHOLE No.: 9 AZIMUTH: 51° INCLINATION: 36° LENGTH:94,60 m Horiz.: 76,55 m Vert.: 55,60 m CORE DIM.: 36 mm

LOCATION: K- and F-ZONE

COMPANY: A/S SULFIDMALM NGO-COORD.:Y: -19184,765 X: 798582,253 ZONE: D ALTITUDE: 280,126 m.a.s.l.

YEAR: 1981 UTM-COORD.,E: 397330 N: 7229040 ZONE: 33

DEPTH (metres)		LENGTH	LITHOLOGY	MEASURED STRUCTURES			ORE MINERALIZATION			PETROGRAPHY
From	To			Type	Angle w. core	Depth	From	To	Type	
0,00	1,75	1,75	CL							
1,75	3,30	1,55	GTG							Light grey medium-grained TG with GQM inclusions at 2,20-,40. It is cut by some 2-10 cm pegmatite veins.
3,30	4,45	1,15	BAG							Foliated biotite-rich anatectic granite with 5-10 mm equant to spherical white feldspar crystals in a matrix of feldspar (1-3 mm). Pegmatite at 3,70-,95.
4,45	14,45	10,00	GTG							4,45-19,40: Grey medium-grained TG with weak to moderate zonal (1-2 cm) bleaching. It is cut by abundant veins (1-3 cm) of pegmatite (e.g. 7,15-,80 and 18,00-,40) and some white aplitic veins (10 cm) with narrow sericite alteration zones. Relatively abundant sericite veins at 10,00-14,50.
14,45	18,00	3,55	CM							
18,00	19,40	1,40	GTG	LB	55°	18,40				
19,40	20,00	0,60	W-LG							19,40-39,00: White, biotite-spotted and fine- to medium-grained LG with abundant mafic schlieren and 2-10 mm biotite aggregates spots at 26,25-,90; 28,70-,95; 30,60-,80 and 32,60-,90. Locally contains inclusions of bleached GTG (e.g. 20,40-23,50). It is cut by abundant 1-10 cm sericite-altered aplite veins and some pegmatite veins (1-2 cm). The LG also carries scattered sericite-alteration veins (1-10 mm).
20,00	20,30	0,30	CL							
20,30	21,30	1,00	W-LG	SR-V "	40° ÷35°	20,55 20,55				
21,30	21,50	0,20	CL							
21,50	22,15	0,65	W-LG							
22,15	22,55	0,40	CL							

LITHOLOGIES: A: = amphibolite; ABGN = dark grey amphibole-biotite gneiss; BAG = dark grey biotite-rich anatectic granite; BGN = dark grey biotite gneiss; CGN = greenish calc-silicate gneiss; CL = coreloss; CM = cores missing; CSCH = calcareous schist; GQM = dark grey biotite-quartz monzonite; GGO = grey granodioritic orthogneiss; GTG = grey medium-grained two-mica granite; HTG = hybrid pinkish grey medium-grained two-mica granite; IB = intrusion breccia; LG = leucocratic granite; M = calcite marble; MBGN = migmatitic biotite gneiss; MD = dark grey monzodiorite; MSCH = micaschist/-gneiss; OB/CL = overburden and/or coreloss in surface weathered rocks; P = pegmatite and pegmatitic granite; Q = hydrothermal quartz-vein or -lens; SK = skarn-altered marble. Prefixes: B- = bleached; BR- = brecciated; CT- = cataclastic; CR- = crushed; G- = garnetiferous; H- = heterogeneous; i.e. strong interbanding with other lithologies; HA- = hydrothermally altered; MY- = mylonitic; P- = pink; PP- = porphyritic; SH- = semiductilly sheared; W- = white to greyish white.

DDH: 9

DEPTH (metres)		LENGTH	LITHOLOGY	MEASURED STRUCTURES			ORE MINERALIZATION			PETROGRAPHY
From	To			Type	Angle w. core	Depth	From	To	Type	
22,55	35,00	12,45	W-LG							
35,00	36,00	1,00	CL							
36,00	37,00	1,00	W-LG							
37,00	38,00	1,00	CL							
38,00	39,00	1,00	W-LG							
39,00	40,20	1,20	CL							
40,20	41,50	1,30	GTG							40,20-52,60: Light grey medium-grained TG infiltrated by abundant aplitic W-LG veins and dykes with associated moderate bleaching. Aplitic LG at 40,25-,40; 45,40-,75; 48,85-49,15; 49,70-50,40 and 51,05-,40. Some minor 1-2 cm mafic inclusions in GTG at 50,50-51,00. Scattered chlorite-coated fractures (e.g. 51,40-52,30) and 1-10 mm q. veins.
41,50	42,00	0,50	CL							
42,00	42,70	0,70	GTG				42,00	42,30	1-3 mm aspy. veins.	
42,70	45,00	2,30	CL							
45,00	45,75	0,75	GTG							
45,75	48,00	2,25	CL							
48,00	52,60	4,60	GTG					51,10 51,20	Quartz cemented rock flour-breccia vein (20 mm) with diss. aspy. 10 mm " " "	

STRUCTURES: BV = breccia vein; FL = foliation; LB = lithological boundary; LL = metamorphic banding and/or primary lithological layering; MY = mylonite foliation; SP = semiductile shear plane; V = mineral veins with prefixes: AN- = ankerite; CA- = calcite; CHL- = chlorite; MY- = mylonitic; Q- = quartz; SR- = sericite; ST- = stilbite.

DDH: 9

DEPTH (metres)		LENGTH	LITHOLOGY	MEASURED STRUCTURES			ORE MINERALIZATION			PETROGRAPHY
From	To			Type	Angle w. core	Depth	From	To	Type	
52,60	59,25	6,65	W-LG							White fine-grained to pegmatitic leucogranite with some inclusions of bleached GTG.
59,25	60,25	1,00	CR-A							Crused fine-grained amphibolite.
60,25	65,20	4,95	W-LG				61,25 62,40 63,70	61,40 62,65 63,95	A few aspy. breccia veins. Diss. aspy. in q.-musc. segregation. Some 2-10 mm aspy. veins in q. vein.	White fine- to medium-grained leucogranite with q. ± musc. segregations and veins (62,40-,65 and 63,70-,95) and abundant hairline chlorite veins. The upper contact with a crushed amphibolite inclusion at 63,95-64,60 is comprised by a narrow q. and chlorite-cemented breccia. Below the inclusion the granite is strongly fragmented with chlorite ± ankerite cemented breccia zones.
65,20	67,90	2,70	BAG							Biotite-rich anatectic granite with weak pervasive chlorite alteration. It is cut by white aplitic dykes with hairline chlorite veins at 66,10-,45 and 67,50-,60. A few 2-10 mm q. veins.
67,90	68,55	0,65	CT-Q/ CR-CT							Dark fine-grained ultracataclasite which is crushed . ? Originally quartz-vein ?
68,55	82,95	14,40	W-LG				 74,00	69,30 70,76 76,00	3 mm aspy. vein. Hairline aspy. vein. Scattered 1-3 mm aspy. veins.	White fine- to medium-grained leucogranite with small inclusions of bleached GTG, especially below 73,00. Also inclusion of fine-grained amphibolite (71,05-,65 and 78,55-79,10). The granite contains several 1-2 cm rock flour- and chlorite-breccias near the upper contact where the granite is fragmented (68,55-69,65). Elsewhere the granite contains scattered chlorite veins, some sericite-alteration veins and a milky q. vein at 69,40-,55.
82,95	84,75	1,80	MD							Medium-grained monzodiorite.

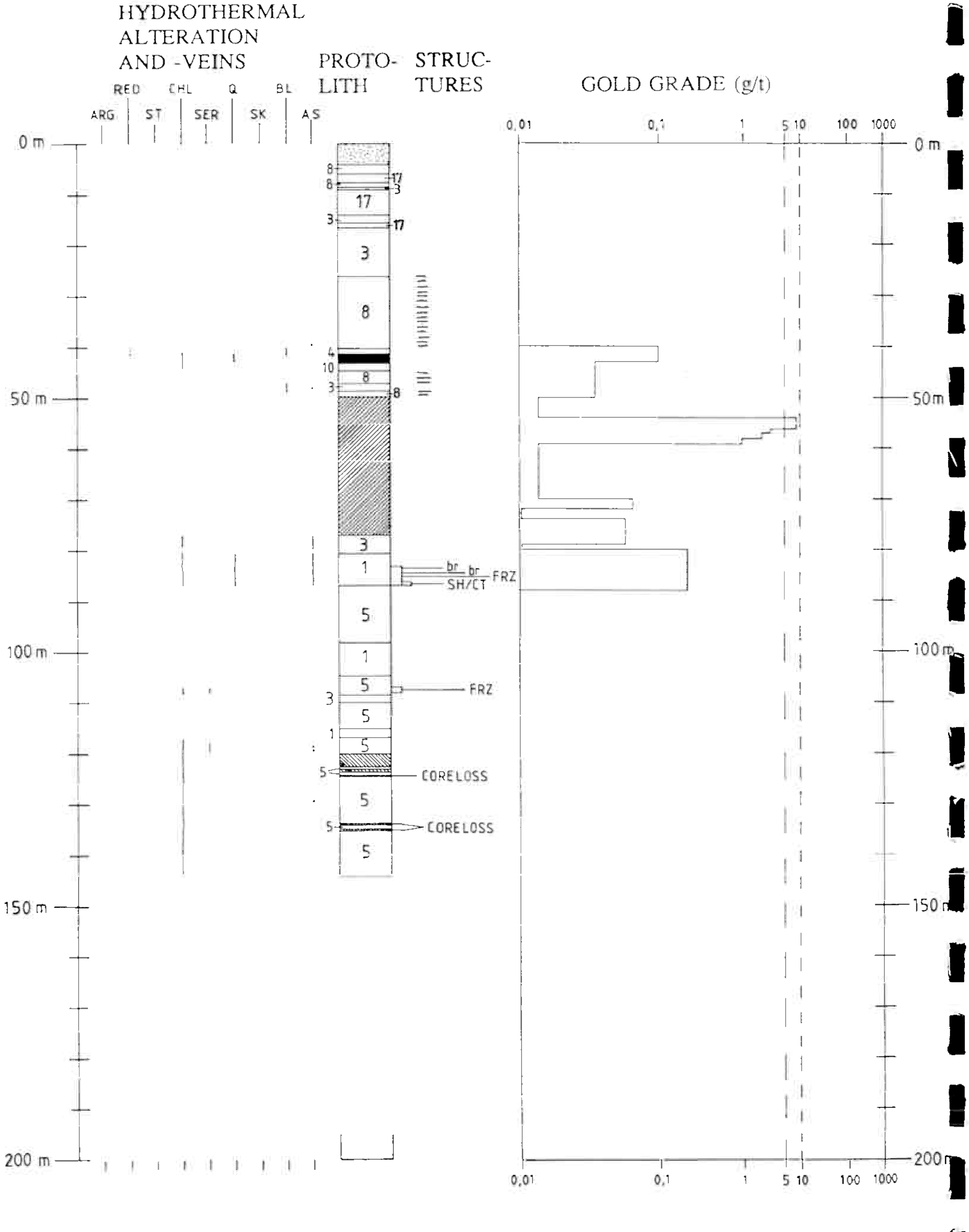
STRUCTURES: BV = breccia vein; FL = foliation; LB = lithological boundary; LL = metamorphic banding and/or primary lithological layering; MY = mylonite foliation; SP = semiductile shear plane; V = mineral veins with prefixes: AN- = ankerite; CA- = calcite; CHL- = chlorite; MY- = mylonitic; Q- = quartz; SR- = sericite; ST- = stilbite.

DDH: 9

DEPTH (metres)		LENGTH	LITHOLOGY	MEASURED STRUCTURES			ORE MINERALIZATION			PETROGRAPHY
From	To			Type	Angle w. core	Depth	From	To	Type	
84,75	87,45	2,70	A	FL "	15° 5°	86,30 86,75				Fine-grained amphibolite with 0,2 x 5 mm hornblende needles along the foliation. The lower contact zone (87,00-87,45) is comprised by an intrusion breccia of amphibolite, GQM and some GTG veins. The amphibolite above also carries some 1-2 cm GTG veins locally with ankerite-veins surrounded by sericite alteration (85,85).
87,45	94,60	7,15	GTG	LB	25°	90,55				Light grey to grey and medium- to coarse-grained TG with inclusion of GTG veined monzodiorite at 90,55-91,35). The GTG is cut by some pegmatite veins (92,20-,40 and 93,35-,40). It contains scattered 1-5 mm sericite alteration zones occurring abundantly as up to 20 mm envelopes on calcite- and/or chlorite-coated fractures at 87,45-90,55.

STRUCTURES: BV = breccia vein; FL = foliation; LB = lithological boundary; LL = metamorphic banding and/or primary lithological layering; MY = mylonite foliation; SP = semiductile shear plane; V = mineral veins with prefixes: AN- = ankerite; CA- = calcite; CHL- = chlorite; MY- = mylonitic; Q- = quartz; SR- = sericite; ST- = stilbite.

SUMMARY CORELOG-DIAGRAM: DDH 10



PROFILE: DDH 10 & 11
WSW
ENE
350 m
300 m
250 m
200 m
150 m
K-ZONE
DDH 9
DDH 10
DDH 11
F5B
F5A
F5
F4
F1
F-ZONE
1 + 2
3 + 17
CM
CL

DRILLHOLE No.: 10 AZIMUTH: 61° INCLINATION: 36° LENGTH: 144,00 m Horiz.: 116,50 m Vert.: 84,65 m CORE DIM.: 36 mm
LOCATION: K- and F-ZONE
COMPANY: A/S SULFIDMALM NGO-COORD.:Y: -19205,351 X: 798596,430 ZONE: D ALTITUDE: 272,382 m.a.s.l.
YEAR: 1981 UTM-COORD.,E: 397310 N: 7229050 ZONE: 33

DEPTH (metres)		LENGTH	LITHOLOGY	MEASURED STRUCTURES			ORE MINERALIZATION			PETROGRAPHY
From	To			Type	Angle w. core	Depth	From	To	Type	
0,00	3,95	3,95	OB/CL							
3,95	5,85	1,90	BAG							Biotite-rich anatectic granite cut by low-angle white LG vein (3 cm). Green chloritization at 5,50-,85.
5,85	7,65	1,85	MBGN	FL " " LB	35° 30° 45° 90°	6,00 6,20 7,20 7,30				Migmatitic biotite gneiss showing strong chlorite alteration at 5,85-6,00, elsewhere weak. It contains a granular felsic zone with abundant calcite at 6,35-,85. It is cut by a light grey TG with a few sericite-alteration veins and bleached zones (7,30-,50) and 1-2 cm pegmatite veins.
7,65	8,65	1,00	BAG							Coarse-grained biotite-rich anatectic granite with a low-angle pegmatite vein (2 cm). Scattered chlorite veins with envelopes (10-20 mm) of chlorite alteration.
8,65	9,05	0,40	GTG							Grey medium-grained two-mica granite with some bleached zones containing 1-5 mm sericite-alteration veins.
9,05	14,05	5,00	MBGN	FL "	35° 40°	10,70 13,90				Migmatitic biotite gneiss with pegmatitic segregations and a green calc-silicate band at 11,30-,40. It is cut by a foliated GTG dyke at 12,15-,50.
14,05	15,50	1,45	GTG							Grey medium-grained TG cut by 1-10 cm light grey TG veins with up to 5 mm sericite-alteration veins.
15,50	16,65	1,15	MBGN	FL	30° 20°	15,90 16,60				Migmatitic biotite gneiss with strongly bleached GTG vein at 16,10-,15.

LITHOLOGIES: A: = amphibolite; ABGN = dark grey amphibole-biotite gneiss; BAG = dark grey biotite-rich anatectic granite; BGN = dark grey biotite gneiss; CGN = greenish calc-silicate gneiss; CL = coreloss; CM = cores missing; CSCH = calcareous schist; GQM = dark grey biotite-quartz monzonite; GGO = grey granodioritic orthogneiss; GTG = grey medium-grained two-mica granite; HTG = hybrid pinkish grey medium-grained two-mica granite; IB = intrusion breccia; LG = leucocratic granite; M = calcite marble; MBGN = migmatitic biotite gneiss; MD = dark grey monzodiorite; MSCH = micaschist/-gneiss; OB/CL = overburden and/or coreloss in surface weathered rocks; P = pegmatite and pegmatitic granite; Q = hydrothermal quartz-vein or -lens; SK = skarn-altered marble. Prefixes: B- = bleached; BR- = brecciated; CT- = cataclastic; CR- = crushed; G- = garnetiferous; H- = heterogeneous; i.e. strong interbanding with other lithologies; HA- = hydrothermally altered; MY- = mylonitic; P- = pink; PP- = porphyritic; SH- = semiductilly sheared; W- = white to greyish white.

DDH: 10

DEPTH (metres)		LENGTH	LITHOLOGY	MEASURED STRUCTURES			ORE MINERALIZATION			PETROGRAPHY
From	To			Type	Angle w. core	Depth	From	To	Type	
16,65	26,35	9,70	GTG	LB	5°	19,40				Grey medium-grained TG with inclusions of MBGN (19,40-20,25, half core and 20,95-21,00) and GQM (17,90-,95 and 18,40-,80). It is weakly bleached along the margin of white aplitic LG veins (1-3 cm) and dykes (22,30-,55 and 22,45-,55). The former dyke show sericite alteration along the lower contact and along fractures in the adjacent granite down to 23,60. Scattered sericite- and chlorite veins (1-3 mm) elsewhere. Muscovite-rich zones (10-30 mm) are common in the GTG at 16,65-19,50.
26,35	40,35	14,00	BAG	FL " " " "	30° 35° 25° 30° 50°	27,65 29,80 31,65 32,55 34,85		39,50	3 mm. aspy. vein.	Weakly foliated biotite-rich anatectic granite with biotite-rich schlieren. It is cut by dykes of light grey TG (31,00-,45 and 34,00-,15) and white aplitic LG (34,15-,20; 36,75-,90 and 34,00-,20, LG/GTG). The gneiss shows weak greyish green chlorite alteration below 38,85.
40,35	41,30	0,95	B-HTG							Light pinkish grey medium-grained TG with 1-2 cm biotite bearing domains. Probably strongly bleached TG. Some chlorite-coated fissures (0,1-1 mm).
41,30	43,05	1,75	Q							Hydrothermal milky quartz with chlorite-coated fissures down to 42,00 and an amphibolite raft at 41,50-,55.
43,05	44,65	1,60	A							Fine-grained amphibolite with amphibole-chlorite-coated fissures.
44,65	47,15	2,50	BAG	ST-V " "	30° 45° 80°	44,90 " 46,03				Weakly foliated biotite-rich anatectic granite with brick-red alteration of feldspar in association with envelopes around three stilbite veins (44,90 and 46,00-,05).
47,15	48,45	1,30	B-GTG				47,85	48,30	A few aspy. veinlets (1-2 mm).	Grey medium-grained TG, strongly bleached in association with infiltration veins of aplitic LG (e.g. 47,85-48,30). BAG inclusion at 47,70-,80.

STRUCTURES: BV = breccia vein; FL = foliation; LB = lithological boundary; LL = metamorphic banding and/or primary lithological layering; MY = mylonite foliation; SP = semiductile shear plane; V = mineral veins with prefixes: AN- = ankerite; CA- = calcite; CHL- = chlorite; MY- = mylonitic; Q- = quartz; SR- = sericite; ST- = stilbite.

DDH: 10

DEPTH (metres)		LENGTH	LITHO-LOGY	MEASURED STRUCTURES			ORE MINERALIZATION			PETROGRAPHY
From	To			Type	Angle w. core	Depth	From	To	Type	
48,45	49,70	1,25	BAG							Weakly foliated biotite-rich anatectic granite with light grey TG vein at 48,95-49,00 and white LG vein at 49,45-,47.
49,70	50,00	0,30	P-LG							Pink fine-grained aplogranite with some chlorite-coated fissures and dark grey q. veins (2-3 mm).
50,00	77,00	27,00	CM							
77,00	80,60	3,60	GTG				77,00	79,60	Hairline veins of aspy. associated chlorite veined zones.	Grey medium-grained TG with moderate zonal bleaching. It is cut by pink pegmatite at 79,60-80,10. Both contain hairline veins of chlorite, abundant above 79,60.
80,60	87,20	6,60	BR-W-LG	SP	30°	82,90	80,60	87,20	Scattered aspy. veins (< 2 mm).	White to light greyish white and fine- to medium-grained leuco-granite being variably sheared and brecciated and containing abundant q. veins (e.g. 83,35-,70) and chlorite ± ankerite veins and fissures (e.g. 86,45-,90). It contains an inclusion of sheared schistose amphibolite (82,65-83,15) and is cut by pegmatite veins and dykes/segregations (80,60-82,65 and 86,30-,45. The granite is strongly fragmented and brecciated below 83,15 and with semi-ductile chloritised shear zone and ultracataclasite at 86,45-,90. Breccia zones occur at 83,15-,35; 83,40-,45 and 84,40-,60. The former zone carries 5-10 mm rounded fragments.
87,20	98,15	10,95	GQM							Dark grey biotite-quartz monzonite with lighter zones (1-10 cm) probably representing breakdown of biotite (bleaching, 1-3 cm). More extensive zonal bleaching (moderate) at 87,20-89,60 and 85,40-,70 where the GQM is cut by low angle aplitic and pegmatitic veins (5-20 mm) and dykes of pegmatite (87,50-88,00 and 95,15-,35). They are surrounded by pervasive beige ?sericite-chlorite? alteration.

STRUCTURES: BV = breccia vein; FL = foliation; LB = lithological boundary; LL = metamorphic banding and/or primary lithological layering; MY = mylonite foliation; SP = semiductile shear plane; V = mineral veins with prefixes: AN- = ankerite; CA- = calcite; CHL- = chlorite; MY- = mylonitic; Q- = quartz; SR- = sericite; ST- = stilbite.

DDH: 10

DEPTH (metres)		LENGTH	LITHO-LOGY	MEASURED STRUCTURES			ORE MINERALIZATION			PETROGRAPHY
From	To			Type	Angle w. core	Depth	From	To	Type	
98,15	104,55	6,40	W-LG	LB	80°	98,15				White fine- to medium-grained aplitic leucogranite with biotite aggregates and mafic schlieren. It carries pegmatite segregations and scattered chlorite-coated fissures and sericite-alteration veins, the latter being most abundant near the upper and lower contact. Some bleached inclusions of GQM.
104,55	108,30	43,75	GQM	LB	30°	104,55				Dark grey medium-grained biotite-quartz monzonite with dark green clinopyroxene-skarn inclusion at 105,70-106,05. The skarn is retrograded to amphibole along fractures and a q. vein and borders on two pervasively sericite-altered aplite dykes (30 cm). The granite is cut by abundant veins (1-10 cm) and dykes of white aplitic LG (e.g. 107,30-,75) and younger pegmatites. The granite carries some bleached zones and 1-10 mm greyish green chlorite- and sericite-chlorite- alteration zones being abundant at 107,00-,70 where the granite is strongly fractured.
108,30	109,70	1,40	GTG							Light grey medium-grained TG cut by abundant white biotite-spotted aplitic LG veins with scattered sericite alteration zones (5-10 mm). Pegmatite vein at 109,40-,65.
109,70	115,10	5,40	GQM							Dark grey medium-grained biotite-quartz monzonite with an amphibolite inclusion at 112,50-,70. It is cut by scattered pegmatite and white LG veins (1-5 cm) and some gryeish green chlorite-altered zones along chlorite-coated fractures.
115,10	116,90	1,80	W-LG	LB "	5° 10°	115,10 116,90				White aplitic LG with pegmatite veins and dykes. The LG carries some small inclusions of light grey TG.

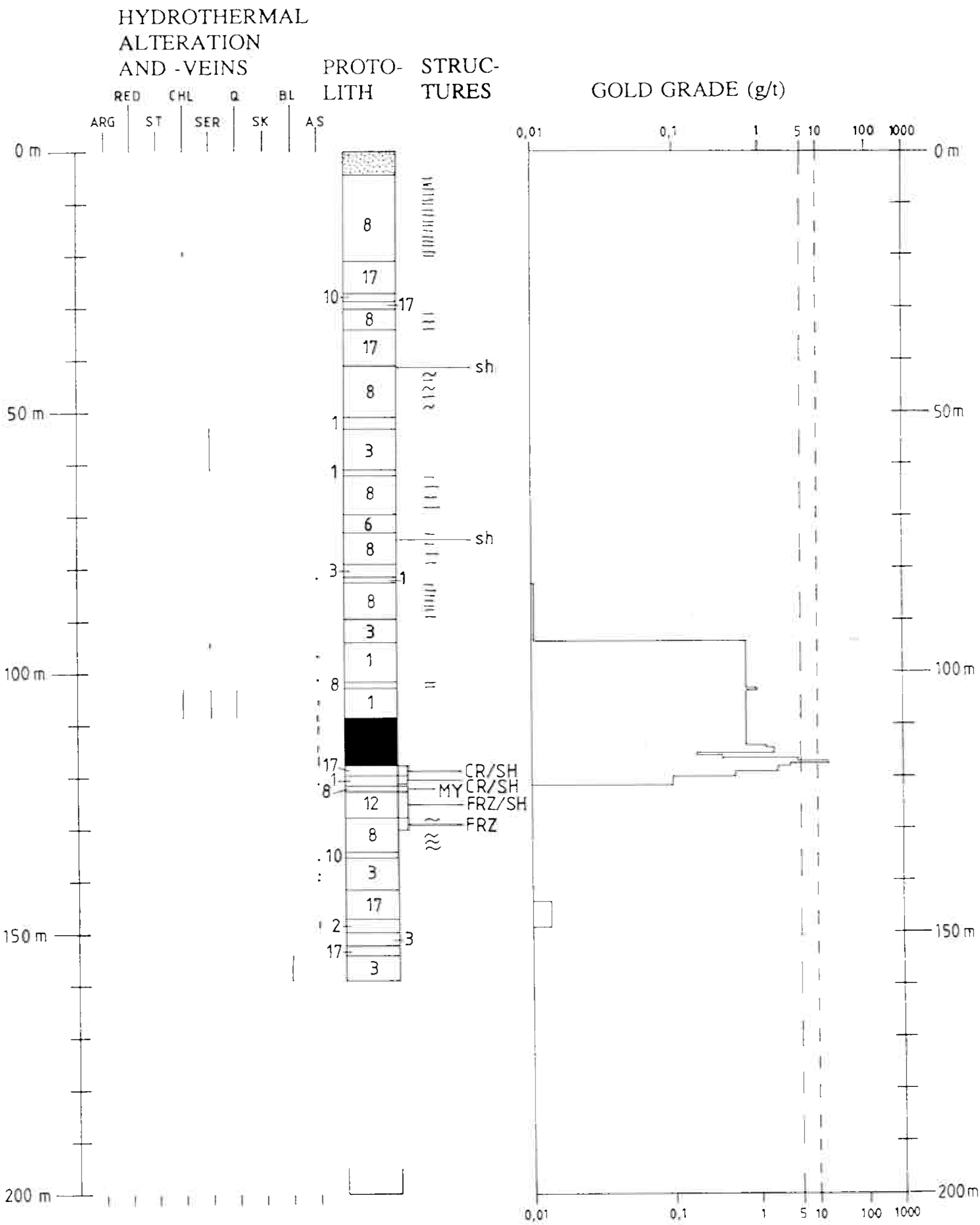
STRUCTURES: BV = breccia vein; FL = foliation; LB = lithological boundary; LL = metamorphic banding and/or primary lithological layering; MY = mylonite foliation; SP = semiductile shear plane; V = mineral veins with prefixes: AN- = ankerite; CA- = calcite; CHL- = chlorite; MY- = mylonitic; Q- = quartz; SR- = sericite; ST- = stilbite.

DDH: 10

DEPTH (metres)		LENGTH	LITHOLOGY	MEASURED STRUCTURES			ORE MINERALIZATION			PETROGRAPHY
From	To			Type	Angle w. core	Depth	From	To	Type	
116,90	120,00	3,10	GQM	Q-V "	40° 35°	119,05 119,15	 119,00	118,82 118,95 119,20	Hairline aspy. vein. " " " " Several 1-5 mm q.-aspy.-py. veins.	116,90-144,00: Dark grey biotite-quartz monzonite cut by scattered 1-10 cm white and pink pegmatite veins and dykes (e.g. 122,65-,70; 123,90-,124,00; 124,25-,40). Light grey TG dyke at 143,70-,80. Chlorite-coated fractures of variable density occur widespread in the granite and pegmatites. In the granite they carry greyish green envelopes (5-10 mm) of chlorite alteration. More pervasive alteration of similar type but with a more soot-grey colour occurs at 118,35-119,60. Some ankerite coated fissures are found between 130,00 and 140,00.
120,00	122,65	2,65	CL							
122,65	123,00	0,35	GQM							
123,00	123,40	0,40	CL							
123,40	124,00	0,60	GQM							
124,00	124,25	0,25	CL							
124,25	133,75	9,50	GQM	LB Q-V CHL-V	30° 30° 40°	124,40 129,15 129,18	129,15	129,20	Two q.-chl.-aspy. veins (5 x 12 mm).	
133,75	134,00	0,25	CL							
134,00	134,85	0,85	GQM							
134,85	135,00	0,15	CL							
135,00	144,00	9,00	GQM							

STRUCTURES: BV = breccia vein; FL = foliation; LB = lithological boundary; LL = metamorphic banding and/or primary lithological layering; MY = mylonite foliation; SP = semiductile shear plane; V = mineral veins with prefixes: AN- = ankerite; CA- = calcite; CHL- = chlorite; MY- = mylonitic; Q- = quartz; SR- = sericite; ST- = stilbite.

SUMMARY CORELOG-DIAGRAM: DDH 11




PROFILE: DDH 10 & 11
WSW
ENE
350 m
300 m
250 m
200 m
150 m
K-ZONE
DDH 9
DDH 10
DDH 11
F5B
F5A
F5
F4
F1
F-ZONE
CM
CL
1 + 2
3 + 17

DRILLHOLE No.: 11 AZIMUTH: 61° INCLINATION: 54° LENGTH: 159,20 m Horiz.: 93,60 m Vert.: 128,80 m CORE DIM.: 36 mm

LOCATION: K- and F-ZONE

COMPANY: A/S SULFIDMALM NGO-COORD.:Y: -19205,1 X: 798596,2 ZONE: D ALTITUDE: 272,3 m.a.s.l.

YEAR: 1981 UTM-COORD.,E: 397310 N: 7229050 ZONE: 33

DEPTH (metres)		LENGTH	LITHO-LOGY	MEASURED STRUCTURES			ORE MINERALIZATION			PETROGRAPHY
From	To			Type	Angle w. core	Depth	From	To	Type	
0,00	4,40	4,40	OB/CL							
4,40	20,80	16,40	BAG	FL CA-V FL " " CHL-V	55° 15° 45° 35° 40° 10°	7,45 8,90 14,00 14,60 16,60 19,50				Weakly foliated and dark grey biotite-rich anatectic granite with 5-10 mm rectangular to equant feldspar porphyries in a medium-grained (2-3 mm) matrix. It is cut by veins and dykes of light grey TG (6,70-,75; 7,30-,35; 7,55-,70; 13,10-,25 and 13,70-,85), grey TG (10,25-,50) and muscovite-rich pegmatite (4,65-,95; 6,30-,35; 8,10-,15 and 13,70-,80). The BAG carries low-angle chlorite and/or calcite veins (1 mm) with greyish green envelopes of chlorite alteration, abundant at 8,70-9,10 and 19,00-,70.
20,80	26,90	6,10	MBGN	LL LL	25° 25°	22,40 23,20	22,40 23,45	22,60 23,70	Fine-gr. po. diss. Skarn with interst. po. ± cp. aggr. and po. diss. in adjacent MBGN.	Leucosome rich migmatitic biotite gneiss with narrow BAG zones with biotite schlieren. It carries bands of biotite-amphibolite (22,40-,60) and clinopyroxene-amphibole skarn with interstitial biotite and quartz (23,00-,20 and 23,45-,70). It is cut by white fine- to medium-grained LG veins, the thickest at 24,00-,30.
26,90	28,55	1,65	A	FL	30°	27,50	28,20	28,60	Po. ± cp. diss. and veinlets.	Fine-grained amphibolite grading into zones of biotite-amphibole gneiss. Some 5-10 cm bands of garnetiferous calc-silicate gneiss at 28,20-,55. The contact zones (20 cm) with the surrounding MBGN are composed of a q.-epidote rock.
28,55	30,10	1,55	MBGN	FL "	10° 30°	29,10 29,70				Leucosome-rich migmatitic biotite gneiss.

LITHOLOGIES: A: = amphibolite; ABGN = dark grey amphibole-biotite gneiss; BAG = dark grey biotite-rich anatectic granite; BGN = dark grey biotite gneiss; CGN = greenish calc-silicate gneiss; CL = coreloss; CM = cores missing; CSCH = calcareous schist; GQM = dark grey biotite-quartz monzonite; GGO = grey granodioritic orthogneiss; GTG = grey medium-grained two-mica granite; HTG = hybrid pinkish grey medium-grained two-mica granite; IB = intrusion breccia; LG = leucocratic granite; M = calcite marble; MBGN = migmatitic biotite gneiss; MD = dark grey monzodiorite; MSCH = micaschist/-gneiss; OB/CL = overburden and/or coreloss in surface weathered rocks; P = pegmatite and pegmatitic granite; Q = hydrothermal quartz-vein or -lens; SK = skarn-altered marble. Prefixes: B- = bleached; BR- = brecciated; CT- = cataclastic; CR- = crushed; G- = garnetiferous; H- = heterogeneous; i.e. strong interbanding with other lithologies; HA- = hydrothermally altered; MY- = mylonitic; P- = pink; PP- = porphyritic; SH- = semiductilly sheared; W- = white to greyish white.

DDH: 11

DEPTH (metres)		LENGTH	LITHOLOGY	MEASURED STRUCTURES			ORE MINERALIZATION			PETROGRAPHY
From	To			Type	Angle w. core	Depth	From	To	Type	
30,10	34,20	4,10	BAG	FL " "	40° 30° 35°	30,70 32,40 34,00	31,90	32,00	Fine-gr. po. diss.	Biotite-rich anatectic granite with biotite schlieren defining a crude foliation together with some 1-2 cm amphibolite- and calc-silicate bands at 31,90-32,00. It is cut by some 1-2 cm white aplite and pegmatite veins (locally muscovite rich) and a dyke of GTG (33,45-,85).
34,20	40,80	6,60	G-MBGN	FL " "	30° 25° 45°	35,50 37,65 40,50				Garnet-bearing and leucosome rich migmatitic biotite gneiss. The leuco- and paleosome alternate in 10-20 cm zones and contain a calc-silicate band at 36,90-,95. It is cut by veins of muscovite-rich white LG (35,25-,40; 36,95-37,05; 38,00-,10 and 38,50-,55).
40,80	50,85	10,05	BAG	SP FL LB FL " " LB FL LB	30° 40° 30° 35° 40° 30° 5° 50° 5°	41,10 42,20 43,85 44,50 46,65 49,20 50,10 50,50 50,85	43,85	44,10	Po. veinlets in chlorite veined aplite.	Biotite-rich anatectic granite with lens-shaped to spherical white feldspar porphyries (5-10 mm) in a medium-grained (2-3 mm) granular matrix of white feldspar with interstitial biotite. Foliation is variably developed. It is cut by white fine- to medium-grained LG veins and dykes with muscovitized zones, often at the dyke contact (41,60-,85; 43,85-44,10; 45,90-46,05; 47,20-,65, biotite-spotted and sericite veined and 49,95-50,10). Also dykes of GQM (43,30-,60) and pegmatite (42,90-43,30). A chloritised semi-ductile shear zone surrounded by chlorite veined and altered BAG occurs at 41,10-,25.
50,85	52,90	2,05	W-LG							White aplitic leucogranite with scattered 1-5 mm q.-muscovite- and sericite-alteration veins. Small inclusions of bleached GTG towards the lower contact. Muscovite-rich contact zone at 50,85-51,15.
52,90	60,85	7,95	GTG							Grey medium-grained TG with some 2-10 cm bleached zones often associated with scattered q.-muscovite veins and some 5-10 cm aplitic dykes (e.g. 53,95-54,10). Inclusions of GQM (60,20-,50) and MBGN (60,70-,85). 5-10 mm sericite alteration zones are common. These overprint early soot-grey alteration at 60,10.

STRUCTURES: BV = breccia vein; FL = foliation; LB = lithological boundary; LL = metamorphic banding and/or primary lithological layering; MY = mylonite foliation; SP = semiductile shear plane; V = mineral veins with prefixes: AN- = ankerite; CA- = calcite; CHL- = chlorite; MY- = mylonitic; Q- = quartz; SR- = sericite; ST- = stilbite.

DDH: 11

DEPTH (metres)		LENGTH	LITHOLOGY	MEASURED STRUCTURES			ORE MINERALIZATION			PETROGRAPHY
From	To			Type	Angle w. core	Depth	From	To	Type	
60,85	61,95	1,10	W-LG	LB	25°	61,95				White medium-grained to pegmatitic leucogranite with scattered sericite-altered fractures.
61,95	69,50	7,55	BAG	FL " LB FL "	25° 30° 30° 20° 25°	62,20 64,25 64,50 65,90 67,25	65,00	65,25	Po. and chlorite-coated fissures.	Biotite-rich anatectic granite with scattered white porphyritic feldspar (5-10 mm), spherical to irregular. Biotite schlieren and a band of amphibolite define a crude foliation. It is cut by veins and dykes of GQM (e.g. 64,50-,65) and white aplitic LG with muscovite-rich zones (e.g. 66,48-,53). It carries chlorite veins at 65,00-,25.
69,50	73,05	3,55	MD	LB	15°	73,05				Medium-grained monzodiorite grading into more fine-grained amphibolitic contact zones at 69,50-,80 and 72,70-73,05. It is cut by a few 1-3 cm GQM veins.
73,05	79,20	6,15	BAG	FL	30°	73,50				Biotite-rich anatectic granite with abundant biotite-schlieren down to 74,00. They are strongly foliated and define a planar structure. It is cut by white aplitic LG veins with some sericite-alteration veins (e.g. 73,15-,20) and by 2 cm pegmatites. A sheared schistose amphibolite with foliation-concordant calcite veinlets occurs at 74,30-,40.
79,20	81,40	2,20	GTG							Light grey medium-grained TG infiltrated by a dense system of white aplite veins (1-5 cm). Moderate zonal (1-2 cm) bleaching. Some scattered chlorite-coated fissures.
81,40	82,55	1,15	W-LG				81,60	82,00	Hairline (0,1 mm) aspy. veins.	White aplitic leucogranite with chlorite-coated fissures or hairline chlorite veins.
82,55	89,55	7,00	BAG	FL	5°	88,50	86,00	87,00	Some py. on chlorite-coated fractures.	Biotite-rich anatectic granite, weakly foliated. Scattered chlorite-coated fissures.

STRUCTURES: BV = breccia vein; FL = foliation; LB = lithological boundary; LL = metamorphic banding and/or primary lithological layering; MY = mylonite foliation; SP = semiductile shear plane; V = mineral veins with prefixes: AN- = ankerite; CA- = calcite; CHL- = chlorite; MY- = mylonitic; Q- = quartz; SR- = sericite; ST- = stilbite.

DDH: 11

DEPTH (metres)		LENGTH	LITHO-LOGY	MEASURED STRUCTURES			ORE MINERALIZATION			PETROGRAPHY
From	To			Type	Angle w. core	Depth	From	To	Type	
89,55	93,95	4,40	GTG							Grey medium-grained TG infiltrated by abundant veins of white medium-grained to aplitic LG with some narrow sericite alteration zones. The GTG show moderate zonal bleaching partly associated with the aplite veins.
93,95	101,65	7,70	W-LG					96,45 96,65 96,85 101,40	Hairline aspy. vein. 3 cm zone with network of aspy. veinlets. Hairline aspy. vein. 1 mm aspy. vein.	White medium-grained to aplitic leucogranite with small inclusions of bleached GTG with chlorite-altered biotite. The inclusions are commonly found close to the lower contact. The LG carries scattered 1-30 mm q. veins and 1-10 mm sericite alteration zones being abundant at 93,95-95,00.
101,65	102,75	1,10	BAG	FL	0°	102,20				Weakly foliated biotite-rich anatectic granite with weak greyish green chlorite alteration.
102,75	108,40	5,65	W-LG					105,30 105,75 108,02 108,30	Aspy.-coated fracture Aspy. breccia vein (10 mm). Aspy.-coated fissure. " " " "	White medium-grained to aplitic leucogranite with evenly scattered q. veins (2-10 mm), chlorite-coated fractures and 1-5 mm sericite alteration zones.
108,40	117,60	9,20	Q				 110,00 114,25 116,05 117,30	108,70 111,40 115,25 117,30 117,60	Several 1 mm aspy. veins. Scattered 1 mm aspy. veinlets. " " " " Network of aspy. veins. and veinlets (1-5 mm). Massive aspy. vein.	Hydrothermal milky quartz with arsenopyrite veins.

STRUCTURES: BV = breccia vein; FL = foliation; LB = lithological boundary; LL = metamorphic banding and/or primary lithological layering; MY = mylonite foliation; SP = semiductile shear plane; V = mineral veins with prefixes: AN- = ankerite; CA- = calcite; CHL- = chlorite; MY- = mylonitic; Q- = quartz; SR- = sericite; ST- = stilbite.

DDH: 11

DEPTH (metres)		LENGTH	LITHOLOGY	MEASURED STRUCTURES			ORE MINERALIZATION			PETROGRAPHY
From	To			Type	Angle w. core	Depth	From	To	Type	
117,60	119,50	1,90	CR-MBGN	SP	5°	118,20				Crush zone with fragments of semi-ductilly sheared migmatitic biotite gneiss with some q. lenses.
119,50	121,40	1,90	CR-W-LG				121,00	121,25	Some hairline aspy. veins.	White aplitic leucogranite with chlorite-coated fractures. It contains MBGN schlieren at 119,50-120,95 where the granite is foliated, crushed and strongly fragmented.
121,40	122,50	1,10	SH-BAG	SP	5°	122,10				Strongly foliated and sheared biotite-rich anatectic granite with strongly flatened porphyritic feldspars.
122,50	127,50	5,00	SH-BGN							Schistose and fragmented grey biotite gneiss which is strongly sheared.
127,50	134,35	6,85	BAG	FL " "	25° 25° 30°	129,50 130,20 133,50				Biotite-rich anatectic granite with foliated zones often containing abundant biotite-rich schlieren. Strongly fractured down to 129,00. It contains a few white aplitic veins e.g. 131,55-,60 and scattered chlorite + ankerite veins (<5 mm).
134,35	135,20	0,85	A	LB FL	30° 20°	134,35 134,80				Fine-grained amphibolite.
135,20	141,40	6,20	GTG	FL LB "	60° 5° 20°	139,90 140,00 141,40		135,75 138,55 139,55	1 mm. aspy. vein. " " " " " "	Light grey to grey medium-grained TG with moderate zonal bleaching. It carries small inclusions of MBGN below 139,00, e.g. 139,75-140,00. The GTG is cut by white aplitic LG veins (e.g. 135,70-,95) with up to 50 mm sericite alteration zones and by low-angle muscovite-rich pegmatites. At 135,00-136,00 scattered chlorite-coated fissures.

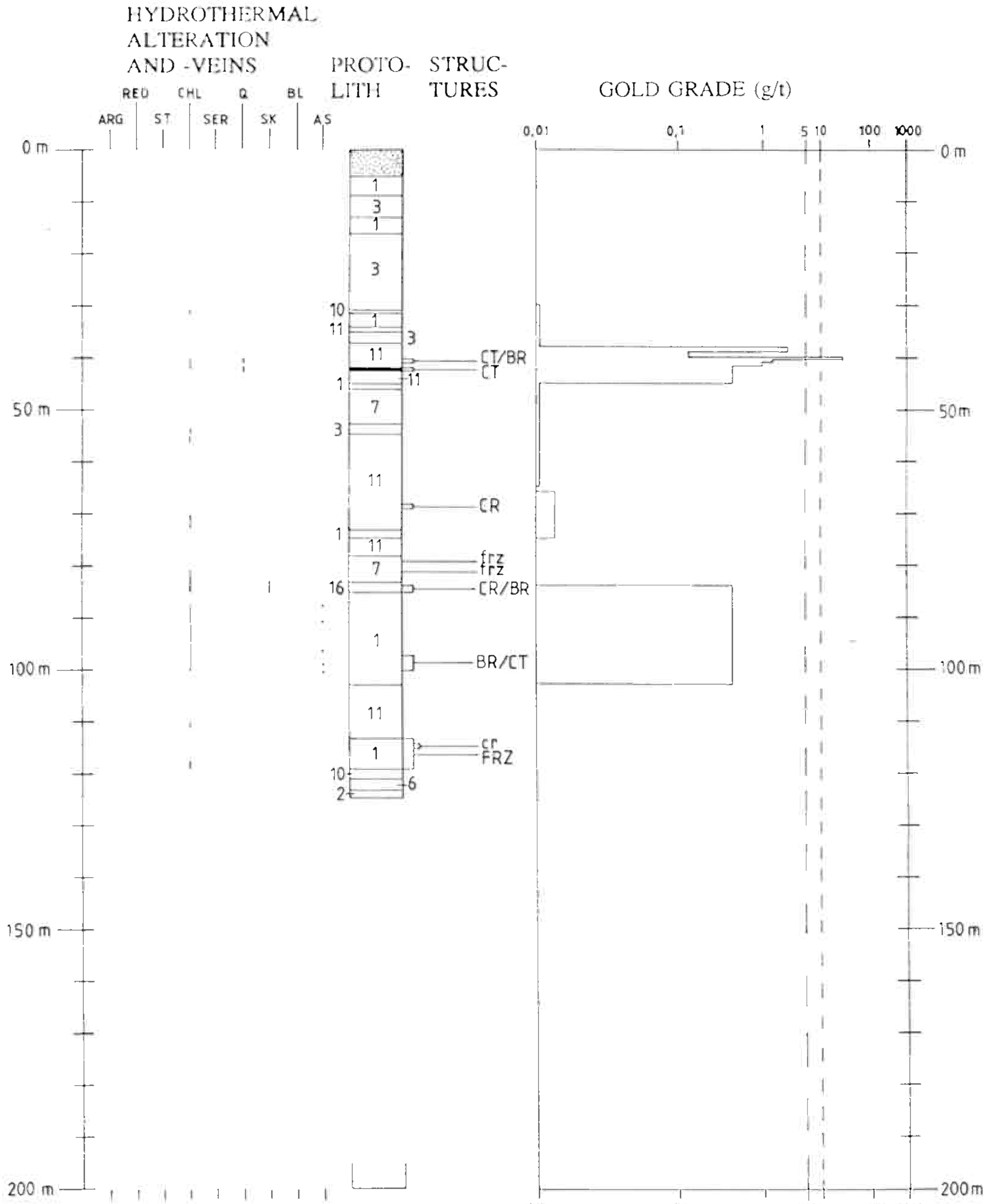
STRUCTURES: BV = breccia vein; FL = foliation; LB = lithological boundary; LL = metamorphic banding and/or primary lithological layering; MY = mylonite foliation; SP = semiductile shear plane; V = mineral veins with prefixes: AN- = ankerite; CA- = calcite; CHL- = chlorite; MY- = mylonitic; Q- = quartz; SR- = sericite; ST- = stilbite.

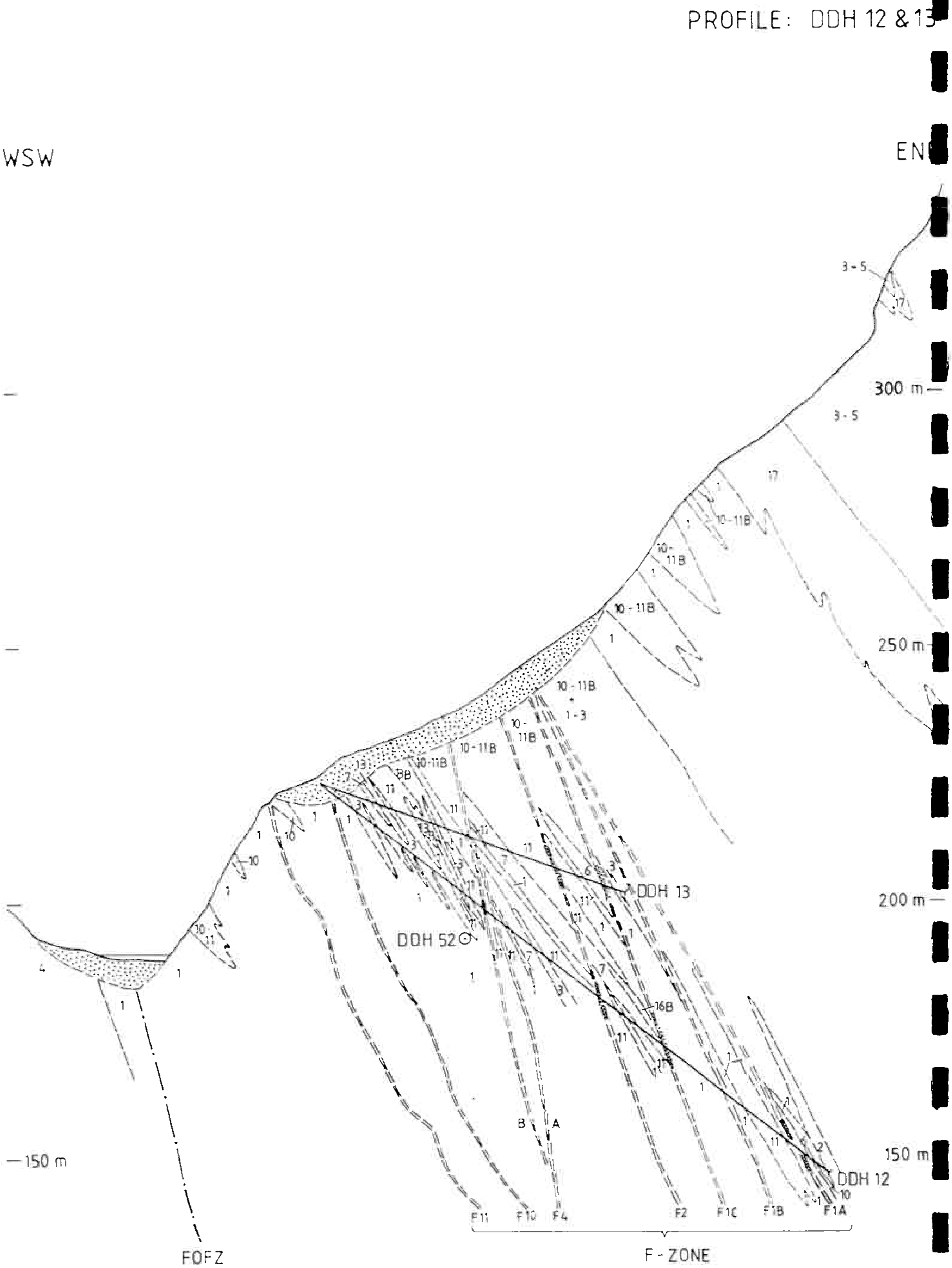
DDH: 11

DEPTH (metres)		LENGTH	LITHOLOGY	MEASURED STRUCTURES			ORE MINERALIZATION			PETROGRAPHY
From	To			Type	Angle w. core	Depth	From	To	Type	
141,40	147,10	5,70	MBGN	FL " ST-V FL	20° 0° 10° 30°	141,90 143,30 143,50 143,90		142,80	2 mm q.-chl.-aspy. vein. in LG.	Leucosome-rich migmatitic biotite gneiss with some BAG zones. The gneiss is cut by white LG veins and dykes (e.g. 142,65-,90 and 146,30-,35) and a white biotite-bearing pegmatitic granite (144,85-145,40). 1 mm red stilbite veins with weakly chlorite-altered envelopes at 143,40-,65.
147,10	149,80	2,70	W-P	LB	5°	149,80	147,60	147,75	Some 0,1-1 mm aspy. veins.	White low-angle muscovite pegmatite to pegmatitic granite with abundant inclusions of GTG. Scattered narrow sericite-alteration zones.
149,80	152,05	2,25	GTG	LB	20°	152,05				Grey medium-grained TG, weakly bleached, containing scattered sericite-alteration veins.
152,05	154,00	1,95	MBGN	FL	25°	153,80				Crenulated migmatitic biotite gneiss having a BAG zone at 152,10-,60.
154,00	159,20	5,20	B-GTG							Grey medium-grained TG, with moderate to strong zonal bleaching. It is cut by pegmatites (e.g. 154,20-,80 and 157,80-158,00) and white biotite-spotted aplitic LG with abundant sericite-alteration veins (e.g. 158,50-,80). The TG also carries scattered sericite veins and some chlorite-coated fissures.

STRUCTURES: BV = breccia vein; FL = foliation; LB = lithological boundary; LL = metamorphic banding and/or primary lithological layering; MY = mylonite foliation; SP = semiductile shear plane; V = mineral veins with prefixes: AN- = ankerite; CA- = calcite; CHL- = chlorite; MY- = mylonitic; Q- = quartz; SR- = sericite; ST- = stilbite.

SUMMARY CORELOG-DIAGRAM: DDH 12




PROFILE: DDH 12 & 13
WSW
EN
300 m
250 m
200 m
150 m
3-5
17
10-11B
10-11B
1-3
13
7
3
11
6
DDH 13
DDH 52
16B
DDH 12
B
A
F11
F10
F4
F2
F1C
F1B
F1A
FOFZ
F-ZONE

DRILLHOLE No.: 12 AZIMUTH: 72° INCLINATION: 38° LENGTH: 124,45 m Horiz.: 98,05 m Vert.: 76,60 m CORE DIM.: 36 mm
LOCATION: F-ZONE
COMPANY: A/S SULFIDMALM NGO-COORD.:Y: -19267,6 X: 798742,5 ZONE: D ALTITUDE: 223,5 m.a.s.l.
YEAR: 1981 UTM-COORD.,E: 397280 N: 7229180 ZONE: 33

DEPTH (metres)		LENGTH	LITHOLOGY	MEASURED STRUCTURES			ORE MINERALIZATION			PETROGRAPHY
From	To			Type	Angle w. core	Depth	From	To	Type	
0,00	5,00	5,00	OB/CL							
5,00	8,40	3,40	W-LG							White, medium-grained and biotite-spotted leucogranite with up to 5 cm inclusions of bleached GTG. The LG carries some 1-10 cm wide sericite-altered zones (e.g. 7,05; 8,15 and 8,25-,35) and rare q. veins.
8,40	12,80	4,40	GTG							Grey medium-grained TG showing moderate zonal (1-20 mm) bleaching. The bleaching is associated with 1 mm q. veins and some sericite alteration zones along thin LG dykes.
12,80	16,30	3,50	W-LG	LB	10°	15,05				White medium-grained and biotite-spotted leuco-granite with weak fracture controlled sericite alteration. Inclusion of moderately bleached GTG at 14,20-15,05.
16,30	30,80	14,50	GTG							Grey medium-grained TG with moderate zonal bleaching and some scattered sericite alteration zones (5-50 mm) mainly associated with LG dykes. White, fine- to medium-grained and locally biotite-spotted LG dykes occur at 17,90-18,70; 20,10-,80; 26,15-,80; 27,30-,45 and 30,50-,80. Elsewhere also narrower dykes (1-5 cm).
30,80	31,30	0,50	HA-A							Greyish green chlorite-altered amphibolite.
31,30	34,00	2,70	W-LG							White medium- to coarse-grained LG with abundant biotite- and amphibolite-rich schlieren (5-10 x 10 - 30 mm²).

LITHOLOGIES: A: = amphibolite; ABGN = dark grey amphibole-biotite gneiss; BAG = dark grey biotite-rich anatectic granite; BGN = dark grey biotite gneiss; CGN = greenish calc-silicate gneiss; CL = coreloss; CM = cores missing; CSCH = calcareous schist; GQM = dark grey biotite-quartz monzonite; GGO = grey granodioritic orthogneiss; GTG = grey medium-grained two-mica granite; HTG = hybrid pinkish grey medium-grained two-mica granite; IB = intrusion breccia; LG = leucocratic granite; M = calcite marble; MBGN = migmatitic biotite gneiss; MD = dark grey monzodiorite; MSCH = micaschist/-gneiss; OB/CL = overburden and/or coreloss in surface weathered rocks; P = pegmatite and pegmatitic granite; Q = hydrothermal quartz-vein or -lens; SK = skarn-altered marble. Prefixes: B- = bleached; BR- = brecciated; CT- = cataclastic; CR- = crushed; G- = garnetiferous; H- = heterogeneous; i.e. strong interbanding with other lithologies; HA- = hydrothermally altered; MY- = mylonitic; P- = pink; PP- = porphyritic; SH- = semiductilly sheared; W- = white to greyish white.

DDH: 12

DEPTH (metres)		LENGTH	LITHOLOGY	MEASURED STRUCTURES			ORE MINERALIZATION			PETROGRAPHY
From	To			Type	Angle w. core	Depth	From	To	Type	
34,00	35,10	1,10	ABGN							Dark biotite-amphibole gneiss cut by some 1-5 cm veins and dykes of pegmatite, aplite and GTG.
35,10	37,35	2,25	GTG							Grey medium-grained TG with some bleached zones and small inclusions of GQM. A few 1-10 mm sericite alteration zones partly associated with some narrow (1-5 cm) aplite dykes.
37,35	38,60	1,25	ABGN							Dark biotite-amphibole gneiss with some 10 cm bands of quartzofeldspatic biotite gneiss and migmatitic biotite gneiss.
38,60	41,00	2,40	BR-ABGN							Grey silicified and fractured biotite-amphibole gneiss in association with ultracataclasite and breccia at 40,00-,70. The gneiss is cut by some white LG dykes (e.g. 39,55-,65) and scattered q. veins.
41,00	41,75	0,75	ABGN	Fl	50°	41,20				Dark biotite-amphibole gneiss with scattered 5 mm feldspar augen.
41,75	42,25	0,50	CT-Q							Dark greyish green fine-grained cataclasite with brecciated fragments of hydrothermal milky quartz.
42,25	44,80	2,55	ABGN							Dark biotite-amphibole gneiss with quartzofeldspatic bands and granodioritic augengneiss zones (e.g. 44,00-,35). It is cut by a GTG dyke with sericite-altered aplite dykes (43,15-,75). The lower contact of the dyke is strongly fractured with a network of chlorite veins.
44,80	45,80	1,00	W-LG							White fine- to medium-grained aplitic LG, locally with abundant green chlorite-altered mafic aggregates (45,00-,15 and 45,35-,55). Inclusion of grey granodioritic augengneiss at 45,15-,35.
45,80	52,65	6,85	GGO	FL	30°	48,85				Light grey medium- to coarse-grained granodioritic orthogneiss, partly with 7 x 12 mm^2 augen. It is cut by dykes of white aplitic LG (46,80-47,00; 47,15-,20 and 51,55-,75 with some sericite-altered fractures) and GTG (47,50-,55 and 49,65-,70).

STRUCTURES: BV = breccia vein; FL = foliation; LB = lithological boundary; LL = metamorphic banding and/or primary lithological layering; MY = mylonite foliation; SP = semiductile shear plane; V = mineral veins with prefixes: AN- = ankerite; CA- = calcite; CHL- = chlorite; MY- = mylonitic; Q- = quartz; SR- = sericite; ST- = stilbite.

DDH: 12

DEPTH (metres)		LENGTH	LITHOLOGY	MEASURED STRUCTURES			ORE MINERALIZATION			PETROGRAPHY
From	To			Type	Angle w. core	Depth	From	To	Type	
52,65	54,65	2,00	GTG							Light grey medium-grained TG cut by white aplitic LG dykes with weak fracture controlled sericite alteration (52,65-,75 and 53,05-,85). The TG carries greyish green chlorite-altered zones (10-20 mm) towards the lower contact i.e. 53,85-54,60. White pegmatite vein at 54,60-,65.
54,65	73,20	18,55	ABGN							Dark biotite-amphibole gneiss and biotite-amphibolite with more coarse-grained leucocratic zones at 60,50-,70; 63,45-65,80 and 59,50-60,50. These zones carry often 1-2 mm white porphyritic feldspars. They are cut by white aplitic LG dykes locally with some sericite alteration zones (e.g. 61,65-,95 and 62,35-,45). Also some 1-5 cm pegmatite veins. The gneisses and dykes are cut by a crush zone at 68,20-,90 and contain abundant calcite veinlets with associated chlorite-q. alteration (greyish green) at 54,90-55,80 and 70,55-73,20. Scattered veins and alteration elsewhere.
73,20	74,40	1,20	W-LG							White fine-grained aplitic LG with biotite aggregates and some narrow sericite alteration zones.
74,40	78,05	3,65	ABGN	FL " "	0° 20° 10°	75,15 75,90 76,70				Dark biotite-amphibole gneiss with zones containing 1-5 mm feldspar augen and schlieren and some bands of calc-silicate- and granodioritic gneiss.
78,05	82,90	4,85	GGO							Grey medium- to coarse-grained granodioritic orthogneiss with up 20 cm wide zones of calc-silicate- and biotite-amphibole gneiss. It is cut by aplitic LG dykes at 80,45-,55; 80,75-,80; 81,25-,75. It is strongly fractured with network of chlorite-calcite veins at 78,85-79,35 and 81,10-,20. Chlorite veins with associated chlorite-altered envelopes are common below 81,00.

STRUCTURES: BV = breccia vein; FL = foliation; LB = lithological boundary; LL = metamorphic banding and/or primary lithological layering; MY = mylonite foliation; SP = semiductile shear plane; V = mineral veins with prefixes: AN- = ankerite; CA- = calcite; CHL- = chlorite; MY- = mylonitic; Q- = quartz; SR- = sericite; ST- = stilbite.

DDH: 12

DEPTH (metres)		LENGTH	LITHO-LOGY	MEASURED STRUCTURES			ORE MINERALIZATION			PETROGRAPHY
From	To			Type	Angle w. core	Depth	From	To	Type	
82,90	85,20	2,30	BR-SK							Garnet skarn with epidote and/or chlorite alteration along an irregular system of fractures. Strong brecciation and retrograde alteration at 83,65-84,00. Strong fracturing between 84,00 and a crush zone at 84,90-85,20. The crush zone cuts retrograded skarn with white aplitic LG veins.
85,20	102,70	17,50	W-LG				 98,90	87,60 90,70 96,20 99,40 100,20	3 aspy. veins (1-2 mm). Chlorite crackle breccia with some aspy. 1 mm aspy. vein. Net of rock flour breccia veins (5-10 mm) with some diss. aspy. Some diss. aspy.	White fine- to medium-grained aplitic leuco-granite with scattered 1-5 mm q. veins and sericite alteration zones. Chlorite-coated fissures and fractures common between 87,55 and 100,00. At 97,00-99,90 occur several breccia veins and ultracataclasites. 97,00-97,55: Sericite- and chlorite-veined/-altered ultracataclasite. 98,90-99,40: Network of q., chlorite and aspy. cemented rock- flour breccia veins (5-10 mm). The rest of the breccia zone contains 2-3 cm chlorite crackle breccias.
102,70	113,15	10,15	ABGN							Dark fine-grained biotite-amphibole gneiss cut by chlorite-veined dykes of GTG (109,70-,72; 110,05-,40; 111,20-,40; 111,90-112,10 and 112,35-,90). It is strongly fractured and ankerite-veined (1-5 mm) at 102,70-105,70, decreasing downwards. Chlorite veins with greenish chlorite-altered envelopes and some ankerite veins (1-3 mm) are common, but being more pervasive in the dyke and wallrock at 110,00-110,50. Soot-grey altered zone at 112,90.
113,15	119,30	6,15	W-LG	LB	30°	119,40				White fine- to medium-grained leucogranite with diffusely delineated and chlorite-altered biotite aggregates, especially below 117,65. It carries scattered fracture-controlled sericite alteration zones. The LG is quite fractured and is totally crushed at 114,30-,80. Soot-grey alteration at 113,60-,70.

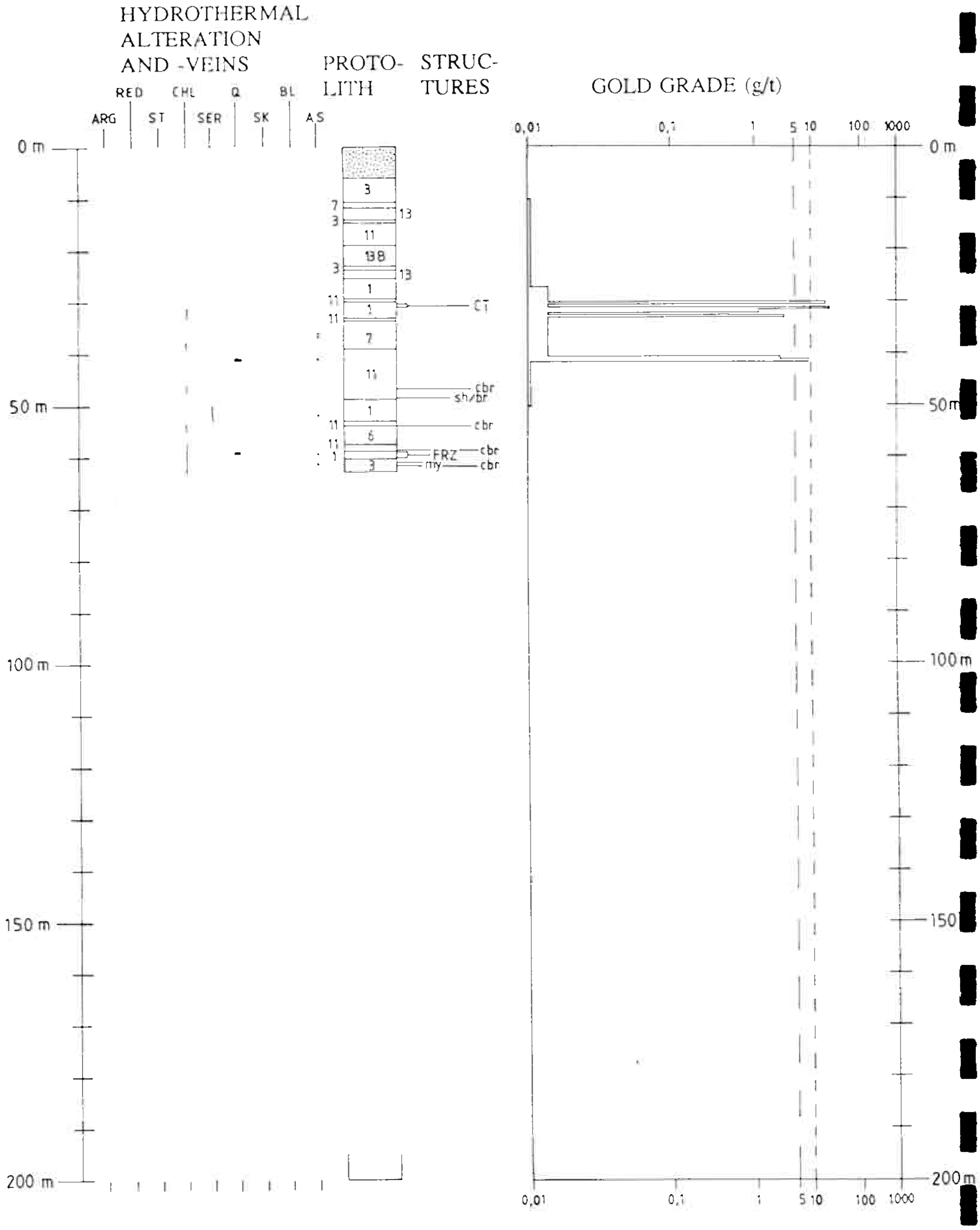
STRUCTURES: BV = breccia vein; FL = foliation; LB = lithological boundary; LL = metamorphic banding and/or primary lithological layering; MY = mylonite foliation; SP = semiductile shear plane; V = mineral veins with prefixes: AN- = ankerite; CA- = calcite; CHL- = chlorite; MY- = mylonitic; Q- = quartz; SR- = sericite; ST- = stilbite.

DDH: 12

DEPTH (metres)		LENGTH	LITHOLOGY	MEASURED STRUCTURES			ORE MINERALIZATION			PETROGRAPHY
From	To			Type	Angle w. core	Depth	From	To	Type	
119,30	121,00	1,70	A							Fine-grained amphibolite with a few 1-2 cm LG veins.
121,00	123,30	3,30	MD							Medium-grained monzodiorite cut by white aplitic LG dyke with a few narrow sericite alteration zones (121,50-,70).
123,30	124,45	1,15	W-P	LB	15°	123,80				White pegmatite dyke (123,80-124,45) cutting grey moderately bleached TG at an low angle. Both carry scattered 1-20 mm sericite alteration zones.

STRUCTURES: BV = breccia vein; FL = foliation; LB = lithological boundary; LL = metamorphic banding and/or primary lithological layering; MY = mylonite foliation; SP = semiductile shear plane; V = mineral veins with prefixes: AN- = ankerite; CA- = calcite; CHL- = chlorite; MY- = mylonitic; Q- = quartz; SR- = sericite; ST- = stilbite.

SUMMARY CORELOG-DIAGRAM: DDH 13



PROFILE: DDH 12 & 13

DRILLHOLE No.: 13 AZIMUTH: 72° INCLINATION: 20° LENGTH: 62,80 m Horiz.: 59,00 m Vert.: 21,50 m CORE DIM.: 36 mm
LOCATION: F-ZONE
COMPANY: A/S SULFIDMALM NGO-COORD.:Y: -19267,6 X: 798742,5 ZONE: D ALTITUDE: 223,5 m.a.s.l.
YEAR: 1981 UTM-COORD.,E: 397280 N: 7229180 ZONE: 33

DEPTH (metres)		LENGTH	LITHOLOGY	MEASURED STRUCTURES			ORE MINERALIZATION			PETROGRAPHY
From	To			Type	Angle w. core	Depth	From	To	Type	
0,00	6,00	6,00	OB/CL							
6,00	10,60	4,60	GTG							Grey medium- to coarse-grained TG with 1-3 mm biotite flakes. Strong bleaching along the margin of white aplitic LG at 6,95-7,05 and 7,20-,65. Small biotite-rich gneiss inclusions common at 9,55-10,15. Dyke of biotite-spotted white LG with some sericite alteration zones at 10,15-,45. Scattered 1-10 mm q. veins and chlorite-coated fissures.
10,60	11,75	1,15	GGO							Grey medium-grained granodioritic orthogneiss with 1-5 mm feldspar augen. It is cut by dykes of white aplitic and biotite-spotted LG (11,17-,20 and 11,30-,75) containing inclusions of GTG (11,45-,60) and gneiss.
11,75	14,00	2,25	CGN							Banded (1-20 mm) green calc-silicate gneiss with some 2-5 cm bands of biotite-amphibole gneiss. It is cut by a few 1-2 cm GTG veins.
14,00	14,60	0,60	GTG							Grey medium to coarse-grained granite with a few 1-5 cm white aplitic LG veins.
14,60	19,00	4,40	ABGN							Dark medium-grained biotite-amphibole gneiss cut by white aplitic LG at 18,60-,80 and thin 0,5-2 cm veins elsewhere. The gneiss carries bands (10-20 cm) of more quartzofeldspatic gneiss.
19,00	23,05	4,05	H-CGN							Banded (1-10 cm) calc-silicate (cpx + plag.) gneiss containing thick zones of biotite-amphibole gneiss at 19,60-22,45. The gneisses are cut by white aplitic LG dyke at 20,80-21,15 and a low angle LG vein (1-2 cm) at 22,65-,95.

LITHOLOGIES: A: = amphibolite; ABGN = dark grey amphibole-biotite gneiss; BAG = dark grey biotite-rich anatectic granite; BGN = dark grey biotite gneiss; CGN = greenish calc-silicate gneiss; CL = coreloss; CM = cores missing; CSCH = calcareous schist; GQM = dark grey biotite-quartz monzonite; GGO = grey granodioritic orthogneiss; GTG = grey medium-grained two-mica granite; HTG = hybrid pinkish grey medium-grained two-mica granite; IB = intrusion breccia; LG = leucocratic granite; M = calcite marble; MBGN = migmatitic biotite gneiss; MD = dark grey monzodiorite; MSCH = micaschist/-gneiss; OB/CL = overburden and/or coreloss in surface weathered rocks; P = pegmatite and pegmatitic granite; Q = hydrothermal quartz-vein or -lens; SK = skarn-altered marble. Prefixes: B- = bleached; BR- = brecciated; CT- = cataclastic; CR- = crushed; G- = garnetiferous; H- = heterogeneous; i.e. strong interbanding with other lithologies; HA- = hydrothermally altered; MY- = mylonitic; P- = pink; PP- = porphyritic; SH- = semiductilly sheared; W- = white to greyish white.

DDH: 13

DEPTH (metres)		LENGTH	LITHOLOGY	MEASURED STRUCTURES			ORE MINERALIZATION			PETROGRAPHY
From	To			Type	Angle w. core	Depth	From	To	Type	
23,05	24,05	1,00	GTG							Grey medium- to coarse-grained TG with some small (<5 cm) gneiss inclusions.
24,05	25,55	1,50	CGN							Greenish calc-silicate gneiss with 1-5 cm garnetiferous bands. It is cut by GTG dykes (24,70-,95; 25,10-,25; 25,35-,40).
25,55	29,40	3,85	W-LG							White aplitic LG infiltration in coarse-grained GTG occurring as small inclusions and between LG dykes, e.g. 26,30-,95. Scattered narrow sericite alteration zones.
29,40	30,00	0,60	ABGN							Dark fine- to medium-grained biotite-amphibole gneiss with thin dyke of GTG (29,60-,65).
30,00	33,05	3,05	W-LG							White aplitic LG with chlorite-coated fissures below 31,00. At 30,45-31,00 a dark grey to black flinty fine-grained rock, probably a ultracataclasite.
33,05	33,65	0,60	ABGN							Dark fine-grained biotite-amphibole gneiss.
33,65	38,90	5,25	GGO					36,25 36,55	Aspy.-q. vein. Aspy.-coated fissure.	Grey medium- to coarse-grained granodioritic orthogneiss with augen texture. Zone of biotite-amphibole gneiss at 36,25-,55. Greyish green chlorite alteration associated with chlorite veinlets at 37,75-38,90. The gneiss is cut by white to grey biotite-bearing aplitic LG dykes at 36,00-,25 and 36,55-,95.
38,90	48,70	9,80	ABGN				40,90	41,30	Q. vein with 1-20 mm aspy. stringers	Dark medium-grained amphibole-biotite gneiss with scattered coarse-grained GTG veins and 1-15 cm white LG dykes e.g. 45,75-,85. Two 10 cm calc-silicate gneiss bands at 44,00-,45. Chlorite crackle breccia at 46,65-,85 surrounded by chlorite alteration and a 10 mm ankerite-stilbite vein at the lower breccia margin. Milky q. vein at 40,90-41,30. Chloritic shear zone (48,30-,70) with a 3 cm chlorite-cemented breccia.

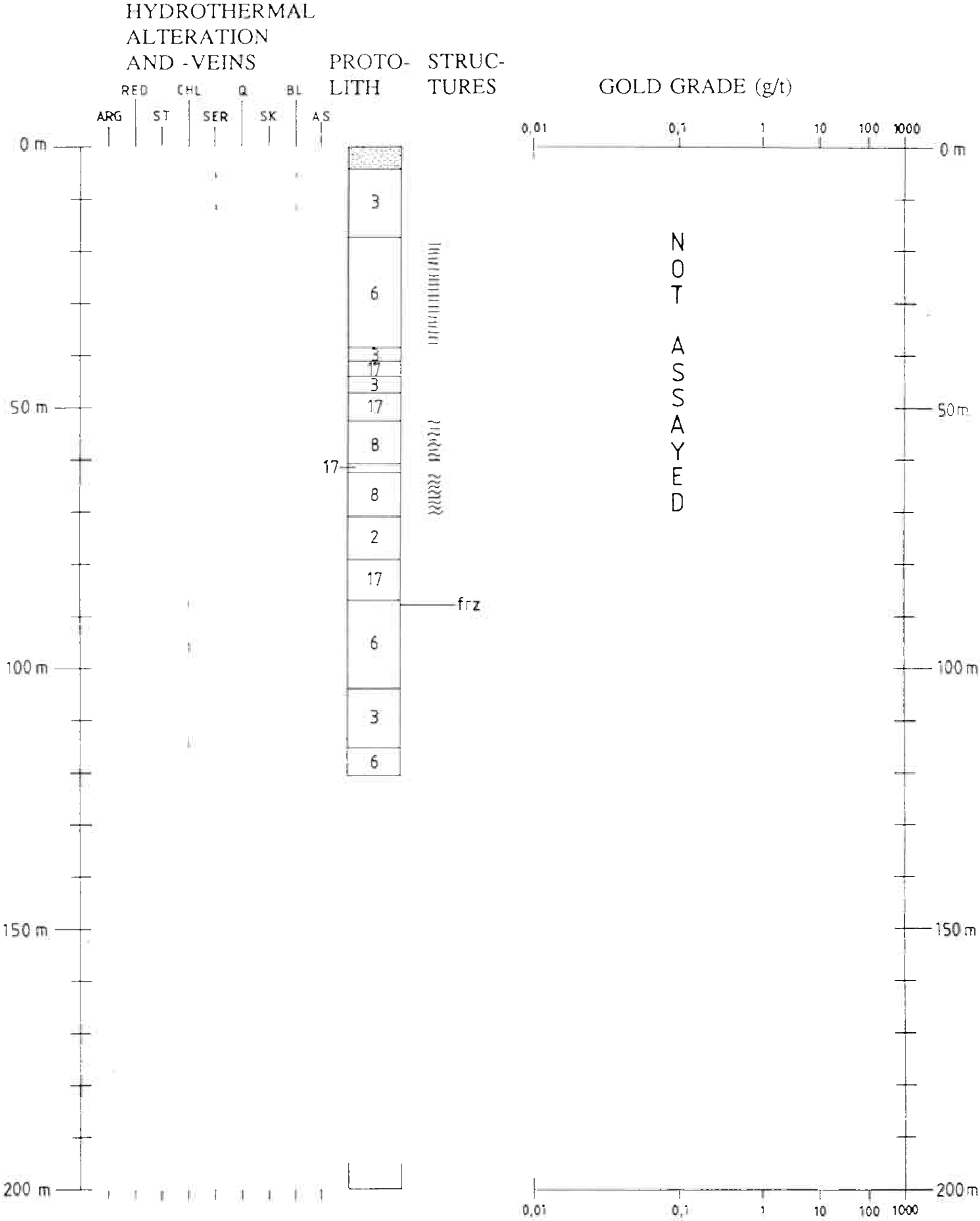
STRUCTURES: BV = breccia vein; FL = foliation; LB = lithological boundary; LL = metamorphic banding and/or primary lithological layering; MY = mylonite foliation; SP = semiductile shear plane; V = mineral veins with prefixes: AN- = ankerite; CA- = calcite; CHL- = chlorite; MY- = mylonitic; Q- = quartz; SR- = sericite; ST- = stilbite.

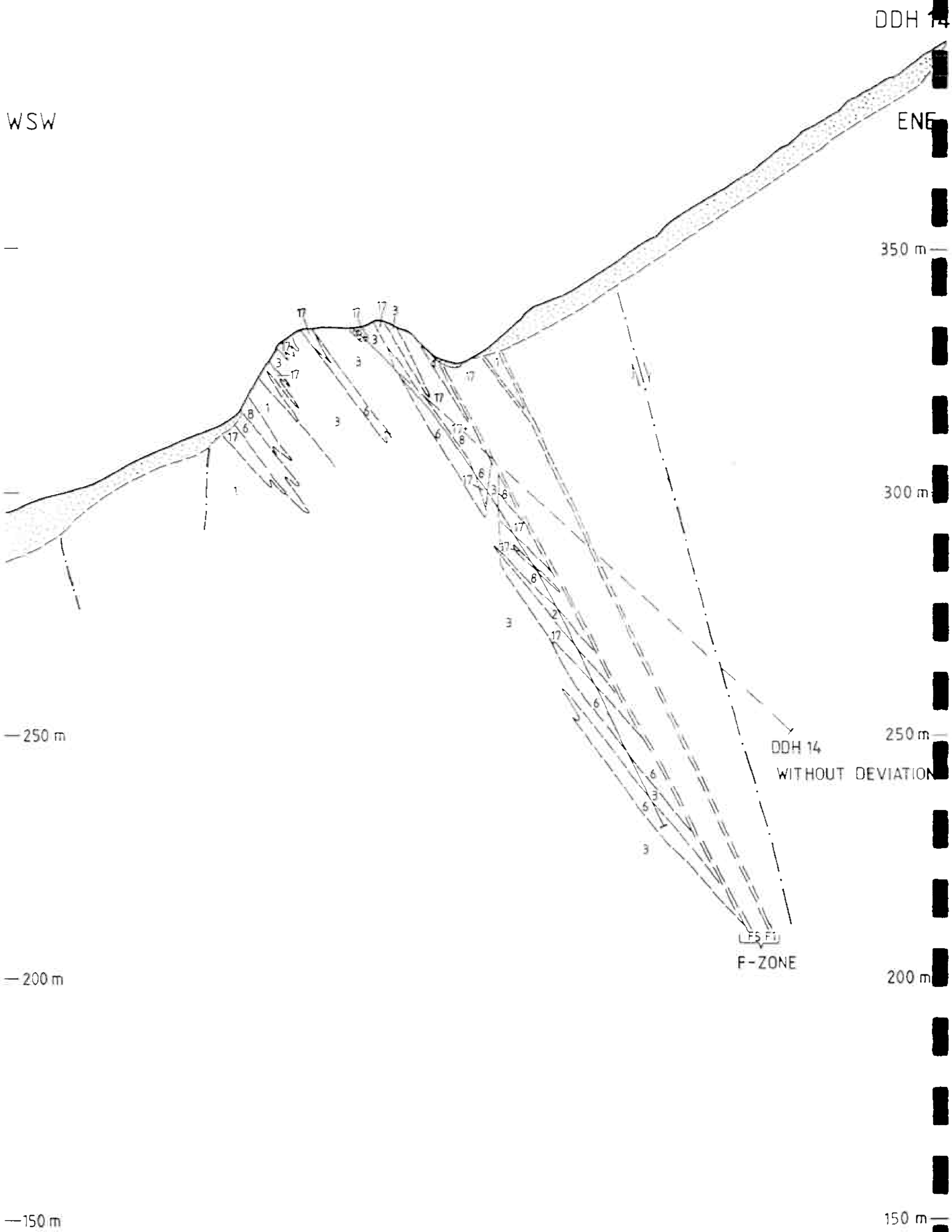
DDH: 13

DEPTH (metres)		LENGTH	LITHOLOGY	MEASURED STRUCTURES			ORE MINERALIZATION			PETROGRAPHY
From	To			Type	Angle w. core	Depth	From	To	Type	
48,70	52,95	4,25	W-LG	LB	60°	52,95	52,05	52,10	Q. vein with py. and aspy. aggr. along the margin and fissure coatings in the interior part.	White aplitic leucogranite with chlorite-altered biotite aggregates (5-10 mm) at 49,10-,30. It contains scattered narrow sericite alteration zones becoming wider (1-20 cm) and abundant below 50,20. Milky q. vein at 52,05-,10.
52,95	53,80	0,85	ABGN							Dark amphibole-biotite gneiss cut by some GTG veins (1-2 cm) at 53,25-,40. 10 cm chlorite crackle breccia at the lower contact of ABGN.
53,80	57,55	3,75	MD							Medium-grained monzodiorite with unorientated needles of hornblende (1 x 3-10 mm²) in a felspar matrix. It is cut by some 0,5-2 cm veins of white aplitic LG. It carries scattered chlorite-calcite veins (1-10 mm) with associated greyish green envelopes of chlorite-q. alteration, particularly abundant at 53,80-54,50 i.e. at the upper contact.
57,55	58,70	1,15	ABGN							Dark fine- to medium-grained biotite-amphibole gneiss with greyish green chlorite-q. alteration associated with chlorite crackle breccias (e.g. 57,55-,95) and network of 1-20 mm brown ankerite veinlets (58,20-,70). It is cut by chlorite-veined and brecciated LG dykes.
58,70	60,25	1,55	W-LG					59,40	Aspy. aggr. in q. vein.	Fragmented white and fine-grained aplite with milky q. vein at 59,25-,50 and some chlorite veins.
60,25	62,80	2,55	HA-GTG	SP	30°	61,05		61,40	3 mm aspy. veinlet in chloritic fracture zone.	Dirty greyish green and strongly chloritised TG with inclusions of altered GGO. Both contain abundant chlorite veins locally forming 1-2 cm crackle breccia veins. The altered GTG is strongly foliated in narrow zones (60,90-61,20).

STRUCTURES: BV = breccia vein; FL = foliation; LB = lithological boundary; LL = metamorphic banding and/or primary lithological layering; MY = mylonite foliation; SP = semiductile shear plane; V = mineral veins with prefixes: AN- = ankerite; CA- = calcite; CHL- = chlorite; MY- = mylonitic; Q- = quartz; SR- = sericite; ST- = stilbite.

SUMMARY CORELOG-DIAGRAM: DDH 14





DDH 14
WSW
ENE
350 m
300 m
—250 m
250 m
DDH 14
WITHOUT DEVIATION
F5 F1
F-ZONE
—200 m
200 m
—150 m
150 m

DRILLHOLE No.: 14 AZIMUTH: 71° INCLINATION: 43° LENGTH: 120,85 m Horiz.: 88,40 m Vert.: 82,40 m CORE DIM.: 36 mm
LOCATION: F-ZONE
COMPANY: A/S SULFIDMALM NGO-COORD.:Y: -19120,663 X: 798544,654 ZONE: D ALTITUDE: 333,241 m.a.s.l.
YEAR: 1981 UTM-COORD.,E: 397420 N: 7228970 ZONE: 33

DEPTH (metres)		LENGTH	LITHOLOGY	MEASURED STRUCTURES			ORE MINERALIZATION			PETROGRAPHY
From	To			Type	Angle w. core	Depth	From	To	Type	
0,00	4,00	4,00	OB/CL							
4,00	17,45	13,75	GTG	LB " "	10° 10° 10°	4,10 4,70 17,45				Light grey to grey medium-grained TG with bleached zones associated with the margin of veins and dykes of white LG and pegmatite and along scattered q.-, musc.-q.- and sericite-alteration veins. Pegmatite dykes at 4,10-,70 and 11,60-13,55. Amphibolite inclusion at 13,25-,40. Pervasive bleaching often associated with sericite veins and q. veins (1-10 mm) is found at 5,00-6,00; 11,00-,60 and 14,00-,15. Sericite alteration veins also common in pegmatite and LG veins down to 14,15. Hydrothermal veins are rare below 14,15.
17,45	38,45	21,00	MD	LB FL	50° 10°	19,55 25,50				Fine- to coarse-grained monzodiorite with grain-size gradually increasing downwards. coarse-grained gabbro-monzodiorite with white feldspar aggregates (weakly foliated) at 18,45-27,55. It is cut by white coarse-grained to pegmatitic granite dykes with some sericite- and chlorite-veins at 19,55-20,00; 22,35-,55 and 23,40-,60. GTG dykes partly bleached and carrying chlorite veins at 28,25-,35; 28,60-,70; 29,65-30,30 and mixed LG/GTG dyke at 32,30-34,60 with abundant mafic inclusions. Also thinner granite veins elsewhere. Brown ankerite veins with greyish green chlorite-altered wallrocks at 34,60-35,00.

LITHOLOGIES: A: = amphibolite; ABGN = dark grey amphibole-biotite gneiss; BAG = dark grey biotite-rich anatectic granite; BGN = dark grey biotite gneiss; CGN = greenish calc-silicate gneiss; CL = coreloss; CM = cores missing; CSCH = calcareous schist; GQM = dark grey biotite-quartz monzonite; GGO = grey granodioritic orthogneiss; GTG = grey medium-grained two-mica granite; HTG = hybrid pinkish grey medium-grained two-mica granite; IB = intrusion breccia; LG = leucocratic granite; M = calcite marble; MBGN = migmatitic biotite gneiss; MD = dark grey monzodiorite; MSCH = micaschist/-gneiss; OB/CL = overburden and/or coreloss in surface weathered rocks; P = pegmatite and pegmatitic granite; Q = hydrothermal quartz-vein or -lens; SK = skarn-altered marble. Prefixes: B- = bleached; BR- = brecciated; CT- = cataclastic; CR- = crushed; G- = garnetiferous; H- = heterogeneous; i.e. strong interbanding with other lithologies; HA- = hydrothermally altered; MY- = mylonitic; P- = pink; PP- = porphyritic; SH- = semiductilly sheared; W- = white to greyish white.

DDH: 14

DEPTH (metres)		LENGTH	LITHOLOGY	MEASURED STRUCTURES			ORE MINERALIZATION			PETROGRAPHY
From	To			Type	Angle w. core	Depth	From	To	Type	
38,45	41,00	2,55	GTG							Grey medium-grained TG grading into GQM below 40,20 and cut by white LG veins (1-5 cm). Variable content of small biotite-rich mafic inclusions.
41,00	43,90	2,90	G-MBGN	FL "	10° 5°	41,50 43,10				Garnetiferous migmatitic biotite gneiss with variable density of leucosome zones/veins.
43,90	47,10	3,20	GTG							Grey coarse-grained TG with some sericite-alteration veins and abundant biotite-schlieren, dominant at 45,80-46,65. It is cut by 1-5 cm white LG veins.
47,10	52,65	5,55	G-MBGN							Garnetiferous migmatitic biotite gneiss with zones of biotite-amphibole gneiss (51,15-,50) and calc-silicate gneiss (52,00-,65). It is cut by some thin LG veins.
52,65	60,80	8,15	BAG	FL " " "	5° 20° 25° 30°	55,40 57,90 58,40 59,90	53,85	54,00	Calc-silicate gneiss with po. diss.	Biotite-rich anatectic granite with variable development of foliation. The granite alternates with 0,5-3 cm zones of biotite- and calc-silicate gneisses at 52,65-53,00. Zones of MBGN occur at 55,10-,75 and 56,25-,80 whereas BAG with abundant biotite schlieren occurs at 57,30-,55 and 59,85-60,80. The BAG is weakly chloritised at 54,40-,70.
60,80	62,50	1,70	MBGN	Fl	15°	61,30				Migmatitic biotite gneiss with biotite- and calc-silicate-gneiss bands.
62,50	70,70	8,20	BAG	Fl " " "	5° 15° 25° 30°	63,45 64,50 67,50 69,60				Biotite-rich anatectic granite, foliated, with zones of MBGN at 63,20-,55 and 66,00-,55. It is cut by a few 1-10 cm LG veins.

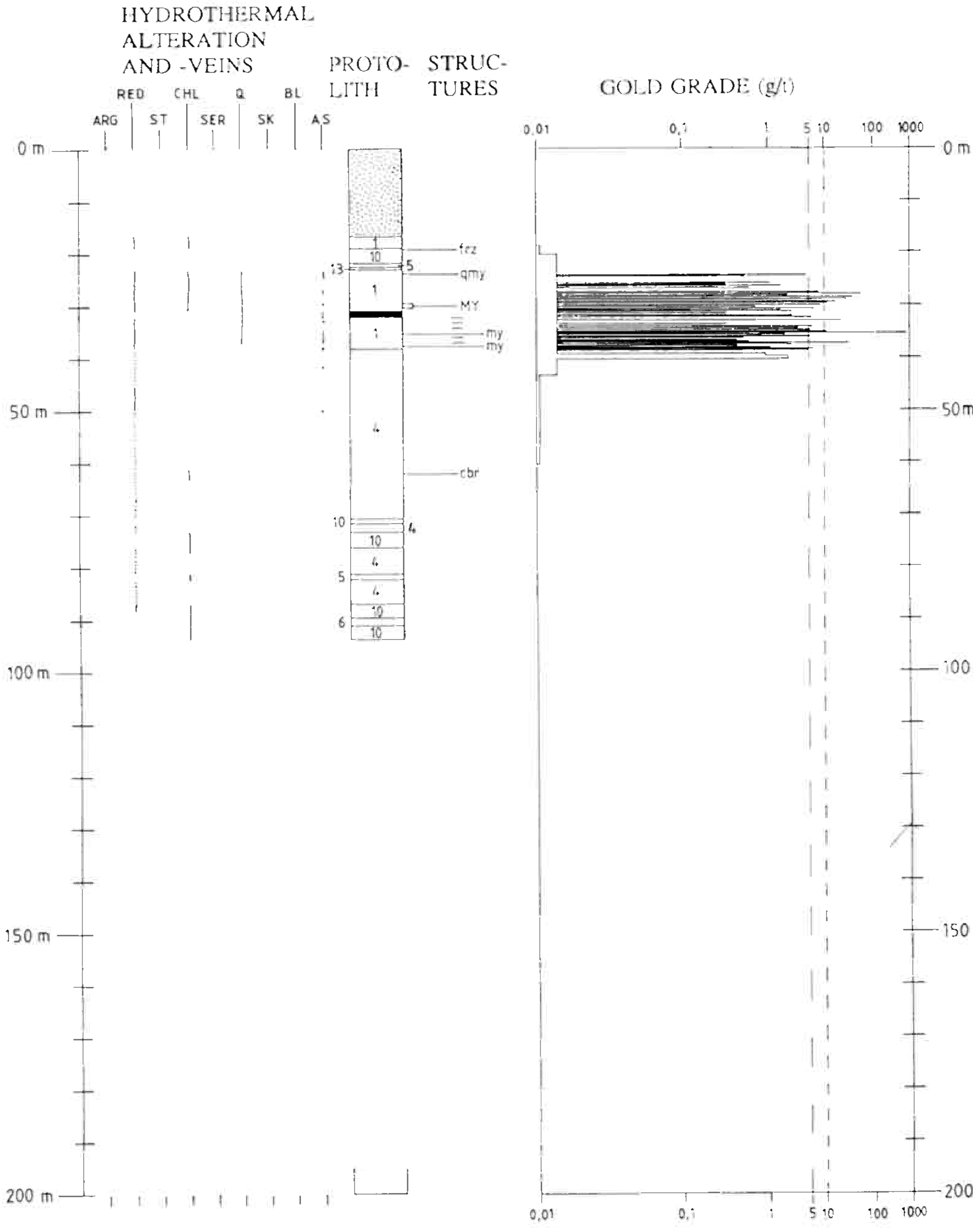
STRUCTURES: BV = breccia vein; FL = foliation; LB = lithological boundary; LL = metamorphic banding and/or primary lithological layering; MY = mylonite foliation; SP = semiductile shear plane; V = mineral veins with prefixes: AN- = ankerite; CA- = calcite; CHL- = chlorite; MY- = mylonitic; Q- = quartz; SR- = sericite; ST- = stilbite.

DDH: 14

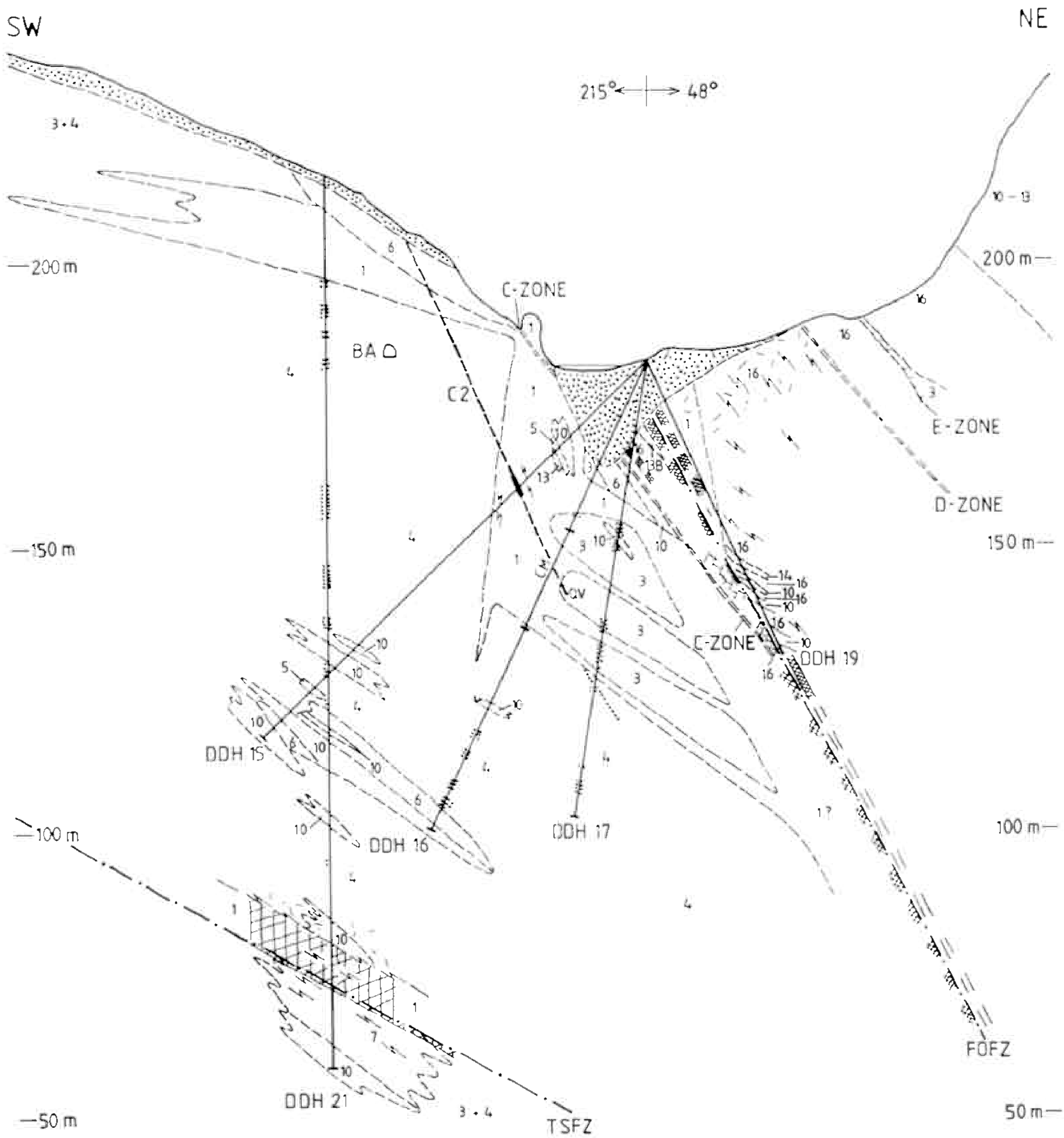
DEPTH (metres)		LENGTH	LITHOLOGY	MEASURED STRUCTURES			ORE MINERALIZATION			PETROGRAPHY
From	To			Type	Angle w. core	Depth	From	To	Type	
70,70	79,05	8,35	W-P							White pegmatitic granite with some sericite-alteration veins and muscovite veins (1-2 mm).
79,05	87,00	7,95	MBGN	FL " " A-V FL "	0° 5° 10° 10° 40° 55°	80,80 80,85 82,50 83,40 84,70 86,75				Leucosome-rich migmatitic biotite gneiss cut by a GTG dyke with some 10 mm sericite alteration zones at 84,05-,55 and a few 1-5 cm muscovite-rich LG veins elsewhere. Crenulation at 84,70 and a 5 mm ankerite vein at 83,40.
87,00	103,90	16,90	MD							Medium-grained monzodiorite with some narrow fine-grained zones. It is cut by veins (1-5 cm) and dykes of pink partly biotite-spotted aplitic LG (e.g. 88,00-,30; 95,00-,10; 95,40-,55 and 96,20-,50). Pervasive greyish green chloritisation at 95,00-96,60 and fracture-bound elsewhere as narrow zones. Fragmented and calcite-veined (1 mm) at 87,60-,80.
103,90	115,25	11,35	GTG							Grey medium-grained granite with moderate zonal (1-5 cm) bleaching. It is more heterogeneous below 110,00 where pegmatite dykes and MD inclusions (10-20 cm) are common. Inclusions of GQM at 105,50-106,10; 110,15-,35 and 114,00-,75 (chloritised) and MD at 104,00-,75 and 105,25-,50. Pegmatite dykes at 103,90-104,45) and white aplitic LG at 114,75-115,20. The bleached zones in the granite usually contain some 1-10 mm sericite alteration zones becoming rare below 110,00.
115,25	120,85	5,60	MD							Medium-grained monzodiorite cut by veins (1-3 cm) and dykes of white aplitic LG (e.g. 119,90-120,25 and 120,70-,85).

STRUCTURES: BV = breccia vein; FL = foliation; LB = lithological boundary; LL = metamorphic banding and/or primary lithological layering; MY = mylonite foliation; SP = semiductile shear plane; V = mineral veins with prefixes: AN- = ankerite; CA- = calcite; CHL- = chlorite; MY- = mylonitic; Q- = quartz; SR- = sericite; ST- = stilbite.

SUMMARY CORELOG-DIAGRAM: DDH 15



PROFILE: DDH 15, 16, 17, 19 & 21



DRILLHOLE No.: 15 AZIMUTH: 215° INCLINATION: 44° LENGTH: 93,50 m Horiz.: 67,25 m Vert.: 64,95 m CORE DIM.: 36 mm
LOCATION: C-ZONE
COMPANY: A/S SULFIDMALM NGO-COORD.:Y: -19324,0 X: 798883,0 ZONE: D ALTITUDE: 182,0 m.a.s.l.
YEAR: 1981 UTM-COORD.,E: 397240 N: 7229310 ZONE: 33

DEPTH (metres)		LENGTH	LITHOLOGY	MEASURED STRUCTURES			ORE MINERALIZATION			PETROGRAPHY
From	To			Type	Angle w. core	Depth	From	To	Type	
0,00	16,60	16,60	OB/CL							
16,60	18,80	1,20	P-LG							Pink medium-grained leucogranite with many chlorite veinlets.
18,80	21,55	2,75	A							Fractured fine- to medium-grained amphibolite cut by monzodiorite dykes at 19,40-,50; 19,95-20,25; 21,10-,12 and 21,20-,25. Strong fracturing with chlorite-coated fractures at 18,80-19,00. Scattered 1-2 mm stilbite veins and chlorite slickensides along the foliation.
21,55	22,40	0,85	GQM							Dark grey moderately bleached biotite-quartz monzonite.
22,40	22,70	0,30	CGN							Greenish medium-grained calc-silicate gneiss.
22,70	31,10	8,40	LG	MY	50°	23,65	23,30	23,40	Aspy veinlets (5 mm) and fissures in densly q.veined (1-10 cm) granite.	Pink medium-grained leucogranite with some small biotite-bearing domains at 22,95-23,10; 26,90-28,60; 30,20-,95 and 32,05-,50. White in the upper part (22,70-26,20). Pink fine-grained mylonite at 28,60-30,20. Mylonite also developed along 20 cm q. vein and adjacent granite at 23,65-24,00. Inclusion of diorite at 25,95-26,00 and 26,25-,90. Chlorite veins are common particularly at 22,70-23,00 and 23,50-26,25. Some scattered stilbite-coated fissures.
				"	40°	23,90				
				"	60°	28,60				
				"	50°	28,90		23,65	1 mm aspy. veinlet in q. vein.	
							24,00	24,25	Network of 1-8 mm aspy. veins.	
							24,25	25,50	Scattered aspy. veins.	
							26,90	27,40	Scattered aspy.-coated fissures.	
								29,45	Aspy. aggr. (5 mm) and aspy.-coated fissure.	

LITHOLOGIES: A: = amphibolite; ABGN = dark grey amphibole-biotite gneiss; BAG = dark grey biotite-rich anatectic granite; BGN = dark grey biotite gneiss; CGN = greenish calc-silicate gneiss; CL = coreloss; CM = cores missing; CSCH = calcareous schist; GQM = dark grey biotite-quartz monzonite; GGO = grey granodioritic orthogneiss; GTG = grey medium-grained two-mica granite; HTG = hybrid pinkish grey medium-grained two-mica granite; IB = intrusion breccia; LG = leucocratic granite; M = calcite marble; MBGN = migmatitic biotite gneiss; MD = dark grey monzodiorite; MSCH = micaschist/-gneiss; OB/CL = overburden and/or coreloss in surface weathered rocks; P = pegmatite and pegmatitic granite; Q = hydrothermal quartz-vein or -lens; SK = skarn-altered marble. Prefixes: B- = bleached; BR- = brecciated; CT- = cataclastic; CR- = crushed; G- = garnetiferous; H- = heterogeneous; i.e. strong interbanding with other lithologies; HA- = hydrothermally altered; MY- = mylonitic; P- = pink; PP- = porphyritic; SH- = semiductilly sheared; W- = white to greyish white.

DDH: 15

DEPTH (metres)		LENGTH	LITHOLOGY	MEASURED STRUCTURES			ORE MINERALIZATION			PETROGRAPHY
From	To			Type	Angle w. core	Depth	From	To	Type	
31,10	32,05	0,95	Q				31,10 31,70	31,15 32,05	2-5 mm aspy. veinlets. Aspy. (1-2 mm) diss. and 1-10 cm veins and veinlets.	Milky q. vein.
32,05	38,15	6,10	LG	MY " " " " "	80° 30° 40° 30° 80° 60°	34,90 34,95 35,15 35,50 37,70 38,10	32,80 34,80 35,15 35,95 37,90	33,00 34,95 35,95 36,80 38,10	Abundant 2-10 mm aspy. veins. A few diss. aspy. grains. Scattered aspy.-coated fissures and grains. Q. veins with diss. aspy. and aspy. veinlets. Some aspy. veinlets and diss. aggr. and grains.	Pink and white medium-grained leucogranite with strongly q. veined aplite phase at 32,75-34,95. The aplite is weakly foliated below 34,65 and grades into mylonitic q. veined granite with abundant chlorite-coated fissures at 34,95-35,15. Dense q. veining (1-20 mm) also at 35,15-35,95 in weakly foliated white LG and at 35,95-36,80 in pink and white LG. Foliated LG also from 36,80 to 38,15 with a dark granitic mylonite zone at 37,65-,85.
38,15	70,65	32,50	HTG	LB	85°	70,65	 49,75	41,70 50,10	5 mm aspy. band along the margin of mylonitic q. vein. Q. vein with a few aspy.-coated fissures.	Variably bleached pinkish, grey and medium-grained HTG. More brick-red between 45,00-49,70. Inclusion of GQM at 44,25-,95. The granite is cut by aplite dykes at 55,40-,60 and 69,30-,55. The latter is fine-grained with 1-2 mm feldspar phenocrysts. The HTG shows a low to moderate density of 1-10 cm bleached zones. It contains scattered veins of q. (1-50 mm, max. 35 cm), light greenish chlorite - q. (1-5 mm), stilbite (1-2 mm), chlorite (1 mm) and calcite (1-10 mm). Calcite-cemented crackle breccia at 61,70-62,05 surrounded by strong chlorite - q. veining (61,50-63,00). Only a few sericite alteration zones in the granite.
70,65	71,55	0,90	A	FL "	35° 70°	70,70 71,10				Fine-grained amphibolite cut by many 0,5-2 cm GTG veins at 71,15-,55. At 70,65-,80 light greyish green chlorite-alteration associated with fractures.

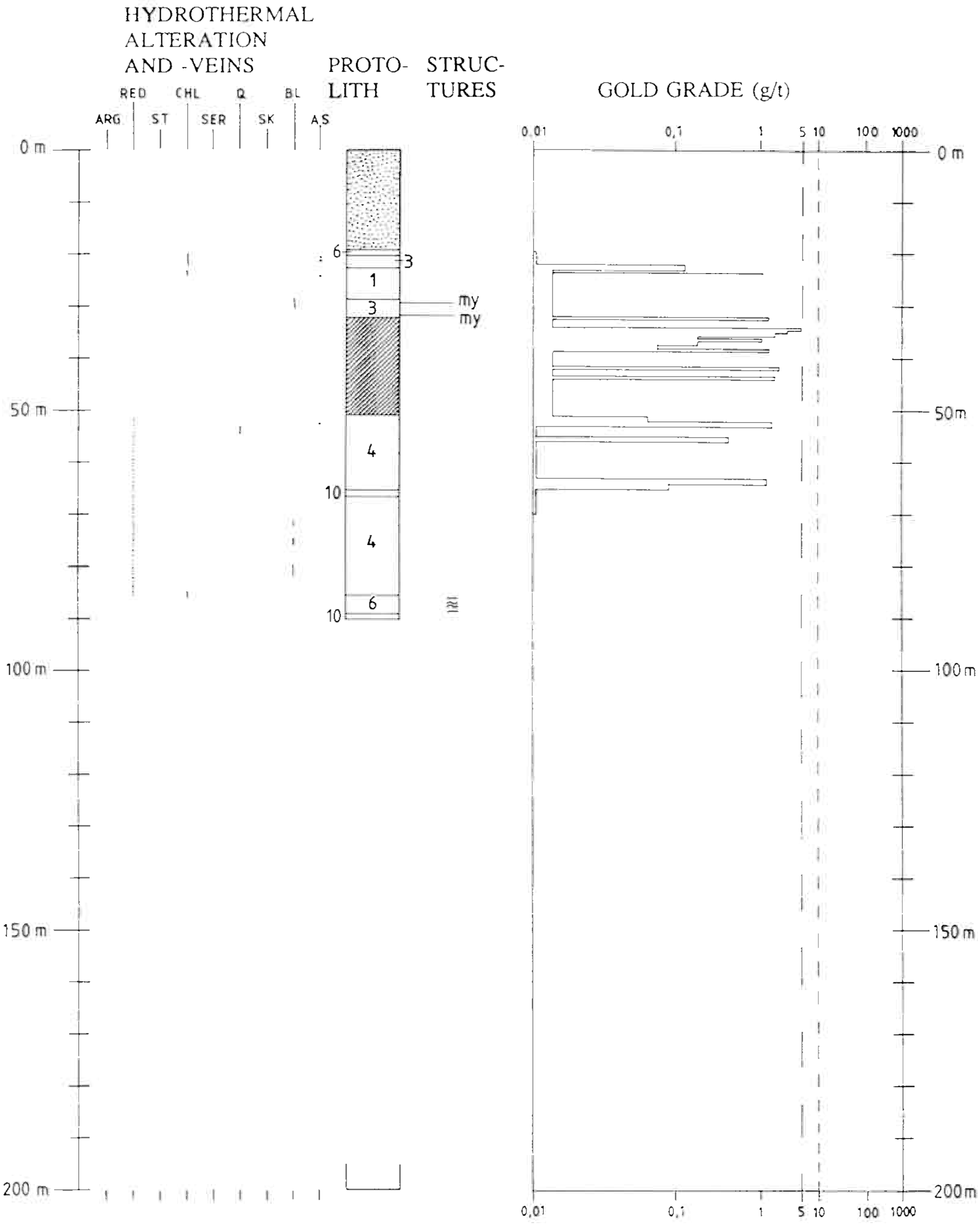
STRUCTURES: BV = breccia vein; FL = foliation; LB = lithological boundary; LL = metamorphic banding and/or primary lithological layering; MY = mylonite foliation; SP = semiductile shear plane; V = mineral veins with prefixes: AN- = ankerite; CA- = calcite; CHL- = chlorite; MY- = mylonitic; Q- = quartz; SR- = sericite; ST- = stilbite.

DDH: 15

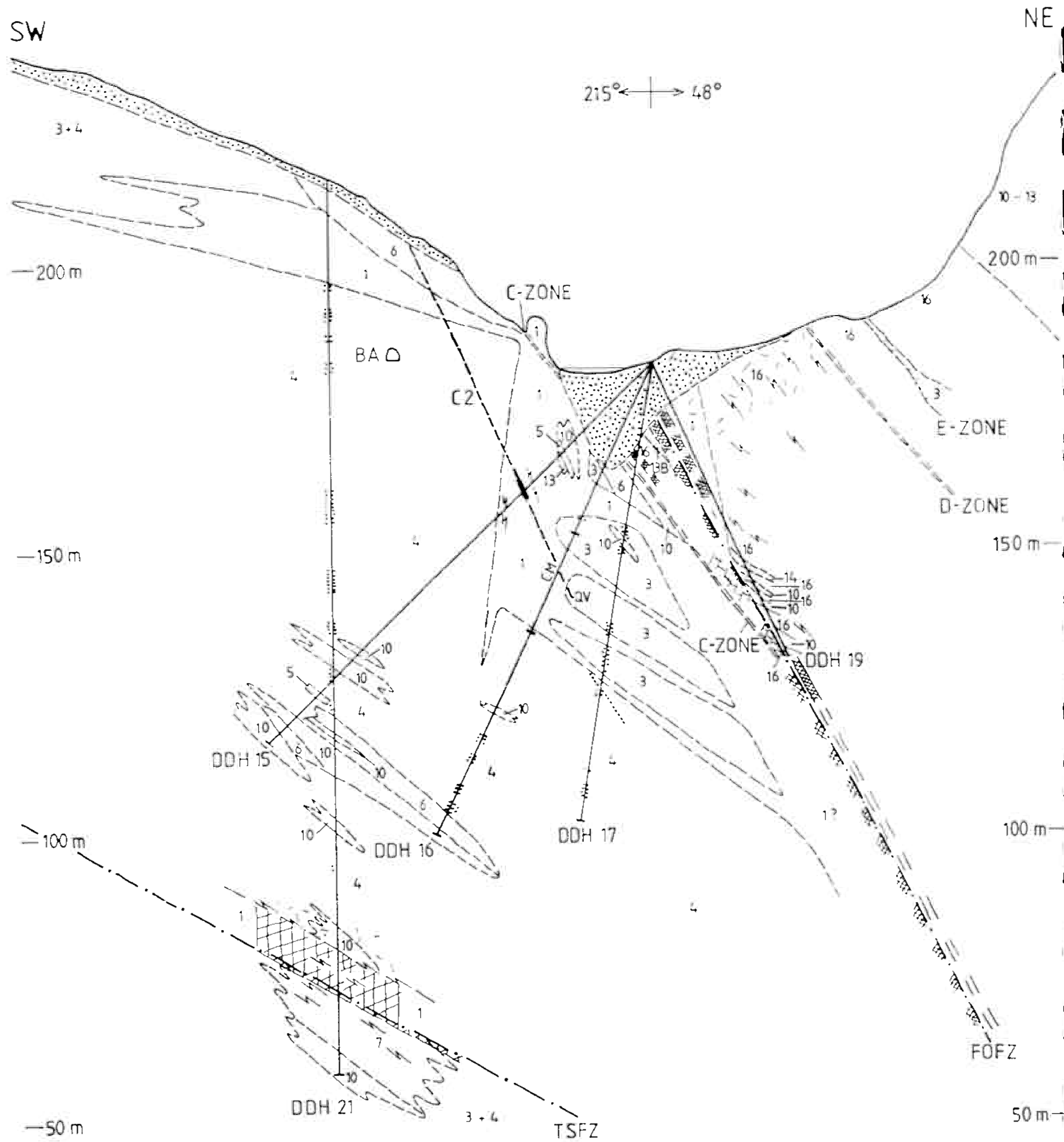
DEPTH (metres)		LENGTH	LITHOLOGY	MEASURED STRUCTURES			ORE MINERALIZATION			PETROGRAPHY
From	To			Type	Angle w. core	Depth	From	To	Type	
71,55	72,95	1,40	HTG							Pinkish grey medium-grained TG with a few scattered 1-5 mm q.- and stilbite veins. Greyish green chlorite alteration at 72,75-,95.
72,95	76,00	3,05	A	FL "	60° 60°	74,50 75,25				Fine-grained amphibolite cut by many 1-5 cm HTG dykes. Some 0,5-2 cm q ± musc. veins. Patchy greyish green chlorite alteration especially in areas with 1-5 mm calcite - q. veins.
76,00	80,90	4,90	HTG							Pinkish grey medium-grained TG, moderately bleached. Network of light greenish chlorite - q. veins with associated red colouration of the granite at 76,00-,75. Scattered q. - ca. veins. Chlorite-altered mafic inclusion at 76,85-77,00.
80,90	82,25	1,35	GQM							Dark grey medium-grained biotite-quartz monzonite with scattered 5-10 mm wide greyish green chlorite-altered zones and 1-3 mm chlorite + q. veins.
82,25	86,80	4,55	HTG							Pinkish, grey medium-grained TG with scattered 1-5 cm bleached zones. fine-grained porphyritic (1-2 mm) aplite (86,15-,80) with incl. of MD (86,25-,45). Scattered 5 mm stilbite-calcite veins.
86,80	89,50	2,70	A	LB FL " "	45° 50° 70° 65°	86,80 87,10 88,40 89,40				Medium-grained amphibolite with greyish green chlorite alteration zones partly as envelopes along 1-5 mm chlorite - q. veins. Red colouration of feldspar is common especially at 86,80-88,25 where chlorite alteration is strong.
89,50	91,00	1,50	MD							Medium-grained monzodiorite with some small amphibolite incl. (2 cm). Some greyish green chlorite alteration zones at 89,50-,65.
91,00	93,50	2,50	A	FL " LL FL	60° 85° 80° 65°	91,05 91,70 92,50 93,45				Fine-grained amphibolite with hornblende porphyritic (0,5 x 1 - 5 mm^2) zones (2-20 cm). It is cut by 2-50 mm veins of HTG and a MD dyke (91,90-92,20). Patchy greyish green chlorite alteration in association with scattered 2-8 mm q.-chl. and ep.-chl. veins.

STRUCTURES: BV = breccia vein; FL = foliation; LB = lithological boundary; LL = metamorphic banding and/or primary lithological layering; MY = mylonite foliation; SP = semiductile shear plane; V = mineral veins with prefixes: AN- = ankerite; CA- = calcite; CHL- = chlorite; MY- = mylonitic; Q- = quartz; SR- = sericite; ST- = stilbite.

SUMMARY CORELOG-DIAGRAM: DDH 16



PROFILE: DDH 15, 16, 17, 19 & 21



DRILLHOLE No.: 16 AZIMUTH: 215° INCLINATION: 65° LENGTH: 90,00 m Horiz.: 38,00 m Vert.: 81,50 m CORE DIM.: 36 mm
LOCATION: C-ZONE
COMPANY: A/S SULFIDMALM NGO-COORD.:Y: -19324,0 X: 798883,0 ZONE: D ALTITUDE: 182,0 m.a.s.l.
YEAR: 1981 UTM-COORD.,E: 397240 N: 7229310 ZONE: 33

DEPTH (metres)		LENGTH	LITHOLOGY	MEASURED STRUCTURES			ORE MINERALIZATION			PETROGRAPHY
From	To			Type	Angle w. core	Depth	From	To	Type	
0,00	19,30	19,30	OB/CL							
19,30	20,20	0,90	MD							Medium-grained monzodiorite with unorientated hbl. needles locally.
20,20	22,55	2,35	GTG				 21,15	20,80 21,35	Aspy.-coated fissure. Network of py. veins and py. diss. in chlorite-altered granodioritic orthogneiss.	Grey medium-grained TMG with greyish chlorite-altered biotite. Many inclusions of amphibolite, grey granodioritic orthogneiss with chlorite alteration and calc-silicate veins (20,60-,75; 21,15-,35 and 22,25-,30) and calc-silicate gneiss (20,20-,60; 21,35-,45 and 21,55-,65).
22,55	28,55	6,00	W-LG					24,20	Aspy.-coated fracture.	White medium-grained LG with white aplite (e.g. 22,55-,85) and pegmatite (e.g. 24,50-25,00) dykes. Inclusions of variably bleached GQM (22,90-23,00 and 24,05-,50) and GTG (23,15-,80). Scattered chlorite veins, more abundant at 22,85-23,00; 23,50-24,00 and 24,80-25,10.
28,55	32,00	3,45	GTG	MY	60° 70°	29,30 29,45				Grey medium-grained TG cut by LG dyke at 29,10-,60. Strongly bleached granite up to 0,75 m away from the LG contacts. Some stilbite-coated fissures at 28,80-29,10 where the granite is more red. Sericite foliated mylonites at 29,30-,45 and 31,70-,85.
32,00	51,00	19,00	CM							

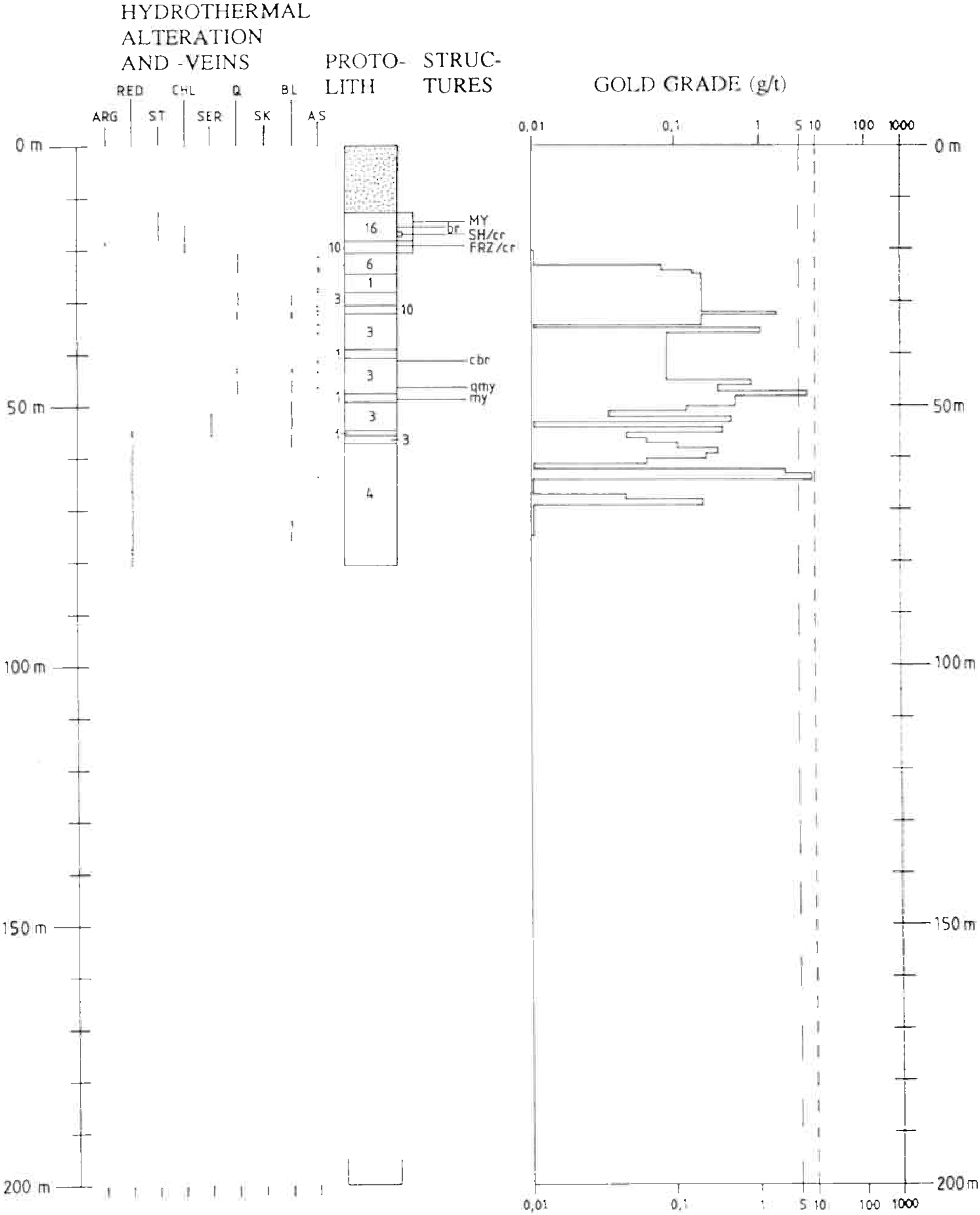
LITHOLOGIES: A: = amphibolite; ABGN = dark grey amphibole-biotite gneiss; BAG = dark grey biotite-rich anatectic granite; BGN = dark grey biotite gneiss; CGN = greenish calc-silicate gneiss; CL = coreloss; CM = cores missing; CSCH = calcareous schist; GQM = dark grey biotite-quartz monzonite; GGO = grey granodioritic orthogneiss; GTG = grey medium-grained two-mica granite; HTG = hybrid pinkish grey medium-grained two-mica granite; IB = intrusion breccia; LG = leucocratic granite; M = calcite marble; MBGN = migmatitic biotite gneiss; MD = dark grey monzodiorite; MSCH = micaschist/-gneiss; OB/CL = overburden and/or coreloss in surface weathered rocks; P = pegmatite and pegmatitic granite; Q = hydrothermal quartz-vein or -lens; SK = skarn-altered marble. Prefixes: B- = bleached; BR- = brecciated; CT- = cataclastic; CR- = crushed; G- = garnetiferous; H- = heterogeneous; i.e. strong interbanding with other lithologies; HA- = hydrothermally altered; MY- = mylonitic; P- = pink; PP- = porphyritic; SH- = semiductilly sheared; W- = white to greyish white.

DDH: 16

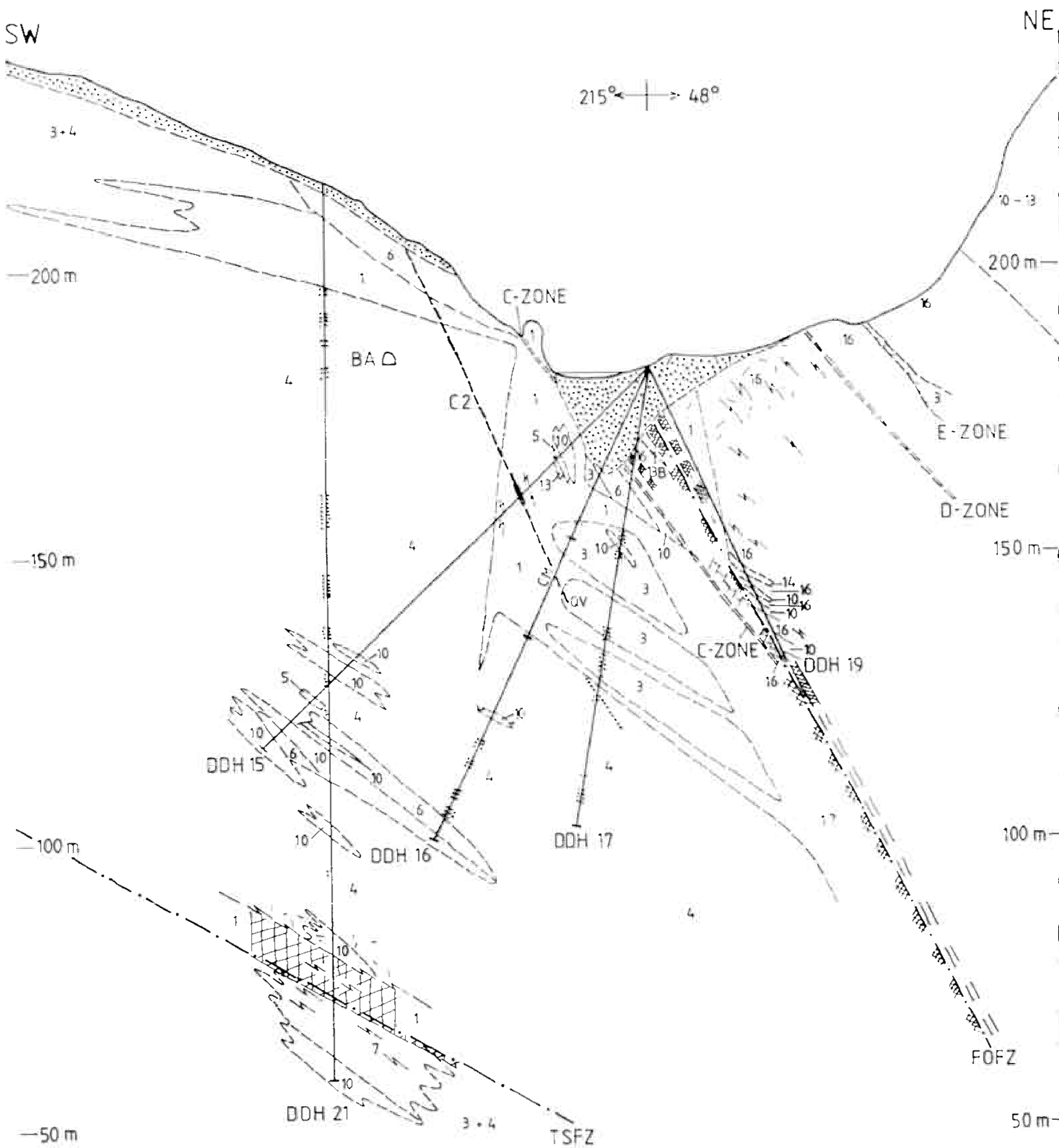
DEPTH (metres)		LENGTH	LITHOLOGY	MEASURED STRUCTURES			ORE MINERALIZATION			PETROGRAPHY
From	To			Type	Angle w. core	Depth	From	To	Type	
51,00	65,25	14,25	HTG					52,65 65,25	1 mm aspy. + py. vein with 5 cm envelope of bleached granite. 5 cm q. vein with py. diss. in 5 mm chlorite vein at the granite contact.	Moderately bleached (1-5 cm zones) pink to grey TG cut by thin pink and white aplite veins (1-3 cm) and thicker dykes (54,90-55,15; 58,10-,30 and 62,80-63,75). Pegmatite with up to 10 mm sericite alteration zones at 63,25-,65. Scattered thin sericite alteration zones, 5-50 mm q. veins (abundant at 53,10-54,50) and chlorite veinlets.
65,25	66,55	1,30	A	FL	75°	66,30				Fine-grained amphibolite with 0,1- 1 x 2 - 8 mm² porphyritic hornblende. Dykes of pinkish grey HTG at 65,25-,60 and 66,20-,25. Also other thin 0,5-3 cm HTG veins.
66,55	85,50	18,95	HTG	FL " LB	75° 60° 50°	70,30 70,95 71,15				Pinkish grey medium-grained HTG with variable density of bleached biotite-free zones (1-5 cm). High density at 71,15-72,00; 74,50-76,10; 79,85-81,70 and 83,50-85,50. It contains inclusions of amphibolite (69,05-,80 and 70,25-71,15), GQM (72,25-,30) and some 1-5 cm MD inclusions near the lower contact. The rocks are cut by dykes of pink aplite (72,00-,25 and 82,95-83,50) and pegmatite (74,05-,15; 76,40-,60 and 84,20-,40). The granites contain scattered stilbite-coated fissures and 1-10 mm q. veins. Chlorite alteration occurs along the lower contact at 85,30-85,50.
85,50	89,00	3,50	MD	Fl " "	70° 60° 60°	86,65 87,60 87,75				Medium-grained and variably foliated monzodiorite with fine-grained amphibolitic zone at 86,35-,85. More strongly foliated at 86,60-88,00. Greyish green chlorite alteration at the upper contact down to 85,75 and at 86,90-87,25 and 87,80-88,20.
89,00	90,00	1,00	A	FL "	50° 60°	89,55 89,95				Fine-grained amphibolite partly with porphyritic hornblende (0,5 x 2 - 5 mm²) cut by GQM dykes at 89,25-,35 and 89,65-,70. The MD along the latter dyke is chlorite-altered in a 10 cm wide zone.

STRUCTURES: BV = breccia vein; FL = foliation; LB = lithological boundary; LL = metamorphic banding and/or primary lithological layering; MY = mylonite foliation; SP = semiductile shear plane; V = mineral veins with prefixes: AN- = ankerite; CA- = calcite; CHL- = chlorite; MY- = mylonitic; Q- = quartz; SR- = sericite; ST- = stilbite.

SUMMARY CORELOG-DIAGRAM: DDH 17



PROFILE: DDH 15, 16, 17, 19 & 21



DRILLHOLE No.: 17 AZIMUTH: 215° INCLINATION: 80° LENGTH: 80,65 m Horiz.: 14,00 m Vert.: 79,40 m CORE DIM.: 36 mm
LOCATION: C-ZONE
COMPANY: A/S SULFIDMALM NGO-COORD.:Y: -19324,0 X: 798883,0 ZONE: D ALTITUDE: 182,0 m.a.s.l.
YEAR: 1981 UTM-COORD.,E: 397240 N: 7229310 ZONE: 33

DEPTH (metres)		LENGTH	LITHOLOGY	MEASURED STRUCTURES			ORE MINERALIZATION			PETROGRAPHY
From	To			Type	Angle w. core	Depth	From	To	Type	
0,00	12,70	12,70	OB/CL							
12,70	18,10	5,40	MY-M	FL MY " FL MY " " "	10° 50° 30° 45° 50° 30° 60° 40°	12,95 13,25 14,40 14,90 15,35 17,50 17,95 18,05				Finely colour- and calc-silicate-banded (1-30 mm) mylonitic marble (white, grey and bluish) with thicker zones of calc-silicate gneiss (12,70-13,00; 14,60-15,15) and amphibolite (17,80-18,10) with thin CGN and marble bands. The banded marble is cut by strongly chlorite-veined pink aplitic LG dykes (13,00-13,15; 17,50-,80) becoming greyish green and chlorite rich where brecciation (15,35-15,70) and semi-brittle shearing (16,50-17,10) have occurred. Dyke of chlorite-altered and crushed (16,20-,50) GTG is found at 15,90-16,50. The marble contains many 1-15 mm red stilbite veins.
18,10	20,40	2,40	A	FL	50°	19,90				Strongly fractured amphibolite and dykes of pink to greenish pink aplitic LG (18,20-,55 and 19,00-,65). The dykes contain a dense network of 1-2 mm chlorite veins and locally also numerous q. veinlets. Strong fragmentation at 19,45-,85 where a clay gouge is found along a crush zone at 18,55-19,00.

LITHOLOGIES: A: = amphibolite; ABGN = dark grey amphibole-biotite gneiss; BAG = dark grey biotite-rich anatectic granite; BGN = dark grey biotite gneiss; CGN = greenish calc-silicate gneiss; CL = coreloss; CM = cores missing; CSCH = calcareous schist; GQM = dark grey biotite-quartz monzonite; GGO = grey granodioritic orthogneiss; GTG = grey medium-grained two-mica granite; HTG = hybrid pinkish grey medium-grained two-mica granite; IB = intrusion breccia; LG = leucocratic granite; M = calcite marble; MBGN = migmatitic biotite gneiss; MD = dark grey monzodiorite; MSCH = micaschist/-gneiss; OB/CL = overburden and/or coreloss in surface weathered rocks; P = pegmatite and pegmatitic granite; Q = hydrothermal quartz-vein or -lens; SK = skarn-altered marble. Prefixes: B- = bleached; BR- = brecciated; CT- = cataclastic; CR- = crushed; G- = garnetiferous; H- = heterogeneous; i.e. strong interbanding with other lithologies; HA- = hydrothermally altered; MY- = mylonitic; P- = pink; PP- = porphyritic; SH- = semiductilly sheared; W- = white to greyish white.

DDH: 17

DEPTH (metres)		LENGTH	LITHO-LOGY	MEASURED STRUCTURES			ORE MINERALIZATION			PETROGRAPHY
From	To			Type	Angle w. core	Depth	From	To	Type	
20,40	24,60	4,20	MD					21,10 21,20 21,50 23,50 23,95 24,00 24,10	2-10 mm aspy. schlieren in 20 mm q. vein. Aspy. diss in 2 mm q. vein. A few aspy. grains in q. vein. Fine-gr. py. along the margin of q. vein. 5 mm aspy. vein. Q. vein with aspy. diss. and veinlets. 7 mm aspy. vein.	Medium-grained monzodiorite with many 1-5 mm q. veins. Below 24,30 it is cut by many 1-2 cm veins of white LG.
24,60	27,80	3,20	W-LG	V "	30° 60°	26,40 26,50	27,15	27,35	Aspy. on a few chl. ± q. veins (5 mm).	White fine- to medium-grained LG cut by a few 10 cm pegmatite dykes. It contains inclusions of MD (26,65-,70 and 27,35-,40) and moderately bleached GTG (26,75-27,10). The LG carries a sparse set of sericite alteration zones (10-20 mm), locally forming thicker zones (25,05-,45). Sheeted vein system of q. - chl. veins occurs at 26,40-,50 and 27,15-,35.
27,80	30,60	2,80	B-GTG					27,90	1 mm aspy. vein.	Light grey medium-grained TG with abundant q. veins (1-20 mm) carrying bleached envelopes. Strong bleaching and q. veining at 28,55-30,60. Darker grey bleached GQM at 27,80-28,05.
30,60	31,80	1,20	A					30,75 31,70	Aspy. diss. in q. vein. Py. diss. and veinlet in 20 mm q. vein.	Amphibolite with a few 5 mm q. veins.

STRUCTURES: BV = breccia vein; FL = foliation; LB = lithological boundary; LL = metamorphic banding and/or primary lithological layering; MY = mylonite foliation; SP = semiductile shear plane; V = mineral veins with prefixes: AN- = ankerite; CA- = calcite; CHL- = chlorite; MY- = mylonitic; Q- = quartz; SR- = sericite; ST- = stilbite.

DDH: 17

DEPTH (metres)		LENGTH	LITHOLOGY	MEASURED STRUCTURES			ORE MINERALIZATION			PETROGRAPHY
From	To			Type	Angle w. core	Depth	From	To	Type	
31,80	39,00	7,20	GTG					32,30 34,30 35,85	Aspy. diss. in q. vein. 1 mm aspy. veinlet in q.vein. 1-2 mm aspy. veinlet in aplite vein.	Light grey medium-grained TG with small MD inclusion at 34,20-,50. The granite is strongly bleached in areas with a dense net of q. veins (1-50 mm) and aplite veins, i.e. 31,80-32,90.
39,00	40,60	1,60	W-LG							White aplitic LG with thin pegmatite zones. Inclusions of bleached GTG at 39,15-,30 and 39,60-,80.
40,60	47,55	6,95	GTG	MY	60°	45,25	 46,15	41,25 43,20 46,40	Aspy.-cemented crackle breccia (2 cm) in granite. 1-2 mm aspy. veins. Several 1-20 mm aspy. veins in mylonitic q. vein.	Light grey medium-grained TG being cut by white pegmatite (43,90-44,55) and thin aplite veins. Strong bleaching occurs in zones with high density of q. veins, i.e. 42,80-43,20 and 45,15-47,55. These zones also contain scattered fracture-bound sericite alteration (5-10 mm). Thin mylonite zones are developed along some of the q. veins. A few chlorite veinlets are also found.
47,55	49,05	1,50	W-LG	MY	80° 85°	48,60 48,85				White fine- to medium-grained LG with a few 2-10 cm mylonite zones. It contains a few q. veins and sericite alteration zones (< 10 mm).
49,05	54,50	5,45	B-GTG							Light grey to white, medium-grained and strongly bleached GTG with diffusely delineated domains with biotite. It is cut by aplite veins with associated 1-10 cm sericite alteration zones, both in aplite and adjacent bleached granite. Sericite alteration zones abundant below 50,80. Small dark biotite rich inclusions at 51,85-,87 and 52,75-,95. Scattered chlorite fissures and 1-10 mm q. veins.
54,50	55,40	0,90	H-P-LG							Pervasively sericite-altered pink aplitic LG.
55,40	57,00	1,60	B-GTG							Strongly bleached light grey TG with a few muscovite-rich zones. Some scattered chlorite and q. veins.

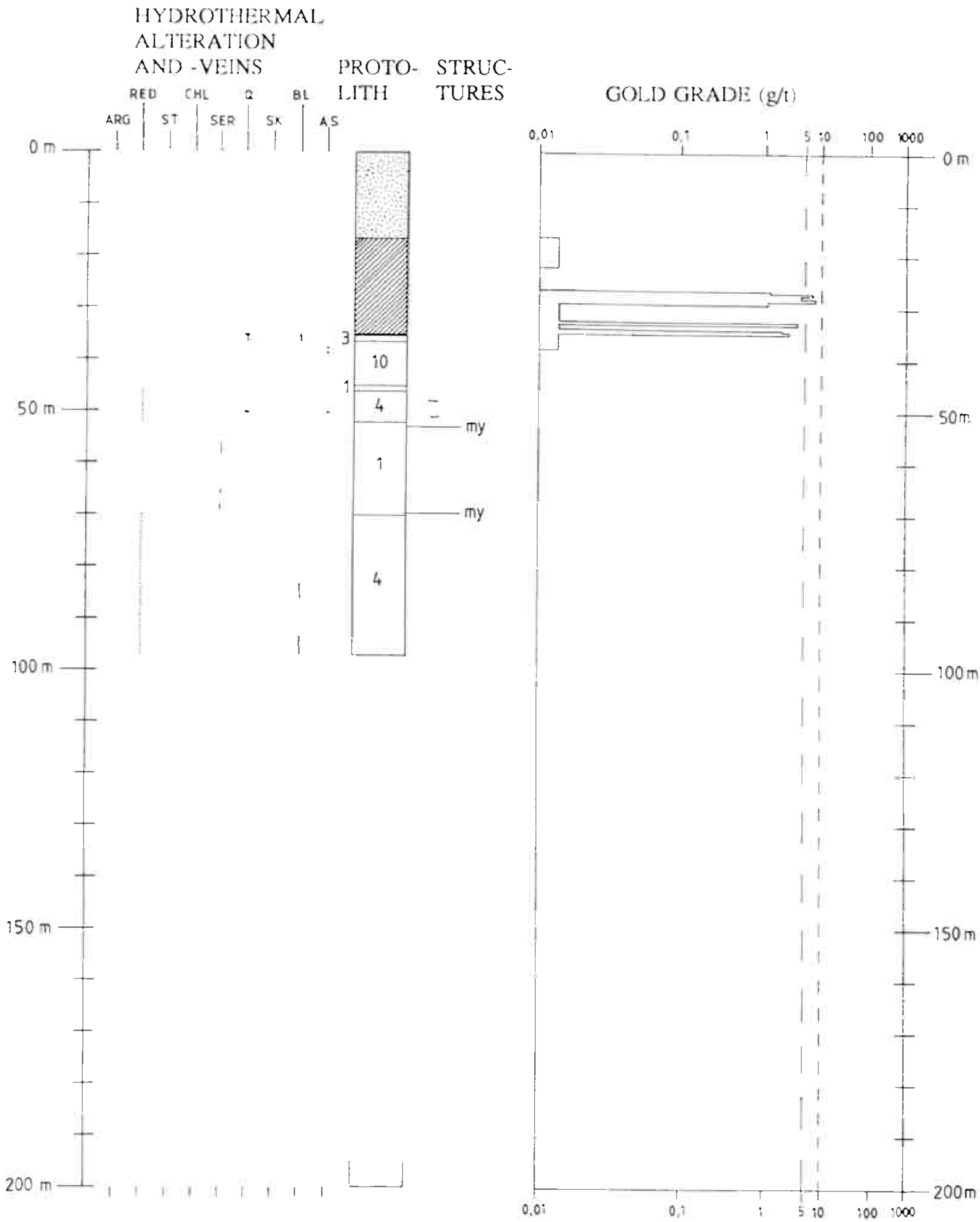
STRUCTURES: BV = breccia vein; FL = foliation; LB = lithological boundary; LL = metamorphic banding and/or primary lithological layering; MY = mylonite foliation; SP = semiductile shear plane; V = mineral veins with prefixes: AN- = ankerite; CA- = calcite; CHL- = chlorite; MY- = mylonitic; Q- = quartz; SR- = sericite; ST- = stilbite.

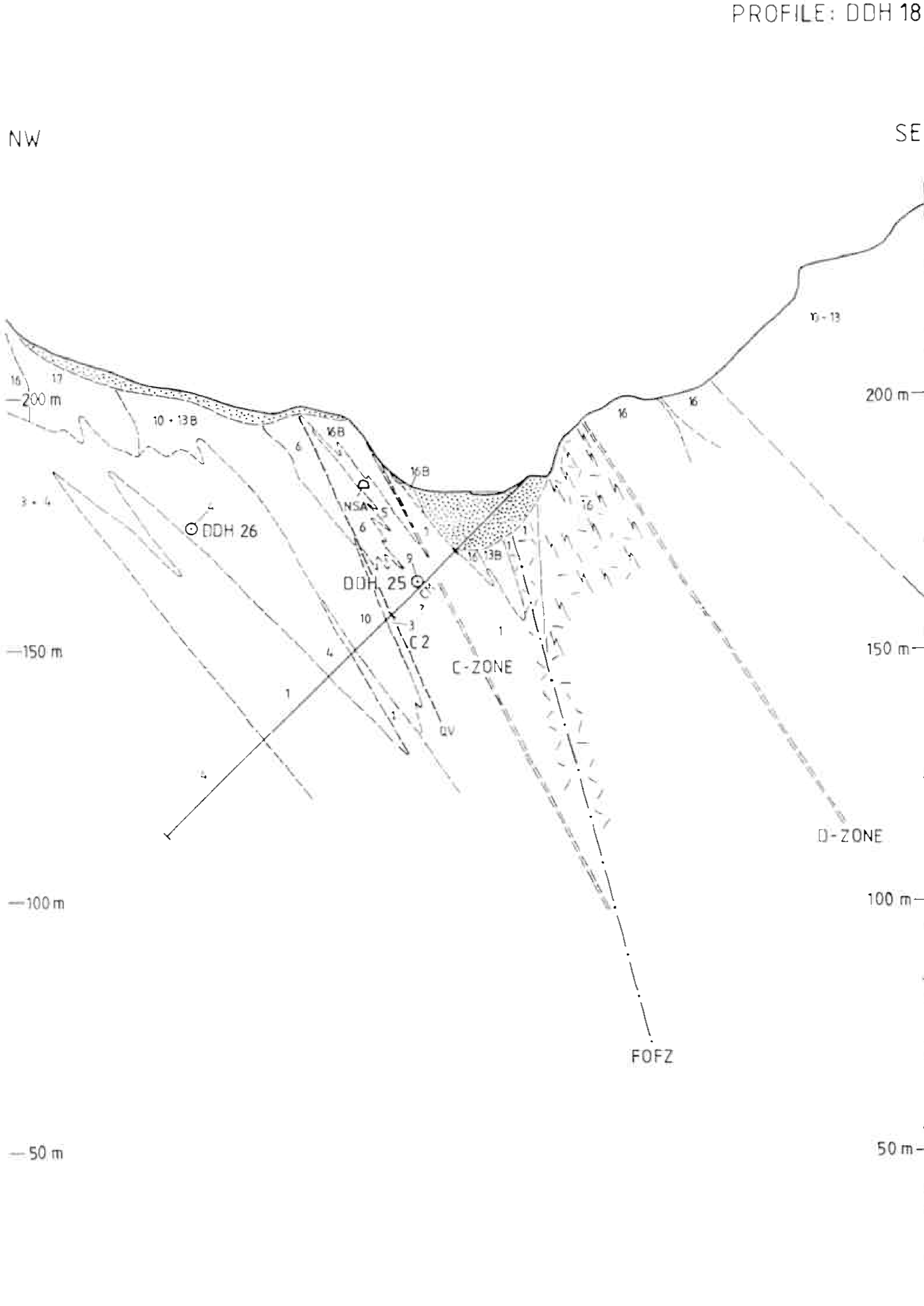
DDH: 17

DEPTH (metres)		LENGTH	LITHOLOGY	MEASURED STRUCTURES			ORE MINERALIZATION			PETROGRAPHY
From	To			Type	Angle w. core	Depth	From	To	Type	
57,00	80,65	23,65	HTG	FL "	35° 45°	77,70 77,90		63,45	1 mm zone with diss. aspy. at margin of q. vein.	Pink to pinkish grey medium-grained TG containing inclusions of amphibolite (71,45-72,35 and 77,60-78,00) and GQM (78,60-,85 and 80,30-,40). The granite is cut by thin aplite and pegmatite veins, the thickest occurring at 59,70-,95 (Ap.), 63,30-,50 (Ap), 72,15-,25 (P) and 78,95-79,25 (P). The granite shows variable zonal (1-10 cm) bleaching, strong at 66,65-68,10; 72,35-,85 and 74,10-76,25. It contains scattered veins of q.-tourmaline, q., q.-musc. and stilbite. Some of the q. veins are affected by ductile shearing.

STRUCTURES: BV = breccia vein; FL = foliation; LB = lithological boundary; LL = metamorphic banding and/or primary lithological layering; MY = mylonite foliation; SP = semiductile shear plane; V = mineral veins with prefixes: AN- = ankerite; CA- = calcite; CHL- = chlorite; MY- = mylonitic; Q- = quartz; SR- = sericite; ST- = stilbite.

SUMMARY CORELOG-DIAGRAM: DDH 18





PROFILE: DDH 18
NW
SE
200 m
150 m
100 m
50 m
10 - 13B
16B
DDH 26
DDH 25
INSA
C 2
QV
C-ZONE
D-ZONE
FOFZ

DRILLHOLE No.: 18 AZIMUTH: 295° INCLINATION: 45° LENGTH: 97,00 m Horiz.: 68,60 m Vert.: 68,60 m CORE DIM.: 36 mm
LOCATION: C-ZONE
COMPANY: A/S SULFIDMALM NGO-COORD.:Y: -19324,0 X: 798883,0 ZONE: D ALTITUDE: 182,0 m.a.s.l.
YEAR: 1981 UTM-COORD.,E: 397240 N: 7229310 ZONE: 33

DEPTH (metres)		LENGTH	LITHOLOGY	MEASURED STRUCTURES			ORE MINERALIZATION			PETROGRAPHY
From	To			Type	Angle w. core	Depth	From	To	Type	
0,00	16,60	16,60	OB/CL							
16,60	35,00	18,40	CM							
35,00	35,30	0,30	Q							Milky quartz-vein.
35,30	36,50	1,20	B-GTG							Medium-grained strongly bleached GTG with network of 1-10 cm q. veins. Strong veining at 35,30-,70. Inclusion of GQM at 35,70-36,10. Pegmatite at 36,35-,55.
36,50	45,00	8,50	A	FL	30°	41,90		37,95 38,80	Aspy. veinlet in 20 mm q. vein. Py. aggr. in 20 mm q. vein.	Fine- to medium-grained amphibolite cut by pinkish grey medium-grained HTG dykes at 37,05-,35; 42,25-,55; 42,70-43,35 and 44,15-,75. Some of the dykes contain small domains of GTG and GQM and are locally bleached. Also some thin aplite veins.
45,00	46,00	1,00	W-LG							White medium-grained biotite-spotted LG with more fine-grained aplitic veins. The LG contain some sericite alteration zones (5-20 mm).
46,00	52,00	6,00	HTG	FL	50°	48,50	50,00	50,20	Several 1-5 mm aspy. veins in q. vein.	Medium-grained pinkish grey HTG with moderate zonal bleaching. It shows a faint foliation locally. It is cut by thin (5-20 cm) dykes of white aplite and pegmatites, the latter dominant at 46,50-47,70. The HTG contains small domains of bleached GTG and GQM at 50,95-51,30. Q. vein at 49,95-50,25. Scattered 1 mm stilbite veins with brick-red envelopes.

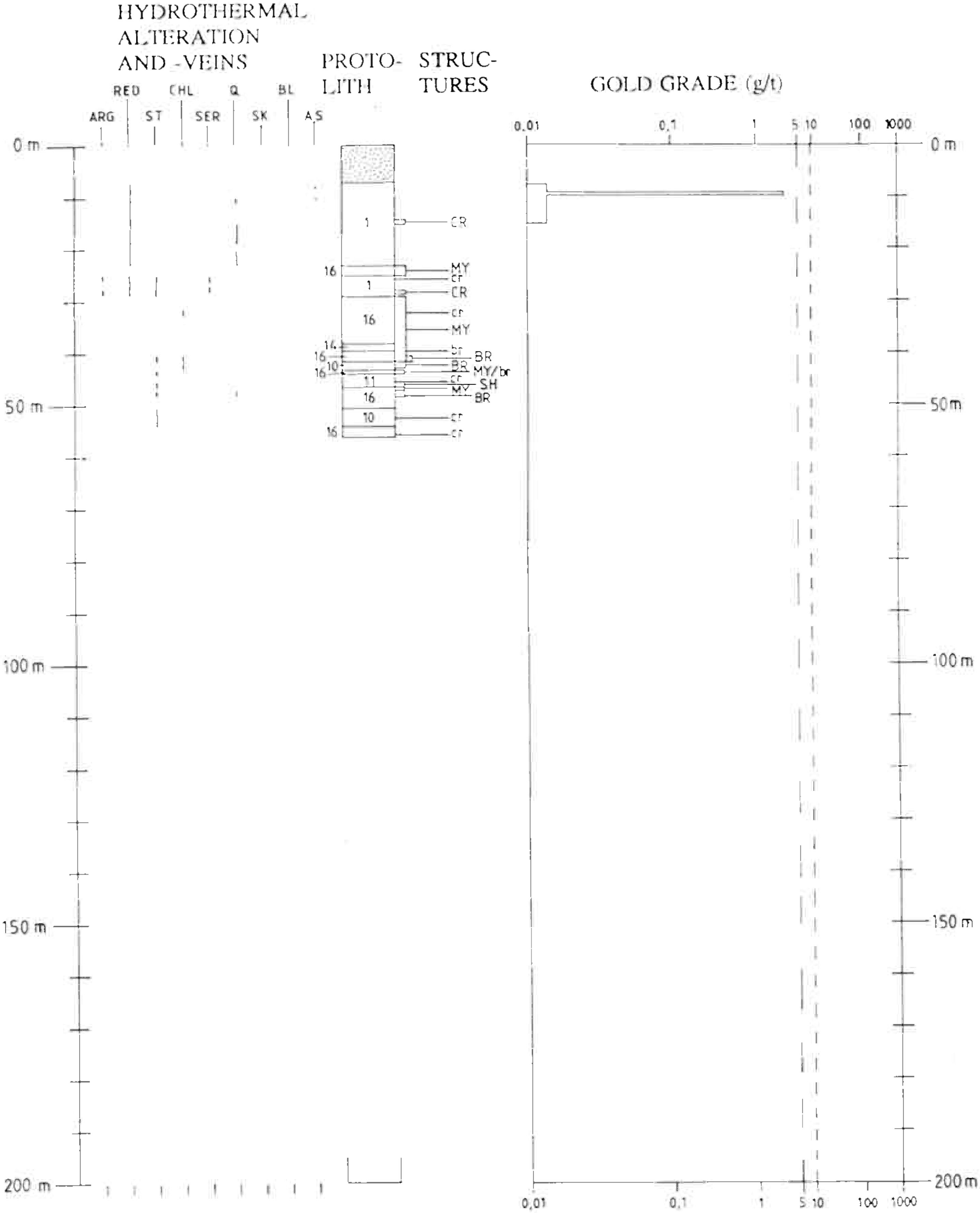
LITHOLOGIES: A: = amphibolite; ABGN = dark grey amphibole-biotite gneiss; BAG = dark grey biotite-rich anatectic granite; BGN = dark grey biotite gneiss; CGN = greenish calc-silicate gneiss; CL = coreloss; CM = cores missing; CSCH = calcareous schist; GQM = dark grey biotite-quartz monzonite; GGO = grey granodioritic orthogneiss; GTG = grey medium-grained two-mica granite; HTG = hybrid pinkish grey medium-grained two-mica granite; IB = intrusion breccia; LG = leucocratic granite; M = calcite marble; MBGN = migmatitic biotite gneiss; MD = dark grey monzodiorite; MSCH = micaschist/-gneiss; OB/CL = overburden and/or coreloss in surface weathered rocks; P = pegmatite and pegmatitic granite; Q = hydrothermal quartz-vein or -lens; SK = skarn-altered marble. Prefixes: B- = bleached; BR- = brecciated; CT- = cataclastic; CR- = crushed; G- = garnetiferous; H- = heterogeneous; i.e. strong interbanding with other lithologies; HA- = hydrothermally altered; MY- = mylonitic; P- = pink; PP- = porphyritic; SH- = semiductilly sheared; W- = white to greyish white.

DDH: 18

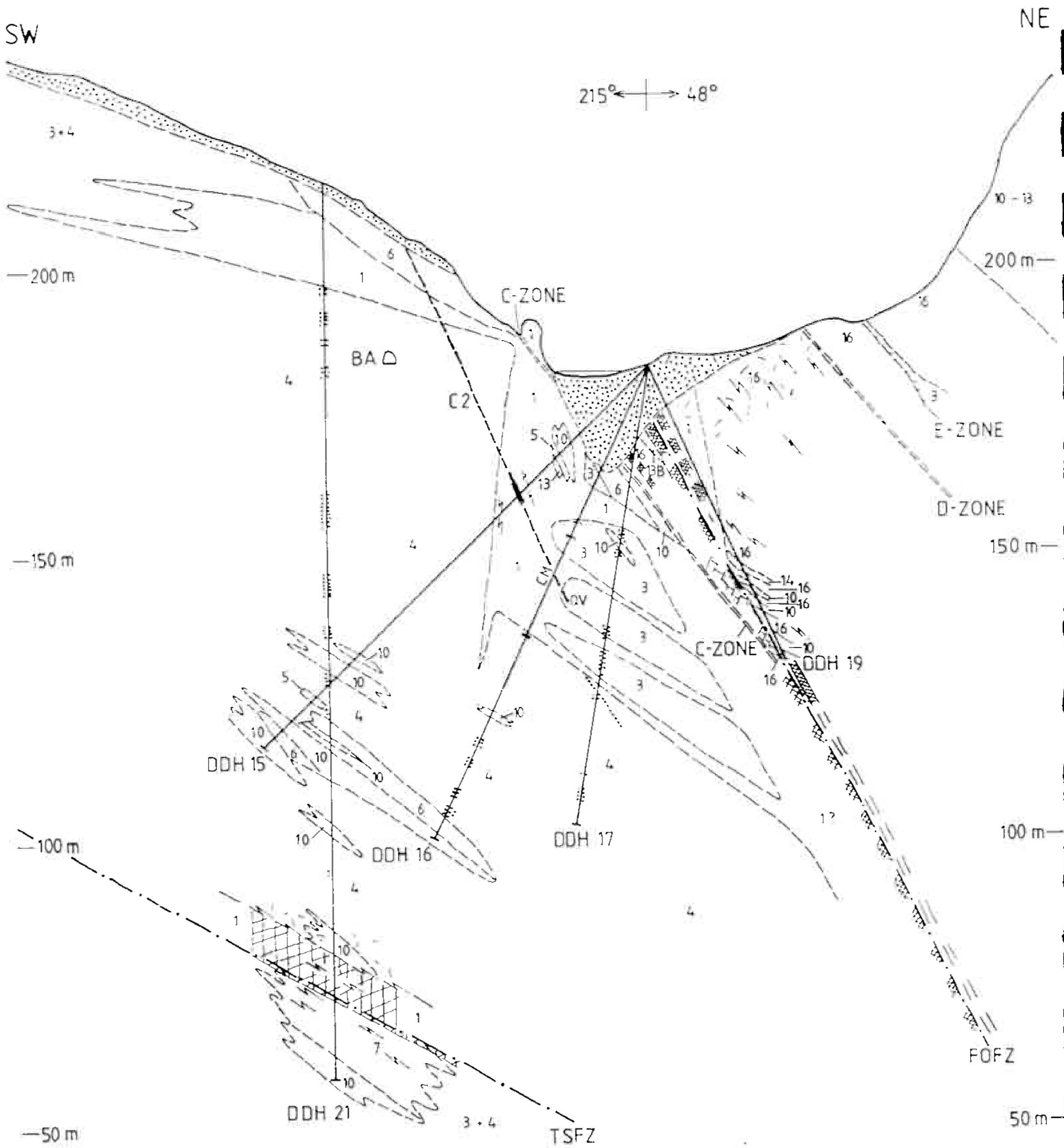
DEPTH (metres)		LENGTH	LITHOLOGY	MEASURED STRUCTURES			ORE MINERALIZATION			PETROGRAPHY
From	To			Type	Angle w. core	Depth	From	To	Type	
52,00	70,25	18,25	W-LG	MY "	60° 50°	69,75 69,90				White massive and medium-grained LG containing variable density of 1-10 mm biotite-aggregates except at 57,10-58,30. Inclusions of dark grey sericite-altered (10-20 mm zones) biotite-quartz monzonite at 56,40-,65 and with several small ones at 68,15-,65. Mylonite zones at 53,10 and 69,70-70,10. Pervasive sericite-altered zones at 56,95-57,30; 64,70-65,10; 65,15-,35 and 66,10-,25. Elsewhere scattered 5-30 mm zones, abundant at 68,20-,80. Scattered 1-10 cm pegmatite veins, 10-30 mm glassy sheared q. veins and 1-5 mm stilbite ± calcite veins surrounded by brick-red envelopes (up to 5 cm).
70,25	97,00	26,75	HTG							Pinkish grey to grey two-mica granite showing zonal bleaching with variable intensity. Strong bleaching in areas with abundant pink aplitic LG dykes and veins, e.g. 70,25-,40; 71,50-,90; 78,60-,95; 83,60-86,00 and 94,50-97,00. Thicker aplite dykes some containing fracture-bound sericite alteration, at 71,05-,50; 74,40-,60 and 84,35-,95. Also some scattred q. veins and stilbite veins.

STRUCTURES: BV = breccia vein; FL = foliation; LB = lithological boundary; LL = metamorphic banding and/or primary lithological layering; MY = mylonite foliation; SP = semiductile shear plane; V = mineral veins with prefixes: AN- = ankerite; CA- = calcite; CHL- = chlorite; MY- = mylonitic; Q- = quartz; SR- = sericite; ST- = stilbite.

SUMMARY CORELOG-DIAGRAM: DDH 19



PROFILE: DDH 15,16,17,19 & 21



DRILLHOLE No.: 19 AZIMUTH: 48° INCLINATION: 66° LENGTH: 56,25 m Horiz.: 22,90 m Vert.: 51,40 m CORE DIM.: 36 mm
LOCATION: D-ZONE
COMPANY: A/S SULFIDMALM NGO-COORD.:Y: -19324,0 X: 798883,0 ZONE: D ALTITUDE: 182,0 m.a.s.l.
YEAR: 1981 UTM-COORD.,E: 397240 N: 7229310 ZONE: 33

DEPTH (metres)		LENGTH	LITHOLOGY	MEASURED STRUCTURES			ORE MINERALIZATION			PETROGRAPHY
From	To			Type	Angle w. core	Depth	From	To	Type	
0,00	7,00	7,00	OB/CL							
7,00	22,90	15,90	P-LG					7,90 10,20	Aspy.-coated fissure. " " " "	Pink fine- to medium-grained leucogranite with abundant q.-veins, -veinlets, -lenses and irregular silification at 10,20-11,20; 15,00-19,20 and 20,00-22,90. Crush zone with roch flour at 14,30-15,05. The granite carries scattered 1-5 mm stilbite and chlorite veins.
22,90	25,25	2,35	MY-M	MY " "	20° 30° 45°	23,60 24,30 25,15				Finely calc-silicate- and colour-banded bluish grey mylonitic calcite marble, often with necked calc-silicate augen (1-5 x 15 mm²). It is cut by non-mylonitic pink LG dykes at 23,90-24,10 and 24,45-,95. The latter is q. rich and contains scattered stilbite-coated fissures.
25,25	28.95	3,70	P-LG							Pink fine- to medium-grained leucogranite cut by clay gouge zones. It contains an inclusion of dark clinoyroxene-garnet skarn at 26,75-27,00. It shows fracture-bound sericite alteration, pervasive at 25,70-26,10 and 27,50-,55. Clay gouge zones at 25,50-,65 and 27,90-28,50. The latter follows a low angle q.-muscovite vein with muscovite-rich envelopes. In addition occur 1-5 mm stilbite veins and some chlorite veinlets.
28,95	38,10	9,15	MY-M	MY " " " "	20° 30° 30° 0° 0°	29,15 30,80 32,85 34,80 37,85				Finely banded (1-20 mm) bluish grey and mylonitic calcite marble with an amphibolite band at 29,80-30,00. It is cut by pink q.-rich LG dykes at 30,00-,30; 30,95-31,35; 31,80-32,65; 33,40-,70; 35,80-36,30 and 36,75-,90. Some of the dykes are strongly fractured with abundant stilbite veins (30,00-,30) and chlorite-coated fissures (31,80-32,65). The LG dyke is cut by a crush zone at 32,20-,50. Also the marble contains some stilbite veins.

LITHOLOGIES: A: = amphibolite; ABGN = dark grey amphibole-biotitegneiss; BAG = dark grey biotite-rich anatectic granite; BGN = dark grey biotitegneiss; CGN = greenish calcislicate-gneiss; CL = coreloss; CM = cores missing; CSCH = calcareous schist; GQM = dark grey biotitegranite; GGO = grey granodioritic orthogneiss; GTG = grey medium-grained two-mica-granite; HGN = heterogeneous sequence of strongly interbanded gneisses; HTG = hybrid pinkish grey medium-grained two-mica-granite; IB = intrusion breccia; LG = leucocratic granite; M = calcite marble; MBGN = migmatitic biotitegneiss; MD = dark grey monzodiorite; MSCH = micaschist/-gneiss; OB/CL = overburden and/or coreloss in surface weathered rocks; P = pegmatite and pegmatitic granite; Q = hydrothermal quartz-vein or -lens; SK = skarn-altered marble. Prefixes: B- = bleached; BR- = brecciated; CC- = cataclastic; CR- = crushed; G- = garnetiferous; H- = heterogeneous; i.e. strong interbanding with other lithologies; HA- = hydrothermally altered; MY- = mylonitic; P- = pink; P- = porphyritic; SH- = semiductilly sheared; W- = white to greyish white.

DDH: 19

DEPTH (metres)		LENGTH	LITHOLOGY	MEASURED STRUCTURES			ORE MINERALIZATION			PETROGRAPHY
From	To			Type	Angle w. core	Depth	From	To	Type	
38,10	39,60	1,50	MY-CSCH	SP "	40° 35°	38,80 39,35				Green, strongly foliated and sheared calcareous schist with scattered calcite- and/or stilbite veins (1 mm).
39,60	41,55	1,95	BR-My-M	MY	25°	40,30				Greenish grey mylonitic marble cut by breccia and crush zones. Stilbite cemented breccia with fragments of q. veined marble at 39,60-,70. Breccia with 1-10 mm fragments of marble in matrix of stilbite and chlorite at 40,80-41,10. Crush and fracture zones at 40,75-,80 and 41,25-,30.
41,55	42,90	1,35	BR-A							Brownish green chlorite-?ankerite? altered amphibolite with calc-silicate gneiss bands. It is cut by breccia zones at 41,55-42,10 and 42,35-,70. The former contain 0,5-20 mm black fragments of ultracataclasite together with fragments of quartz-veins.
42,90	44,10	1,20	MY-M	MY	0°	43,50				Grey mylonitic calcite marble with red stilbite breccia at 43,60-,80.
44,10	46,50	2,40	ABGN	SP	30°	46,30				Dark amphibole-biotite gneiss and -schist cut by crush zone at 44,10-45,70. Sheared schistose variety with brownish green chlorite ?ankerite? alteration and stilbite- and calcite-veins is found at 45,70-46,50.
46,50	50,40	3,90	BR-M	MY LL " " "	20° 0° 20° 30° 10°	46,95 48,00 48,20 48,85 50,30				Bluish grey banded calcite marble. It is mylonitic and finely banded down to 47,00 where it gradually changes into a more massive and colour-banded type with a brownish calcite-veined schist band at 48,30-,70. The marble is cut by brown to dark brownish red breccia zones with 1-30 mm fragments of marble, schist and hydrothermal quartz (47,00-,75 and 48,25-,30). The marble is cut by some thin aplite veins e.g. 49,55-,70.
50,40	54,25	3,85	A	LB	50°	54,25				Brownish green chlorite- ? ankerite? altered amphibolite cut by pink aplitic LG dykes (50,85-,88; 51,15-,25; 52,25-,70 and 52,85-53,00). The latter carries a crush zone at 52,80-,50. The amphibolite contains abundant veins (1-10 mm) of stilbite and/or calcite whereas the granite dykes carries chlorite crackle breccias.

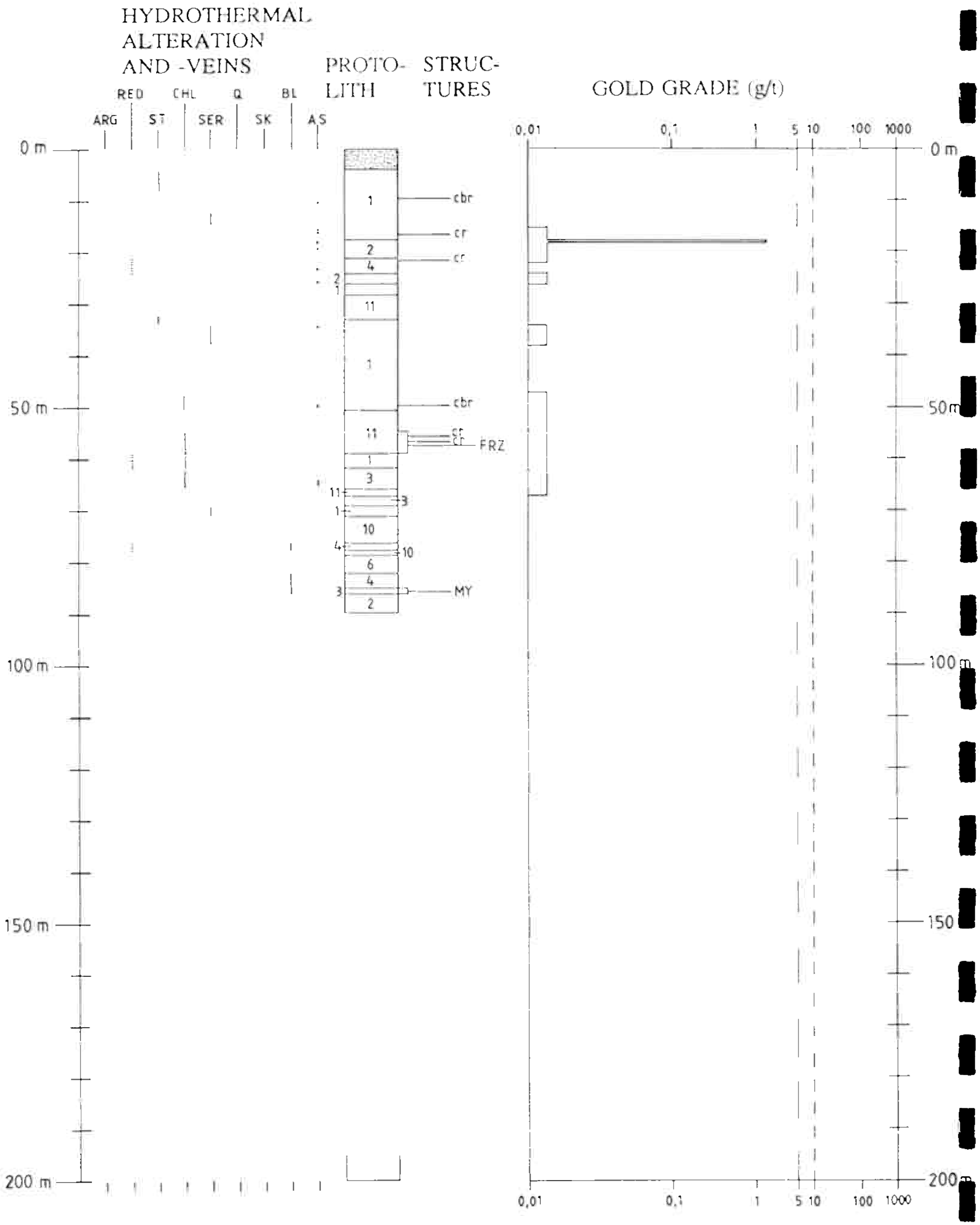
STRUCTURES: BV = breccia vein; FL = foliation; LB = lithological boundary; LL = metamorphic banding and/or primary lithological layering; MY = mylonite foliation; SP = semiductile shear plane; V = mineral veins with prefixes: AN- = ankerite; CA- = calcite; CHL- = chlorite; MY- = mylonitic; Q- = quartz; SR- = sericite; ST- = stilbite.

DDH: 19

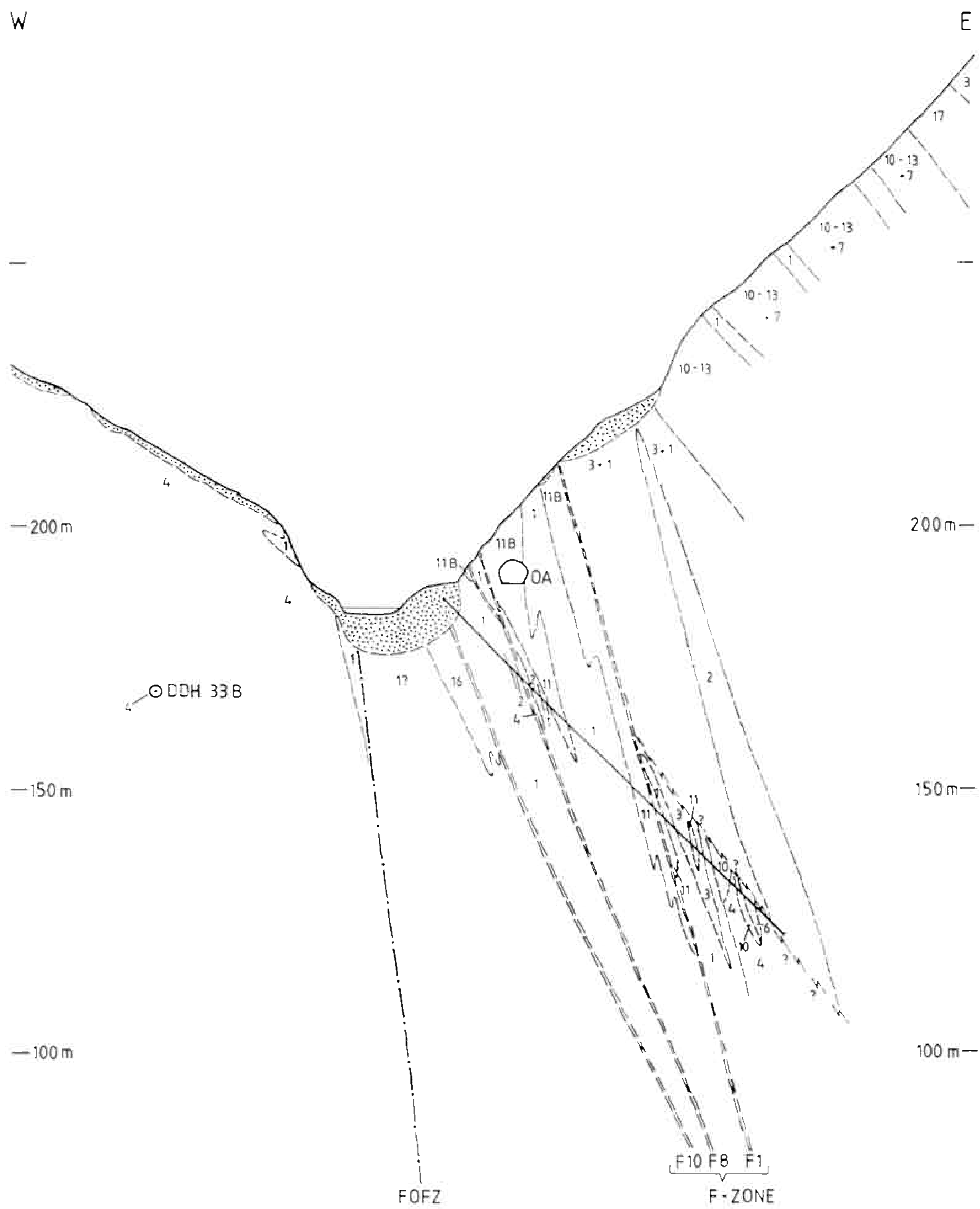
DEPTH (metres)		LENGTH	LITHOLOGY	MEASURED STRUCTURES			ORE MINERALIZATION			PETROGRAPHY
From	To			Type	Angle w. core	Depth	From	To	Type	
54,25	56,25	2,00	M	LL	30°	55,10				Grey massive calcite marble, weakly banded below 55,30 where some 5-15 cm chlorite-altered amphibolite bands occur. One of these is cut by a 3 cm crush zone (55,65).

STRUCTURES: BV = breccia vein; FL = foliation; LB = lithological boundary; LL = metamorphic banding and/or primary lithological layering; MY = mylonite foliation; SP = semiductile shear plane; V = mineral veins with prefixes: AN- = ankerite; CA- = calcite; CHL- = chlorite; MY- = mylonitic; Q- = quartz; SR- = sericite; ST- = stilbite.

SUMMARY CORELOG-DIAGRAM: DDH 20



PROFILE : DDH 20



DRILLHOLE No.: 20 AZIMUTH: 87° INCLINATION: 45° LENGTH: 89,75 m Horiz.: 63,45 m Vert.: 63,45 m CORE DIM.: 36 mm
LOCATION: F-ZONE
COMPANY: A/S SULFIDMALM NGO-COORD.:Y: -19296,0 X: 798817,5 ZONE: D ALTITUDE: 187,0 m.a.s.l.
YEAR: 1981 UTM-COORD..E: 397250 N: 7229240 ZONE: 33

DEPTH (metres)		LENGTH	LITHOLOGY	MEASURED STRUCTURES			ORE MINERALIZATION			PETROGRAPHY
From	To			Type	Angle w. core	Depth	From	To	Type	
0,00	3,70	3,70	OB/CL							
3,70	17,45	13,75	W-LG				10,05	10,10 10,30 15,80 16,25	Some aspy.-coated fissures. Aspy. veinlet. " " " " " "	White, partly biotite-spotted and fine- to medium-grained leucogranite with inclusions of amphibolite (4,85-,95; 6,95-7,25; 8,35-9,55; 14,90-15,20 and 16,60-,90 (small schlieren)). It contains scattered 1-10 mm sericite alteration zones becoming wider and more abundant at 12,30-14,50. It is cut by thin pegmatite veins (1-5 cm) and a crush zone of rock flour at 16,55-,65. Stilbite-coated fissures are common above 8,00. Some scarce 10 mm q.-veins and a chlorite crackle breccia (9,65).
17,45	21,05	3,60	P					17,95 19,25	5 mm aspy. lens. Some diss. aspy. xx.	Pink and white pegmatite with some small (1-2 cm) mafic inclusions. Some 10-50 mm sericite alteration zones.
21,05	23,80	2,75	HTG				23,00	23,20	Some 1-2 mm aspy. veinlets.	Pinkish grey medium-grained two-mica granite with 1-5 cm zonal bleaching reaching moderate intensity at 22,50-23,80. Some of the bleached zones represent envelopes around scattered 3-10 mm q. veins. Also some fractures with sericite alteration. Red crush zone at 21,35-,45.
23,80	25,90	2,10	P					25,70	5 x 30 mm^2 aspy. aggr.	White to pink pegmatite with some small inclusions of GTG. It contains a few fractures with sericite alteration.
25,90	28,30	2,40	W-LG							White, medium-grained and biotite-spotted leucogranite with scattered 3-50 mm sericite alteration zones. Some small inclusions of bleached GTG at 26,50-,65.

LITHOLOGIES: A: = amphibolite; ABGN = dark grey amphibole-biotite gneiss; BAG = dark grey biotite-rich anatectic granite; BGN = dark grey biotite gneiss; CGN = greenish calc-silicate gneiss; CL = coreloss; CM = cores missing; CSCH = calcareous schist; GQM = dark grey biotite-quartz monzonite; GGO = grey granodioritic orthogneiss; GTG = grey medium-grained two-mica granite; HTG = hybrid pinkish grey medium-grained two-mica granite; IB = intrusion breccia; LG = leucocratic granite; M = calcite marble; MBGN = migmatitic biotite gneiss; MD = dark grey monzodiorite; MSCH = micaschist/-gneiss; OB/CL = overburden and/or coreloss in surface weathered rocks; P = pegmatite and pegmatitic granite; Q = hydrothermal quartz-vein or -lens; SK = skarn-altered marble. Prefixes: B- = bleached; BR- = brecciated; CT- = cataclastic; CR- = crushed; G- = garnetiferous; H- = heterogeneous; i.e. strong interbanding with other lithologies; HA- = hydrothermally altered; MY- = mylonitic; P- = pink; PP- = porphyritic; SH- = semiductilly sheared; W- = white to greyish white.

DDH: 20

DEPTH (metres)		LENGTH	LITHOLOGY	MEASURED STRUCTURES			ORE MINERALIZATION			PETROGRAPHY
From	To			Type	Angle w. core	Depth	From	To	Type	
28,30	33,30	5,00	ABGN	LB "	10° 5°	31,85 32,40				Fine- to medium-grained biotite-amphibole gneiss and amphibolite with zones of GGO (28,95-29,15; 29,25-,30; 29,40-,70; 30,80-31,20; 31,40-,45; 31,85-32,25 and 32,40-33,25) and dyke of white LG (33,05-,15). Some red stilbite-calcite veins in GGO at 32,40-33,25.
33,30	50,50	17,20	W-LG					34,65 49,50 49,70	Aspy.-coated fissure. 1 mm q.-aspy. vein in chlorite crackle-breccia. 5 mm q.-aspy. vein in chlorite crackle breccia.	White medium-grained leucogranite with variable density of biotite aggregates and small (1-2 cm) mafic inclusions. The latter is common at 56,65-57,70. Larger inclusions of ABGN at 38,33-,38; 39,20-,40; 41,40-,50; 44,05-,15 and 46,60-,80. 1-50 mm sericite alteration zones are common down to 41,00 and most abundant at 34,00-38,00. It contains scattered 10-20 mm q.-musc.- and stilbite-veins. In addition chlorite veins, veinlets and narrow zones of crackle breccias are common below 47,60. Soot-grey alteration at 46,05.
50,50	58,70	8,20	ABGN							Dark biotite-amphibole gneiss and amphibolite cut by dykes of white to light greyish aplite (e.g. 50,60-,65 and 57,55-,75). The gneiss is more greyish green and chlorite-altered below 54,60 where it also is strongly fractured and cut by crush zones (55,55-,75 and 56,40-,75).
58,70	61,60	2,90	LG							White to pink aplitic LG with 1 cm biotite-bearing schlieren of GTG. It carries a network of chlorite veinlets.
61,60	65,75	4,15	GTG				64,10	64,70	A few 1-5 mm aspy. veinlets.	Light grey, medium-grained TG with abundant veins of white aplitic LG with associated bleached wallrocks (3-10 cm zones). Chlorite veins are widespread. Scattered soot-grey alteration zones.
65,75	66,90	1,15	ABGN							Fine-grained biotite-amphibolite gneiss.

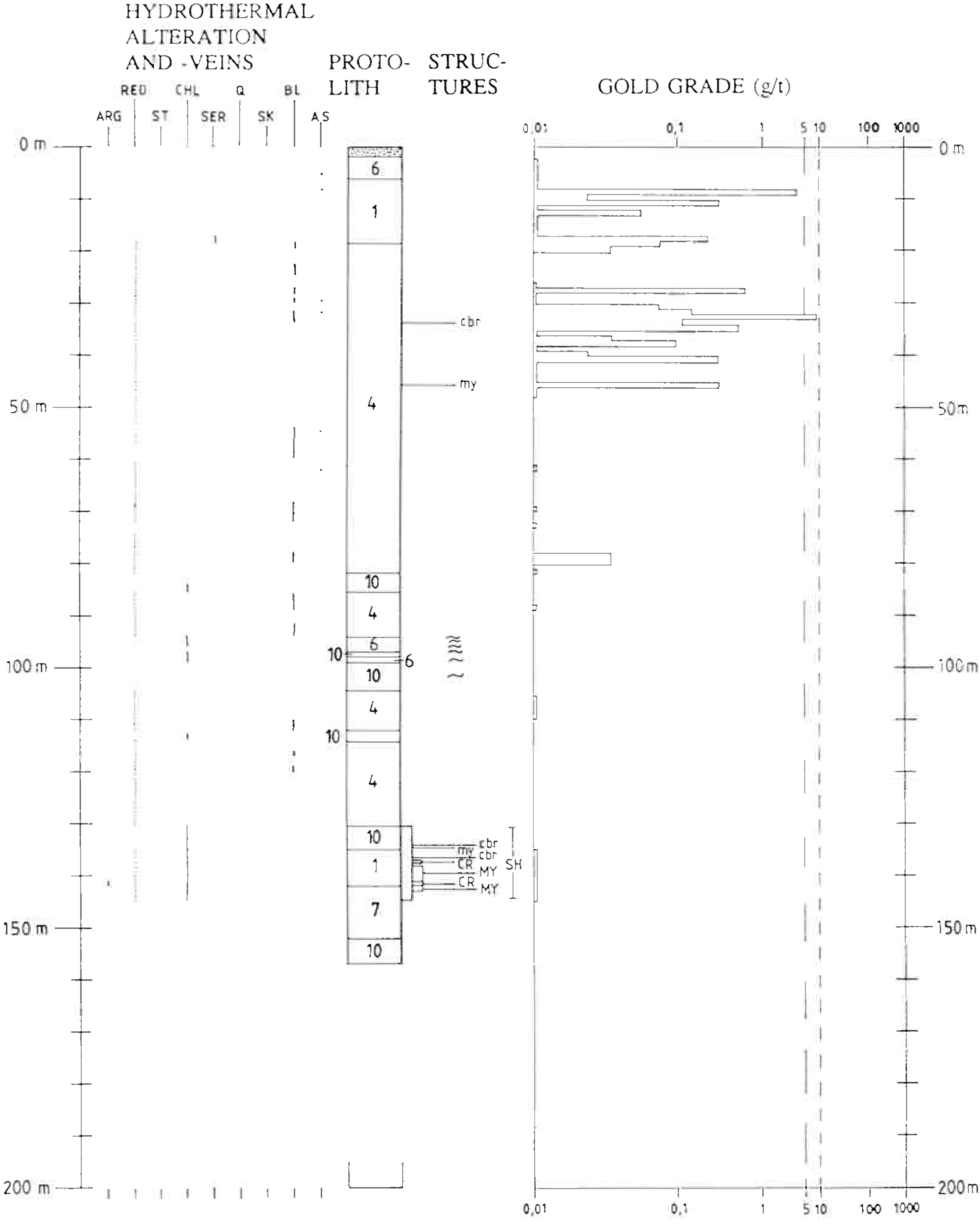
STRUCTURES: BV = breccia vein; FL = foliation; LB = lithological boundary; LL = metamorphic banding and/or primary lithological layering; MY = mylonite foliation; SP = semiductile shear plane; V = mineral veins with prefixes: AN- = ankerite; CA- = calcite; CHL- = chlorite; MY- = mylonitic; Q- = quartz; SR- = sericite; ST- = stilbite.

DDH: 20

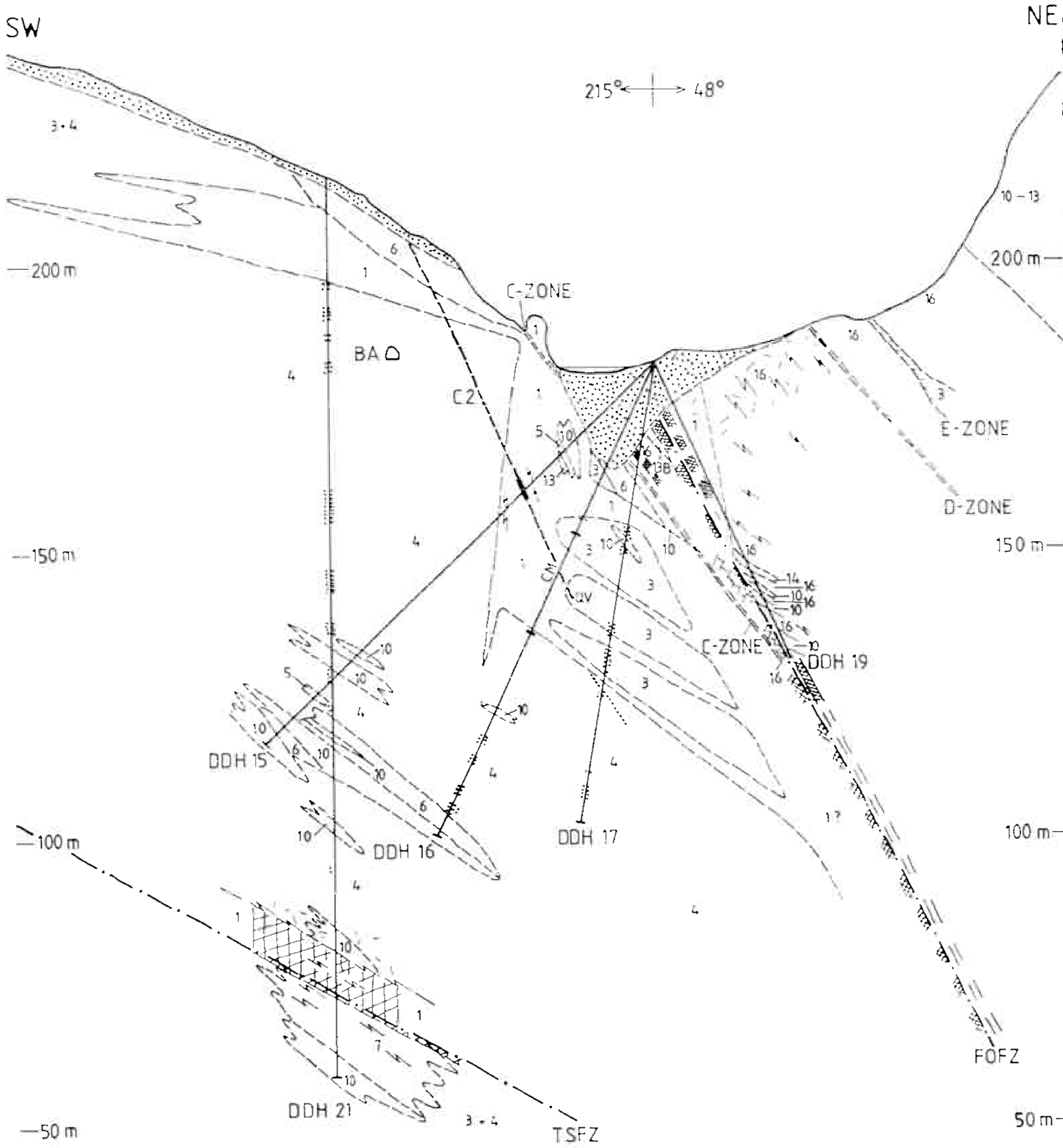
DEPTH (metres)		LENGTH	LITHOLOGY	MEASURED STRUCTURES			ORE MINERALIZATION			PETROGRAPHY
From	To			Type	Angle w. core	Depth	From	To	Type	
66,90	69,10	2,20	GTG							Light grey medium-grained TG with moderate zonal bleaching at 67,10-,60 and 68,30-,70. It contains up 5 cm inclusions of ABGN at 68,65-69,15. Scattered chlorite-coated fissures and soot-grey alteration zones.
69,10	70,95	1,85	W-LG							White medium-grained leucogranite with 1-10 mm biotite aggregates and mafic schlieren (69,10-,70). It carries many fractures with associated sericite alteration.
70,95	76,20	5,25	A							Fine-grained amphibolite with some biotite-amphibole gneiss and GGO zones. It is cut by narrow dyke (10-20 cm) of GTG. Scattered 1-2 mm q. ± chlorite veins.
76,20	77,50	1,30	B-HTG	LB	20°	77,50				Pinkish grey medium-grained granite. It si strongly bleached and contain only minor biotite-bearing remnants especial towards the lower contact. The upper border towards the amphibolite is occupied by a pink pegmatite (76,20-,50). It contains some scattered chlorite veins and sericite alteration zones.
77,50	78,40	0,90	A							Fine-grained amphibolite being cut by a number of parallel GTG veins (1-5 cm) at 77,65-,85. A few calcite veinlets.
78,40	82,30	3,90	MD							Medium-grained monzodiorite with a few 1-2 cm GTG veins near the lower contact.
82,30	84,90	2,60	B-HTG							Pinkish grey medium-grained TG cut by abundant pegmatite dykes (82,35-,45; 82,60-,80; 83,70-,85 and 84,30-,45). It is strongly bleached and contains scattered chlorite-coated fissures and 1-5 mm q. veins.
84,90	86,00	1,10	MY-GTG	MY "	10° 5°	84,90 85,90				Grey, fine-grained mylonitic granite with some sparse chlorite-coated fissures.
86,00	89,75	3,80	W-P							White pegmatite with inclusions of GTG at 87,65-88,05; 88,65-,75 and 88,95-89,00.

STRUCTURES: BV = breccia vein; FL = foliation; LB = lithological boundary; LL = metamorphic banding and/or primary lithological layering; MY = mylonite foliation; SP = semiductile shear plane; V = mineral veins with prefixes: AN- = ankerite; CA- = calcite; CHL- = chlorite; MY- = mylonitic; Q- = quartz; SR- = sericite; ST- = stilbite.

SUMMARY CORELOG-DIAGRAM: DDH 21



PROFILE: DDH 15, 16, 17, 19 & 21



DRILLHOLE No.: 21 AZIMUTH: INCLINATION: 90° LENGTH: 156,85 m Horiz.: 0,00 m Vert.: 156,85 m CORE DIM.: 36 mm
LOCATION: C-ZONE
COMPANY: A/S SULFIDMALM NGO-COORD.:Y: -19356,9 X: 798837,8 ZONE: D ALTITUDE: 215,2
YEAR: 1982 UTM-COORD.,E: 397200 N: 7229260 ZONE: 33

DEPTH (metres)		LENGTH	LITHOLOGY	MEASURED STRUCTURES			ORE MINERALIZATION			PETROGRAPHY
From	To			Type	Angle w. core	Depth	From	To	Type	
0,00	2,00	2,00	OB/CL							
2,00	6,30	4,30	MD					5,05	1 mm aspy. vein in 20 mm q. vein in granite dyke.	Medium-grained monzodiorite with a few 1-5 cm amphibolite inclusions. It is cut by some aplitic LG and GTG dykes.
6,30	18,65	12,35	W-LG				 9,00	6,65 8,25 10,00	1 mm aspy. veinlet. " " " " Scattered aspy. aggr. (max 8 mm).	White medium-grained LG containing inclusions of GQM (6,45-,70; 6,90-7,00; 15,20-,50 and 16,05-,50, MD (7,20-,70) and amphibolite with GTG dykes (15,50-16,05). The LG carries biotite-aggregates (1-5 mm) above 15,30. It is cut by more fine-grained white aplite dykes particularly below 16,50 (e.g. 17,35-18,40). coarse-grained and pegmatitic granite dyke is found at 11,20-,50. The LG carries scattered 1-10 mm sericite alteration zones becoming wider (<50 mm) and more abundant at 17,35-18,40.

LITHOLOGIES: A: = amphibolite; ABGN = dark grey amphibole-biotite gneiss; BAG = dark grey biotite-rich anatectic granite; BGN = dark grey biotite gneiss; CGN = greenish calc-silicate gneiss; CL = coreloss; CM = cores missing; CSCH = calcareous schist; GQM = dark grey biotite-quartz monzonite; GGO = grey granodioritic orthogneiss; GTG = grey medium-grained two-mica granite; HTG = hybrid pinkish grey medium-grained two-mica granite; IB = intrusion breccia; LG = leucocratic granite; M = calcite marble; MBGN = migmatitic biotite gneiss; MD = dark grey monzodiorite; MSCH = micaschist/-gneiss; OB/CL = overburden and/or coreloss in surface weathered rocks; P = pegmatite and pegmatitic granite; Q = hydrothermal quartz-vein or -lens; SK = skarn-altered marble. Prefixes: B- = bleached; BR- = brecciated; CT- = cataclastic; CR- = crushed; G- = garnetiferous; H- = heterogeneous; i.e. strong interbanding with other lithologies; HA- = hydrothermally altered; MY- = mylonitic; P- = pink; PP- = porphyritic; SH- = semiductilly sheared; W- = white to greyish white.

DDH: 21

DEPTH (metres)		LENGTH	LITHO-LOGY	MEASURED STRUCTURES			ORE MINERALIZATION			PETROGRAPHY
From	To			Type	Angle w. core	Depth	From	To	Type	
18,65	82,15	63,50	HTG	MY -Q-V	70°	54,70		29,55 32,00 54,70 62,15	1 mm. aspy. veinlet. 2 mm aspy. veinlet in aplite. 10 mm aspy. + py. vein along margin of mylonitic q. vein. Aspy. and py. diss. in 10 mm chlorite veinlet in aplite.	Pinkish grey to light grey medium-grained TG with variable intensity of 1-15 cm bleached zones. Locally the HTG grades into a more coarse-grained type (18,70-19,00). The HTG contains some small inclusions of bleached GQM (62,35-,95 and 79,25-,40) and amphibolite (79,00-,25). It is cut by dykes of aplite frequently containing sericite alteration zones (29,70-,95; 31,95-32,05; 39,00-,20; 41,20-,25; 45,20-,50; 62,00-,25; 77,25-,70 and 78,90-79,00) and pegmatite (41,40-42,05; 42,25-,65; 61,15-,30 and 61,40-,60). Mylonitic q.-chlorite schist occurs at 45,60-,70. The HTG carries 1-5 cm bleached zones becoming wider and denser in the more strongly altered zones at 18,65-19,60; 22,50-23,00; 23,55-24,50; 26,85-28,00: 29,20-,85; 31,70-33,95; 54,00-59,90; 67,95-72,05 and 72,70-80,00. It also contains scattered q.- and q.-musc. veins (1-20 mm) becoming abundant at 26,85-27,20. Below 30,00 it also carries some veins of light green q.-chl., white calcite and red stilbite. They may carry red coloured envelopes. Q.-chlorite-cemented crackle breccia occur at 33,85-,95.
82,15	85,50	3,35	A	FL	35°	83,90				Aplite and GTG veined fine- to medium-grained amphibolite. Bleached GTG at 84,10-,50, scattered 1-10 cm veins elsewhere. Greyish green chlorite alteration at 84,20-85,50.
85,50	94,15	8,65	HTG							Pinkish grey medium-grained TG with 0,5-5 cm bleached zones. Strong zonal bleaching at 85,50-88,95; 91,65-92,30 and 92,60-93,95. It is cut by thin aplite and pegmatite veins in the strongly bleached zones.
94,15	96,80	2,65	MD	FL	55°	96,25				Foliated medium-grained monzodiorite with some 1-5 cm granite veins and a GQM dyke at 93,65-,90. The MD show greenish grey chlorite alteration with red feldspar in areas with abundant chlorite-q. and calcite-q. veins, i.e. at 94,10-96,20.

STRUCTURES: BV = breccia vein; FL = foliation; LB = lithological boundary; LL = metamorphic banding and/or primary lithological layering; MY = mylonite foliation; SP = semiductile shear plane; V = mineral veins with prefixes: AN- = ankerite; CA- = calcite; CHL- = chlorite; MY- = mylonitic; Q- = quartz; SR- = sericite; ST- = stilbite.

DDH: 21

DEPTH (metres)		LENGTH	LITHOLOGY	MEASURED STRUCTURES			ORE MINERALIZATION			PETROGRAPHY
From	To			Type	Angle w. core	Depth	From	To	Type	
96,80	97,95	1,15	A							Fine-grained amphibolite with greyish green chlorite alteration associated with light greenish q.-chlorite veinlets.
97,95	99,00	1,05	MD	FL	55°	98,20				Foliated medium-grained monzodiorite with fracture-bound chlorite alteration above 98,70. It is cut by some granite veins.
99,00	104,45	5,45	A	FL "	50° 55°	100,10 102,40				Fine-grained amphibolite with foliated MD dyke at 101,15-,85. It is cut by some GTG veins and show fracture-bound chlorite alteration at 100,60-101,10.
104,45	112,05	7,60	HTG	FL	55°	109,50				Pinkish grey medium-grained TG with some small inclusions of chlorite-altered amphibolite (max. at 109,00-,70) and strongly aplite-veined GTG (104,45-105,40). It is cut by dykes of white pegmatite (e.g. 108,70-,95) and thin aplite veins. It contains 1-5 cm wide bleached zones becoming very abundant at 110,00-112,05 (strong bleaching).
112,05	113,90	1,85	A	FL	50°	113,60		113,80	Py.-diss. inn chlorite veined granite dyke (3 cm).	Fine- to medium-grained and weakly chlorite-altered amphibolite. Strong greenish grey chlorite alteration in association with 1 mm q.-chlorite veins along the contact at 112,05-,35 and 113,10-,90. A few 0,5-3 cm granite veins.
113,90	130,45	16,55	HTG							Pinkish grey medium-grained TG with chlorite-altered biotite and some small inclusions of amphibolite (e.g. 120,65-,95). The HTG is cut by thin 3-5 cm aplite and pegmatite veins. Biotite-spotted white LG dyke with 5-20 mm sericite alteration zones at 120,95-121,30. Lower 5 cm of the dyke show pervasive alteration. The HTG shows weak to moderate zonal bleaching except at 116,20-,65 and 119,70-120,65 where it is strong. Scattered q.-chlorite and q. veins.

STRUCTURES: BV = breccia vein; FL = foliation; LB = lithological boundary; LL = metamorphic banding and/or primary lithological layering; MY = mylonite foliation; SP = semiductile shear plane; V = mineral veins with prefixes: AN- = ankerite; CA- = calcite; CHL- = chlorite; MY- = mylonitic; Q- = quartz; SR- = sericite; ST- = stilbite.

DDH: 21

DEPTH (metres)		LENGTH	LITHOLOGY	MEASURED STRUCTURES			ORE MINERALIZATION			PETROGRAPHY
From	To			Type	Angle w. core	Depth	From	To	Type	
130,45	135,00	4,55	SH-A	SP " " MY	45° 50° 40° 50°	130,75 132,10 133,30 134,80				Strongly foliated and fractured amphibolite with thin fractured aplite and q. veins. Thicker dyke of aplite with chlorite crackle breccia and alteration at 134,15-,50. Mylonitic chlorite schist at 134,80-135,00. The amphibolite is deformed by semi-ductile shearing.
135,00	141,85	6,85	SH-LG	SP "	65° 55°	138,15 139,95				Pink to grey and fine- to medium-grained massive LG. It carries widespread chlorite alteration as greyish green spots and irregularly altered areas (135,00-140,90) locally grading into crackle breccias with greenish fragments cemented by q. and/or chlorite (136,55-137,00). Cataclastic appearance at 137,00-,10 and 139,40-,55. At 139,70 it grades into an aplite with flaser structure given by green flames of chlorite alteration probably representing sheared aplite originally containing irregular spots of chlorite alteration. The aplite becomes gradually more dark green and mylonitic at the lower part, ending in a q.-chlorite-cemented breccia and clay gouge with dark green altered fragments at 140,90-141,85. In some zones strongly bleached and aplite-veined HTG occur (135,50-136,30 and 136,55-137,00).
141,85	151,90	10,05	SH-H-GGO	FL " " " "	50° 45° 70° 60° 55°	145,35 147,65 149,50 150,30 151,50				Grey medium- to coarse-grained and usually highly strained granodioritic gneiss with scattered 5-10 mm feldspar porphyries and augen. The quartzo-feldspatic matrix (2-4 mm) contains interstitial biotite which is frequently altered to chlorite (e.g. 142,85-143,35). It contains frequently thin intercalations of amphibolite, migmatitic biotite gneiss and biotite gneiss with 2-5 mm porphyritic feldspars. It is cut by abundant pink aplite veins and dykes (the widest occurring at 143,45-144,00).

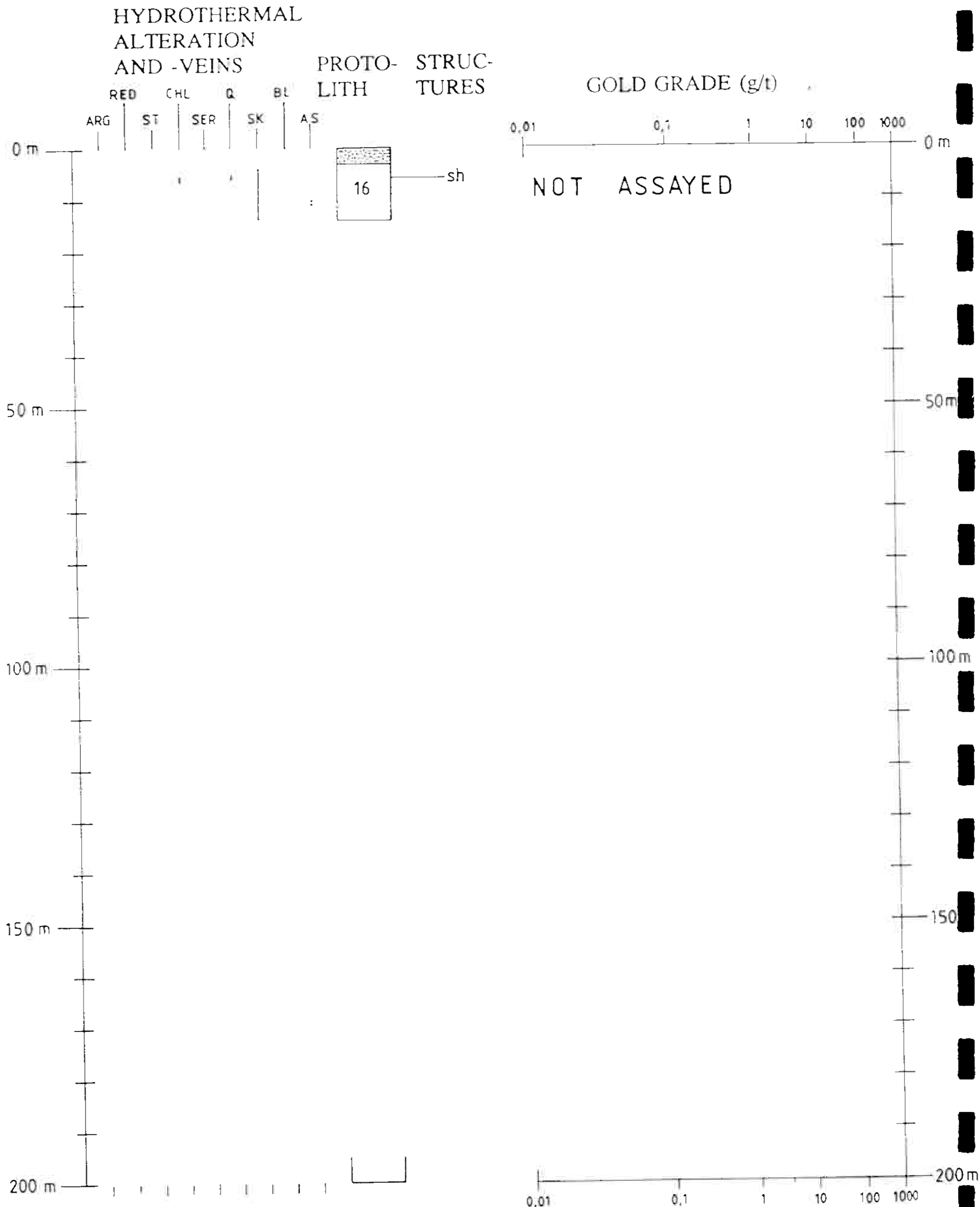
STRUCTURES: BV = breccia vein; FL = foliation; LB = lithological boundary; LL = metamorphic banding and/or primary lithological layering; MY = mylonite foliation; SP = semiductile shear plane; V = mineral veins with prefixes: AN- = ankerite; CA- = calcite; CHL- = chlorite; MY- = mylonitic; Q- = quartz; SR- = sericite; ST- = stilbite.

DDH: 21

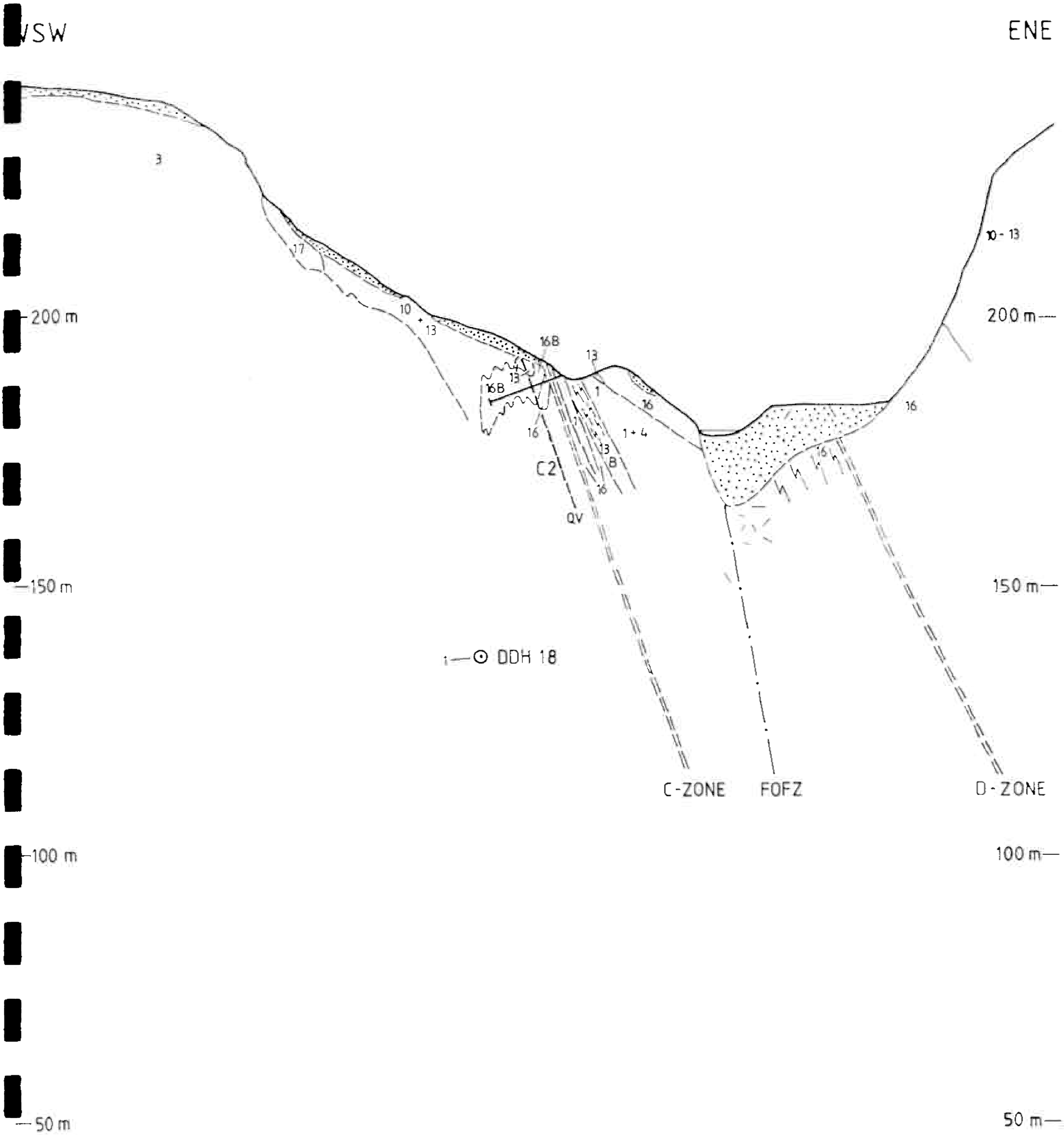
DEPTH (metres)		LENGTH	LITHOLOGY	MEASURED STRUCTURES			ORE MINERALIZATION			PETROGRAPHY
From	To			Type	Angle w. core	Depth	From	To	Type	
151,90	156,85	4,95	A	FL	50° 50°	155,20 156,70				Fine-grained amphibolite with some zones (2-10 cm) of granodioritic gneiss becoming abundant at 152,00-,50 and 155,00-156,85. It is cut by an aplite dyke at 156,25-,40.

STRUCTURES: BV = breccia vein; FL = foliation; LB = lithological boundary; LL = metamorphic banding and/or primary lithological layering; MY = mylonite foliation; SP = semiductile shear plane; V = mineral veins with prefixes: AN- = ankerite; CA- = calcite; CHL- = chlorite; MY- = mylonitic; Q- = quartz; SR- = sericite; ST- = stilbite.

SUMMARY CORELOG-DIAGRAM: DDH 213



PROFILE: DDH 21B



DRILLHOLE No.: 21 B | AZIMUTH: 245° | INCLINATION: 20° | LENGTH: 14,00 m | Horiz.: 13,15 m | Vert.: 4,80 m | CORE DIM.: 36 mm

LOCATION: C-ZONE

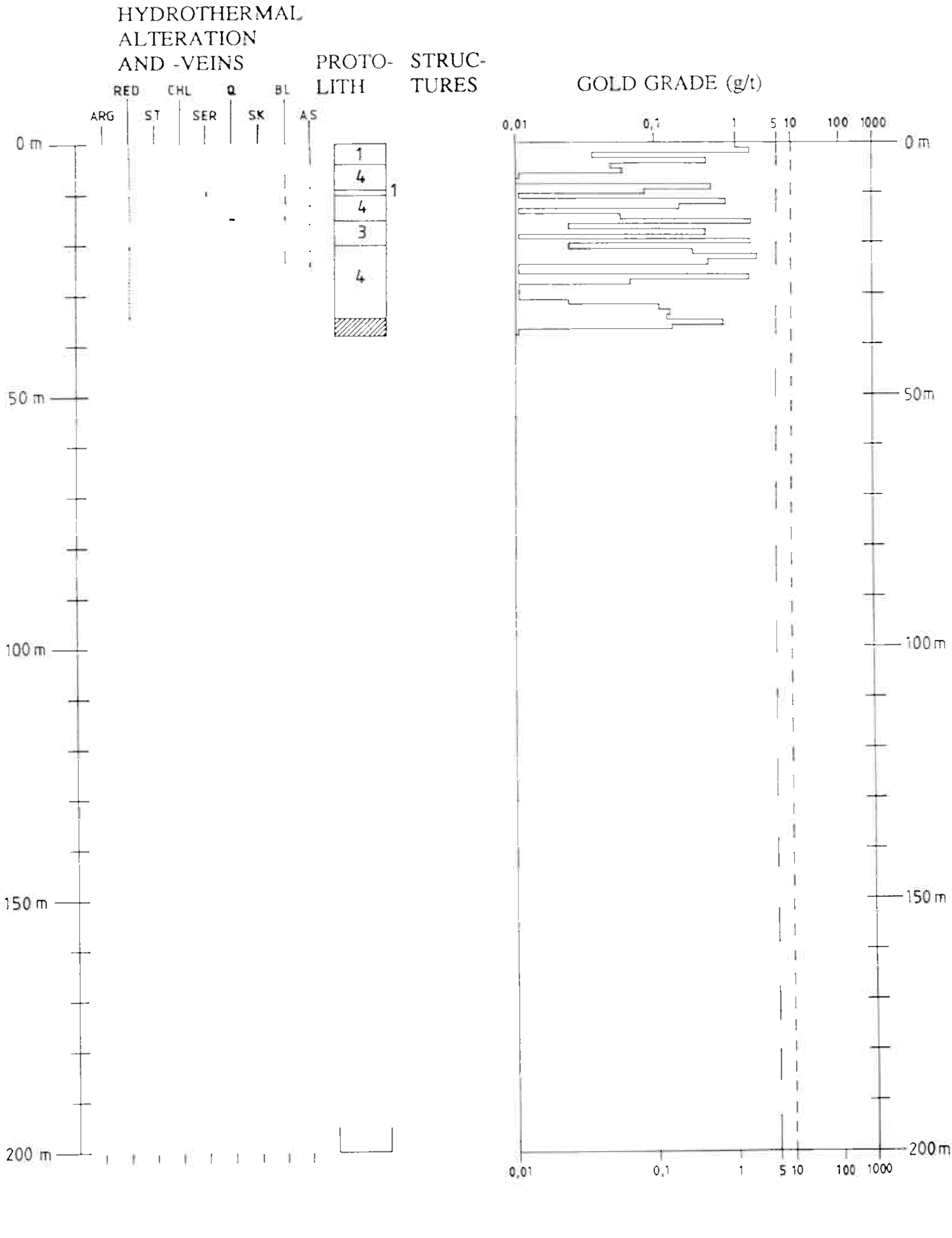
COMPANY: A/S SULFIDMALM | NGO-COORD.:Y: -19350,694 | X: 798907,806 | ZONE: D | ALTITUDE: 188,899 m.a.s.l.

YEAR: 1982 | UTM-COORD.,E: 397220 | N: 7229360 | ZONE: 33

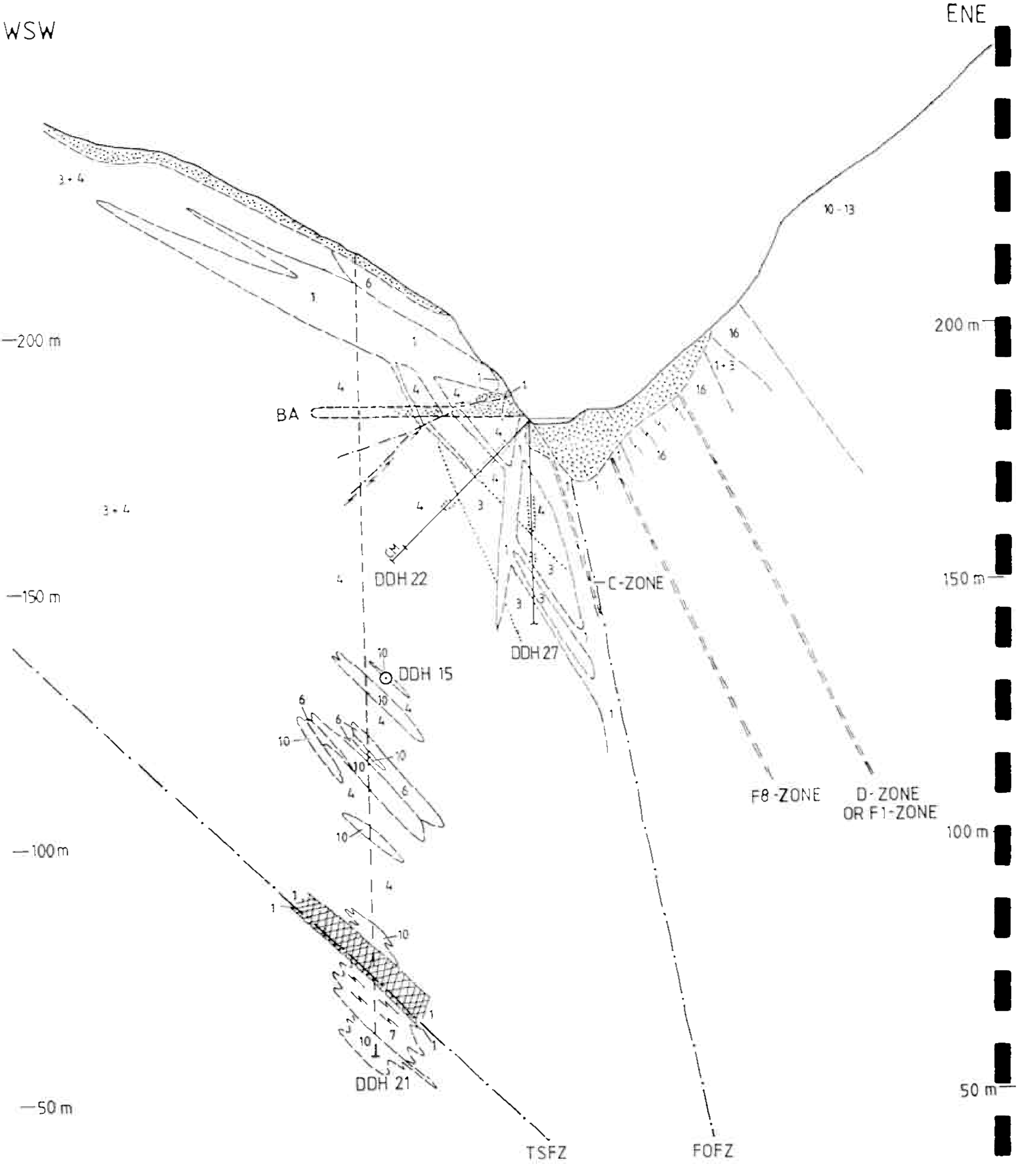
DEPTH (metres)		LENGTH	LITHOLOGY	MEASURED STRUCTURES			ORE MINERALIZATION			PETROGRAPHY
From	To			Type	Angle w. core	Depth	From	To	Type	
0,00	3,00	3,00	OB/CL							
3,00	4,35	1,35	M	LL " "	45° 50° 80°	3,50 3,80 4,25				Grey colour- (1-10 mm) and calc-silicate-banded (1-50 mm) marble. It is cut by dykes of pink aplite (3,90-4,15) and moderately bleached GTG (3,65-,75).
4,35	14,00	9,65	SK	LL SP " LL "	50° 45° 75° 25° 25°	4,40 5,40 5,90 7,45 9,49	4,65 5,95	5,30 6,40 6,90 7,95 10,65 11,40 11,70	Skarn with diss. grains (5 mm) and aggr. of pyrite. " " " " Py.-coated fissure. " " " " " " Diss. aspy. in aplite. 3 cm apl. vein with network of 1-5 mm aspy. veinlets.	Brownish red and green garnet-clinozoisite-clinopyroxene - hornblende skarn showing a weak mineral banding in the upper part. It is infiltrated by quartz at 5,30-,95 and 11,65-,75. Thicker dykes of weakly sericite-altered aplitic LG and bleached GTG occur at 4,45-,55 and 12,75-13,10, respectively. Two thin chloritic shear zones are found at 5,40 and 5,90.

LITHOLOGIES: A: = amphibolite; ABGN = dark grey amphibole-biotite gneiss; BAG = dark grey biotite-rich anatectic granite; BGN = dark grey biotite gneiss; CGN = greenish calc-silicate gneiss; CL = coreloss; CM = cores missing; CSCH = calcareous schist; GQM = dark grey biotite-quartz monzonite; GGO = grey granodioritic orthogneiss; GTG = grey medium-grained two-mica granite; HTG = hybrid pinkish grey medium-grained two-mica granite; IB = intrusion breccia; LG = leucocratic granite; M = calcite marble; MBGN = migmatitic biotite gneiss; MD = dark grey monzodiorite; MSCH = micaschist/-gneiss; OB/CL = overburden and/or coreloss in surface weathered rocks; P = pegmatite and pegmatitic granite; Q = hydrothermal quartz-vein or -lens; SK = skarn-altered marble. Prefixes: B- = bleached; BR- = brecciated; CT- = cataclastic; CR- = crushed; G- = garnetiferous; H- = heterogeneous; i.e. strong interbanding with other lithologies; HA- = hydrothermally altered; MY- = mylonitic; P- = pink; PP- = porphyritic; SH- = semiductilly sheared; W- = white to greyish white.

SUMMARY CORELOG-DIAGRAM: DDH 22



PROFILE: DDH 22 & 27



DRILLHOLE No.: 22 AZIMUTH: 247° INCLINATION: 45° LENGTH: 38,00 m Horiz.: 26,90 m Vert.: 26,90 m CORE DIM.: 36 mm
LOCATION: C-ZONE
COMPANY: A/S SULFIDMALM NGO-COORD.:Y: -19327,5 X: 798852,5 ZONE: D ALTITUDE: 182,0 m.a.s.l.
YEAR: 1982 UTM-COORD.,E: 397220 N: 7229230 ZONE: 33

DEPTH (metres)		LENGTH	LITHO-LOGY	MEASURED STRUCTURES			ORE MINERALIZATION			PETROGRAPHY
From	To			Type	Angle w. core	Depth	From	To	Type	
0,00	4,15	4,15	LG				0,00	4,10	Scattered 1-3 mm aspy. veinlets and fissure coatings.	White to pinkish fine-grained LG with small nebulous inclusions of GTG. Gradational contact with the pinkish grey medium-grained HTG.
4,15	9,00	4,85	HTG				8,50	8,80	Scattered aspy. fissures.	Pinkish grey medium-grained TG showing variable intensity of zonal bleaching, strong at 5,70-9,00. It carries an inclusion of GQM at 5,30-,50 and scattered q. veins (1-10 mm), max. at 7,45-,70.
9,00	10,10	1,10	W-LG							White fine- to medium-grained LG with abundant 5-10 mm sericite alteration zones.
10,10	15,00	4,90	HTG					12,20	Aspy.-coated fissure.	Pinkish grey medium-grained TG with inclusions of GQM (11,70-12,30 and 12,70-,80) and amphibolite (12,80-13,20). It is cut by thin aplite veins, the thickest at 12,35-,75. Variable zonal bleaching, strong at 10,10 - 11,70 and 14,25-15,00. Scattered q. veins (1-10 mm), max. width at 14,55-,70. A few chl. veinlets.
15,00	20,00	5,00	GTG					15,95	40 mm aspy. vein along the contact of 60 mm q. vein.	Grey medium-grained TG with moderate to low density of 1-5 cm bleached zones. A few scattered sericite alteration zones particularly at 18,00-19,00.

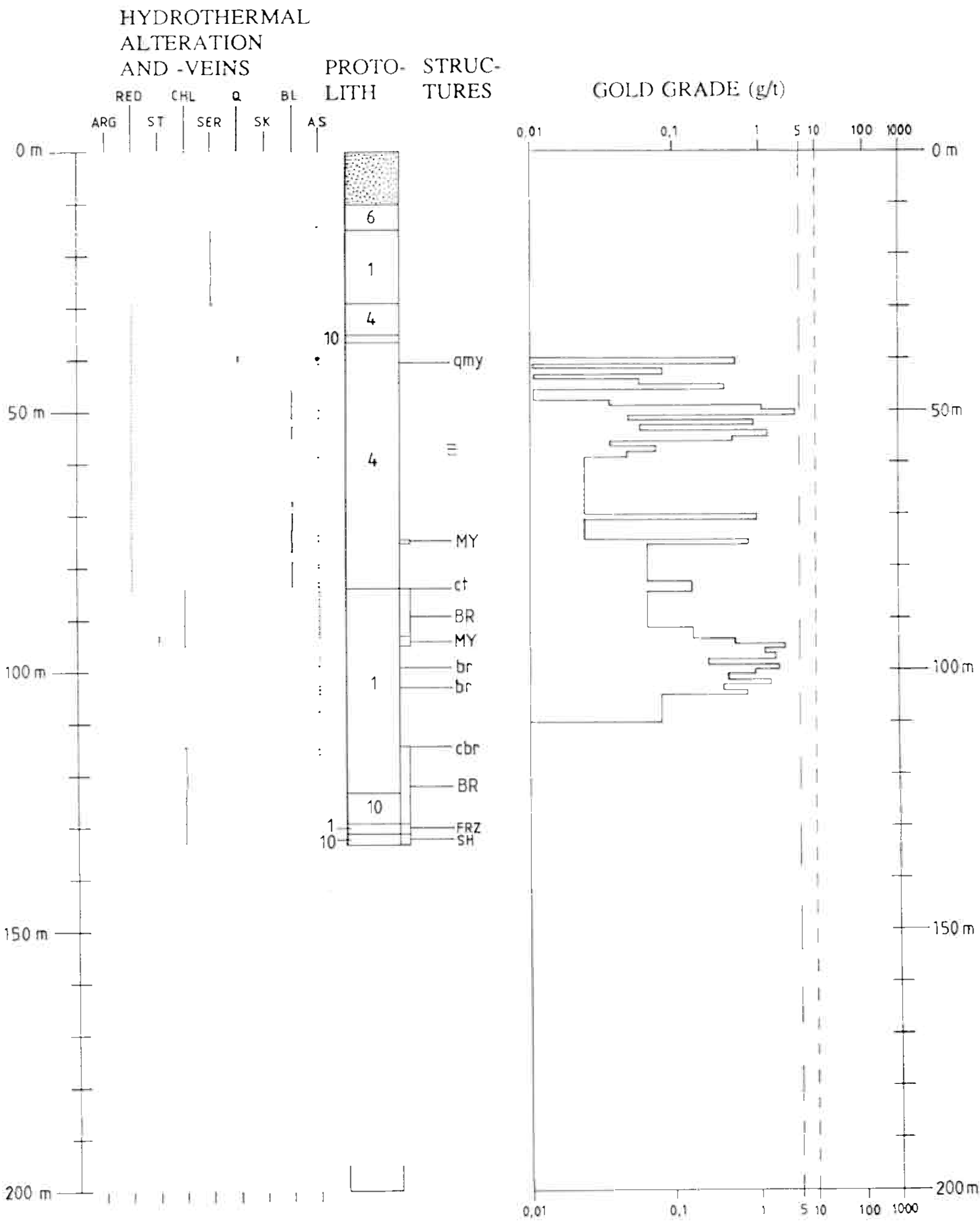
LITHOLOGIES: A: = amphibolite; ABGN = dark grey amphibole-biotitegneiss; BAG = dark grey biotite-rich anatectic granite; BGN = dark grey biotitegneiss; CGN = greenish calcislicate-gneiss; CL = coreloss; CM = cores missing; CSCH = calcareous schist; GQM = dark grey biotitegranite; GGO = grey granodioritic orthogneiss; GTG = grey medium-grained two-mica-granite; HGN = heterogeneous sequence of strongly interbanded gneisses; HTG = hybrid pinkish grey medium-grained two-mica-granite; IB = intrusion breccia; LG = leucocratic granite; M = calcite marble; MBGN = migmatitic biotitegneiss; MD = dark grey monzodiorite; MSCH = micaschist/-gneiss; OB/CL = overburden and/or coreloss in surface weathered rocks; P = pegmatite and pegmatitic granite; Q = hydrothermal quartz-vein or -lens; SK = skarn-altered marble. Prefixes: B- = bleached; BR- = brecciated; CC- = cataclastic; CR- = crushed; G- = garnetiferous; H- = heterogeneous; i.e. strong interbanding with other lithologies; HA- = hydrothermally altered; MY- = mylonitic; P- = pink; P- = porphyritic; SH- = semiductilly sheared; W- = white to greyish white.

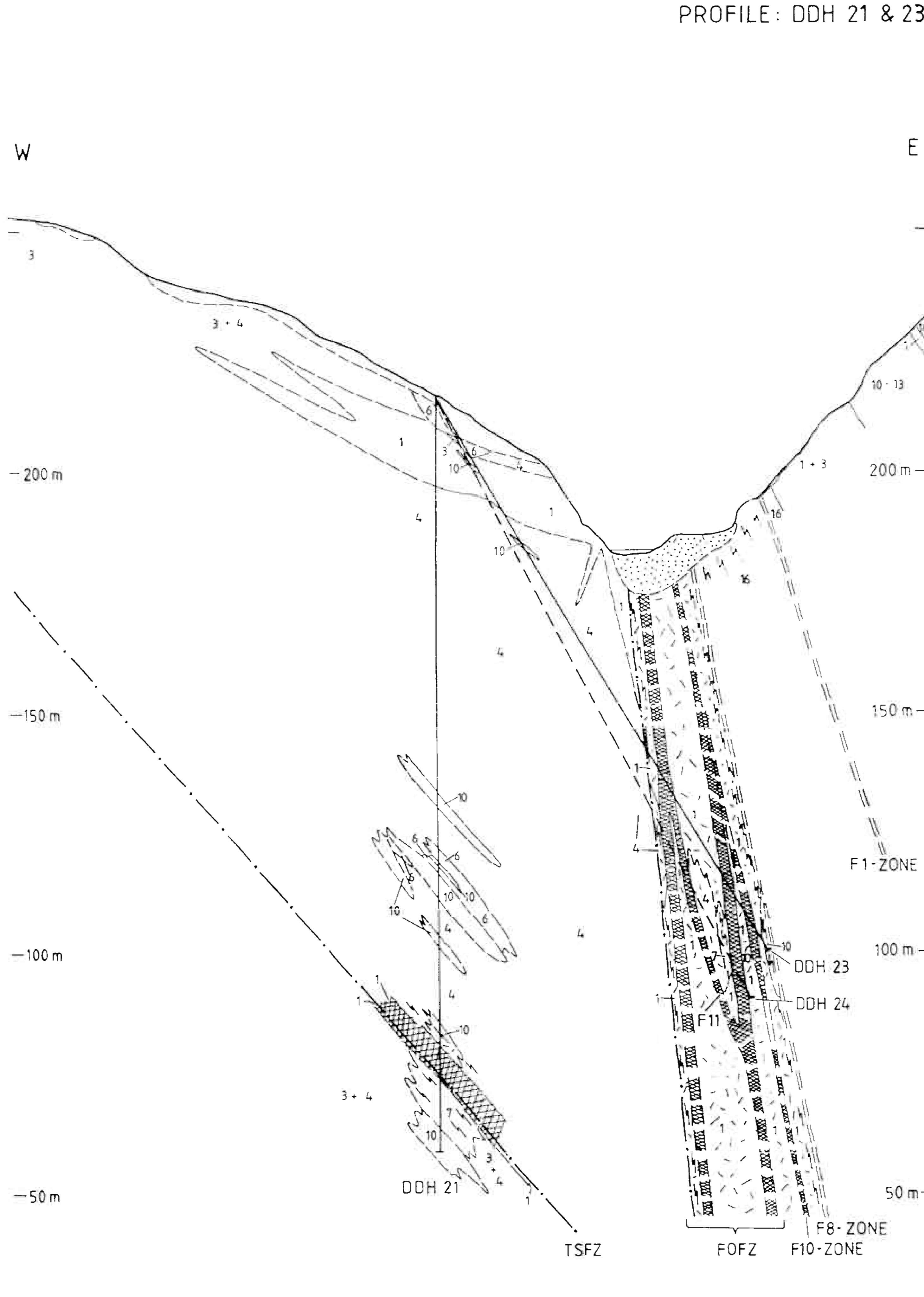
DDH: 22

DEPTH (metres)		LENGTH	LITHOLOGY	MEASURED STRUCTURES			ORE MINERALIZATION			PETROGRAPHY
From	To			Type	Angle w. core	Depth	From	To	Type	
20,00	34,50	14,50	HTG				 23,50	21,05 23,65 23,90	Aspy.-coated fissures in q. vein. Aspy. veinlets in 30 mm q. vein and adjacent granite. Py. - aspy. veinlet along the margin of a 30 mm muscovite zone in granite.	Pinkish grey to light grey medium-grained TG. Moderate to high density of bleached zones. Strong bleaching e.g. at 21,30-,80 along 22,35-23,50. It is cut by thin veins and dykes of pink and white aplitic LG (e.g. 20,60-,90; 21,40-,70; 22,40-,70; 23,50-,95 and 29,70-30,00) and pegmatite (21,95-22,00 and 27,00-,30), scattered 3-30 mm q. veins and some chlorite veinlets. Sheeted veins of q. + chl. at 29,60-30,00.
34,50	38,00	3,50	CM							

STRUCTURES: BV = breccia vein; FL = foliation; LB = lithological boundary; LL = metamorphic banding and/or primary lithological layering; MY = mylonite foliation; SP = semiductile shear plane; V = mineral veins with prefixes: AN- = ankerite; CA- = calcite; CHL- = chlorite; MY- = mylonitic; Q- = quartz; SR- = sericite; ST- = stilbite.

SUMMARY CORELOG-DIAGRAM: DDH 23




PROFILE: DDH 21 & 23
W
E
3
3 + 4
1
6
3
6
10
4
1
1 + 3
10 - 13
16
16
200 m
200 m
10
4
4
4
150 m
150 m
10
6
6
10
10
10
6
4
4
F1-ZONE
100 m
100 m
10
DDH 23
DDH 24
F11
1
10
3 + 4
7
10
3
4
DDH 21
50 m
50 m
TSFZ
FOFZ
F8-ZONE
F10-ZONE

DRILLHOLE No.: 23 AZIMUTH: 84˚ INCLINATION: 60˚ LENGTH: 133,00 m Horiz.: 66,50 m Vert.: 115,20 m CORE DIM.: 36 mm
LOCATION: C-ZONE
COMPANY: A/S SULFIDMALM NGO-COORD.:Y: -19356,492 X: 798837,940 ZONE: D ALTITUDE: 215,191 m.a.s.l.
YEAR: 1982 UTM-COORD.,E: 397200 N: 7229260 ZONE: 33

DEPTH (metres)		LENGTH	LITHOLOGY	MEASURED STRUCTURES			ORE MINERALIZATION			PETROGRAPHY
From	To			Type	Angle w. core	Depth	From	To	Type	
0,00	10,00	10,00	OB/CL							
10,00	14,85	4,85	MD					10,50	5 mm aspy. vein in q. vein.	Medium-grained monzodiorite with an inclusion of amphibolite at 10,20-,80.
14,85	29,20	14,35	W-LG	FL	30˚ 25˚	18,40 22,40		21,55	10 mm py.-chl. vein along the contact of q. vein.	White medium-grained LG with small inclusions of moderately bleached GTG (15,00-16,00 and 17,05-,25) and amphibolite (16,40-,85). The LG show a faint foliation, pronounced in areas containing disc-shaped aggregates of biotite (2-10 mm), especially below 17,25. Up to 10 cm wide sericite alteration zones occur widespread with a maximum at 17,25-,80. Scattered q.- (5-20 mm), q.-musc. (30 mm) and some chlorite veins.
29,20	35,30	6,10	HTG							Pinkish grey and light grey TG with weak zonal (1-5 cm) bleaching. It contains some inclusions of amphibolite (23,00-,20 and 23,55-24,35) and GQM (23,20-,55 and 24,35-,60). It is cut by some pink aplite veins (e.g. 22,80-23,00 and 25,00-,20). It carries scattered 2-10 mm q.- and q.-musc. veins (2-10 mm) and some chlorite-q. and calcite veinlets.
35,30	36,65	1,35	A							Fractured fine-grained amphibolite with chlorite-coated slickensides at 36,20-,40.

LITHOLOGIES: A: = amphibolite; ABGN = dark grey amphibole-biotite gneiss; BAG = dark grey biotite-rich anatectic granite; BGN = dark grey biotite gneiss; CGN = greenish calc-silicate gneiss; CL = coreloss; CM = cores missing; CSCH = calcareous schist; GQM = dark grey biotite-quartz monzonite; GGO = grey granodioritic orthogneiss; GTG = grey medium-grained two-mica granite; HTG = hybrid pinkish grey medium-grained two-mica granite; IB = intrusion breccia; LG = leucocratic granite; M = calcite marble; MBGN = migmatitic biotite gneiss; MD = dark grey monzodiorite; MSCH = micaschist/-gneiss; OB/CL = overburden and/or coreloss in surface weathered rocks; P = pegmatite and pegmatitic granite; Q = hydrothermal quartz-vein or -lens; SK = skarn-altered marble. Prefixes: B- = bleached; BR- = brecciated; CT- = cataclastic; CR- = crushed; G- = garnetiferous; H- = heterogeneous; i.e. strong interbanding with other lithologies; HA- = hydrothermally altered; MY- = mylonitic; P- = pink; PP- = porphyritic; SH- = semiductilly sheared; W- = white to greyish white.

DDH: 23

DEPTH (metres)		LENGTH	LITHOLOGY	MEASURED STRUCTURES			ORE MINERALIZATION			PETROGRAPHY
From	To			Type	Angle w. core	Depth	From	To	Type	
36,65	83,70	47,05	HTG	MY-V	75°	40,00		39,40	20 mm q.-musc. vein with some diss. aspy. xx (1 mm).	Pink, pinkish grey and light grey medium-grained TG cut by thin aplitic veins (1-5 cm) and dykes e.g. 54,30-,80; 72,80-73,05; 74,60-75,10 and 77,70-78,45. It shows variable zonal (1-5 cm) bleaching. High density of bleached zones with only small (< 10cm) biotite-bearing domains occurs at 45,50-51,25; 52,50-55,00; 66,80-68,10; 68,80-71,45; 71,85-74,60; 75,10-77,00 and 78,45-83,70. The granite shows locally a faint foliation e.g. 56,00-58,00 and 74,60-75,10 (sheared aplite). It contains occasional muscovite-rich zones e.g. 61,95-62,05. 1-100 mm q.- and q.-muscovite veins are common and occur with a high density at 39,35-40,20. Some of them have a mylonitic texture. Normally they carry bleached envelopes. Sericite alteration zones (2-10 mm) are scarse e.g. 54,90-55,00. Below 72,15 some chlorite-coated fissures occur.
				"	60°	40,35				
				"	30°	74,65		39,75	2 mm q.-aspy. vein.	
								39,90	5 mm q.-aspy. vein.	
							40,00	40,40	Mylonitic q. vein with 1-5 mm aspy. veinlets and transverse fissures with aspy.-coating along the vein contacts.	
							49,60	49,65	Aspy.-q. vein	
							50,85	51,05	Q. veins with 3-10 mm aspy. veinlets.	
								58,50	10 mm q.-aspy. vein.	
								73,40	10 mm aspy.-q. vein.	
							74,55	74,65	Mylonitic q.-musc. vein with aspy. stringers and grains along shear planes.	
								79,35	5 mm aspy. veinlet.	
								79,50	Aspy.-coated fissure.	
								82,65	1 mm aspy. veinlet.	
								83,30	" " " "	

STRUCTURES: BV = breccia vein; FL = foliation; LB = lithological boundary; LL = metamorphic banding and/or primary lithological layering; MY = mylonite foliation; SP = semiductile shear plane; V = mineral veins with prefixes: AN- = ankerite; CA- = calcite; CHL- = chlorite; MY- = mylonitic; Q- = quartz; SR- = sericite; ST- = stilbite.

DDH: 23

DEPTH (metres)		LENGTH	LITHO-LOGY	MEASURED STRUCTURES			ORE MINERALIZATION			PETROGRAPHY
From	To			Type	Angle w. core	Depth	From	To	Type	
83,70	122,85	39,15	BR-LG	SP	30°	93,35	84,00	93,25	Scattered disseminated aspy. grains in aplite.	Pink to light grey and fine- to medium-grained LG, strongly brecciated and fractured. It contains small inclusions of strongly bleached HTG e.g. 94,70-114,30 and GQM and is cut by thin white pegmatite dykes (106,60-,75; 107,60-,95 and 108,50-,65). It is cut by abundant chlorite veinlets. The following tectonites occur: - Dark grey ultracataclasite with white porphyroclasts at 83,70-84,00. - Chlorite- and quartz-cemented rock-flour breccia at 84,00-,40. - Chlorite-cemented breccia with green chlorite-altered fragments at 87,15-,70. - Chlorite-cemented breccia at 88,45-90,25. - Greenish grey silicified and quartz-cemented rock-flour breccia with fragments of milky quartz at 90,25-93,35. Chlorite-cemented and altered at 91,50-,65 and 92,85-93,35. - Crush zone at 91,50-,65. - Dark greenish grey shear zone with flattened breccia fragments of chlorite altered LG at 93,35-94,70 being cut by 5 mm chlorite-calcite-stilbite veins (93,35-,45). - Chlorite-cemented breccia at 102,65-,85. - Chlorite crackle breccia at 114,25-,55. Greenish grey silicified and q.-chl.-cemented rock-flour breccia with chlorite-altered fragments at 114,55-,95. - Chlorite-cemented breccia at 114,95-116,75. - Greenish grey silicified rock-flour breccia at 116,75-118,70 with thin chlorite-cemented zones (e.g. 117,45-,50). - Thin zones of silicified rock-flour breccias at 119,90-120,00; 120,80-121,05 and 120,40-,55. - Thin zones of chlorite breccias at 120,10-,20 and 121,90-122,10.
				"	50°	93,65				
				"	20°	93,90	97,05	97,20	Some 5 mm aspy. veinlets in 20 mm q. veins.	
				"	15°	94,15				
				"	30°	94,20		97,65	20 mm aspy. vein.	
							98,70	98,95	Black aspy.-cemented breccia zones (5-15 mm)	
							102,65	102,90	Aspy.-rich breccia with adjacent aspy.-coated fractures.	
							103,05	103,15	Aspy. veinlets (1 mm) and diss. grains (1-2 mm).	
							104,05	104,15	" " " "	
								107,45	Aspy.-coated fissure.	
							114,65	115,00	Bluish grey silification with fine-grained aspy. diss.	
							115,70	115,95	Dark greenish breccia-zones (5-20 mm) with fine-grained aspy. diss.	

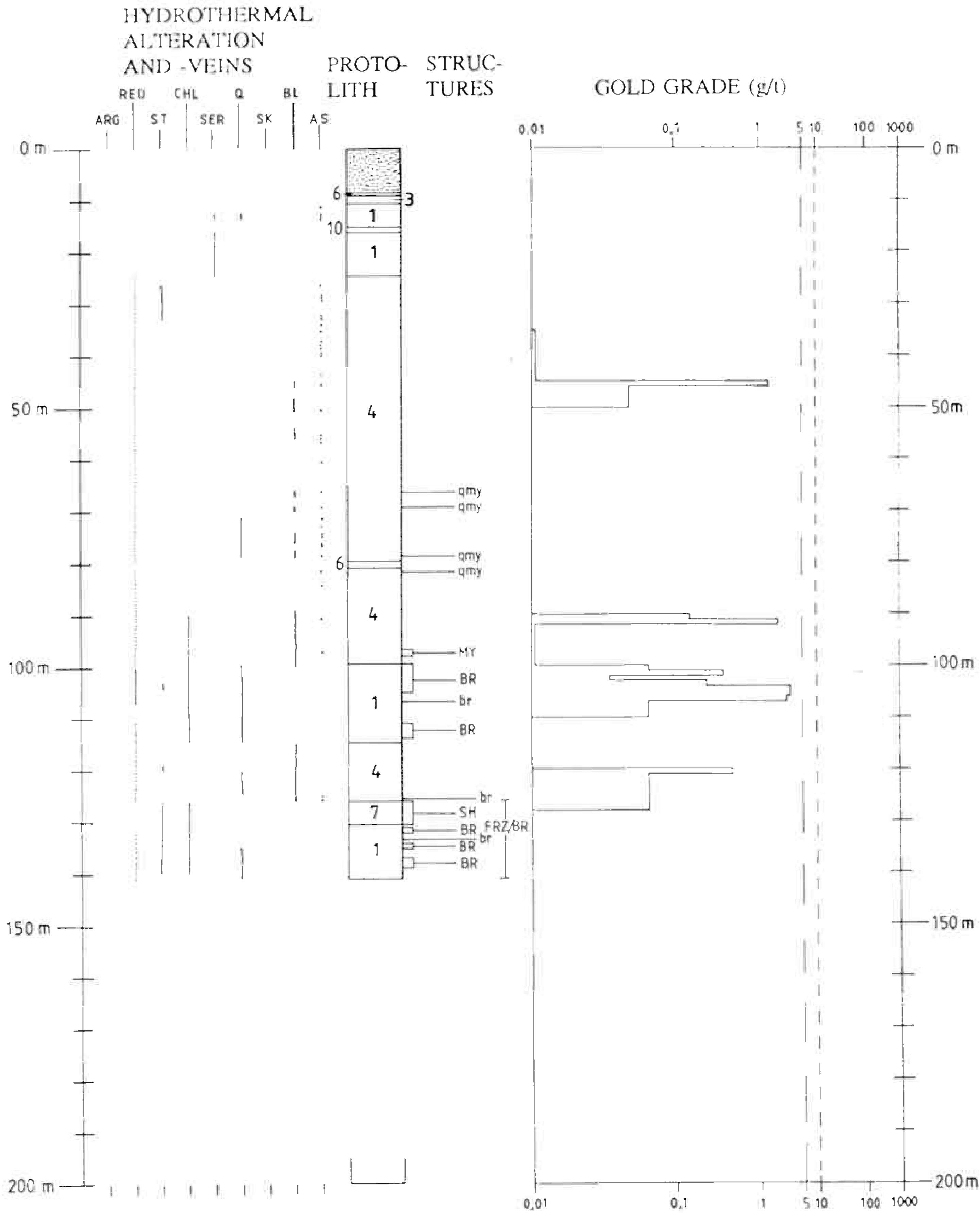
STRUCTURES: BV = breccia vein; FL = foliation; LB = lithological boundary; LL = metamorphic banding and/or primary lithological layering; MY = mylonite foliation; SP = semiductile shear plane; V = mineral veins with prefixes: AN- = ankerite; CA- = calcite; CHL- = chlorite; MY- = mylonitic; Q- = quartz; SR- = sericite; ST- = stilbite.

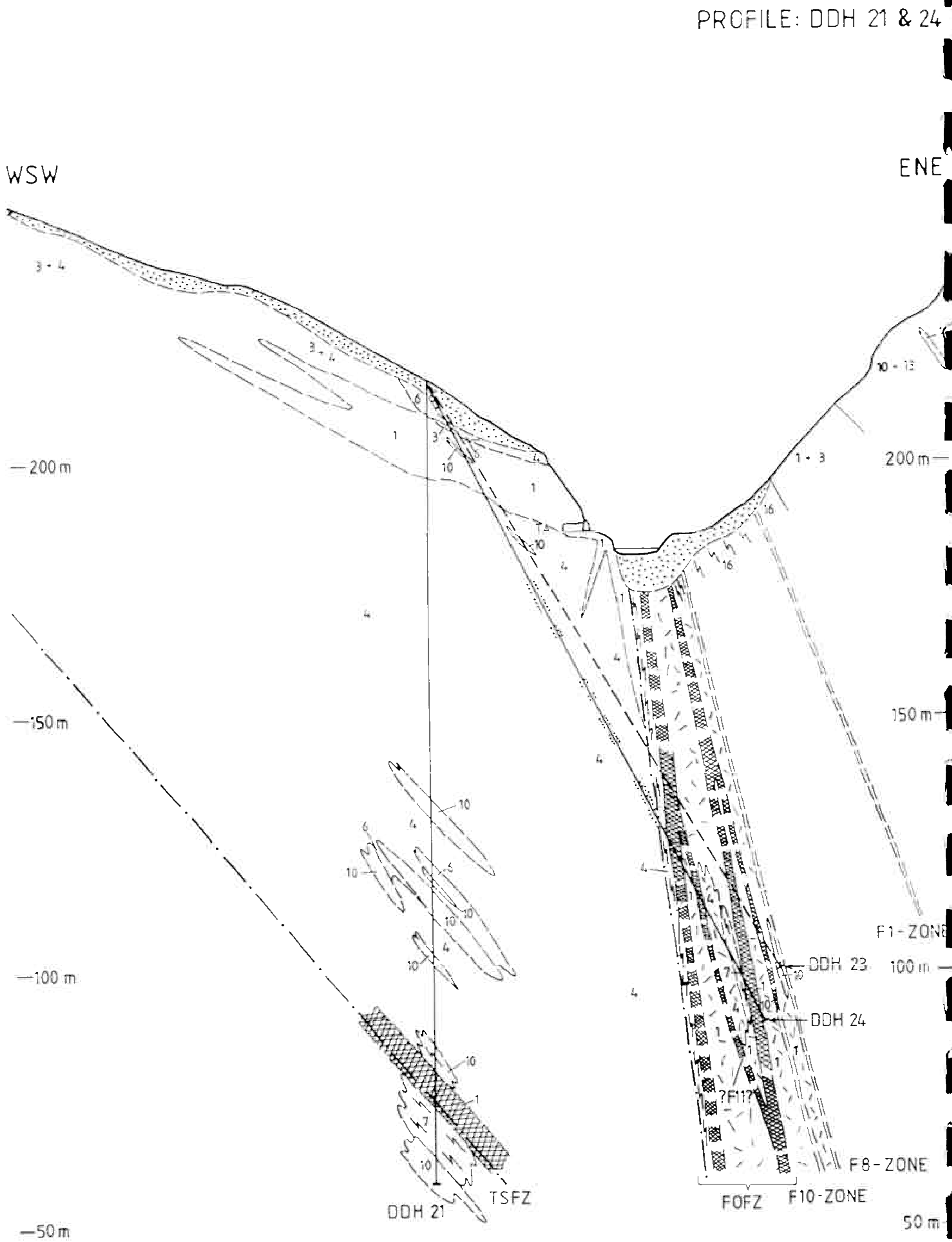
DDH: 23

DEPTH (metres)		LENGTH	LITHOLOGY	MEASURED STRUCTURES			ORE MINERALIZATION			PETROGRAPHY
From	To			Type	Angle w. core	Depth	From	To	Type	
122,85	128,80	5,95	BR-A							Brecciated and crushed amphibolite with 1-5 cm aplite veins. Scattered 1-5 mm stilbite and calcite veins, most abundant in brecciated aplite veins.
128,80	130,90	1,10	P-LG							Strongly fractured medium-grained pink LG with small pegmatite segregations and abundant chlorite veins.
130,90	133,00	2,10	SH-A							Sheared chlorite-altered amphibolite with small dismembered aplite veins. Locally 1 cm aplite fragments in mylonitic amphibolite containing some calcite veins.

STRUCTURES: BV = breccia vein; FL = foliation; LB = lithological boundary; LL = metamorphic banding and/or primary lithological layering; MY = mylonite foliation; SP = semiductile shear plane; V = mineral veins with prefixes: AN- = ankerite; CA- = calcite; CHL- = chlorite; MY- = mylonitic; Q- = quartz; SR- = sericite; ST- = stilbite.

SUMMARY CORELOG-DIAGRAM: DDH 24




PROFILE: DDH 21 & 24
WSW
ENE
200 m
150 m
100 m
50 m
DDH 21
TSFZ
DDH 23
DDH 24
?F11?
FOFZ
F10-ZONE
F8-ZONE
F1-ZONE

DRILLHOLE No.: 24 AZIMUTH: 80° INCLINATION: 65° LENGTH: 140,70 m Horiz.: 59,45 m Vert.: 127,50 m CORE DIM.: 36 mm
LOCATION: C-ZONE
COMPANY: A/S SULFIDMALM NGO-COORD.:Y: -19356,6 X: 798837,9 ZONE: D ALTITUDE: 215,2 m.a.s.l.
YEAR: 1982 UTM-COORD.,E: 397200 N: 7229260 ZONE: 33

DEPTH (metres)		LENGTH	LITHO-LOGY	MEASURED STRUCTURES			ORE MINERALIZATION			PETROGRAPHY
From	To			Type	Angle w. core	Depth	From	To	Type	
0,00	8,50	8,50	OB/CL							
8,50	9,10	0,60	MD							Medium-grained monzodiorite cut by a few 1-10 mm GTG veins.
9,10	10,55	1,45	GTG							Grey medium-grained two-mica granite with a few q. veins.
10,55	15,00	4,45	W-LG	FL "	30° 30°	13,50 14,70	 12,40	11,05 13,25	2 x 15 mm² aspy. aggr. Q. vein with a few 1mm aspy. veinlets.	White, biotite-spotted and fine- to medium-grained LG with small (<1 cm) mafic schlieren and a MD inclusion at 13,75-14,05. The LG is weakly foliated. It contains scattered thin sericite alteration zones becoming more abundant at 12,40-13,25. A few 1-2 cm q. veins.
15,00	16,00	1,00	A							Fine- to medium-grained amphibolite with abundant 1-5 cm white LG veins particularly at 15,00-,40, where some sericite-altered fractures occur.
16,00	24,55	8,55	W-LG	FL	30°	17,15				White, fine- to medium-grained and weakly foliated LG. More aplitic below 18,05. It carries abundant sericite alteration zones (2-20 mm) and scattered 1-5 mm q.-musc. veins.

LITHOLOGIES: A: = amphibolite; ABGN = dark grey amphibole-biotite gneiss; BAG = dark grey biotite-rich anatectic granite; BGN = dark grey biotite gneiss; CGN = greenish calc-silicate gneiss; CL = coreloss; CM = cores missing; CSCH = calcareous schist; GQM = dark grey biotite-quartz monzonite; GGO = grey granodioritic orthogneiss; GTG = grey medium-grained two-mica granite; HTG = hybrid pinkish grey medium-grained two-mica granite; IB = intrusion breccia; LG = leucocratic granite; M = calcite marble; MBGN = migmatitic biotite gneiss; MD = dark grey monzodiorite; MSCH = micaschist/-gneiss; OB/CL = overburden and/or coreloss in surface weathered rocks; P = pegmatite and pegmatitic granite; Q = hydrothermal quartz-vein or -lens; SK = skarn-altered marble. Prefixes: B- = bleached; BR- = brecciated; CT- = cataclastic; CR- = crushed; G- = garnetiferous; H- = heterogeneous; i.e. strong interbanding with other lithologies; HA- = hydrothermally altered; MY- = mylonitic; P- = pink; PP- = porphyritic; SH- = semiductilly sheared; W- = white to greyish white.

DDH: 24

DEPTH (metres)		LENGTH	LITHOLOGY	MEASURED STRUCTURES			ORE MINERALIZATION			PETROGRAPHY
From	To			Type	Angle w. core	Depth	From	To	Type	
24,55	79,40	54,85	HTG	MY-V	50°	66,35		26,05	2 mm aspy. veinlet.	Grey to pink medium-grained TG with variably sized inclusions of bleached GQM normally 1-10 cm except at 25,90-26,15, 57,00-,40 and 70,35-,60. It is greyer above 39,70. It is cut by 5-10 cm aplitic LG veins, the thickest occurring at 41,30-,70 (biotite-spotted), 43,05-,30 and 63,95-64,20. The HTG carries variable density of white and pink bleached zones (1-5 cm) normally moderate bleaching. Strong bleaching partly associated with aplite and q. veining occurs at 44,70-46,20; 47,70-51,00; 54,10-,60; 55,00-56,00; 66,20-67,20; 69,30-70,00; 73,80-74,90; 75,30-76,00 and 77,50-78,95. The strongly bleached zones invariably carry some diffusely delineated biotite-bearing remnants of the protolith. 5-30 mm sericite alteration zones are usually found inside the aplitic dykes but locally also in the HTG which contains scattered 2-30 mm q. and q.-musc. veins with bleached envelopes. The q. veins occur more abundantly in 20-30 cm zones at 71,00-79,00. Numerous calcite- and chlorite-veinlets are found at 49,75-50,15. Such veinlets also occur scattered below 70,00. Some stilbite-coated fissures with red envelopes are found at 26,00-33,00.
				"	50°	68,60		28,50	Two q. veins (2 & 10 mm) with aspy. aggr.	
				"	50°	69,35				
								28,80	1 mm aspy. veinlet.	
								29,00	A few diss. aspy. agg. (1-3 mm).	
							32,05	32,30	Aspy. diss. grains and aspy.-coated fissures at three localities.	
								32,50	1 mm aspy. veinlet at the contact of 20 mm q. vein.	
								34,00	Aspy. aggr. (5 mm) along chlorite vein and 5 mm q. vein.	
								35,25	3 mm aspy. veinlet at the contact of 8 mm q. vein.	
								37,35	Diss. aspy. in 2 mm q.-musc. vein.	
								37,95	10 mm q. vein with diss. apsy.	
								38,50	7 mm aspy. vein along margin of 30 mm q. vein.	
								39,60	Aspy. aggr. on 1 mm q.-musc. vein.	
							39,80	39,95	Some 1-2 mm aspy. veins and veinlets in HTG.	
								43,45	Aspy. fissure coating and 3x10 mm aspy. aggr.	

STRUCTURES: BV = breccia vein; FL = foliation; LB = lithological boundary; LL = metamorphic banding and/or primary lithological layering; MY = mylonite foliation; SP = semiductile shear plane; V = mineral veins with prefixes: AN- = ankerite; CA- = calcite; CHL- = chlorite; MY- = mylonitic; Q- = quartz; SR- = sericite; ST- = stilbite.

DDH: 24

DEPTH (metres)		LENGTH	LITHOLOGY	MEASURED STRUCTURES			ORE MINERALIZATION			PETROGRAPHY
From	To			Type	Angle w. core	Depth	From	To	Type	
							45,55	45,65	Two q. veins with aspy. veinlets.	
								50,45	Diss. aspy. in q.vein.	
								55,35	1 mm aspy. veinlet.	
								55,95	2 mm q. - aspy. vein.	
								56,70	Aspy.-coated fissures.	
								60,55	1 mm aspy.-diss. zone in 7 mm q. vein.	
								66,35	Mylonitic q.-aspy. vein (10-15 mm).	
								69,35	Mylonitic q.-aspy. vein (10 mm).	
								71,20	1 mm aspy. vein.	
								72,90	2 mm aspy. vein.	
								74,40	Aspy. fissures along contact of 8 mm q. vein.	
							74,70	74,80	Aspy. fissures in q. veined aplite dyke.	
								76,30	Aspy. grain in q.-chl. vein (10 mm).	
								76,50	" " " " "	
								78,60	Mylonitic q.-aspy. vein (15 mm).	
79,40	80,80	1,40	MD							Dark grey monzodiorite cut by HTG dykes at 80,25-81,00 and 81,10-,20.

STRUCTURES: BV = breccia vein; FL = foliation; LB = lithological boundary; LL = metamorphic banding and/or primary lithological layering; MY = mylonite foliation; SP = semiductile shear plane; V = mineral veins with prefixes: AN- = ankerite; CA- = calcite; CHL- = chlorite; MY- = mylonitic; Q- = quartz; SR- = sericite; ST- = stilbite.

DDH: 24

DEPTH (metres)		LENGTH	LITHOLOGY	MEASURED STRUCTURES			ORE MINERALIZATION			PETROGRAPHY
From	To			Type	Angle w. core	Depth	From	To	Type	
80,80	96,40	15,60	HTG	MY-V	40°	81,55		81,55 84,10 90,75	10 mm mylonitic q.-aspy vein. Aspy.-coated fissure. Aspy. diss. in 6 mm q. vein.	Pink to pinkish grey medium-grained TG with small mafic inclusions along the upper contact. Zonal bleaching increases downwards to 89,00 where the HTG grades into a nearly totally bleached type containing locally small domains of less altered biotite-bearing TG (e.g. 91,40-94,25). The HTG is cut by thin aplite dykes (<10 cm) with a few sericite-altered fractures, more common below 89,00. From 89,80 also increasing density of q. (1-10 mm), q.-musc (1-20 mm) and chlorite-veins (1-2 mm).
96,40	97,70	1,30	MY-B-HTG	MY " "	0° 30° 30°	96,60 97,00 97,70		97,05	Aspy. veinlet.	Fine-grained granitic mylonite with sheared q.-muscovite veins and chlorite-coated fissures.
97,70	99,45	1,75	B-HTG							Pinkish grey to pink, medium-grained and totally bleached HTG with abundant chlorite veins and some stilbite-calcite- and musc.-q.-veins (1-10 mm). The bleached granite becomes gradually more pink, fine-grained and massive towards 99,45 where it starts to look like a pink aplitic LG.
99,45	114,70	15,25	BR-LG							Chlorite-altered and brecciated green to pink and fine- to medium-grained aplitic LG. It is cut by numerous breccia zones and contains scattered chlorite- and q.-veins and stilbite-coated fissures between these except at 105,20-111,20 where chl.- and q.-veins occur abundantly. Some biotite bearing domains are found at 108,00-,40 indicating that some of the LG represents totally bleached HTG. Breccias occur at: 99,45-101,90: Chlorite-cemented breccia with up to 20 mm LG fragments. 101,90-102,85: Rock-flour breccia cemented by q. and containing silicified fragments with network of chlorite veinlets and pervasive chlorite alteration increasing downwards to 102,85.

STRUCTURES: BV = breccia vein; FL = foliation; LB = lithological boundary; LL = metamorphic banding and/or primary lithological layering; MY = mylonite foliation; SP = semiductile shear plane; V = mineral veins with prefixes: AN- = ankerite; CA- = calcite; CHL- = chlorite; MY- = mylonitic; Q- = quartz; SR- = sericite; ST- = stilbite.

DDH: 24

DEPTH (metres)		LENGTH	LITHOLOGY	MEASURED STRUCTURES			ORE MINERALIZATION			PETROGRAPHY
From	To			Type	Angle w. core	Depth	From	To	Type	
										102,85-104,00: Dark green chlorite-rich breccia with late 5-10 mm calcite-stilbite veins at 103,30-,50. 104,00-105,20: Rock-flour breccia with strongly silicified LG fragments cut by variable density of chlorite veins. 106,60-,85: Chlorite-cemented breccia. 111,20-113,70: Quartz-cemented rock-flour breccia with silicified fragments of LG. Fragments of the rock-flour breccia are found in two thin chlorite-breccia zones occurring at 112,60-,95 and 113,20-,55. The latter grades downwards into a thin semi-ductile shear zone with chlorite-calcite veins defining the shear planes.
114,70	125,85	11,45	B-HTG				124,95 125,20	125,00 125,40	5 mm aspy. vein. surrounded by aspy.-coated fissures. A few 1 mm aspy. veinlets.	Pinkish grey medium-grained TG being strongly bleached. Some small greyer biotite-bearing domains at 114,40-115,70 and 119,20-123,00. It is cut by numerous 2-10 cm pink aplite veins and a dyke of coarse grained white LG at 123,05-,60. Scattered stilbite veins with red envelopes especially at 119,00-120,40. Also scattered q. veins (5-10 mm) becoming more abundant at 120,30-124,60. Dark green chlorite-altered and brecciated aplite at 125,35-,60.
125,85	130,55	4,70	SH-GGO	SP " " " " "	50° 30° 25° 30° 30° 20°	126,05 126,65 127,20 128,35 129,25 129,90				Dark chlorite-veined and -altered granodioritic orthogneiss cut by numerous pink aplite veins at 126,95-129,20 and a single dyke at 129,80-,90. The GGO is highly sheared (semi-ductile) with development of chlorite breccia in the aplite-veined parts i.e. 126,95-129,20.

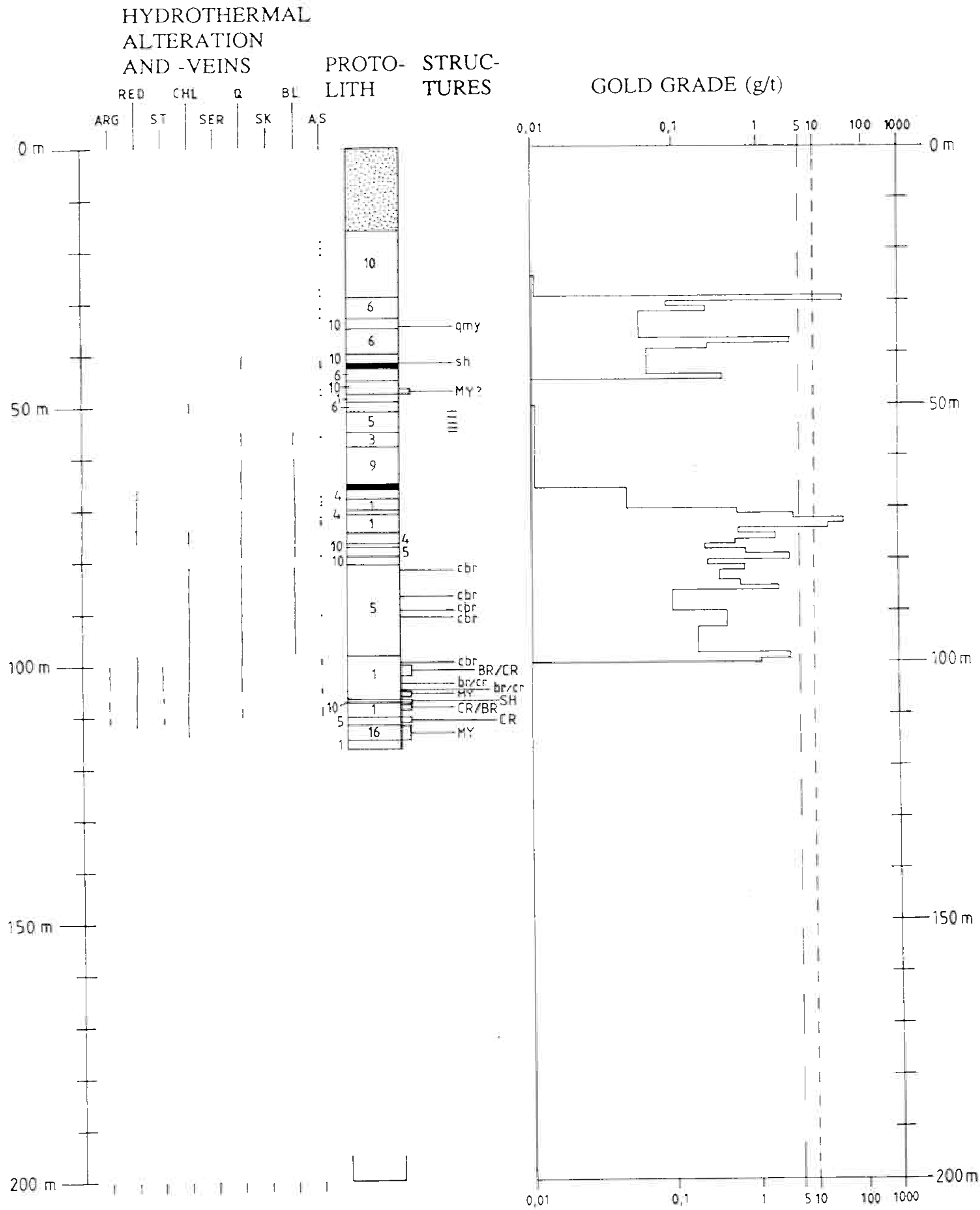
STRUCTURES: BV = breccia vein; FL = foliation; LB = lithological boundary; LL = metamorphic banding and/or primary lithological layering; MY = mylonite foliation; SP = semiductile shear plane; V = mineral veins with prefixes: AN- = ankerite; CA- = calcite; CHL- = chlorite; MY- = mylonitic; Q- = quartz; SR- = sericite; ST- = stilbite.

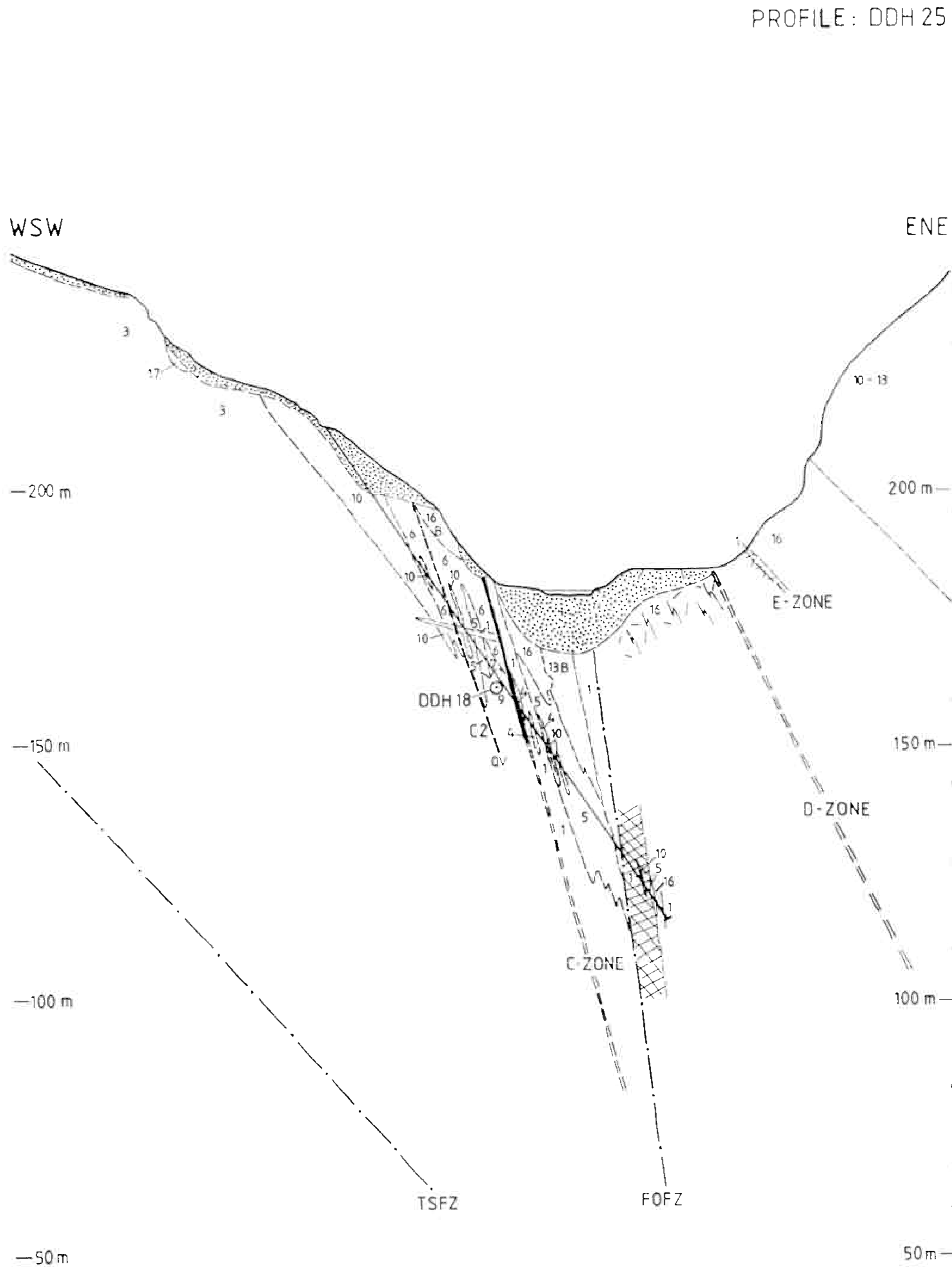
DDH: 24

DEPTH (metres)		LENGTH	LITHOLOGY	MEASURED STRUCTURES			ORE MINERALIZATION			PETROGRAPHY
From	To			Type	Angle w. core	Depth	From	To	Type	
130,55	140,70	10,25	BR-LG	SP BV	65° 25°	131,50 132,15				Pink to pinkish grey and fine- to medium-grained LG. It is cut by thin zones of chlorite-cemented breccias (131,00-132,20; 133,25-,40 and 134,25-135,25), chlorite crackle breccia (130,55-131,00) and q.-cemented rock-flour breccia (135,25-140,70) with variable intensity of brecciation, chlorite veining and chlorite-cementation, the latter at 136,90-137,65; 138,35-,65 and 138,90-139,20. The breccia is cut by 10-20 mm stilbite-calcite veins at 135,25-,85. Elsewhere stilbite-, calcite- and/or chlorite veins are common whereas q. veins are rare.

STRUCTURES: BV = breccia vein; FL = foliation; LB = lithological boundary; LL = metamorphic banding and/or primary lithological layering; MY = mylonite foliation; SP = semiductile shear plane; V = mineral veins with prefixes: AN- = ankerite; CA- = calcite; CHL- = chlorite; MY- = mylonitic; Q- = quartz; SR- = sericite; ST- = stilbite.

SUMMARY CORELOG-DIAGRAM: DDH 25





PROFILE: DDH 25
WSW
ENE
200 m
150 m
100 m
50 m
E-ZONE
D-ZONE
C-ZONE
DDH 18
C2
QV
TSFZ
FOFZ
10 - 13

DRILLHOLE No.: 25 AZIMUTH: 69° INCLINATION: 56° LENGTH: 116,20 m Horiz.: 65,00 m Vert.: 96,35 m CORE DIM.: 36 mm
LOCATION: C-ZONE
COMPANY: A/S SULFIDMALM NGO-COORD.:Y: -19373,278 X: 798880,091 ZONE: D ALTITUDE: 212,389 m.a.s.l.
YEAR: 1982 UTM-COORD.,E: 397180 N: 7229330 ZONE: 33

DEPTH (metres)		LENGTH	LITHOLOGY	MEASURED STRUCTURES			ORE MINERALIZATION			PETROGRAPHY
From	To			Type	Angle w. core	Depth	From	To	Type	
0,00	16,00	16,00	OB/CL							
16,00	28,80	12,80	A	FL	30°	16,30		18,05 19,50 20,85 23,00 25,70 27,40 28,65	20 mm q.-musc. vein with diss. aspy. xx. 10 mm q. vein with diss. aspy. aggr. Q. vein with diss. aspy. xx along contact with chl.-altered wallrock. 15 mm q. vein with diss. py. " " " " " 40 mm q. vein with chlorite fissures and 5 mm aspy. vein along the margin. 20 mm q. vein with diss. aspy. along the margin.	Fine-grained massive to medium-grained hornblende porphyritic amphibolites. Porphyritic type with 1 x 5 mm² hbl. needles at 17,90-19,80; 20,40-22,05; 23,20-24,95 and 25,70-27,10. These zones contain greyish green chlorite?-altered zones. The amphibolites are cut by scattered 1-3 cm grey TG veins the thickest occurring at 25,70-26,50. Also some 3-20 mm q. veins rimmed by muscovite.
							20,65			
28,80	33,15	4,35	MD				31,10	31,20 32,70	Q. vein with up to 10 mm aspy. veinlets. 10 mm aspy. vein in q.	Medium- to coarse-grained monzodiorite with a variety containing unorientated hbl. needles (0,1-0,5 x 3-10 mm) at 31,45-33,15. Inclusion of amphibolite at 30,85-31,45. Scattered 2-5 mm q. veins, some thicker e.g. at 32,95-33,05.

LITHOLOGIES: A: = amphibolite; ABGN = dark grey amphibole-biotite gneiss; BAG = dark grey biotite-rich anatectic granite; BGN = dark grey biotite gneiss; CGN = greenish calc-silicate gneiss; CL = coreloss; CM = cores missing; CSCH = calcareous schist; GQM = dark grey biotite-quartz monzonite; GGO = grey granodioritic orthogneiss; GTG = grey medium-grained two-mica granite; HTG = hybrid pinkish grey medium-grained two-mica granite; IB = intrusion breccia; LG = leucocratic granite; M = calcite marble; MBGN = migmatitic biotite gneiss; MD = dark grey monzodiorite; MSCH = micaschist/-gneiss; OB/CL = overburden and/or coreloss in surface weathered rocks; P = pegmatite and pegmatitic granite; Q = hydrothermal quartz-vein or -lens; SK = skarn-altered marble. Prefixes: B- = bleached; BR- = brecciated; CT- = cataclastic; CR- = crushed; G- = garnetiferous; H- = heterogeneous; i.e. strong interbanding with other lithologies; HA- = hydrothermally altered; MY- = mylonitic; P- = pink; PP- = porphyritic; SH- = semiductilly sheared; W- = white to greyish white.

DDH: 25

DEPTH (metres)		LENGTH	LITHOLOGY	MEASURED STRUCTURES			ORE MINERALIZATION			PETROGRAPHY
From	To			Type	Angle w. core	Depth	From	To	Type	
33,15	35,10	1,95	A							Medium-grained hornblende porphyritic amphibolite cut by some 5 cm wide light grey TG and MD dykes. Some q-musc. veins (e.g. 33,50-,55 and 34,05-,10). Sheared q.-chl. vein at 34,45.
35,10	40,15	5,05	MD							Medium-grained monzodiorite with uorientated ascicular hornblende. It is cut by 0,5-10 cm white LG dykes becoming abundant below 39,45.
40,15	41,60	1,45	A					41,20	Diss. aspy. in A along the margin of 10 mm q. vein.	Medium-grained amphibolite with many 5-20 mm q. veins.
41,60	42,60	1,00	Q	LB "	45° 75°	41,60 42,60	41,60	42,60	Diss. aspy. xx and aggr. plus 1 mm veinlets. Py. diss. along the upper margin.	Milky quartz-vein with muscovite aggr. along the lower margin. Along the upper margin at 41,60-,95 the vein is sheared and contains by laminated platy q. and chlorite-coated fractures.
42,60	45,25	2,65	MD	BV	85°	43,15				Medium-grained MD with development of foliation along 20 mm calcite-cemented breccia. The MD is cut by 10-20 mm aplite veins (max. at 44,70-,85) and borders on medium-gr. amphibolite and white biotite-spotted LG at 42,80-,95 and 42,60-,80, respectively.
45,25	47,40	2,15	A					46,80	Diss. aspy. aggr. (1-2 mm) in the centre of a thin aplite vein.	Fine-grained amphibolite with scattered 2-15 mm white to pink aplite veins. Below 46,60 the amphibolite has the resemblance of a strongly foliated medium-grained monzodiorite.
47,40	49,15	1,75	W-LG					47,60	Massiv 15 mm aspy. vein.	White aplitic leucogranite containing inclusions of GQM at 47,75-48,30 and below, where small diffusely delineated incl. exist in biotite-spotted LG. A few 10 mm sericite alteration zones in LG and some scattered 5-20 mm glassy q. veins.

STRUCTURES: BV = breccia vein; FL = foliation; LB = lithological boundary; LL = metamorphic banding and/or primary lithological layering; MY = mylonite foliation; SP = semiductile shear plane; V = mineral veins with prefixes: AN- = ankerite; CA- = calcite; CHL- = chlorite; MY- = mylonitic; Q- = quartz; SR- = sericite; ST- = stilbite.

DDH: 25

DEPTH (metres)		LENGTH	LITHOLOGY	MEASURED STRUCTURES			ORE MINERALIZATION			PETROGRAPHY
From	To			Type	Angle w. core	Depth	From	To	Type	
49,15	51,15	2,00	MD							Medium-grained monzodiorite with ascicular hornblende (2-5 mm). Some 10-20 mm wide greyish green chlorite-altered zones. Aplitic LG dyke at 50,70-,80 with small chlorite-altered MD inclusions.
51,15	55,30	4,15	GQM	FL "	30° 30°	52,20 53,60				Dark grey biotite-quartz monzonite with abundant aplitic LG veins. Moderate zonal bleaching of the GQM which is weakly foliated. Chlorite-altered amphibolite inclusion at 51,20-,25. Scattered stilbite-coated fissures.
55,30	57,60	2,30	B-GTG				56,75	56,95	Scattered aspy. veins and veinlets up to 10 mm wide associated with network of chlorite veins.	Strongly bleached medium-grained GTG containing abundant 1-2 mm q. veins and scattered chlorite veinlets.
57,60	64,95	7,35	IB (GBT/ GTG)							Intrusion breccia of dark biotite-quartz monzonite and lighter grey two-mica granite. Both show moderate zonal bleaching except below 60,00 where they are strongly bleached and quartz-veined (2-50 mm). Nearly totally bleached and silicified q. veined granite at 63,00-64,95. Aplite dykes with q. veins at 59,45-,60 and 62,30-63,00.
64,95	66,10	1,15	Q							Milky quartz-vein.
66,10	67,90	1,80	HTG					67,50	5 mm aspy. vein along the margin of q. vein.	Mixture of bleached grey TG and pinkish grey HTG with 5-50 mm q. veins the widest being found at 66,30-,35 and 67,50-,55. Dense q. veining at 67,60-,90.

STRUCTURES: BV = breccia vein; FL = foliation; LB = lithological boundary; LL = metamorphic banding and/or primary lithological layering; MY = mylonite foliation; SP = semiductile shear plane; V = mineral veins with prefixes: AN- = ankerite; CA- = calcite; CHL- = chlorite; MY- = mylonitic; Q- = quartz; SR- = sericite; ST- = stilbite.

DDH: 25

DEPTH (metres)		LENGTH	LITHOLOGY	MEASURED STRUCTURES			ORE MINERALIZATION			PETROGRAPHY
From	To			Type	Angle w. core	Depth	From	To	Type	
67,90	70,00	2,10	P-LG					68,45 68,60	5 mm q. vein with aspy.-coated fractures. Aspy.-coated fracture.	Fine- and medium-grained pink LG with some small (1 cm) biotite-rich schlieren and a few chlorite and stilbite veinlets.
70,00	70,90	0,90	B-HTG					70,15	5 mm aspy. vein.	Strongly bleached pinkish HTG with network of 1-10 mm q. veins.
70,90	74,30	2,40	P-LG				 72,35	71,05 72,10 72,15 72,50 72,90	2 mm aspy. vein. 2 x 10 mm aspy. aggr. 2 mm q. vein with aspy. diss. Network of 1-3 mm aspy. veinlets in aplite. 5 mm aspy. veinlet	Pink medium-grained LG with dense network of 1-10 mm q. veins. Some scattered chlorite and stilbite veinlets.
74,30	76,50	2,20	B-HTG							Strongly bleached medium-grained HTG with abundant 1-20 mm q. veins and some small amphibolite inclusions (2-5 cm).
76,50	77,20	0,70	A							Fine- to medium-grained amphibolite. Q. veined below 76,90.
77,20	79,00	1,80	GQM				78,95	79,00	Several 1 mm aspy. veinlets.	Variably bleached medium-grained and grey biotite-quartz monzonite. It contains abundant q.- and chlorite-veins and -veinlets surrounded by silicified (bleached) GQM with chlorite-altered biotite.

STRUCTURES: BV = breccia vein; FL = foliation; LB = lithological boundary; LL = metamorphic banding and/or primary lithological layering; MY = mylonite foliation; SP = semiductile shear plane; V = mineral veins with prefixes: AN- = ankerite; CA- = calcite; CHL- = chlorite; MY- = mylonitic; Q- = quartz; SR- = sericite; ST- = stilbite.

DDH: 25

DEPTH (metres)		LENGTH	LITHOLOGY	MEASURED STRUCTURES			ORE MINERALIZATION			PETROGRAPHY
From	To			Type	Angle w. core	Depth	From	To	Type	
79,00	80,60	1,60	A							Fine-grained amphibolite with some 5-20 mm q. veins and many thin calcite veinlets.
80,60	98,35	17,45	B-GQM					90,20	1 mm aspy.-chlorite vein.	Moderately to strongly bleached biotite-quartz monzonite cut by abundant thin pink and white aplite and pegmatite dykes. The widest aplites with some sericite alteration along fractures occur at 80,95-81,35; 84,40-85,20; 88,50-,75; 89,30-,60; 90,00-,70; 93,90-94,15 and 95,20-,50 (biotite-spotted). Pegmatites are found at e.g. 81,05-,40 and 88,20-,50. MD incl. at 90,70-91,40. Several 1-20 mm q. veins becoming very abundant at 85,15-,.40. Chlorite veinlets are common forming crackle breccia zones at 81,65-,90; 86,50-,85; 89,30-,40 and 90,20-,60.
98,35	100,20	1,85	P-LG					98,95 99,25 99,75 99,95	1 mm aspy. vein. " " " " " " " " "	Pink fine- to medium-grained leuco-granite containing abundant 1-10 mm q. veins and veinlets with associated silicification of the granite. It locally grades into pegmatitic segregations. Strong chlorite veining at 98,35-,50 and 99,00-,40. Elsewhere scattered 1-3 mm chlorite and stilbite ± calcite veins and veinlets.
100,20	106,45	6,25	BR-CR-LG	LB SP LB "	20° 20° -20° 30°	104,80 105,40 105,85 106,45	104,80	105,20	Aplite with some q. veins, super-imposed by a network of 1-10 mm aspy. veins.	Pink aplitic LG cut by abundant breccia zones and crush zones. Chlorite-cemented breccias locally with q. veined fragments occur at 100,60-101,40; 103,50-,60 and 104,55-,80. The two latter are situated within clay-gouge zones which also occur at 100,20-,60 and 101,40-102,00. A chlorite-stilbite breccia with chlorite-altered fragments is found at 105,90-106,05. Between these tectonic zones the LG carries a network 1-10 mm stilbite ± calcite veins and some q. veins. Inclusion of finely banded mylonitic marble occurs at 105,20-,90.
106,45	107,30	0,85	SH-A	SP	25°	106,50				Strongly foliated and calcite veined amphibolite, transformed into a soft clay-altered variety at 106,85-107,30.

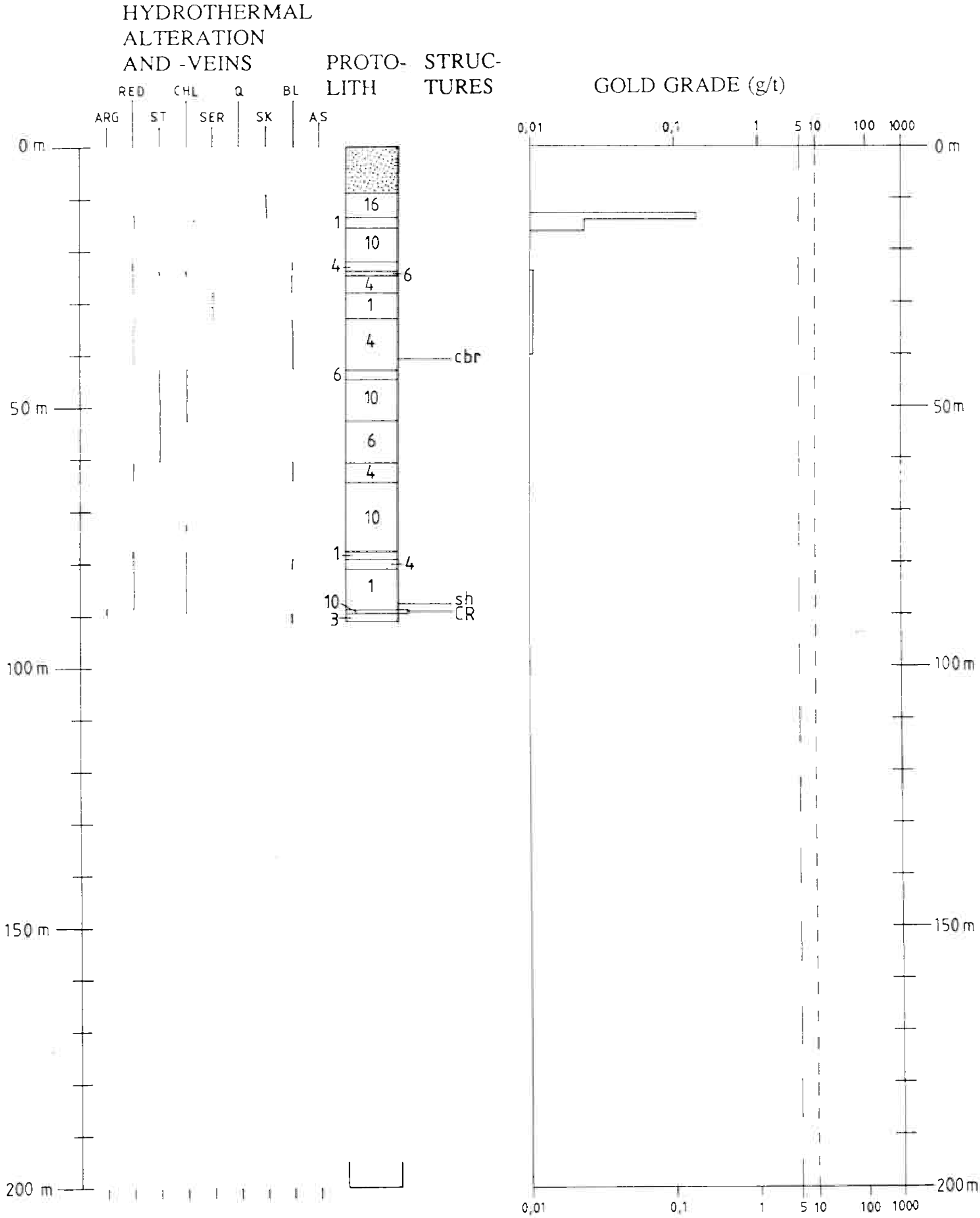
STRUCTURES: BV = breccia vein; FL = foliation; LB = lithological boundary; LL = metamorphic banding and/or primary lithological layering; MY = mylonite foliation; SP = semiductile shear plane; V = mineral veins with prefixes: AN- = ankerite; CA- = calcite; CHL- = chlorite; MY- = mylonitic; Q- = quartz; SR- = sericite; ST- = stilbite.

DDH: 25

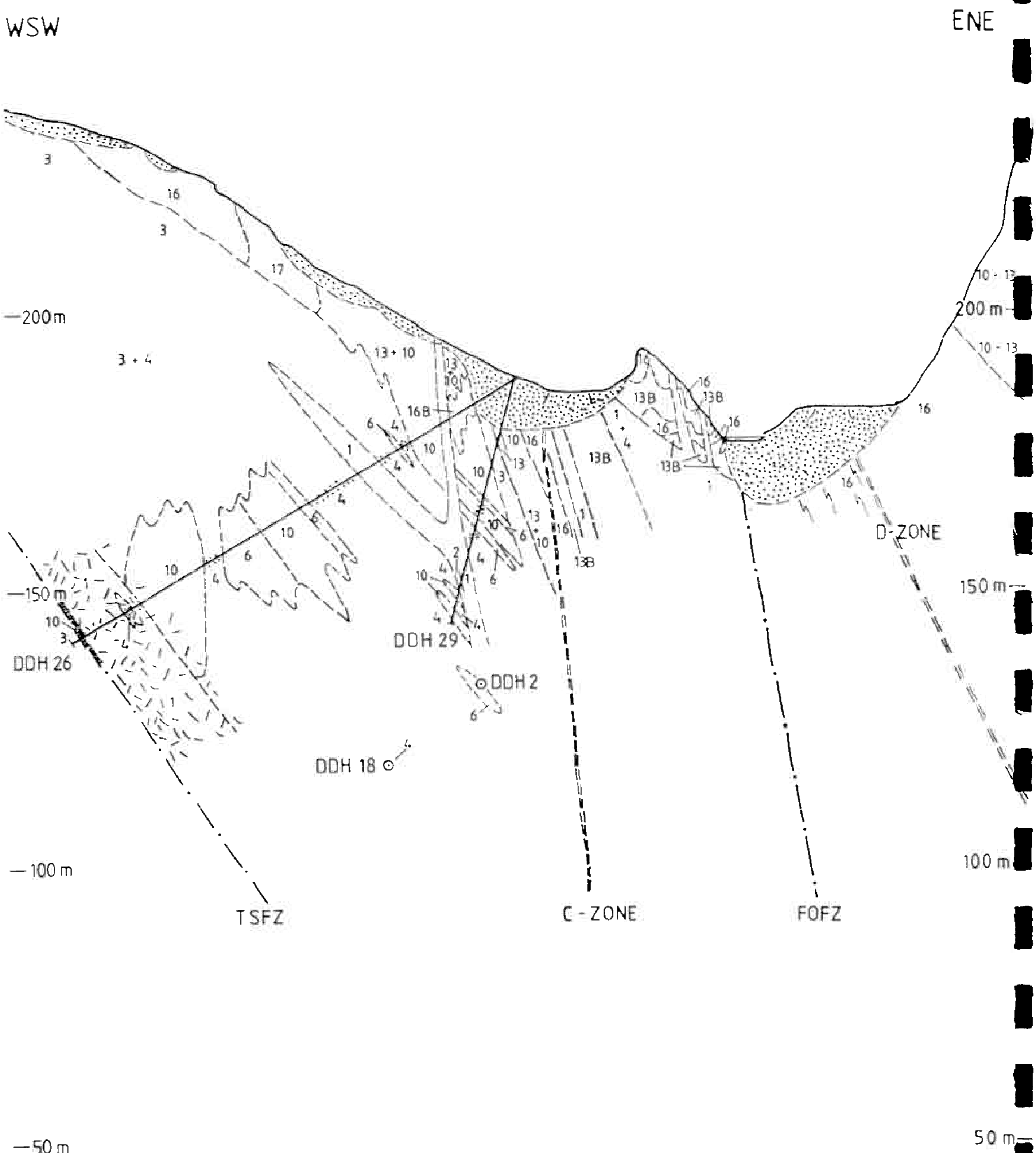
DEPTH (metres)		LENGTH	LITHOLOGY	MEASURED STRUCTURES			ORE MINERALIZATION			PETROGRAPHY
From	To			Type	Angle w. core	Depth	From	To	Type	
107,30	110,05	2,75	BR-CR-LG	BV "	12° 30°	108,00 108,20	108,20	110,05	Aspy. veinlets associated with chlorite crackle breccias.	Quartz and chlorite-veined and silicified pinkish grey aplitic LG. Chlorite-cemented breccias with chlorite-altered fragments are found inside clay gouge zones at 107,30-,85 and 108,00-,50. Chlorite crackle breccias occur abundantly at 108,50-110,05 where also numerous 1 mm stilbite- and/or calcite-veins are found.
110,05	111,50	1,40	CR-GQM							Clay gouge with 10-30 mm fragments of stilbite- and/or calcite-veined (1-30 mm) and chlorite-altered GQM. Amphibolite fragment at 111,30-,40.
111,50	114,50	3,00	MY-M	MY " " "	25° 30° 30° 20°	111,80 112,05 112,50 114,10				Finely banded, folded and mylonitic grey marble containing 5-20 cm bands and boudins of CGN and calcite-bearing skarn below 112,60. It is cut by a pink LG dyke at 111,65-112,05 and a bleached HTG dyke at 112,30-,45. The former dyke is strongly foliated and contains ptygmatic q. veins.
114,50	116,20	1,70	P-LG	LL	15°	116,18				Pinkish grey aplitic LG with inclusions of marble (114,60-,70 and 116,15-,20) and chlorite-altered granodioritic orthogneiss (115,10-,70). A zone of pink pegmatite and pegmatitic granite occurs at 115,70-116,15. Abundant sericite alteration zones at 114,95-115,10. The rocks carry scattered chlorite veins and veinlets.

STRUCTURES: BV = breccia vein; FL = foliation; LB = lithological boundary; LL = metamorphic banding and/or primary lithological layering; MY = mylonite foliation; SP = semiductile shear plane; V = mineral veins with prefixes: AN- = ankerite; CA- = calcite; CHL- = chlorite; MY- = mylonitic; Q- = quartz; SR- = sericite; ST- = stilbite.

SUMMARY CORELOG-DIAGRAM: DDH 26



PROFILE: DDH 26 & 29



DRILLHOLE No.: 26 AZIMUTH: ca. 225° INCLINATION: 31° LENGTH: 91,10 m Horiz.: 78,10 m Vert.: 46,90 m CORE DIM.: 36 mm
LOCATION: C-ZONE
COMPANY: A/S SULFIDMALM NGO-COORD.:Y: -19360,0 X: 798918,5 ZONE: D ALTITUDE: 188,0 m.a.s.l.
YEAR: 1982 UTM-COORD.,E: 397200 N: 7229370 ZONE: 33

DEPTH (metres)		LENGTH	LITHOLOGY	MEASURED STRUCTURES			ORE MINERALIZATION			PETROGRAPHY
From	To			Type	Angle w. core	Depth	From	To	Type	
0,00	8,70	8,70	OB/CL							
8,70	13,65	4,95	SK							Dark green to greenish brown garnet-clinopyroxene skarn with amphibole aggregatres, especially at 13,20-,65. Garnet-rich at 8,70-9,80. The skarn is cut by a composite HTG and pegmatite (12,60-,70) dyke at 12,60-13,15. The HTG is strongly bleached.
13,65	15,50	1,85	P-LG							Pink aplitic LG with areas containing biotite-chlorite aggregates (13,65-,95). It carries scattered 5-10 mm q. veins and locally abundant q-musc. veins (14,05-,10) and red drusy stilbite veins.
15,50	22,30	6,80	A							Fine-grained amphibolite with more medium-grained varieties where the foliation is defined by parallel orientated needles and aggregates (1-2 x 3-6 mm) of hornblende (17,20-18,70). The upper part of the amphibolite becomes more banded and contains more biotite and chlorite and grades into BGN (15,50-16,35). It is cut by numereous variably bleached pink HTG dykes and veins (e.g. 17,95-18,50 and 19,35-,55, the latter being muscovite-rich). Some of the dykes show weak greenish grey chlorite alteration along their margins. Also some scattered 1-8 mm calcite and/or veins and q-musc. veins.

LITHOLOGIES: A: = amphibolite; ABGN = dark grey amphibole-biotite gneiss; BAG = dark grey biotite-rich anatectic granite; BGN = dark grey biotite gneiss; CGN = greenish calc-silicate gneiss; CL = coreloss; CM = cores missing; CSCH = calcareous schist; GQM = dark grey biotite-quartz monzonite; GGO = grey granodioritic orthogneiss; GTG = grey medium-grained two-mica granite; HTG = hybrid pinkish grey medium-grained two-mica granite; IB = intrusion breccia; LG = leucocratic granite; M = calcite marble; MBGN = migmatitic biotite gneiss; MD = dark grey monzodiorite; MSCH = micaschist/-gneiss; OB/CL = overburden and/or coreloss in surface weathered rocks; P = pegmatite and pegmatitic granite; Q = hydrothermal quartz-vein or -lens; SK = skarn-altered marble. Prefixes: B- = bleached; BR- = brecciated; CT- = cataclastic; CR- = crushed; G- = garnetiferous; H- = heterogeneous; i.e. strong interbanding with other lithologies; HA- = hydrothermally altered; MY- = mylonitic; P- = pink; PP- = porphyritic; SH- = semiductilly sheared; W- = white to greyish white.

DDH: 26

DEPTH (metres)		LENGTH	LITHO-LOGY	MEASURED STRUCTURES			ORE MINERALIZATION			PETROGRAPHY
From	To			Type	Angle w. core	Depth	From	To	Type	
22,30	23,80	1,50	B-HTG							Pinkish medium-grained TG with strong zonal bleaching in association with a white fine-grained aplitic LG dyke with biotite aggregates (22,75-23,10). Some scattered stilbite-coated fractures.
23,80	24,55	0,75	MD							Greyish green chlorite-altered monzodiorite (medium-gr.) with ascicular hornblende (0,1 x 2-3 mm). It carries 1-8 mm calcite-stilbite veins with red envelopes.
24,55	28,15	3,60	B-HTG							Light pinkish grey to pink medium-grained TG showing strong to moderate zonal bleaching in association with dykes (24-85-25,05) and veins (1-5 cm) of white LG (partly aplitic) becoming very abundant below 27,00. Scattered stilbite-coated joints.
28,15	32,80	4,65	W-LG							Dense network of white, fine- to medium-grained and biotite-spotted LG dykes intermingled with slices and inclusions of strongly bleached HTG (30,15-,70 and 31,25-,50) with small inclusions 1-5 cm of MD (e.g. 31,25-,40). Sericite-altered zones (5-20 mm) are common. In addition occur scattered calcite-stilbite veins.
32,80	42,70	9,90	B-HTG							Light pinkish grey TMG showing strong zonal bleaching in association with aplitic LG dykes and veins. The TG and LG contain inclusions of amphibolite (38,55-,65: chlorite-alteration, 40,30-,50 and 40,75-,85), monzodiorite (39,85-40,15: red stilbite-alteration and 41,55-,60) and bleached dark grey biotite-granite (41,85-,95). Thicker LG dykes are found at 38,70-39,00 and 40,50-41,00. The latter carries a 5 cm wide chlorite crackle breccia along its upper margin. Some scattered calcite-stilbite veins.

STRUCTURES: BV = breccia vein; FL = foliation; LB = lithological boundary; LL = metamorphic banding and/or primary lithological layering; MY = mylonite foliation; SP = semiductile shear plane; V = mineral veins with prefixes: AN- = ankerite; CA- = calcite; CHL- = chlorite; MY- = mylonitic; Q- = quartz; SR- = sericite; ST- = stilbite.

DDH: 26

DEPTH (metres)		LENGTH	LITHOLOGY	MEASURED STRUCTURES			ORE MINERALIZATION			PETROGRAPHY
From	To			Type	Angle w. core	Depth	From	To	Type	
42,70	44,50	9,90	MD							Medium-grained monzodiorite containing a network of 1-5 mm calcite-stilbite-chlorite veins with up to 10 mm wide envelopes of greyish green chlorite alteraton. White LG dyke at 47,50-,85.
44,50	52,40	7,90	A	FL " "	60° 60° 60°	46,05 47,95 49,05				Fine- to medium-grained massive amphibolite with zones containing parallelly orientated needles (1 x 3-5 mm²) of hornblende. It is cut by several 1-10 cm LG and HTG dykes and MD dykes at 47,50-,85; 50,35-,45 and 51,65-52,00. It contains abundant calcite and/or stilbite veins (1-5 mm) and locally epidote veins with variably sized envelopes of greyish green chlorite alteration.
52,40	60,65	8,25	MD							Medium-grained monzodiorite cut by some veins (1-5 cm) and dykes of moderately bleached HTG (59,25-,40), pink aplitic LG (56,60-,70) and pegmatite with 1-2 mm epidote veinlets (59,95-60,20). It carries small inclusions of amphibolite. The MD contains a sparse network of 1-5 mm veins of stilbite-calcite and locally epidote, surrounded by variably sized envelopes where the feldspar in the MD becomes brick-red (e.g. 55,00-55,20 and 59,40-60,65).
60,65	64,35	3,70	B-HTG							Red, pinkish, grey and light grey medium-grained TG. Strongly bleached in association with abundant 5-10 mm veins of pink aplitic LG. Locally pervasive light greyish green chlorite alteration.
64,35	77,50	13,15	A	FL "	55° 60°	66,20 67,65				Fine-grained and dark green amphibolite with parallel porphyritic black needles (0,1-1 x 2-5 mm²) of hornblende. It is cut by dykes of variably bleached and chlorite-altered GTG (66,65-,75; 66,90-67,35; 71,20-,30; 72,65-73,20 and 75,35-,45) and MD (68,60-69,20; 69,90-70,10 and 72,10-,40). It carries sparse veins and veinlets (max. 15 mm) of calcite, stilbite, chlorite and/or epidote.

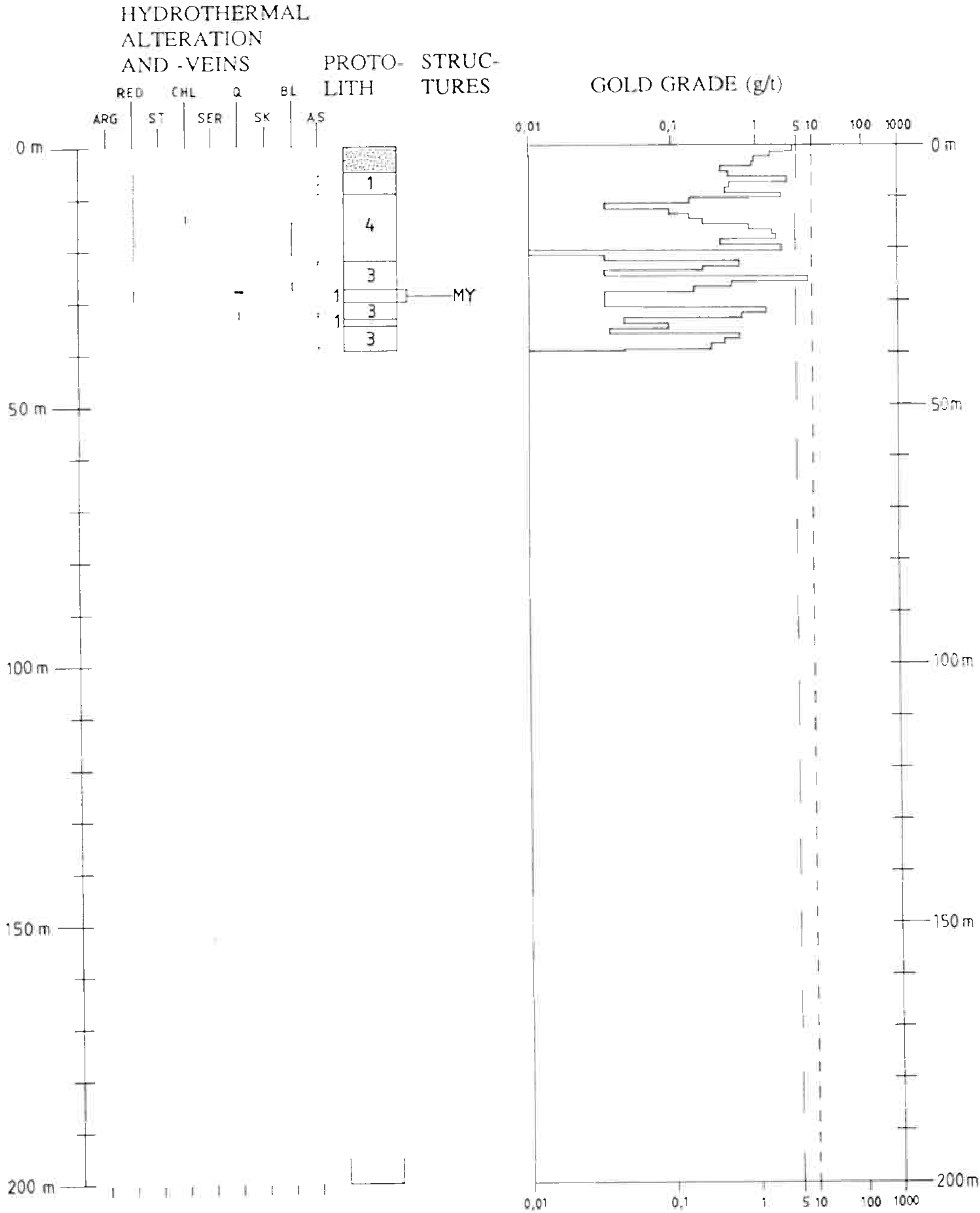
STRUCTURES: BV = breccia vein; FL = foliation; LB = lithological boundary; LL = metamorphic banding and/or primary lithological layering; MY = mylonite foliation; SP = semiductile shear plane; V = mineral veins with prefixes: AN- = ankerite; CA- = calcite; CHL- = chlorite; MY- = mylonitic; Q- = quartz; SR- = sericite; ST- = stilbite.

DDH: 26

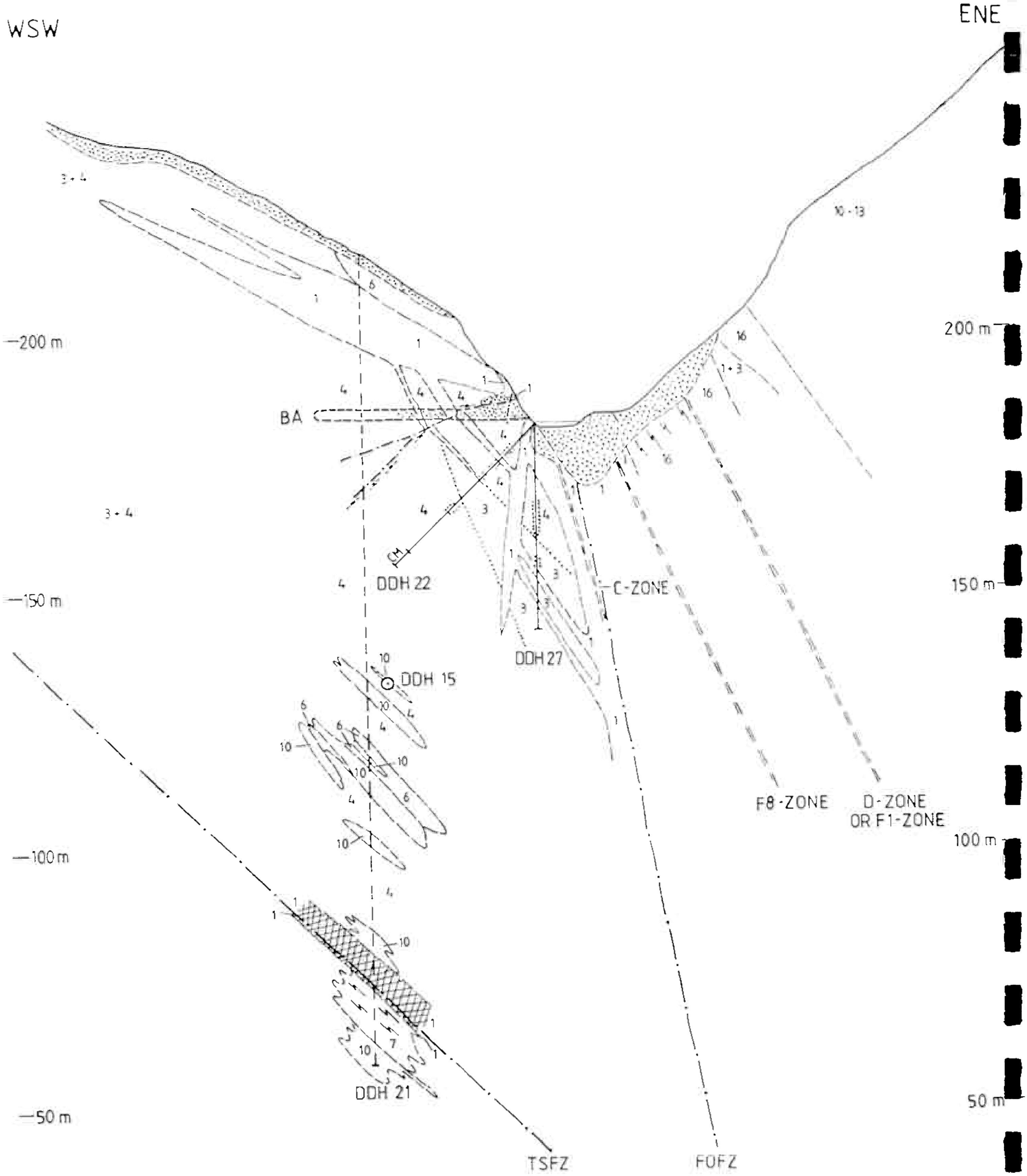
DEPTH (metres)		LENGTH	LITHOLOGY	MEASURED STRUCTURES			ORE MINERALIZATION			PETROGRAPHY
From	To			Type	Angle w. core	Depth	From	To	Type	
77,50	79,00	1,50	P-LG							Pink, massive and aplitic LG becoming greyer close to the upper border due to soot-grey alteration (77,50-78,50) in association with chlorite veinlets.
79,00	80,70	1,70	B-HTG							Strongly bleached pinkish grey TG containing green chlorite-altered biotite and abundant 0,5-1 cm aplite veins. Some small inclusions of bleached GQM. Scattered chlorite-coated fractures.
80,70	88,70	8,00	P-LG							Dominantly pink aplitic LG with some more greyish biotite-spotted zones (e.g. 87,65-88,70). It contains abundant hairline fractures with chlorite and locally 1-2 mm veins of epidote. The density of chlorite veinlets increase towards the lower border and towards inclusions of chlorite-altered amphibolite (82,60-,90) and fragmented chlorite schist (87,20-,65). The LG also carries aplite-veined incl. of strongly bleached GTG e.g. 81,40-,80 and 82,30-,60).
88,70	89,40	0,70	CR-A							Clay gouge with fragments of chlorite schist.
89,40	91,10	1,70	B-GTG							Strongly bleached light grey TG with 1-5 cm aplitic veins and some scattered chlorite veinlets.

STRUCTURES: BV = breccia vein; FL = foliation; LB = lithological boundary; LL = metamorphic banding and/or primary lithological layering; MY = mylonite foliation; SP = semiductile shear plane; V = mineral veins with prefixes: AN- = ankerite; CA- = calcite; CHL- = chlorite; MY- = mylonitic; Q- = quartz; SR- = sericite; ST- = stilbite.

SUMMARY CORELOG-DIAGRAM: DDH 27



PROFILE: DDH 22 & 27



DRILLHOLE No.: 27 AZIMUTH: INCLINATION: 90° LENGTH: 39,40 m Horiz.: 0,00 m Vert.: 39,40 m CORE DIM.: 36 mm
LOCATION: C-ZONE
COMPANY: A/S SULFIDMALM NGO-COORD.:Y: -19327,5 X: 798852,5 ZONE: D ALTITUDE: 182,0 m.a.s.l.
YEAR: 1982 UTM-COORD.,E: 397220 N: 7229230 ZONE: 33

DEPTH (metres)		LENGTH	LITHOLOGY	MEASURED STRUCTURES			ORE MINERALIZATION			PETROGRAPHY
From	To			Type	Angle w. core	Depth	From	To	Type	
0,00	5,00	5,00	OB/CL							
5,00	9,25	4,25	LG				5,70 9,00	5,80 7,15 9,20	Aspy. diss. along some 10-20 mm q. veins. 1 mm aspy. veinlet. 2-3 mm aspy. veinlets along some q. veins.	White to pink and fine- to medium-grained leuco-granite. It contains a dense set of q. veins (2-30 mm) with associated silification of the wallrocks, some 5 cm dark chlorite-altered GQM inclusions and a few chlorite veinlets.
9,25	21,95	12,70	HTG							Pink to pinkish grey and moderately to strongly bleached TG with diffusely delineated more biotite-rich inclusions and inclusions of fine-grained chlorite-altered amphibolite (13,70-14,40). The granite is cut by 1-20 cm pink aplite veins, e.g. 13,50-,70 and 21,20-,95. Strong bleaching at 14,40-21,20. Some scattered 2-20 mm q. veins.
21,95	27,50	5,55	GTG	MY-V	25°	25,30		23,30 23,50 25,30	Aspy. diss. along q. vein. " " " " " Mylonitic q. vein with a few 1-3 mm aspy. veinlets.	Light grey medium-grained TG with some small (1-10 cm) biotite-rich mafic inclusions, e.g. 25,85-,95. It is strongly bleached at 26,00-27,50 elsewhere moderate zonal bleaching. Some small bleached GQM inclusions (1-10 cm), e.g. at 25,85-,95. It contains scattered 5-20 mm q.veins.
27,50	29,80	2,30	MY-LG	MY-B-GTG	20° 10° 0° 20°	28,10 28,60 29,05 29,65				Fine- to medium-grained granitic mylonite containing scattered sheared 10 mm wide q.-muscovite-veins. Stilbite veins and sericite-altered zones are orientated parallel to the shear planes. The mylonite is limited by a thick glassy q. vein with muscovite foliated shear planes at 27,50-28,10.

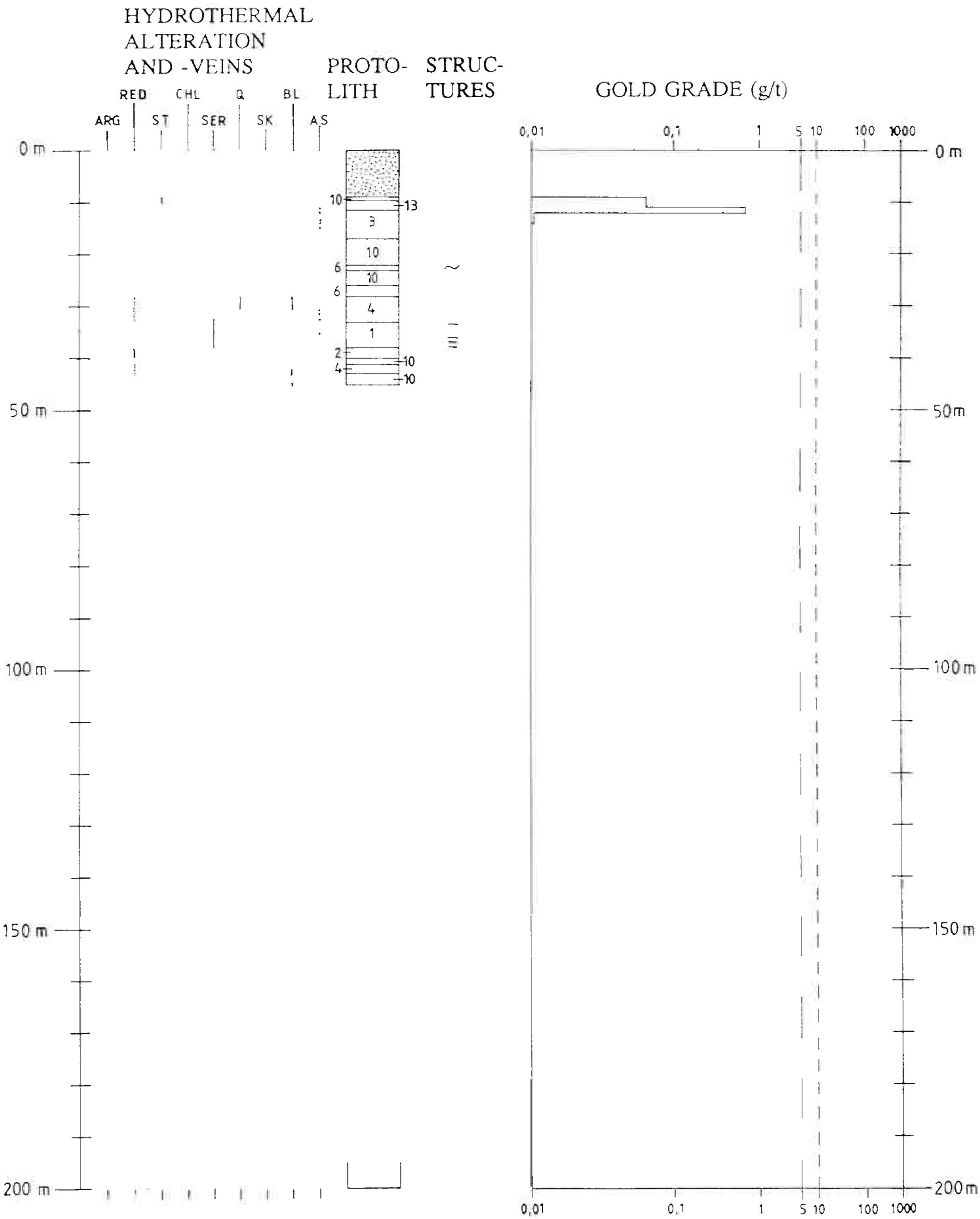
LITHOLOGIES: A: = amphibolite; ABGN = dark grey amphibole-biotite gneiss; BAG = dark grey biotite-rich anatectic granite; BGN = dark grey biotite gneiss; CGN = greenish calc-silicate gneiss; CL = coreloss; CM = cores missing; CSCH = calcareous schist; GQM = dark grey biotite-quartz monzonite; GGO = grey granodioritic orthogneiss; GTG = grey medium-grained two-mica granite; HTG = hybrid pinkish grey medium-grained two-mica granite; IB = intrusion breccia; LG = leucocratic granite; M = calcite marble; MBGN = migmatitic biotite gneiss; MD = dark grey monzodiorite; MSCH = micaschist/-gneiss; OB/CL = overburden and/or coreloss in surface weathered rocks; P = pegmatite and pegmatitic granite; Q = hydrothermal quartz-vein or -lens; SK = skarn-altered marble. Prefixes: B- = bleached; BR- = brecciated; CT- = cataclastic; CR- = crushed; G- = garnetiferous; H- = heterogeneous; i.e. strong interbanding with other lithologies; HA- = hydrothermally altered; MY- = mylonitic; P- = pink; PP- = porphyritic; SH- = semiductilly sheared; W- = white to greyish white.

DDH: 27

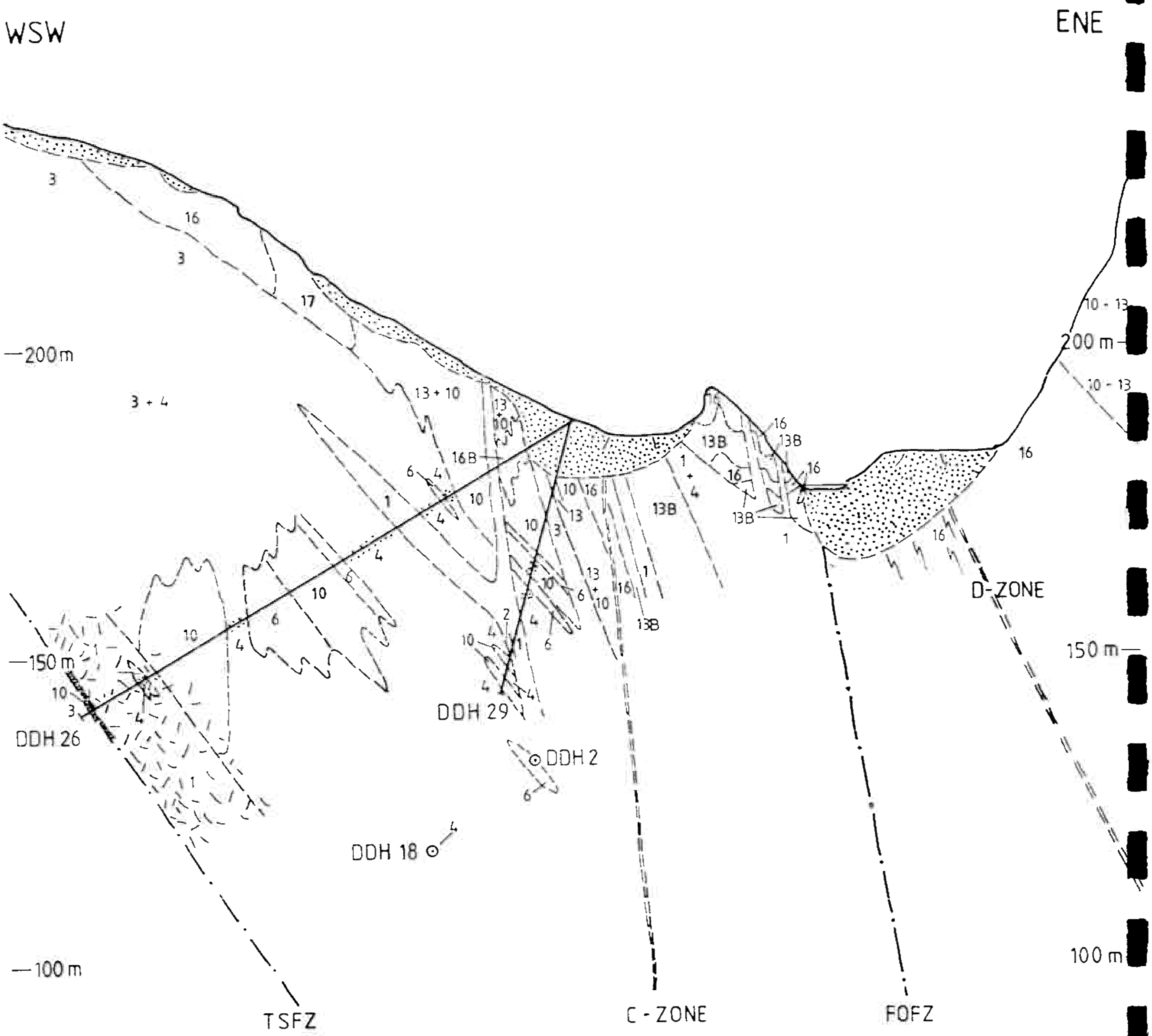
DEPTH (metres)		LENGTH	LITHO-LOGY	MEASURED STRUCTURES			ORE MINERALIZATION			PETROGRAPHY
From	To			Type	Angle w. core	Depth	From	To	Type	
29,80	33,30	3,50	GTG					32,25 32,60	5 mm aspy. veinlet cutting q. vein margin. Aspy. diss. along the contact of 10 mnm q. vein.	Light grey medium-grained TG containing abundant 1-20 mm q ± musc. veins at 31,65 - 33,30. It is cut by thin white aplite veins and dykes, e.g. at 31,50-32,00.
33,30	34,55	1,15	W-LG							White medium-grained massive LG.
34,55	39,40	4,85	GTG					38,60	Aspy.-coated fracture in q. vein.	Light grey medium-grained TG showing weak to moderate zonal (1 cm) bleaching. Scattered 5-10 mm q. ± musc. veins.

STRUCTURES: BV = breccia vein; FL = foliation; LB = lithological boundary; LL = metamorphic banding and/or primary lithological layering; MY = mylonite foliation; SP = semiductile shear plane; V = mineral veins with prefixes: AN- = ankerite; CA- = calcite; CHL- = chlorite; MY- = mylonitic; Q- = quartz; SR- = sericite; ST- = stilbite.

SUMMARY CORELOG-DIAGRAM: DDH 29



PROFILE: DDH 26 & 29



DRILLHOLE No.: 29 AZIMUTH: ca. 225° INCLINATION: 75° LENGTH: 45,20 m Horiz.: 11,70 m Vert.: 43,65 m CORE DIM.: 36 mm
LOCATION: C-ZONE
COMPANY: A/S SULFIDMALM NGO-COORD.:Y: 19360,0 X: 798918,5 ZONE: D ALTITUDE: 188,0 m.a.s.l.
YEAR: 1982 UTM-COORD.,E: 397200 N: 7229370 ZONE: 33

DEPTH (metres)		LENGTH	LITHOLOGY	MEASURED STRUCTURES			ORE MINERALIZATION			PETROGRAPHY
From	To			Type	Angle w. core	Depth	From	To	Type	
0,00	9,00	9,00	OB/CL							
9,00	9,80	0,80	A	FL	30°	9,15				Amphibolite cut by 0,5-1 cm GTG veins. Locally some 2 cm CGN bands. Several 1-2 mm calcite-stilbite veins.
9,80	11,60	1,80	CGN	LL	30°	10,35		10,20 11,05 11,15 11,40	Py.- q.- ca. vein (20 mm). Py.- q. veinlet. 25 mm chl.vein with diss. aspy. (1 mm). Py. fract. in q. vein.	Greenish fine-grained CGN with more coarse-grained garnetiferous zones, locally with a faint banding. It is cut by bleached GTG dykes at 10,00-,20 and 11,20-,35. Scattered 2-10 mm quartz ± calcite veins.
11,60	16,90	5,30	GTG	FL " "	0° 30° 35°	12,10 14,95 16,55		11,65 11,80 13,65 13,75 14,90	Aspy.-coated fissure. 10 mm aspy. vein. Aspy.-coated fissure. " " " " " " " "	Grey medium-grained foliated two-mica granite with moderate zonal bleaching associated with dykes of white LG (11,90-13,30) and pegmatite (12,10-,15; 13,55-14,40 and 15,15-15,65). Some scattered q. veins up to 5 cm wide.
16,90	22,20	5,30	A	FL "	25° 50°	19,10 20,35				Fine- to medium-grained amphibolite with some thin zones carrying porphyritic needles of hornblende 1 x 3 - 4 mm². A few GTG veins (0,5-2 cm) and 1-3 mm q.veins.

LITHOLOGIES: A: = amphibolite; ABGN = dark grey amphibole-biotite gneiss; BAG = dark grey biotite-rich anatectic granite; BGN = dark grey biotite gneiss; CGN = greenish calc-silicate gneiss; CL = coreloss; CM = cores missing; CSCH = calcareous schist; GQM = dark grey biotite-quartz monzonite; GGO = grey granodioritic orthogneiss; GTG = grey medium-grained two-mica granite; HTG = hybrid pinkish grey medium-grained two-mica granite; IB = intrusion breccia; LG = leucocratic granite; M = calcite marble; MBGN = migmatitic biotite gneiss; MD = dark grey monzodiorite; MSCH = micaschist/-gneiss; OB/CL = overburden and/or coreloss in surface weathered rocks; P = pegmatite and pegmatitic granite; Q = hydrothermal quartz-vein or -lens; SK = skarn-altered marble. Prefixes: B- = bleached; BR- = brecciated; CT- = cataclastic; CR- = crushed; G- = garnetiferous; H- = heterogeneous; i.e. strong interbanding with other lithologies; HA- = hydrothermally altered; MY- = mylonitic; P- = pink; PP- = porphyritic; SH- = semiductilly sheared; W- = white to greyish white.

DDH: 29

DEPTH (metres)		LENGTH	LITHO-LOGY	MEASURED STRUCTURES			ORE MINERALIZATION			PETROGRAPHY
From	To			Type	Angle w. core	Depth	From	To	Type	
22,20	23,20	1,00	MD	FL	60°	22,95				Coarse-grained foliated monzodiorite.
23,20	26,25	3,05	A							Fine-grained amphibolite cut by some 1-5 cm veins and dykes of pinkish grey HTG the widest occurring at 23,30-,60. Some calcite coated fissures at 25,30-,80.
26,25	28,05	1,80	MD							Medium-grained monzodiorite with amphibolite inclusions at 26,45-,70 and 27,15-,35. Bleached GTG dyke at 27,90-28,05. Some calcite veinlets.
28,05	32,95	4,90	HTG	V V	25° 40°	32,20 32,65	 32,10	31,98 32,30	Two 1 mm aspy. veins. Scattered 2-10 mm aspy. aggr. and fissure coatings in q. veins and granite.	Pink to pinkish grey TG granite showing gradational contact with a biotite-free (totally bleached) variety occurring at 28,05-30,60. It contains abundant 5-30 mm q. veins. Moderate zonal bleaching below 30,60 where only sparse q.veins occur. Pegmatite infiltration at 31,65-32,10 (with sericite alteration zones at 32,55-,95). Inclusions of MD at 29,15-,30 (chl.-altered), 31,00-,10 and 31,90-,95.Scattered stilbite-coated fissures.
32,95	37,80	4,85	W-LG	FL V FL	30° 50° 55°	34,20 35,20 37,20		35,20	3 x 30 mm aspy. veinlet in granite.	White medium-grained LG with abundant sericite-coated fissures and alteration zones (3-20 mm), particularly at 33,30-34,00 and 35,75-37,75. Locally, the LG shows a faint foliation accentuated in the sericite-altered areas. The LG has a spotted appearance at 37,35-,75 due disseminated biotite-aggregates (2-5 mm). Granite veined MD inclusion at 34,45-35,30.
37,80	40,00	2,20	P-P							Pink pegmatite with scattered biotite flakes and stilbite fissures. Red stilbite-altered inclusion of MD at 38,75-,95.
40,00	41,30	1,00	A	FL LB	55° 55°	41,20 41,30				Medium-grained hornblende porphyritic amphibolite with black hbl. needles size 0,1 x 2-4 mm². White LG dyke with HTG incl. and sericite-altered fissures at 40,05-,40.

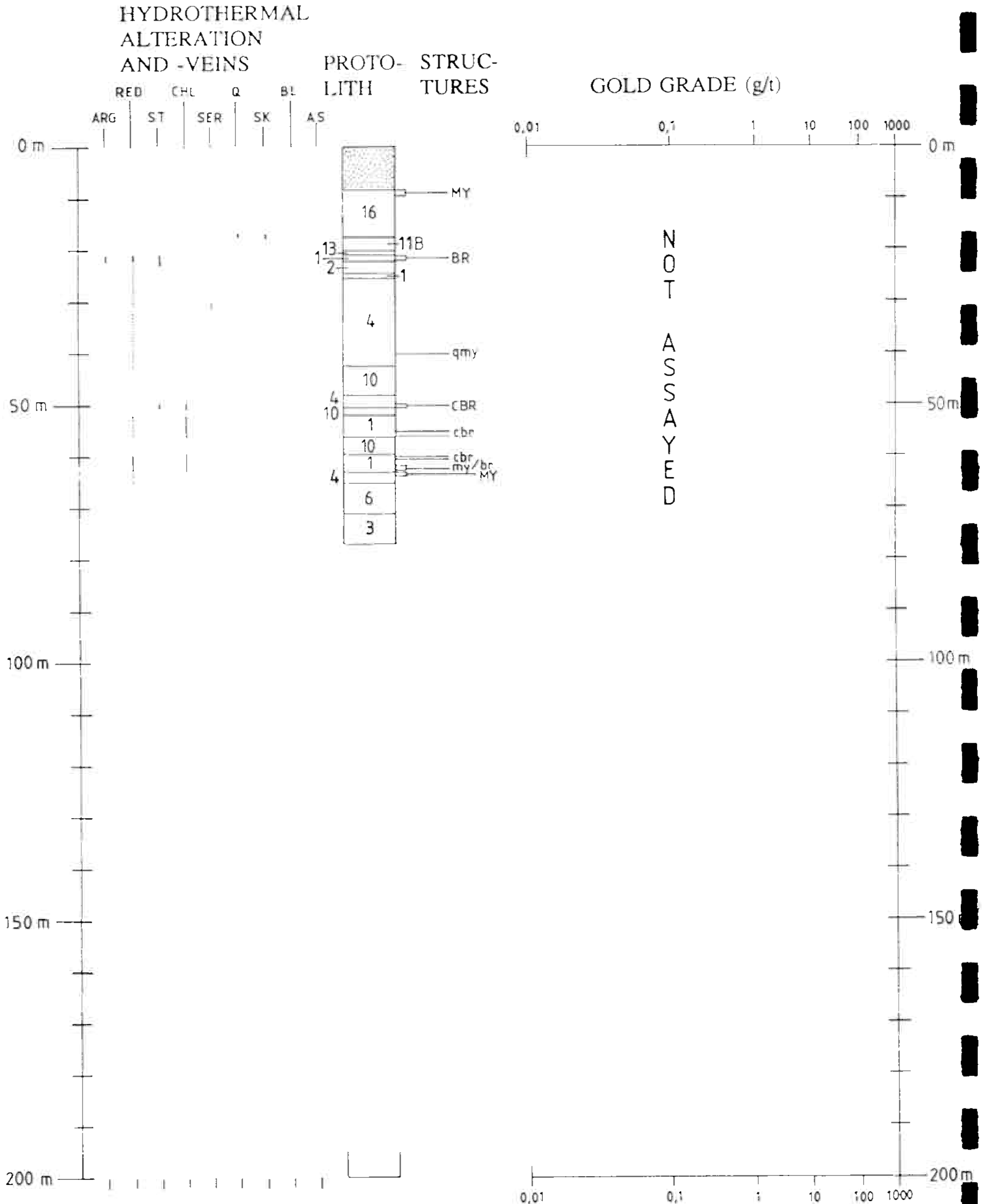
STRUCTURES: BV = breccia vein; FL = foliation; LB = lithological boundary; LL = metamorphic banding and/or primary lithological layering; MY = mylonite foliation; SP = semiductile shear plane; V = mineral veins with prefixes: AN- = ankerite; CA- = calcite; CHL- = chlorite; MY- = mylonitic; Q- = quartz; SR- = sericite; ST- = stilbite.

DDH: 29

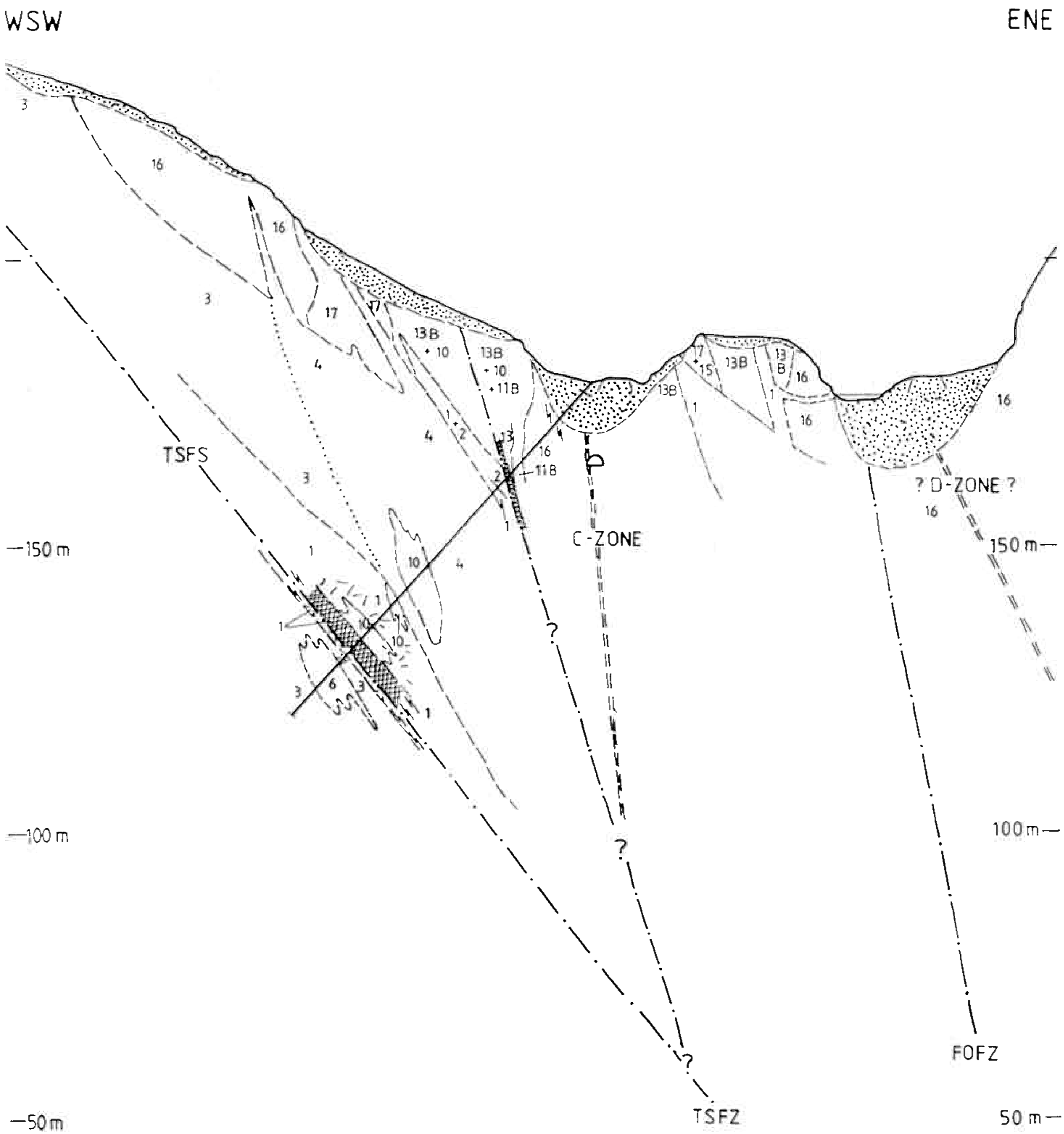
DEPTH (metres)		LENGTH	LITHOLOGY	MEASURED STRUCTURES			ORE MINERALIZATION			PETROGRAPHY
From	To			Type	Angle w. core	Depth	From	To	Type	
41,30	42,90	1,60	HTG							Pinkish grey medium-grained TG being strongly bleached at 41,80-42,90. A few 1-5 mm q. veins and scattered 1-2 mm calcite-stilbite veins.
42,90	44,95	2,05	A	FL "	45° 30°	43,90 44,70				Folded amphibolite with a coarse-grained MD dyke at 44,05-,35. Some 1-10 mm q. and cc. veins.
44,95	45,20	0,25	HTG							Strongly bleached medium-grained pinkish grey TG with some chlorite veinlets.

STRUCTURES: BV = breccia vein; FL = foliation; LB = lithological boundary; LL = metamorphic banding and/or primary lithological layering; MY = mylonite foliation; SP = semiductile shear plane; V = mineral veins with prefixes: AN- = ankerite; CA- = calcite; CHL- = chlorite; MY- = mylonitic; Q- = quartz; SR- = sericite; ST- = stilbite.

SUMMARY CORELOG-DIAGRAM: DDH 30



PROFILE: DDH 30



DRILLHOLE No.: 30 AZIMUTH: 257° INCLINATION: 48° LENGTH: 77,10 m Horiz.: 51,60 m Vert.: 57,30 m CORE DIM.: 36 mm
LOCATION: C-ZONE
COMPANY: A/S SULIFIDMALM NGO-COORD.:Y: -19366,5 X: 798957,5 ZONE: D ALTITUDE: 178,5 m.a.s.l.
YEAR: 1982 UTM-COORD.,E: 397200 N: 7229410 ZONE: 33

DEPTH (metres)		LENGTH	LITHOLOGY	MEASURED STRUCTURES			ORE MINERALIZATION			PETROGRAPHY
From	To			Type	Angle w. core	Depth	From	To	Type	
0,00	8,40	8,40	OB/CL							
8,40	17,60	9,20	M	LL " " " " LB	30° 40° 40° 30° 25° 30°	9,70 10,30 12,60 14,80 17,10 17,60				Colour-banded massive grey and bluish grey marble. Banding in scale 5-20 mm. More finely laminated and mylonitic at 8,40-9,45. Cut by 3 cm white LG vein at 9,90. Quartz infiltrated garnet-hornblende skarn at the footwall boundary.
17,60	20,15	2,55	H-ABGN	FL "	45° 20°	18,40 20,05				Heterogeneous fine-grained and dark grey biotite-amphibole gneiss and amphibolite with 5-10 mm biotite and calc-silicate-rich bands. Some veins of grey coarse-grained granodiorite (18,15-,30) and strongly bleached dark grey granite with scattered stilbite veins (18,75-19,15).
20,15	21,00	0,85	CGN							Fine- to medium-grained greenish calc-silicate gneiss with more granular and incoherent aggregates of garnet at 20,55-,65 and 20,70-21,00. Quartz-vein and aggregates at 20,35-,55.
21,00	22,10	1,10	BR-LG							Brecciated, stilbite veined and clay altered red medium-grained granite.
22,10	24,60	2,50	P							Pegmatitic granite, pink to white. Stilbite veins common at 22,10-,95.
24,60	25,50	0,90	W-LG							White medium-grained LG.

LITHOLOGIES: A: = amphibolite; ABGN = dark grey amphibole-biotite gneiss; BAG = dark grey biotite-rich anatectic granite; BGN = dark grey biotite gneiss; CGN = greenish calc-silicate gneiss; CL = coreloss; CM = cores missing; CSCH = calcareous schist; GQM = dark grey biotite-quartz monzonite; GGO = grey granodioritic orthogneiss; GTG = grey medium-grained two-mica granite; HTG = hybrid pinkish grey medium-grained two-mica granite; IB = intrusion breccia; LG = leucocratic granite; M = calcite marble; MBGN = migmatitic biotite gneiss; MD = dark grey monzodiorite; MSCH = micaschist/-gneiss; OB/CL = overburden and/or coreloss in surface weathered rocks; P = pegmatite and pegmatitic granite; Q = hydrothermal quartz-vein or -lens; SK = skarn-altered marble. Prefixes: B- = bleached; BR- = brecciated; CT- = cataclastic; CR- = crushed; G- = garnetiferous; H- = heterogeneous; i.e. strong interbanding with other lithologies; HA- = hydrothermally altered; MY- = mylonitic; P- = pink; PP- = porphyritic; SH- = semiductilly sheared; W- = white to greyish white.

DDH: 30

DEPTH (metres)		LENGTH	LITHO-LOGY	MEASURED STRUCTURES			ORE MINERALIZATION			PETROGRAPHY
From	To			Type	Angle w. core	Depth	From	To	Type	
25,50	42,45	16,95	HTG	SP	25°	40,10				White to pink hybrid TG with abundant 1-30 cm fine- to medium-gr. LG veins with associated bleaching. Some pegmatitite veins and segregations (26,95-27,05 and 29,25-,45). White to pink LG veins at 27,50-,70; 28,40-,70; 28,90-29,00; 29,25-,45; 29,65-,95; 30,30-31,10; 31,30-,90; 34,65-35,40; 38,40-,50; 38,75-39,00; 39,60-40,50 and 42,00-,30. Some 1 cm sericite alteration zones occur at 27,75-,90 and 1-20 cm zones at 30,00-,90. Moderately bleached GTG with diffuse biotite-bearing remnants between 30,00 and 36,00. Further down 1-15 cm bleached zones enveloping q-musc. veins. Sheared q. vein at 40,10.
42,45	48,10	5,60	PP-A							Fine- to medium-grained massive mafic rock with white porphyritic feldspars (5 mm) in the central part at 43,20-44,40.
48,10	50,60	2,50	HTG							Moderately bleached, pink hybrid TG cut by fine- to medium-grained LG veins. LG dyke at 49,00-,80. At 49,90-50,60 crackle breccia with associated chlorite alteration and stilbite veins.
50,60	52,05	1,45	A							Fine-grained, massive and dark greenish mafic rock with some 10 cm wide LG veins and scattered calcite veinlets.
52,05	56,35	4,30	LG							White to pink and medium-grained to pegmatitic LG with some biotite-rich incl. at 54,60-,70 and 56,15-,16. Black chlorite-coated fractures are common and forming crackle-breccia zones at 54,85-55,20; 55,75-,85 and 56,00-,40.
56,35	59,60	3,25	A							Massiv, dark greenish fine-grained mafic rock cut by granite and pegmatite dykes. The rock shows faint banding (1-10 mm) at 57,10-58,35 and contains scattered 1-5 mm calcite-stilbite- and quartz-calcite-veins and -veinlets. Pegmatite dyke at 56,90-57,40 and 58,85-59,40, GTG dyke cut by pegmatite at 58,35-,85.

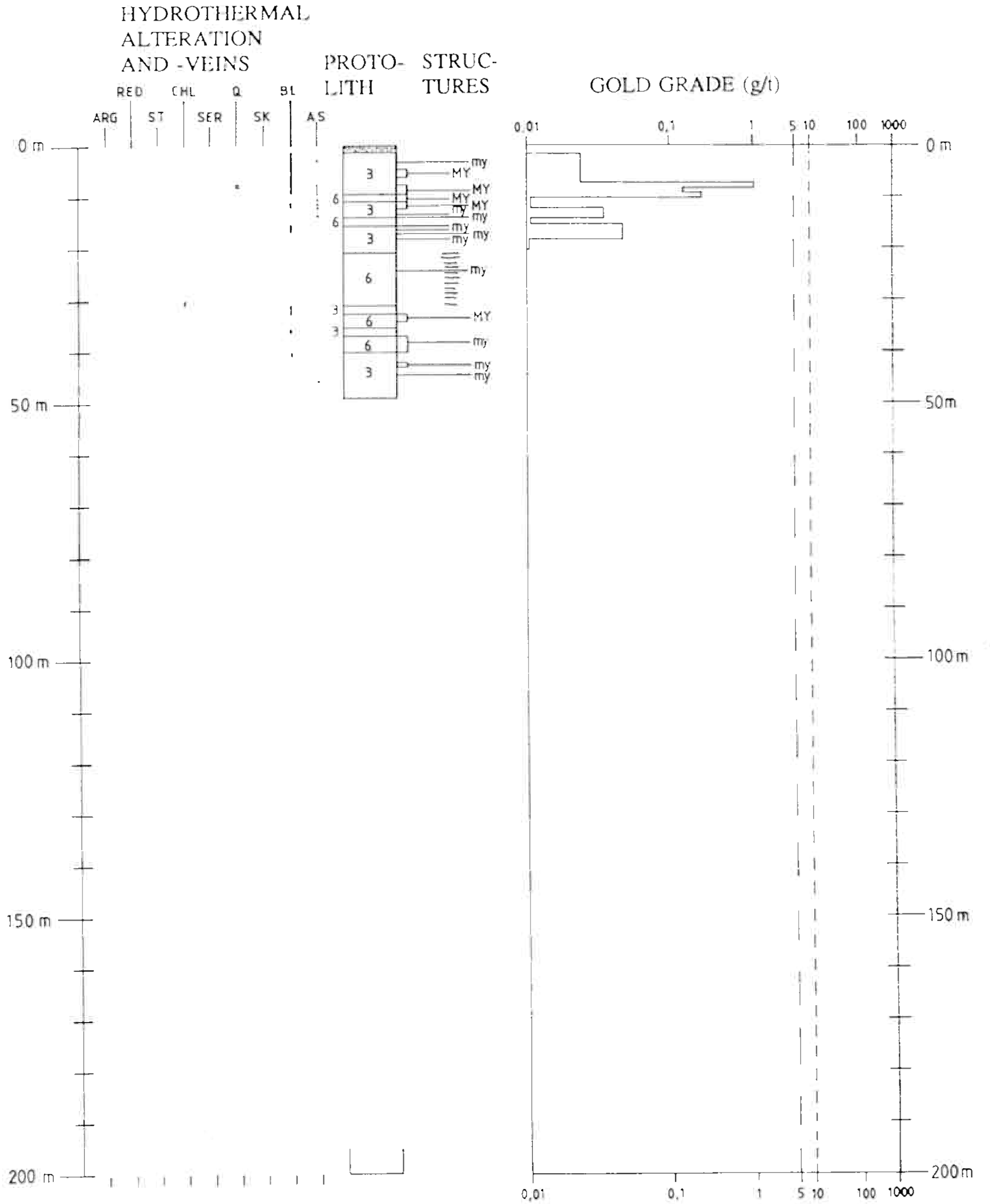
STRUCTURES: BV = breccia vein; FL = foliation; LB = lithological boundary; LL = metamorphic banding and/or primary lithological layering; MY = mylonite foliation; SP = semiductile shear plane; V = mineral veins with prefixes: AN- = ankerite; CA- = calcite; CHL- = chlorite; MY- = mylonitic; Q- = quartz; SR- = sericite; ST- = stilbite.

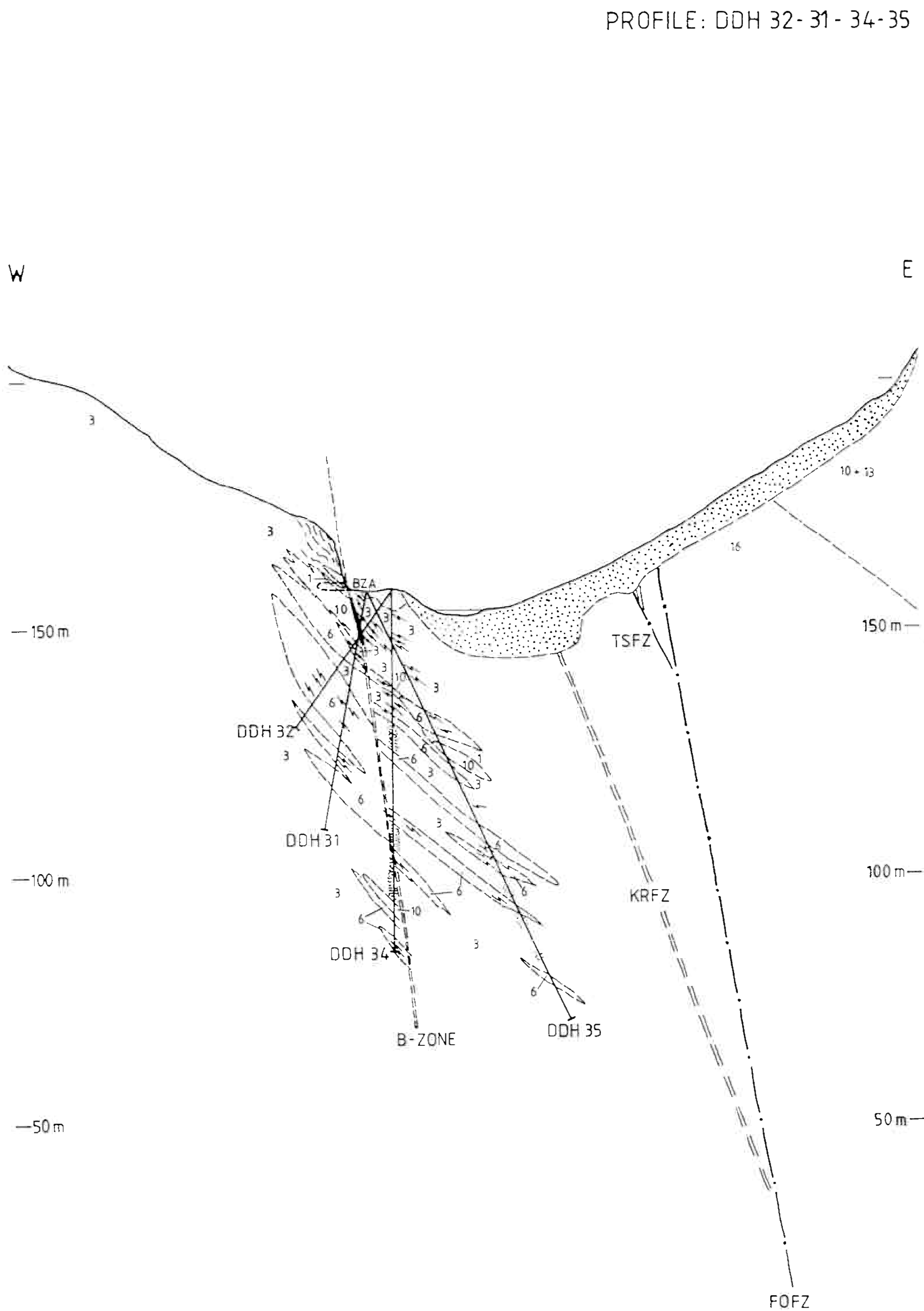
DDH: 30

DEPTH (metres)		LENGTH	LITHOLOGY	MEASURED STRUCTURES			ORE MINERALIZATION			PETROGRAPHY
From	To			Type	Angle w. core	Depth	From	To	Type	
59,60	62,95	3,35	P-LG	FL MY	50° 60°	61,25 61,90				Pink leucocratic granite. medium-grained at 59,60-,85, the rest being more fine-grained and aplitic. Chlorite-cemented crackle-breccia zones at 59,88-,90; 60,40-,52 and 60,65-,85. Massive dark greenish mafic inclusion at 60,85-61,40. Below the inclusion, mixture of fine-grained chlorite-altered and partly silicified greenish grey LG with inclusions of fine-grained mafic rocks. They are transformed into mylonites at 61,75-,95; 62,15-,40 and 62,50-,65. Cataclasite with 1-5 mm fragments of vein quartz at 61,95-62,15 i.e. in the middle of the upper mylonite zone. Stilbite veins at 62,65.
62,95	65,20	2,25	B-HTG	MY	50°	63,40				Pink to white strongly bleached HTG with thin diffusely delineated dark greenish grey zones. The granite is locally porphyritic and is cut by some thin pegmatite and LG veins. Thicker pegmatites occur at 62,95-63,35 and 64,85-65,20. The upper part of the granite is mylonitic, 62,95-63,70.
65,20	71,05	5,85	MD	LB	55°	68,55				Medium- to coarse-grained monzodiorite cut by early GTG dykes (66,70-67,10) with 1-10 cm bleached zones and late pegmatite dykes (65,75-66,10; 67,50-68,55 and 70,00-,70). Small GTG inclusions in the two lower pegmatites.
71,05	77,10	6,05	GTG							Grey medium-grained TG with monzodiorite inclusions at 72,90-73,25; 75,10-,20; 75,35-,75; 75,95-76,15 and some 1 cm sized incl. at 76,68 and 76,95. Some scattered 2-10 mm pegm. veins, sericite fractures and q. veinlets. The granite shows weak zonal bleaching.

STRUCTURES: BV = breccia vein; FL = foliation; LB = lithological boundary; LL = metamorphic banding and/or primary lithological layering; MY = mylonite foliation; SP = semiductile shear plane; V = mineral veins with prefixes: AN- = ankerite; CA- = calcite; CHL- = chlorite; MY- = mylonitic; Q- = quartz; SR- = sericite; ST- = stilbite.

SUMMARY CORELOG-DIAGRAM: DDH 31





PROFILE: DDH 32-31-34-35
W
E
150 m
100 m
50 m
BZA
DDH 32
DDH 31
DDH 34
DDH 35
B-ZONE
TSFZ
KRFZ
FOFZ
10 + 13
16

DRILLHOLE No.: 31 AZIMUTH: 270° INCLINATION: 80° LENGTH: 49,15 m Horiz.: 8,55 m Vert.: 48,40 m CORE DIM.: 36 mm
LOCATION: B-ZONE
COMPANY: A/S SULFIDMALM NGO-COORD.:Y: -19423,341 X: 799280,046 ZONE: D ALTITUDE: 157,231 m.a.s.l.
YEAR: 1982 UTM-COORD.,E: 397140 N: 7229710 ZONE: 33

DEPTH (metres)		LENGTH	LITHOLOGY	MEASURED STRUCTURES			ORE MINERALIZATION			PETROGRAPHY
From	To			Type	Angle w. core	Depth	From	To	Type	
0,00	1,30	1,30	OB/CL							
1,30	9,40	8,10	MY-B-GTG	MY " " " " "	60° 75° 80° 70° 60° 60°	2,90 4,65 5,50 7,65 8,70 9,20	 7,65 9,05	2,90 7,40 8,00 8,05 8,40 8,70 8,95 9,40	1 x 5 mm aspy. lens Aspy.-coated fracture. Mylonitic q.vein with transvers. 1-5 mm veinlets of aspy. and diss. aspy. grains. One 5 mm mylonitic aspy. vein in granite mylonite (7,65). 1 x 5 mm aspy. lens. 3 veinlets (1 mm) of aspy. Set of hairline veinlets of aspy. " " " " " 1-5 mm aspy. lenses and stringers and diss. aspy.	Strongly bleached GTG with small remnants of the original grey biotite-bearing granite (4,45-,60). Small inclusions of amphibolite (1,30-,35; 3,05-,30; 6,35-,34 ona 6,45-,47). The GTG is cut by scattered pegmatite and 1-10 mm q. veins reaching a maximum of 30 cm at 7,70-8,00. Both the granite and the veins have suffered ductile shearing with the development of mylonite zones with totally bleached GTG. The zones are found at 2,80-3,00; 4,60-6,00 and 7,40-9,40.
9,40	10,70	1,30	MY-MD	MY	50°	10,00		9,85 10,25	Py. diss. Py. diss.	Mylonitic fine-grained amphibolite with gradational contact with weakly foliated MD (10,40-,70). Cut by some 0,5-3 cm white LG and q. veins which also have suffered ductile shearing.

LITHOLOGIES: A: = amphibolite; ABGN = dark grey amphibole-biotite gneiss; BAG = dark grey biotite-rich anatectic granite; BGN = dark grey biotite gneiss; CGN = greenish calc-silicate gneiss; CL = coreloss; CM = cores missing; CSCH = calcareous schist; GQM = dark grey biotite-quartz monzonite; GGO = grey granodioritic orthogneiss; GTG = grey medium-grained two-mica granite; HTG = hybrid pinkish grey medium-grained two-mica granite; IB = intrusion breccia; LG = leucocratic granite; M = calcite marble; MBGN = migmatitic biotite gneiss; MD = dark grey monzodiorite; MSCH = micaschist/-gneiss; OB/CL = overburden and/or coreloss in surface weathered rocks; P = pegmatite and pegmatitic granite; Q = hydrothermal quartz-vein or -lens; SK = skarn-altered marble. Prefixes: B- = bleached; BR- = brecciated; CT- = cataclastic; CR- = crushed; G- = garnetiferous; H- = heterogeneous; i.e. strong interbanding with other lithologies; HA- = hydrothermally altered; MY- = mylonitic; P- = pink; PP- = porphyritic; SH- = semiductilly sheared; W- = white to greyish white.

DDH: 31

DEPTH (metres)		LENGTH	LITHOLOGY	MEASURED STRUCTURES			ORE MINERALIZATION			PETROGRAPHY
From	To			Type	Angle w. core	Depth	From	To	Type	
10,70	13,85	3,15	MY-B-GTG	MY " "	55° 50° 50°	10,85 11,95 13,85				Strongly bleached GTG with zonal development of mylonities (10,80-,90; 11,20-12,10 and 13,80-,85). Fine-gr. amphibolite or mafic mylonite at 13,20-,45. The GTG is totally bleached along the mylonite zones and moderately bleached in association with musc. and q-musc. veins between the zones.
13,85	15,45	1,60	MD							Medium-grained MD with fine-grained mylonitic margins (13,85-14,05 and 15,35-,45).
15,45	20,70	5,25	MY-GTG	MY FL MY "	60° 45° 60° 50°	15,65 16,35 17,00 17,95	15,45	15,80 16,30 17,05 17,70 17,95	Diss. grains and aggr. (max 5 mm) of aspy. 1 mm aspy. veinlet. 5 x 10 mm aspy. aggregate in mylonitic q. vein. 1-5 mm aspy. vein. " " "	Variably bleached greyish TG with some scattered MD inclusions (18,15-,55 and 19,80-,95). It is totally bleached along several mylonite zones which may contain abundant sheared q.veins and strongly foliated muscovite-altered zones. The mylonites occur at 15,45-,85, 16,95-17,05 and 17,70-18,25. The GTG is strongly bleached around 2 cm white LG veins at 16,25-,80. Elsewhere thin bleached zones occur alone or in association with 3-7 mm white pegmatite and/or LG veins.
20,70	30,95	10,25	G-MD	FL " MY FL	60° 55° 45° 55°	21,45 22,60 24,70 25,50				Medium-grained garnetiferous monzodiorite which is weakly foliated. It is cut by dykes of dark grey quartz monzonite (20,70-,85 and 30,65-,85), strongly bleached GTG (28,40-,65), white pegmatite (21,70-,95; 24,60-,63 and 25,85-26,00), white sheared LG (24,15-,25) and composite dykes of pegmatite and LG (22,75-23,25) with sheared inclusions of bleached GTG (27,75-28,25). Epidote veins are found in the MD along the margin of a white LG dyke (27,68-,70). Ductile shearing of the MD has occurred at 24,55-,90. Greyish green chloritization of the MD is found near the lower margin, i.e. 30,20-,95.

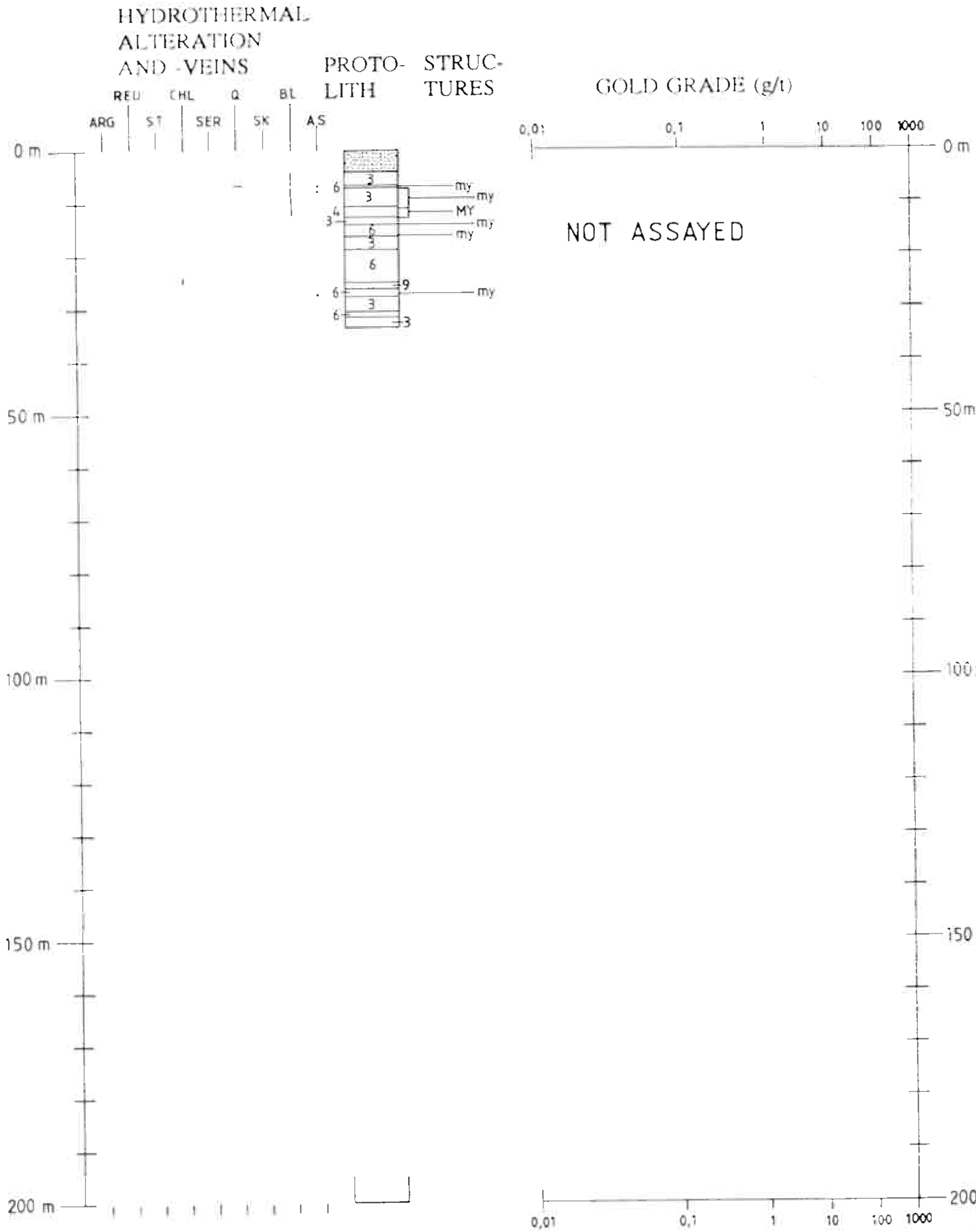
STRUCTURES: BV = breccia vein; FL = foliation; LB = lithological boundary; LL = metamorphic banding and/or primary lithological layering; MY = mylonite foliation; SP = semiductile shear plane; V = mineral veins with prefixes: AN- = ankerite; CA- = calcite; CHL- = chlorite; MY- = mylonitic; Q- = quartz; SR- = sericite; ST- = stilbite.

DDH: 31

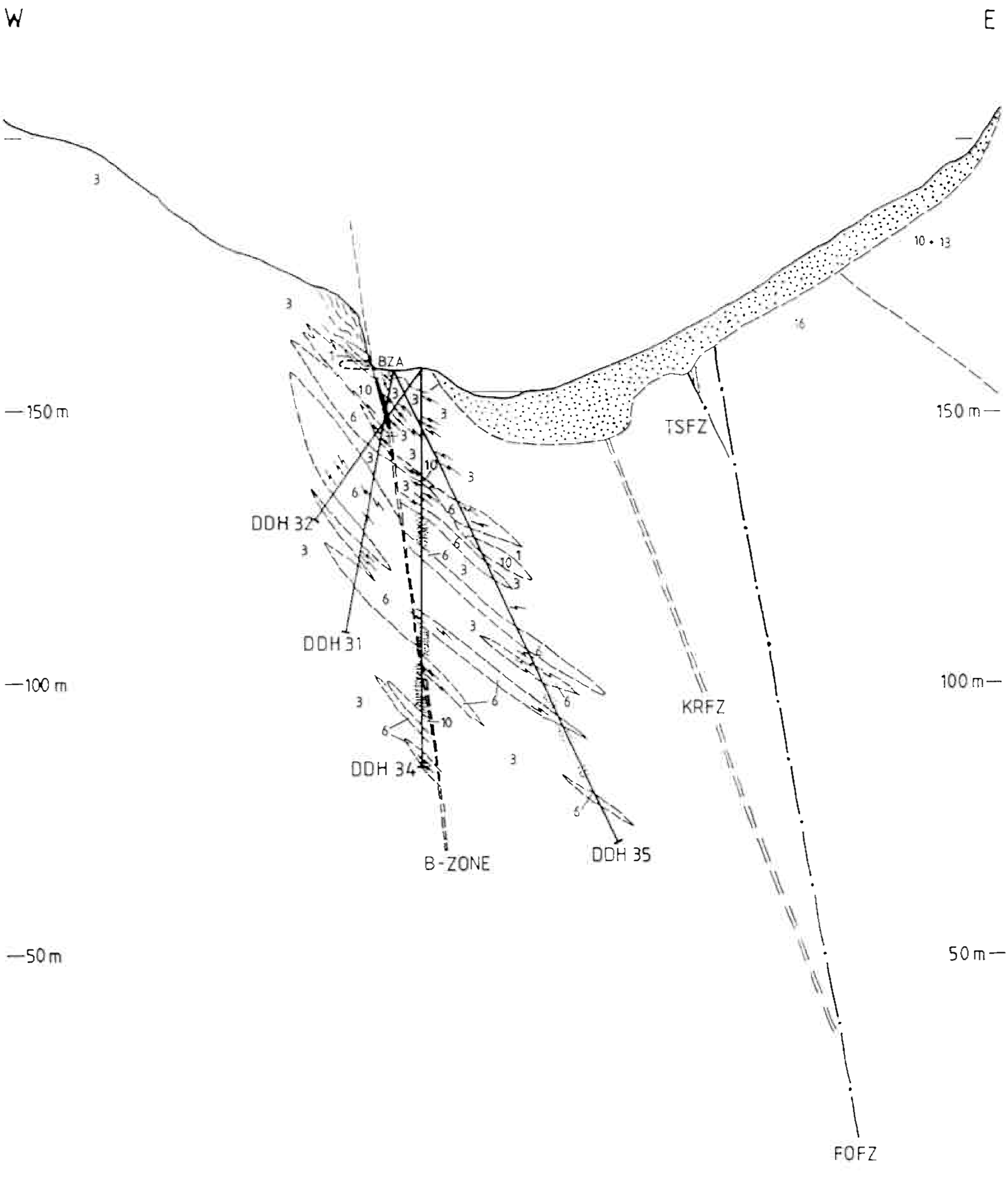
DEPTH (metres)		LENGTH	LITHOLOGY	MEASURED STRUCTURES			ORE MINERALIZATION			PETROGRAPHY
From	To			Type	Angle w. core	Depth	From	To	Type	
30,95	32,45	1,50	B-GTG							Nearly totally bleached medium-grained TG cut by thin white LG dykes and musc. and q-musc. veins. Diffusely delineated remnants of MD occur at 31,70-,85.
32,45	35,30	2,85	MY-MD	MY " "	80° 60° 60°	32,55 33,90 34,90		34,90	5 mm py. aggr.	Fine-gr. to medium-grained ductilly sheared amphibolite containing abundant sheared veins or sheared intrusions breccias of GTG — amphibolite (32,45-33,10) and white LG — amphibolite (33,80-34,05 and 34,80-35,05). medium-grained MD occur at 34,05-,80 and may represent the protolith for the mylonitic amphibolite.
35,30	36,75	1,45	GTG							Grey TG, strongly bleached between 35,55 and ,80 where two q-musc. veins occur.
36,75	39,95	3,20	MD	SP "	70° 60°	37,65 39,35				Alternating zones of medium-grained monzodiorite and fine-grained amphibolite probably representing ductilly sheared MD. Sheared intrusion breccias of amphibolite-white LG/pegmatite (37,90-38,15) and amphibolite-strongly bleached GTG (37,15-,35).
39,95	49,15	9,20	GTG	FL SP SP	60° 45° 85°	41,15 42,25 44,60	45,80	45,95	1-8 mm aspy. ± q.veins with bleached envelopes.	Grey variably bleached TG with inclusions of fine-grained amphibolite (44,50-45,00), foliated garnetiferous monzodiorite with amphibolitic shear zones (42,05-,75) and composite incl. of foliated G-MD and dark grey quartz monzonite (40,75-41,30). The GTG is strongly bleached in association with early q.veins and late q-musc. veins (40,35-,65) and in association with pegmatite and q-musc. veins (45,00-,50).

STRUCTURES: BV = breccia vein; FL = foliation; LB = lithological boundary; LL = metamorphic banding and/or primary lithological layering; MY = mylonite foliation; SP = semiductile shear plane; V = mineral veins with prefixes: AN- = ankerite; CA- = calcite; CHL- = chlorite; MY- = mylonitic; Q- = quartz; SR- = sericite; ST- = stilbite.

SUMMARY CORELOG-DIAGRAM: DDH 32



PROFILE: DDH 32-31-34-35



DRILLHOLE No.: 32 AZIMUTH: 270° INCLINATION: 65° LENGTH: 33,45 m Horiz.: 14,15 m Vert.: 30,30 m CORE DIM.: 36 mm
LOCATION: B-ZONE
COMPANY: A/S SULFIDMALM NGO-COORD.:Y: -19418,0 X: 799279,0 ZONE: D ALTITUDE: 156,5 m.a.s.l.
YEAR: 1982 UTM-COORD.,E: 397140 N: 7229710 ZONE: 33

DEPTH (metres)		LENGTH	LITHOLOGY	MEASURED STRUCTURES			ORE MINERALIZATION			PETROGRAPHY
From	To			Type	Angle w. core	Depth	From	To	Type	
0,00	4,00	4,00	OB/CL							
4,00	6,45	2,45	B-GTG	MY	35°	5,45				Strongly bleached medium-grained granite with greyish biotite-bearing remnants. Some 1-2 cm white leucocratic granite veins. Development of granitic mylonite at 5,35-,55.
6,45	6,70	0,25	MY-MD	MY	85°	6,55				Dark greyish green mafic mylonite (meta-monzodiorite) crosscut by thin milky quartz-veins.
6,70	6,80	0,10	Q				6,70	6,80	Up to 1 cm wide massive aspy. veins and diss. grains.	Milky quartz-vein with inclusions of granite-mylonite and white granite.
6,80	10,85	4,05	B-GTG	MY " " " "	60° 55° 70° 40°	7,70 8,65 9,20 10,40		6,95 7,86	Aspy. fracture coating. 1 mm q. - aspy. veinlet.	Strongly bleached medium-grained TG, locally with biotite-bearing remnants. Zonal development of thin mylonites. Scattered chlorite-coated fractures.
10,85	12,55	1,70	MY-HTG	MY	65° 90° 70°	11,10 11,95 12,25	10,85	10,90 11,10 11,90 12,10	5-10 mm mylonitic aspy. bands. Py. crystals diss. " " " " " "	Greyish white to pink granite mylonite with scattered mylonitic q. veins (1-3 cm) and dark greyish green mafic mylonite at 11,40-12,55.

LITHOLOGIES: A: = amphibolite; ABGN = dark grey amphibole-biotite gneiss; BAG = dark grey biotite-rich anatectic granite; BGN = dark grey biotite gneiss; CGN = greenish calc-silicate gneiss; CL = coreloss; CM = cores missing; CSCH = calcareous schist; GQM = dark grey biotite-quartz monzonite; GGO = grey granodioritic orthogneiss; GTG = grey medium-grained two-mica granite; HTG = hybrid pinkish grey medium-grained two-mica granite; IB = intrusion breccia; LG = leucocratic granite; M = calcite marble; MBGN = migmatitic biotite gneiss; MD = dark grey monzodiorite; MSCH = micaschist/-gneiss; OB/CL = overburden and/or coreloss in surface weathered rocks; P = pegmatite and pegmatitic granite; Q = hydrothermal quartz-vein or -lens; SK = skarn-altered marble. Prefixes: B- = bleached; BR- = brecciated; CT- = cataclastic; CR- = crushed; G- = garnetiferous; H- = heterogeneous; i.e. strong interbanding with other lithologies; HA- = hydrothermally altered; MY- = mylonitic; P- = pink; PP- = porphyritic; SH- = semiductilly sheared; W- = white to greyish white.

DDH: 32

DEPTH (metres)		LENGTH	LITHO-LOGY	MEASURED STRUCTURES			ORE MINERALIZATION			PETROGRAPHY
From	To			Type	Angle w. core	Depth	From	To	Type	
12,55	14.10	1,55	GTG	MY/LB	60°	14,05			10 mm massive aspy. vein	Moderately bleached greyish medium-grained TG with scattered white leucratic granite veins (1-2 cm). 10 cm granite mylonite at 14,00-14,10.
14,10	16,35	2,25	MD	MY MY/LB	55° 65°	15,95 16,35		15,20	Py. - chlorite-coated fracture.	Fine- to medium-grained dark grey monzodiorite with some GQM veins (0,5-3 cm) and white pegmatite veins at 15,05-15,15 and 15,55-15,65. Mylonite development at 15,95-16,00 and 16,32-16,35.
16,35	18,80	2,45	GTG					17,10 18,10 18,20	Diss. aspy. along. q.-musc. veins. " " " " " " " " " "	Moderately bleached greyish TG with GQM incl. at 17,70-18,00. Scattered q.-musc. veins (0,5 cm) locally with aspy.diss.
18,80	24,90	6,10	G-MD	SP SP	50° 80°	23,20 24,30		23,10 24,45	2 cm aspy.-q.-musc. vein. Diss. of py.xx	Medium- to coarse-grained and dark to medium grey monzodiorite with fine-grained pink spots of garnet. Medium grained down to 20,70 where it gradually becomes more coarse-grained. Below 21,75 the monzodiorite is more leucocratic and varies between medium- and coarse-grained. Between 23,70 and 24,60 a hornblende porphyritic (2-5 x 10 mm) variety occurs. The crystals occur in a medium-grained matrix. Epidote veins (2-5 mm) are found locally. Light greyish green chloritization of hornblende occurs along fractures and more pervassive at 24,15-25,00. The MD is crosscut by white LG veins 21,50-,60; 22,10-,20; 23,25-,35; and contains a hbl. bearing felsic segregations at 21,20-,30. Shearing has occurred at 23,00-,30 and 24,20-,50 where strongly flattened porphyritic hornblendes occur.

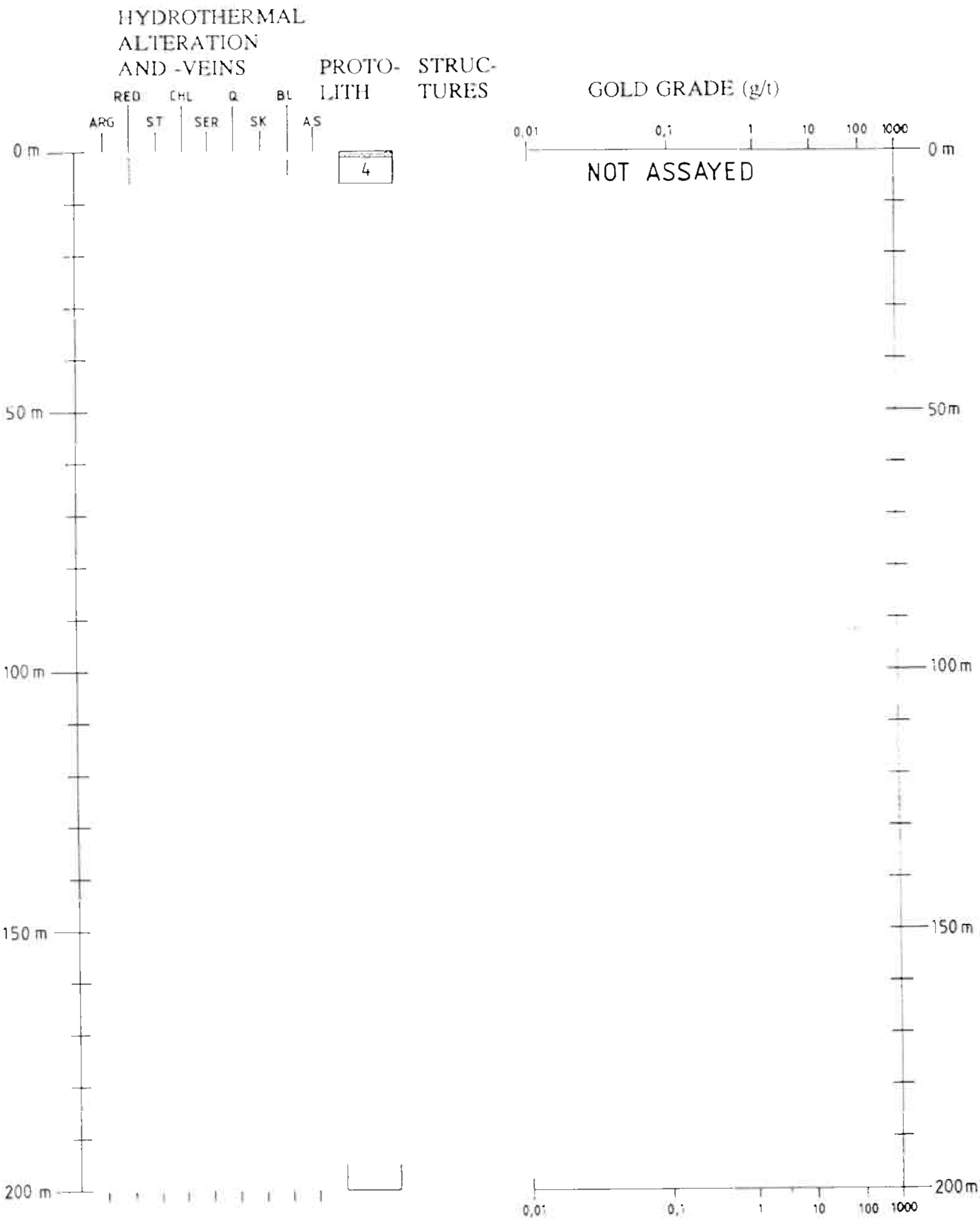
STRUCTURES: BV = breccia vein; FL = foliation; LB = lithological boundary; LL = metamorphic banding and/or primary lithological layering; MY = mylonite foliation; SP = semiductile shear plane; V = mineral veins with prefixes: AN- = ankerite; CA- = calcite; CHL- = chlorite; MY- = mylonitic; Q- = quartz; SR- = sericite; ST- = stilbite.

DDH: 32

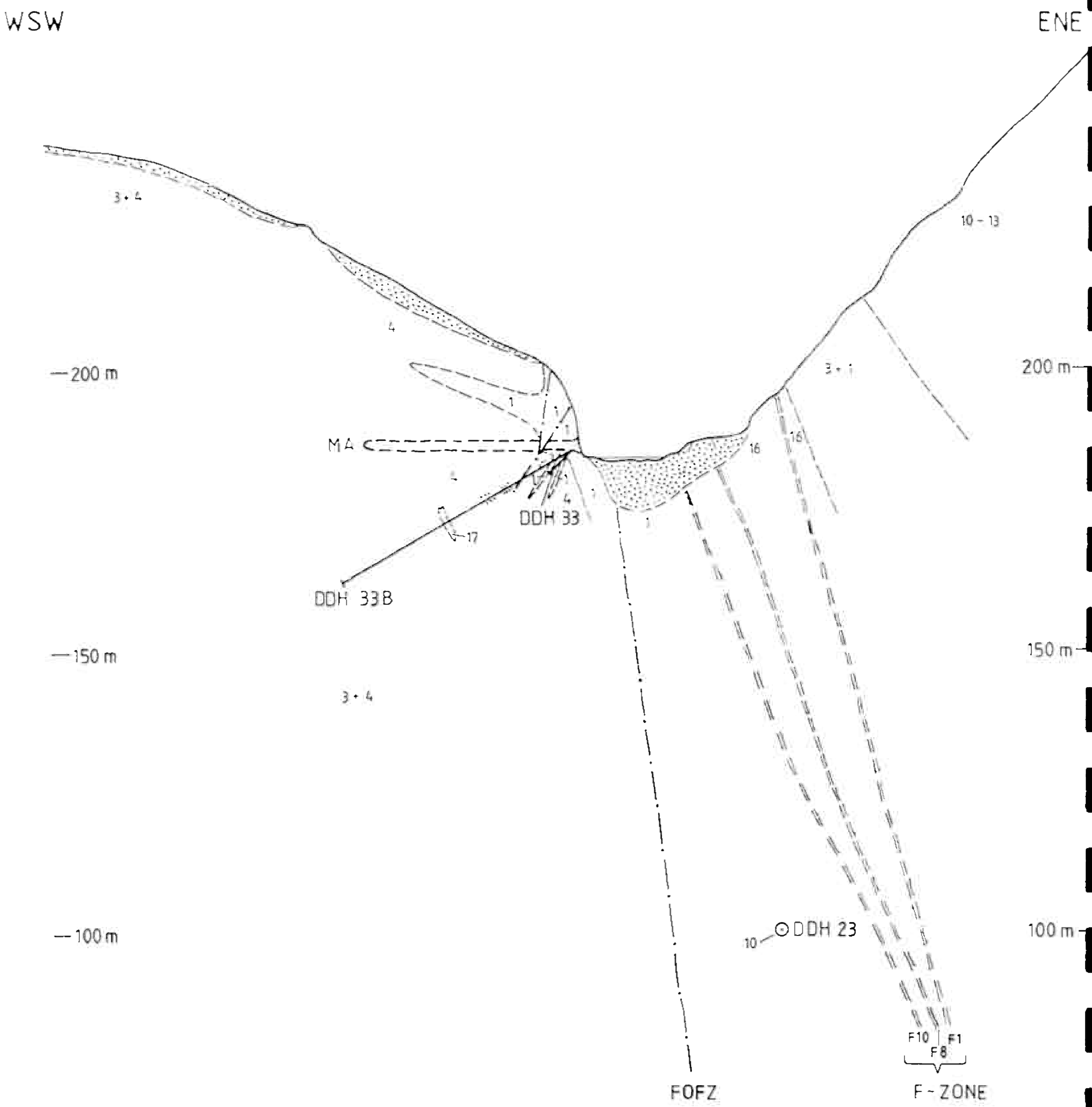
DEPTH (metres)		LENGTH	LITHOLOGY	MEASURED STRUCTURES			ORE MINERALIZATION			PETROGRAPHY
From	To			Type	Angle w. core	Depth	From	To	Type	
24,90	26,30	1,40	IB (MD/GQM /LG)					25,15	1,5 cm wide aspy. - py. vein, massive.	Hetrogeneous intrusion breccia with veins and inclusions of light greyish green chloritised MD, GQM and white LG veins (10-20 cm). Garnetiferous and mica rich sacceroidal white granite occurs at 25,00-25,20. Soot-grey alteration at 24,95 in MD.
26,30	27,65	1,35	G-MD	MY	60°	27,30		27,35 27,40 27,55	Sheared q.-aspy. vein (5mm). 1,5 cm q.-aspy. vein with coarse aspy. xx. " " " "	Medium-grained garnetifereous monzodio. infiltrated by white pegm. at 26,35-,90. It becomes gradually fine-grained and mylonitic below 27,30. Soot-grey alteration at 27,35.
27,65	30,40	2,75	GTG							Grey medium-grained TG crosscut by 5-20 mm q.-musc. veins with white bleached envelopes (1-10 cm). At 30,30-,40 dark muscovite-rich quartz monzonite.
30,40	31,65	1,25	MD							Medium-grained monzodiorite crosscut by GTG veins (1-5 cm) which have a high abundance at 30,45-,90.
31,65	33,45	1,80	GTG	LL FP	85° 15°	32,30 32,35				Grey medium-grained TG with MD incl. at 31,65-32,00 and 32. Scattered dark musc.-rich zones crosscut by 1-5 mm wide q.-musc.-calcite veins with 1-3 cm wide envelopes of bleached white granite.

STRUCTURES: BV = breccia vein; FL = foliation; LB = lithological boundary; LL = metamorphic banding and/or primary lithological layering; MY = mylonite foliation; SP = semiductile shear plane; V = mineral veins with prefixes: AN- = ankerite; CA- = calcite; CHL- = chlorite; MY- = mylonitic; Q- = quartz; SR- = sericite; ST- = stilbite.

SUMMARY CORELOG-DIAGRAM: DDH 33



PROFILE: DDH 33 & 33B

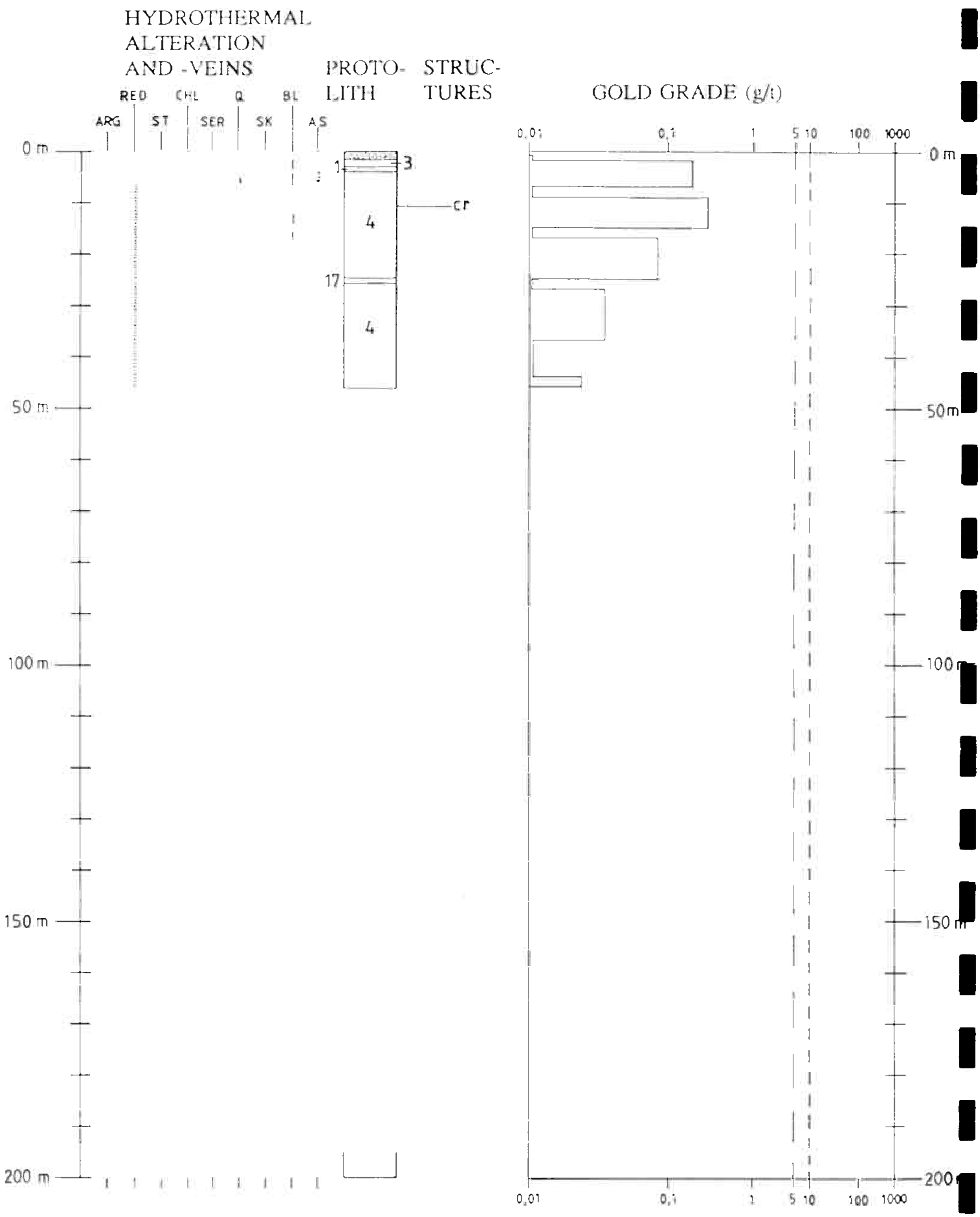


DRILLHOLE No.: 33 AZIMUTH: 239° INCLINATION: 45° LENGTH: 6,00 m Horiz.: 4,25 m Vert.: 4,25 m CORE DIM.: 36 mm
LOCATION: C-ZONE
COMPANY: A/S SULFIDMALM NGO-COORD.:Y: -19322,9 X: 798827,5 ZONE: D ALTITUDE: 185,7 m.a.s.l.
YEAR: 1982 UTM-COORD.,E: 397220 N: 7229250 ZONE: 33

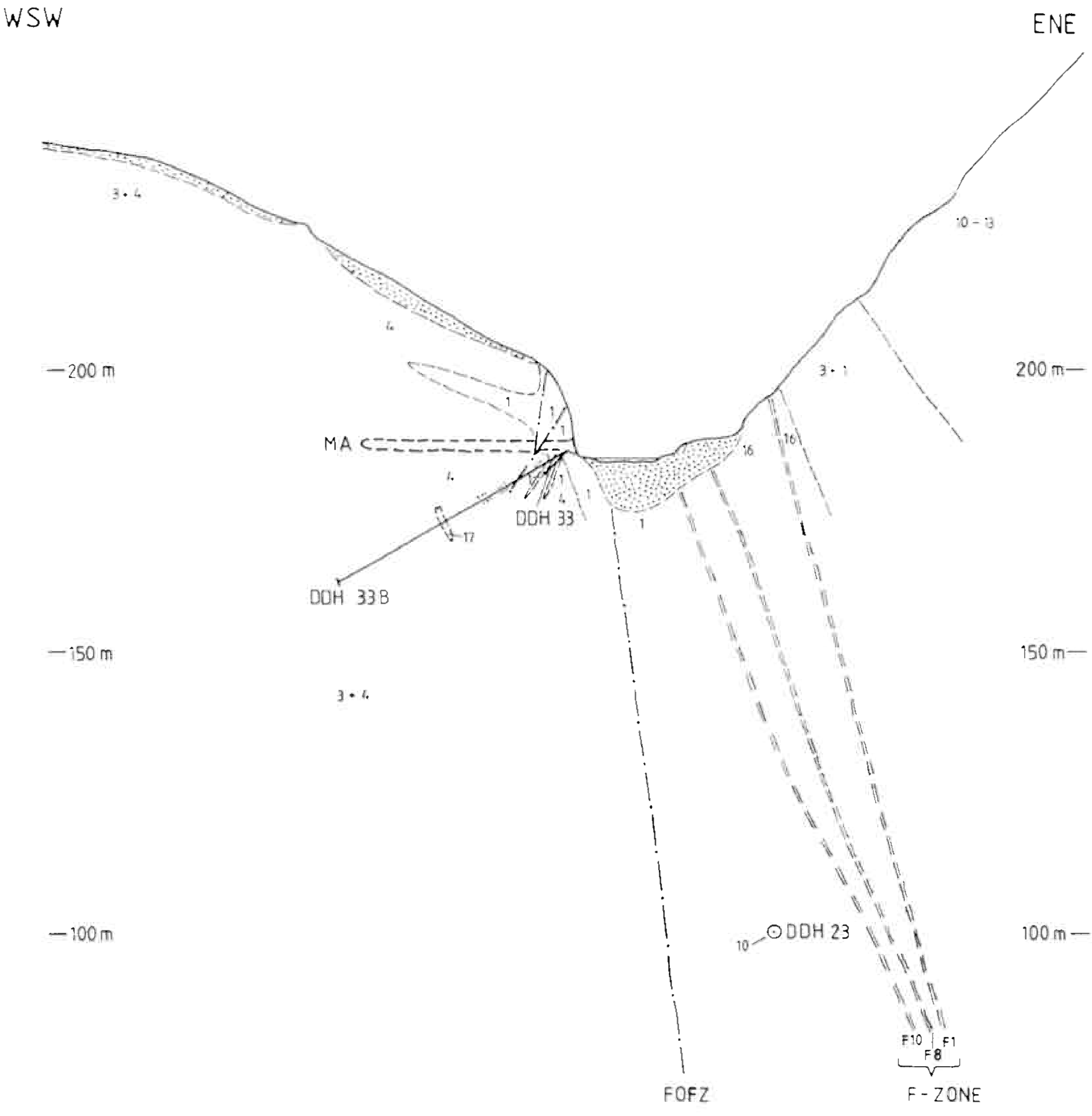
DEPTH (metres)		LENGTH	LITHO-LOGY	MEASURED STRUCTURES			ORE MINERALIZATION			PETROGRAPHY
From	To			Type	Angle w. core	Depth	From	To	Type	
0,00	1,00	1,00	CL							
1,00	6,00	6,00	HTG							Pinkish grey medium-grained TG cut by dykes of pink aplite (1,00-,60) and medium-grained white LG (1,95-2,45). Strong zonal bleaching at 1,60-4,30. Some scattered q. and q.-chl. veins (1-30 mm).

LITHOLOGIES: A: = amphibolite; ABGN = dark grey amphibole-biotitegneiss; BAG = dark grey biotite-rich anatectic granite; BGN = dark grey biotitegneiss; CGN = greenish calcislicate-gneiss; CL = coreloss; CM = cores missing; CSCH = calcareous schist; GQM = dark grey biotitegranite; GGO = grey granodioritic orthogneiss; GTG = grey medium-grained two-mica-granite; HGN = heterogeneous sequence of strongly interbanded gneisses; HTG = hybrid pinkish grey medium-grained two-mica-granite; IB = intrusion breccia; LG = leucocratic granite; M = calcite marble; MBGN = migmatitic biotitegneiss; MD = dark grey monzodiorite; MSCH = micaschist/-gneiss; OB/CL = overburden and/or coreloss in surface weathered rocks; P = pegmatite and pegmatitic granite; Q = hydrothermal quartz-vein or -lens; SK = skarn-altered marble. Prefixes: B- = bleached; BR- = brecciated; CC- = cataclastic; CR- = crushed; G- = garnetiferous; H- = heterogeneous; i.e. strong interbanding with other lithologies; HA- = hydrothermally altered; MY- = mylonitic; P- = pink; P- = porphyritic; SH- = semiductilly sheared; W- = white to greyish white.

SUMMARY CORELOG-DIAGRAM: DDH 33B



PROFILE: DDH 33 & 33B



DRILLHOLE No.: 33 B AZIMUTH: 245° INCLINATION: 30° LENGTH: 46,05 m Horiz.: 39,90 m Vert.: 23,00 m CORE DIM.: 36 mm
LOCATION: C-ZONE
COMPANY: NGO-COORD.:Y: -19323,0 X: 798827,4 ZONE: D ALTITUDE: 185,8 m.a.s.l.
YEAR: 1982 UTM-COORD.,E: 397220 N: 7229250 ZONE: 33

DEPTH (metres)		LENGTH	LITHOLOGY	MEASURED STRUCTURES			ORE MINERALIZATION			PETROGRAPHY
From	To			Type	Angle w. core	Depth	From	To	Type	
0,00	1,50	1,50	CL							
1,50	2,70	1,20	B-GTG							Light grey, medium-grained and strongly bleached TG with inclusions of bleached GQM at 1,50-,65.
2,70	3,80	1,10	P-LG							Pink fine- to medium-grained aplitic LG with some q. veins.
3,80	24,45	20,65	HTG				 5,45	4,00 4,35 5,25 5,90	10 mm aspy.-q. vein. 1 mm aspy. veinlet. 15 mm q.-musc. vein with 1-5 mm aspy. rim. Scattered up to 5 mm aspy. veinlets.	Pinkish grey, medium-grained TG showing weak to moderate zonal bleaching. It contains some small (1-20 cm) inclusions of bleached GQM at 17,65-24,45. It is cut by pink aplitic LG dykes and veins intermingled with strongly bleached TG at 3,80-6,40; 12,30-14,00; 15,70-16,50 and 16,95-17,25. The granite is crushed at 10,30-,60. 1-5 mm q. veins occur in a few places together with some veins (1 mm) of chlorite, q.-chlorite and calcite. More abundant q. veins at 5,25-6,05.

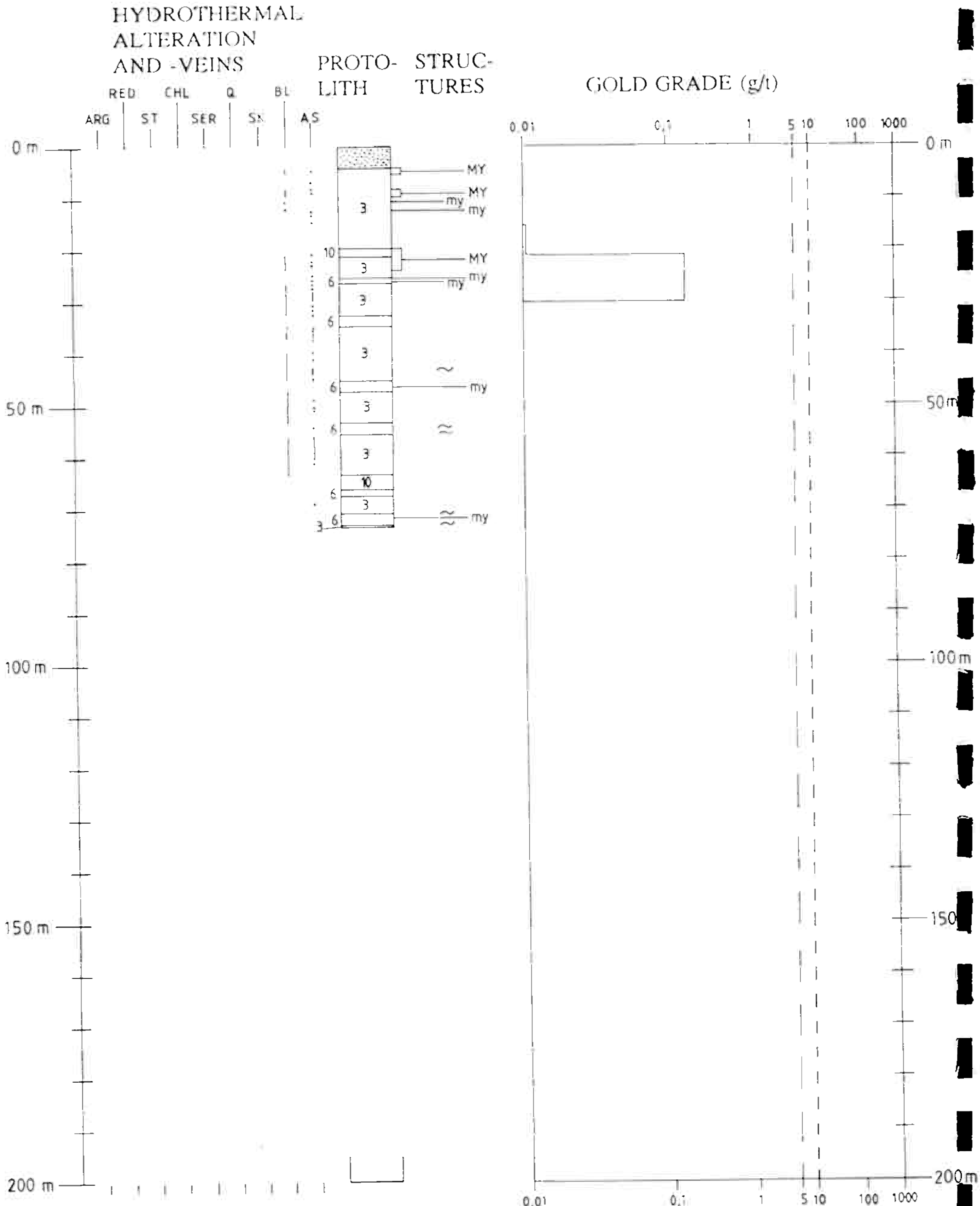
LITHOLOGIES: A: = amphibolite; ABGN = dark grey amphibole-biotite gneiss; BAG = dark grey biotite-rich anatectic granite; BGN = dark grey biotite gneiss; CGN = greenish calc-silicate gneiss; CL = coreloss; CM = cores missing; CSCH = calcareous schist; GQM = dark grey biotite-quartz monzonite; GGO = grey granodioritic orthogneiss; GTG = grey medium-grained two-mica granite; HTG = hybrid pinkish grey medium-grained two-mica granite; IB = intrusion breccia; LG = leucocratic granite; M = calcite marble; MBGN = migmatitic biotite gneiss; MD = dark grey monzodiorite; MSCH = micaschist/-gneiss; OB/CL = overburden and/or coreloss in surface weathered rocks; P = pegmatite and pegmatitic granite; Q = hydrothermal quartz-vein or -lens; SK = skarn-altered marble. Prefixes: B- = bleached; BR- = brecciated; CT- = cataclastic; CR- = crushed; G- = garnetiferous; H- = heterogeneous; i.e. strong interbanding with other lithologies; HA- = hydrothermally altered; MY- = mylonitic; P- = pink; PP- = porphyritic; SH- = semiductilly sheared; W- = white to greyish white.

DDH: 33 B

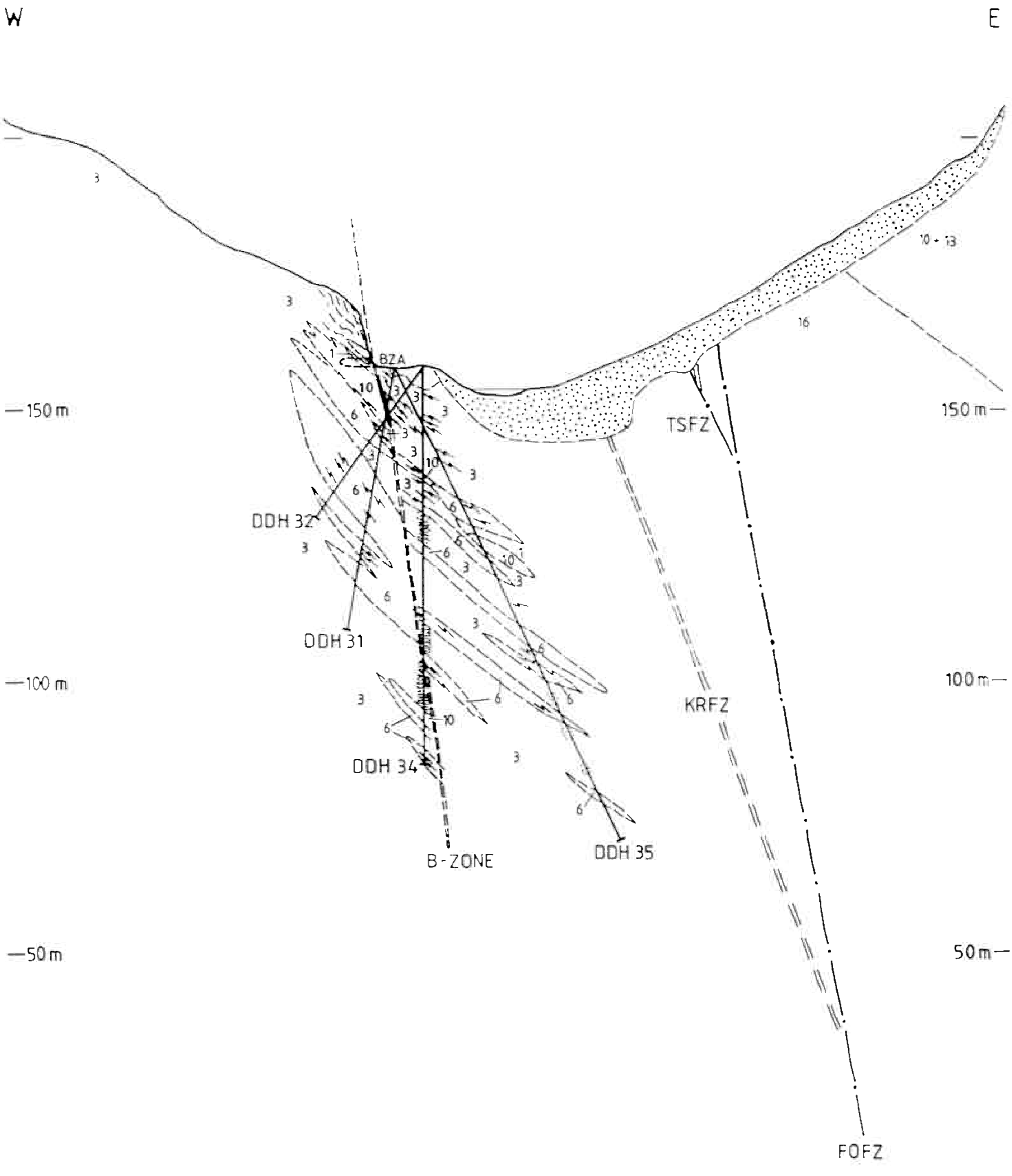
DEPTH (metres)		LENGTH	LITHOLOGY	MEASURED STRUCTURES			ORE MINERALIZATION			PETROGRAPHY
From	To			Type	Angle w. core	Depth	From	To	Type	
24,45	25,65	1,20	MBGN							Inclusion of light grey leucosome-rich migmatitic biotite gneiss.
25,65	46,05	20,40	HTG							Pinkish grey medium-grained TG with variable zonal bleaching. It contains small inclusions of GQM, e.g. 35,65-,75. It is cut by white to pink aplitic dykes at 26,15-,20; 29,90-30,20; 30,80-31,00; 38,40-,55; 43,05-,25 and 44,80-,95. The lowest of these dykes contains fine-grained q.-chlorite veins. The TG adjacent to the dykes is usually more strongly bleached. The granite also carries scattered 1-5 mm q. veins and stilbite-calcite-coated fissures.

STRUCTURES: BV = breccia vein; FL = foliation; LB = lithological boundary; LL = metamorphic banding and/or primary lithological layering; MY = mylonite foliation; SP = semiductile shear plane; V = mineral veins with prefixes: AN- = ankerite; CA- = calcite; CHL- = chlorite; MY- = mylonitic; Q- = quartz; SR- = sericite; ST- = stilbite.

SUMMARY CORELOG-DIAGRAM: DDH 34



PROFILE: DDH 32-31-34-35



DRILLHOLE No.: 34 AZIMUTH: INCLINATION: 90° LENGTH: 73,10 m Horiz.: 0,00 m Vert.: 73,10 m CORE DIM.: 36 mm
LOCATION: B-ZONE
COMPANY: A/S SULFIDMALM NGO-COORD.:Y: -19418,0 X: 799279,0 ZONE: D ALTITUDE: 156,5 m.a.s.l.
YEAR: 1982 UTM-COORD.,E: 397140 N: 7229720 ZONE: 33

DEPTH (metres)		LENGTH	LITHOLOGY	MEASURED STRUCTURES			ORE MINERALIZATION			PETROGRAPHY
From	To			Type	Angle w. core	Depth	From	To	Type	
0,00	4,00	4,00	CL							
4,00	19,60	15,60	MY- GTG	MY " FL MY "	70° 60° 50° 65° 50°	5,00 7,55 7,95 8,40 9,50	 6,65	4,60 6,95 8,25 8,90 9,40 12,65 13,25 14,60	Some diss. aspy. (2 mm). Aspy. veinlets in aplite veins. Aspy. veinlet in granitic mylonite. Scattered aspy. and py. grains in mylonitic q.-musc.vein. Mylonitic q.vein with 1-2 mm massive py. - po. vein. Two aspy. veinlets. 1-2 mm aspy. veinlet at the margin of a 10 mm mylonitic q. vein. Fracture-coating of py. and an 1 x 10 mm aspy. aggr.	Variably bleached light grey TG with a fine-grained amphibolite inclusion at 7,50-8,00. Strong bleaching associated with mylonite zones and the margin of scattered 5 cm aplite veins (6,65-,95) and quartz and quartz-muscovite veins (5-150 mm). The latter veins are often mylonitic (e.g. 4,95-5,10 and 9,35-,45). The granite is transformed into mylonites at 4,00-5,25; 8,05-9,70; 10,30-,40; 12,15-,30.
19,60	20,80	1,20	MY-A	MY " "	50° 50° 30°	19,80 20,25 20,60	 20,10	19,80 20,65 20,50	Py. dissemination. " " " 1 mm aspy. veinlet.	Mylonitic fine- to medium-grained amphibolite cut by GQM veins and calcite veinlets.

LITHOLOGIES: A: = amphibolite; ABGN = dark grey amphibole-biotite gneiss; BAG = dark grey biotite-rich anatectic granite; BGN = dark grey biotite gneiss; CGN = greenish calc-silicate gneiss; CL = coreloss; CM = cores missing; CSCH = calcareous schist; GQM = dark grey biotite-quartz monzonite; GGO = grey granodioritic orthogneiss; GTG = grey medium-grained two-mica granite; HTG = hybrid pinkish grey medium-grained two-mica granite; IB = intrusion breccia; LG = leucocratic granite; M = calcite marble; MBGN = migmatitic biotite gneiss; MD = dark grey monzodiorite; MSCH = micaschist/-gneiss; OB/CL = overburden and/or coreloss in surface weathered rocks; P = pegmatite and pegmatitic granite; Q = hydrothermal quartz-vein or -lens; SK = skarn-altered marble. Prefixes: B- = bleached; BR- = brecciated; CT- = cataclastic; CR- = crushed; G- = garnetiferous; H- = heterogeneous; i.e. strong interbanding with other lithologies; HA- = hydrothermally altered; MY- = mylonitic; P- = pink; PP- = porphyritic; SH- = semiductilly sheared; W- = white to greyish white.

DDH: 34

DEPTH (metres)		LENGTH	LITHOLOGY	MEASURED STRUCTURES			ORE MINERALIZATION			PETROGRAPHY
From	To			Type	Angle w. core	Depth	From	To	Type	
20,80	25,25	4,45	MY-GTG	MY	30°	21,35		21,35	20 mm mylonitic q. vein with py. stringers.	Light grey medium-grained GT, strongly bleached at 20,80-23,70 where the granite is mylonitic with sheared inclusions of MD (21,35-,55) and q.-veined amphibolite (23,00-,60). The mylonites contain some calcite veinlets. Moderate bleaching along 1-50 mm zones below 23,70 where a few 1-3 cm white pegm. veins occur.
				"	30°	21,65				
				"	30°	23,15	21,85	22,00	Scattered aspy. veinlets and 1-2 mm aggr.	
				"	40°	23,50				
				"	45°	23,65	22,60	22,95	" " " " "	
								24,95	1-5 mm aspy. veinlet in bleached zone.	
25,25	26,25	1,00	G-MD	MY	60°	25,85		25,80	Some 1-3 mm diss. aspy. grains in mylonite.	Medium-grained weakly foliated garnetiferous monzodiorite with epidote-altered mylonite zone at 25,65-,95. Mylonites are also found along the granite contact.
				"	60°	26,25		26,25	" " " "	
26,25	32,45	6,20	B-GTG					26,85	1-2 mm aspy. vein.	Nearly totally bleached GTG containing inclusions of G-MD at 27,40-,85 and 29,75-30,20. The bleached granite contains some remnants with biotite, e.g. 26,25-,55. It is cut by 1-2 cm aplites LG veins (max. 40 cm) and white pegmatite (31,60-32,05). In addition occur scattered 1-5 mm q.- and q.-musc. veins.
							27,15	27,20	A few diss. aspy. xx.	
							27,25	27,35	1-2 mm aspy. veinlets.	
								27,60	" " " "	
								27,90	A few diss. aspy. xx.	
							28,40	29,70	Scattered 1-2 mm aspy. veinlets and grains/aggr.	
								30,20	Two 5 and 10 mm q.-aspy. veins.	
							30,20	30,50	Scattered aspy. grains.	
							31,20	31,60	Some diss. aspy. aggr. (5 mm) and veinlets (2-5 mm).	
								32,05	Sheared q.-musc. vein (20 mm) with 5 mm aspy. veinlet.	

STRUCTURES: BV = breccia vein; FL = foliation; LB = lithological boundary; LL = metamorphic banding and/or primary lithological layering; MY = mylonite foliation; SP = semiductile shear plane; V = mineral veins with prefixes: AN- = ankerite; CA- = calcite; CHL- = chlorite; MY- = mylonitic; Q- = quartz; SR- = sericite; ST- = stilbite.

DDH: 34

DEPTH (metres)		LENGTH	LITHOLOGY	MEASURED STRUCTURES			ORE MINERALIZATION			PETROGRAPHY
From	To			Type	Angle w. core	Depth	From	To	Type	
32,45	34,60	2,15	G-MD							Garnetiferous monzodiorite cut by 1-20 mm white LG veins.
34,60	44,95	10,35	GTG	SP FL "	60° 50° 45°	35,25 43,30 44,25	 35,36 36,30 42,55	34,80 35,40 35,90 36,25 36,45 36,95 39,55 40,80 43,55 44,50	15 mm q.-musc. vein with 1-5 mm aspy. veinlet. Mylonitic q.-vein with 1 mm aspy. veinlet and py. aggr. at the margin. 1 mm aspy. veinlet. 1-5 mm aspy. veinlets along q.-musc. vein. Some 1 mm aspy. veinlets and grains. 1-5 mm aspy. vein. 30 mm sheared q. vein with 1-3 mm aspy. veinlet. 5 mm aspy. aggr. in aplitic LG vein. Scattered 1-2 mm aspy. grains and aggr. Some aspy. aggr. in chlorite-veined granite.	Variably bleached light grey TG with inclusions of granite veined G-MD (34,95-35,35 sheared, 36,75-,95; 38,65-39,35; 41,35-,65 and 42,35-,40), amphibolite (37,40-,65 and 37,80-38,50) and GQM (43,55-,75). The granite is strongly bleached at 34,60-,905; 35,40-36,75; 39,35-41,35 and 41,65-44,95. Muscovite-rich zones (43,20-,30 and 43,75-44,30) in the granite are well foliated. All the rocks including the foliated muscovitised granite are cut by veins (1-3 cm) and dykes of white aplitic LG (e.g. 37,20-,45 and 38,50-,65); biotite-spotted LG (38,50-,65) and white pegmatites. They also carry scattered q.- and q.-musc. veins (1-40 mm).
44,95	46,90	1,95	G-MD	MY	40°	46,20				Medium-grained garnetiferous monzodiorite cut by GTG (46,45-,65) and white LG (46,70-,75) dykes. Mylonite zone is developed at 46,05-,45.

STRUCTURES: BV = breccia vein; FL = foliation; LB = lithological boundary; LL = metamorphic banding and/or primary lithological layering; MY = mylonite foliation; SP = semiductile shear plane; V = mineral veins with prefixes: AN- = ankerite; CA- = calcite; CHL- = chlorite; MY- = mylonitic; Q- = quartz; SR- = sericite; ST- = stilbite.

DDH: 34

DEPTH (metres)		LENGTH	LITHOLOGY	MEASURED STRUCTURES			ORE MINERALIZATION			PETROGRAPHY
From	To			Type	Angle w. core	Depth	From	To	Type	
46,90	52,70	5,80	B-GTG	SP	35°	47,55	47,50 48,65	48,00 48,70 48,70 50,05 50,50	Py. diss. in MD inclusion. Aplitic LG with scattered aspy. veinlets. Py. diss. in amphibolite. A few 1-5 mm aspy. veinlets in aplitic LG. Some diss. aspy. in aplitic LG.	Strongly bleached GTG with inclusions of sheared monzodiorite (47,50-48,00), porphyritic hornblende (1 x 5 mm²) amphibolite (48,50-49,20) and partly chloritised GQM (48,00-48,50). The granite is cut by white aplitic LG veins and dykes (e.g. 47,05-,50; 48,00-,05 and 48,25-,45) and contains scattered q.- and q.-musc. veins (3-20 mm).
52,70	55,25	2,55	MD	SP Q-V SP LB	30° 5° 10° 20°	53,30 54,00 55,10 55,25	53,95	54,00	2-10 mm aspy. stringers along the margin of q. vein with greyish green chl.-ser.-coated fractures and clay-altered margin.	Medium-grained monzodiorite cut by 2-3 cm q. veins. It is weakly foliated above 53,20. Variable intensity of shearing below 53,20. Locally the MD contain light greyish green chloritised zones (e.g. 52,70-,80).
55,25	63,25	8,00	B-GTG				55,80 56,40 60,75	56,40 60,10 60,95	Scattered 1-10 mm aspy. ± chlorite veinlets and 5 mm aggr., partly along 5-10 mm sheared q. veins. Scattered 0,5-5 mm aspy. aggr., stringers and veins. Two 5-10 mm q.-musc.-aspy. veins. Some 2-5 mm aspy. veinlets with muscovite rims.	Strongly bleached light grey TG with small inclusions of chloritised GQM (56,05-,35). Strong bleaching is found at 55,80-56,40; 56,40-60,10 and 60,10-63,25. The former zone shows silicification associated with q. veins (5-10 mm) whereas the latter is strongly muscovite-altered. The granite is cut by scattered aplitic LG veins and 1-10 mm q. and q.-musc. veins.

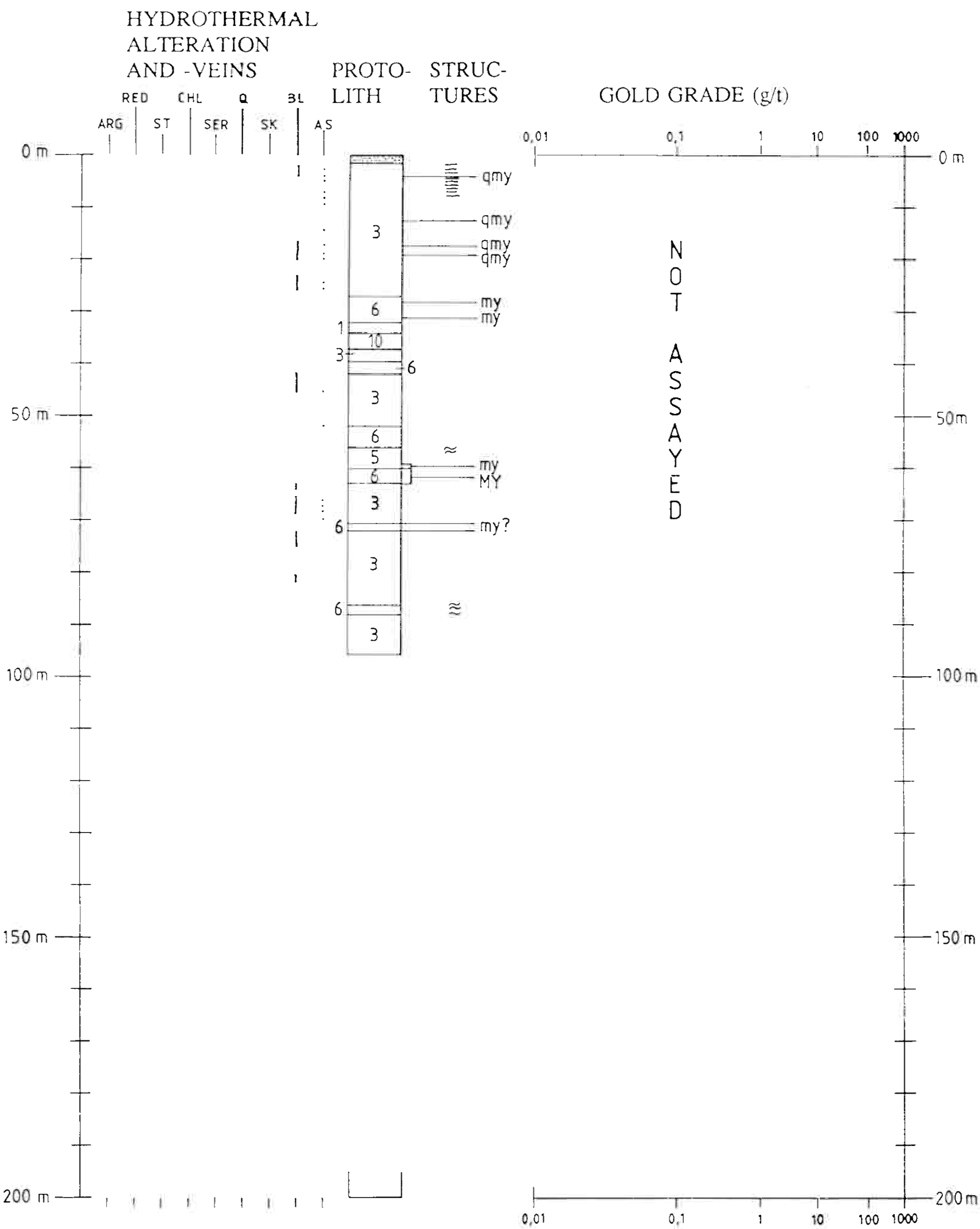
STRUCTURES: BV = breccia vein; FL = foliation; LB = lithological boundary; LL = metamorphic banding and/or primary lithological layering; MY = mylonite foliation; SP = semiductile shear plane; V = mineral veins with prefixes: AN- = ankerite; CA- = calcite; CHL- = chlorite; MY- = mylonitic; Q- = quartz; SR- = sericite; ST- = stilbite.

DDH: 34

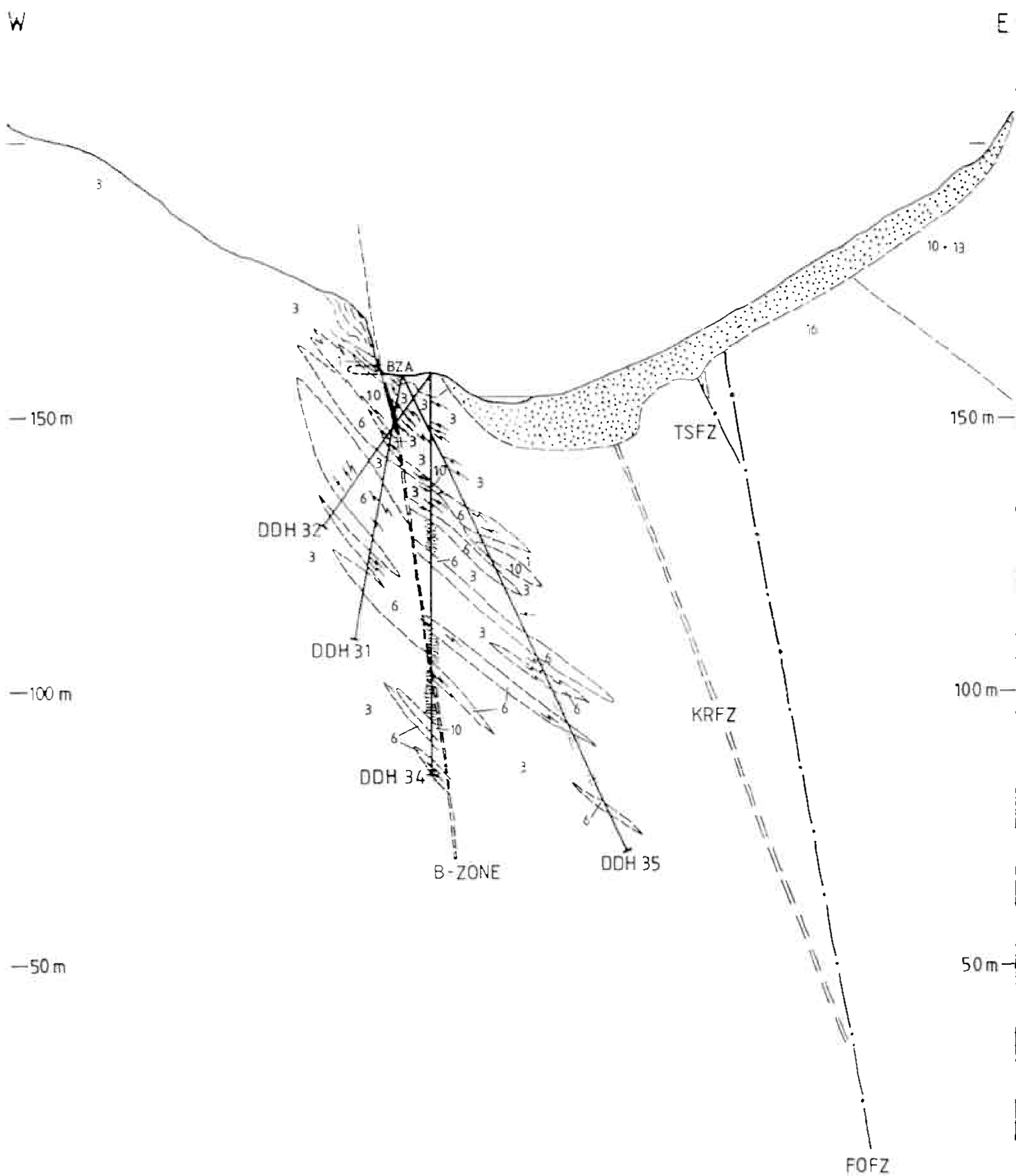
DEPTH (metres)		LENGTH	LITHO-LOGY	MEASURED STRUCTURES			ORE MINERALIZATION			PETROGRAPHY
From	To			Type	Angle w. core	Depth	From	To	Type	
63,25	65,70	2,45	A	LB FL "	60° 60° 55°	63,25 64,50 65,20				Fine- to coarse-grained hornblende-spotted amphibolite cut by 0,5-10 cm GTG and white LG dykes, partly containing hbl. segregations.
65,70	67,35	1,65	G-MD	LB	65°	67,35				Medium- to coarse-grained garnetiferous monzodiorite which is weakly foliated. It is cut by a 3 cm pegmatite dyke at 65,90. Below 66,25 it carries scattered epidote veins with epidote-altered envelopes (20 cm).
67,35	70,65	3,40	GTG					68,50	2 mm q.-aspy. vein.	Light grey weakly bleached TG cut by some 1-3 cm pegmatite and q. veins.
70,65	72,85	2,20	MD	SP " "	40° 35° 35°	71,10 71,50 72,15				Partly sheared monzodiorite cut by white pegmatite dykes (70,75-,90 and 71,60-,85) and infiltrated by GTG (e.g. 72,40-,60). It also contain scattered 10 mm q. veins having a ptygmatic form in one of the shear zones (71,20).
72,85	73,10	0,25	GTG							Light grey TG cut by 1-2 cm white pegmatite veins.

STRUCTURES: BV = breccia vein; FL = foliation; LB = lithological boundary; LL = metamorphic banding and/or primary lithological layering; MY = mylonite foliation; SP = semiductile shear plane; V = mineral veins with prefixes: AN- = ankerite; CA- = calcite; CHL- = chlorite; MY- = mylonitic; Q- = quartz; SR- = sericite; ST- = stilbite.

SUMMARY CORELOG-DIAGRAM: DDH 35



PROFILE: DDH 32- 31 - 34-35



DRILLHOLE No.: 35 AZIMUTH: 90° INCLINATION: 65° LENGTH: 95,65 m Horiz.: 40,40 m Vert.: 86,70 m CORE DIM.: 36 mm
LOCATION: B-ZONE
COMPANY: A/S SULFIDMALM NGO-COORD.:Y: -19422,0 X: 799280,0 ZONE: D ALTITUDE: 157,20 m.a.s.l.
YEAR: 1982 UTM-COORD.,E: 397140 N: 7229720 ZONE: 33

DEPTH (metres)		LENGTH	LITHOLOGY	MEASURED STRUCTURES			ORE MINERALIZATION			PETROGRAPHY
From	To			Type	Angle w. core	Depth	From	To	Type	
0,00	1,40	1,40	OB/CL							
1,40	27,00	25,60	GTG	FL	50°	3,85		2,70	2 mm aspy. veinlet.	Variably bleached light grey TG with amphibolite incl. (6,40-,85). It is weakly foliated down to 8,00. The granite is cut by some white LG dykes (1-10 cm wide) and is strongly bleached in the intervals 1,65-4,35; 16,60-20,20 and 23,00-26,00. Thin bleached zones and envelopes (1-10 cm) are found scattered in the rest of the granite frequently associated with q.- and q.-musc. veins (1-10 mm) which may contain aspy.. Sheared q-veins occur at 4,15 (aspy.), 12,50-,60; 16,95-17,45 (aspy.) and 19,00-,15 (aspy.).
				MY-Q	80°	4,15		4,15	5 mm diss. zone in 1 cm mylonitic q. vein.	
				FL	30°	6,70		5,10	1 mm aspy. veinlet.	
				"	60°	7,90		7,15	5 mm " "	
				MY-Q	60°	12,55		8,20	Aspy. coatings on two fractures.	
				"	45°	16,95		9,45	" " " "	
				"	50°	17,15		14,45	Aspy.aggr. (5x10 mm) on 10 mm q.-musc.vein.	
				"	60°	17,30		15,35	Py diss. along fracture.	
				"	10°	19,10	16,20	16,30	1 mm py. veinlets and diss.grains along 10 mm q.-musc. veins.	
							17,25	17,35	1 mm aspy. - py. veinlets.	
								19,05	2 mm aspy. veinlet in mylonitic q.-vein.	
								19,95	1 mm aspy. veinlet.	
								23,10	1 cm q.vein with py.stringers along the margin.	
								24,55	1 mm aspy.veinlet.	
								25,50	1 mm aspy.veinlet.	

LITHOLOGIES: A: = amphibolite; ABGN = dark grey amphibole-biotite gneiss; BAG = dark grey biotite-rich anatectic granite; BGN = dark grey biotite gneiss; CGN = greenish calc-silicate gneiss; CL = coreloss; CM = cores missing; CSCH = calcareous schist; GQM = dark grey biotite-quartz monzonite; GGO = grey granodioritic orthogneiss; GTG = grey medium-grained two-mica granite; HTG = hybrid pinkish grey medium-grained two-mica granite; IB = intrusion breccia; LG = leucocratic granite; M = calcite marble; MBGN = migmatitic biotite gneiss; MD = dark grey monzodiorite; MSCH = micaschist/-gneiss; OB/CL = overburden and/or coreloss in surface weathered rocks; P = pegmatite and pegmatitic granite; Q = hydrothermal quartz-vein or -lens; SK = skarn-altered marble. Prefixes: B- = bleached; BR- = brecciated; CT- = cataclastic; CR- = crushed; G- = garnetiferous; H- = heterogeneous; i.e. strong interbanding with other lithologies; HA- = hydrothermally altered; MY- = mylonitic; P- = pink; PP- = porphyritic; SH- = semiductilly sheared; W- = white to greyish white.

DDH: 35

DEPTH (metres)		LENGTH	LITHO-LOGY	MEASURED STRUCTURES			ORE MINERALIZATION			PETROGRAPHY
From	To			Type	Angle w. core	Depth	From	To	Type	
27,00	32,00	5,00	MD	MY	40° 50°	28,10 31,20				Medium-grained monzodiorite cut by grey TG at 29,30-,55, 30,05-,35 and 30,50-,90. The latter is strongly bleached. Ductile shearing with development of thin zones of mafic mylonite occurs at 28,10-,15 and 31,05-,25. The MD also contains hairline veins of epidote.
32,00	34,05	2,05	W-LG	MY-Q	45°	32,40		33,80	1 mm py. - chl. vein.	White medium-grained LG with muscovite rich foliated zones such as 33,60-,70. Scattered q.- and q.+musc.-veins (1-5 mm) some showing ductile shearing. Small incl. av grey TG not exceeding 5 cm.
34,05	37,30	3,25	A	FL	60°	36,15				Fine-grained amphibolite with scattered granite veins (0,5 - 5 cm).
37,30	39,60	2,30	GTG				38,05	38,25	Aspy. veinlets and fracture coating.	Greyish green chlorite-altered GTG with 1-5 cm wide white LG dykes.
39,60	41,85	2,25	MD							Medium-grained monzodiorite dykes in fine-grained amphibolite (intrusion breccia). The MD contains unorientated hornblende needles and epidote veinlets.
41,85	51,85	10,00	GTG	SP LB	50° 35°	47,55 51,85		45,25 51,85	1-2 mm wide aspy. stringers along the margin of a 5 mm q.vein. Aspy.-coated fol. plane.	Variably bleached grey TG with incl. of dark grey foliated quartz monzonite (46,95-47,15) and monzodiorite (58,80-53,00). The GTG contains muscovite-rich foliated zones in association with 2-20 mm q.-musc. veins. The widest zone occurs at 47,55-48,00. The GTG is cut by white LG dykes (43,85-44,10) some of them with weak fracture-bound sericite alt. (51,25-,45 and 51,75-,85). Strong bleaching with minor biotite remnants is found in the intervall 41,85-45,50. Further down the TG contains scattered 1-20 cm bleached zones.

STRUCTURES: BV = breccia vein; FL = foliation; LB = lithological boundary; LL = metamorphic banding and/or primary lithological layering; MY = mylonite foliation; SP = semiductile shear plane; V = mineral veins with prefixes: AN- = ankerite; CA- = calcite; CHL- = chlorite; MY- = mylonitic; Q- = quartz; SR- = sericite; ST- = stilbite.

DDH: 35

DEPTH (metres)		LENGTH	LITHOLOGY	MEASURED STRUCTURES			ORE MINERALIZATION			PETROGRAPHY
From	To			Type	Angle w. core	Depth	From	To	Type	
51,85	55,95	4,10	G-MD	V	20°	55,95				Garnetiferous medium-grained MD with white pegmatite dykes (53,15 ,20; 53,95-54,05 and 54,75-,95). Chlorite-calcite filled fracture at footwall boundary.
55,95	60,10	4,15	GQM	FL SP	25° 35°	56,30 59,50				Dark grey biotite-quartz monzonite cut by grey GTG dykes which are bleached along the margin of white LG dykes (15-20 cm) and 1-5 mm muscovite and q.-musc. veins. Garnetiferous MD incl. occur locally (58,25-80). Shearing is locally developed in muscovite-altered GTG in association with 2-5 mm q-musc. veins (e.g. 59,30-,75). The dark grey quartz monzonite along the upper contact is foliated (55,95-56,50).
60,10	62,85	2,75	G-MD	SP SP SP SP	45° 30° 40° 35°	60,75 61,25 61,65 62,10				Sheared medium - to fine-gr. garnetiferous monzodiorite. The shearing has also affected pegmatite and LG dykes (61,60-,75 and 61,80-,85) and thin TG veins. Along the footwall boundary the MD is fine-grained (62,00-,85).
62,85	70,55	7,70	GTG					66,35 67,25 68,20 69,80	A pair of 1 mm q.-aspy. veins. 1-2 mm aspy. veinlet. 1 mm aspy. veinlet. 1-2 mm sheared aspy. vein.	Grey TG cut by white LG dykes (65,00-,15; 65,70-,85; 67,05-,10; 67,35-,50; 67,70-,80; 67,95-68,10 and 69,85-70,35). The TG is strongly bleached at 62,85-63,85 and 65,65-69,00.
70,55	71,85	1,30	G-MD	FL FL	45° 30°	70,70 71,60				Foliated medium- to coarse-grained garnetiferous MD with more fine-grained ductile shear-zones at 70,55-,65; 70,80-71,35; 71,45-,55 and 71,70-,85. The fine-grained "mylonitic" amphibolite may represent ordinary inclusions.

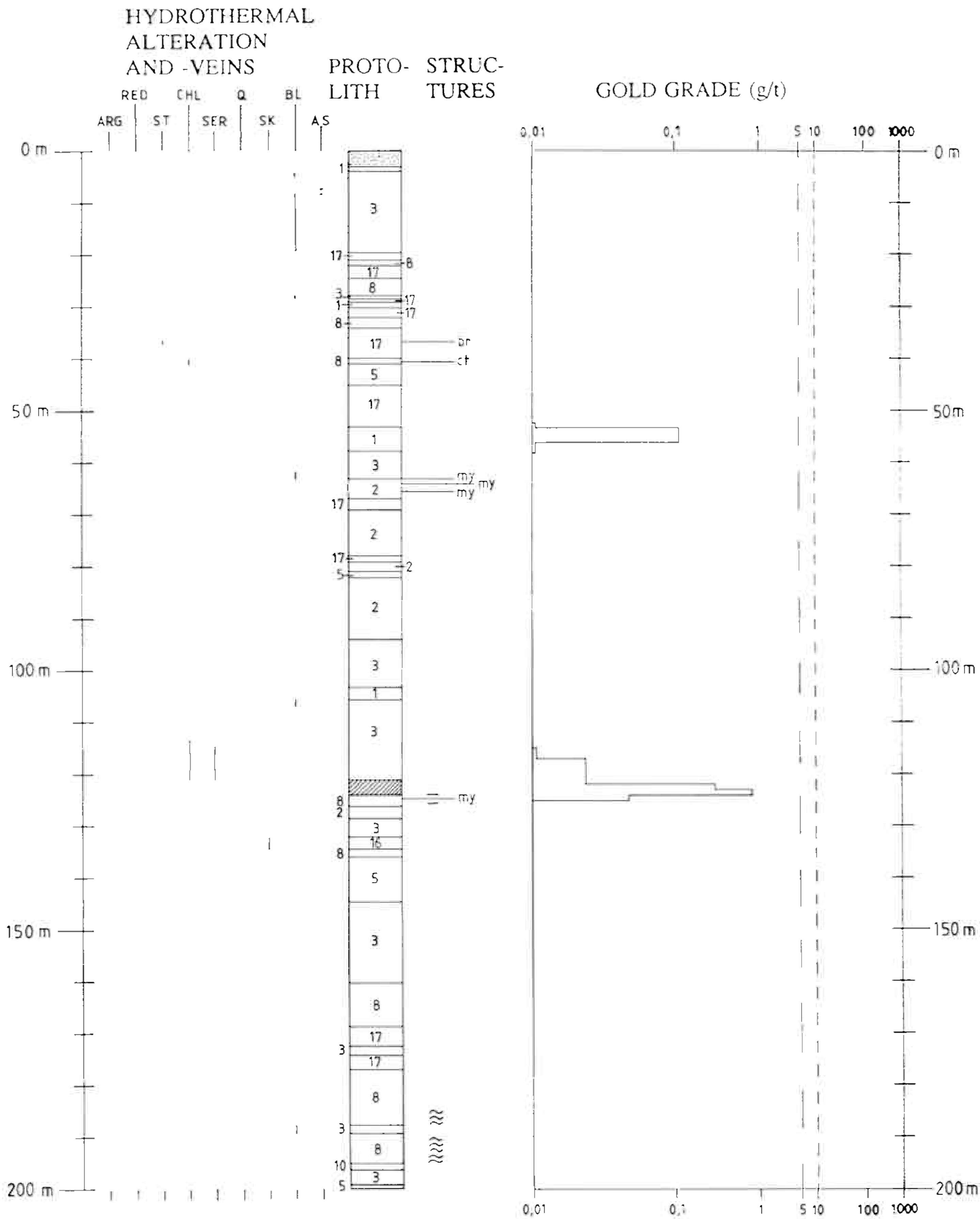
STRUCTURES: BV = breccia vein; FL = foliation; LB = lithological boundary; LL = metamorphic banding and/or primary lithological layering; MY = mylonite foliation; SP = semiductile shear plane; V = mineral veins with prefixes: AN- = ankerite; CA- = calcite; CHL- = chlorite; MY- = mylonitic; Q- = quartz; SR- = sericite; ST- = stilbite.

DDH: 35

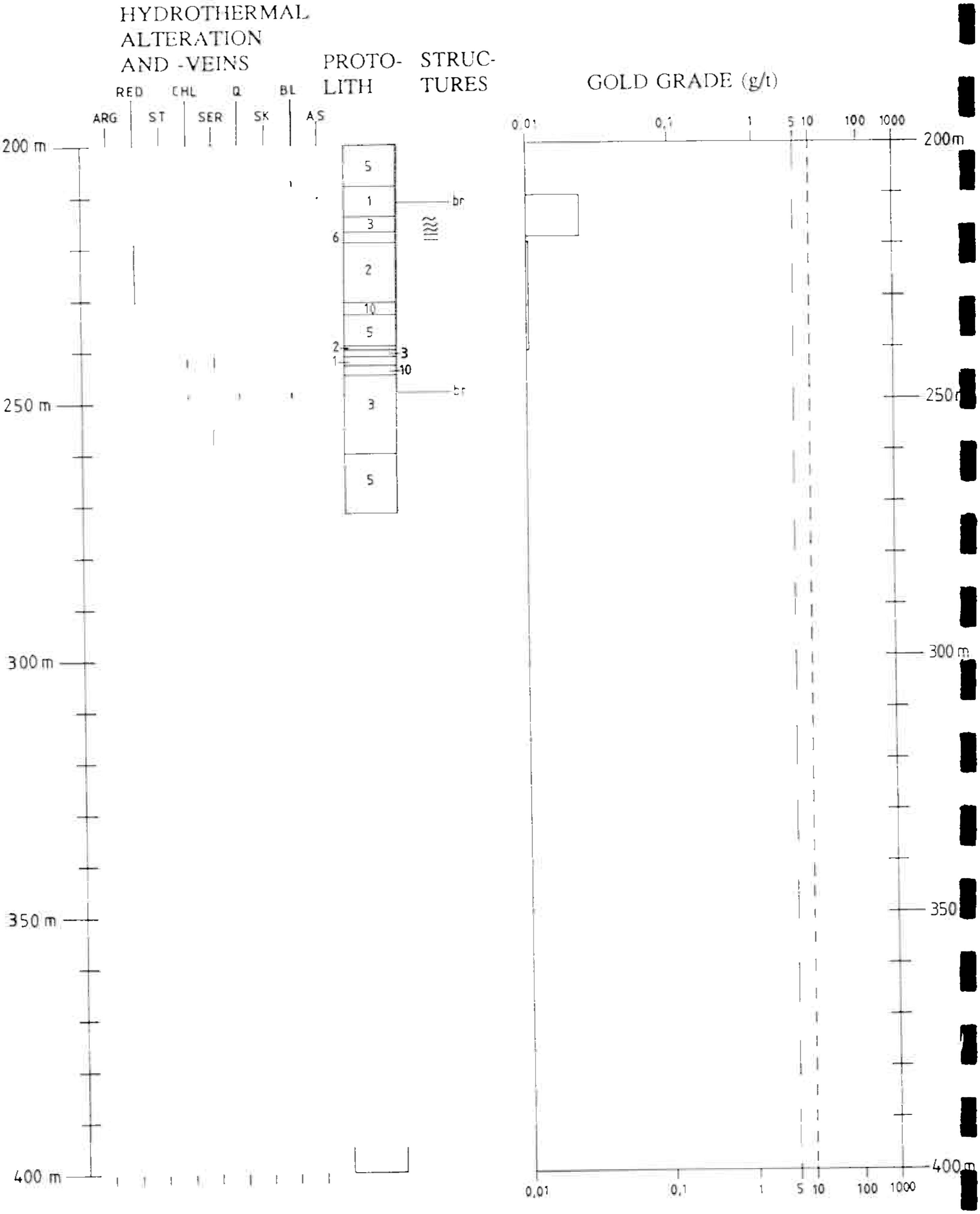
DEPTH (metres)		LENGTH	LITHO-LOGY	MEASURED STRUCTURES			ORE MINERALIZATION			PETROGRAPHY
From	To			Type	Angle w. core	Depth	From	To	Type	
71,85	86,30	14,45	GTG	SP	45° 40°	74,85 75,25	75,00	75,15 85,45	Diss. 5-15 mm aspy. aggr. 2 x 5 mm aspy. aggr. along 0,5 mm q. veins.	Grey variably bleached and muscovite-enriched TG with inclusions of garnetiferous MD (74,00-,30; 75,55-76,30 and 82,20-,75), foliated and chloritised G-MD (83,90-84,55) and amphibolite (73,55-74,00; 75,30-,40). The mafic rocks contain some hairlines of epidote and 1-2 mm greyish green chloritised zones. The GTG is cut by white LG dykes (72,85-73,00; 77,70-78,00; 78,85-79,00 and 81,20-,50). Both the GTG and LG contain 1-10 mm musc. and q.-musc. veins which may be enveloped by muscovite alteration (73,25-,45 and 74,80-75,30 foliated). The GTG is strongly bleached and muscovite-altered in association with thin LG dykes and muscovite-bearing veins (72,00-75,30 and 80,50-82,00). Between 77,00 and 80,00 the GTG is moderately bleached along 1-3 cm zones in association with LG and musc. veins.
86,30	87,95	1,65	G-MD	FL FL	25° 40°	85,60 87,55		87,70	1 mm q.-ca.-py. veinlet.	Foliated medium-grained garnetiferous MD with an amphibolite inclusion at 86,30-,70. Both are cut by foliated dark grey quartz monzonite dykes at 86,70-87,05, 87,35-,40 and 87,95-88,10.
87,95	95,65	7,70	GTG							Grey TG cut by 1-10 cm white LG (88,70-,90; 89,70-,80; 90,40-,55 and 91,55-,65) and pegmatite dykes (92,90-93,05). The GTG contains small amphibolite inclusions in the interval 94,65-,80. The GTG is weakly muscovite-altered in association with scattered 1-10 mm musc. ± veins especially from the upper border and down to 89,40.

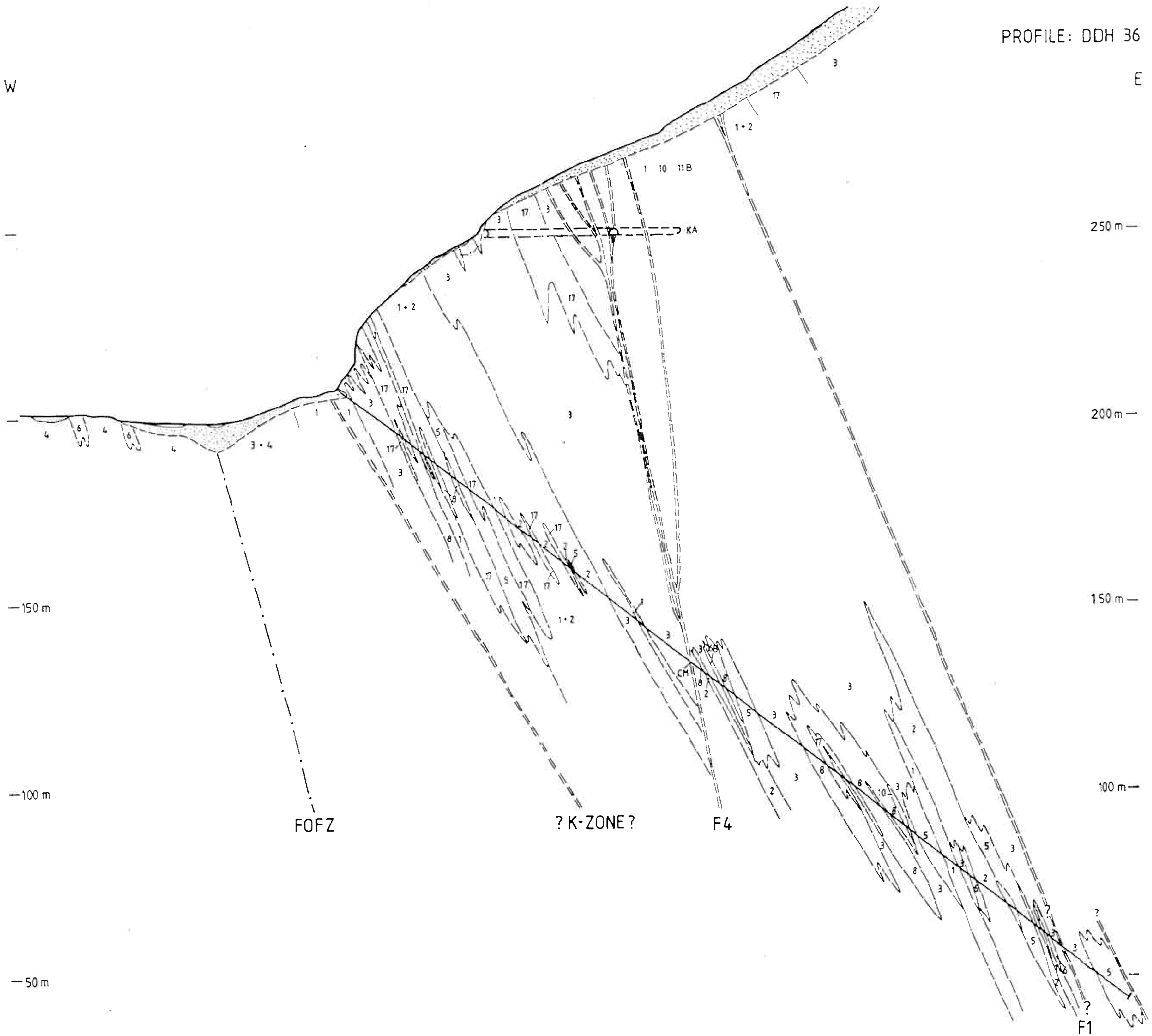
STRUCTURES: BV = breccia vein; FL = foliation; LB = lithological boundary; LL = metamorphic banding and/or primary lithological layering; MY = mylonite foliation; SP = semiductile shear plane; V = mineral veins with prefixes: AN- = ankerite; CA- = calcite; CHL- = chlorite; MY- = mylonitic; Q- = quartz; SR- = sericite; ST- = stilbite.

SUMMARY CORELOG-DIAGRAM: DDH 36



SUMMARY CORELOG-DIAGRAM: DDH 36 cont.




PROFILE: DDH 36
W
E
250 m
200 m
150 m
100 m
150 m
100 m
50 m
KA
CM
FOFZ
? K-ZONE ?
F4
F1

DRILLHOLE No.: 36 AZIMUTH: 86° INCLINATION: 37° LENGTH: 271,65 m Horiz.: 216,95 m Vert.: 163,50 m CORE DIM.: 36 mm
LOCATION: F-ZONE
COMPANY: A/S SULFIDMALM NGO-COORD.:Y: -19266,071 X: 798649,249 ZONE: D ALTITUDE: 207,554 m.a.s.l.
YEAR: 1982 UTM-COORD.,E: 397270 N: 7229090 ZONE: 33

DEPTH (metres)		LENGTH	LITHOLOGY	MEASURED STRUCTURES			ORE MINERALIZATION			PETROGRAPHY
From	To			Type	Angle w. core	Depth	From	To	Type	
0,00	3,00	3,00	OB/CL							
3,00	4,30	1,30	W-LG	LB	20°	4,30				White medium-grained leucogranite with small inclusions of bleached GTG.
4,30	19,40	15,10	B-GTG	V LB " "	30° 15° 90° 30°	8,35 16,45 17,45 19,40	7,10	7,30 8,35 10,05	Bleached zones with a few 1-5 mm aspy. veinlets. 3 mm aspy. veinlet. Py.-coated fissure.	Light grey to grey medium-grained TG cut by abundant white aplitic biotite-spotted veins (2-5 cm) and dykes (12,65-,75; 16,45-17,05; 17,50-18,00 and 18,80-19,00). The dyke at 17,50-18,00 is cut by a white aplite vein. Also some pegmatite veins. The GTG is strongly bleached at 4,30-5,00 and 8,20-19,40. The LG dykes and adjacent TG carry scattered fractures with sericite-alteration.
19,40	21,00	1,60	MBGN	FL " LB	30° 30° 30°	19,80 20,40 21,00				Dark grey migmatitic biotite gneiss with scattered white feldspar augen (5 x 10 mm²) and locally grading towards a biotite-rich anatectic granite in appearance. It is cut by some 2-3 cm white aplitic LG veins.
21,00	21,95	0,95	BAG	LB	30°	21,95				Dark coarse-grained biotite-rich anatectic granite with 5-8 mm aquant to spherical white feldspar in a matrix of biotite. It carries some biotite-rich schlieren. It is cut by a white aplitic LG dyke at 21,30-,45.
21,95	24,60	2,65	MBGN	FL	10°	23,30				Migmatitic biotite gneiss with zones of amphibolite (22,10-,50) and BAG (22,50-,90). It is cut by white aplitic LG at 24,30-,40.
24,60	27,80	3,20	BAG	LB "	50° 15°	24,60 27,10				Biotite-rich anatectic granite with variable biotite content. It is cut by a GTG dyke at 26,60-27,10.

LITHOLOGIES: A: = amphibolite; ABGN = dark grey amphibole-biotite gneiss; BAG = dark grey biotite-rich anatectic granite; BGN = dark grey biotite gneiss; CGN = greenish calc-silicate gneiss; CL = coreloss; CM = cores missing; CSCH = calcareous schist; GQM = dark grey biotite-quartz monzonite; GGO = grey granodioritic orthogneiss; GTG = grey medium-grained two-mica granite; HTG = hybrid pinkish grey medium-grained two-mica granite; IB = intrusion breccia; LG = leucocratic granite; M = calcite marble; MBGN = migmatitic biotite gneiss; MD = dark grey monzodiorite; MSCH = micaschist/-gneiss; OB/CL = overburden and/or coreloss in surface weathered rocks; P = pegmatite and pegmatitic granite; Q = hydrothermal quartz-vein or -lens; SK = skarn-altered marble. Prefixes: B- = bleached; BR- = brecciated; CT- = cataclastic; CR- = crushed; G- = garnetiferous; H- = heterogeneous; i.e. strong interbanding with other lithologies; HA- = hydrothermally altered; MY- = mylonitic; P- = pink; PP- = porphyritic; SH- = semiductilly sheared; W- = white to greyish white.

DDH: 36

DEPTH (metres)		LENGTH	LITHO-LOGY	MEASURED STRUCTURES			ORE MINERALIZATION			PETROGRAPHY
From	To			Type	Angle w. core	Depth	From	To	Type	
27,80	28,50	0,70	B-GTG	LB	30°	28,50				Grey medium-grained TG, strongly bleached at 27,80-28,20. A few scattered 1-2 mm sericite alteration zones.
28,50	29,00	0,50	MBGN	LB	45°	29,00				Migmatitic biotite gneiss with 15 x 30 mm² quartz-feldspar segregations.
29,00	30,05	1,05	W-LG							White biotite-spotted aplitic LG with some GTG inclusions below 29,40.
30,05	31,80	1,75	MBGN	FL "	30° 15°	30,40 31,35				Migmatitic biotite gneiss.
31,80	33,95	2,15	BAG							Medium-grained (1-2 mm) biotite-rich anatectic granite with granular texture and some 5 x 8 mm² rectangular porphyritic feldspars.
33,95	39,80	5,85	MBGN	FL LB ST-V FL " ST-V FL ST-V	20° 10° 10° 10° 40° 35° 30° 20°	35,10 35,90 36,80 37,10 38,00 39,25 39,25 39,65				Migmatitic biotite gneiss with variable density of 10 mm leucosome schlieren. It is cut by a white aplitic LG vein at 35,80-,90. It is cut by a breccia zone (36,50-,70) surrounded by scattered 1-10 mm stilbite- and/or calcite-veins.
39,80	40,70	0,90	BAG	BV "	10° 15°	40,40 40,70				Biotite-rich anatectic granite with ultracataclasite at 40,40-,70. The 10 cm contact-zone towards the ultracataclasite contains several chlorite- and calcite-albite-epidote-veins.
40,70	45,25	4,55	GQM	LB	60°	40,70				Dark grey variably bleached biotite-quartz monzonite with many small inclusions of MBGN and BAG. It is cut by thin aplitic LG veins, maximum width at 45,10-,25 where chlorite veins with sericite-altered envelopes also occur.

STRUCTURES: BV = breccia vein; FL = foliation; LB = lithological boundary; LL = metamorphic banding and/or primary lithological layering; MY = mylonite foliation; SP = semiductile shear plane; V = mineral veins with prefixes: AN- = ankerite; CA- = calcite; CHL- = chlorite; MY- = mylonitic; Q- = quartz; SR- = sericite; ST- = stilbite.

DDH: 36

DEPTH (metres)		LENGTH	LITHO-LOGY	MEASURED STRUCTURES			ORE MINERALIZATION			PETROGRAPHY
From	To			Type	Angle w. core	Depth	From	To	Type	
45,25	52,90	7,65	MBGN	LB FL "	30° 20° 15°	45,25 45,90 50,50				Migmatitic biotite gneiss with zones of foliated and granular BAG, e.g. 47,25-,80 and 50,80-51,30. Gradational contacts BAG/MBGN. They are cut by white aplitic LG veins, e.g. 51,90-52,00.
52,90	57,85	4,95	W-LG							White medium- to coarse-grained leucogranite with small inclusions of bleached GTG and migmatitic gneiss. A few 1-3 mm q. veins and pegmatites (1-5 cm).
57,85	62,80	4,95	GTG	Q-V " " "	30° 30° 30° 35°	58,55 58,85 60,15 62,20				Grey medium-grained granite with variable zonal bleaching often representing envelopes around q. veins (e.g. 48,55-,85 and 49,55-,90). It is strongly bleached at 61,85-62,80 and contains only minor biotite-bearing domains. It is cut by white aplite dykes (58,30-,55 and 59,80-,90) and carries scattered 1-5 mm q. ± musc. veins and sericite alteration zones.
62,80	66,70	3,90	W-P	SP Q-V LB	25° 55° 10°	63,90 66,60 66,70				White pegmatite and pegmatitic granite with 5 cm quartz segregations. Grey TG inclusion at 63,20-,40. Ductile shear zones with laminated platy quartz and sericite/muscovite foliation planes occur at 62,80-63,20; 63,65-64,00 and 65,40-,55. One 5 mm q.-musc. vein.
66,70	69,10	2,40	MBGN	FL	30°	67,50				Migmatitic biotite gneiss with BAG zone at 66,70-67,20. The gneiss is crenulated.
69,10	77,95	8,85	W-P							White pegmatite with quartz segregations, transitional to aplitic granite. It contains inclusions of GTG (69,55-,85; 70,00-,25 and 75,40-76,10), BAG (73,75-,95) and MBGN (74,70-75,50). Scattered 0,5-1 mm sericite veins.
77,95	78,95	1,00	MBGN	FL	50°	78,50				Migmatitic biotite gneiss.

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DDH: 36

DEPTH (metres)		LENGTH	LITHO-LOGY	MEASURED STRUCTURES			ORE MINERALIZATION			PETROGRAPHY
From	To			Type	Angle w. core	Depth	From	To	Type	
78,95	81,10	2,15	W-P							White pegmatitic granite with inclusions of GTG at 79,45-,70.
81,10	82,30	1,20	GQM							Dark grey biotite-quartz monzonite with low angle white medium-grained granite veins (5 cm) cut by white aplite (1-2 cm).
82,30	94,10	11,80	W-P	FL	30°	90,50				White pegmatite and pegmatitic granite with small inclusions of MBGN (82,30-83,60 and 84,00-,20) and GQM (90,80-91,00; 91,30-92,00; 92,75-93,20). Faint foliation locally. It is cut by thin (5 cm) white aplite dykes.
94,10	103,30	9,20	GTG	Q-V " "	30° 50° 50°	100,15 100,30 101,45		95,00 101,45	Po. diss. in LG. 6 mm q.-aspy. vein.	Grey medium-grained TG cut by 1-20 cm veins and dykes of white aplitic LG and pegmatite. It contains scattered q. veins some with chlorite- and sericite-veins along their margin. Bleached envelopes occur in association with both aplite and q. veins. Moderate bleaching associated with pervasive muscovitisation at 101,80-103,30.
103,30	105,50	2,20	W-LG							White medium-grained leucogranite grading into biotite-spotted aplitic zones. Pegmatite occurs at 104,75-,95. Some scattered q. veins and fractures with sericite alteration.
105,50	121,00	15,50	GTG	SR-V Q-V	42° 52°	104,60 105,50				Grey medium-grained TG with 1-10 cm bleached zones. Strong pervasive bleaching at 105,50-107,50. The bleaching occurs frequently as envelopes on q. veins (5-10 mm) and sericite-alteration veins (1-10 mm), the latter occurring abundantly at 114,60-121,00. Below 113,50 are chlorite-coated fissures common. Soot-grey alteration at 119,00-,20.
121,00	124,00	3,00	CM							
124,00	126,25	2,25	BAG	SP Q-V LB	10° 30° 5°	124,75 125,20 126,25				Weakly foliated biotite-rich anatectic granite. It is cut by a 10 mm shear plane at 124,75 and a few q.-epidote- and calcite-veins.

STRUCTURES: BV = breccia vein; FL = foliation; LB = lithological boundary; LL = metamorphic banding and/or primary lithological layering; MY = mylonite foliation; SP = semiductile shear plane; V = mineral veins with prefixes: AN- = ankerite; CA- = calcite; CHL- = chlorite; MY- = mylonitic; Q- = quartz; SR- = sericite; ST- = stilbite.

DDH: 36

DEPTH (metres)		LENGTH	LITHO-LOGY	MEASURED STRUCTURES			ORE MINERALIZATION			PETROGRAPHY
From	To			Type	Angle w. core	Depth	From	To	Type	
126,25	128,60	2,35	W-P	FL	5°	128,05				White pegmatitic granite with inclusions of strongly bleached GTG (127,00-,40) and BAG (127,70-128,10, low angle raft). Scattered fractures with sericite alteration and some chlorite veinlets.
128,60	131,90	3,30	GTG							Grey medium-grained TG with weak to moderate zonal bleaching. It carries inclusions of BAG at 128,75-129,25; 131,00-,30 and 131,75-,90. It is transected by some aplite and pegmatite veins (3-20 cm).
131,90	134,30	2,40	SK							Green clinopyroxene-amphibole skarn cut by abundant pegmatite granite veins above 133,05. Some of these contain sericite veins.
134,30	135,80	1,50	BAG							Biotite-rich anatectic granite with clinopyroxene skarn zone (135,20-,30) and a dyke of GTG (135,30-,45).
135,80	144,60	8,80	GQM							Dark grey weakly foliated biotite-quartz monzonite with some 0,5-1 cm white LG veins.
144,60	160,30	15,70	GTG							Grey medium-grained TG with abundant white LG veins and dykes containing some sericite alteration zones (1-10 mm). White LG at 146,65-,85; 150,20-,30; 155,05-,40; 157,10-,15; 157,35-,60; 158,20-,35 and 160,10-,30. The GTG is only weakly bleached in areas with abundant LG veins (155,00-158,50). Soot-grey alteration at 150,30-,80. Some scattered 5 mm q. veins.
160,30	168,60	8,30	BAG							Biotite-rich anatectic granite cut by dykes of white LG (e.g. 162,00-,25 and 164,30-,40) and GTG (163,20-,75). The dykes carry some sericite alteration zones.
168,60	172,65	4,05	G-MBGN							Garnetiferous migmatitic biotite gneiss with GTG dyke at 170,50-,65.
172,65	173,95	1,30	GTG							Grey medium-grained TG with some bleached zones associated with sericite alteration zones.

STRUCTURES: BV = breccia vein; FL = foliation; LB = lithological boundary; LL = metamorphic banding and/or primary lithological layering; MY = mylonite foliation; SP = semiductile shear plane; V = mineral veins with prefixes: AN- = ankerite; CA- = calcite; CHL- = chlorite; MY- = mylonitic; Q- = quartz; SR- = sericite; ST- = stilbite.

DDH: 36

DEPTH (metres)		LENGTH	LITHOLOGY	MEASURED STRUCTURES			ORE MINERALIZATION			PETROGRAPHY
From	To			Type	Angle w. core	Depth	From	To	Type	
173,95	176,85	2,90	G-MBGN							Garnetiferous migmatitic biotite gneiss.
176,85	187,65	10,80	BAG	LB " " FL LB "	30° 0° 30° 20° 5° 10°	177,95 178,80 179,50 186,70 186,90 187,65				Biotite-rich anatectic granite, more foliated and containing abundant biotite-schlieren below 185,50. It contains low-angle zones (2-5 cm) of amphibolite at 177,85-179,60 and 186,90-187,00. It is cut by some 1-2 cm LG veins and contains low-angle veins and veinlets of calcite (181,00-182,60).
187,65	189,35	1,70	B-GTG							Light grey medium-grained TG, strongly bleached in association with pervasive muscovitisation.
189,35	195,00	5,65	BAG	FL LB	30° 30°	191,45 191,50				Foliated biotite-rich anatectic granite with some biotite- and amphibole-rich schlieren. Amphibolite band at 190,95-191,00. The anatectic granite is cut by a moderately bleached and muscovitised TG dyke at 191,50-192,30. The dyke is cut by a aplite vein (2 cm) and a q.-musc. vein (5 mm).
195,00	196,35	1,35	A	LB	35°	195,60				Dark green fine-grained amphibolite with 5 cm BAG zone at 195,65. It contains several calcite-coated fissures.
196,35	199,10	2,75	GTG							Light grey medium-grained TG with narrow (1-3 cm) schlieren and larger inclusions of amphibolite, BAG and MBGN (198,25-,65 for the latter). Scattered white LG veins (e.g. 198,85-199,10) and sericite alteration zones occurring along the margin of BAG and MBGN rafts.

STRUCTURES: BV = breccia vein; FL = foliation; LB = lithological boundary; LL = metamorphic banding and/or primary lithological layering; MY = mylonite foliation; SP = semiductile shear plane; V = mineral veins with prefixes: AN- = ankerite; CA- = calcite; CHL- = chlorite; MY- = mylonitic; Q- = quartz; SR- = sericite; ST- = stilbite.

DDH: 36

DEPTH (metres)		LENGTH	LITHOLOGY	MEASURED STRUCTURES			ORE MINERALIZATION			PETROGRAPHY
From	To			Type	Angle w. core	Depth	From	To	Type	
199,10	208,30	9,20	GQM							Intrusion breccia of GQM and GTG, comprised dominantly of GQM with inclusion of MBGN at 207,20-,40. The breccia is cut by white aplitic LG veins (1-5 cm) and dykes with sericite alteration veins. LG dykes at 199,50-,95 (biotite-spotted), 200,15-,30; 201,95-203,20 (low angle), 204,50-,55 and 206,85-207,20. Some scattered 5-100 mm q. veins. Strongly bleached GTG at 207,40-208,30. Moderate zonal bleaching of the GQM.
208,30	214,10	5,80	W-LG					210,03	5 mm aspy. vein	White fine- to medium-grained aplitic leucogranite with small inclusions (5-10 cm) of GTG especially at 211,50-213,30. It contains a few 1-10 mm q. veins and narrow sericite-altered fractures. Thin rock-flour-cemented breccia veins at 211,00-,10.
214,10	216,85	2,75	GTG							Grey, medium-grained and foliated TG with moderate density of 1-10 cm bleached zones. Small mafic schlieren parallel to the core at 214,10-215,00.
216,85	218,70	1,85	MD							Medium-grained and weakly foliated monzodiorite with 1-2 mm white feldspar augen.
218,70	230,45	11,75	P-P							Pink biotite pegmatite with 1-3 cm lens-shaped K-feldspar. Mafic inclusions common below 226,70.
230,45	232,70	2,25	A							Dark green fine-grained amphibolite.
232,70	239,25	6,55	GQM	FL	20°	237,75				Dark grey weakly foliated biotite-quartz monzonite cut by GTG dyke at 233,25-,55.
239,25	239,85	0,60	P-P							Pink biotite-bearing pegmatite.

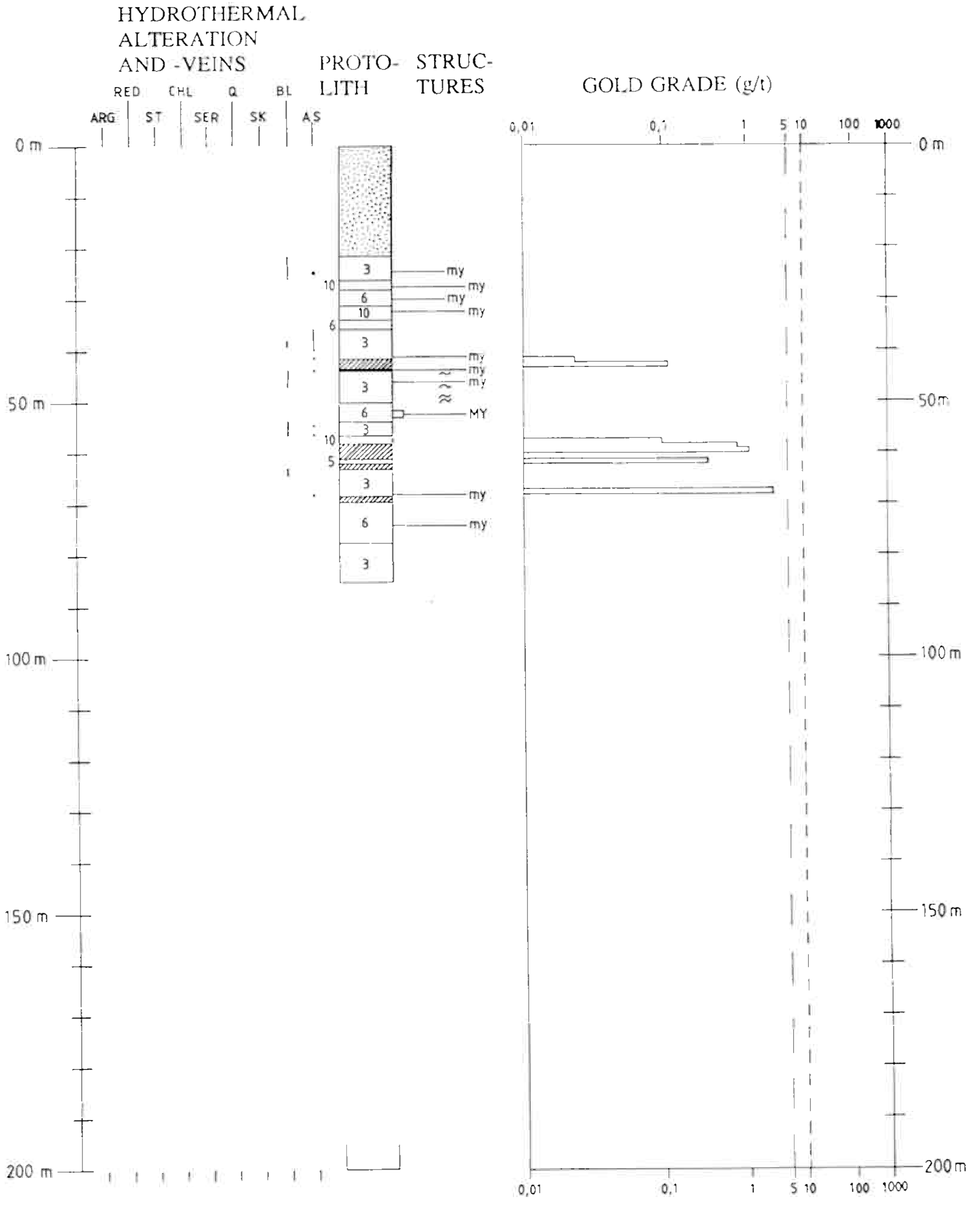
STRUCTURES: BV = breccia vein; FL = foliation; LB = lithological boundary; LL = metamorphic banding and/or primary lithological layering; MY = mylonite foliation; SP = semiductile shear plane; V = mineral veins with prefixes: AN- = ankerite; CA- = calcite; CHL- = chlorite; MY- = mylonitic; Q- = quartz; SR- = sericite; ST- = stilbite.

DDH: 36

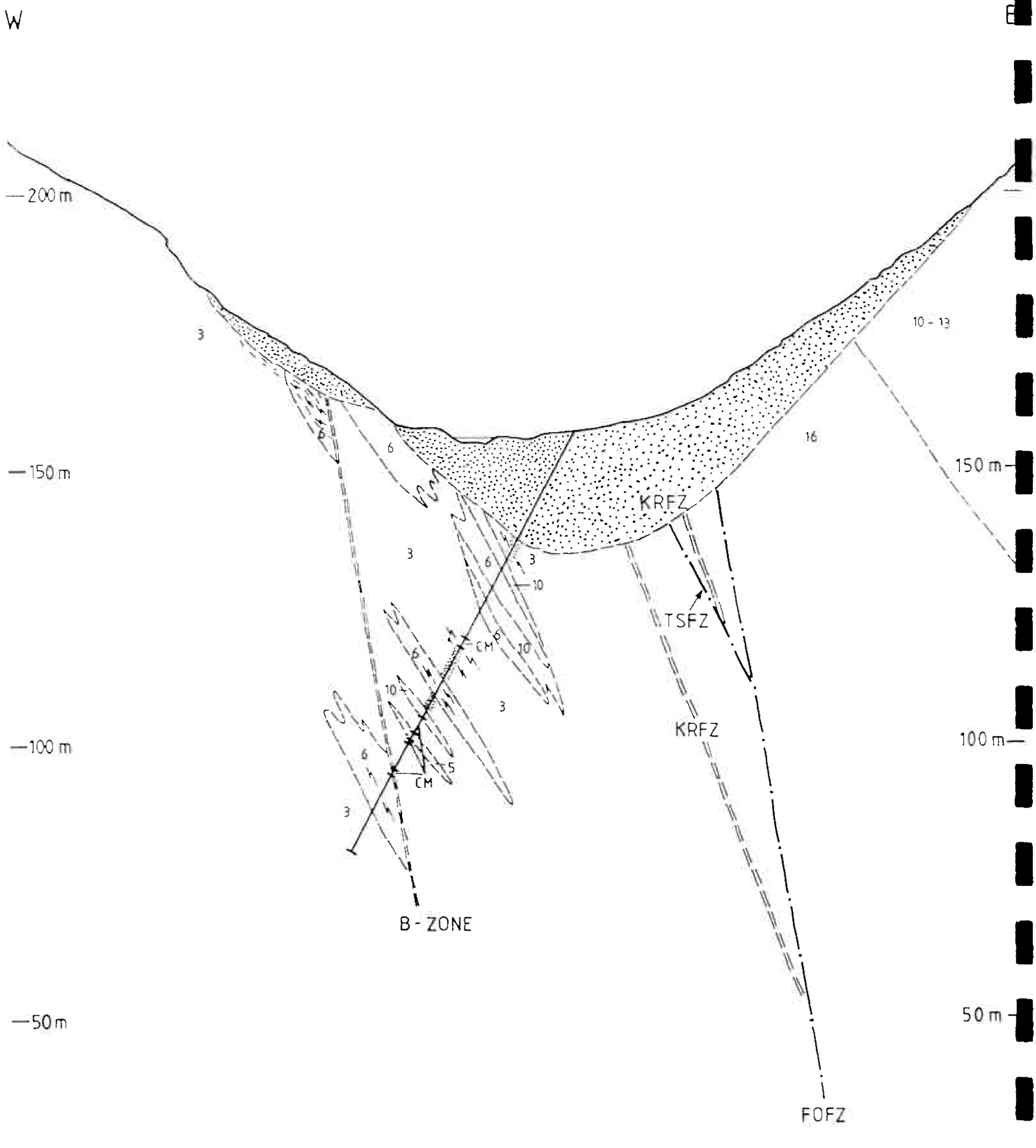
DEPTH (metres)		LENGTH	LITHO-LOGY	MEASURED STRUCTURES			ORE MINERALIZATION			PETROGRAPHY
From	To			Type	Angle w. core	Depth	From	To	Type	
239,85	241,30	1,45	GTG							Grey medium-grained TG, weakly bleached with variably sized inclusions of fine-grained amphibolite (239,85-240,00 and 241,20-,30). The granite carries a few sericite alteration veins.
241,30	242,75	1,45	W-LG	LB "	15° 30°	241,30 242,75				Greyish green aplitic leucogranite with chlorite aggregates and mafic schlieren. The granite shows pervasive sericite- and/or chlorite alteration.
242,75	244,55	1,80	A							Fine-grained hornblende porphyroblastic (1 x 3 mm²) amphibolite. It is cut by 1-4 cm veins of GTG and GQM.
244,55	259,95	15,40	GTG							Grey medium-grained TG with inclusions of GQM (244,55-,95; 245,40-,60; 247,15-,95; 249,15-,75 and 258,60-,85) and fine-grained amphibolite (258,10-,60). Strong zonal bleaching at 248,00-249,10 where many 1-3 mm q. veins, chlorite veinlets and rock-flour breccia veins (248,00-,05) occur. Also strong zonal (1-10 cm) bleaching associated with the contact zones of aplitic LG dykes (e.g. 255,70-256,30, low angle) and pegmatite (244,55-,95 and 258,85-259,20). Scattered sericite alteration zones in bleached zones and aplites abundant at 255,00-258,00.
259,95	271,65	11,70	GQM	LB	65°	261,30				Dark grey medium-grained biotite-quartz monzonite cut by some 1-5 cm GTG and LG veins (e.g. 61,30). Soot-grey alteration at 266,40-,60 and 271,00-,20.

STRUCTURES: BV = breccia vein; FL = foliation; LB = lithological boundary; LL = metamorphic banding and/or primary lithological layering; MY = mylonite foliation; SP = semiductile shear plane; V = mineral veins with prefixes: AN- = ankerite; CA- = calcite; CHL- = chlorite; MY- = mylonitic; Q- = quartz; SR- = sericite; ST- = stilbite.

SUMMARY CORELOG-DIAGRAM: DDH 40



PROFILE: DDH 40



DRILLHOLE No.: 40 AZIMUTH: 263° INCLINATION: 62° LENGTH: 85,20 m Horiz.: 40,00 m Vert.: 75,25 m CORE DIM.: 32 mm
LOCATION: B-ZONE
COMPANY: TERRA MINING A/S NGO-COORD.:Y: -19384,054 X: 799249,195 ZONE: D ALTITUDE: 156,016 m.a.s.l.
YEAR: 1985 UTM-COORD.,E: 397170 N: 7229680 ZONE: 33

DEPTH (metres)		LENGTH	LITHOLOGY	MEASURED STRUCTURES			ORE MINERALIZATION			PETROGRAPHY
From	To			Type	Angle w. core	Depth	From	To	Type	
0,00	21,50	21,50	OB/CL							
21,50	26,15	4,65	B-GTG	FL MY "	60° 60° 50°	24,15 24,70 24,80	24,35 24,80	24,50 25,00	Network of black aspy.-coated fissures in mylonite. Scattered aspy. fissures.	Light grey, medium-grained and strongly bleached TG. Some diffusely delineated domains (1-5 cm) with biotite at 21,50-,80, 23,00-,40 and 25,70-26,15. Inclusions of granite veined amphibolite at 21,85-,95; 22,15-23,00 and 23,85-24,35. The middle inclusion carries epidote veinlets along the foliation. The bleached granite contains a mylonite zone at 24,35-,80.
26,15	27,85	1,70	A	LB SP LL	50° 55° 60°	26,15 27,50 27,75				Fine-grained amphibolite cut by some thin GTG and bleached GTG veins. Strongly foliated shear zones (1-3 cm) with epidote veinlets along the foliation occur locally e.g. 27,50.
27,85	31,00	3,15	G-MD	SP	50°	29,80	27,85	31,00	Scattered grains of py.	Medium-grained garnetiferous monzodiorite with 5-10 mm shear zones and some epidote veinlets. It is cut by 1-20 cm variably bleached GTG veins e.g. 30,40-,85.
31,00	33,90	2,90	A	SP	40°	31,25		33,15	1 mm py. veinlet.	Fine-grained amphibolite cut by 1-15 cm veins of variably bleached GTG, white LG and MD e.g. 31,00-,10; 33,25-,40; 33,65-,75 and 33,80-,90. It carries thin shear zones with epidote veinlets (1-3 mm).

LITHOLOGIES: A: = amphibolite; ABGN = dark grey amphibole-biotite gneiss; BAG = dark grey biotite-rich anatectic granite; BGN = dark grey biotite gneiss; CGN = greenish calc-silicate gneiss; CL = coreloss; CM = cores missing; CSCH = calcareous schist; GQM = dark grey biotite-quartz monzonite; GGO = grey granodioritic orthogneiss; GTG = grey medium-grained two-mica granite; HTG = hybrid pinkish grey medium-grained two-mica granite; IB = intrusion breccia; LG = leucocratic granite; M = calcite marble; MBGN = migmatitic biotite gneiss; MD = dark grey monzodiorite; MSCH = micaschist/-gneiss; OB/CL = overburden and/or coreloss in surface weathered rocks; P = pegmatite and pegmatitic granite; Q = hydrothermal quartz-vein or -lens; SK = skarn-altered marble. Prefixes: B- = bleached; BR- = brecciated; CT- = cataclastic; CR- = crushed; G- = garnetiferous; H- = heterogeneous; i.e. strong interbanding with other lithologies; HA- = hydrothermally altered; MY- = mylonitic; P- = pink; PP- = porphyritic; SH- = semiductilly sheared; W- = white to greyish white.

DDH: 40

DEPTH (metres)		LENGTH	LITHO-LOGY	MEASURED STRUCTURES			ORE MINERALIZATION			PETROGRAPHY
From	To			Type	Angle w. core	Depth	From	To	Type	
33,90	35,60	1,70	MD	FL LB	60° 40°	34,30 35,60	33,90	35,60	Some scattered 10 mm q. veins with 1-2 mm ?aspy.? grains and aggr. along their margins.	Medium-grained (weakly foliated) monzodiorite with greyish green chlorite-altered amphibolite at 35,50-,60.
35,60	41,45	5,85	GTG	MY-V	75°	41,40	35,65 41,40	40,00 41,45	Scattered 1-10 mm bluish grey zones with some diss. py. and aspy. along fissures. 1-3 mm steel grey zones with fine-grained aspy.diss.	Light grey medium-grained TG with 1-10 cm bleached zones of variable density. High density at 38,00-39,20. The granite carries small inclusions (3-5 cm) of GQM and amphibolite (e.g. 38,05-,10). Some of the bleached zones occur along the margins of scattered muscovite veins and mylonitic q. veins e.g. 41,40-,45.
41,45	43,70	2,25	CM							
43,70	49,90	6,20	B-GTG	MY " FL MY FL "	60° 75° 75° 45° 45° 25°	43,70 43,75 44,80 46,05 49,35 49,70	43,70	43,75	Foliation parallel aspy. stringers.	Light grey medium-grained and often strongly bleached TG with inclusion of GQM at 49,35-,60). Bleaching less pronounced below 47,30 except at 49,60-,90. The granite contains 1-2 mm muscovite veins with 1-5 cm bleached envelopes and 1-10 mm q. veins with envelopes (< 10 cm) of muscovite-rich bleached granite. Ductile shearing has taken place along the zones of muscovitisation giving rise to phyllonite (45,95-46,10) and foliated muscovite granites (44,75-,85; 46,90-47,00; 49,10-,35 and 49,60-49,90). Possibly lower part of a thicker granite mylonite zone is found at 43,70-,75.
49,90	53,75	3,85	MY-G-MD	SP MY-V LB	60° 70° 60°	51,60 50,85 53,75	49,90	53,75	Scattered mylonitic q. veins and musc. veins with py. diss. and stringers along shear planes and vein contacts.	Garnetiferous medium-grained monzodiorite, strongly foliated at 51,45-53,05. The shear zone carries z folds along the lower margin. It is cut by strongly bleached GTG dykes (1-10 cm), e.g. 51,55-,65 and 52,30-,90. It contains scattered q.- and muscovite veins (1-10 mm), some sheared and showing greyish green chloritization at 53,60-,75.

STRUCTURES: BV = breccia vein; FL = foliation; LB = lithological boundary; LL = metamorphic banding and/or primary lithological layering; MY = mylonite foliation; SP = semiductile shear plane; V = mineral veins with prefixes: AN- = ankerite; CA- = calcite; CHL- = chlorite; MY- = mylonitic; Q- = quartz; SR- = sericite; ST- = stilbite.

DDH: 40

DEPTH (metres)		LENGTH	LITHOLOGY	MEASURED STRUCTURES			ORE MINERALIZATION			PETROGRAPHY
From	To			Type	Angle w. core	Depth	From	To	Type	
53,75	56,50	2,75	B-GTG					54,60 56,35	3 mm q. vein with aspy.-coated fissure with some diss. py.xx. 5 mm q. vein with aspy. veinlet.	Light grey, medium-grained and strongly bleached TG with scattered 1-2 cm biotite-bearing domains. It contains an inclusion of partly chlorite-altered amphibolite at 56,05-,20 and is cut by dykes of coarse-grained white LG with interstitial muscovite flakes (54,50-,60) and aplitic LG at 56,20-,50. It carries scattered musc. ± q. veins (2-20 mm).
56,50	58,00	1,50	A	FL "	70° 55°	56,95 57,05	57,75	57,85	Q. veins with some fine-grained py. diss.	Fine-grained amphibolite with small open folds below 57,10. It is cut by some scattered 3-10 cm aplite and GTG veins e.g. 57,90-58,00. Greyish green chlorite alteration associated with 1-10 mm q. veins.
58,00	61,20	3,20	CM							
61,20	62,20	1,00	GQM							Dark grey medium-grained biotite-quartz monzonite with zonal bleaching in association with 1-8 mm q.- and muscovite- q. veins. Inclusions of amphibolite with 5 cm MD veins at 61,35-,50 and 62,00-,20.
62,20	63,30	1,10	CM							
63,30	68,60	5,30	GTG	MY-V	50°	68,10	68,00	68,10	Scattered aspy.-coated fissures and veinlets in mylonitic q.-musc. vein and its bleached envelope.	Light grey medium-grained TG showing variable bleaching in association with q.- and q.-musc. veins. Strong bleaching at 63,25-64,45. Some of the q. veins are mylonitic. The granite contains an inclusion of MD at 64,55-,65 and is cut by thin white granite veins (1-5 cm), abundant at 65,50-,95.
68,60	69,60	1,00	CM							

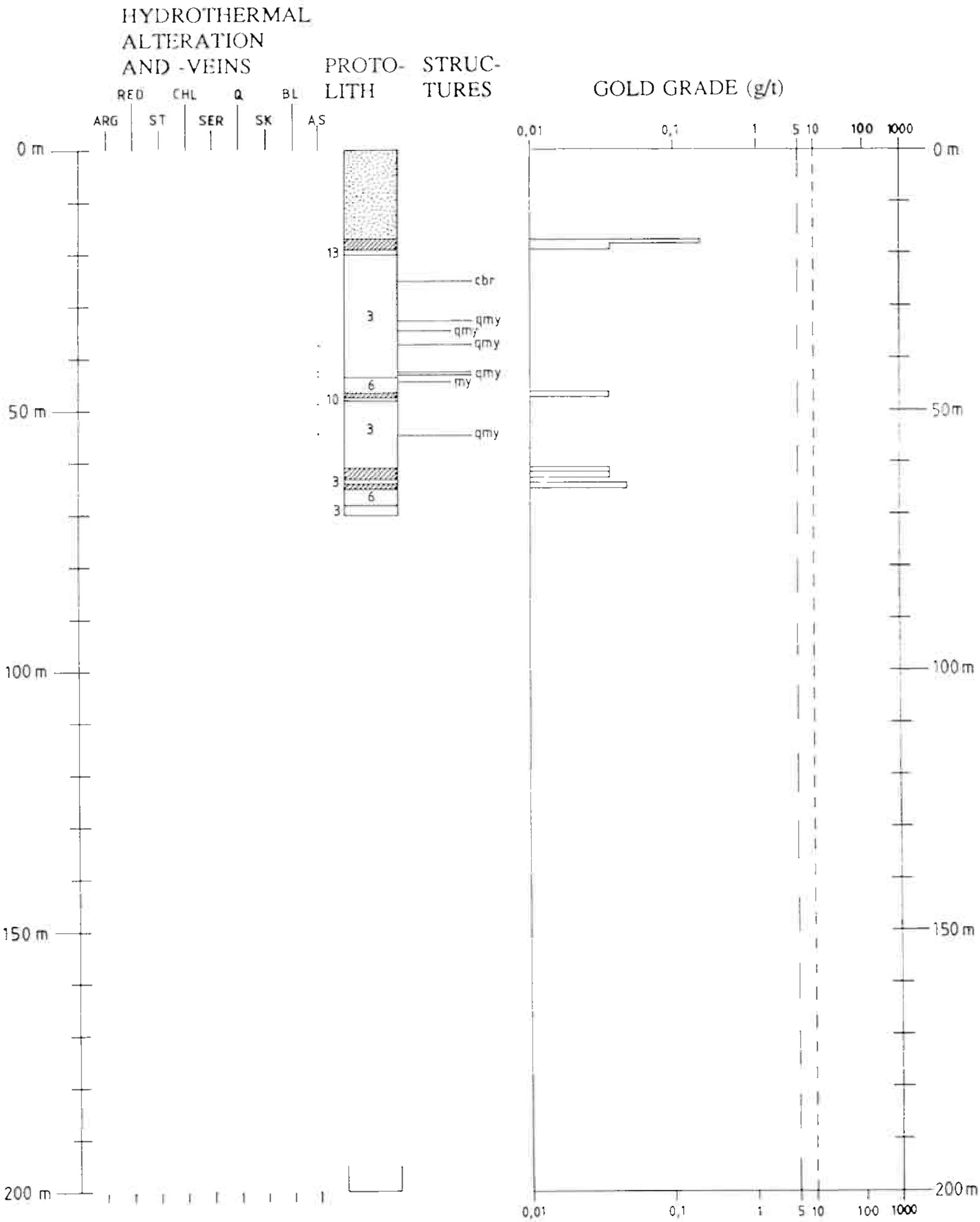
STRUCTURES: BV = breccia vein; FL = foliation; LB = lithological boundary; LL = metamorphic banding and/or primary lithological layering; MY = mylonite foliation; SP = semiductile shear plane; V = mineral veins with prefixes: AN- = ankerite; CA- = calcite; CHL- = chlorite; MY- = mylonitic; Q- = quartz; SR- = sericite; ST- = stilbite.

DDH: 40

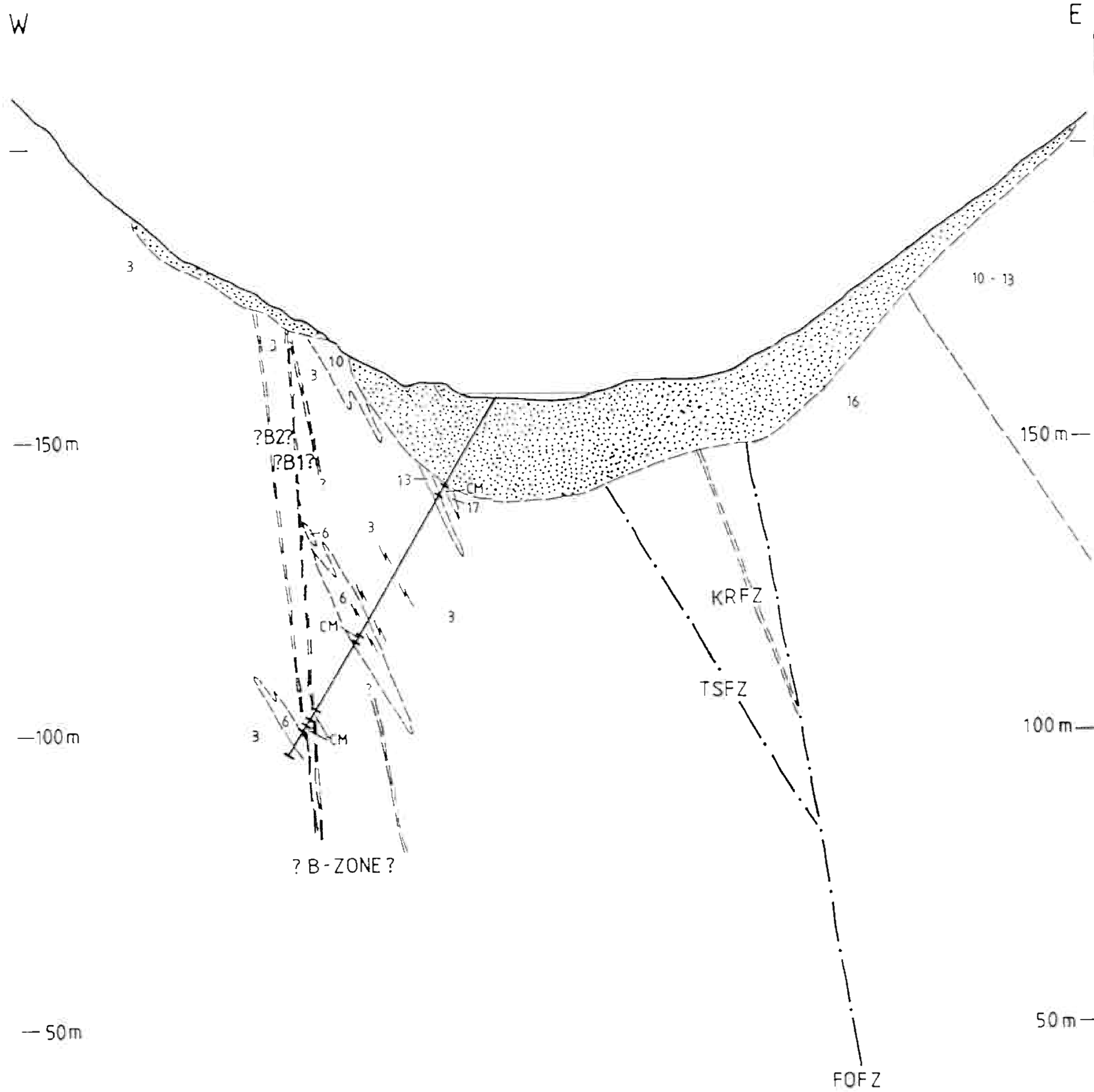
DEPTH (metres)		LENGTH	LITHOLOGY	MEASURED STRUCTURES			ORE MINERALIZATION			PETROGRAPHY
From	To			Type	Angle w. core	Depth	From	To	Type	
69,60	77,45	7,85	MD	SP " " FL	50° 60° 90° 60°	73,80 74,20 74,23 77,10				Medium- to coarse-grained monzodiorite with 1-10 mm hornblende aggregates. The section starts with a coarse-grained white pegmatite dyke at 69,60-,85 and fine-grained amphibolite at 69,85-70,30. Amphibolitic shear zones with 5 mm q.-musc. veins are developed at 73,75-,80 and 74,20-,23. Below 76,75 the MD contains abundant amphibolite inclusions and carries zones with network of 1-5 cm GTG veins (intrusion breccia).
77,45	85,20	7,75	GTG							Light grey medium-grained TG with weak zonal bleaching mainly associated with some scattered 5-20 mm q.- and q.musc. veins.

STRUCTURES: BV = breccia vein; FL = foliation; LB = lithological boundary; LL = metamorphic banding and/or primary lithological layering; MY = mylonite foliation; SP = semiductile shear plane; V = mineral veins with prefixes: AN- = ankerite; CA- = calcite; CHL- = chlorite; MY- = mylonitic; Q- = quartz; SR- = sericite; ST- = stilbite.

SUMMARY CORELOG-DIAGRAM: DDH 41



PROFILE: DDH 41



DRILLHOLE No.: 41 AZIMUTH: ca. 270° INCLINATION: ca. 60° LENGTH: 70,00 m Horiz.: 35,00 m Vert.: 60,60 m CORE DIM.: 32 mm
LOCATION: B-ZONE
COMPANY: TERRA MINING A/S NGO-COORD.:Y: -19392,5 X: 799189,0 ZONE: D ALTITUDE: 158,0 m.a.s.l.
YEAR: 1985 UTM-COORD.,E: 397150 N: 7229630 ZONE: 33

DEPTH (metres)		LENGTH	LITHOLOGY	MEASURED STRUCTURES			ORE MINERALIZATION			PETROGRAPHY
From	To			Type	Angle w. core	Depth	From	To	Type	
0,00	16,80	16,80	OB/CL							
16,80	17,00	0,20	MBGN	FL	50°	16,90				Leucosome-rich migmatitic biotite gneiss.
17,00	19,00	2,00	CM							
19,00	19,95	0,95	CGN	LL "	55° 55°	19,20 19,80				Banded calc-silicate gneiss with brownish garnet-rich zones and green epidote bands. It is cut by white pegmatite at 19,45-,55.
19,95	43,40	23,45	GTG	MY-V " " " "	70° 60° 60° 85° 40°	32,50 34,65 37,30 42,45 43,40	37,50 43,40	37,35 42,45 43,45	Mylonitic q.vein with fine-grained aspy.diss. 5 mm mylonitic q.vein with fine-grained aspy. along fissures. Mylonitic q.vein with fine-grained aspy. stringers along foliation.	Light grey medium-grained TG showing weak to moderate zonal bleaching (1-20 cm) mainly as envelopes around aplitic dykes, q. ± musc. veins and sericite alteration zones. The TG contains inclusions of fine-grained granite veined amphibolite (24,50-,85 lower margin chlorite-altered, 26,35-,55; 28,10-,20; 28,00-,40; 33,80-34,05; 40,90-41,10 and 42,58-,60), monzodiorite (34,35-,60), bleached GQM (37,40-38,25) and coarse-grained GTG with sericite alteration zones (41,10-,60). The TG shows weak pervasive muscovite/sericite alteration at 34,60-38,40. It is cut by aplitic white LG dykes at 22,70-,80 and 24,85-,90 the latter containing a chlorite crackle breccia. Both the TG and LG dykes carry scattered veins of q. (3-50 mm), muscovite ± q. (1-5 mm) and fractures with associated sericite alteration (1-5 mm). Some of the q. veins have suffered ductile shearing giving rise to finely laminated veins with granite mylonite envelopes.

LITHOLOGIES: A: = amphibolite; ABGN = dark grey amphibole-biotite gneiss; BAG = dark grey biotite-rich anatectic granite; BGN = dark grey biotite gneiss; CGN = greenish calc-silicate gneiss; CL = coreloss; CM = cores missing; CSCH = calcareous schist; GQM = dark grey biotite-quartz monzonite; GGO = grey granodioritic orthogneiss; GTG = grey medium-grained two-mica granite; HTG = hybrid pinkish grey medium-grained two-mica granite; IB = intrusion breccia; LG = leucocratic granite; M = calcite marble; MBGN = migmatitic biotite gneiss; MD = dark grey monzodiorite; MSCH = micaschist/-gneiss; OB/CL = overburden and/or coreloss in surface weathered rocks; P = pegmatite and pegmatitic granite; Q = hydrothermal quartz-vein or -lens; SK = skarn-altered marble. Prefixes: B- = bleached; BR- = brecciated; CT- = cataclastic; CR- = crushed; G- = garnetiferous; H- = heterogeneous; i.e. strong interbanding with other lithologies; HA- = hydrothermally altered; MY- = mylonitic; P- = pink; PP- = porphyritic; SH- = semiductilly sheared; W- = white to greyish white.

DDH: 41

DEPTH (metres)		LENGTH	LITHOLOGY	MEASURED STRUCTURES			ORE MINERALIZATION			PETROGRAPHY
From	To			Type	Angle w. core	Depth	From	To	Type	
43,40	46,50	3,10	MD	MY "	55° 60°	44,20 44,30	45,05	45,45	Fine-grained py. diss. in amphibolite. Some coarser aggr. along some q. veins.	Medium-grained monzodiorite grading into a coarse-grained variety at 45,70-46,35 containing 2-5 x 7-10 mm² stubby hornblende aggregates and needles. An inclusion of fine-grained hornblende porpyritic (0,5 x 2-3 mm²) amphibolite cut by 1-30 mm q. veins occurs at 45,05-,45. The MD is cut by thin 0,5-1 cm GQM veins e.g. at 43,60-,70. An amphibolitic shear zone is developed at 44,15-,35.
46,50	47,50	1,00	CM							
47,50	47,90	0,40	A	FL	55°	47,60				Fine-grained amphibolite with thin granite veins and some q. veins (5 mm).
47,90	60,80	12,90	GTG	FL " MY-V	55° 55° 45°	49,30 51,50 54,50		48,75 48,80 54,50	Bluish grey q. vein with aspy.-coated fissures and diss. " " " " " Aspy.-coated fissure in mylonitic q. vein (20 mm).	Light grey, medium-grained and weakly foliated TG showing weak zonal bleaching. It contains inclusions of amphibolite with white pegmatite veins (58,70-,90), monzodiorite (54,60-,70; 55,25-,65; 57,00-05 and 58,60-,70), dark biotite-quartz monzonite cut by GTG veins (58,05-,60; 59,00-59,60) and darker grey TG (60,55-,80). The GTG has scattered sericite-altered fractures (1-10 mm) and muscovite veins (1-3 mm) and q. veins (1-20 mm). The latter is frequently mylonitic and becomes bluish grey when containing fine-grained aspy.
60,80	61,00	0,20	A							Fine-grained amphibolite.
61,00	63,00	2,00	CM							
63,00	64,00	1,00	GTG							Light grey medium-grained TG with inclusions of MD (65,75-,85) and darker grey GTG (63,15-,50 and 63,60-,65).
64,00	65,00	1,00	CM							

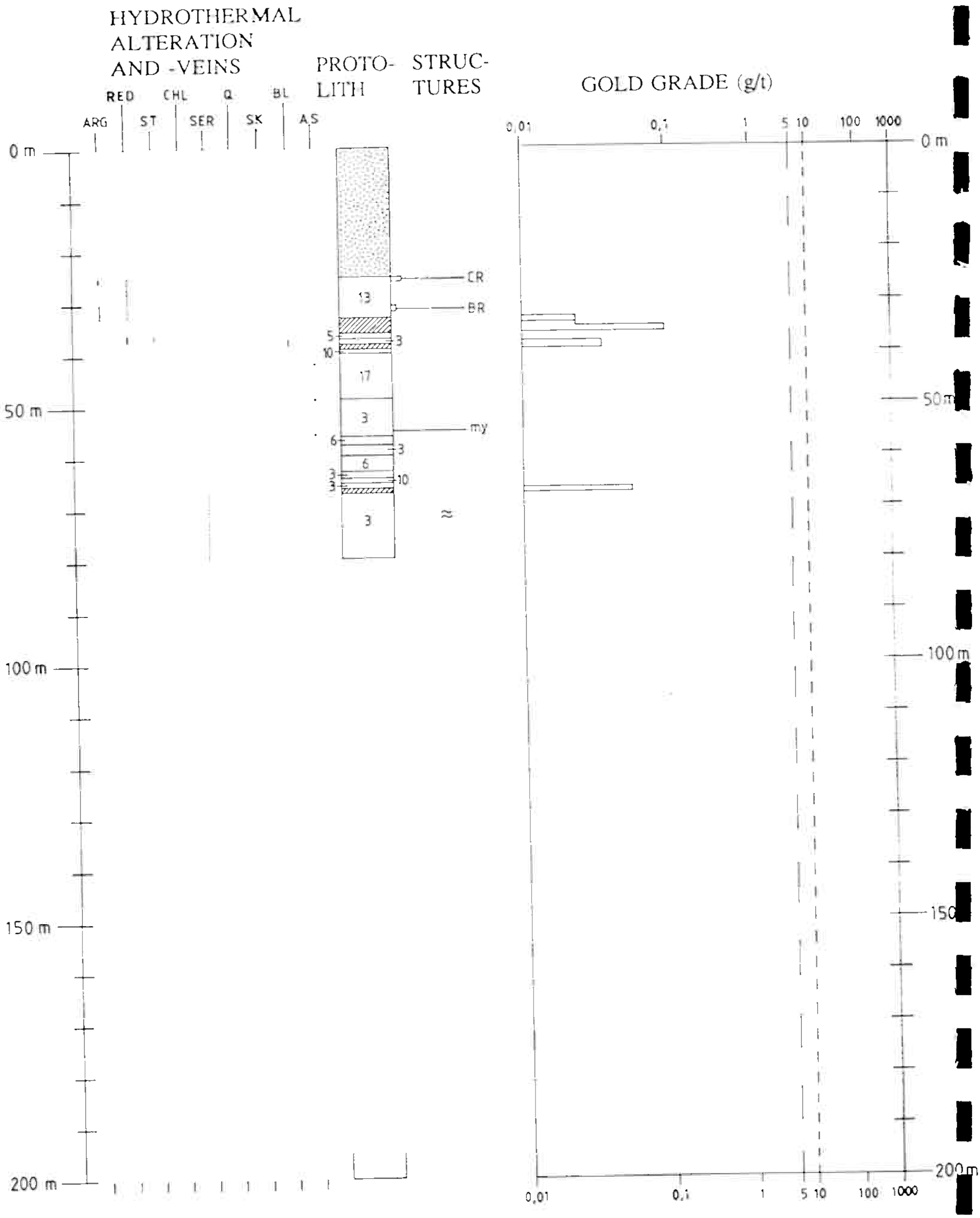
STRUCTURES: BV = breccia vein; FL = foliation; LB = lithological boundary; LL = metamorphic banding and/or primary lithological layering; MY = mylonite foliation; SP = semiductile shear plane; V = mineral veins with prefixes: AN- = ankerite; CA- = calcite; CHL- = chlorite; MY- = mylonitic; Q- = quartz; SR- = sericite; ST- = stilbite.

DDH: 41

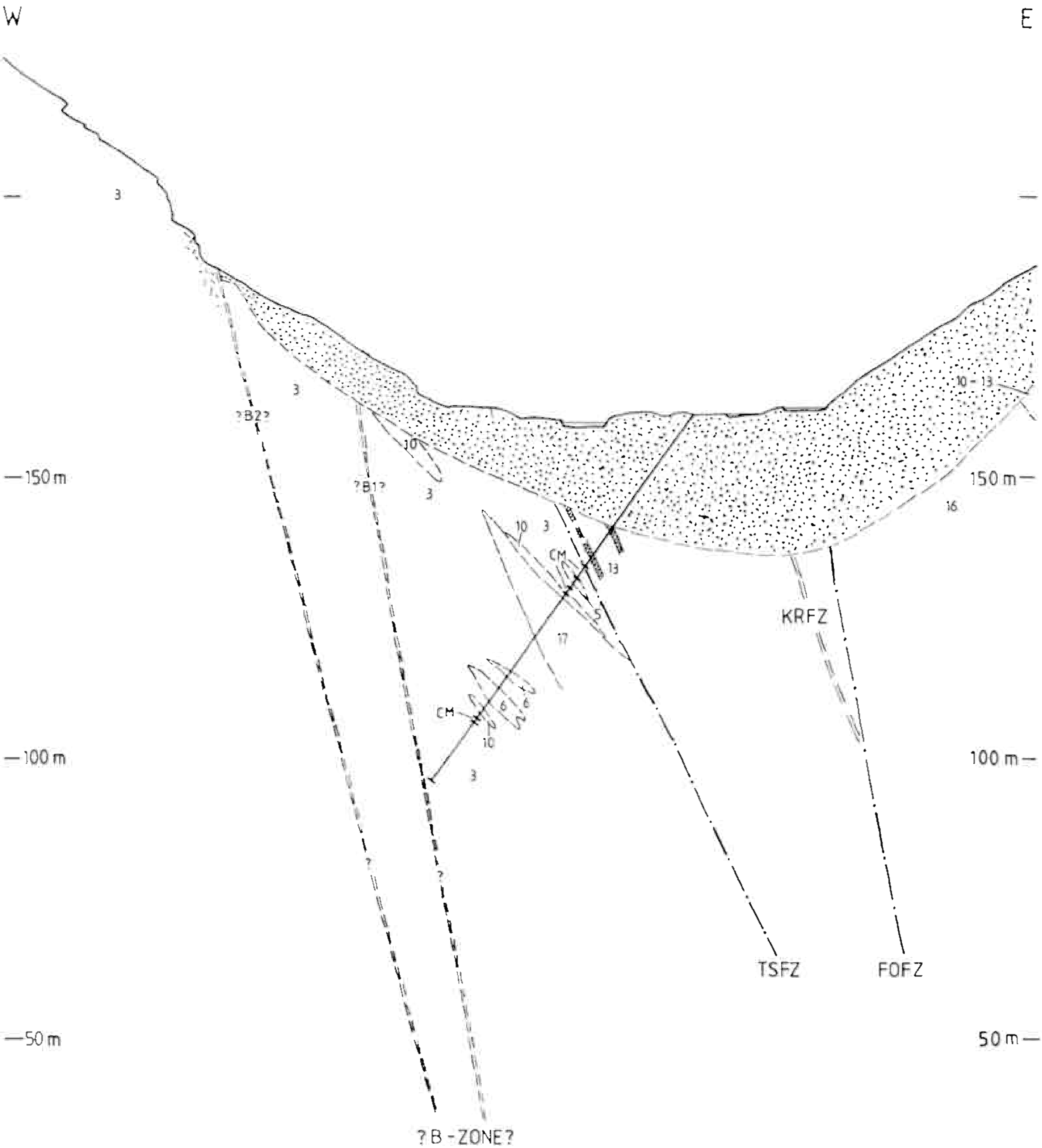
DEPTH (metres)		LENGTH	LITHOLOGY	MEASURED STRUCTURES			ORE MINERALIZATION			PETROGRAPHY
From	To			Type	Angle w. core	Depth	From	To	Type	
65,00	65,25	0,25	GTG							Grey medium-grained TG, darker than the normal type.
65,25	68,00	2,75	MD							Medium-grained monzodiorite with small amphibolite inclusions at 67,80-,90.
68,00	70,00	2,00	GTG							Grey medium-grained TG with inclusions of aplite-veined amphibolite (68,55-,65), MD (68,25-69,20, i.e. an area with small 0,5-4 cm inclusions) and GQM (68,45-,55).

STRUCTURES: BV = breccia vein; FL = foliation; LB = lithological boundary; LL = metamorphic banding and/or primary lithological layering; MY = mylonite foliation; SP = semiductile shear plane; V = mineral veins with prefixes: AN- = ankerite; CA- = calcite; CHL- = chlorite; MY- = mylonitic; Q- = quartz; SR- = sericite; ST- = stilbite.

SUMMARY CORELOG-DIAGRAM: DDH 42



PROFILE DDH 42



DRILLHOLE No.: 42 AZIMUTH: 270° INCLINATION: 55° LENGTH: 79,50 m Horiz.: 45,60 m Vert.: 65,10 m CORE DIM.: 32 mm
LOCATION: B-ZONE
COMPANY: TERRA MINING A/S NGO-COORD.:Y: -19364,938 X: 799150,224 ZONE: D ALTITUDE: 160,871 m.a.s.l.
YEAR: 1985 UTM-COORD.,E: 397170 N: 7229600 ZONE: 33

DEPTH (metres)		LENGTH	LITHO-LOGY	MEASURED STRUCTURES			ORE MINERALIZATION			PETROGRAPHY
From	To			Type	Angle w. core	Depth	From	To	Type	
0,00	25,00	25,00	OB/CL							
25,00	33,00	8,00	HA-CGN	FL " LL FL " "	50° 75° 60° 70° 70° 75°	25,55 26,65 27,35 28,70 30,75 32,10	25,00	28,00	Scattered veinlets and diss. of py.	Light green to greenish grey calc-silicate gneiss with dykes of pink fine- to medium-grained LG (25,95-26,05 purple; 26,75-,85; 27,45-27,50; 27,55-,70; 27,95-28,00; 28,45-,55; 29,00-,20; 29,40-,50, 29,55-30,15; 30,80-,85; 31,35-,50;31,55-,60 and 32,65-33,00). Both the gneiss and dykes are cut by crush zones with clay gouge at 25,00-26,00. Strong brecciation is found at 31,70-32,65. The rocks are transformed into a soft mass of clay alteration below 30,00.
33,00	36,00	3,00	CM							
36,00	36,35	0,35	A							Fine- to medium-grained amphibolite with a few 1-2 cm pegmatite veins.
36,35	37,10	0,75	GQM	LB	65°	36,35				Dark grey medium-grained quartz monzonite with stilbite-coated fissures and associated red envelopes.
37,10	38,00	0,90	B-GTG	LB	65°	37,10				Light grey, strongly bleached and medium-grained granite. Some small biotite-bearing domains. Upper 30 cm red coloured with chlorite veinlets.

LITHOLOGIES: A: = amphibolite; ABGN = dark grey amphibole-biotite gneiss; BAG = dark grey biotite-rich anatectic granite; BGN = dark grey biotite gneiss; CGN = greenish calc-silicate gneiss; CL = coreloss; CM = cores missing; CSCH = calcareous schist; GQM = dark grey biotite-quartz monzonite; GGO = grey granodioritic orthogneiss; GTG = grey medium-grained two-mica granite; HTG = hybrid pinkish grey medium-grained two-mica granite; IB = intrusion breccia; LG = leucocratic granite; M = calcite marble; MBGN = migmatitic biotite gneiss; MD = dark grey monzodiorite; MSCH = micaschist/-gneiss; OB/CL = overburden and/or coreloss in surface weathered rocks; P = pegmatite and pegmatitic granite; Q = hydrothermal quartz-vein or -lens; SK = skarn-altered marble. Prefixes: B- = bleached; BR- = brecciated; CT- = cataclastic; CR- = crushed; G- = garnetiferous; H- = heterogeneous; i.e. strong interbanding with other lithologies; HA- = hydrothermally altered; MY- = mylonitic; P- = pink; PP- = porphyritic; SH- = semiductilly sheared; W- = white to greyish white.

DDH: 42

DEPTH (metres)		LENGTH	LITHOLOGY	MEASURED STRUCTURES			ORE MINERALIZATION			PETROGRAPHY
From	To			Type	Angle w. core	Depth	From	To	Type	
38,00	39,00	1,00	CM							
39,00	39,80	0,80	A	FL	85°	39,50				Fine- to medium-grained amphibolite with some 1-2 cm grey TG veins.
39,80	48,65	8,85	MBGN	LB FL " " " LB	70° 60° ÷50° 50° 50° 60°	39,80 40,00 43,70 44,90 47,50 48,65		41,90	1 mm aspy. - q. vein.	Leucosome-rich migmatitic biotite gneiss with thin leucosome schlieren (2-20 mm). It shows small scale folding below 43,55 affecting bleached GQM vein at 43,90-44,00. It is cut by veins and dykes of white LG (39,90-40,00; 40,20-,30 and 43,15-,20) and grey TG (41,20-,60; 44,25-,40 and 48,00-,60).
48,65	55,80	7,15	GTG	MY LB	70° 90°	55,15 55,80		48,85 55,60	20 mm greyish blue zone with fine-gr. aspy. diss. 1 mm q.vein with fine-gr. aspy. diss.	Light grey medium-grained TG with only weak bleaching in up to 25 cm zones associated with some sericite-altered zones. It carries an amphibolite inclusion at 55,20-,25 and is cut by some thin white LG veins, e.g. 55,60-,65. A few chlorite veinlets. Mylonitic granite (5 cm) along the upper margin of the amphibolite inclusion at 55,20.
55,80	57,65	1,85	G-MD	FL	85°	56,10	55,80	57,65	Weak py. diss. and some veinlets of py. in MD. The mineralization is cut by pegmatite veins.	Medium-grained, garnetiferous and foliated monzodiorite with coarse-grained gabbro-like inclusion at 56,20-,95. It is cut by granite veins including white biotite-spotted LG at 56,95-57,05. Also some 1-5 cm pegmatite veins.
57,65	59,60	1,95	GTG				58,20	58,80	Some py.-chl. veinlets in aplite dykes and adjacent granite.	Grey medium-grained TG with inclusions of amphibolite (58,50-,70 and 58,95-58,05). It is cut by white biotite-spotted LG dykes at 58,20-,50 and 58,70-,80.

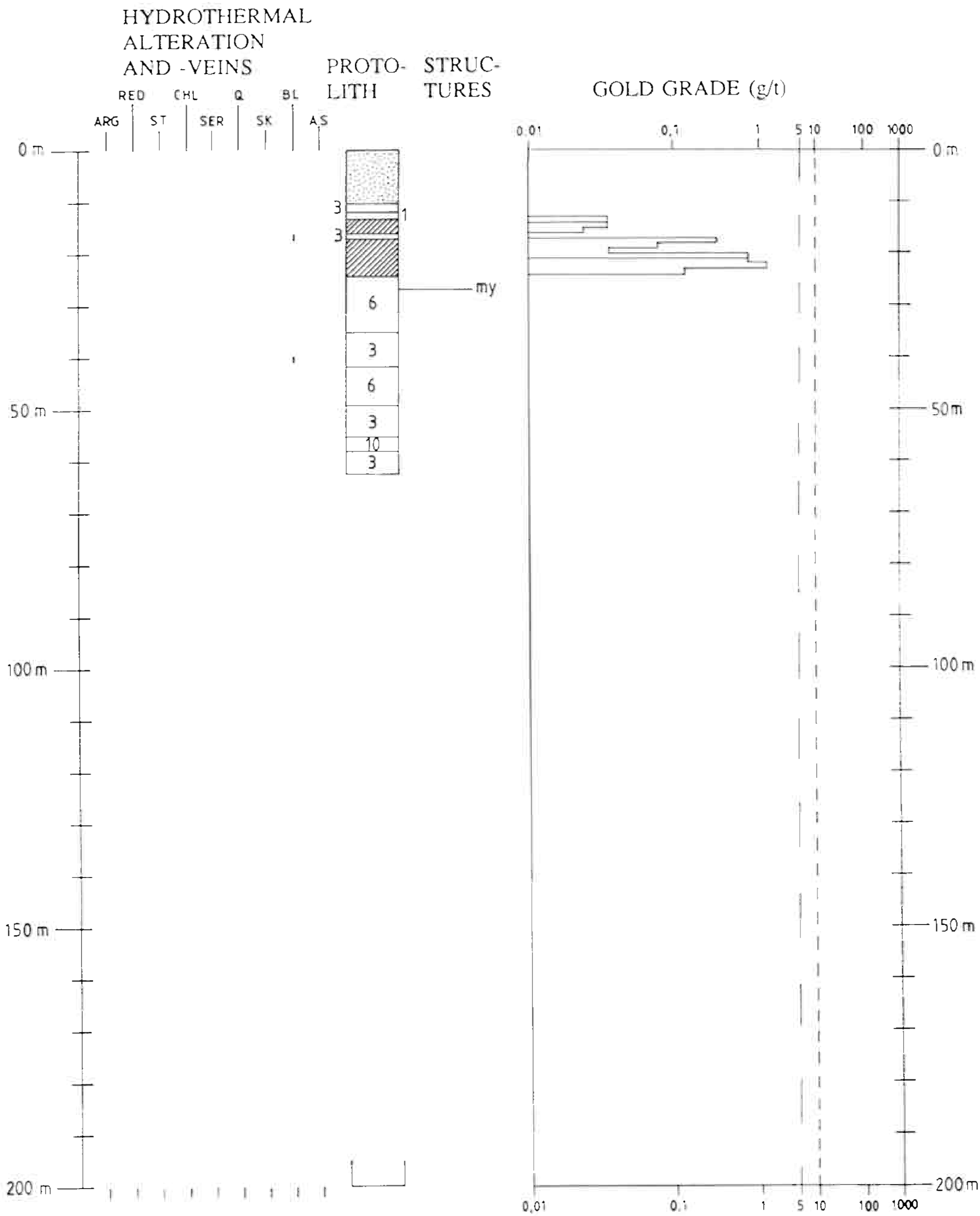
STRUCTURES: BV = breccia vein; FL = foliation; LB = lithological boundary; LL = metamorphic banding and/or primary lithological layering; MY = mylonite foliation; SP = semiductile shear plane; V = mineral veins with prefixes: AN- = ankerite; CA- = calcite; CHL- = chlorite; MY- = mylonitic; Q- = quartz; SR- = sericite; ST- = stilbite.

DDH: 42

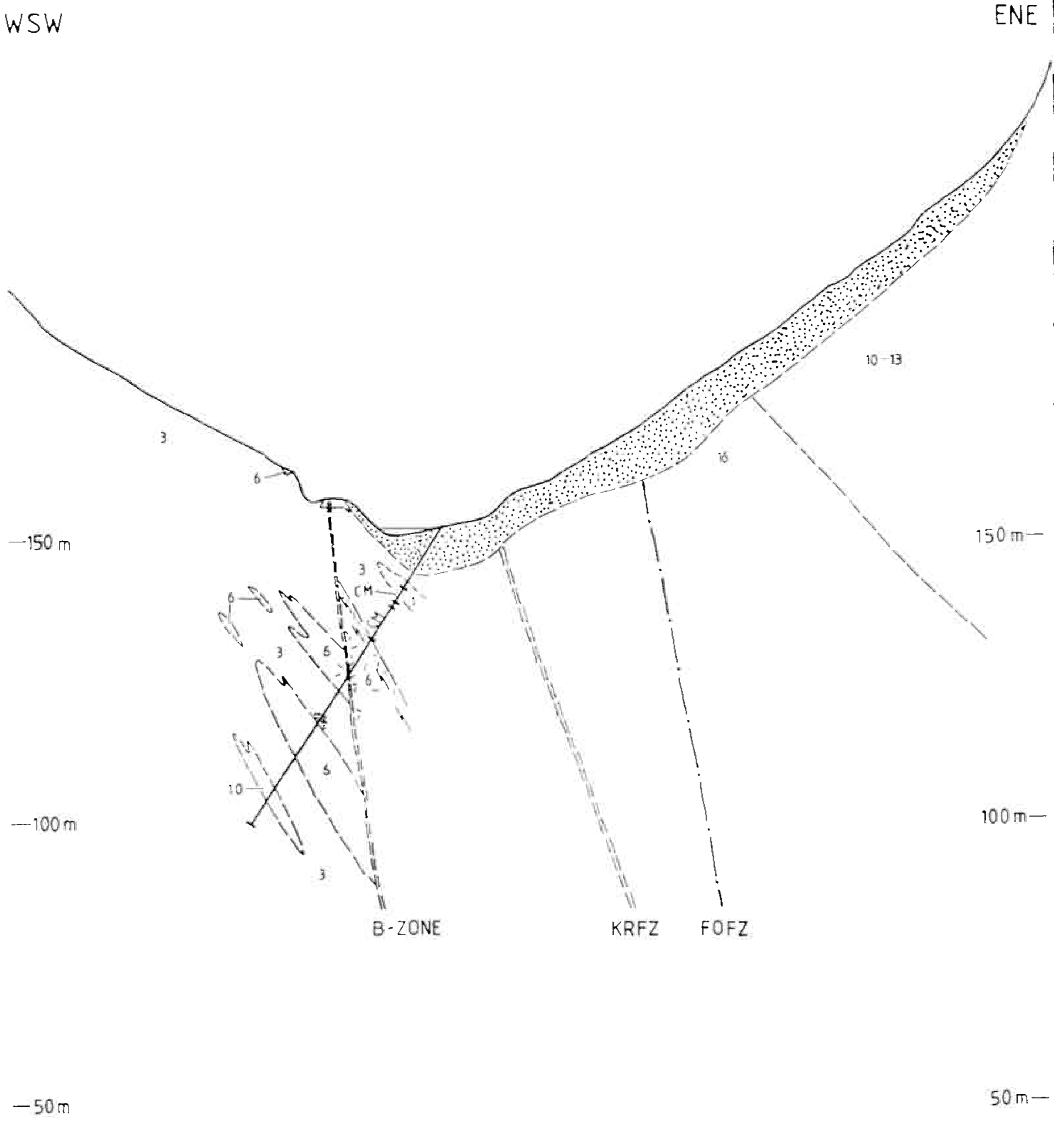
DEPTH (metres)		LENGTH	LITHOLOGY	MEASURED STRUCTURES			ORE MINERALIZATION			PETROGRAPHY
From	To			Type	Angle w. core	Depth	From	To	Type	
59,60	62,70	3,10	G-MD							Medium-grained, garnetiferous monzodiorite, somewhat more feldspar- rich at 60,00-61,50. It is cut by some GTG veins (5-10 mm). It shows pervasive epidotisation along fracture at 60,90-61,00.
62,70	64,00	1,30	GTG							Light to darker grey TG. Darker grey at 63,30-64,00.
64,00	65,05	1,05	A	FL "	80° 70°	64,10 65,00				Fine- to medium-grained amphibolite cut by some grey TG veins (1-2 cm) and a MD dyke (64,45-,75). Scattered epidote veinlets.
65,05	66,00	0,95	GTG	LB FL	70° 50°	65,05 65,50				Light grey, medium-grained and weakly foliated TG, moderately bleached (1-2 cm). It has a faint yellowish green colouration probably due to sericite/muscovite alteration.
66,00	67,00	1,00	CM							
67,00	79,50	12,50	GTG	FL " "	55° 60° 55°	70,95 71,30 71,85		67,25	Sheared bluish q. vein (8 mm) with some aspy.-coated fissures.	Light grey medium-grained TG. It is foliated at 70,70-71,90. It shows weak to moderate zonal bleaching and has a yellowish green hue due to sericitisation/muscovitisation. It contains small inclusions of GQM and an granite-veined amphibolite at 70,45-,65. It carries scattered veins of white LG, q. (1-10 mm) and sericite alteration zones. The thickest of the latter occurs at 77,75-,95.

STRUCTURES: BV = breccia vein; FL = foliation; LB = lithological boundary; LL = metamorphic banding and/or primary lithological layering; MY = mylonite foliation; SP = semiductile shear plane; V = mineral veins with prefixes: AN- = ankerite; CA- = calcite; CHL- = chlorite; MY- = mylonitic; Q- = quartz; SR- = sericite; ST- = stilbite.

SUMMARY CORELOG-DIAGRAM: DDH 43



PROFILE: DDH 43



DRILLHOLE No.: 43 AZIMUTH: 254 INCLINATION: 58° LENGTH: 62,35 m Horiz.:33,05 m Vert.: 52,90 m CORE DIM.: 32 mm
LOCATION: B-ZONE
COMPANY: TERRA MINING A/S NGO-COORD.:Y: -19403,604 X: 799310,216 ZONE: D ALTITUDE: 151,935 m.a.s.l.
YEAR: 1985 UTM-COORD.,E: 397160 N: 7229730 ZONE: 33

DEPTH (metres)		LENGTH	LITHO-LOGY	MEASURED STRUCTURES			ORE MINERALIZATION			PETROGRAPHY
From	To			Type	Angle w. core	Depth	From	To	Type	
0,00	10,00	10,00	OB/CL							
10,00	11,80	1,80	GTG							Light grey medium-grained TG, moderately bleached at 10,10-,85.
11,80	13,00	1,20	W-LG							White medium-grained LG with a dark muscovite-rich band at 12,00-,05. Dark grey quartz monzonite and amphibolite incl. at 12,25-,35 and 12,35-,45, respectively.
13,00	16,00	3,00	CM							
16,00	17,00	1,00	B-GTG							Strongly bleached GTG.
17,00	24,25	7,25	CM							
24,25	35,05	10,80	G-MD	MY	60°	25,65				Medium-gr. (2-3 mm) garnetiferous monzodiorite. Transected by some white LG and pegmatite veins and a dyke of light grey aplite at 31,80-32,55. The latter contains an amphibolite incl. (10 cm). Scattered greyish green chlorite-altered fracture zones, widest at 24,25-,45 and 32,55-,75. The alteration zones occur associated with thin q.-musc. veins. Ductile shear zone at 26,60-,65.

LITHOLOGIES: A: = amphibolite; ABGN = dark grey amphibole-biotite gneiss; BAG = dark grey biotite-rich anatectic granite; BGN = dark grey biotite gneiss; CGN = greenish calc-silicate gneiss; CL = coreloss; CM = cores missing; CSCH = calcareous schist; GQM = dark grey biotite-quartz monzonite; GGO = grey granodioritic orthogneiss; GTG = grey medium-grained two-mica granite; HTG = hybrid pinkish grey medium-grained two-mica granite; IB = intrusion breccia; LG = leucocratic granite; M = calcite marble; MBGN = migmatitic biotite gneiss; MD = dark grey monzodiorite; MSCH = micaschist/-gneiss; OB/CL = overburden and/or coreloss in surface weathered rocks; P = pegmatite and pegmatitic granite; Q = hydrothermal quartz-vein or -lens; SK = skarn-altered marble. Prefixes: B- = bleached; BR- = brecciated; CT- = cataclastic; CR- = crushed; G- = garnetiferous; H- = heterogeneous; i.e. strong interbanding with other lithologies; HA- = hydrothermally altered; MY- = mylonitic; P- = pink; PP- = porphyritic; SH- = semiductilly sheared; W- = white to greyish white.

DDH: 43

DEPTH (metres)		LENGTH	LITHO-LOGY	MEASURED STRUCTURES			ORE MINERALIZATION			PETROGRAPHY
From	To			Type	Angle w. core	Depth	From	To	Type	
35,05	41,55	6,50	GTG							Moderately bleached medium-gr. greyish TG containing incl. of amphibolite (35,70-,75; 39,50-,70; 38,15-,17) and monzodiorite (36,05-,70; 39,70-,90; 45,15-,16). The GTG is transected by a dyke of white biotite-spotted LG at 35,80-36,00. Down to 39,90 the granite contains thin muscovite veins with 1 cm bleached envelopes. The granite is totally bleached at 39,90-41,50.
41,55	48,90	7,35	G-MD	FL	55° 75° 60° 60°	45,75 46,50 47,80 48,25				Medium-gr. garnetiferous and foliated monzodiorite with inclusions of amphibolite (41,60-42,10; 46,30-,65; 47,20-,30) and amphibolite with dark grey quartz monzonite veins (44,15-,45; 44,85-45,00). The monzodiorite is transected by some light grey TG, white LG and dark grey quartz monzonite veins (1-10 cm). Greyish green chloritization zones (5 cm) are found along the margin of a LG dyke (54,55-,60).
48,90	55,25	6,35	GTG							Light grey medium-gr. TG with incl. of monzodiorite (51,90-53,05; 53,55-54,20). The latter incl. is foliated and contains abundant muscovite aggr. Aplogranite dyke with 1-5 mm muscovite veins occurs at 54,50-55,20.
55,25	57,85	2,60	A							Medium-grained amphibolite partly fine-grained with 3x5-8 mm^2 white porphyritic feldspars (55,25-,45). Dark grey quartz monzonite vein at 55,46-,85.
57,85	62,35	5,50	GTG							Light grey medium-grained TG.

STRUCTURES: BV = breccia vein; FL = foliation; LB = lithological boundary; LL = metamorphic banding and/or primary lithological layering; MY = mylonite foliation; SP = semiductile shear plane; V = mineral veins with prefixes: AN- = ankerite; CA- = calcite; CHL- = chlorite; MY- = mylonitic; Q- = quartz; SR- = sericite; ST- = stilbite.

SIMPLIFIED CORELOG-DIAGRAM

DRILLHOLE NO: 50

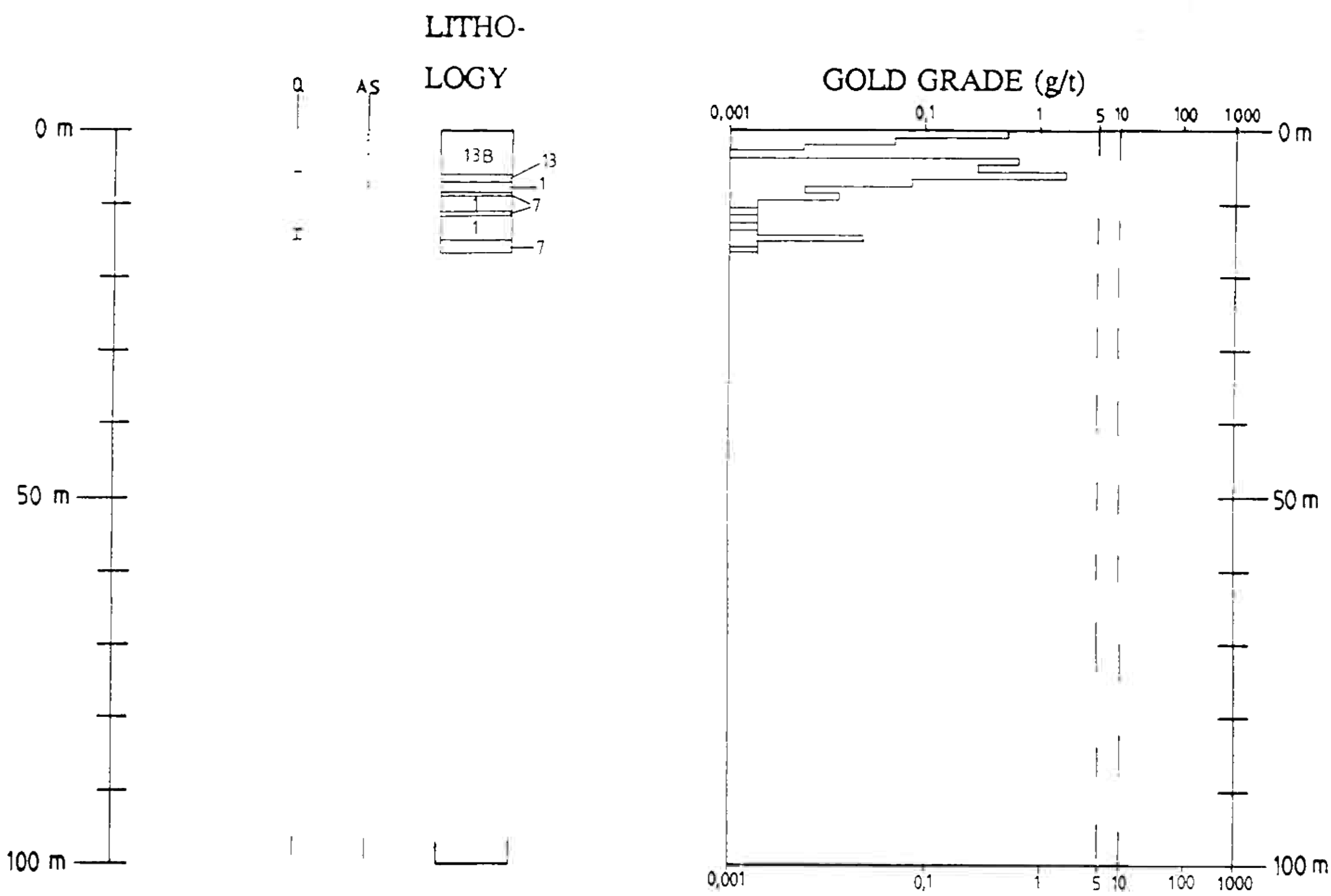
AZIMUTH: 243°
INCLINATION: 0°
LENGTH: 16,70 m

NGO-COORD., Y: -19282,0
X: 798797,0
ZONE: D

UTM-COORD., E: 397260
N: 7229220
" : 33

ALTITUDE: 190,0 m.a.s.l.
CORE DIM: 62 mm
YEAR: 1986

COMPANY: TERRA MINING A/S



SIMPLIFIED CORELOG-DIAGRAM

DRILLHOLE NO: 51

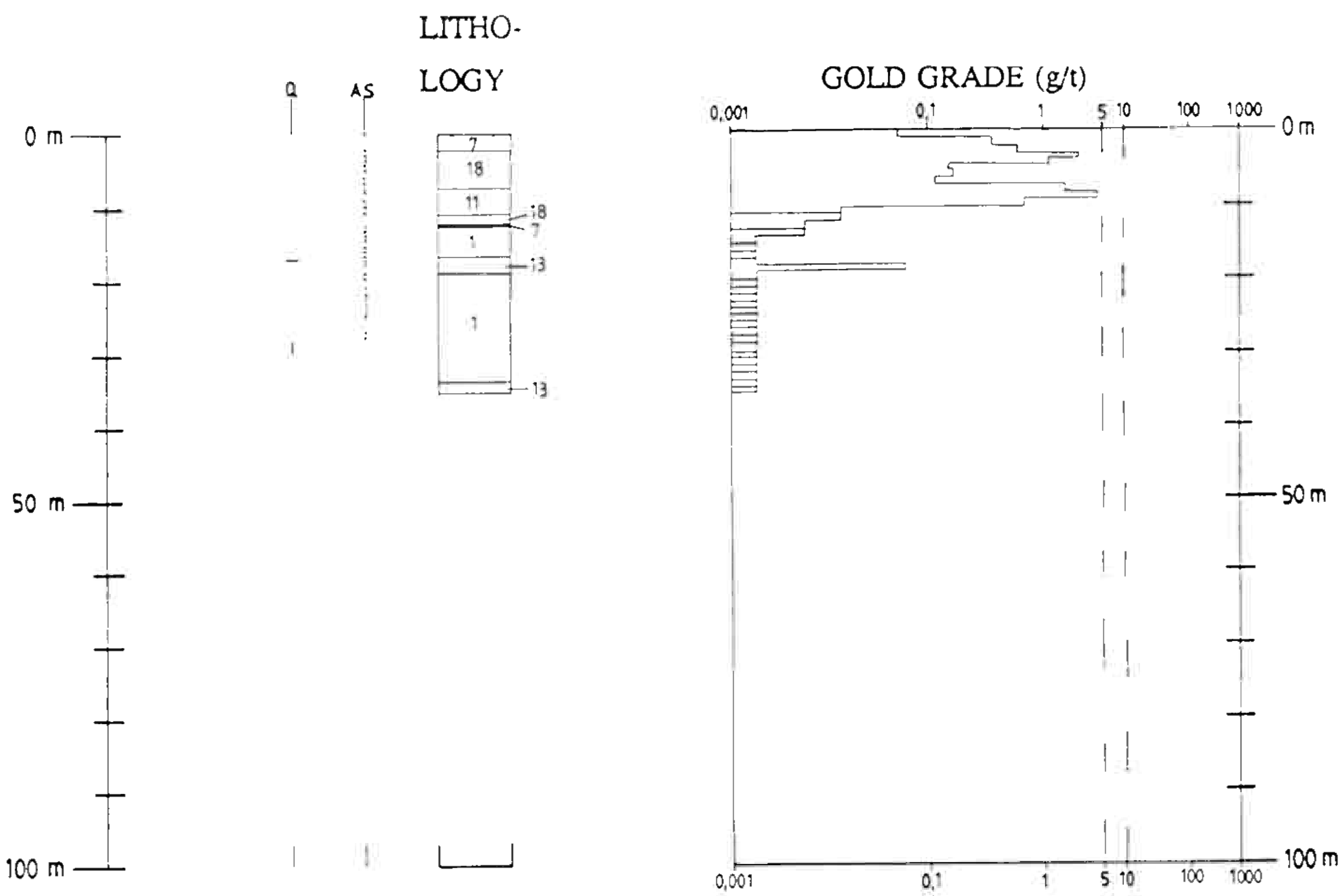
AZIMUTH: 180° | INCLINATION: 0° | LENGTH: 35,70 m

NGO-COORD., Y: - 19280,7 | X: 798796,0 | ZONE: D

UTM-COORD., E: 397265 | N: 7229220 | " : 33

ALTITUDE: 190,0 m. a. s. l. | CORE DIM: 62 mm | YEAR: 1986

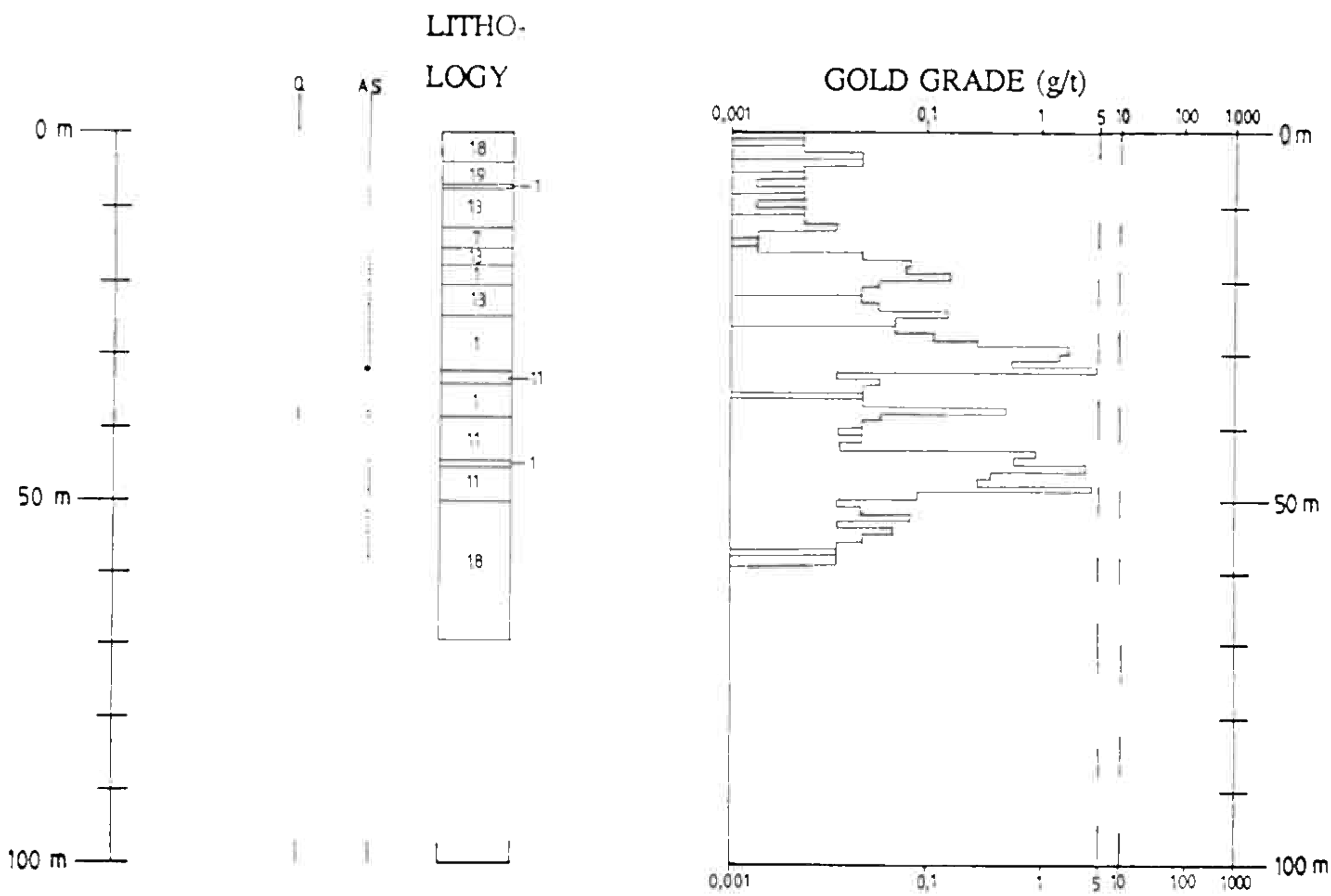
COMPANY: TERRA MINING A/S



SIMPLIFIED CORELOG-DIAGRAM

DRILLHOLE NO: 52

AZIMUTH: 93° | INCLINATION: 0° | LENGTH: 59,50 m
NGO-COORD., Y: - 19294,285 | X: 798753,482 | ZONE: D
UTM-COORD., E: 397250 | N: 7229200 | " : 33
ALTITUDE: 192,763 m.a.s.l. | CORE DIM: 62 mm | YEAR: 1986
COMPANY: TERRA MINING A/S



SIMPLIFIED CORELOG-DIAGRAM

DRILLHOLE NO: 53

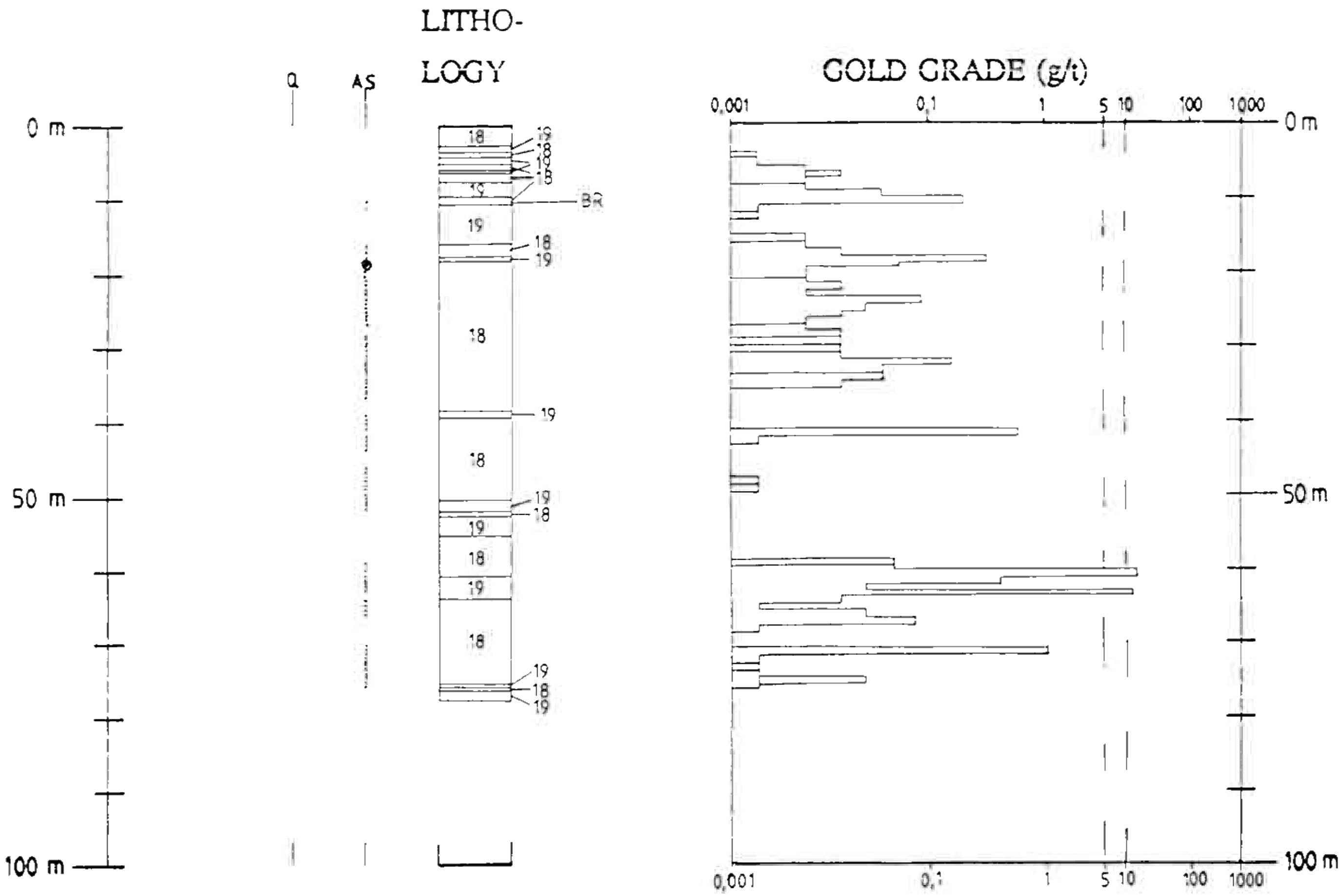
AZIMUTH: 77°
INCLINATION: 0°
LENGTH: 77,80 m

NGO-COORD., Y: -19293,116
X: 798723,791
ZONE: D

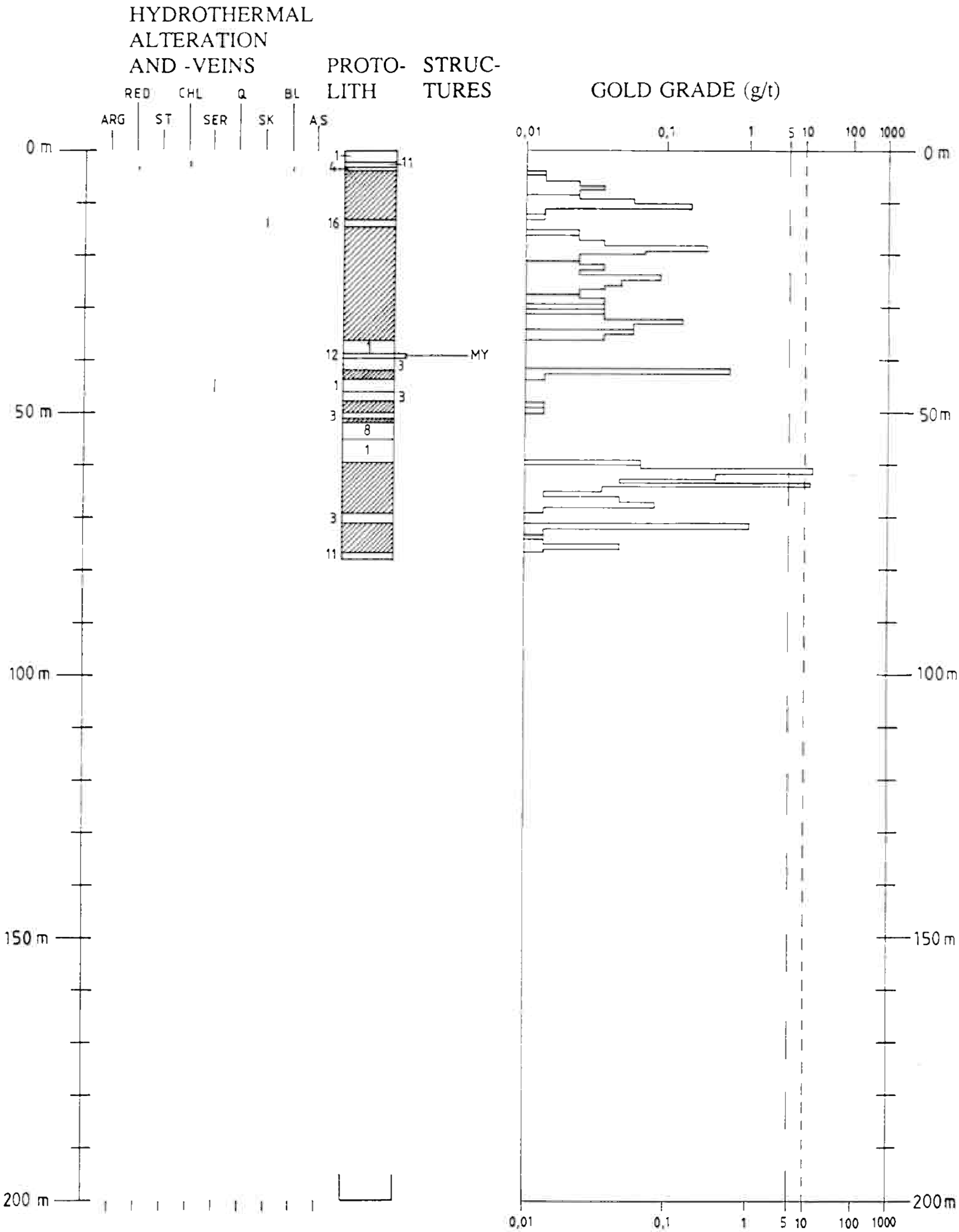
UTM-COORD., E: 397250
N: 7229170
" : 33

ALTITUDE: 192,710 m.a.s.l.
CORE DIM: 62 mm
YEAR: 1986

COMPANY: TERRA MINING A/S



SUMMARY CORELOG-DIAGRAM: DDH 53



DRILLHOLE No.: 53 AZIMUTH: 77° INCLINATION: 0° LENGTH: 77,80 m Horiz.: 77,80 m Vert.: 0,00 m CORE DIM.: 62 mm
LOCATION: F-ZONE
COMPANY: TERRA MINING A/S NGO-COORD.:Y: -19293,116 X: 798723,791 ZONE: D ALTITUDE: 192,710 m.a.s.l.
YEAR: 1986 UTM-COORD.,E: 397250 N: 7229170 ZONE: 33

DEPTH (metres)		LENGTH	LITHOLOGY	MEASURED STRUCTURES			ORE MINERALIZATION			PETROGRAPHY
From	To			Type	Angle w. core	Depth	From	To	Type	
0,00	2,30	2,30	P-LG							Light pink massive aplitic leucogranite with strongly bleached medium-grained inclusions of HTG with some minor biotite remnants. The inclusion is cut by 5 cm aplite veins.
2,30	3,20	0,90	ABGN	FL	30°	2,50				Dark fine-grained amphibole-biotite gneiss with black chloritic fractures with slickensides. Greyish green pervasive chlorite-q. alteration at 2,70-,85.
3,20	3,60	0,40	B-HTG							Pink totally bleached medium-grained HTG with some chlorite veinlets.
3,60	13,10	9,50	CM							
13,10	14,40	1,30	SK							Brownish red to green garnet-clinopyroxene skarn cut by white medium-grained LG veins containing abundant biotite aggregatres. Epidote-altered skarn along some of the veins.
14,40	35,90	21,50	CM							
35,90	38,50	2,60	W-LG							White medium-grained LG with inclusions of bleached GTG and containing many mafic aggr. and schlieren at 37,20-38,50. It carries muscovite-rich zones at 36,30-,40 and 36,55-,60 and scattered chlorite veinlets at 35,90-36,50.

LITHOLOGIES: A: = amphibolite; ABGN = dark grey amphibole-biotite gneiss; BAG = dark grey biotite-rich anatectic granite; BGN = dark grey biotite gneiss; CGN = greenish calc-silicate gneiss; CL = coreloss; CM = cores missing; CSCH = calcareous schist; GQM = dark grey biotite-quartz monzonite; GGO = grey granodioritic orthogneiss; GTG = grey medium-grained two-mica granite; HTG = hybrid pinkish grey medium-grained two-mica granite; IB = intrusion breccia; LG = leucocratic granite; M = calcite marble; MBGN = migmatitic biotite gneiss; MD = dark grey monzodiorite; MSCH = micaschist/-gneiss; OB/CL = overburden and/or coreloss in surface weathered rocks; P = pegmatite and pegmatitic granite; Q = hydrothermal quartz-vein or -lens; SK = skarn-altered marble. Prefixes: B- = bleached; BR- = brecciated; CT- = cataclastic; CR- = crushed; G- = garnetiferous; H- = heterogeneous; i.e. strong interbanding with other lithologies; HA- = hydrothermally altered; MY- = mylonitic; P- = pink; PP- = porphyritic; SH- = semiductilly sheared; W- = white to greyish white.

DDH: 53

DEPTH (metres)		LENGTH	LITHOLOGY	MEASURED STRUCTURES			ORE MINERALIZATION			PETROGRAPHY
From	To			Type	Angle w. core	Depth	From	To	Type	
38,50	39,40	0,90	SH-BGN	SP "	40° 50°	39,10 39,30				Fine-grained biotite gneiss, strongly foliated and sheared at 38,60-39,40 where lenses of mylonitic q. and calcite-coated fissures occur.
39,40	41,60	2,20	GTG							Grey medium-grained moderately bleached TG with some small GQM inclusions (40,60-,80 and 41,10-,20). It is cut by white aplitic LG veins and dykes (e.g. 39,70-40,60 and 41,20-,60 both with mafic schlieren). Scattered sericite alteration zones and thin muscovite veins.
41,60	43,60	2,00	CM							
43,60	45,90	2,30	W-LG	FL "	40° 50°	43,65 45,55				White medium-grained LG with parallel orientated biotite aggregates and mafic schlieren. It carries several 5-50 mm sericite alteration zones. Strongly bleached GTG (47,55-45,30) with muscovite rich zones as inclusions.
45,90	47,70	1,80	GTG							Grey medium-grained variably bleached TG with GQM inclusions. It is cut by 1-10 cm white LG veins e.g. 46,05-,15.
47,70	49,70	2,00	CM							
49,70	51,00	1,30	GTG							Grey medium-grained TG with weak zonal (2-5 cm) bleaching. It contains an inclusion of dark coarse-grained feldspatic biotite gneiss (? BAG ?). It is cut by a few 2-10 cm pegmatite dykes.
51,00	51,75	0,75	CM							
51,75	54,90	3,15	BAG	FL " "	65° 60° 65°	51,85 53,60 54,50				Dark, medium- to coarse-grained and biotite-rich anatectic granite with granular texture. Below 53,70 it contains 5-30 mm bands rich in biotite, amphibole or calc-silicates. It is cut by 5-15 cm dykes of GTG.

STRUCTURES: BV = breccia vein; FL = foliation; LB = lithological boundary; LL = metamorphic banding and/or primary lithological layering; MY = mylonite foliation; SP = semiductile shear plane; V = mineral veins with prefixes: AN- = ankerite; CA- = calcite; CHL- = chlorite; MY- = mylonitic; Q- = quartz; SR- = sericite; ST- = stilbite.

DDH: 53

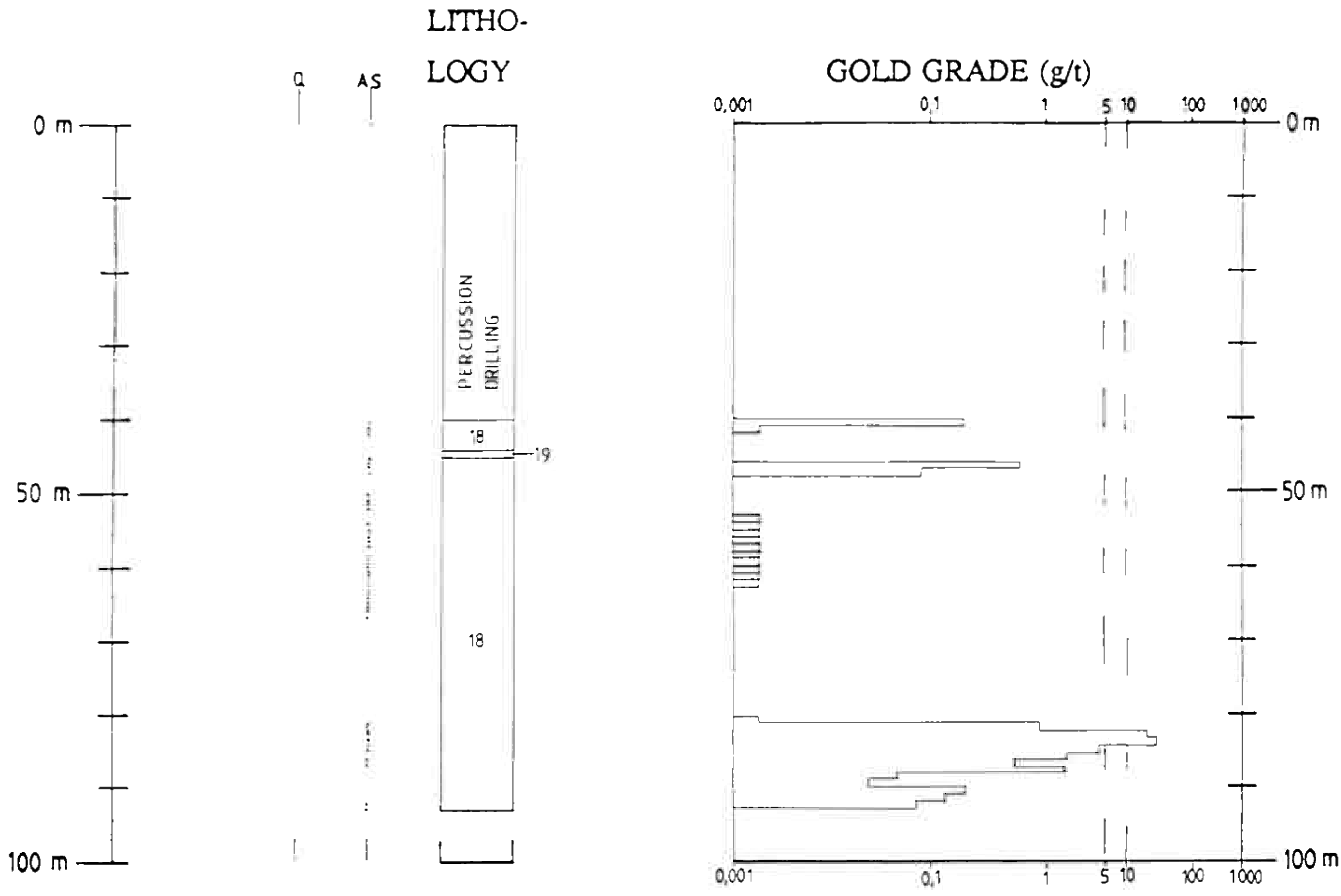
DEPTH (metres)		LENGTH	LITHOLOGY	MEASURED STRUCTURES			ORE MINERALIZATION			PETROGRAPHY
From	To			Type	Angle w. core	Depth	From	To	Type	
54,90	59,30	4,40	W-LG	FL "	30° 35°	57,40 58,90				White medium-grained leucogranite with zones of parallel mafic schlieren (1-10 cm) defining the foliation. The LG with mafic schlieren is cut by a 5 cm white aplite dyke. Scattered 5-15 mm sericite alteration zones.
59,30	68,90	9,60	CM							
68,90	70,80	1,90	GTG							Grey medium-grained TG with mafic inclusions (< 10 cm) and moderate bleaching. It is transected by 1-5 cm white LG veins. Pervasive (68,90-69,10) to irregular fracture-bound sericite alteration.
70,80	76,60	5,80	CM							
76,60	77,80	1,30	ABGN							Dark amphibole-biotite gneiss with greyish green chlorite alteration zones (10 cm) along the margin of white aplitic LG dyke (76,60-,80). The dyke contains chlorite veinlets and some 5-10 mm sericite alteration zones. At 77,60-,20 weakly bleached dyke of GTG.

STRUCTURES: BV = breccia vein; FL = foliation; LB = lithological boundary; LL = metamorphic banding and/or primary lithological layering; MY = mylonite foliation; SP = semiductile shear plane; V = mineral veins with prefixes: AN- = ankerite; CA- = calcite; CHL- = chlorite; MY- = mylonitic; Q- = quartz; SR- = sericite; ST- = stilbite.

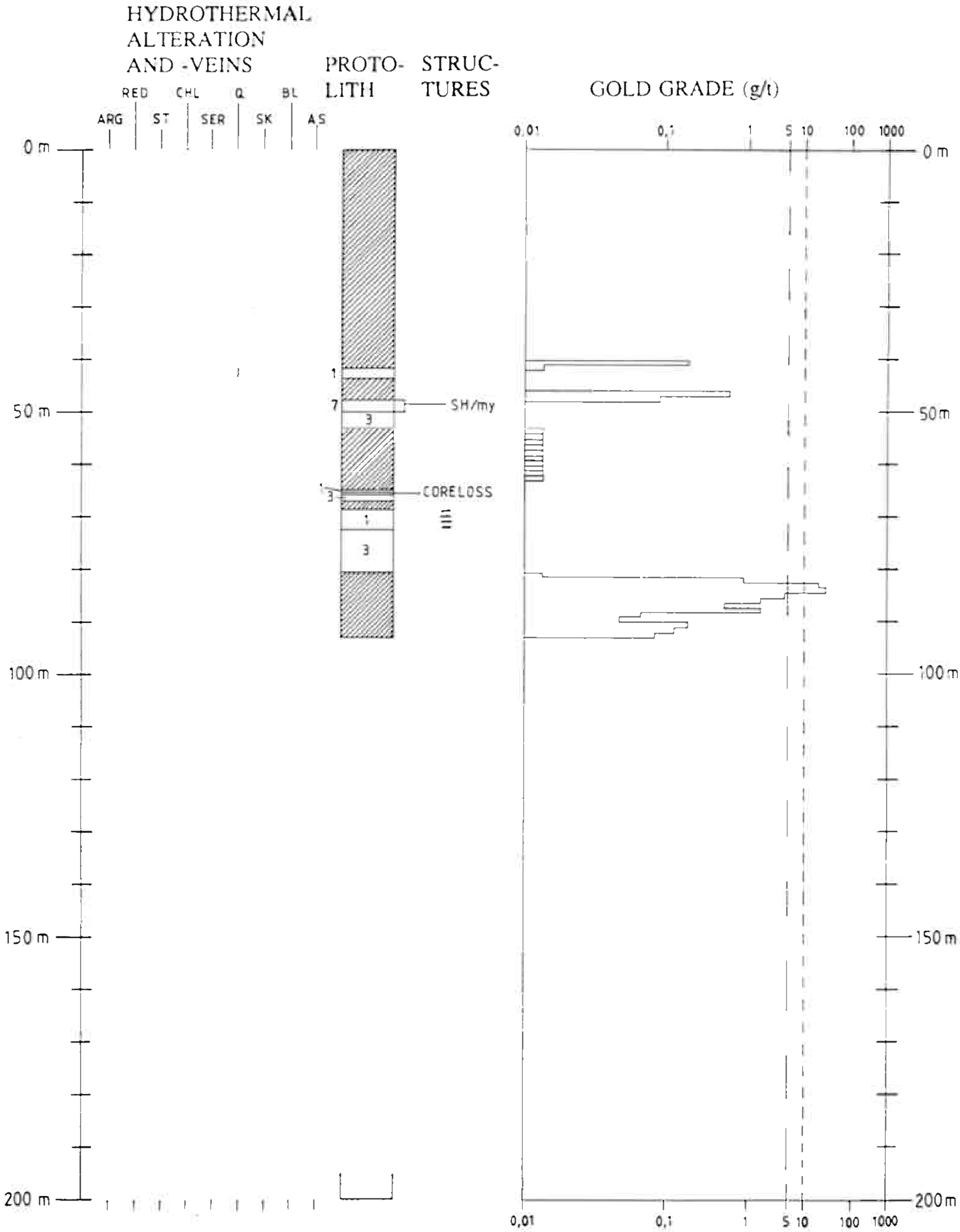
SIMPLIFIED CORELOG-DIAGRAM

DRILLHOLE NO: 54

AZIMUTH: 90°	INCLINATION: 0°	LENGTH: 93,20 m
NGO-COORD., Y: -19291,5	X: 798718,8	ZONE: D
UTM-COORD., E: 397250	N: 7229170	" : 33
ALTITUDE: 194,0 m.a.s.l.	CORE DIM: 62 mm	YEAR: 1986
COMPANY: TERRA MINING A/S		



SUMMARY CORELOG-DIAGRAM: DDH 54



DRILLHOLE No.: 54 AZIMUTH: 90° INCLINATION: 0° LENGTH:93,20 m Horiz.: 93,20 m Vert.: 0,00 m CORE DIM.: 62 mm
LOCATION: F-ZONE
COMPANY: TERRA MINING A/S NGO-COORD.:Y: -19291,5 X: 798718,8 ZONE: D ALTITUDE: 194,0 m.a.s.l.
YEAR: 1986 UTM-COORD.,E: 397250 N: 7229170 ZONE: 33

DEPTH (metres)		LENGTH	LITHOLOGY	MEASURED STRUCTURES			ORE MINERALIZATION			PETROGRAPHY
From	To			Type	Angle w. core	Depth	From	To	Type	
0,00	40,00	40,00	CL							Percussion drilling.
40,00	41,70	1,70	CM							
41,70	43,60	1,90	W-LG							White medium-grained leucogranite with mafic (biotite-rich) schlieren and bands. Locally it grades into pegmatitic granite. It contains abundant up to 10 cm thick q. veins, especially at 43,00-,60 where weak pervasive sericite alteration is developed. 10 cm wide zones with many chlorite veinlets are found adjacent to a quartz-vein at 43,00-,10.
43,60	47,70	4,10	CM							
47,70	49,95	2,25	GGO	SP LB	7,5° 5°	48,10 49,95				Grey granodioritic orthogneiss with 2 x 3 - 8 mm² feldspar augen. It is cut by narrow strongly foliated shear zones.
49,95	53,20	3,25	GTG	FL	45°	51,20				Light grey medium-grained TG with 5-10 mm mafic inclusions. It is cut by biotite-spotted LG dyke at 49,55-50,30 and abundant LG veins (< 5 cm) at 50,80-51,30. It carries several 1-10 mm sericite alteration zones below 52,90. Some irregular patches of sericite alteration are also found elsewhere.
53,20	64,80	11,60	CM							
64,80	65,10	0,30	W-LG							White medium-grained biotite-spotted LG with a 20 mm q. vein.
65,10	65,70	0,60	CL							

LITHOLOGIES: A: = amphibolite; ABGN = dark grey amphibole-biotite gneiss; BAG = dark grey biotite-rich anatectic granite; BGN = dark grey biotite gneiss; CGN = greenish calc-silicate gneiss; CL = coreloss; CM = cores missing; CSCH = calcareous schist; GQM = dark grey biotite-quartz monzonite; GGO = grey granodioritic orthogneiss; GTG = grey medium-grained two-mica granite; HTG = hybrid pinkish grey medium-grained two-mica granite; IB = intrusion breccia; LG = leucocratic granite; M = calcite marble; MBGN = migmatitic biotite gneiss; MD = dark grey monzodiorite; MSCH = micaschist/-gneiss; OB/CL = overburden and/or coreloss in surface weathered rocks; P = pegmatite and pegmatitic granite; Q = hydrothermal quartz-vein or -lens; SK = skarn-altered marble. Prefixes: B- = bleached; BR- = brecciated; CT- = cataclastic; CR- = crushed; G- = garnetiferous; H- = heterogeneous; i.e. strong interbanding with other lithologies; HA- = hydrothermally altered; MY- = mylonitic; P- = pink; PP- = porphyritic; SH- = semiductilly sheared; W- = white to greyish white.

DDH: 54

DEPTH (metres)		LENGTH	LITHOLOGY	MEASURED STRUCTURES			ORE MINERALIZATION			PETROGRAPHY
From	To			Type	Angle w. core	Depth	From	To	Type	
65,70	66,80	1,10	GTG	FL	50°	65,85				Light grey medium-grained TG with small inclusions of GQM and GGO and cut by several thin white LG veins (< 5 cm).
66,80	68,70	1,90	CM							
68,70	72,65	3,95	W-LG	FL V FL " " V	20° 60° 5° 30° 20° 90°	69,00 69,95 70,20 70,90 72,00 72,10				White fine- to medium-grained leucogranite with abundant biotite-rich mafic schlieren and aggregates (1-2 x 10 - 15 mm) defining a crude planar fabric (foliation). It is cut by a white pegmatite dyke at 72,35-,65. The LG carries scattered sericite alteration zones (10-20 mm).
72,65	80,60	7,95	GTG							Light grey granite with inclusions of migmatitic biotite gneiss and amphibolite (5-20 cm). It is cut by some 10-20 cm wide white aplitic LG veins and a 0,8 m wide pegmatite dyke. It carries also a few sericite alteration zones.
80,60	93,20	12,60	CM							

STRUCTURES: BV = breccia vein; FL = foliation; LB = lithological boundary; LL = metamorphic banding and/or primary lithological layering; MY = mylonite foliation; SP = semiductile shear plane; V = mineral veins with prefixes: AN- = ankerite; CA- = calcite; CHL- = chlorite; MY- = mylonitic; Q- = quartz; SR- = sericite; ST- = stilbite.

SIMPLIFIED CORELOG-DIAGRAM

DRILLHOLE NO: 55

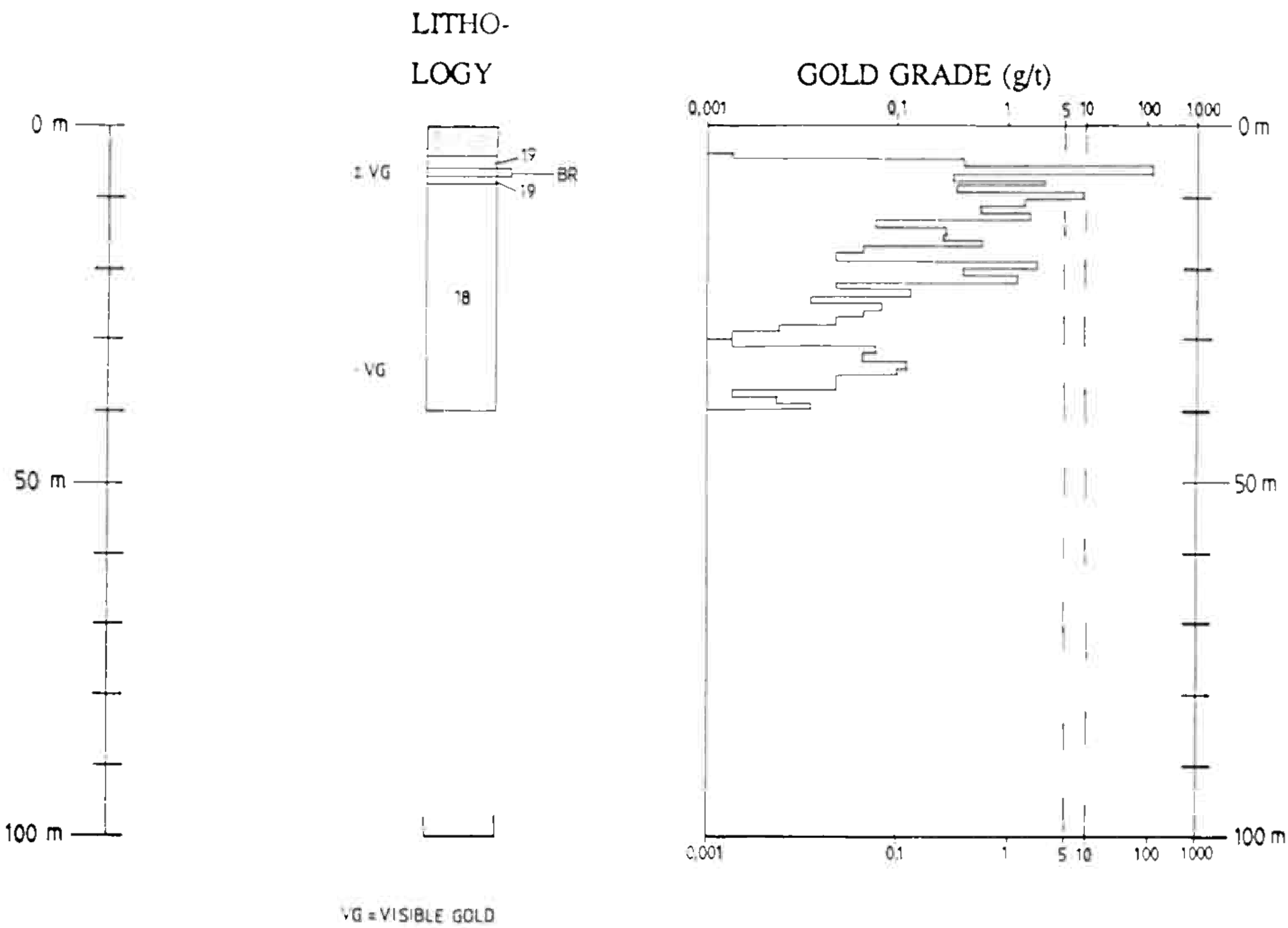
AZIMUTH: 270° | INCLINATION: 40° | LENGTH: 40,30 m

NGO-COORD., Y: Ca. -19328,2 | X: 798864,0 | ZONE: D

UTM-COORD., E: 397220 | N: 7229245 | " : 33

ALTITUDE: Ca. 181,5 m. a. s. l. | CORE DIM: 62 mm | YEAR: 1986

COMPANY: TERRA MINING A/S



SIMPLIFIED CORELOG-DIAGRAM

DRILLHOLE NO: 56

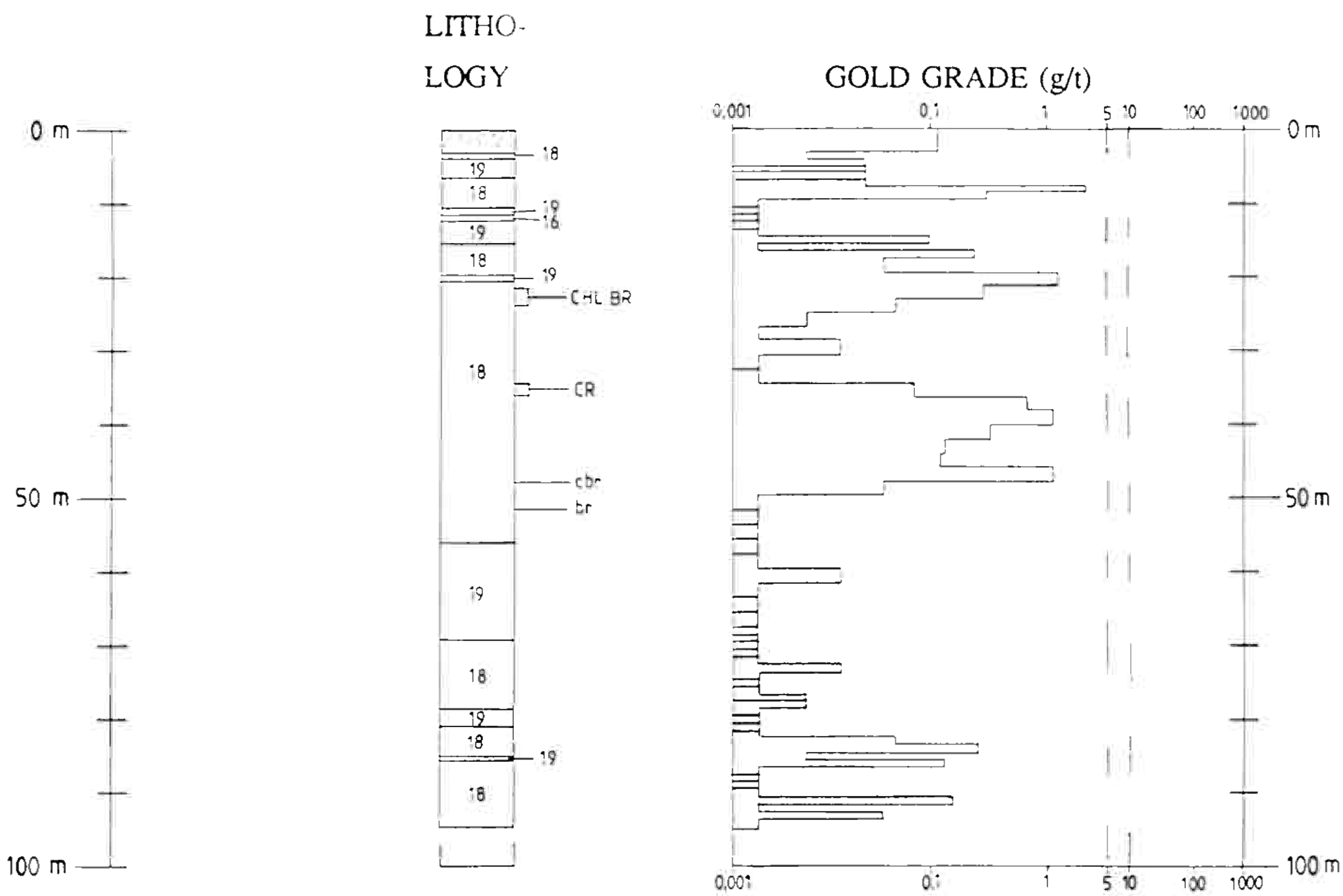
AZIMUTH: 252° INCLINATION: 60° LENGTH: 94,70 m

NGO-COORD., Y: -19287,8 X: 798825,0 ZONE: D

UTM-COORD., E: 397255 N: 7229245 " : 33

ALTITUDE: 189,0 m.a.s.l. CORE DIM: 62 mm YEAR: 1986

COMPANY: TERRA MINING A/S




LEGEND
INTRUSIVE ROCKS:
White to pink and mediumgrained to pegm. leuco-granite
Light grey to pink mediumgrained two-mica granite and grey quartz monzonite
Dark grey mediumgrained monzodiorite
Grey biotite-rich anatectic granite
SUPRACRUSTAL ROCKS:
Alternating zones of calc-silicate gneiss, amphibolite, biotite gneiss and migmatitic gneiss
Marble
Garnet-clinopyroxene skarn
Alternating zones of amphibolite, amphibole-biotite gneiss, calc-silicate gneiss, granodioritic orthogneiss and locally marble and skarn
Migmatitic sillimanite-kyanite-biotite gneiss
GEOLOGICAL SYMBOLS:
Strike and dip (60°, 90°) of foliation and banding
Strike and dip (60°) of shear planes and mylonite banding
Foldaxes with plunge (30°)
Stilbite breccia
Late high-angle normal fault with dextral strike-slip displacement (FOFZ)
Quartz breccia and quartz veined zone
Early high-angle dextral fault (KRFZ) with dip of fault plane/quartz vein, Ore structures: B1, B2, C, F1 - F11, K.
Mylonite
Shaft/small working (P)
Adits: BZA = B-zone, NSA = Nordre Skarstoll, SSA = Søndre Skarstoll, BA = Boliden, TA = Tanner, MA = Mannerheim, HA = Hartvig, OA = Oppgangen, KA = Kaffisteinen, STA = Storsteinen
Diamond drill hole no. 5 (DDH 5) with horizontal projection
Vertical drillhole, DDH 21
DDH 20 with uncertain position
DDH 41 with uncertain position and orientation
B1 Boliden drillhole
Cabin
0 50 100 m
N
FOFZ
KRFZ
TSFZ
ORE ZONE MAP WITH DRILLHOLE LOCATION
KOLSVIK Au - As DEPOSIT
BINDAL COMMUNE
NORDLAND
MÅLESTOKK 1:1000
OBS. P.M.I.
TEGN. P.M.I.
TRAC. L.F. DES. -93
KFR.
PLATE 2
NORGES GEOLOGISKE UNDERSØKELSE
TRONDHEIM
TEGNING NR. 93.003 - 02
KARTBLAD NR. 1825 II


PLATÅET
PLATÅET
ØSTLIA
STUPET
RYGGEN
OPPGANGEN
NEBBA
KLONDYKE
SKARSHAUG
SKARET
SEKSA
HELVETESLIA
KLØFTA
KAFFISTEIN ADIT
KAFFISTEIN-URA
STORSTEINEN
FOLKEPARTI-URA
TOSTEIN
OTTAR
VESTLIA
HUMPELVLIA
BOGELVA RIVER
HUMPELVA RIVER
TVERRELVA RIVER
FINNLIA- OKSDAL FAULT ZONE (FOFZ)
FINNLIA - OKSDAL FAULT ZONE (FOFZ)
KOLSVIKBOGEN-RINGVANN FAULT ZONE (KRFZ)
KOLSVIKBOGEN-RINGVANN FAULT ZONE
TVERRELVA-SKAVVASSFJELL FAULT ZONE (TSFZ)
FOFZ
KRFZ
TSFZ
LEGEND
INTRUSIVE ROCKS:
1 White to pink and mediumgrained to pegm. leuco-granite
2 Light grey to pink mediumgrained two-mica granite and grey quartz monzonite
3 Dark grey mediumgrained monzodiorite
4 Grey biotite-rich anatectic granite
SUPRACRUSTAL ROCKS:
5 Alternating zones of calc-silicate gneiss, amphibolite, biotite gneiss and migmatitic gneiss
6 Marble
7 Garnet-clinopyroxene skarn
8 Alternating zones of amphibolite, amphibole-biotite gneiss, calc-silicate gneiss, granodioritic orthogneiss and locally marble and skarn
9 Migmatitic sillimanite-kyanite-biotite gneiss
GEOLOGICAL SYMBOLS:
Strike and dip (60°, 90°) of foliation and banding
Strike and dip (60°) of shear planes and mylonite banding
Foldaxes with plunge (30°)
Stilbite breccia
Late high-angle normal fault with dextral strike-slip displacement (FOFZ)
Quartz breccia and quartz veined zone
Early high-angle dextral fault with dip of fault plane/quartz vein (ore structure)
Mylonite
Shaft/adit/cabin
Small working (P)
0 50 100 m
N
GEOLOGICAL MAP
KOLSVIK Au-As DEPOSIT
BINDAL COMMUNE
NORDLAND
MÅLESTOKK 1:1000
OBS. P.M.I.
TEGN P.M.I.
TRAC L.F. DES.-93
KFR
PLATE 1
NORGES GEOLOGISKE UNDERSØKELSE
TRONDHEIM
TEGNING NR. 93.003-01
KARTBLAD NR. 1825 II