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Text and diamond drill logs.
Finnmark project (N-81-2).

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FINNMØRK PROJEKT - N-81-2

Diamond Drill Logs - 1982.

FINNMARK PROJECT (N-81-2)

FOLLDAL VERK A/S - AMOCO NORWAY OIL COMPANY

DIAMOND DRILLING PROGRAMME

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with

a review of the geology of the Finnmark-district

By

FRANK-DIETER PRIESEMANN

1. INTRODUCTION.

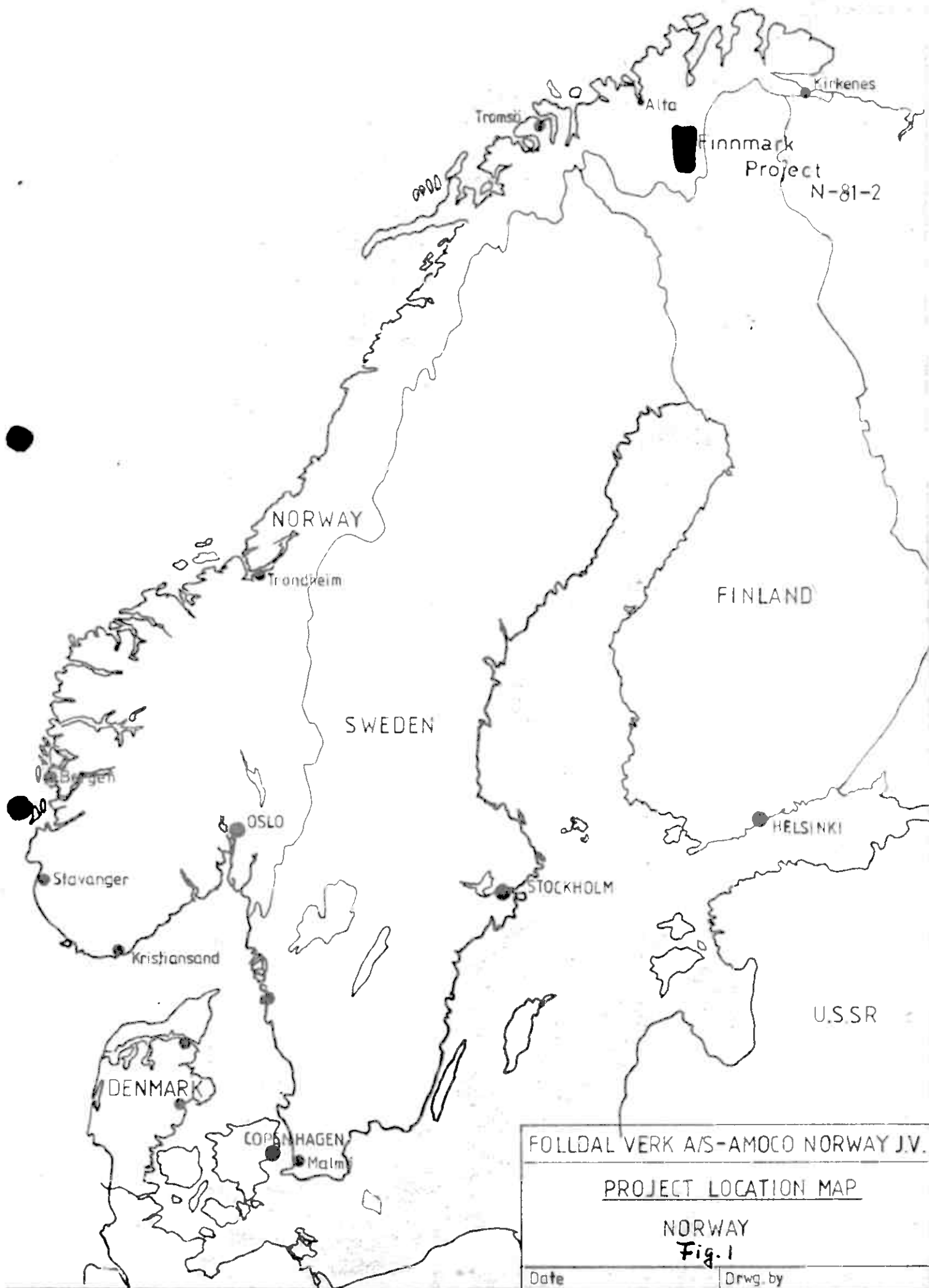
The Karasjok-programme is located in Finnmark fylke, Northern Norway, centered at 69°20' N and 25°15' E. (Fig. 1). The tract of land is called Finnmarks-vidda, an area of about 14.000 km², which means the southgoing sheety extension of the normal northern norwegian coaststate into the "Lappi" - district of Finland. It represents the norwegian part of the north scandinavian, respectively arctic, peneplain.

The project-area lies in the eastern part of this region in the nearea, west of Karasjok, a town located at the Karasjåkka (Karasjok-river) 18 km west from the Finnish-border. The prospected area is about rectangular shaped with a N-S extension and encloses about 1000 km². It includes the main part of the so called "Karasjok-feltet" (WENNERWILTA, 1968).

The landscape of this district is formed by extense glacial erosion and shows therefore a very soft relief. It predominates knolls or smooth mountain ridges surrounded by flat u-shaped valleys, which are normally covered by svamps. The general heights differs between 400 and 250 m, with an average of about 300 m. The main elevation is the Iskuras mountain belt - made up out of quartzite - with 642 m a.s.l.. It is outside the work area.

The drainage is undertaken by the main rivers: Karasjåkka, Jesjåkka and Bævtajåkka. They are running mostly either in a strict N-S or E-W direction with rectangular bands in between. They are following and pointing out by that way the prominent tectonic lineaments. The riverbeds are wide - 40 - 170 m - and u-shaped and filled with fluviatile and glacial material. The older river terrasses are in general 6 to 7 m above the nowadays run. Due to the very little fall - Karasjåkka: 90 m on a distance of 60 km (Bæivasgiedde: 218 m, Karasjok church: 125 m) - the rivers are even in the summer-time navigable by engined riverboats.

There exists a typical vegetation of the higher latitudes. It comprises of cripple - birches, juniper, dwarf - birches and small willow-trees and bushes. Furthermore there are existing pine-trees, but they are restricted to the river-valleys. The ground is covered by gras, several kinds of berries (e.g. *rubus chamaemorus*, *arctostaphylos alpina*, *vaccinium uliginosum*, *vaccinium vitis-idea*) mosses and different kinds of lichen (*cladonia mitis*, *peltigera aphthosa*, *cladonia pyxidata*). At some locations there were found flowers of *viscaria alpina* which are typical indicators for Mg-rich rocks. (see also REITAN, 1963).



2. GENERAL GEOLOGY OF THE FINNMARK-DISTRICT.

The Finnmark area consists of precambrian to caledonian rocks. The oldest rocks exposed are of archaean age and are dated back to 2800 m.y. They belong therefore to one of the oldest yet reported rocks of Norway. The main precambrian areas are the Sør-Varanger region with the "Øst-Finnmarks grunnfjell" (OFTEDAL, 1974) and the Finnmark-vidda. They are lying south of a SW-NE trending line running from the north west corner of the Finnmark-vidda up to the Varangerfjord in the E (Fig. 2). This line marks the border between the precambrian series and the unconformably overlying caledonian rocks. Furthermore there are existing two tectonic-windows of precambrian - basement in the caledonian mountain - chain, known as the Komagfjord - and the Alta - Kvenangen "tectonic window". All the four mentioned areas have a more or less comparable precambrian stratigraphic. This is the fact especially in that unit of volcanic - sedimentary deposition of possibly karelich (1800 - 1900 m.y.) age, this project is dealing with. For a better understanding of the now prospected area and for supposedly further prospecting activities in the other areas a short discription of all of them will be given in the following.

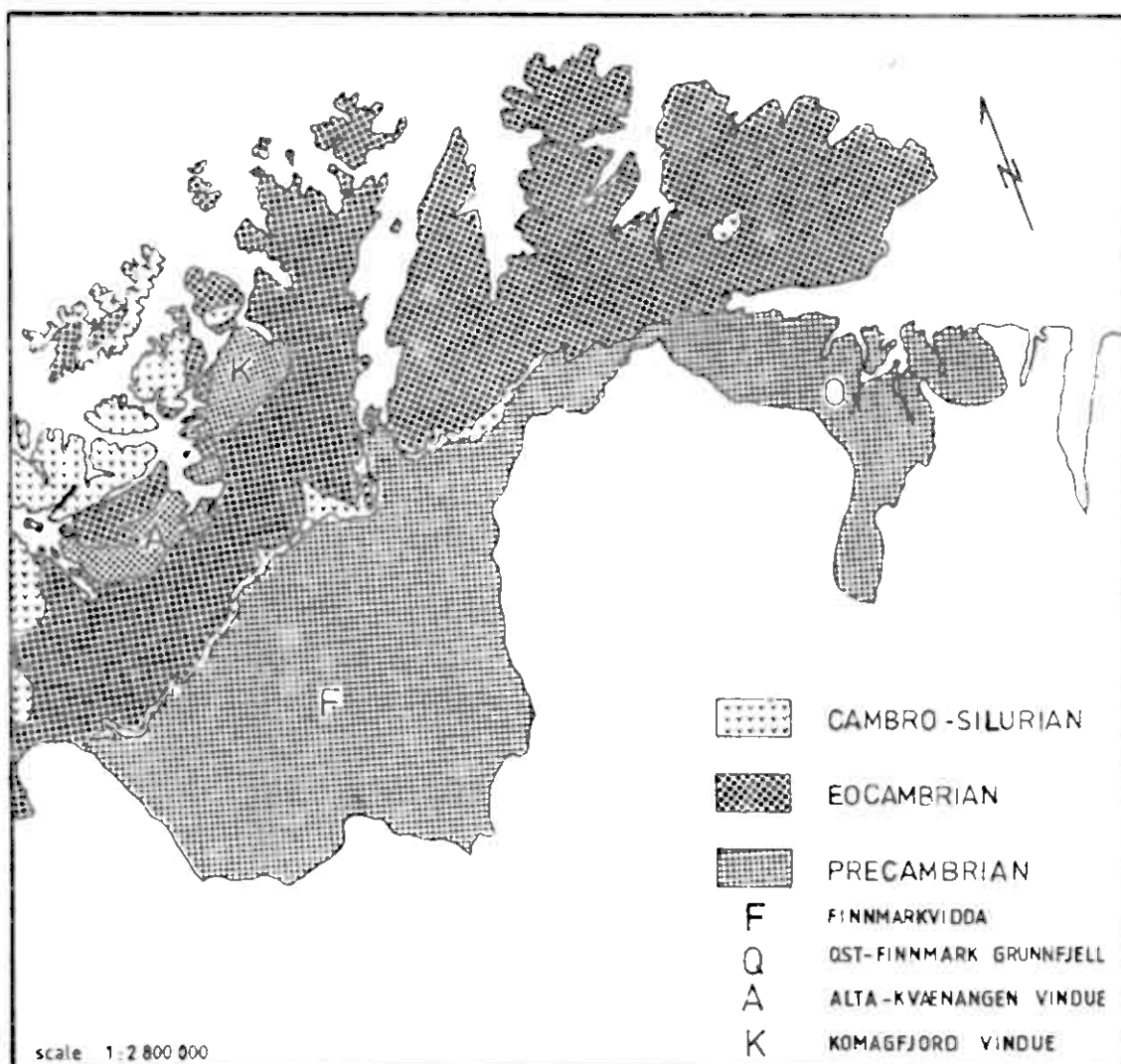


Fig. 2: Simplified geological map of the Finnmark-district.

2.1 THE "ØST-FINNMARKS GRUNNEFJELL".

Only very little information are available about the geology and lithostratigraphic of the precambrian basement south of Varangerfjord. That is why most of the works are carried out by geologists of Sydvaranger A/S, here under the leadership of J.A.W. Bugge (BJØRLYKKE, 1982). However some notes and within that a general stratigraphy are found in OFTEDAHL (1974) and BJØRLYKKE (1982). After OFTEDAHL (1974) the precambrian rockgroup is divided into three main groups. (Fig. 3).

Æra og omtrentlig alder i mill. år	Stratigrafi
?	Gjennomsettende diabasganger
Karelder ca. 1800	Foldning og metamorfose Petsamo-gruppen. 2. Skogfoss grønnstein ¹⁾ . Underordnet: Lag av glimmerskifer, kalk, tuffer og sure lavaer. I tilslutning: Basisk gabbro og peridotitt. 1. Neverskrukk-konglomeratet: Polymikt basalkgl.
2500 Norvegosamider ca. 2600 ?	Gjennomsettende ganger av granitt og megmatitt. Sterk foldning og metamorfose med dannelse av f.eks. den anatektiske Neiden granitt. Bjørnevanns-gruppen. 4. Ørnevann meta-vulkanitter: Biotitt-hornblendegneiser (vesentlig meta-andesitt og metadacitt). 3. Sydvaranger jernmalm ¹⁾ (Mt kvartsrandmalm). 2. Bjørnevann gneis: Mest kvartsitter og glimmerskifer, tynne rhyolitt-horisonter. 1. Bjørnevann konglomerat: Polym. basalkgl.
Pre-samider ca. 2800 ?	Jarfjord-komplekset ¹⁾: Gammelt gneisunderlag i Sydvaranger med granittiske gneiser, migmatitter, glimmer og granatgneiser, økinzigitt og amfibolitt. Fra Polmak vestover langs Tana: Granulittgneiser. 1) Forslag til nye stratigrafiske navn

Fig. 3: The precambrian of the east-Finnmark (OFTEDAHL, 1974).

There are from the basis upwards the "Jarfjord-komplekset" (2800 m.y.), which consists of granitic gneises and migmatites and finds its pendant in the archaean gneisdome on the Finnmarks-vidda (see 2.2), than the "Bjørnevanns-gruppe" (2600 m.y.) supposedly a geosyncline series and at least, with a clear discordance to the underlying group, the "Petsamo-gruppe" (1800 m.y.), a typical geosyncline sedimentation pile. This group starts at its footwall with a basal-conglomerate (Neverskrukk-konglomeratet), what is mixed with arkosic sandstones. Upon that rests a sequence of basic volcanics ("Skogfoss grønnstein"), made up out of submarine - pillowed - basic volcanics, now metamorphosed to greenstones and or amphibolites and not further differentiated ultrabasic volcanics with inter-

bedded graphite slates and - schists. Further up there are following more felsic volcanics and, in a greater amount, metasediments like micaschists and carbonates.

The series as its whole could be related to a rift - volcanisme (BJØRLYKKE, 1982). There are some indications - age of formation and lithostratigraphie - what leads to a correlation of this group with the volcanic-sedimentary sequence of the Finnmarks-vidda (OFTEDAHL, 1974).

2.1.1 ECONOMIC GEOLOGY.

Connected to the Bjørnevanns-group there is an exhalative - sedimentary iron-ore deposit called "Sydvaranger quartz - banded iron ore". Further informations can be taken from BUGGE (1978).

In the norwegian part of the Petsamo-group no sulfide mineralisation of economic importance has yet been found. Well known is a Ni- Cu - mine (Petsamo) on the russian side, not far away from the norwegian border. This pentlandite/chalcopyrite appearance is connected to serpentized peridotites and metagabbros. On the norwegian side there have been reported boulders of equivalent mineral composition in glacial residues from the Pasvik-area. Glacial transport direction and trace-element analysis of these heavy sulfide boulders point to an own mineralisation supposedly located in this area. In the last few years prospecting activities were carried out by Sulfidmalm A/S. They included diamond-drilling. In fact of the negative results these activities were stopped in the middle of 1982.

2.2 GEOLOGY OF THE FINNMARKS-VIDDA.

The geological structure of the Finnmarks-vidda is from the first point of view a very simple one. (Fig. 4). In central position there is found a tongue-shaped gneisdome of archean age (2800 m.y). With a mainly N - S elongation this body covers an area of about 5000 km². Its northern hinge is located in the nearea of Skoganvarre. This gneisdome is surrounded by a volcanic-sedimentary series metamorphosed in lower greenschist - to amphibolite-facies. Its horizons are running more or less N - S and by that parallel to the gneisborders. This unit shows lithological differences between its eastern and western part, what efforts a discrimination in the West-Vidda, with the westerly greenstone-belt and the Karasjok-group (east side). Their separate description will be given later.

The total age of this rockgroup is nowadays in discussion. Former age-determinations pointed out a karelish (1800 m.y) formation. Never works carried out on samples of adequate

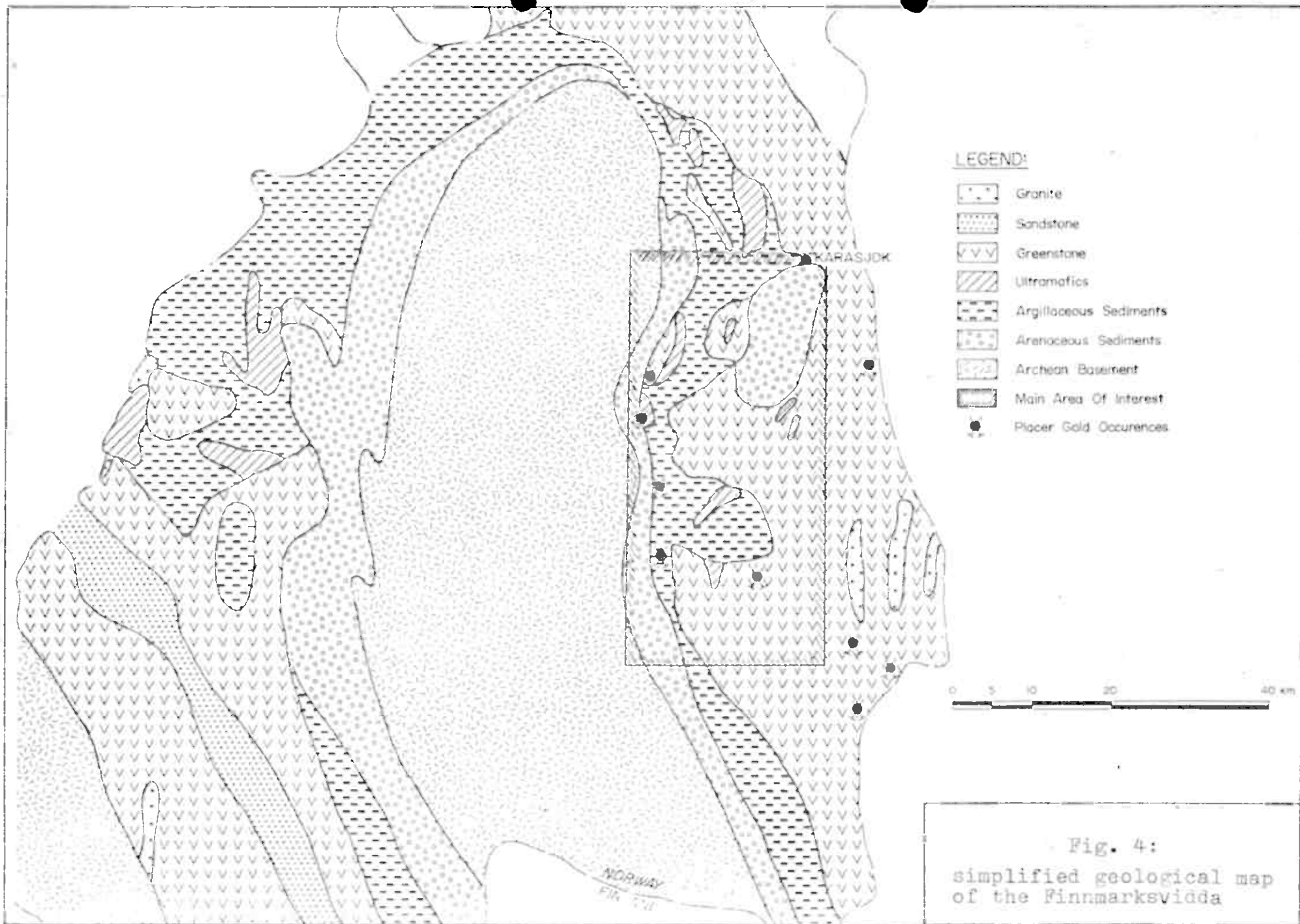


Fig. 4:
simplified geological map
of the Finnmarksvidda

material from northern Finland lead to a possibly archaean age (BJØRLYKKE, 1982).

Both, gneisdome and volcanic - sedimentary pile are intructed by gabbros - the majority of them is found in the Karasjok-greenstone - belt-, granites and dolerite - dykes.

2.2.1 THE CENTRAL GNEISDOMES.

This basal gneis varies from granitic to dioritic in composition (BJØRLYKKE, 1982) - granodioritic to quartzdioritic (SKÅLVOLL, 1972) - and shows by that locally enrichments of mica and garnets, what leads to a mica - or garnet gneis. It predominates a medium grain-size and a granoblastic texture. Pegmatitic equivalents develops as small (dm) "veins" and or certain bodies with typical mikrographic textures between quartz and feldspar. Enrichments of large biotite-plates are common in these zones.

Inclusions of unfamiliar material as amphibolites, hornblende-gneises and micagneisses are reported from WENNERVIRTA (1969). HOLMSEN et al (1957) describe micaschists, green-schists, quartzites and talkschists, the common types of rocks in the westerly greenstone-belt.

The contacts between the gneisdome and the onlying meta-sedimentary formation are as well concordant as discordant.

2.2.2 THE KARASJOK-GROUP.

The stratigraphie of the Karasjok-group given by WENNERVIRTA (1968) and SKÅLVOLL (1972) basis essentially on one good outcrop, called the "Cag'gejåkká nøkkelområde", which is located about 10 km south of Skoganvarre. After that the Karasjok-group consists of two, supposedly three groups: an arenaceous basis, the following volcanic-sedimentary pile and a more sedimentary completion part (Fig. 5). The last two ones are described as the Karasjok greenstone-group. It builds the Karasjok greenstone-belt, (BJØRLYKKE (1982)), a mainly N - S trending formation, which runs from Porsanger-fjorden in the north to the southern corner of the Finnmarksvidda. From here it continues further into Finland, where it forms the Kittilä greenstone-complex.

Fig. 5:

Stratigraphic of the Karasjok-group

- Karasjok greenstone-group
 - amphibolite, hornblendeschist (marbel)
 - meta-picrite (mafic, ultramafic, laves)

supposedly
Karelish

Arenaceous basis

- (1800 m.y.)
- mica schists, metagreywacks,
graphiteschists
 - quartzites, metaarenites
 - basalconglomerate

Basal gneis-complex

arkean
(2800 m.y)

The arenaceous basis comprises out of a typical basal conglomerate, which grades upwards into arkosic sandstones and further into pure quartzite. This alignment characterizes an typical clastic evolution of shelf deposition. Upon that follows a more pelitic section made up out of quartz-mica schists, which contain small horizons of metagreywacks and graphite schists.

The contacts between the base - sediments and the onresting volcanic-sedimentary pile appearse to be very sharp with locally obvious brecciation. This let think about tectonic conditions, which are mainly accepted by SKÅLVOLL (1972) and BJØRLYKKE (1982) - he believes in an overthrust sequence from the east.

A detailed description of the whole volcanicsedimentary pile or even an idea of the karelish (?) volcanic evolution hasn't been found in any of the publications. Surely, this is why there is a lack of information about the geology based on the very small amount of outcrops.

The greenstone unit starts at here base with basic and ultrabasic volcanics, which show locally very well preserved pillow - and agglomerate - structures (Njuvcokka). They occure nowadays as more or less massive amphibolites or garnet - amphibolites and greenstones and can be interpreted as former submarine basalt-flows. They are accompanied by amphibolechlorite schists, supposedly tuffaceous in origin (WENNERVIRTA, 1968). Furthermore SKÅLVOLL (1972) reports rockmaterial composed of amphibole, chlorite and serpentine surely an altered ultrabasic volcanic. Interbedded in this section are some arenaceous layers, described as biotite - bearing metasandstones (BJØRLYKKE, 1982). Furter are associated one or even more horizons of iron-banded quartzites (banded iron-formation) and beds of graphite slates and - schists.

These banded iron-formations are of possibly exhalativ - sedimentary origin and occure in 8 to 15 m big horizons

mostly on top of marked basalt-flows (masses of amphibolites with underlain amphibolite-chlorite), from which they are divided by 5 to 20 cm thick seams of sulfides (composed out of pyrrhotite with minor amounts of pyrite and chalcopyrite). The formations show in general a wide mineralogy. Main components are quartz, carbonate and magnetite. In a lesser degree there appears garnet, pyroxen, biotite, grunerite and ferric tremolite and in addition hematite and Mn-oxides. By diamond drilling (TRØFTEN, 1957062) there is proved a distinct zoning, both in a horizontal and vertical extension, what is indicated by mostly slowly changes in mineral composition. Carbonate - facies banded iron-formation occurs for example at Njuv-cokka in a higher niveau as the magnetite enriched more quartzite variation. The pure silicate section, very often located at the footwall of the formations, are always overlain by "Skarnstein" (WENNERWIRTA, 1968), supposedly the silicate-facies of banded iron-formation.

As a rule the banded iron-formations are capped by graphite-rich pelites.

Higher up in the volcanic-sedimentary sequence there are found greater amounts of quartzites (with and without fuchsite), arkosic sandstones, micaschists and carbonates.

The uppermost part of the Karasjok-group consists mainly out of amphibolites (massive and banded, garnet-bearing or not) and hornblende gneisses, which are interlayered by small horizons of carbonate.

2.2.2.1 ECONOMIC GEOLOGY.

GOLD.

The Karasjok-district has been noted for many years for the occurrence of placer gold. Nearly all of the earlier papers available were restricted to these occurrences (DAHL, 1891, RENSCH, 1903). A good review of all is given by BJØRLYKKE (1966).

Most of the placer gold prospects are located in the southwest of Karasjok along the Bartajokka and Karasjokka (here only the streak between Baeivasgiedde and Raitejavri). From this are there are reported both, basic and ultrabasic volcanics, which belong to the bottom part of the Karasjok-group. Connected to are banded iron-formations. Another placer gold area is the Gorzzejåkka-/Anajåkka-field, lying in the far south of Karasjok close to the easterly border to Finland. This occurrence is arranged - after SKÅLVOLL (1972) - in the completion pile of the Karasjok-group.

There are three different types of placer gold occurrences

reported by BJØRLYKKE (1966). The first two ones are restricted to the old erosional river terraces, which often lie 6 - 8 m above the present river level. These occurrences are described as

1. preglacial placers which have not been affected by glacial erosion and
2. preglacial placers which are enclosed in glacial residues.

The third type is represented by postglacial gold concentrations in present river beds. This is only found at the "Sargejok-gullfelt".

The estimated total gold production of the Finnmarks-vidda is of the order of 40 kg. The extracted gold consisted mainly out of small plates of $\frac{1}{2}$ to 1 mm in diameter. No gold dust has been reported. Besides that there were found some nuggets, with up to 17 g in weight ("Sargejok-gullfelt").

Native gold has been found by RENSCH (1903) in quartzites and sandstones near Baeivasgiedde and Skiecamjokka. From Finland (Lappi-district) there have been reported gold-bearing pyrrhotite and siderite veins.

At last should be mentioned, that the highest gold-concentration of more than 2 g/m³ was found in the "Sargejok - gullfelt". This is located at the Sargejokka south of Baeivasgiedde.

IRON-ORE.

In 1956/57 a prospecting programme on magnetic iron-ore connected with the banded iron-formation was carried out at Soulomaras, Njuovcåkka and Gaessagielas. These activities included as well geophysical surveys as diamond-drilling. On the best looking mineralisation south of Njuovcokka there were drilled altogether 12 holes with a total meterage of 1100 m. The iron-content ranged between 22 - 27 % by a thickness of 10 to 15 m. No economic iron - enrichments have been proved (TRØFTEN, 1957/62, WENNERVIRTA, 1968).

SULFIDES.

A chalcopyrite occurrence, bearing some gold, in a gneis of dioritic composition was discovered by Sydvaranger A/S at Raitivarri in 1966. The exploration programme lasted for several years (a member of 10 were named by local persons).

Sulfidmalm A/S concentrated their activities on Cu - Ni - occurrences bounded to ultramafic volcanics, the same type of deposit they were looking for in the Pasvik-area (2.1.1). These activities were dropped in 1976.

Several chalcopyrite, pyrite, pyrrhotite mineralisations are described from metamorphosed mainly basic volcanics of the Caskias - Porsanger group, which is the northern lithological equivalence of the volcanic-sedimentary section of the Karasjok-group. The occurrences are divided into a stratiform type with a domination of pyrrhotite and a Cu-enriched brecciated vein-type. The stratabound sedimentary deposits consists of alternating bands of quartzitic and schistose rockmaterial with sulfide-rich seams. This section can be followed on the base of a distinct rusty colouring over a distance of several hundreds of meters along the strike. Its thickness vary from 10 to 20 m. The main sulfides reported are pyrrhotite and pyrite with lesser amounts of arsenopyrite (gold ?) (BUGGE, 1978). The brecciated vein-type shows a very inhomogeneous habit and develops mostly in the greenstones. The vein-material consists of quartz (carbonate is not reported) (TRØFTEN, 1957) and sulfides, mostly chalcopyrite with bornite and digenite. Typical are ore-shots near boundaries of greenstones.

All prospecting programmes in the last 50 years, which included geophysical surveys, diamond-drilling and pitting came to a negative result.

2.2.3 THE VEST-VIDDA.

A nearly complete description of the Vest-Vidda is given by HOLMES et al (1957). The results of further works, namely carried out by A. SOLLI are at the present time not available, though they are discussed already by BJØRLYKKE (1982). Furthermore there are found some regional studies mainly dealing with the Bidjovagge Cu - Au - deposit. Especially they led forwards to a better understanding of the tectonic structure of this area.

The rocks of the Vest-Vidda are metamorphosed in either very low greenschist (Caravarre region) or in amphibolite-facies.

The nowadays valid stratigraphy for the "Vest-Vidda" originates from OFTEDAHL (1974) Fig. 6.

As pointed out, the supracrustale rock-assemblage comprises out of three main groups. The bottom-part builds the "Masi-gruppen", which mainly is composed out of arenaceous sediments, here the Masi - konglomerate and the Masi-quartzite. This Masi-quartzite is well known especially from its significant amount of Cr-mica (Fuchsite). Right beyond this horizon there is found the "lowest" greenstone-series which is called the Gåldenvarrifformation (BJØRLYKKE, 1982).

Æra og alder	Stratigrafi
Post-karelsk	Yngre diabasganger.
(Sen-karelsk)	Invasjon av pegmatittgranitt på sprekker. Foldning, metamorfose, granittisering.
Karelsk	Caravarre-gruppen. Sandstein, dels grov og feltipatisk. Argillitt med karbonatiag. ? Kautokeino-konglomerat. Argillitter, tuffittiske leirskifer.
1800-1900	Caskias-gruppen. Grønnstein, dertil tuffiskifer, agglomerat, kvartskaratolys. intrusjoner av gabbro og ultrabasiske bergarter.
	Masi-gruppen. Masi kvartsitt, bl.a. med fuchssitt. Masi konglomerat. Grønnskifer-fm. (?) Masi-Miron. Basal-arkose (Karassjøkk, 100 m v. Skoganvarre). Skoganvarre kgl. Basalkgl. (og breksje).
Pre-samidisk, Ca. 2800	Migmatitt-gneiser med rester av amfibolitt, etc.

Fig. 6: Stratigraphic of the Vest-Vidda (OPTEDAHL, 1974).

The following "Caskias-group" comprises out of masses of metabasalts (amphibolites) with local obvious pillow- and agglomerate-structures, beds of tuffites, graphite rich pelitic sediments and the often described and discussed Albite-felsite from the Bidjovagge-mine, a rock, which supposedly represents a felsic volcanic tuft (leptite) (HOLLANDER, 1979).

This rockgroup with predominating basic volcanics is capped by the "Caravarre-group", a more arenaceous and argillaceous unit, which carries minor amount of the tuffaceous pelites.

2.2.3.1 ECONOMIC GEOLOGY.

In the opposite to the Karassjøkk-group no placer gold occurrences are reported from the Vest-Vidda. Several Cu, Zn, Pb enrichments are pointed out by HOLMSEN et al. (1957). These occur as syngenetic mineralisations in graphite-rich sediments (either untouched by tectonics or brecciated) (up to 0,5 % Cu. (GJERSVIK 1957)) or are bound as a epigenetic type of deposition to metasomatic alterations or to vein like structures. All of them are restricted to the Caskias-formation.

The one and yet only reported deposit of commercial size is the Bidjovagge-mine, located in the most westerly part of the Vest-Vidda. Mining operations here started in 1970, after several years of prospecting and exploration. "Due to the falling prices of copper" the production was already closed down in the middle of 1975 (HOLLANDER, 1979).

The Cu - Au mineralisations at Bidjovagge occur in the Casikas-Stuorajavre group, which consists in that part out of either greenstones or greenschists, than carbonaceous schists, the albite-felsite and further more out of intrusive amphibolites and metadiabases. The sulfides are mainly localized to the albite-felsite and the carbonaceous schists, which in places show a significant brecciation (matrix out of chalcopyrite). The heavy sulfide concentrations are found in more or less lenseshaped bodies which are following the main tectonic structures. They represent remobilisations from syngenetic, stratabound mineralisations.

The ore-minerals are chalcopyrite, pyrite and pyrrhotite. Galena, sphalerite and magnetite are restricted to fissuring. The reported gold is mostly connected with chalcopyrite and pyrite, or, by lesser amounts of sulfides, to Bi-, Ni-, Fe-tellurides (HAGEN 1981/82).

The Cu-content varies between 1,8 and 2,1 %. The Au-content shows a great variation, but the average grade is about 1,2 ppm. (HAGEN, 1982), 0,5 ppm (HOLLANDER, 1979).

2.3 THE ALTA-KVENNANGEN "TECTONIC-WINDOW".

The Alta-Kvennangen window is used in fact, of the very good outcrop-situation, as a reference-district, by, for example, interpretations of the precambrian rock-unit of the Finnmarksvidda.

Most of the papers available are dealing with the Cu-mineralisations, found at Raipas and Kåfjord and further in the Bergmark-district. From ZWAAN and GAUTIER (1980) there exist a geological map (1 : 50000) and a detailed description of the Alta - Gargia region, the east part of the precambrian tectonic window.

The precambrian rocks of this area are combined to the Raipas-group, which consists, following the new subdivision, out of four sections, known as the "Kvenvik-", "Storviknes-", "Skoaddivarri-" and the "Luovusvarriformation". (Fig. 7).

This group is overlain by the senprecambrian "Bossekop-" and the Precambrian "Borrasformation".

Fig. 7:

Stratigraphie of the Alta-Kvennangen tectonic window

Raipas-group	Luovusvarri-formation (dolomite with sandstone)
	Skoaddivarri-formation (sandstone with metapelites)
	Storviknes-formation (carbonates and metapelites)
	Kvenvik-formation (metagabbro, metabasalt, tuffs, metapelites, carbonates).

The Kvenvik-formation encloses a more or less volcanic sequence, mainly built up out of metagabbros and metabasalts. They are interlayered by tuffs and tuffites which gradually increase in amount up section. This pure volcanic pile is in his upper parts more and more intermixed by pelitic and carbonaceous sediments.

The following Storviknes-formation carries an alternating bedding of carbonates and pelites.

Massive to slightly bedded sandstone, which is interbedded by some horizons of pelitic material, predominates in the Skuaddivarri-formation.

The Luovusvarri-formation shows a significant alternation of dolomites and sandstones.

For the better understanding of the lithology of the Raipas-group, there are given, in the following, some simplified profiles published in different NGU-reports and by ZWAAN a. GAUTIER (1980). (Fig. 8 - 10).

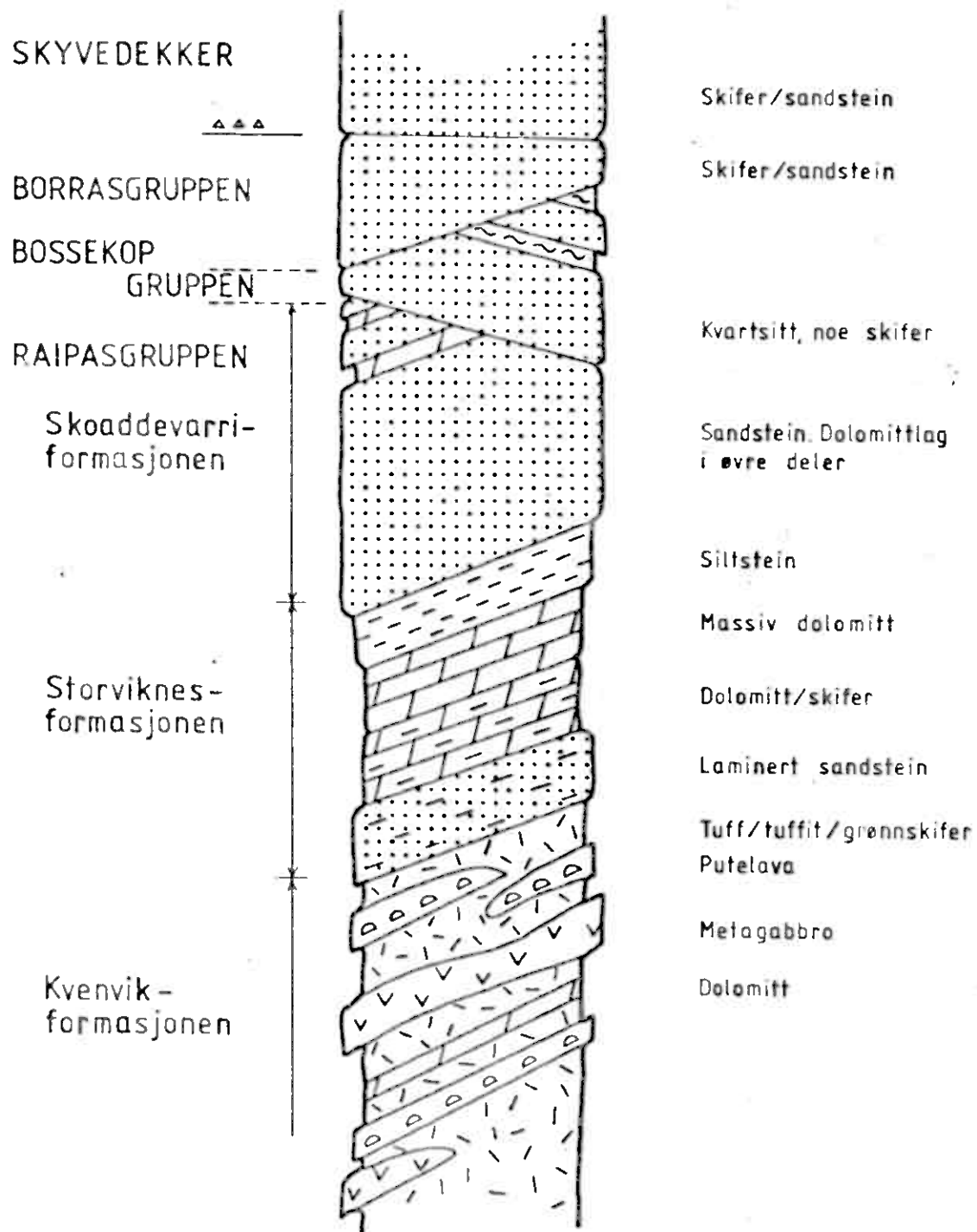


Fig. 8. Simplified stratigraphy of the Alta - Kvænangen window (VIK, 1979).

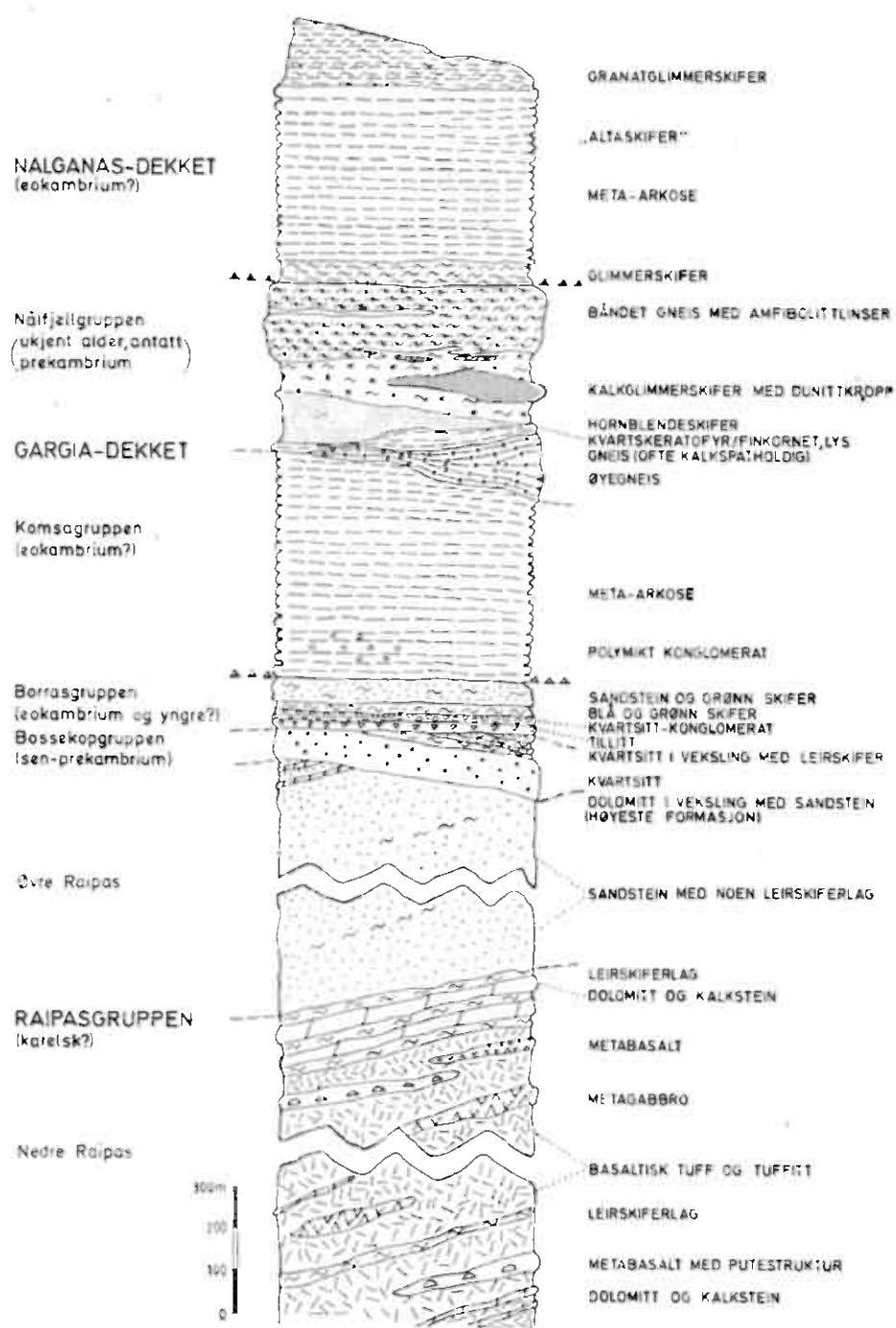


Fig. 9. Tektonostratigraphic column (map-sheet Alta). Vertical scale is approximate. (ZWAAN og GAURIER, 1980).

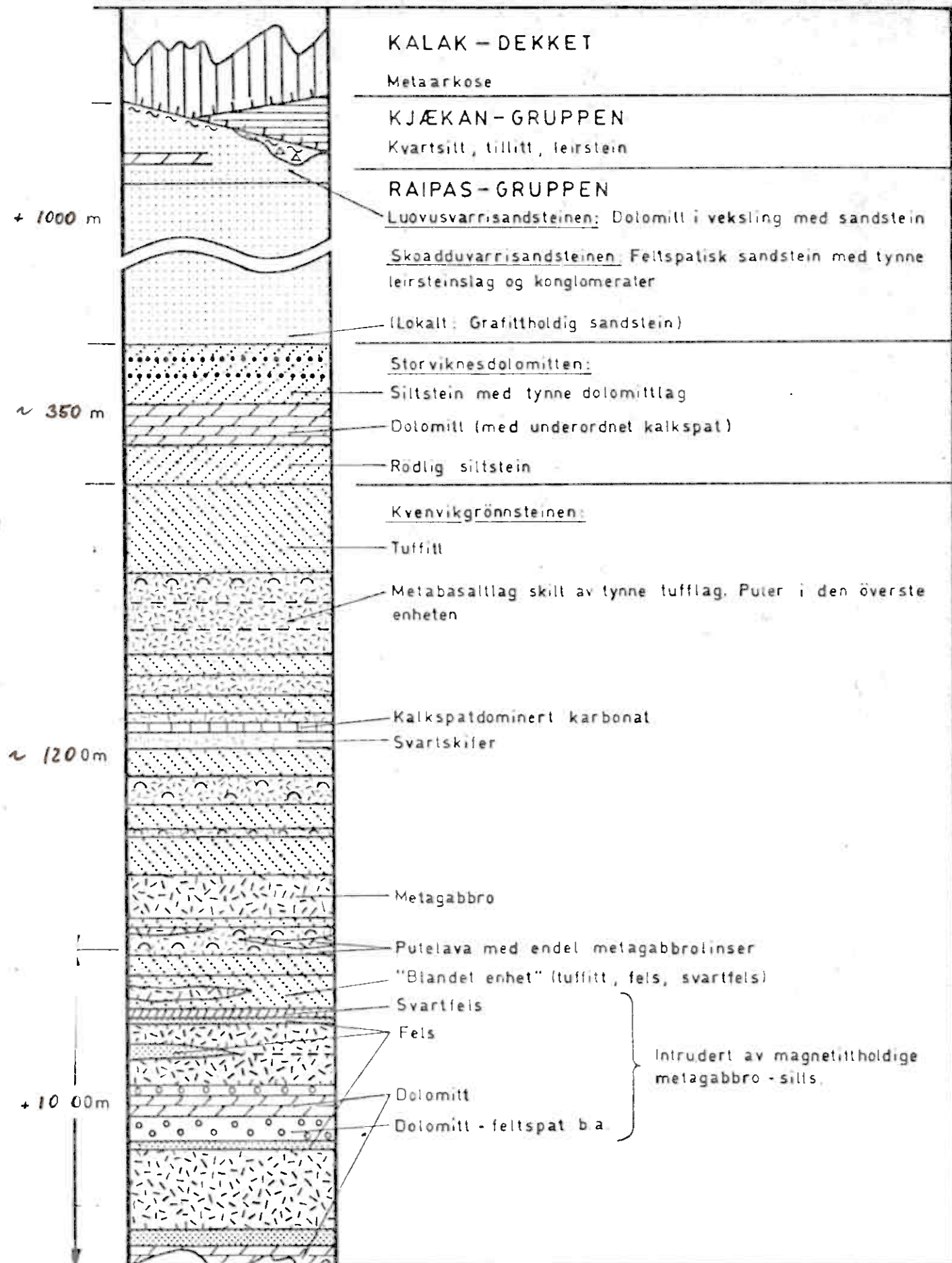


Fig. 10. Simplified stratigraphy of the Alta - Kvanangen window (VIK, 1981).

2.3.1 ECONOMIC GEOLOGY.

The Alta-Kvennangen window shows a great number of Cu-mineralisations and - deposits, that have been extensively explored or even have been mined for a longer period. The most important Cu-occurences were Kåfjord and Raipas, both located in the Alta-Gargia district, and the "Bergmark-området" in the western part of this window.

There are found two main types of deposits (VIK 1979/80/81), both located in the Kvenvikformation of the Raipas-group. The first, dessiminated type, is connected to albite-felsite and graphite-schists of a greenstone sequence. This appearance makes it comparable with the Cu-mineralisation at Bidjovagge

The second type represents vein-deposits. There are described either quartz - carbonate - or siderite - veins, which carry chalcopyrite and pyrite in bigger and smaller lumps. These veins occur mainly in altered metagabbros (VIK, 1981) greenstones (BJØRLYKKE, 1982). This group includes too the Raipas-copper-mine, a brecciated vein-type deposit, but located in dolomites and metapelites of the "Storvikformation".

2.4 THE KOMAGFJORD-WINDOW.

The general geology of the Komagfjord-window is described either by REITAN (1963) or by PHARAOH (1980) (see BJØRLYKKE, 1982).

The supercrustale series of karalish age is divided into the "Holmvanngruppen", the "Saltvanngruppen" and the "Nusserengruppen". Both the first and the last one, enclose basic and ultrabasic volcanics (metabasalt, tuffs, tuffites) and in minor amounts calcareous sediments, quartzites and carbonaceous layers. The "Saltvannsgroup", located in between these volcanic-sedimentary sections, comprises out of arkosic sandstones and polymikt conglomerates.

2.4.1 ECONOMIC GEOLOGY.

There are known a lot of copper-iron sulfide deposits from the Kvennangen-window. These mineralisations are divided into a more Cu-rich dessiminated type, found for example in the arkosic sandstones of the Saltvannsgroup at Ulveryggen (Repparfjord) and a more pyrite-rich paragenesis, which is represented by small vein-fillings especially occurring in the greenstones and quartzites of the Holmvann- and Nusserengroup. This type of deposit has been mined at Bratthammeren, Porsa and Bachkes.

2.5 CORRELATIONS BETWEEN THE PRECAMBRIAN AREAS OF THE FINNMARK-DISTRICT.

Most of the correlations between the supercrustale series of precambrian age, found in the Finnmark-district, are made for only that reason, to clear up the geology and lithostratigraphy of the highly covered areas, especially these of the Finnmarks-vidda. Further more these combinations can also help with prospecting and exploration programmes. These correlations were made with the use of marker horizons and characteristic rock-groups and several interpretations may exist.

The "Masigruppen" finds, and there is no doubt, its pendant in the arenaceous bottom part of the Karasjok-group. Complicated is the situation of the Gåldenvarrifformation. Equal material has not been found in the basis section on the east side of the gneis-dome. This unit may be correlated with the Holmvannsgroup of the Komagfjord tectonic window. The following Caskejasformation (Vest-Vidda) is comparable with the volcanic-sedimentary section of the Karasjok-group, the Nusserengroup of the Komagfjordarea, the Kvenvikformation of the Alta - Kvenangen - window and the Skøgsfossgreenstone of the Petsamogroup of the east Finnmark-district. The arenaceous sediments of the Caravarrifformation (Vest-Vidda) supposedly find their northern extension in the Skuadduvarrisandstone of the Alta - Kvenangen area. Further it may be equivalent with the Saltvannsgroup (Komagfjord window), but also with the Masi-quartzite of the Vest-Vidda.

A main problem is the stratigraphic position of the Iskuras quartzite (Karasjok-district), which can be, based on the mineralogy, combined with the Masi-quartzite in the west. This is done as well by OFTEDAHL (1974) as by BJØRLYKKE (1982). WENNERVIRTA (1969) tries no real correlation. He comes only to the result, that this block of rock must belong to his sedimentary-volcanic complex, what includes the arenaceous basis and the volcanic-sedimentary section, without the upper amphibolited and hornblendites (2.2.2).

From the economic point of view, it it to stress out, that placer gold occurrences are restricted to the eastern side of the Finnmark-vidda. It is conspicuous too, that no banded iron-formations are reported from other precambrian outcrop-areas. Furthermore no gold-quartz veins are found at all within the norwegian part.

The Cu-mineralisation and - deposits are restricted, with only some exceptions, to the volcanic-sedimentary rockgroup at the basis of the precambrian supercrustale series. No

real massive stratiform sulfide-deposit is known from the whole district. On the opposite, numerous vein-type or brecciated vein-type deposits with sometimes high Cu-values ($> 10\%$ (VIK, 1980/81)) are described from the precambrian windows and also (one) from the north-part (Porsanger) of the Karasjok greenstone-belt. Stratiform disseminated types in albite-felsites (possibly of volcanic origin) and carbonaceous schists and greenstones have been mined at Bidjovagge (here secondary enriched, tectonically controlled) and in the Bergmark-district. Equal mineralisations have been reported from North-Sweden and North-Finland (BJØRLYKKE, 1982).

3. GEOLOGY OF THE KARASJOK-DISTRICT.

The geology of the Karasjok-district is mainly described by WENNER/IRTA (1969) and SKÅLVOLL (1972). From the last one originates too the nowadays valid geological-map (scale 1 : 250 000) of this area. Further informations are available by different NGU-rapports, which in the majority are dealing with the prospecting on iron-ore connected to the banded iron-formation (2.2.2.1). Several other papers, such from BJØRLYKKE (1966) and REUSCH (1903) are more or less restricted to the placer gold occurrences in this area (2.2.2.1).

Both, stratigraphy and the main geology of this area are not really cleared up yet. But a model of the lithology of the precambrian rockgroup is already in operation (2.2.2).

The geological map draws a very diffuse picture of the Karasjok district. The whole series of supercrustale rocks seems to be divided in several small blocks, which have been rotated against each other. This is shurely on one hand due to a lack of information (low degree of outcrops), to the other due to a certain high degree of deformation, which is represented by isoclinal folding, obvious, both, in a smaller and a greater scale and in an extreme thrust faulting.

However, even from the very little information available, it is possible to draw out belts of specific rock appearance.

The basis and ultrabasis volcanics for example, classified by SKÅLVOLL (1972) as metapicrites, together with the banded iron-formations are spread out over a crescent shaped area, which extends from Vuollosjavri in the south to Bakkelvarri in the north. (Fig. 4). This area lies very close to the border of the gneis-dome, but east from Baktajåkka and Karasjåkka. In this belt the metavolcanics are accompanied by the mica schists and quartz-mica schists of the arenaceous bottom-part. Further to the east there follows the large district of the hornblende schists and the amphibolites. A belt of quartzites (with Fuchsité) is extending from Bieskenjarga in the west over Jaegilvarri to the east side of Karasjok.

The strike of the horizons varies between 0° and 360° (400°). Locally there is found a very distinct E - W trend, here especially in the metapicrites at Njuocäkä and Gaessagielas. The dip is in all directions, but clearly predominates towards the east. The dipangles are normally 30 to 45° , sometimes higher, at 60° , or even more.

Tectonical studies from the Karasjok-district have not really been carried out yet. No foldaxis or faults are included in the geological map from SKÄLVOLL (1972). A structural sketch with a brief explanation is given by WENNERWIRTA (1969). This illustration shows foldaxis, which are mostly N - S trending, here in Iskuras-district (south of Karasjok) and strict E - W orientated in the far south at Baeivasgiedde. Fractures occur as flat lying uplifts strikeing ca. NE - SW. The direction of movement or even the age are not discussed.

4. DIAMOND-DRILLING PROGRAMME 1982.

The diamond-drilling program in the Karasjok-project area lasted at least three month, from the 18th of June to the 16th of September. On ground of a mutual agreement, there was a two weeks break from the 13th to the 27th of July.

The works were carried out by the norwegian drill-company TERRANOR A/S. Drilling-operations were undertaken in two shifts. The equipment consisted out of a rig-slade, a transport-slade and muskeg (Bombardier, Can.). The drill-rig was a fully automated hydraulic core drill of the type DBH 700 from Diamond Boart, Belgium, with wireline. Normal coring was undertaken by 46,1 mm (1.815') (O.D.) steel-rocks of the metric system and diamond-bits with impregnated diamonds by different hardnesses and diamond-qualities. The normale casing was done by 56,1 mm (2.209') and 66,1 mm (2.602') rocks. In only half of the cases, there was used a 76,1 mm (2.996') dimension.

The drilling operations were concentrated in two main areas. (Fig. 11). The first is the tract between Karasjok and Bieskenjarga, which encloses the drill-targets on Madijavri (1 hole), Daktejäkä (2 holes), Sammelcäkä (1 hole), Gaetkevarri (2 holes) and Aslat-Pier-Varri (1 hole). These locations are connected to good supply gravel roads. The second drill-area is lying in the far southwest at Baeivasgiedde, about 35 km (linear distance) from Karasjok. Drilling was done here at Dabmutuokkadas (3 holes) and Gaessaroarvi (1 hole). This place can be reached only either by tractor or heavy cross country cars on swampy dirt roads or by helicopter. No supply is possible by water-plane. The transport of the drill-equipment to this operation area was undertaken by muskeg.

There were drilled 11 holes (13 with stucked ones: DAB-82-01/04) with a total meterage of 1.337,35 m. The drill-targets were

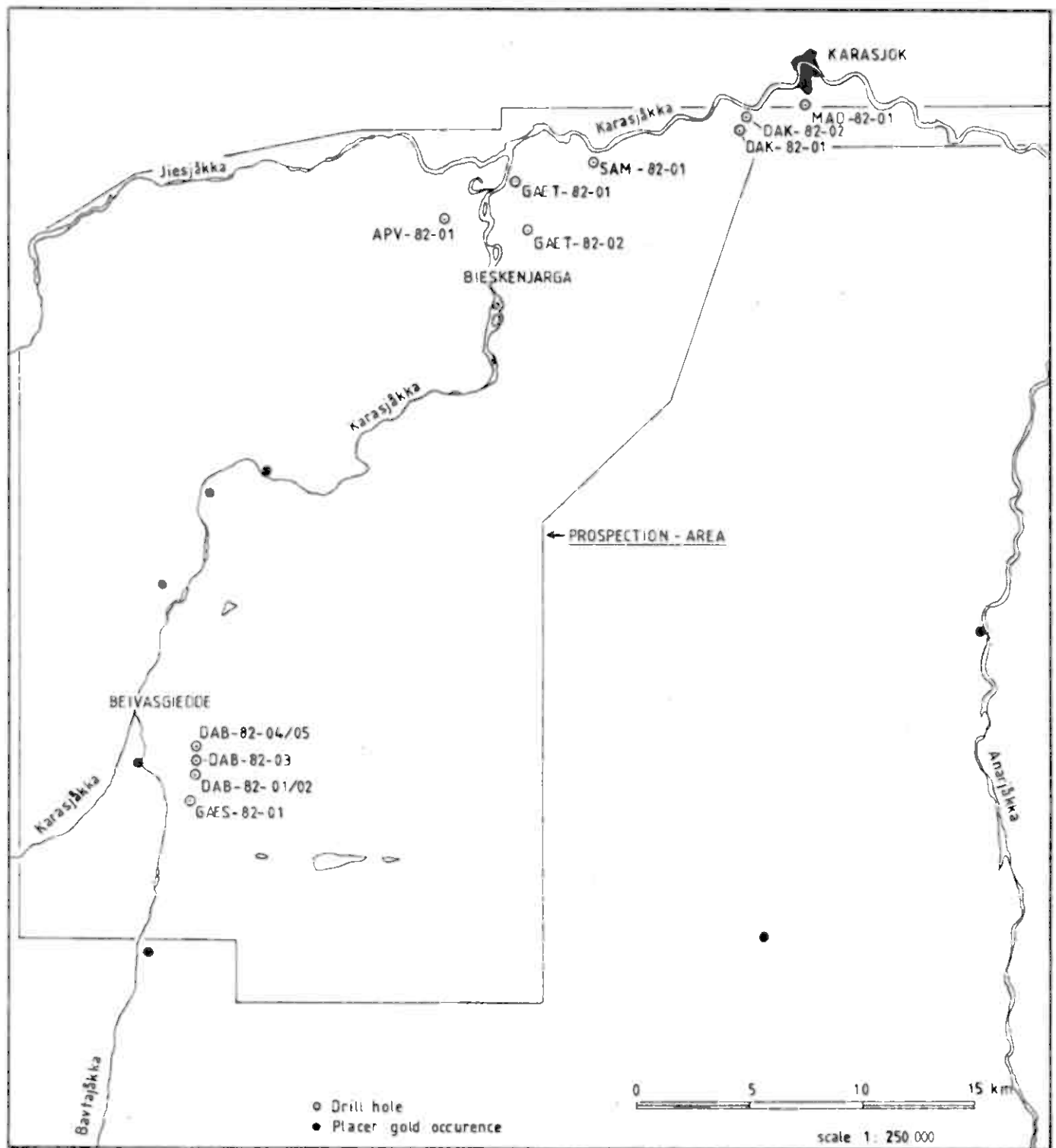


Fig. 11. Drill hole location map, Karasjok-prospect.

good corresponding EM- and Mag.-anomalies of ground geophysical surveys. Some conductors could be eliminated before as graphite horizons by former fieldobservations. The drill-angle was -45° , that in fact of the mostly low ($30 - 45^{\circ}$) dipping of the supercrustale horizons. The direction of drilling was mostly aligned with the geophysical profiles.

4.1 DIAMOND DRILL HOLE DESCRIPTION.

The logs of the single drill holes are arranged at the end of this report. Furthermore, from every drill hole there are columnar profiles available. The illustrations include too the estimated total sulfide contents of the different rock-types, the sample-locations together with their chemical results and sketches of the EM- and Mag.-anomalies of the target.

MAD-82-01

location: Madijavri-grid, 1 km southwest of Karasjok
L 1 + 00 N / 0 + 00
drilling: -45° , grid west (330°)
overburden: 3,40 m
depth: 75,00 m
further points of interest: started : 19.06.82 (d)
finished : 21.06.82 (d)
cementation at 35,30 m.
samples: 4, covering together 6 m.

This drill hole intersected three distinct rock-units. These are from the top downwards a metagabbro (0 - 46 m), a graphite sequense (46 - 57 m) and a series of argillaceous metasediments with interlayered basis volcanics (57 - 75 m).

The metagabbro (amphibolite) is a massive, locally - here especially in the contamination zone to the metasediments - slightly schistose, greenish black rock, which occurs as well in a medium (0,2 - 0,5 mm) as a coarse grained (0,5 - 1,0 mm) variety. The plagioklas-content may rise to about 60 % - this gradual - but is mostly very very low. A negligible titanomagnetite - impregnation is recognized between 22 and 23 m. Sulfides, here mostly pyrite accompanied sometimes by pyrrhotite, are present sporadically. At about 40 m there occurs a massive sulfide seam (pyrrhotite overestimates pyrite), which shows very irregular walls to the surrounding foliated and disturbed metagabbro. This mineralisation shows no characteristics with a real vein-type deposition. It is more to think of a lense shaped remobilisation. The contact between the metagabbro and the metasediments are clearly discordant.

The graphite sequence, of 11 m thickness, is made up out of a more or less massive, blackish coloured graphite pelite, which possesses some bands of biotite-phyllite. To the irregular fissuring, there are bound quartz (remobilized, autochthon) and the only visible sulfides (pyrrhotite, pyrite).

In the lowest sequence there predominates a dark grey, very well schistose garnet phyllite (garnets reach locally 10 Vol. - % by an average grain size of 0,2 mm), which is interbedded by a green to light green biotite-chlorite-amphibolite, perhaps a basic tuff to tuffite.

The sedimentary pile of this drill hole shows a clear domination in pelitic sediments. The amount of intermixed volcanics is very low.

The EM-conductor is represented by the graphite sequence.

DAK-82-01.

location: Daktejåkka-grid, 4 km west of Karasjok.

9 + 00 S / 1 + 25 Ø

drilling: - 45°, grid west (340°)

overburden: 17,00 m

depth: 91,60 m

further points of interest: started : 23.06.82 (n)

finished: 25.06.82 (n)

samples: 13, covering together 27 m.

From the lithology this drill hole is to divide into an upper section mainly made up out of quartz-feldspar-biotite-amphibole gneis (17,00 - 57,82 m), a middle one, named graphite sequence (57,82 - 84,42 m) and a last one, consisting out of metagabbro (84,42 - 91,60 m).

The first section shows a high contingent of metamorphosed arenaceous sediments occurring as quartzites, metasilicstones/sandstones and the quartz-feldspar-biotite-amphibole gneis, a may be in situ recrystallized arkose or greywacke (WINDLEY, 1977). This gneis is for the first described as a rock of sedimentary origin, though it is not clear yet, of what kind of parent rock it originates.

The following graphite-rich zone shows a distinct alternating bedding of a massive to well laminated, sometimes distorted graphite slate with the equal arenaceous metasediments of

the more upper section. The contacts between these pelitic and argillitic/arenaceous beds are always extreme sharp.

The sulphides as pyrite and pyrrhotite (no chalcopyrite has been observed) displays a clear rockpreference. Pyrite is the only sulfide occurring in the quartzites. It is hear filling cracks and veins, what let think of a secondary enrichment (5 to 7 Vol.-%). In the graphite slates there is mineralized as well pyrrhotite (major part) as pyrite (1 - 2 Vol.-%).

The EM-conductor is the graphitic sequence.

DAB-82-02.

location: Daktejåkka-grid, 4 km west of Karasjok.
3 + 00 N / 0 + 50 V
drilling: - 45⁰, grid west (340⁰)
overburden: 7,60 m
depth: 82,75 m
further points of interest-started: 25.06.82 (d)
finished: 26.06.82 (d)
samples: 4, covering together 7 m.

The main part of this hole is made up out of a amphibole/hornblende schist, supposedly the same kind of rock SKÅLVOLL (1972) already described from this area. This rock occurs in several varieties, here, with or without biotite and garnets (0,5 - 1,0 mm), or markedly enriched in quartz or graphite. It is possibly of sedimentary origin. This amphibolite is further down interlayered by thinner (20 cm) and thicker (2 m) bands of graphite slate and metasandstone/-siltstone.

This series is intruded by a gabbro. The contamination zone between the metasediments and this intrusive rock is characterized by an alternating of bands of highly reworked graphite schist with a very schistose metagabbro.

Sulfide mineralisation is found in metasiltstones, graphite horizons and distorted sections of the metagabbro. The values in general do not pass 2 Vol.-%. Pyrite is the most occurring sulfide.

The EM-conductor is represented by the graphite horizons.

SAM-82-01.

location: Sammelcåkka, 11 km west from Karasjok.
3 + 00 S / 1 + 25 Ø
drilling: - 45°, grid west (310°)
overburden: 6,50 m
depth: 124,00 m
further points of interest: startet : 29.06.82 (n)
finished: 01.07.82 (n)
samples: 6, covering together 10 m.

The drill hole shows a very clear predominance of metamorphosed arenaceous and argillitic sediments. Products of volcanic activities are only obvious in one section. Here they even exceed the accompanying sediments.

The revealed rockpile presents four significant rockunits. These are the arkosic sandstone (6,50 - 36,68 m), the upper garnet schist (36,68 - 56,70 m), the volcanic-sedimentary section (56,70 - 84,40 m) and the lower garnet schist (84,40 - 124,00 m). The first two ones and the last one are very homogeneous in character. The most important part of this drill hole is the volcanic-sedimentary interval, which consists out of an alternating bedding of graphite slates, laminated intervals with graphite schists, phyllites, biotite schists and metasiltstones, than quartzites and basic to ultrabasic tuffs and tuffites. Further with are intermediate volcanics. The contact between the different beds or horizons are always sharp. This section carries the highest sulfide mineralisation which can reach in places 20 Vol.-%. The most important sulfide is pyrrhotite. Pyrite occurs in only minor amounts.

High magnetite concentrations accompanied by idiomorphic pyrite (2 Vol - %) are found in the arkosic sandstone. The garnet schist are always sulfide - or oxide - free.

The EM-anomaly indicates surely the graphite and the sulfide of the volcanic-sedimentary section. The weak and wide Mag. should be referred to the magnetite found in the arkosic sandstone and the higher pyrrhotite concentration in the volcanic-sedimentary section.

GET-82-01.

location: Gaetkevarri, 14 km west from Karasjok.
3 + 00 N / 0 + 75 Ø.
drilling: - 45°, grid west (304°).

overburden: 6,00 m
depth: 137,80 m
further point of interest: started: 02.07.82 (n)
finished: 04.07.82 (d)
samples: 18, covering together 28 m.

The drill hole intersected a very structured sedimentary - volcanic pile. The sediments consists mainly out of pelitic rocks, either metamorphosed to garnet-amphibole schists or, by considerable amount of carbon, to graphite slates. Further more there are occurring carbonate beds (the only drilled ones) and some horizons of quartzite. The volcanic material is of basic and supposedly of intermediate to felic composition and represents tuffs and tuffites. Some greenstones are surely metamorphosed basalt-flows. They build up only some thinner bands.

The division of this sedimentary-volcanic pile into a metagabbro section (6,00 - 26,00 m), a graphitic interval (26,00 - 80,70 m), a unit of garnet - amphibole schists (80,70 - 94,70 m), a volcanic sequence (94,70 - 117,30 m), a carbonate horizon (117,30 - 132,80 m) and a massive quartzite occurrence (132,80 - 137,80 m) is surely practicable.

Sulfidmineralisation is restricted to the graphite slates and the basic volcanics. The amount is normally very low and varies between 1 and 2 Vol - %. Pyrrhotite is the most common sulfide. It is accompanied by some pyrite. Chalcopryrite is in the opposite only mineralized in the graphite slates.

The EM-conductor is represented by the graphite slates.

GAT - 82 - 02..

location: Gaetkevarri, 14 km west from Karasjok.
18 + 00 S / 9 + 75 Ø
drilling: - 45°, grid west (304°).
overburden: 6,05 m
depth: 157,40 m
further points of interest : started: 06.07.82 (n)
finished: 08.07.82 (d)
samples: 31, covering together 54 m.

The top group of this drill hole consists of two thick graphite horizons, which are divided by a 11 m thick volcanic sequence. This divisionpart shows in the majority biotite-

carbonates, which have been interpreted as intermediate tuffs or tuffites. The whole group extends from the overburden to 85,40 m, where it stands in a contact to a supposedly sill-like intruded metagabbro. This shows a distinct fractionation from a Fe, Mg-rich bottom part, now described as a plagioklas - amphibolite, to a Ca-rich hanging portion, consisting of quartz - feldspar - amphibole - biotite gneisses or schists. They carry a significant titanomagnetic - mineralisation.

The lower sedimentary interval - from 111,90 to 157,40 m - is mainly made up out of an alternating bedding of laminated biotite schists and well bedded graphitic phyllites. In this group the content of tuffaceous material may be important, especially that in the laminated intervals. In this lower sedimentary section there are further found bands of very homogeneous biotite phyllites.

The sulfide-mineralisation, as pyrrhotite, pyrite, chalcopryite and spahlerite, is restricted to the not intrusive rockvarieties. The content is reaching sometimes 10 Vol.-%, but varies normally around 1 and 2 Vol.-%. The highest chalcopryite values are found in the upper graphitic section, where there also appearse sphalerite. Further down in the hole pyrrhotite and pyrite are nearly the only sulfides.

Both, graphite slates and the mica-carbonates show no significant differences in their sulfide-charge.

The EM-conductor is represented by the graphitic units.

APV-82-01.

location: Aslat-Pier-Varri, 18 km weest from Karasjok.
drilling: - 45⁰, grid west (324⁰).
overburden: 4,40 m
depth: 86,54 m.
further points of interest: startet : 28.07.82 (d)
finished: 29.07.82 (n)
samples: -

Intersected is a single basalt-flow, now occuring as a more ore less massive greensone. This is capped by a volcanic-sedimentary sequence, build up out of graphitic slates and basic - to ultra basic tuffs and tuffites. Further with are, but in minor amount, intermediate volcanics. This volcanic rockgroup is intruded by a gabbro, occuring as a plagioklas -amphibolite, which carries very locally some garnets.

Sulfide mineralisation is found only in the volcanic - sedimentary section. The amounts do not pass 2 Vol.-%. Pyrrhotite is the main phase.

The EM-conductor is represented by the graphitic material.

DAB-82-01.

location : Dabmutsuokkadas, 35 km. south-west from Karasjok.
L 3 + 00 S / 2 + 75 Ø
drilling : - 45°, grid west (250°)
overburden : 6,75 m
depth : 55,60 m
further points of interest: started : 09.08.82 (d)
finished: 11.08.82 (d)
stucked
samples : 15, covering together 31 m.

A general description of this stucked drill-hole is included in the explanations for DAB-82-03.

DAB-82-02.

location : Dabmutsuokkadas, 35 km. south west from Karasjok.
L 3 + 00 S / 2 + 85 Ø
drilling : - 45°, grid west (250°)
overburden : 10,25 m
depth : 121,90 m
further points of interest: started 12.08.82 (n)
finished 15.08.82 (d)
samples : 47, covering together 93,00 m

The drill hole shows a typical volcanic cycle consisting out of basic to ultrabasic volcanics with intercalated banded iron-formations. The amount of sedimentary components is very low.

The series starts at the bottom with a massive basaltiflow occuring as amphibolites or greenschists and greenstones. The following volcanic-sedimentary interval shows an alternating bedding of basic to ultrabasic volcanics (supposedly tuffs), described as talk-chlorite schists, chlorite-amphibolite schists or chlorite-biotite-amphibolite schists, with graphite-felsite breccias. The contacts between each layer are mostly sharp and furthermore sometimes distorted. Some thicker horizons are

looking very knead, what is obvious by either small scale zick-zack folding or brecciation or even mylonitisation.

The onresting banded iron-formation consists out of two main horizons, which are devided from each other by beds of graphite-felsite breccia and basic tuffs. The banded iron-formations shows only silicate or oxide facies. Interlayered are bands of cummingtonite/grunerite, which may carry significant amounts of idiomorphic garnets.

The uppermost volcanic-sedimentary section has the same lithology like the lower volcanic-sedimentary interval. But there exists a slowly incoming of argillaceous and arenaceous material up section, what is visuable by the occurence of beds of sandy metapelites.

This drill hole, together with the stucked one of DAB-82-01, shows the highest sulfide content - up to 60 vol.-% - this drilling programme has indicated. The most common sulfide is pyrrhotite, which is accompanied by lesser amounts of pyrite. Chalcopyrite is very rare.

The highest sulfide content is found in the graphite-felsite breccias, where pyrrhotite and pyrite are locally the only matrix. Furthermore concentrations of about 10 - 15 vol.-% occure also in basic to ultrabasic volcanics. But here predominates a dessiminated type of mineralisations. The banded iron-formations carry lower degreese of sulfides (1 to 5 vol.-%), while the basalt-flows normaly are barren.

Magnetite occures only in the banded iron-formations and shows a distinct preference to silicate-rich rock-types.

There are several indications, which lead foreward to the assumption, that this drill hole is located in the very nearea of a thrustfault. There is first the anomalous high distortion, which grades locally in a distinct mylonitisation and second the results from the ground geophysical survey, which point out a very diffuse structure especially for the area of the drill-target. Further south all anomalies are suddenly cut off.

The EM-conductor is represented by the graphite horizons and the high sulfide mineralisations. The Mag. can be explained by the magnetite and pyrrhotite mineralisations.

DAB-82-03.

location : Dabmutsuokkadas, 35 km south west from Karasjok.

L 4 + 50 N/ 6 + 00 Ø.

Drilled is a banded iron-formation with silicate facies. This horizon is to correlate with the first "banded - quartzite" out off drill hole DAB-82-05.

DAB-82-05.

location : Dabmutsuokkadas - north, 35 km. south-west from Karasjok.

L 1 + 50 N / 7 + 40 Ø.

drilling : - 45, grid west (255°)

overburden : 33,75 m

depth : 114,51 m

further points of interest: startet 26.08.82 (n)
finished 30.08.82 (n)
cementation at 35,90 m

samples : 16, covering together 29 m.

The drill hole shows in equation to DAB-82-02 a very typical volcanic cycle. This starts at the base with a basalt-flow, which is here interlayered by some basic to ultrabasic tuffs. Immediately on that follows a series of three banded iron-formations in silicate facies. As division-horizons between them appears a rock-assemblage, made out of basic to ultrabasic tuffs and graphite-felsite breccias. Further with, is one thin bed of a graphite-bearing siltstone. This section is capped by a very well structured rockpile, consisting out of an alternating bedding of basalt-flows, basic/ultrabasic tuffs, thin bands of banded iron-formations and some arenaceous metasediments.

Highest sulfide-concentrations, of 10 Vol-%, are locally found in the banded iron-formations. Amounts of 5 to 7 Vol.-% are reached in the graphite-felsite breccias. The most common sulfide is pyrrhotite.

Magnetite is restricted to the banded iron-formation.

Responsible for the steep Mag. is the high magnetite-concentration in the banded iron-formation. For the distinct EM-anomaly, there is no real conductor available. That is shurely, why this drill hole was not directly aligned on the geo-physical profile.

GÆS-82-01.

location : Gæssaroavvi, 36 km. south-west from Karasjok.

L 6 + 00 S / 0 + 75 Ø

drilling : - 45°, grid west (310°)
overburden : 9,75 m
depth : 137,00 m
further points of interest: startet 01.09.82 (n)
finished 12.09.82 (d)
cementation at 33,55 m
waiting for rods (3 days)
repairing of the rotation-
motor (3 days).
samples : 21, covering together 45 m.

Intersected with this drill hole is a section, formed out of mainly volcanics. The most characteristing parts are two thick basalt-flows, situated at the bottom and at the top of the hole. These more or less homogeneous flows are divided from each other by a greywacke interval, which is occuring on the top of the lower flow and a volcanic section, made up out of minor basalt-flows, basic tuffs and banded iron-formations (silicate-facies).

Sulfide-mineralisation is restricted to the banded iron-formation (1 to 2 Vol.-%) and to the greywacke interval (mainly 1 Vol.-%).

Magnetite occures in places in the banded iron-formation.

The geophysical anomaly is due to the pyrrhotite and magnetite enrichments and further due to a distinctiv graphite content of the greywacke.

4.2 SUMMARY AND CONCLUSION OF THE DIAMOND DRILLING PROGRAMME.

The diamond drilling programme turned out for the present no attrictive gold,gold-sulfide or sulfide mineralisation. All of the dilled conductors were graphite-rich horizons, occuring either as graphite slates or schists, which carry only unimportant amounts of dessiminated pyrrhotite, pyrite and chalcopyrite, or graphite-felsite breccias, with locally higher sulfide mineralisation. Further-more, dessiminated sulfide is found in some quartzites, tuffs or tuffites and the banded iron-formations.

In general, the most frequent sulfide occuring is pyrrhotite, what is often accompanied by pyrite. Chalcopyrite is very rare. The estimated total sulfide contents of mineralized rocks vary normally between 1 and 2 Vol.-%. But they reach locally 5 Vol.-%, or can even grade up, in very rare cases, to 60 or 100 Vol.-%. The best mineralisation is found in the drill holes DAB-82-01/02.

The diamond drill holes are one of the best information available about the lithology from the Karasjok greenstone-belt.

By the holes DAB-82-01/02 it is shown, that correlations even between nearby drillholes are only possible by the use of marker horizons (banded iron-formations, basalt-flows) or characteristic rockgroups. Combinations in a smaller scale are very difficult to establish.

The 11 drill holes can be summarized to two groups. There are on the one hand those, with a very clear domination of basic volcanics, here metabasalts and basic to ultrabasic tuffs, which carry sediments in a very low percentage. These are the drill holes from the Baeivasgiedde area and that lonely one from Aslat-Pier-Varri. The further east located ones from Gaetkevarri, Sammelcåka, Daktejåka and Madijavri show significant amounts of metamorphosed pelitic and arenaceous sediments. These are interbedded by thick horizons of carbonaceous material. Nearly no basalt-flows are obvious, but tuffs and tuffites of mostly intermediate or even felsic composition.

The first group of holes represent a typical basic to ultrabasic submarine volcanic pile, a very normal bottom-part of a archean greenstone-belt (WINDLEY, 1977). The second group shows some spots out of a higher proportion of the volcanic evolution. They can be interpreted as marine shallow-water deposition products, mostly bounded to low energy environments.

This conclusion results in a possible model for the lithostratigraphy of the Karasjok greenstone-belt (Fig. 12).

intermediate (felsic) volcanics	- mostly sediments (quartzites, carbonates, garnet-mica (amphibole) schists, metapelites, graphite slates/schists)
(Gaetkevarri, Sammelcåka, Daktejåka, Madijavri)	- nearly no basalt-flows - tuffs and tuffites
-----	-----
basic to intermediate volcanics	- more sediments - minor basalt-flows - more tuffs, tuffites
-----	-----
basic + ultrabasic volcanics	- minor sediments (metapelites, graphite slates, graphite-felsite breccias)
(Dabmutsuoakkadas, Gaessaroavvi, Aslat- Pier-Varri)	- several cycles of submarine basalt-flows, with inter- bedded banded iron-formations (silicate-, oxide-, karbonate facies) - tuffs

Fig. 12: Model of the stratigraphy of the Karasjok greenstone-belt (Karasjok-district).

It is not clear yet, if there occurs in the real a slowly outdying of the basalt-volcanism upsection. In the comparable greenstone-formation of the Alta-Kvenangen window, the metabasalts for example, obvious only in one horizon (Kvenvik-formation), show no distinct graduation (Fig. 8 - 10). This lead further forward to the assumption, that the rockmaterial of the second group of drill holes - with nearly no metabasalts - represents already sections, equally with those of the Storvik-nesformation of the Alta-Kvenangen window. But from here no tuffs or tuffites are reported. Therefore this volcanic-sedimentary assemblage should be best correlated with the uppermost sections of the Kvenvikformation of the Alta-Kvenangen window.

All these ideas do not coincide with the geological interpretation of the Karasjok-district. The map from SKÅLVOLL (1972) points out occurrences of the micaceous basis of the super-curstale series (micaschists and quartzmicaschists) from the Gaetkevarri, Sammalcåkka, Daktejåkka and Madijavri areas. This opinion should be wrong, from the nowadays available information.

5. GEOCHEMICAL RESULTS.

From the 13 drill holes there were taken altogether 197 samples. These covered a total length of 377 m, what are 35,4 % of the drilled meterage. The decision either to take 1, 2 or 3 m material depended on the lithology of the sampled section. There was only taken special looking rockmaterial, like visible mineralized metasediments-quartzites, carbon-rich metapelites - all kinds of tuffs and tuffites, banded iron-formations and obviously altered basic volcanics. Further were included all quartz-carbonate occurrences (very rare mineralized). The samples were assayed by assessment assay methods for Au, Ag, Cu, Zn and Pb. Not all results have been received yet.

From the nowadays available results only one Au-assay (GÆT-82-02, sample 17, 54,50 - 55,50 m) showed an attractive enrichment. Furthermore no higher copper-mineralisation has been proved.

Except from MAD-82-01 all the other drill holes contain one or even more samples with a low Au-content, varying mostly between 0,034 and 0,102 ppm. The highest value of 0,816 ppm Au was found in GÆT-82-02, a sample which consists out of graphitic slate, mica-carbonate and biotite-chlorite-talk schists. This content stands alone for only 1 m. The surround samples do not reach more than 0,064 ppm Au. Furthermore there

are better looking Au-targets occurring in a banded iron-formation of DAB-82-02 (66 - 72 m), with a Au-content of 0,102 to 0,544 ppm and in a graphite slate of GAT-82-02 (12 - 27 m) with 0,034 to 0,374 ppm Au.

It is obvious, that the detected Au normally is accompanied by somewhat higher values of Cu and Zn. One anomaly is found in the above mentioned banded iron-formation, where the assayed Au stands alone, joined only by traces of Cu, Ag and Zn.

It is surprising, that no real Au-enrichment has been proved. There are visible all characteristics of good Au-occurrences, for example talc-chlorite schists and banded iron-formations. Anyways, the uneconomic Au-content of the assayed banded iron-formation does not surprise very much. It is already proposed by several authors, that high Au-values are bound only to the sulfide - or carbonatic facies of banded iron-formation, while the argillaceous variety, rich in pyrrhotite, mostly is barren (FRIPP, 1976; UITTERDIJK APPEL, 1979).

The Cu-values range normally between 0,02 and 0,05 %. The highest content of 0,13 % is found in drill hole SAM-82-01. The percentage of Zn does not increase over 0,24 (DAB-82-02), normal rates are between 0,02 and 0,09 %. No, or only traces of Ag and Pb have been reported.

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Diamond drill hole logs.

M A P S .

MAD - 82 - 01

DAK - 82 - 01

DAK - 82 - 02

SAM - 82 - 01

GAT - 82 - 01

GAT - 82 - 02

APV - 82 - 01

DAB - 82 - 01

DAB - 82 - 02

DAB - 82 - 03

DAB - 82 - 04/05

GAS - 82 - 01

SUMMARY.

The this year's diamond drilling programme of the Karasjok-project (N-81-2) lasted for three month, from the 18th of June to the 16th of September. In that time, there were drilled 11 holes (13 with stucked ones), with a total meterage of 1.337,35 m. The targets were good corresponding EM-MAG.-anomalies of ground geophysical surveys.

There were two main drill areas, first the tract between Karasjok and Bieskenjarga and second, the area around Baeivasgiedde.

The drill holes are separated from their lithology into two groups. The Baeivasgiedde holes, together with that one from Aslat-Pier-Varri show a clear domination in submarine basic volcanics, accompanied by banded iron-formations. The further east located ones are characterized by significant amounts of metasediments, interbedded by intermediate, (felsic) tuffs and tuffites. These significant differences between the two groups lead to a possible model for the stratigraphy of the Karasjok green-stone-belt. Correlations to the good described precambrian Alta-Kvenangen window are carried out.

The drilling programme turned out for the present no attractive gold, gold-sulfide or sulfide mineralisation. But the revealed rockmaterial shows all characteristics of good Au-occurences.

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283 85m

MID. IAVEL

FOLLDAL VERK A/S

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DIAMOND DRILL LOG

FOLLDAL VERK A/S

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From	To	Description	DDH No. MAD-82-01	Interval		Assays					
				From	To	Cu	Mo	Pb	Zn	Au	Ag
		Min: <u>po</u> (5 Vol.-%) mostly in spots and blebs.									
		40.85-40.92: massiv Sulfide									
		sharp hanging wall. Foot- wall: irregular inter- fingering of <u>py</u> and carbonate with reworked amphibolite.									
		Min: <u>py</u> , <u>po</u> . lower section <u>py</u> -rich grading up- wards into massiv <u>po</u> .									
		40.92-41.01: reworked amphibolite cementation by carbonate.									
		41.60 - 41.68: carbonate - band (vein) Hanging wall: 75°, Foot- wall: 30°									
		42.12-42.33: distortion - zone irregular "lapping" be- tween carbonate and amphibolite									

DIAMOND DRILL LOG

FOLLDAL VERK A/S

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From	To	Description	DDH No. <i>HAD-82-01</i>	Interval		Assays						
				From	To	Cu	Mo	Pb	Zn	Au	Ag	
		42.53-42.55: stringers and blebs of carbonate some foliation in nearby amphibolite										
		42.70-42.88: felsic amphibolite sharp walls										
		43.18-43.21: carbonate irregular interfingering amphibolite with layers of biotite (68°). Min: <u>py, po</u> . some spots										
		43.64-43.66: carbonate band (vein) sharp walls (15°)										
		44.06-44.19: carbonate with irregular formed amphibolite Min: <u>py, po</u> . some spots										
		45.48-45.60: foliated amphibolite (felsic habit). some areas high in quartz content.										

DIAMOND DRILL LOG

FOLLDAL VERK A/S

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From	To	Description	DDH No.	Interval		%		%		Assays		ppm Au	ppm Ag	
				From	To	Cu	Mo	Pb	Zn					
45.60	54.00	<u>graphite-schist</u> massiv, with some bands (0.1 - 0.4 mm) of biotitic quartzite high amounts of fine stringers and veins (net- work and irregular) of quartzite contact (Hanging wall): 28° Min: py, po (< 1 Vol.-%) mostly connected with the quartzitic mat.	HAD-82-01	MAD-82-02 47.00	49.00	0.04		-	0.01	-	-	-	-	2.0m
54.00	55.66	<u>quartz-rich graywacke to chlorite-biotite- amphibole-rich graywacke</u> massiv and alternating bedding. some sections with interbedded graphitic slate to graphitic phyllite. some carbonate veining. whole section: mixed sedimentary and volcanic mat. bedding plane: 15° contact: graphite-schist - graywacke slowly increasing graphite. First fine stringers and mm bands, then graphite bearing graywacke and graphitic- slate		MAD-82-3 53.00	55.00	0.04		-	0.01	-	-	-	-	2.0m

FOLLDAL VERK A/S

%

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From		To	Description	DDH No.	Interval		% Cu	% Mo	% Pb	% Zn	Assays ppm Au ppm Ag	
			Min: 10. disseminated (1-3 Vol.-%) cy. fine stringers mostly following bedding planes. only mineralized in the contact-area to overlying graphite-schist (1 Vol.-%).	MAD-82-01								
			54.67 - 54.69: alternating bedding (cm-scale) of biotite-rich graywacke, quartzite-rich graywacke and graphitic graywacke (sharp and gradual contacts).									
			54.90 - 55.18: graphitic graywacke with some mm-bands of mica-rich graywacke.									
55.66	57.16		<u>graphitic slate to graphite schist</u> massiv. some carbonate veining Min: 10. restricted to the carbonate mat. (1 Vol.-%) cy. connected with 10 (< 1 Vol.-%)									
			55.73 - 55.82: chlorite, mica, amphibole-rich graywacke with some fine stringers of graphitic graywacke									
			55.98 - 55.99: greenschist contacts: 5°									
			56.00 - 56.01: greenschist									
					MAD-82-4							
					56.00	57.00	0.02	-	0.02	-	-	1.0m

DIAMOND DRILL LOG

FOLLDAL VERK A/S

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From	To	Description	DDH No. <i>HAD-82-01</i>	Interval		Assays					
				From	To	Cu	Mo	Pb	Zn	Au	Ag
		56.30-56.32: Greenschist									
		56.79-56.86: graywacke									
57.16	58.79	<u>mixed sedimentary and volcanic sequence</u> alternation of graywacke, amphibolite, garnet-biotite - schist, greenstone (chlorite, biotite amphibole) and graphite bearing to graphitic slate									
		cur-bands with gradual change									
		contact graphite schist - mixed sequence: slowly incoming graphite with building up a graphitic slate with fine stringers of green-schist.									
		Min: cy some spots									
58.79	75.00	<u>garnet + phyllite (Knotschist)</u> lamellar-bedding and wavy-bedding of metapelite with buffaceous mat (greenschist). sometimes stringers of graphitic mat. Garnet: 0,2 mm Ø									
		67.00 - 67.30: Greenstone (biotite, chlorite, amphibole)									
		67.40 - 67.49: "									
		68.83 - 69.52: "									

From	To	Description	DDH No. MAD-82-01	Interval		%	Assays					
				From	To		Cu	Mo	Pb	Zn	Au	Ag
29.80	45.60	amphibolite, medium grained (0.3-0.5 mm) Min: <u>py</u> mostly disseminated. some spots connected to carbonate veins 40.19-40.22: irregular stringers of carbonate 40.54-40.66: sulfide-H ₂ O amphibolite Min: <u>py</u> , <u>po</u> , some spots <u>act.</u> (ca. 40 vol.-%) 40.75-40.85: carbonate-band with some irregular spots of amphibole Min: <u>po</u> mostly in spots (5 vol.-%) 40.85-40.92: massive sulfide Min: <u>py</u> , <u>po</u> lower section <u>py</u> -rich grading up- wards into massive <u>po</u> 40.92-41.01: massive amphibolite cementation by carbonate	MAD-82-1	40.00	41.00	0.01			-	0.01	-	-

DIAMOND DRILL LOG

FOLLDAL VERK A/S

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From	To	Description	DDH No.	Interval		%	Assays					
				From	To		Cu	Mo	Pb	Zn	Au	Ag
45.60	54.00	graphite-schist massiv, with small bands (laminae) of quartzite with biotite. high amounts of fine stringers and veins (network and irregular) of quartzite Min: py. po. restricted to the quartz- itic mat. (= 1 Vol.-%)	MAD-82-01 MAD-82-2	47.00	49.00	0.04			-	0.01	-	-
53.00	54.00	s.a.	MAD-82-3	53.00	56.00	0.04			-	0.01	-	-
54.00	55.66	quartz-rich greywacke to chlorite-, biotite-, amphibole-rich greywacke massiv to alternating bedding. some sections with stripes and stringers of graphitic slate. sometimes irregular carbonate veining Min: po. disseminated (1-3 Vol.-%) mostly concordant to bedding planes cy. fine stringers, mostly con- cordant, only mineralized in										

DIAMOND DRILL LOG

FOLLDAL VERK A/S

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From	To	Description	DDH No. <i>HAD-82-01</i>	Interval		%	Assays					
				From	To		Cu	Mo	Pb	Zn	<i>mm</i> Au	Ag
		the contact area to overlying graphite-schist (≈ 1 Vol.-%)										
55.66	57.16	graphitic slate to graphite-schist massiv. some carbonate veining Min: <u>po</u> restricted to the carb. (1 Vol.-%) cy. connected with <u>po</u> (≈ 1 Vol.-%) 55.98-56.99: green schist 56.00-56.01: " 56.30-56.32: " 56.79-56.86: greywacke	HAD-82-4	56.00	57.00	0.02			-	0.02	-	-

DAKTESÅKKA

DIAMOND DRILL LOG

FOLLDAL VERK A/S

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D.D.H. No.		Azimuth		Started		Directional surveys						
DAK-82-01		340°		23.06.82		Depth	Azim.	Dip.	Depth	Azim.	Dip.	
Property		Angle		Finished								
DAKTEJENNA		-45°		25.06.82								
Co-ord.		Depth		Logged by								
L 9+00 S 1+25 Ø		91.60		F.D.P								
From	To	Description	Interval		% Cu		% Mo		% Pb		Assays	
			From	To					Zn	ppm Au	ppm Ag	
0.00	17.00	overburden										
17.00	21.40	quartz, feldspar, biotite, amphibole - gneis sometimes orientation of biotite - flader (30°) Min: py. some spots. 20.24 - 20.29: high epidot content 20.55 - 20.72: quartzite with some amounts of biotite and amphibole. local distortion Min: py. disseminated and some bigger spots (1 vol.-%) 20.92 - 20.98: biotite - amphibolite	DAK-82-1 20.00	21.00	trace				0.01	-	-	1.0m
21.40	22.40	core missing										
22.40	46.70	quartz, feldspar, biotite, amphibole - gneis see: 17.00 - 21.40 23.00 - 23.15: quartzite with small bands (mm) of biotite - phyllite carbonate veining. some lenses and spots of carbonate	DAK-82-2 23.00	25.00	trace				0.01	-	-	2.0m

DIAMOND DRILL LOG

FOLLDAL VERK A/S

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From	To	Description	DDH No. JAH-82-01	Interval		Assays					
				From	To	Cu	Mo	Pb	Zn	Au	Ag
		Min: py. spots and some greater blebs, mostly connected with the biotite-phyllite (± 1 Vol.-%)									
		23.23 - 23.33: quartzite very small amounts of mica Min: py. some spots and plates									
		23.73 - 23.75: amphibolite									
		23.75 - 24.10: alternating-bedding (mm) of quartzite with biotite-phyllite some stripes of amphibolite interbedded									
		24.10 - 24.25: quartzite small amounts of biotite, slightly foliated									
		24.25 - 24.27: amphibolite									
		24.70 - 25.04: alternating-bedding (mm) of quartzite with biotite-phyllite see: 23.75 - 24.10									
		25.85 - 25.90: Carbonate-sand (min) rimmed by amphibolite Min: py. irregular spots									

DIAMOND DRILL LOG

FOLLDAL VERK A/S

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From	To	Description	DDH No.	Interval		Assays						
				From	To	Cu	Mo	Pb	Zn	Au	Ag	
		mostly connected with the Al-Silicates (± 1 Vol.-%)	DAK-82-01									
		25.20-25.58: quartzite with small amounts of biotite, slightly foliated, 10° Min: py. disseminated and some bigger spots (< 1 Vol.-%)										
		26.84-26.97: interbedded bands of greenschist Min: py. some spots										
		27.79-27.81: greenschist										
		27.98-28.00: "										
		28.27-28.29: quartzite Min: py. following foliation (1 to 2 Vol.-%)										
		28.36-28.66: carbonate - band (thin)										
		29.40-29.42: greenschist										
		29.57-29.63: carbonate - band rimmed by greenschist Min: py. disseminated in greenschist spots and blebs in carbonate (1-2 Vol.-%)										

DIAMOND DRILL LOG

FOLLDAL VERK A/S

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From	To	Description	DDH No. JAH-82-01	Interval		Assays					
				From	To	Cu	Mo	Pb	Zn	Au	Ag
		29.63 - 30.95: metasiltstone									
		29.95 - 30.06: carbonate-band									
		Mineralized by greenschist									
		Min: py. some spots									
		mt. some spots, mostly									
		arranged at the hanging wall of carbonate-band									
		30.55 - 30.57: carbonate-band									
		Mineralized by amphibole									
		Min: py. some irregular spots.									
		31.33 - 31.35: greenschist									
		32.13 - 32.14: biotite-schist									
		32.21 - 32.29: greenschist									
		32.29 - 32.35: metasiltstone									
		bedding planes: 18°									
		Min: py. disseminated (ca 1 Vol-%)									
		32.64 - 32.90: irregular stringers and bands of biotite-chlorite schist									
		Min: py. disseminated, mostly con-									

DIAMOND DRILL LOG

FOLLDAL VERK A/S

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From	To	Description	DDH No. JAK-82-01	Interval		Assays						
				From	To	Cu	Mo	Pb	Zn	Au	Ag	
		lined with carbonate mat.										
		33.71 - 33.80: irregular stringers and bands of biotite - crist										
		34.10 - 34.12: carbonate - band										
		rimmed by greenschist										
		34.42 - 34.50: metasiltstone with some lenses of greenstone										
		Min: py. some spots										
		35.12 - 35.28: amphibolite with some spots of carbonate										
		Min: py. some spots										
		35.60 - 36.15: graywacke										
		local typical gneissic texture, interbedded bands of amphibole, biotite - carbonate										
		Min: py. restricted to the carbonate mat.										
		38.00 - 38.20: massive metasiltstone										
		38.20 - 39.60: core missing										
		39.60 - 40.60: massive metasiltstone										
		40.39 - 40.46: greenstone										

DIAMOND DRILL LOG

FOLLDAL VERK A/S

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From	To	Description	DDH No. <u>DAK-82-01</u>	Interval		Assays					
				From	To	Cu	Mo	Pb	Zn	Au	Ag
		41.21 - 41.46: <u>massiv quartzitic metasilstone</u>									
		41.30 - 41.33: <u>carbonate-band</u>									
		42.00 - 42.15: <u>massiv high quartzitic metasilstone</u>									
		42.15 - 43.45: <u>quartzite</u>									
		local flakes of diorite, here visible									
		foliated									
		43.45 - 45.00: <u>high quartzitic metasilstone</u>									
46.70	47.62	<u>massiv quartz-rich metasilstone</u>									
47.62	47.81	<u>quartzite</u>									
		with small band (mm to cm) of diorite - schist									
47.81	48.00	<u>gneiss</u>									
		some irregular carbonate veining. lenses of carbonate.									
48.00	48.30	<u>distorted section</u>									
		alternating bands of quartzite, gneiss and quartz-rich metasilstone									
		some carbonate veining									
48.30	57.32	<u>quartzite</u>									
		Min: py. spots and blebs (2 - 7 Vol.-%)									
		48.35 - 48.37: amphibole, diorite - carbonate									
		48.80 - 48.90: distortion-zone									

FOLLDAL VERK A/S

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FOLLDAL VERK A/S

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From	To	Description	DDH No. <i>DAN-82-01</i>	Interval		Assays						
				From	To	% Cu	Mo	Pb	Zn	ppm Au	ppm Ag	
		high distortion with zig-zag-folding Min: py. stringers and spots concen- trated to bedding planes (3 Vol.-%)										
		54.44 - 54.80: sandy quartzite some fine stringers of graphitic mat. Min: py. only as plates on fracture planes										
		54.80 - 55.24: graphite bearing quartzite see: 51.40 - 52.32 (not min.)										
57.32	57.70	<u>Transition zone</u> bands, stringers and laminae of graphitic slate in quartzite to graphite bearing quartzite. some lenses and stringers of carbonate. dis- tortion with zig-zag-folding Min: py. only as platelets on fracture planes		<i>DAN-82-4</i> 56.00	58.00	0.01		-	trace	-	-	2.0um
57.70	57.82	<u>amphibole - carbonate</u>										
57.82	62.10	<u>graphite - schist</u> massive to laminated. laminae of carbonate rich greenstone, in the hanging portions of graphite bearing quartzite		<i>DAN-82-5</i> 58.00	60.00	0.02		-	trace	-	-	2.0um

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FOLLDAL VERK A/S

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From	To	Description	DDH No. <u>DAK-82-01</u>	Interval		%		%		Assays		ppm Au	ppm Ag
				From	To	Cu	Mo	Pb	Zn				
		highly distorted with zoned -folds and disharmonic folding. carbonate veining Min: <u>py</u> as stringers and spots concordant to bedding planes, but very inhomogenic. mostly connected with greenstone and carbonate. platelets on fracture planes. (2 Vol.-%)											
		60.13 - 60.16: highly distorted interval of quartzite with quartzitic metasilstone Min: <u>py</u> . Very irregular (8-10 Vol.-%)											
		60.44 - 61.28: quartzite lamina of biotite - carbonate (alter- tasic volcanics) Min: <u>py</u> , <u>po</u> (1-2 Vol.-%) <u>py</u> . some spots <u>po</u> . disseminated. both sulphides not directly con- cordant embedded.		DAK-82-6 60.00	62.00	0.01		-	trace	-	-	2.0	
62.10	63.04	carbonaceous quartz, feldspar, biotite - <u>gneis</u> some carbonate veining Min: <u>py</u> , <u>po</u> .											

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From	To	Description	DDH No. <u>DAH-82-01</u>	Interval		%		%		Assays		<u>ppm</u> Au	<u>ppm</u> Ag
				From	To	Cu	Mo	Pb	Zn				
		<u>py</u> : disseminated (≈ 1 Vol.-%) <u>py</u> : restricted to fracture planes											
63.04	68.08	<u>quartzite</u> varying amounts of mica and carbonate Min: <u>py</u> , <u>py</u> (1-2 Vol.-%) <u>py</u> : occurs in spots ore platelets, here concordant to bedding planes and sometimes crosscutting. <u>py</u> : mostly disseminated 65.12-65.18: Graphite bearing quartzite 65.73-66.73: Core missing 66.78-66.99: carbonate with bands (cm to mm) of biotite-schist Min: <u>py</u> , <u>py</u> , irregular spots (< 1 Vol.-%) 67.84-68.08, alternating bedding (cm) quartzite, biotite-rich quartzite and biotite-schist Min: <u>py</u> spots (sometimes up to 5 Vol.-%)											
68.08	72.22	<u>biotite-rich quartz, feldspar - Gneiss</u> folded with irregular carbonate		<u>DAH-82-7</u> 68.00	70.00	0.01		-	trace	trace	-	2.0m	
				<u>DAH-82-8</u> 70.00	72.00	0.01		-	trace	trace	-	2.0m	

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From	To	Description	DDH No. <u>DAH-82-01</u>	Interval		%		%		Assays		ppm Au	ppm Ag
				From	To	Cu	Mo	Pb	Zn				
		Min: <u>py.</u> mostly irregular spots and blebs with up to 0,5 cm in diameter, sometimes stringers following hidden bedding planes, some places disseminated (1-2 Vol.-%)											
		70.65 - 71.35: alternating bedding (cns) quartzite, biotite-rich quartzite and biotite-schist see: 67.84 - 68.08											
72.22	82.60	<u>graphite-schist</u> varying graphite content (75.75 - 80.89 high graphite content). laminae of biotite-carbonate and carbonate distortion with <u>zircon</u> - folding		DAH-82-9 72.00	74.00	0.03		-	trace	0.204	-	2.0	um
				DAH-82-10 74.00	76.00	0.03		-	trace	-	-	2.0	um
				DAH-82-11 76.00	78.00	0.04		-	trace	trace	-	2.0	um
				DAH-82-12 78.00	80.00	0.03		-	trace	0.068	-	2.0	um
				DAH-82-13 80.00	82.00	0.02		-	trace	0.068	-	2.0	um
		Min: <u>py.</u> , <u>po.</u> stringers and spots mostly connected with the carbonate mat. (1-2 Vol.-%)											
		73.88 - 74.61: <u>argosic</u> metasandstone Min: <u>po.</u> disseminated (1 Vol.-%) <u>py.</u> some irregular spots											
		75.56 - 75.75: graphite bearing <u>argosic</u> metasilstone Min: <u>po.</u> concordant to bedding, some											

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From	To	Description	DDH No. <u>DAK-82-01</u>	Interval		Assays							
				From	To	Cu	Mo	Pb	Zn	Au	Ag		
		times crosscutting, mostly connected with carbonate (1-2 Vol.-%) Hy: some spots											
		77.85-78.42: aegiric metasiltstone slightly bedded, some stringers of biotite-rich mat. Min: <u>no</u> disseminated (1 Vol.-%)											
		80.89-81.05: aegiric metasiltstone see: 77.85-78.42											
		81.06-81.10: aegiric metasiltstone see: 77.85-78.42											
		81.12-81.18: aegiric metasiltstone see: 77.85-78.42											
82.60	85.72	<u>argillaceous to arenaceous interval</u> 82.60-83.20: quartzite Min: <u>no</u> disseminated, spots (1-2 Vol.-%) Hy: some spots											
		83.20-84.42: aegiric metasandstone to biotite rich metasandstone 84.20-84.30: amphibolite (altered gabbro)											

Hammar-Teknik A/S

FOLLDAL VERK A/S

From	To	Description	DDH No. <u>DAK-82-01</u>	Interval		% Cu		% Mo		% Pb		Assays Zn		Au		% Ag	
				From	To												
17.00	20.40	<u>quartz, feldspar, biotite, amphibole-</u> <u>gneis</u> Min: py. some spots 20.24 - 20.29. high epidot content 20.55 - 20.82. quartzite with some amounts of biotite and amphibole. local dis- tortion Min: py. disseminated with some bigger spots (1 Vol.-%). 20.92 - 20.98. biotite-amphibolite	DAK-82-1	20.00	21.00	trace				-		0.01		-		-	1.0m
22.40	46.70	<u>quartz, feldspar, biotite, amphibole-</u> <u>gneis</u> see: 17.00 - 21.40 23.00 - 23.15. quartzite with small bands (mm) of biotite- phyllite. some carbonate veining, bubbles and spots of	DAK-82-2	23.00	25.00	trace				-		0.01		-		-	2.0m

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From	To	Description	DDH No. <i>DAK-82-01</i>	Interval		Assays					
				From	To	Cu	Mo	Pb	Zn	Au	Ag
		carbonate, mostly following bedding- planes Min: pg. spots and some greater blebs, mostly in the biotite-phyllite (± 1 Vol.-%)									
		23.23 - 23.33: quartzite very small amounts of mica Min: pg. some spots									
		23.73 - 23.75: amphibolite									
		23.75 - 24.10: alternating bedding (mm) of quartzite with biotite- phyllite, interbedded some small bands of amphibolite									
		24.10 - 24.25: quartzite small amounts of biotite, slightly foliated									
		24.25 - 24.28: amphibolite									
		24.70 - 25.04: alternating bedding (mm)									

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From	To	Description	DDH No. <i>DAK-82-01</i>	Interval		%	Assays					Ag	
				From	To		Cu	Mo	Pb	Zn	Au		
		of quartzite with biotite- phyllite. see: 23.85-24.10 25.85-25.90: carbonate-band rimmed by amphibolite Min: py. irregular spots, mostly arranged round the H-silicates (± 1 Vol.-%)											
48.30	52.70	<u>quartzite</u> massiv 51.40-52.32: graphite bearing quartzite laminated interval with some distortion Min: <u>py</u> , <u>ap</u> . irregular spots and lenses, fibers (2-3 Vol.-%) 52.32-53.50: quartzite	<i>DAK-82-3</i>	52.00	56.00	0.03			-	Trace	-	-	4.0 m

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From	To	Description	DDH No. <i>DAN-82-01</i>	Interval		%	Assays					
				From	To		Cu	Mo	Pb	Zn	<i>11M</i> Au	Ag
		Min: <i>py.</i> irregular spots, lumps, fibers (5-7 Vol.-%)										
		53.50 - 54.44: graphite bearing to graphitic quartzite stringers of carbonate, ex- tremely distorted (zigzag- folding)										
		Min: <i>py.</i> spots and stringers concordant to bedding planes (3 Vol.-%)										
		54.44 - 54.80: sandy quartzite some fine stringers of carbon										
		Min: <i>py.</i> as platelets on fracture planes										
		54.80 - 55.24: graphite bearing quartzite see: 57.40 - 57.32 (not min.)										
48.30	57.30	quartzite. see above massiv	DAN-82-4	56.00	58.00	0.01			-	Trace	-	- 2.0 m
57.32	57.40	transition zone										

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From	To	Description	DDH No. <u>DAK-82-01</u>	Interval		Assays						
				From	To	Cu	Mo	Pb	Zn	Au	Ag	
		bands, stringers and lamina of graphitic slate in quartzite to graphite bearing quartzite some lenses and stringers of carbonate. distortion with <u>rich</u> <u>rich</u> - folding Min: py. only as plate laths on fracture planes										
57.70	57.82	<u>amphibole - carbonate</u>										
57.82	62.10	<u>graphite - schist (felsite)</u> massive to laminated. lamina of carbonate - rich greenstone, of graphite bearing quartzite (in the hanging portion). extremely distorted mat. with <u>rich</u> <u>rich</u> - folding and disharmonic folding. carbonate-veining Min: py. as stringers and spots con- cordant to bedding planes; very inhomogeneous. mostly connected with greenstone and carbonate- veining. plate laths on fracture planes. (2 Vol.-%)										

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From	To	Description	DDH No. <u>DAK-82-01</u>	Interval		%	Assays						
				From	To		Cu	Mo	Pb	Zn	<u>mm</u> Au	Ag	
57.82	62.10	<u>graphite-schist (felsite)</u> see above 60.13-60.16, extremely distorted interval of quartzite with quartzitic meta- siltstone Min. py. very irregular (8-10 Vol.-%) 60.44-61.28, quartzite laminae of Holite-carbonate (altered basic volcanics) Min. py, po (1-2 Vol.-%) py. some spots po. disseminated	DAK-82-6	60.00	62.00	0.01			-	Trace	-	-	2.0 m
68.08	72.22	<u>biotite-rich quartz-feldspar-gneiss</u> folded with irregular carbonate veining Min: py. mostly irregular spots and lenses (up to 0.5 cm in diameter) sometimes stringers following hidden bedding planes. local disseminated type. (1-2 Vol.-%)	DAK-82-7	68.00	70.00	0.01			-	Trace	Trace	-	2.0 m
			DAK-82-8	70.00	72.00	0.01			-	Trace	Trace	-	2.0 m

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From	To	Description	DDH No. <u>DAK-82-01</u>	Interval		%		Assays				
				From	To	Cu	Mo	Pb	Zn	Au	Ag	
		70.65-71.35: alternating bedding (cm) quartzite to biotite-rich quartzite and biotite schist see: 67.84-68.08										
72.00	72.22	biotite-rich quartz-feldspar-gneiss see: 68.08 to 72.22 (above)	<u>DAK-82-9</u>	72.00	74.00	0.03		-	Trace	0.204	-	2.0m
72.22	73.88	graphite schist varying graphite content. laminae of biotite-carbonate and carbonate. distortion with zig-zag-folding Min: py, po. stringers and spots mostly connected with the carbonate (1-2 Vol.-%)										
73.88	74.00	argillaceous meta sandstone massive Min: po. disseminated (1 Vol.-%) py, some irregular spots										
74.00	74.61	argillaceous meta sandstone see: 73.88 to 74.00 (above)	<u>DAK-82-10</u>	74.00	76.00	0.03		-	Trace	-	-	2.0m

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From	To	Description	DDH No. <u>DAH-82-01</u>	Interval		%	Assays					
				From	To		Cu	Mo	Pb	Zn	Au	Ag
74.61	75.56	<u>graphite schist</u> see: 72.22 to 73.88 (above)										
75.56	75.75	<u>graphite bearing orogenic metasilstone</u> Min: <u>po.</u> concordant to bedding, some- times crosscutting, mostly connec- ted with the carbonate (1-2 Vol.-%) py: some sp. ob										
75.75	76.00	<u>graphite schist</u> see: 72.22 to 73.88 (above)										
76.00	77.85	<u>graphite schist</u> see: 72.22 to 73.88 (above)	<u>DAH-82-11</u>	76.00	78.00	0.04			-	Trace	Trace	- 2.0 m
77.85	78.00	<u>orogenic metasilstone</u> slightly bedded, some stringers of biotite rich mat. Min: <u>po.</u> disseminated (1 Vol.-%)										
78.00	78.42	<u>orogenic metasilstone</u> see: 77.85 to 78.00	<u>DAH-82-12</u>	78.00	80.00	0.03			-	Trace	0.068	- 2.0 m
78.42	80.00	<u>graphite schist</u> see: 72.22 to 73.88										

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From	To	Description	DDH No.	Interval		Assays						
				From	To	Cu	Mo	Pb	Zn	Au	Ag	
		Min: <u>py, po, int.</u> disseminated (1 Vol.-%).	DAK-82-02									
		16.78 - 17.00: <u>metaciltstone</u> Min: <u>py.</u> disseminated (1 Vol.-%)										
		17.00 - 17.61: <u>quartzitic greenstone</u> some carbonate veining Min: <u>py.</u> (1 - 2 Vol.-%)										
		17.30 - 17.38: high carbonate green- schieist alternating bands of Carbonate rich greenschieist with mica - carbonate										
		17.61 - 31.10: <u>greenstone with garnet</u> 19.68 - 19.72: <u>mica, amphibole - carbonate</u> garnet bearing.										
		31.10 - 39.70: <u>quartzitic greenstone</u> slightly bedded with some irregu- lar carbonate veining Min: <u>py.</u> as platelets on fracture planes.										

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From	To	Description	DDH No. JAK-82-02	Interval		Assays					
				From	To	Cu	Mo	Pb	Zn	Au	Ag
		36.80-37.07: <u>carbonate-band</u> with some waves of quartzitic greenstone Min: py. as platelets on fracture planes.									
		38.15-38.19: <u>carbonate-band</u>									
		38.31-38.41: "									
		38.41-39.04: <u>distortion with carbonate veining</u>									
		39.04-39.41: <u>carbonate-band</u>									
		39.70-40.00: <u>quartz-Mt</u> , <u>graphitic slate</u> some distortion with irregular carb. veining. Min: py. some spots									
		40.00-40.10: <u>carbonate-band</u>									
		40.10-40.80: <u>garnet bearing greenschist</u> some stringers of carbonate									
		40.80-41.00: <u>distortion-zone</u> greenschist with carbonate Min: py. spots (1-2 Vol.-%)									
		41.00-41.50: <u>Carbonate-band</u>									

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From	To	Description	DDH No.	Interval		Assays						
				From	To	Cu	Mo	Pb	Zn	Au	Ag	
		some irregular stringers of greenschist	JAK-82-02									
		Min: py. some spots										
		41.50 - 41.75: <u>distortion-zone</u>										
		see: 40.80 - 41.00										
		41.75 - 42.10: <u>greenstone</u>										
		42.10 - 42.50: <u>garnet bearing greenschist</u>										
		42.50 - 42.70: <u>greenstone</u>										
		42.55 - 42.59: <u>carbonate-band</u>										
		42.70 - 42.95: <u>graphite bearing greenstone</u>										
		Min: py. some spots										
		42.95 - 45.15: <u>graphite schist</u>										
		distorted mat. with fine stringers and irregul										
		veining of carbonate										
		Min: py. as platelets of fracture planes										
		43.48 - 44.00: <u>brecciation-zone</u>										
		reworked graphite-schist cemented										
		by quartzitic mat.										
		Min: py. some spots										
		45.15 - 45.90 <u>metasandstone</u>										
		Min: py. some spots										

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From	To	Description	DDH No. <u>DAN-82-02</u>	Interval		Assays					
				From	To	Cu	Mo	Pb	Zn	Au	Ag
		<u>45.90 - 49.15: biotite schist</u> stringers and lamina of graphitic slate interbedded, some lenses and stringers of carbonate 48.00 - 49.05: high distorted interval with carbonate veining									
		<u>49.15 - 56.40: alternating bedding: quartzite, greenstone</u> <u>49.15 - 50.50: garnet bearing greenstone</u> Min: <u>py.</u> some spots									
		<u>50.50 - 51.90: biotite bearing quartzite</u> some distortion with carbonate veining. Min: <u>py.</u> platelets on fracture planes									
		<u>51.90 - 54.08: quartzitic greenstone</u> slightly bedded, planes: 13° Min: <u>py.</u> disseminated (< 1 Vol.-%)									
		<u>54.08 - 54.51: biotite bearing quartzite</u> slightly bedded, some irregular carbonate veining									
		<u>54.51 - 54.94: garnet bearing, graphitic greenschist</u> some lamina of mica-carbonate									
		<u>54.94 - 56.03: greenstone</u>									

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From	To	Description	DDH No. <u>DAK-82-02</u>	Interval		%		%		Assays		mm Au	mm Ag
				From	To	Cu	Mo	Pb	Zn				
		56.85 - 56.99: <u>carbonate-band</u> some bands and stringers of green schist with mica-bearing quartzite Min: <u>py</u> , <u>pe</u> , irregular spots and stringers (10 vol.-%)											
		56.99 - 59.60: <u>biotite-chlorite-bearing quartzite to</u> <u>high biotitic-chloritic quartzite</u> some blebs and stringers of carbonate Min: <u>py</u> , some spots											
59.60	68.13	<u>contamination zone gabbro-sediments</u>											
		59.60 - 60.43: <u>amphibolite</u>		DAK-82-15 60.00	62.00	0.03		-	0.04	0.068	-	2.0 m	
		60.43 - 61.30: <u>graphite-schist</u> highly distorted, irregular carbonate- veining Min: <u>py</u> , some spots											
		61.30 - 61.44: <u>amphibolite</u>											
		61.44 - 61.50: <u>graphite-schist</u> interbedded mica-carbonate and amphibolite Min: <u>py</u> , mostly arranged in the carbonate mat. (2 vol.-%)											

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From	To	Description	DDH No. <u>DAH-82-02</u>	Interval		%		%		Assays		ppm Au	ppm Ag
				From	To	Cu	Mo	Pb	Zn				
		61.50 - 61.65: <u>greenschist</u> some lamina of graphite-bearing slate Min: py. stringers concordant to bedding planes (1-2 Vol.-%)											
		61.65 - 61.71: <u>amphibolite</u> (altered gabbro)											
		61.71 - 61.91: <u>garnet-bearing greenstone</u>											
		61.91 - 62.01: <u>biotite-schist</u> distortion, zirconia-folding											
		62.01 - 63.64: <u>garnet-biotite-chlorite-amphibole</u> <u>schist</u> some stringers of graphite-slate											
		63.64 - 63.80: <u>graphite-schist</u> highly distorted Min: py. very irregular (< 1 Vol.-%)											
		63.80 - 66.00: <u>amphibolite</u> (altered gabbro) Min: py. disseminated (1 Vol.-%) 63.80 - 64.30: renewed											
		66.00 - 68.13: <u>graphite-schist</u> renewed with spots and irregular veining (network of carbonate)											
				DAH-82-16 66.00	68.00	0.02		-	0.06	0.034	-	2.000	

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From	To	Description	DDH No.	Interval		%		%		Assays		Au	Ag
				From	To	Cu	Mo	Pb	Zn				
			DAK-82-02										
		Min: py. spots and blebs (1-2 Vol.-%)											
68.13	82.45	amphibolite (altered gabbro)											
		Min: py, cy, po. some spots											
		73.30 - 73.48: carbonate-band (brecciation zone) pieces of amphibolite cemented by carbonate											
		74.83 - 77.00: foliated		DAK-82-17									
		Min: py. disseminated ($\pm$ 2 Vol.-%)		75.00	77.00	0.02		-	0.03	trace	-	2.0	

From	To	Description	DDH No. <u>DAK-82-02</u>	Interval		%	Assays					mm	Ag
				From	To		Cu	Mo	Pb	Zn		Au	
56.00	56.20	<u>greystone</u> some irregular carbonate veining Min: py. some spots	<u>DAK-82-14</u>	56.00	57.00	0.12			-	0.01		Trace	-
56.20	56.40	<u>quartzite</u> Min: py, po. some spots											
56.40	56.85	<u>graphite slate</u> high disordered section with some dis- solution. carbonate-veining (network) Min: py. some spots											
56.85	56.99	<u>carbonate-band</u> some bands and stringers of greenschist with mica-bearing quartzite Min: py, po. irregular spots and string- ers (10 vol.-%)											
56.99	57.00	<u>biotite-chlorite bearing quartzite to high</u> <u>biotitic-chloritic quartzite</u> some lumps and stringers of carbonate Min: py. some spots											
60.00	60.43	<u>amphibolite</u>	<u>DAK-82-15</u>	60.00	62.00	0.03			-	0.04		0.068	-
60.43	61.30	<u>graphite schist</u>											

DIAMOND DRILL LOG

FOLLDAL VERK A/S

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From	To	Description	DDH No. <u>DAK-82-02</u>	Interval		Assays <u>1 ppm</u>					
				From	To	% Cu	Mo	Pb	Zn	Au	Ag
		extremely distorted, irregular carbonate veining Min: py. some spots									
61.33	61.44	<u>amphibolite</u>									
61.44	61.50	<u>graphite schist</u> interbedded mica-carbonate and amphibolite Min: py. mostly connected with the carbonate mat. (2 Vol.-%)									
61.50	61.65	<u>greenschist</u> some lamina of graphite bearing slate Min: py. stringers concordant to bedding planes (1-2 Vol.-%)									
61.65	61.71	<u>amphibolite</u>									
61.71	61.91	<u>garnet-bearing greenstone</u>									
61.91	62.00	<u>biotite schist</u> distortion, zigzag folding									
66.00	68.00	<u>graphite schist</u> newsed. with spot and irregular veining (newsed.) of carbonate	<u>DAK-82-16</u>	66.00	68.00	0.02		-	0.06	0.034	-

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Harmer-Tryck A/6

SPAIN, MALCINRA

FOLLDAL VERK A/S

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D.D.H. No.		Azimuth		Started		Directional surveys							
Property		Angle		Finished		Depth	Azim.	Dip.	Depth	Azim.	Dip.		
SAM-82-01		310°		29.06.82									
SAHMALCARKA		-45°		01.07.82									
Co-ord.		Depth		Logged by									
L 3+00 S 1+250		124.00		F.D.P									
From	To	Description				Interval		Assays					
						From	To	Cu	Mo	Pb	Zn	Au	Ag
0.00	6.50	overburden											
6.50	36.68	atoxic sandstone (quartz banded iron ore) alternation of <u>mt</u> -rich bands with <u>mt</u> -poor bands, normal bedding planes: 25°. Min: <u>mt</u> , concordant to bedding planes, idiomorphic, synsedimentary. py. sometimes disseminated secondary enrichment to large sometimes idiomorphic spots. in distorted sections very mobile and crosscutting bedding planes (2 vol.-%) 6.50-8.75: folded section with abnormal steep angles 12.50-13.85: distortion, some brecciation 13.85-14.60: alternating bedding (m) of quartz sandstone with biotite-chlorite-rich sandstone. 14.90-14.98:											
						SAM-82-1		0.02		-	0.01	-	-
						8.00	10.00						2.0m

DIAMOND DRILL LOG

FOLLDAL VERK A/S

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From	To	Description	DDH No. SAM-82-01	Interval		Assays						
				From	To	Cu	Mo	Pb	Zn	Au	Ag	
		15.20 - 15.60 : distortion										
		16.70 - 17.90 : section with interbedded biotite, chlorite - micr sandstone										
		18.55 - 18.62 : biotite, chlorite - micr sandstone										
		18.68 - 18.80 : carbonate - band										
		19.10 - 19.12 : biotite, chlorite - micr siltstone										
		21.01 - 21.09 : siltstone to phyllite										
		22.99 - 23.16 : "										
		23.40 - 23.41 : "										
		24.08 - 24.10 : "										
		24.27 - 24.30 : "										
		25.61 - 26.30 : sandy gneiss with bands of biotite, chlorite - bearing sand- stone										
		26.51 - 27.61 : biotite - micr sandstone lamina of siltstone and bands of aegiric sandstone some distortion with zigzag- folding										
		28.00 - 28.1 : sandy gneiss with interbedded biotite - micr sandstone										

DIAMOND DRILL LOG

FOLLDAL VERK A/S

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From	To	Description	DDH No. <u>SAH-82-01</u>	Interval		Assays						
				From	To	Cu	Mo	Pb	Zn	Au	Ag	
		28.30 - 28.46: <u>diolite - rich sandstone</u>										
		28.62 - 29.00: <u>folded section with steep angles</u>										
		29.36 - 29.80: <u>quartzite</u>										
		<u>folded with some schistation</u>										
		<u>no net and py</u>										
		31.18 - 31.49: <u>diolite - rich sandstone</u>										
36.68	56.70	<u>garnet, diolite, orthinolite - schist</u>										
		<u>garnet: up to 1.0 cm in diameter</u>										
		37.00 - 37.15: <u>diolite, orthinolite - rich sandstone</u>										
		<u>interbedded some small bands of</u>										
		<u>diolite, orthinolite - schist (mm)</u>										
		39.72 - 39.81: <u>irregular interfingering of</u>										
		<u>carbonate</u>										
		<u>Min: py, py. in spots. (5 Vol.-%)</u>										
		39.85 - 39.90: <u>quartzitic siltstone</u>										
		<u>small bands (mm) of diolitic</u>										
		<u>siltstone</u>										
		<u>Dipping planes: 12°</u>										
		39.90 - 40.30: <u>diolite, orthinolite - rich sandstone</u>										
		<u>see: 37.00 - 37.15</u>										
		40.84 - 40.85: <u>carbonate - sand</u>										

DIAMOND DRILL LOG

FOLLDAL VERK A/S

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From	To	Description	DDH No. SAM-82-01	Interval		Assays						
				From	To	Cu	Mo	Pb	Zn	Au	Ag	
56.20	84.40	<u>Volcanic - sedimentary section</u>										
		56.20-56.82: laminated interval, phyllite and graphitic slate. some garnet blasts (0.1 to 0.5 cm in diameter)										
		bedding planes: 18°										
		56.82-56.98: biotite, chlorite - schist										
		56.98-57.05: graphitic slate										
		garnet in more fl-rich portions (0.1 cm in diameter)										
		stressed mat. with carbonate veining										
		Min. po. mostly connected with the carbonate (± 1 Vol.-%)										
		57.05-57.22: mica - carbonate										
		folded										
		57.22-57.20: sandy to quartzitic greenschist										
		57.50-57.80: laminated interval, graphite bearing phyllite and graphite bearing metasilstone										
		57.80-58.01: graphitic slate										
		stressed mat. some porphyroblastation										

DIAMOND DRILL LOG

FOLLDAL VERK A/S

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From	To	Description	DDH No. SAM-82-01	Interval		%		%		Assays		Au	Ag
				From	To	Cu	Mo	Pb	Zn				
		58.01 - 59.29: quartzite											
		59.29 - 59.50: laminated interval, graphite bearing phyllite, mica-carbonate, mica-schist, metasilstone disharmonic folded											
		59.50 - 59.60: mica carbonate disharmonic folded											
		59.60 - 61.20: sandy greenstone (idiomorphic biotite) Min: 10. (< 1 Vol.-%)											
		60.50 - 60.60: biotite-schist											
		61.20 - 62.19: graphite-schist lamination of graphite-schist, gra- phitic slate, biotite-schist, phyllite highly distorted. Min: 10 following the primary sedimentary structures. rare crosscutting. (2 Vol.-%)		SAM-82-2 61.00	62.00	0.03		-	0.02	-	-	1.0m	
		62.19 - 62.25: biotite-carbonate massiv Min: 10 disseminated ($\pm$ 1 Vol.-%)		SAM-82-3 62.00	63.00	0.03		-	0.03	0.034	-	1.0m	

FOLLDAL VERK A/S

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From	To	Description	DDH No.	Interval		Assays						
				From	To	Cu	Mo	Pb	Zn	Au	Ag	
		62.25-62.26: graphite bearing slate felsic habit, stressed mat.	SAM-P2-01									
		62.26-62.31: biotite, chlorite - carbonate										
		62.31-62.52: laminated graphitic slate extremely stressed with slightly mylonitisation Min: po. some spots										
		62.52-63.14: biotite, chlorite - carbonate Min: po. disseminated (2 Vol.-%)										
		63.14-65.14: laminated interval, graphite-schist, phyllite, mica-carbonate, biotite- schist, talc-chlorite-schist. distortion										
		65.14-66.06: talc, biotite - carbonate zigzag-folding 65.45-65.48: graphite-schist with laminae of biotite-schist										
		66.06-66.90: laminated interval greenschist, graphite-schist, phyllite, altered volcanics. distortion		SAM-P2-4 66.00	68.00	0.02		-	0.03	-	-	20 m

FOLLDAL VERK A/S

%

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DIAMOND DRILL LOG

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From	To	Description	DDH No. <i>SAH-82-01</i>	Interval		Assays					
				From	To	Cu	Mo	Pb	Zn	Au	Ag
		Min: <u>10</u> . concordant to bedding. (1-3 Vol.-%)									
		70.25-70.36: Graphite-schist with mica-carbonate highly distorted.									
		Min: <u>10</u> . following bedding planes and crosscutting (5-7 Vol.-%)									
		70.36-70.84: Graphite bearing phyllite with some irregular stringers of biotite-schist and mica-carbonate slightly bedded and mostly distorted									
		Min: <u>10</u> . irregular, but normally connected with mica-H ₂ O mat. (5-7 Vol.-%)									
		70.84-70.94: mica-carbonate some small plates of graphite slightly bedded and distorted									
		Min: <u>10</u> . (1 Vol.-%)									
		70.94-71.12: Graphite bearing phyllite (slate) highly distorted with irregular carb. mining. some indurization.									

DIAMOND DRILL LOG

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From	To	Description	DDH No. SAM-P2-01	Interval		Assays						
				From	To	Cu	Mo	Pb	Zn	Au	Ag	
		Min: 10. spots, stringers, veinlets (net- work structures) (5-8 Vol.-%)										
		71.12-71.17: mica carbonate bedding planes: 45°										
		71.17-72.17: alternating bedding (mm to cm) graphite bearing slate to phyllite, talc chlorite-schist, mica-carbonate, biotite-schist sharp to gradual bedding planes, in lower portions small scale fol- ding (zigzag). Bedding planes: 25° Min: 10. stringers following primary sedimentary structures (2-3 Vol.-%)										
		72.17-72.54: sandy mica, chlorite, talc-schist laminae of graphite bearing mat. fine scale folding (harmonic), some- times undistorted, bedding planes: 15° Min: 10. irregular stringers following primary structures (3 Vol.-%)										

DIAMOND DRILL LOG

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From	To	Description	DDH No. SAM-82-01	Interval		Assays						
				From	To	Cu	Mo	Pb	Zn	Au	Ag	
		72.54 - 73.03: laminated interval										
		graphitic slate, biotite-schist, mica-										
		carbonate, sandy to quartzitic										
		biotite, chlorite, talc - stone										
		highly distorted										
		Min: po. mainly concordant, some-										
		thin crosscutting (10 Vol.-%)										
		73.03 - 74.90: biotite, chlorite, amphibole - rich										
		sandstone to sandy amphibole, mica-										
		stone										
		high distorted mat.										
		Min: po. spots, lenses, stringers										
		(2-3 Vol.-%)										
		74.10 - 74.65: talc, chlorite, biotite, am-										
		phibole - stone										
		(idiomorphic amphibole)										
		sometimes interbedded										
		mica, amphibole-, chlorite -										
		rich sandstone										
		Min: po. spots, stringers										
		(1-2 Vol.-%)										

DIAMOND DRILL LOG

FOLLDAL VERK A/S

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From	To	Description	DDH No. SAM-82-01	Interval		Assays						
				From	To	Cu	Mo	Pb	Zn	Au	Ag	
		74.90 - 74.98: laminated interval										
		graphitic siltstone with carbonate										
		bedding planes: 50°										
		Min: 10. stringers, following primary structures (< 1 Vol.-%)										
		74.98 - 75.10: Greenschist (talz, chlorite, amphibole)										
		walls: 28°										
		75.10 - 75.51: biotite, amphibole, talz, chlorite - with										
		sandstone to sandy greenschist										
		some stringers, spots of graphite										
		bearing mat.										
		highly distorted										
		Min: 10. spots, lenses, stringers										
		(2-3 Vol.-%)										
		75.51 - 75.60: greenschist (talz, chlorite, amphibole)										
		75.60 - 75.71: laminated interval										
		see: 74.90 - 74.98 (distorted)										
		75.71 - 77.35: laminated interval										
		graphite-schist to graphitic-slate, carb.										
		siltstone, phyllite, biotite-schist										
		stringers, lenses of carbonate, some										

DIAMOND DRILL LOG

FOLLDAL VERK A/S

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From	To	Description	DDH No. SM-82-01	Interval		Assays					
				From	To	Cu	Mo	Pb	Zn	Au	Ag
		veining, highly distorted with fine scale folding (harmonic, dish.)									
		Min: 10% concordant to primary structures, often rimmed by biotite flakes (10-20 Vol.-%)									
		77.35-77.95: alternating bedding									
		biotite-, chlorite-, amphibole-rich quartzite to high quartzitic green-schist.									
		highly distorted with irregular carb. veining.									
		Min: 10% spots, stringers, often following primary structures (1-2 Vol.-%)									
		77.95-84.40: quartzitic greenschist (biotite, chlorite, talc, amphibole)									
		massive to slightly bedded, some stringers, stripes of graphite bearing slate									
		highly distorted mat.									
		Min: 10% disseminated (< 1 Vol.-%)									
		py. platelets on fracture planes									

DIAMOND DRILL LOG

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From	To	Description	DDH No. SAM-82-01	Interval		%		%		Assays		Au	Ag
				From	To	Cu	Mo	Pb	Zn				
		78.55-78.61: carbonate - sand											
		79.52-80.00: mica-, amphibolite- rich sandstone											
		81.66 - 81.90: "											
84.40	124.00	<u>garnet, biotite, chlorite, amphibole - schist</u> high amounts of volcanic mat. interbedded, some stringers and stringers of graphitic mat. garnet: 0.3 - 0.7 cm in diameter Min: <u>py</u> , some spots. 95.98-97.15: carb. garnet, biotite, amphibole-schist well bedded, bedding planes: 15° 97.15 - 97.25: foliated section: 25° 97.59 - 97.61: " 15° 98.22 - 98.58: " 99.30 - 99.40: carb. veining with high distortion 122.91 - 123.32: carbonate-sand with some amphibole. Min: <u>py</u> . disseminated (1 Vol.-%)	SAM-82-6 96.00 97.00	0.13		-	0.02	-	-	1.0m			

DIAMOND DRILL LOG

FOLLDAL VERK A/S

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From	To	Description	DDH No. SAM-82-01	Interval		%		Assays				
				From	To	Cu	Mo	Pb	Zn	Au	Ag	
62.00	62.19	<u>graphite schist</u> see 61.20 to 62.00 (above)	SAM-82-3	62.00	63.00	0.03		-	0.03	0.034	-	
62.19	62.25	<u>biotite-carbonate</u> massiv Min. po. disseminated ($\pm$ 1 Vol.-%)										
62.25	62.26	<u>graphite-bearing slate</u> felsic habit. stressed mat.										
62.26	62.31	<u>biotite-chlorite-carbonate</u>										
62.31	62.52	<u>laminated graphitic slate</u> extremely stressed, slightly mylonitization. Min. po. some spots										
62.52	63.00	<u>biotite-chlorite-carbonate</u> Min. po. disseminated (2 Vol.-%)										
66.00	66.05	<u>calc-biotite-carbonate</u>	SAM-82-4	66.00	68.00	0.02		-	0.03	-	-	
66.06	66.90	<u>lamination interval</u> <u>greenschist</u> , <u>graphite schist</u> , <u>phyllite</u> , <u>altered volcanics</u> distorted mat. Min. po. concordant to primary structure										

DIAMOND DRILL LOG

FOLLDAL VERK A/S

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From	To	Description	DDH No. SAM-82-01	Interval		% Assays		mm			Ag
				From	To	Cu	Mo	Pb	Zn	Au	
		mostly connected with carbonate (2 Vol.-%)									
66.90	67.00	biotite - schist									
67.00	68.00	laminated interval									
		graphitic slate, mica-carbonate, green-schist, siltstone, phyllite									
		strongly foliated (disharmonic) with some distortion. carbonate veining									
		Min: 10. spots (< 1 Vol.-%)									
69.00	69.40	quartzite with high amounts of altered basic volcanics	SAM-82-5	69.00	71.00	0.03		-	0.04	-	-
		Min: 10. irregular stringers (3 Vol.-%)									
69.40	70.25	laminated interval									
		graphite phyllite, mica-carbonate, biotite-schist, metasiltstone									
		some distortion									
		Min: 10. concordant to bedding (1-3 Vol.-%)									
70.25	70.36	graphite schist									
		with mica-carbonate lamination									
		extremely distorted									

DIAMOND DRILL LOG

FOLLDAL VERK A/S

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From	To	Description	DDH No. <u>SAH-82-01</u>	Interval		%		Assays				Au	Ag
				From	To	Cu	Mo	Pb	Zn				
		Min: <u>10</u> . following bedding planes and crosscutting (5-7 Vol.-%)											
70.36	70.84	<u>graphite-bearing phyllite</u> with some irregular stringers of biotite, quartz and mica-carbonate slightly bedded, mostly distorted Min: <u>10</u> . irregular, normally connected with mica-rich mat. (5-7 Vol.-%)											
70.84	70.94	<u>mica-carbonate</u> some small stringers of graphite slightly bedded and distorted Min: <u>10</u> . (1 Vol.-%)											
70.94	71.00	<u>graphite-bearing phyllite (slate)</u> extremely distorted with irregular carbonate veining. some oxidation. Min: <u>10</u> . spots, stringers, veinlets (network structures) (5-7 Vol.-%)											
96.00	97.00	<u>carbonate-bearing garnet-biotite-actinolite schist</u> Min: <u>10</u> , <u>14</u> . some spots.	<u>SAH-82-6</u>	96.00	97.00	0.13		-	0.02		-	-	

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DIAMOND DRILL LOG

FOLLDAL VERK A/S

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From	To	Description	DDH No. <u>GET-82-01</u>	Interval		Assays						
				From	To	Cu	Mo	Pb	Zn	Au	Ag	
		laminated with siltstone, biotite-schist, mica-carbonate, carbonate some carb. veining. Bedding planes: 26° Min: <u>10</u> . occurs mainly in the carb. mat., some disseminated sulfide in the graphite (< 2 Vol.-%)										
		26.62-26.78: metasiltstone										
		26.78-27.50: greenstone (biotite, chlorite, amphibole) network of carbonate (testonics?)										
		27.50-27.56: metasiltstone										
		27.56-27.62: graphitic slate see: 26.00-26.62, Bedding planes: 30°										
		27.62-27.80: mica-carbonate to high carb. green-schist Min: <u>10</u> . disseminated (2 Vol.-%)										
		27.80-27.92: graphitic slate see: 26.00-26.62										
		27.92-27.94: quartzite Min: <u>10</u> . some spots										
		27.94-27.96: mica-carbonate Min: <u>10</u> , <u>11</u> . mostly following primary										

DIAMOND DRILL LOG

FOLLDAL VERK A/S

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From	To	Description	DDH No. SET-82-01	Interval		Assays						
				From	To	Cu	Mo	Pb	Zn	Au	Ag	
		structures; sometimes cross-cutting, here especially μ (5 Vol.-%)										
		28.96 - 28.98: graphitic slate -										
		see: 26.00 - 26.62										
		28.98 - 28.00: mica - carbonate										
		lamina of graphitic slate										
		28.00 - 28.44: graphitic slate										
		see: 26.00 - 26.62, some distortion										
		28.44 - 28.48: mica - carbonate										
		see: 28.94 - 28.96										
		28.48 - 28.52: graphitic slate										
		see: 26.00 - 26.62										
		28.52 - 28.63: metasiltstone										
		grading upwards into orthoquartzitic metasiltstone										
		Min: <u>po</u> . some spots. often in carb. mat.										
		28.63 - 28.90: graphitic slate										
		see: 26.00 - 26.62										
		28.90 - 28.98: greenschist										

DIAMOND DRILL LOG

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From	To	Description	DDH No	Interval		Assays					
				From	To	Cu	Mo	Pb	Zn	Au	Ag
		28.98 - 29.25: dis trication zone	GET-82-01								
		29.25 - 34.00: graphite bearing silstone									
		Min: <u>10</u> . disseminated (< 1 Vol.-%)									
		29.42 - 29.58: interbedded some									
		bands (mm) of graphite									
		bearing slate									
		bedding planes: 20°									
		29.88 - 29.94: "									
		bedding planes: 24°									
		30.10 - 30.15: "									
		bedding planes: 35°									
		30.50 - 30.60: "									
		bedding planes: 25°									
		30.92 - 30.95: carbonate-band									
		31.10 - 31.40: dis trication zone with									
		carbonate-cement									
		31.72 - 31.77: fine stringers of graphitic									
		slate									
		Min: <u>10</u> , <u>14</u> .									
		bedding planes: 30°									
		31.82 - 32.30: graphitic slate									

DIAMOND DRILL LOG

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From	To	Description	DDH No.	Interval		%		%		Assays		ppm	ppm
				From	To	Cu	Mo	Pb	Zn	Au	Ag		
		see: 26.00-26.62	GET-82-01										
		32.52-32.54:	"										
		32.73-32.75:	"										
		bedding planes: 28°											
		32.88-33.40: some fine stringers and	GET-82-21	33.00	34.00	0.04		-	0.04	-	-	1.0m	
		small bands (± 2 mm)											
		of graphite bearing slate,											
		some wavy bedding.											
		Min: <u>po</u> , <u>py</u> .											
		33.85-34.00: quartzitic siltstone											
		disturbed.											
		Min: <u>po</u> , <u>py</u> .											
		34.00-36.50: graphite schist	GET-82-22	34.00	36.00	0.03		-	0.02	-	-	2.0m	
		lamina of graywacke, mica-schist,											
		mica-carbonate. some stringers											
		and veinlets of carbonate, some											
		fracturation, strongly reversed.											
		Min: <u>po</u> , <u>py</u> , <u>cy</u> , <u>sl</u> . occurs in											
		the carb. mat. (± 1 Vol.-%)											
		36.50-36.92: graphite bearing siltstone											
		with stringers and bands of graphite											

DIAMOND DRILL LOG

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From	To	Description	DDH No. GET-82-01	Interval		% Cu		% Mo		% Pb		% Zn		Assays ppm Au ppm Ag	
				From	To										
		slate. bedding planes: 28°		GET-82-23											
		Min: <u>po, py</u>		36.00	38.00	0.04				-		0.02		-	2.0m
		36.92 - 37.00: graphite schist													
		see: 34.00 - 36.50													
		37.00 - 38.06: graphite bearing siltstone													
		massiv with carb. veining													
		Min: <u>po, py</u> .													
		38.06 - 38.60: carb. metasandstone													
		massiv													
		Min: <u>po, py, cy</u> . disseminated													
		(± 2 Vol.-%).													
		38.60 - 42.90: sandy graphite schist													
		laminated.													
		Min: <u>po, py</u> . (2 Vol.-%)													
		38.30 - 38.60: brecciation zone with													
		carbonate-cement													
		42.00 - 42.68: wavy bedding and dis-													
		ortion													
		42.90 - 43.20: mica-carbonate													
		Min: <u>po, py</u> . disseminated (1 Vol.-%)													
				GET-82-24											
				38.00	40.00	0.05				-		0.02		-	2.0m
				GET-82-25											
				40.00	42.00	0.04				-		0.03	trace	-	2.0m
				GET-82-26											
				42.00	44.00	0.03				-		0.03		-	2.0m

DIAMOND DRILL LOG

FOLLDAL VERK A/S

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From	To	Description	DDH No.	Interval		%		%		Assays		ppm	ppm	
				From	To	Cu	Mo	Pb	Zn	Au	Ag			
		43.20 - 46.50: sandy graphiteschist	§ ET-82-01											
		see: 37.60 - 42.70		§ ET-82-27										
				44.00	46.00	0.04		-	0.01	-	-	2.0	mc	
		46.50 - 48.88: graphiteschist		§ ET-82-28										
		massiv		46.00	48.00	0.04		-	0.01	-	-	2.0	mc	
		see: 34.00 - 36.50		§ ET-82-29										
				48.00	50.00	0.04		-	0.01	-	-	2.0	mc	
		28.88 - 48.99: high carb. metasilstone												
		48.99 - 52.04: graphitic slate		§ ET-82-30										
		laminated, bedding planes: 0-10°		50.00	52.00	0.03		-	0.01	0.068	-	2.0	mc	
		see: 26.00 - 26.62												
		52.04 - 53.45: carb. gneiss												
		idiomorphic actinolite in chloritic matrix, some biotite-rich stringers												
		Min. 10% irregular spots (5 vol.-%)												
		52.40 - 52.50: amphibolite with												
		garnet, mica-schist												
		52.66 - 52.68: talc-schist												
		53.20 - 53.25: chloritic talc-schist												
		53.45 - 54.00: graphitic slate												
		see: 26.00 - 26.62												
		bedding planes: 24°												
		54.00 - 54.08: mica-carbonate												

DIAMOND DRILL LOG

FOLLDAL VERK A/S

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From	To	Description	DDH No. <i>ET-82-01</i>	Interval		Assays					
				From	To	Cu	Mo	Pb	Zn	Au	Ag
		54.02-54.42: quartzitic metaciltstone stringers and bands (mm) of graphitic slate. spots and bands of carb. Min: <u>10</u> . in stringers (< 1 Vol.-%)									
		54.42-54.73: graphite bearing slate with small bands (mm) of graphite bearing quartzitic metaciltstone, mica-carbonate, chloritephyllite, chlorite, talc-schist. Min: <u>10</u> . mostly connected with carb. mat.									
		54.73-55.18: quartzitic metaciltstone stringers and fine bands of mica- carbonate Min: <u>10</u> . (± 2 Vol.-%)									
		55.18-55.62: aegiric metasandstone to quartzite some stringers of mica flakes Min: <u>10</u> . mostly in bedding planes sometimes crosscutting. (± 2 Vol.-%)									
		55.62-58.65: greenstone									

DIAMOND DRILL LOG

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From	To	Description	DDH No.	Interval		Assays						
				From	To	Cu	Mo	Pb	Zn	Au	Ag	
		58.65-59.21: sandy quartzite	GET-82-01									
		59.21 - 60.54: graphite bearing slate										
		see: 54.42 - 54.73										
		60.54 - 60.64: mica - carbonate										
		bedding planes: 20°										
		60.64 - 64.22: graphitic slate										
		see: 26.00 - 26.62										
		Min: 10, 14. 14 mostly as platelets										
		on fracture planes (5 Vol.-%)										
		61.72 - 61.79: mica - carbonate										
		64.22 - 64.90: graphite bearing metasiltstone										
		laminated.										
		Min: 10, 14. (1-2 Vol.-%)										
		64.90 - 64.91: mica - carbonate										
		64.91 - 65.82: graphitic slate										
		see: 26.00 - 26.62										
		some wavy bedding										
		Min: 10. (1 Vol.-%)										
		65.82 - 65.93: carb. argoic metasiltstone										
		fine stringers of graphite										
		Min: 10. restricted to carb. mat.										

FOLLDAL VERK A/S

%

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From	To	Description	DDH No	Interval		%		%		Assays		Au	Ag	
				From	To	Cu	Mo	Pb	Zn					
		65.93-67.58: graphitic slate see: 26.00-26.62 Min: <u>10</u> . (1 Vol.-%)	GET-82-01											
		67.58-67.78: alternating bedding graphite bearing slate with graphite bearing argillaceous siltstone Min: <u>10</u> . restricted to more carb. mat. (1 Vol.-%)		GET-82-31 67.00 69.00	0.03		-	Trace	-	-	2.0 m			
		67.78-69.80: graphitic slate laminated. graphite bearing siltstone, mica-carbonate, quartzitic silt- stone. some wavy bedding and distortion Min: <u>10</u> , <u>14</u> (1-2 Vol.-%) 68.66-68.73: quartzitic siltstone 69.50-69.51: "												
69.80	94.70	<u>garnet-actinolite schist</u> 69.80-70.05 quartzite 70.05-71.20 mica-carbonate massive to slightly bedded 71.15-71.16 carbonate band Min: <u>10</u> , <u>14</u> (10 Vol.-%)		GET-82-41 71.00 72.00	0.06		-	0.01	-	-	10 m			

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From	To	Description	DDH No. <i>JET-82-01</i>	Interval		Assays					
				From	To	Cu	Mo	Pb	Zn	Au	Ag
		71.20 - 71.46: quartzitic greenschist									
		71.46 - 73.00: mica, amphibol - carbonate									
		73.00 - 73.22: greenschist									
		73.22 - 75.00: garnet - amphibole schist									
		some bands with high strolite-content. small stringers of carb.									
		75.00 - 75.22: greenschist									
		75.22 - 75.40: reworking-zone									
		sheet of graphitic slate crushed to lense shaped particles. surrounded by carbonate.									
		Min. no. some spots.									
		75.40 - 75.90: zebra bedding									
		graphitic slate, phyllite, greenschist, metasilstone. each band between 1 to 5 mm. both sides sharp.									
		bedding planes: 5°									
		75.90 - 76.00: graphitic slate									
		see: 68.78-69.80									
		Min. no. some stringers, spots									

DIAMOND DRILL LOG

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From	To	Description	DDH No. <i>GAET-82-01</i>	Interval		Assays					
				From	To	Cu	Mo	Pb	Zn	Au	Ag
		76.00-76.09: <i>zibtrabbedding</i>									
		<i>see: 75.40-75.70</i>									
		76.09-76.28: <i>laminated interval</i>									
		<i>graphitic slate, arctic siltstone,</i>									
		<i>phyllite. rhythmic sedimentation</i>									
		76.28-76.94: <i>garnet, amphibolite-schist</i>									
		<i>stringers and small bands of</i>									
		<i>graphite</i>									
		76.94-77.10: <i>laminated interval</i>									
		<i>see: 76.09-76.28</i>									
		77.10-77.70: <i>garnet, amphibolite-schist</i>									
		77.70-77.95: <i>sandy phyllite</i>									
		<i>with bands and laminae of</i>									
		<i>greenschist, biotite-schist</i>									
		<i>bedding planes. 20°</i>									
		77.95-78.32: <i>laminating bedding (wavy habit)</i>									
		<i>biotite phyllite, greenschist, graphitic</i>									
		<i>slate, quartzite</i>									
		78.32-78.46: <i>serpentine, chlorite-schist</i>									
		<i>mica-bands and stringers</i>									
		<i>Min: no. some spots</i>									

FOLLDAL VERK A/S

%

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FOLLDAL VERK A/S

%

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From	To	Description	DDH No. <u>GET-82-01</u>	Interval		%			Assays			ppm Au	ppm Ag
				From	To	Cu	Mo	Pb	Zn				
94.70	116.30	<u>Volcanic sequence</u> 94.70-95.40: actinolite (garnets) 95.40-100.64: alternating bedding quartzite; quartzitic talc, chlorite, serpentine. bands common with sharp walls. bedding planes. 18° Min: <u>po, py</u> . mainly on fracture planes. 100.64-100.88: mica-carbonate Min: <u>po</u> . some spots 100.88-101.00: quartzite with mixed chlorite, serpentine (homogeneous) Min: <u>po</u> . irregular spots (± Vol.-%) 101.00-101.04: mica-carbonate 101.04-101.50: quartzite see: 100.88-101.00 101.50-103.40: quartzitic greenstone Wollastonit (?) on cracks. Min: <u>po</u> . some spots 103.40-104.80: alternating bedding see: 95.40-100.64											
				<u>GET-82-33</u> 104.70	105.70	trace			-	0.01	-	-	1.06

Hamar-Trykk A/S

DIAMOND DRILL LOG

FOLLDAL VERK A/S

%

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From	To	Description	DDH No. <i>GET-82-01</i>	Interval		%		%		Assays		ppm Au	ppm Ag
				From	To	Cu	Mo	Pb	Zn				
		104.80 - 104.93: Breccia											
		pieces of quartzite cemented by talc-											
		chlorite with idiomorphic arfvedsonite											
		Min. py. disseminated (2 Vol.-%)											
		104.93 - 104.98: Greenschist											
		104.98 - 105.62: Breccia											
		see: 104.80 - 104.93											
		105.62 - 105.89: Quartzitic greenstone		<i>GET-82-34</i> 105.70	106.70	trace		-	0.01	-	-	1.0m	
		Min. py. (< 1 Vol.-%)											
		105.89 - 105.95: quartzite											
		laminae of diorite-chlorite schist											
		irregular lenses of carbonate											
		Min. py. disseminated larger spots											
		mostly connected with carb.											
		(± 2 Vol.-%)											
		105.95 - 106.57: Greenschist											
		Min. py. disseminated (1 Vol.-%)											
		106.57 - 106.93: talc, chlorite - carbonate		<i>GET-82-35</i> 106.70	107.70	0.01		-	0.01	0.102	-	1.0m	
		Min. py (1 Vol.-%)											
		106.93 - 107.29: quartz bearing greenschist											
		Min. py (1 Vol.-%)											

DIAMOND DRILL LOG

FOLLDAL VERK A/S

%

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From	To	Description	DDH No. <u>GET-82-01</u>	Interval		%		%		Assays		Au	Ag
				From	To	Cu	Mo	Pb	Zn				
		112.06 - 112.73: amphibole with wollastonite(?) Min: <u>po</u> . some spots											
		112.73 - 113.24: garnet, biotite, amphibole - schist											
		113.24 - 113.52: amphibole with wollastonite(?)											
		113.52 - 115.62: garnet, biotite, amphibole - schist											
		115.62 - 115.90: quartzite see: 108.40 - 109.10 Min: <u>py</u> . some spots and stringers concordant to crosscutting (< 1 Vol.-%) bedding planes: 20°		<u>GET-82-37</u> 115.50	116.50	trace		-	trace	-	-		1.0m
		115.90 - 116.30: mica - carbonate with idiomorphic Biotite. Min: <u>py</u> , <u>wt</u> . irregular spots (1-2 Vol.-%)											
116.30	132.80	<u>biotite-schist and carbonate</u>											
		116.30 - 116.51: biotite-schist alternating bands of carbonate											
		116.51 - 116.61: carbonate some stringers of biotite-schist											
		116.61 - 116.84: mica - carbonate											

DIAMOND DRILL LOG

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From	To	Description	DDH No. <i>9 ET-82-01</i>	Interval		Assays					
				From	To	Cu	Mo	Pb	Zn	Au	Ag
		116.84 - 116.88: biotite - schist									
		116.88 - 117.30: mica - carbonate									
		117.30 - 118.62: biotite - schist									
		alternating bands of carbonate									
		118.62 - 118.71: carbonate									
		118.71 - 119.71: biotite - schist									
		alternating bands of carbonate									
		119.71 - 120.28: carbonate									
		120.28 - 120.70: biotite - schist									
		alternating bands of carbonate									
		120.70 - 125.00: carbonate									
		some biotite - flakes									
		125.00 - 125.08: gneiss									
		pieces of quartzite with carbonate									
		cemented by carbonate, mica - flakes									
		are arranged mainly on the									
		periphery of the rock pieces									
		125.28 - 125.36: mica - carbonate									
		125.36 - 128.15: sandy greenstone									
		126.05 - 126.60: gneiss, cemented									
		by carbonate									

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From	To	Description	DDH No. <i>8-ET-82-01</i>	Interval		Assays						
				From	To	Cu	Mo	Pb	Zn	Au	Ag	
		128.15 - 128.40: carbonate										
		128.40 - 129.30: breccia										
		see: 125.00 - 125.08										
		129.30 - 130.18: core missing										
		130.18 - 130.30: carbonate										
		130.30 - 132.60: breccia										
		see: 125.00 - 125.08										
		132.60 - 132.42: carbonate										
		132.42 - 132.82: mica-carbonate										
		132.82 - 133.25: quartzite										
		133.25 - 133.30: carbonate										
		133.30 - 133.35: biotite-schist										
		133.35 - 133.80: breccia										
		quartzitic nodules cemented by carbonate some idiomorphic biotite										
133.80	134.80	<u>quartzite</u>										

SAMPLES: GET-82-01

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From	To	Description	DDH No. <u>GET-82-01</u>	Interval		%	Assays					
				From	To		Cu	Mo	Pb	Zn	Au	Ag
33.00	33.40	<u>graphite-bearing siltstone</u> stringers and small bands (± 2 mm) of graphite-bearing slate. wavy bedding Min: <u>po, py</u>	<u>GET-82-21</u>	33.00	34.00	0.04			-	0.04	-	-
33.40	33.85	<u>graphite-bearing siltstone</u> Min: <u>po</u> , disseminated (< 1 Vol.-%)										
33.85	34.00	<u>quartzitic siltstone</u> distorted Min: <u>po, py</u>										
34.00	36.00	<u>graphite schist</u> laminated, laminae of grey waste, mica- schist, mica-carbonate. some stringers and inlets of carbonate, metazition, strongly marked Min: <u>po, py, cy, sl</u> , restricted to the carbonate (± 1 Vol.-%)	<u>GET-82-22</u>	34.00	36.00	0.03			-	0.02	-	-
36.00	36.50	<u>graphite schist</u> see: 34.00 to 36.00 (above)	<u>GET-82-23</u>	36.00	38.00	0.04			-	0.02	-	-

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From	To	Description	DDH No <i>GET-82-01</i>	Interval		Assays <i>1111</i>						
				From	To	<i>0/0</i> Cu	Mo	Pb	Zn	Au	Ag	
36.50	36.92	<u>graphite-bearing sil. blone</u> with stringers and bands of graphitic slate Min: <i>p0, p1</i>										
36.92	37.00	<u>graphiteschist</u> sec. 34.00 to 36.00 (above)										
37.00	37.06	<u>graphite-bearing sil. blone</u> massiv, with carbonate veining Min: <i>p0, p1</i>										
37.06	37.60	<u>carbonate-rich metasandstone</u> massiv Min: <i>p0, p1, c1</i> disseminated (± 2 Vol.-%)										
37.60	38.00	<u>sandy-graphiteschist</u> laminated Min: <i>p0, p1</i> (2 Vol.-%)										
38.00	40.00	<u>sandy-graphiteschist</u> sec: 37.60 to 38.00 (above)	<i>GET-82-24</i>	38.00	40.00	0.05		-	0.02	-	-	
40.00	42.00	<u>sandy-graphiteschist</u> sec: 37.60 to 38.00 (above)	<i>GET-82-25</i>	40.00	42.00	0.04		-	0.03	Trace	-	

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From	To	Description	DDH No. <i>GET-82-01</i>	Interval		% Cu		Mo		Pb		Assays Zn		<i>ppm</i> Au		Ag
				From	To											
42.00	42.90	<u>sandy graphite schist</u> wavy bedding and distortion see: 37.60 to 38.00 (above)	<i>GET-82-26</i>	42.00	44.00	0.03				-		0.03		-		-
42.90	43.20	<u>mica - carbonate</u> Min. μ , μ g. disseminated (1 Vol.-%)														
43.20	44.00	<u>sandy graphite schist</u> see: 37.60 to 38.00 (above)														
44.00	46.00	<u>sandy graphite schist</u> see: 37.60 to 38.00 (above)	<i>GET-82-27</i>	44.00	46.00	0.04				-		0.01		-		-
46.00	46.50	<u>sandy graphite schist</u> see: 37.60 to 38.00 (above)	<i>GET-82-28</i>	46.00	48.00	0.04				-		0.01		-		-
46.50	48.00	<u>graphite schist</u> massiv Min: μ , μ g, μ g, sl. restricted to carbonate ($\pm$ 1 Vol.-%)														
48.00	48.88	<u>graphite schist</u> see: 46.50 to 48.00 (above)	<i>GET-82-29</i>	48.00	50.00	0.04				-		0.01		-		-
48.88	48.99	<u>high carbonate metasediment</u>														

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From	To	Description	DDH No. <i>GET-82-01</i>	Interval		Assays					
				From	To	<i>0/0</i> Cu	Mo	Pb	Zn	<i>14.4</i> Au	Ag
48.99	50.00	<u>graphitic slate</u> lamina of metasiltstone, diolite schist, mica-carbonate, carbonate some carbonate veining Min: <u>po.</u> occurs mainly in the car- bonate mat. Besides that some disseminated sulfide in the graphite (< 2 Vol.-%)									
50.00	52.00	<u>graphitic slate</u> see: 48.99 to 50.00 (above)	<i>GET-82-30</i>	50.00	52.00	0.03		-	0.01	0.068	-
67.00	67.58	<u>graphitic slate</u> see: 48.99 to 50.00 (above)	<i>GET-82-31</i>	67.00	69.00	0.03		-	Trace	-	-
67.58	67.78	<u>alternating bedding</u> <u>graphite-bearing slate with graphite-bear-</u> <u>ing argasic metasiltstone</u> Min: <u>po.</u> restricted to high carbonate mat. (1 Vol.-%)									
67.78	69.00	<u>graphitic slate</u> lamina of graphite-bearing siltstone,									

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From	To	Description	DDH No. <i>GET-82-01</i>	Interval		Assays <i>ppm</i>					
				From	To	<i>%</i> Cu	Mo	Pb	Zn	Au	Ag
		<i>mica-carbonate, quartzitic meta-silt-stone</i> <i>wavy bedding, distortion</i> <i>Min: <u>po, py</u> (1-2 Vol.-%)</i>									
<i>71.00</i>	<i>71.25</i>	<i>mica-carbonate</i> <i>massive to slightly bedded</i>	<i>GET-82-41</i>	<i>71.00</i>	<i>72.00</i>	<i>0.06</i>		<i>-</i>	<i>0.01</i>	<i>-</i>	<i>-</i>
<i>71.15</i>	<i>71.16</i>	<i>carbonate-band</i> <i>Min: <u>po, cy</u> (10 Vol.-%)</i>									
<i>71.16</i>	<i>71.20</i>	<i>mica-carbonate</i> <i>see: 71.00 to 71.15 (above)</i>									
<i>71.20</i>	<i>71.46</i>	<i>quartzitic gneiss-silt</i>									
<i>71.46</i>	<i>72.00</i>	<i>mica-amphibol-carbonate</i>									
<i>90.80</i>	<i>91.00</i>	<i>quartzite</i> <i>irregular shaped particles of chlorite-carbonate</i> <i>Min: <u>po, cy</u> . occurs as spots and stringers in the carbonate</i>	<i>GET-82-32</i>	<i>90.80</i>	<i>91.80</i>	<i>0.03</i>		<i>-</i>	<i>0.01</i>	<i>-</i>	<i>-</i>
<i>91.00</i>	<i>91.20</i>	<i>garnet-silicopolithe-silt</i>									
<i>91.20</i>	<i>91.54</i>	<i>quartzite</i> <i>see: 90.80 to 91.00 (above)</i>									

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From	To	Description	DDH No. <u>GET-82-01</u>	Interval		% Cu		Mo		Pb		Zn		Assays <u>14.00</u>		Au	Ag
				From	To												
91.54	91.80	<u>garnet - orthoclase - quartz</u>															
104.70	104.80	<u>alternating bedding</u> <u>quartzite and quartzitic talc - chlorite -</u> <u>serpentine bands (one to mm)</u> Min: <u>py</u> , mainly on fracture planes	<u>GET-82-33</u>	104.70	105.70	Trace				-		0.01		-		-	
104.80	104.93	<u>breccia</u> rock pieces of quartzite cemented by talc - chlorite with idio. orthoclase Min: <u>py</u> , disseminated (2 Vol.-%)															
104.93	104.98	<u>greenschist</u>															
104.98	105.62	<u>breccia</u> see: 104.80 to 104.93 (above)															
105.62	105.70	<u>quartzitic greenstone</u> Min: <u>py</u> (< 1 Vol.-%)															
105.70	105.89	<u>quartzitic greenstone</u> Min: <u>py</u> (= 1 Vol.-%) see: 105.62 to 105.70	<u>GET-82-34</u>	105.70	106.70	Trace				-		0.01		-		-	
105.89	105.95	<u>quartzite</u> lamina of biotite - chlorite schist, irregular lenses of carbonate															

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From	To	Description	DDH No. <u>GET-82-01</u>	Interval		Assays <u>ppm</u>						
				From	To	Cu	Mo	Pb	Zn	Au	Ag	
		Min. <u>py.</u> disseminated. (± 2 Vol.-%)										
105.95	106.57	<u>greenschist</u>										
		Min. <u>py.</u> disseminated (1 Vol.-%)										
106.57	106.70	<u>talcs - chlorite - carbonate</u>										
		Min. <u>py.</u> (1 Vol.-%)										
106.70	106.93	<u>talcs - chlorite - carbonate</u>	<u>GET-82-35</u>	106.70	107.70	0.01		-	0.01	0.102	-	
		sec: 106.57 - 106.70 (above)										
106.93	107.29	<u>quartz - bearing greenschist</u>										
		Min. <u>py.</u> (1 Vol.-%)										
107.29	107.30	<u>biotite schist</u>										
107.30	107.51	<u>alternating bedding</u>										
		<u>quartzite with quartzitic biotite phyllite</u>										
		Min. <u>py.</u> disseminated										
107.51	107.70	<u>gneiss</u>										
		sec: 104.80 to 104.93 (above)										
107.70	107.85	<u>gneiss</u>	<u>GET-82-36</u>	107.70	108.70	Trace		-	0.01	-	-	
		sec: 104.80 to 104.93 (above)										
107.85	107.92	<u>biotite - schist</u>										
107.92	108.02	<u>talcs - chlorite - biotite schist</u>										

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From	To	Description	DDH No. <u>GET-82-01</u>	Interval		%		Assays				Au	Ag
				From	To	Cu	Mo	Pb	Zn				
108.02	108.20	alternating bedding <u>quartzite with talc-chlorite-biotite schist</u> extremely distorted, small scale E-W trend folding											
108.20	108.40	<u>breccia</u> see: 104.80 - 104.93 (above)											
108.40	108.70	<u>quartzite</u> with bands and stripes of biotite phyllite and serpentine-chlorite											
115.50	115.62	<u>garnet-biotite-orthoclase schist</u>	<u>GET-82-37</u>	115.50	116.50	Trace		-	Trace			-	-
115.62	115.90	<u>quartzite</u> see: 108.40 to 108.70 (above) Min: py. some spots and stringers (< 1 Vol.-%)											
115.90	116.30	<u>unica-carbonate</u> Min: py. nat. irregular spots (1-2 Vol.-%)											
116.30	116.50	<u>biotite-schist</u>											

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D.D.H. No.	Azimuth	Started	Directional surveys						
Property	Angle	Finished	Depth	Azim.	Dip.	Depth	Azim.	Dip.	
Co-ord.	Depth	Logged by							
GAT-82-02	304°	06.07.82							
GATKEVARAI	-45°	08.07.82							
L 18+00 S 9+75 E	157.40	FDP.							
From	To	Description	Interval	% Cu	% Mo	% Pb	% Zn	% Au	% Ag
0.00	06.05	overburden							
06.05	81.10	carbonaceous interval with interbedded volcanics	GAT-82-1 12.00 13.00	0.04			0.06	0.306	- 1.0m
		6.05 - 81.10 : graphitic slate to graphitic phyllite	GAT-82-2 13.00 15.00	0.04		-	0.05	0.340	- 2.0m
		massiv to well bedded with either	GAT-82-3 15.00 17.00	0.04		-	0.07	0.136	- 2.0m
		volcanic mat. or quartzitic mat.	GAT-82-4 17.00 19.00	0.06		-	0.15	0.068	- 2.0m
		folding planes: 30°, sometimes	GAT-82-5 19.00 20.00	0.07		-	0.24	0.374	- 1.0m
		distortion with slightly autochthonous	GAT-82-6 20.00 21.00	0.10		-	0.10	trace trace	1.0m
		and again remountation	GAT-82-7 21.00 23.00	0.05		-	0.17	0.068	- 2.0m
		by carb., some carb. mining	GAT-82-8 23.00 25.00	0.05		-	0.18	0.034	- 2.0m
		Hin: fo, cy, py, sl. mostly connected	GAT-82-9 25.00 27.00	0.05		-	0.09	0.102	- 2.0m
		with the carb. mat. con-	GAT-82-10 27.00 29.00	0.05		-	0.11	trace	- 2.0m
		cordant to bedding, in rare	GAT-82-11 29.00 31.00	0.05		-	0.12	0.068	- 2.0m
		cases crosscutting.	GAT-82-12 31.00 32.00	0.04		-	0.12	-	- 1.0m
		(2 Vol.-%, sometimes up to	GAT-82-13 33.00 35.00	0.05		-	0.07	-	- 2.0m
		10 Vol.-%) high sulfide con-	GAT-82-14 35.00 37.00	0.06		-	0.17	-	- 2.0m
		centrations: 18.50 - 18.80	GAT-82-38 37.00 39.00	0.05		-	0.07	-	- 2.0m
		19.60 - 19.70	GAT-82-15 39.00 41.00	0.05		-	0.15	-	- 2.0m
		20.00 - 20.50	GAT-82-39 42.00 43.00	0.05		-	0.09	0.068	- 1.0m
		72.50 - 73.80							

DIAMOND DRILL LOG

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From	To	Description	DDH No. <i>GET-82-02</i>	Interval		% <i>%</i>		% <i>%</i>		Assays <i>ppm</i> <i>ppm</i>		
				From	To	Cu	Mo	Pb	Zn	Au	Ag	
		21.30 - 21.50		<i>GET-82-16</i> 43.00	45.00	0.07		-	0.06	-	-	2.0 <i>mc</i>
		22.20 - 22.21: mica - schist		<i>GET-82-40</i> 45.00	47.00	0.08		-	0.09	-	-	2.0 <i>mc</i>
		30.20 - 30.26: mica - carbonate (altered basic volcanics)										
		31.08 - 31.09: biotite - schist with some stringers of carbonate										
		34.40 - 34.70: biotite - H ₂ O quartzite with laminae of graphite bearing slate and altered basic volcanics										
		Min: <u>cy, po</u> occurs mainly in volcanic and carb. mat. ($> 2 \text{ Vol.-%}$)										
		34.80 - 34.90: mica - carbonate (altered basic volcanics)										
		Min: <u>po, py</u> disseminated. ($\pm 3 \text{ Vol.-%}$)										
		34.90 - 35.30: biotite bearing quartzite Min: <u>po, py</u> disseminated. ($\pm 3 \text{ Vol.-%}$)										

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From	To	Description	DDH No.	Interval		Assays						
				From	To	Cu	Mo	Pb	Zn	Au	Ag	
		35.30 - 35.40: mica - carbonate (altered basic volcanics) with interbedded quartz-rich section. Epidote in sporadic areas. Min: <u>10</u> disseminated. Big spots to about 0,3 cm in diameter in sporadic areas (5 Vol.-%)	GET-82-02									
		37.74 - 37.80: quartzite										
		40.60 - 40.83: mica - carbonate (altered basic volcanics) Min: <u>10</u> , + cy. fine net- work (10 Vol.-%)										
		41.30 - 41.70: "										
		42.45 - 42.51: quartz - rich mica - car- bonate (altered basic vol.) Min: <u>10</u> disseminated (5 Vol.-%)										

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%

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From	To	Description	DDH No.	Interval		%		%		Assays		ppm Au	ppm Ag
				From	To	Cu	Mo	Pb	Zn				
		42.76-42.80: quartz - rich mica - carbonate (altered basic volcanics) Min: 10, ± cy. fine net- work (10 Vol.-%)	GET-82-02										
		45.10-45.30: mica - carbonate (altered basic volcanics) with some flakes of graphite Min: py, cy. (< 1 Vol.-%)											
		46.18-46.40: gray waste											
		45.88-45.92: see 45.10 - 45.30											
		46.15-46.25: "											
		48.10-48.75: "											
		48.90-48.92: "											
		49.20-50.50: altered basic volcanics (mica - carbonate) Min: po. some spots.		GET-82-42 47.00 49.20		0.07		-	0.06	-	-	2.2 m	
				GET-82-43 49.20 50.50		0.01		-	0.02	0.102	-	1.3 m	
				GET-82-44 50.50 52.60		0.04		-	trace	0.034	trace	1.1 m	
				GET-82-45 52.60 54.50		0.01		-	0.02	0.064	-	1.9 m	
		52.60-54.72: mica - carbonate (altered basic volcanics) Min: po. mostly occurring in biotite less areas.		GET-82-17 54.50 55.50		0.04		-	0.03	0.816	-	1.0 m	

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%

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From	To	Description	DDH No.	Interval		%		%		Assays		ppm	ppm
				From	To	Cu	Mo	Pb	Zn	Au	Ag		
		55.40-55.80: laminated interval	GET-82-02										
		biotite, chlorite, talc-schist											
		with graphite bearing mat											
		and carbonate											
		bedding planes: 10°											
		55.80-56.30: laminated greenschist											
		(biotite, chlorite, talc)											
		56.30-59.00: laminated interval											
		graphite a. greenschist											
		wavy bedding, some											
		irregular blebs of biotite											
		(ophitic texture with											
		chlorite). high carb.											
		some distortion											
		Min: po, ± py, ± cy.											
		59.00-59.63: mica-carbonate (altered											
		basic volcanics) with											
		stringers of graphite.											
		sometimes wavy bedding.											
		Min: po, mainly connected											
		with the graphite.											

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FOLLDAL VERK A/S

%

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From	To	Description	DDH No	Interval		%		%		Assays		μmm Au	μmm Ag
				From	To	Cu	Mo	Pb	Zn				
		59.73 - 59.76: graphite bearing quartzite	GET-82-02										
		59.90 - 59.93: mica - carbonate											
		78.85 - 78.98: mica - carbonate		GET-82-18 61.00	63.00	0.02		-	0.03	0.034	-	2.0m	
		Min: <u>po</u> (< 2 Vol.-%)		GET-82-19 72.00	74.00	0.02		-	0.03	-	-	2.0m	
		80.00 - 81.10: alternating bedding graphite bearing slate with meta-phyllite. slowly increasing graphite Min: <u>po</u> , <u>py</u> , <u>cy</u> (2 Vol.-%)											
81.10	85.40	<u>biotite-phyllite</u> slightly bedded, some stringers and laminae of carbonate											
85.40	89.90	<u>garnet, biotite - schist</u> with high carb. content sometimes gneissic texture											
89.90	107.70	<u>high carb. quartz, feldspar, biotite - gneis</u> massive to slightly or well bedded (mica) bedding planes: 25° Min: <u>mt</u> , <u>po</u> , <u>py</u> (> 5 Vol.-%) 89.90 - 90.08: carbonate 90.70 - 90.72: " 91.29 - 91.39: "											

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From	To	Description	DDH No.	Interval		Assays						
				From	To	Cu	Mo	Pb	Zn	Au	Ag	
		95.38 - 95.41: carbonate	GET-82-02									
107.70	112.10	<u>Flag.-amphibolite (altered gabbro)</u> Varying Flag. content: 10 to 50 Vol.-% Min: int, py (idiomorphic)										
112.10	118.38	<u>sandy phyllite (biotite)</u> massive to slightly bedded; here stripes of carbonate or alternating bedding of biotite- schist and biotite, chlorite-phyllite Min: 10. some spots. 112.10 - 112.50: idiomorphic py and idiomorphic int (2 Vol.-%)										
118.38	151.05	<u>Volcanic - sedimentary interval</u> 118.38 - 151.05: alternating bedding to laminated graphitic phyllite with mica- carbonate and biotite-schist often distortion with zigzag folding Min: 10. mostly concordant to sedimentary structures (± 1 Vol.-%) 119.38 - 119.48: sandy biotite-carbonate 119.95 - 119.98: " 124.30 - 124.87: "										

DIAMOND DRILL LOG

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From	To	Description	DDH No	Interval		%		%		Assays		Au	Ag
				From	To	Cu	Mo	Pb	Zn				
		127.90 - 128.60: laminated in basal biotite-schist, mica- carbonate, quartzite highly distorted (disharmonic) Min: <u>po.</u> some spots mostly connected with carb. mat.	9ET-82-02										
		128.92 - 129.45: see 127.90 - 128.60											
		131.65 - 132.10: "											
		134.22 - 134.40: "											
		134.78 - 135.00: "											
		135.90 - 135.96: "											
		136.68 - 136.98: "											
		148.08 - 148.30: mica-carbonate											
		148.50 - 148.82: "											
		149.50 - 150.00: mica-carbonate with fine bands of biotite- schist. Min: <u>po.</u> irregular (5 vol.%)		9ET-82-20 149.00	151.00	0.02		-	0.01	-	-	2.00	
151.05	156.94	biotitephyllite with some stringers of carb.											

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From	To	Description	DDH No. GET-82-02	Interval		0/0		0/0		Assays		ppm	
				From	To	Cu	Mo	Pb	Zn	Au	Ag		
12.00	13.00	graphitic slate to graphitic phyllite massiv. some carbonate veining Min: <u>po, cy, py, sl</u> . mostly connected with the carbonate (1-2 Vol.-%)	GET-82-1	12.00	13.00	0.04		-	0.06	0.306	-		
13.00	15.00	graphitic slate to graphitic phyllite 13.00-14.00: massiv ss: 12.00-13.00 14.00-14.30: laminated with graphite bearing meta sandstone 14.30-15.00: distorted section with irregular carbonate veining	GET-82-2	13.00	15.00	0.04		-	0.05	0.340	-		
15.00	17.00	graphitic slate to graphitic phyllite 15.00-15.30: laminated 15.30-17.00: laminated with slightly distortion	GET-82-3	15.00	17.00	0.04		-	0.07	0.136	-		
17.00	19.00	graphitic slate to graphitic phyllite 17.00-18.00: laminated with slightly distortion 18.00-18.50: massiv	GET-82-4	17.00	19.00	0.06		-	0.15	0.068	-		

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From	To	Description	DDH No	Interval		%		%		Assays		ppm	
				From	To	Cu	Mo	Pb	Zn	Au	Ag		
		18.50-18.80: high sulfide concentration (10 Vol.-%). distorted mat.	GET-82-02										
		18.80-19.00: laminated with slightly distortion											
19.00	20.00	<u>graphitic slate to graphitic phyllite</u> 19.00-19.60: laminated with slightly distortion 19.60-19.70: high sulfide concentration (6-7 Vol.-%) 19.70-20.00: massiv. some irregular carbonate veining	GET-82-5	19.00	20.00	0.07		-	0.24	0.374	-		
20.00	21.00	<u>graphitic slate to graphitic phyllite</u> 20.00-20.50: high sulfide concentration (6 Vol.-%) 20.50-20.70: laminated to massiv 20.70-21.00: well banded section. bands (mm) of carbonate with mica.	GET-82-6	20.00	21.00	0.10		-	0.10	+	+		

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FOLLDAL VERK A/S

%

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From	To	Description	DDH No. <u>GET-82-02</u>	Interval		%		%		Assays		µm	Ag
				From	To	Cu	Mo	Pb	Zn	Au			
21.00	22.20	<u>graphitic slate to graphitic phyllite</u> 21.00-21.30: well bedded section, bands (mm) of carbonate with mica 21.30-21.50: high sulfide concentration (6-7 Vol.-%) laminated 21.50-22.20: massiv	<u>GET-82-7</u>	21.00	23.00	0.05		-	0.17	0.068	-		
22.20	22.21	<u>biotite schist</u>											
22.21	23.00	<u>graphitic slate to graphitic phyllite</u> well bedded with either volcanic mat (mica-carbonate) or quartzitic mat, carbonate veining Min: see 12.00 to 13.00 (above)											
23.00	25.00	<u>graphitic slate to graphitic phyllite</u> see: 22.21 - 23.00 (above)	<u>GET-82-8</u>	23.00	25.00	0.05		-	0.18	0.034	-		
25.00	27.00	<u>graphitic slate to graphitic phyllite</u> see: 22.21 - 23.00 (above)	<u>GET-82-9</u>	25.00	27.00	0.05		-	0.09	0.102	-		
27.00	29.00	<u>graphitic slate to graphitic phyllite</u>	<u>GET-82-10</u>	27.00	29.00	0.05		-	0.11	Trace	-		

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From	To	Description	DDH No. <i>9ET-82-02</i>	Interval		% %		% %		Assays <i>1pm</i>		
				From	To	Cu	Mo	Pb	Zn	Au	Ag	
		<i>see: 22.21 - 23.00 (above)</i>										
29.00	30.20	<u>graphitic slate to graphitic phyllite</u>	<i>9ET-82-11</i>	29.00	31.00	0.05		-	0.12	0.068	-	
		<i>see: 22.21 - 23.00 (above)</i>										
30.20	30.26	<u>mica - carbonate</u>										
		<i>irregular bedding</i>										
30.26	31.00	<u>graphitic slate</u>										
		<i>laminated. some irregular carbonate veining</i>										
		<i>Min: 10, idiom. μg, $\pm\text{cy}$. restricted to the carbonate ($\pm 2\text{ Vol.-%}$)</i>										
31.00	31.08	<u>graphitic slate</u>	<i>9ET-82-12</i>	31.00	33.00	0.04		-	0.12	-	-	
		<i>see: 30.26 - 31.00 (above)</i>										
31.08	31.09	<u>Diorite chert</u>										
31.09	33.00	<u>graphitic slate</u>										
		<i>laminae of mica-carbonate, carbonate, graphite bearing phyllite.</i>										
		<i>some irregular carbonate veining, auto-oxidation (rock pieces 0.1 - 0.2 cm in diameter)</i>										

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From	To	Description	DDH No. <i>GET-82-02</i>	Interval		% %		Asays %		ppm ppm	
				From	To	Cu	Mo	Pb	Zn	Au	Ag
		<i>Min: 10, cy (2-4 Vol.-%)</i>									
33.00	34.00	<i>graphitic slate</i> <i>see: 31.09 to 33.00 (above)</i>	<i>GET-82-13</i>	33.00	35.00	0.05		-	0.07	-	-
34.00	34.20	<i>alternating bedding</i> <i>graphite bearing slate with graphite</i> <i>bearing quartzite and some stripes</i> <i>of mica-carbonate</i> <i>Min: 10, cy (2-3 Vol.-%)</i> <i>10 mostly connected with the</i> <i>quartzitic mat.</i>									
34.20	34.40	<i>graphitic slate</i> <i>lamina of mica-carbonate</i> <i>Min: 10, cy (± 2 Vol.-%)</i>									
34.40	34.70	<i>blotite-rich quartzite</i> <i>fine beds of graphite bearing slate</i> <i>and mica-carbonate</i> <i>Min: 10, ± cy. Occurs mainly in the</i> <i>volcanaceous mat. (± 2 Vol.-%)</i>									
34.70	34.80	<i>graphitic slate</i> <i>see: 31.09 to 33.00 (above)</i>									

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From	To	Description	DDH No. <i>9 ET-82-02</i>	Interval		% <i>%</i>		% <i>%</i>		Assays <i>ppm</i>		Au	Ag
				From	To	Cu	Mo	Pb	Zn				
34.80	34.90	Min: <u>po, cy, + py</u> (± 2 Vol.-%)											
		<u>mica - carbonate</u>											
34.90	35.00	Min: <u>po, py</u> . disseminated (2 Vol.-%)											
		<u>biotite - bearing quartzite</u>											
		Min: <u>po, + py</u> (3 Vol.-%)											
		disseminated											
35.00	35.30	<u>biotite - bearing quartzite</u>	<i>9 ET-82-14</i>	35.00	37.00	0.06		-	0.17	-	-		
		see: 34.90 - 35.00 (above)											
35.30	35.40	<u>mica - carbonate</u>											
		interbedded quartzitic sections											
		Min: <u>po</u> , disseminated . some lumps											
		with 0.3 cm in diameter (5 Vol.-%)											
35.40	36.70	<u>graphitic slate</u>											
		fine strings and stripes of mica - carbonate											
		Min: <u>po, + cy, + py</u> (± 2 Vol.-%)											
36.70	37.00	<u>laminated interval</u>											
		<u>mica - carbonate with graphite bearing</u>											
		<u>phyllite / slate</u>											
		some irregular carbonate veining											

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From	To	Description	DDH No. <u>9 ET-82-02</u>	Interval		%		%		Assays		
				From	To	Cu	Mo	Pb	Zn	Au	Ag	
		Min: <u>py</u> , <u>py</u> , <u>± cy</u> (<u>± 2 Vol.-%</u>)										
37.00	37.74	laminated interval <u>mica-carbonate with graphite-bearing</u> <u>phyllite/slate</u> see: 36.70 to 37.00 (above)	<u>9 ET-82-38</u>	37.00	37.00	0.05		-	0.07	-	-	
37.74	37.80	<u>quartzite</u>										
37.80	37.90	laminated interval <u>mica-carbonate with graphite bearing</u> <u>phyllite/slate</u> see: 36.70 to 37.00 (above)										
37.90	39.00	<u>graphitic slate</u> lamina and stringers of mica-carbonate some carbonate veining Min: <u>py</u> , <u>py</u> , <u>± cy</u> connected with the carbonate. (<u>2 Vol.-%</u>)										
39.00	40.60	<u>graphitic slate</u> see: 37.90 to 39.00 (above)	<u>9 ET-82-15</u>	39.00	41.00	0.05		-	0.15	-	-	
40.60	40.83	<u>mica-carbonate</u> Min: <u>py</u> , <u>± cy</u> network like (<u>10 Vol.-%</u>)										

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%

%

Assays

mm

Au

Ag

From	To	Description	DDH No. <u>GET-82-02</u>	Interval		% Cu		% Mo		% Pb		% Zn		% Au		% Ag	
				From	To												
40.83	41.00	<u>graphitic slate</u> see: 37.90 to 39.00 (above)															
42.00	42.45	<u>graphitic slate</u> see: 37.90 to 39.00 (above) Min: <u>no</u> (1 Vol.-%)	<u>GET-82-39</u>	42.00	43.00	0.05				-		0.09	0.068	-			
42.45	42.51	<u>quartzite - rich mica - carbonate</u> Min: <u>no</u> (5 Vol.-%)															
42.51	42.76	<u>graphitic slate</u> see: 42.00 to 42.45 (above)															
42.76	42.80	<u>quartzite - rich mica - carbonate</u> see: 42.45 to 42.51 (above) Min: <u>no</u> , <u>± cy</u> - hetero- size (10 Vol.-%)															
42.80	43.00	<u>graphitic slate</u> beds of argon metapelite and mica carbonate. some distortion with irregular carbonate veining Min: <u>no</u> , <u>py</u> , <u>± cy</u> (<2 Vol.-%) mostly connected with the sandy and carbonate mat.															

DIAMOND DRILL LOG

FOLLDAL VERK A/S

%

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From	To	Description	DDH No. <u>GET-82-02</u>	Interval		% Cu		% Mo		% Pb		Assays Zn		ppm Au		Ag
				From	To											
46.25	47.00	<u>graphitic slate</u> see: 42.80 to 43.00 (above)														
54.50	54.82	<u>mica-carbonate</u> Min: <u>po</u> . occurs mainly in the biotite- less sections. here concordant to bedding and also discordant (± 1 Vol.-%)	<u>GET-82-17</u>	54.50	55.50	0.04				-		0.03	0.816	-		
54.82	55.40	<u>graphitic slate</u> fine stripes and bands of carbonate. Min: <u>po</u> , $\pm$ <u>cy</u> (< 2 Vol.-%)														
55.40	55.50	<u>laminated interval</u> <u>biotite-chlorite-talc schist, carbonate,</u> <u>graphite bearing metasilicstone</u>														
61.00	63.00	<u>alternating bedding</u> <u>graphite bearing slate with stringers</u> <u>and lamina of mica-carbonate,</u> <u>graphite-bearing quartzite, biotite schist</u> Min: <u>po</u> , $\pm$ <u>cy</u> , $\pm$ <u>py</u> (< 2 Vol.-%)	<u>GET-82-18</u>	61.00	63.00	0.02				-		0.03	0.034	-		

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From	To	Description	DDH No. <i>§ ET-82-02</i>	Interval		% Cu		% Mo		% Pb		% Zn		% Au		% Ag	
				From	To												
72.00	74.00	alternating bedding <u>graphite-bearing slate with stringers and</u> <u>lamina of mica-carbonate, graphite-</u> <u>bearing quartzite, biotite schist</u> see: 61.00 to 63.00 (above) 72.50 - 73.80: high sulfide concentra- tion (3-5 Vol.-%)	<i>§ ET-82-19</i>	72.00	74.00	0.02				-		0.03		-		-	
149.00	149.50	laminated interval <u>graphitic phyllite, mica-carbonate,</u> <u>biotite schist</u> Min: <u>10</u> (± 1 Vol.-%)	<i>§ ET-82-20</i>	149.00	151.00	0.02				-		0.01		-		-	
149.50	150.00	<u>mica-carbonate</u> Min: <u>10</u> , irregular (5 Vol.-%)															
150.00	151.00	laminated interval <u>graphitic phyllite, mica-carbonate,</u> <u>biotite schist</u>															

Completion to samples GET-82-02

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From	To	Description	DDH No. GET-82-02	Interval		% %		% %		Assays ppm ppm	
				From	To	Cu	Mo	Pb	Zn	Au	Ag
47.00	48.70	<u>graphitic slate</u> beds of argosic metasilstone and mica-carbonate. some distortion with irregular car- bonate veining Min: py, ± cy (< 2 Vol.-%) mostly connected with the sandy and carbonate mat.	GET-82-42	47.00	49.20	0.07		-	0.06	-	-
48.70	48.75	<u>mica-carbonate</u> some stringers of graphite Min: py, ± cy (< 1 Vol.-%)									
48.75	48.90	<u>graphitic slate</u> see: 47.00-48.70									
48.90	48.92	<u>mica-carbonate</u> see: 48.70-48.75									
48.92	49.20	<u>graphitic-slate</u> see: 47.00-48.70									
49.20	50.50	<u>mica-carbonate</u> biotite/carbonate ca. 50/50 biotite-flakes showing slightly	GET-82-43	49.20	50.50	0.01		-	0.02	0.102	-

DIAMOND DRILL LOG

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From	To	Description	DDH No.	Interval		%		%		Assays		ppm	ppm
				From	To	Cu	Mo	Pb	Zn	Au	Ag		
		lamination by mostly inhomogeneous distribution Min: 10. as spots mostly in carbonate (< 1 Vol.-%)	GET-82-02										
50.50	52.60	<u>graphitic slate</u> stripes, flakes, stringers of mica-carbonate. highest graphite content totl at the foot wall and hanging wall Min: 10, 5% (± 2 Vol.-%) occurs mostly in the carbonate mat. 50.52 - 50.60: <u>brecciation zone</u> autobrecciation (rock pieces 0.4 cm in diameter, carbonate-cement) 52.30 - 52.32: <u>distortion</u> with autobrecciation	GET-82-44	50.50	52.60	0.04		-	+	0.034	+		

DIAMOND DRILL LOG

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From	To	Description	DDH No. <u>GET-82-02</u>	Interval		%		%		Assays		ppm Au	ppm Ag
				From	To	Cu	Mo	Pb	Zn				
52.60	54.50	<u>mica-carbonate</u>	<u>GET-82-45</u>	52.60	54.50	0.01		-	0.02	0.064	-		
		see: 49.20 - 50.50											
		Min: <u>po</u> as spots in more car- bonate mat. sometimes stringers concordant to lamination of biotite-fl. and crosscutting											
55.50	55.80	<u>laminated interval</u>	<u>GET-82-46</u>	55.50	57.00	0.01		-	0.03	+	-		
		biotite-chlorite-talc schist, carbon- ate, graphite bearing meta silt- stone											
		see: sample GET-82-17											
55.80	56.30	<u>biotite-chlorite-talc schist</u> laminated											
56.30	57.00	laminated to wavy bedded <u>altered basic volcanics</u> with fine stringers and layers of <u>graphite</u> very inhomogeneous distribution of biotite (ophitic texture with											

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From	To	Description	DDH No. <i>ET-82-02</i>	Interval		%		%		Assays		ppm Au	ppm Ag
				From	To	Cu	Mo	Pb	Zn				
		chlorite), normally high carbonate content. some carbonate veining combined to distortion. Min: <u>10</u> , <u>py.</u> , <u>±cy.</u> as spots and some stringers (<1 Vol.-%)											
57.00	58.00	laminated to wavy bedded <u>altered basic volcanics</u> with fine stringers and layers of <u>graphite</u> see: 56.30 - 57.00	<i>ET-82-47</i>	57.00	58.00	0.02		-	0.04	0.068	-		
58.00	59.00	laminated to wavy bedded <u>altered basic volcanics</u> with fine stringers and layers of <u>graphite</u> see: 56.30 - 57.00	<i>ET-82-48</i>	58.00	59.63	0.03		-	0.02	+	+		
59.00	59.63	<u>mica - carbonate</u> see: 49.20 - 50.50 with stringers and bands of graphite bearing slate Min: <u>10</u> . connected mainly to the graphite bearing slate											

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From	To	Description	DDH No.	Interval		%		%	Assays		ppm	ppm
				From	To	Cu	Mo	Pb	Zn	Au	Ag	
59.63	61.00	alternating bedding graphite bearing slate with stringers and laminae of mica-carbonate, graphite bearing quartzite, dioritic schist Min: μO , $\pm \mu\text{y}$, $\pm \text{cy}$ (<2 Vol.-%) connected mainly to the mica-carbonate	GET-82-02	59.63	61.00	0.02		-	0.02	-	-	
			GET-82-49									

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D.D.H. No.	APV-82-01	Azimuth	324°	Started	28.07.82	Directional surveys							
Property	Aslat - Pier - Varri	Angle	-45°	Finished	29.07.82	Depth	Azim.	Dip.	Depth	Azim.	Dip.		
Co-ord.	L 12+00 S 2+00 Ø	Depth	86.54	Logged by	F.D.P								
From	To	Description				Interval		Assays					
						From	To	Cu	Mo	Pb	Zn	Au	Ag
0.00	4.40	overburden											
4.40	44.60	<u>amphibolite (altered gabbro)</u>											
		4.40 - 15.00: amphibolite with Plag. (1-2 Vol.-%)											
		medium grained (0.3 - 0.5 cm)											
		6.58 - 6.62: Diolite - crist											
		with some spots of carbonate											
		15.00 - 16.00: amphibolite with Plag. (30-40 Vol.-%)											
		medium grained (0.3 - 0.5 cm)											
		16.00 - 17.00: core missing											
		17.00 - 17.10: amphibolite											
		see: 15.00 - 16.00											
		17.10 - 20.00: Plagioclase - amphibolite											
		coarse grained (0.5 - 1.0 cm)											
		some irregular carb. veining											
		19.66 - 19.68: Diolite - crist											
		sharp walls: 65°											
		20.60 - 20.80: foliated interval											
		25.70 - 25.71: carbonate - sand											

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From	To	Description	DDH No. <u>APV-82-01</u>	Interval		Assays						
				From	To	Cu	Mo	Pb	Zn	Au	Ag	
		slightly layered to massiv. layering: 5° Min: <u>py.</u> mostly in the graphitic sections or in carb. veining. some- times disseminated										
44.60	50.50	<u>Volcanic - sedimentary section</u> 44.60-44.92: alternating bedding of graphite bearing slate, graywacke and mica- carbonate. some irregular carb. veining bedding planes: 10° 44.92-45.07: mica-carbonate 45.07-45.19: quartz-vein with fine stringers and bands (cm- mm) of graphite Min: <u>py.</u> spots and stringers following cracks. 45.19-45.80: graphite to graphite slate highest graphite content at the top of horizon. bottom-group laminated										

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From	To	Description	DDH No. <i>APV-82-01</i>	Interval		Assays						
				From	To	Cu	Mo	Pb	Zn	Au	Ag	
		Min. <u>14</u> , <u>10</u> . <u>14</u> : mostly concentrated in the top <u>10</u> : highest amounts in the bottom-group both following primary structures (1 Vol.-%)										
		45.80-46.04: mica-carbonate										
		Min: <u>10</u> . disseminated (1-2 Vol.-%)										
		46.04 - 47.00: graphitic to graphite bearing slate laminated. (mica-carbonate, biotite-schist, metasilstone) some distortion.										
		Min: <u>10</u> . mostly connected with the carb., concordant to crosscutting (1-2 Vol.-%)										
		47.00 - 47.25: mica-carbonate										
		47.25 - 47.31: graphitic slate with interbedded mica-carbonate some irregular carb. veining										
		Min: <u>10</u> . spots and stringers, mostly connected with carb. mat. (1-2 Vol.-%)										

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From	To	Description	DDH No.	Interval		Assays						
				From	To	Cu	Mo	Pb	Zn	Au	Ag	
		47.31 - 49.20: greenschist (biotite, chlorite, talc) with interbedded mica carbonate bedding planes: 20° Min: p.p. only in mica-carbonate, here spots, stringers (10 Vol.-%) 48.02 - 48.30: distortion zone graphitic slate with mica-carbonate. graphitic slate: lamina- ted: greenstone, mica- carbonate carbonate; here distortion with zigzag-folding Min: p.p. some spots 48.57 - 48.88: graphite-schist highly distorted with small scale harmonic to disharmonic folding some lamina of carbonate, greenstone Min: p.p. spots and stringers.	APV-82-01									

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From	To	Description	DDH No.	Interval		Assays					
				From	To	Cu	Mo	Pb	Zn	Au	Ag
		shaped particles of greenschist	APV-82-01								
		Min: μ , $\pm$ cy. some spots, very inhomogeneous.									
		53.00-54.65: greenschist (biotite, chlorite, talc) laminated. some small bands (cm-mm) of graphite schist interbedded. some carb. veining and big lenses of carb. bedding planes: 0-20°									
		54.35-54.65: graphite bearing green- schist laminated. high amounts of mica-carbonate. some irregular carb. veining.									
		54.65-59.23: mica-carbonate with greenschist some stringers and bands (cm) of graphitic mat. slightly to well bedded. highly									

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From	To	Description	DDH No	Interval		Assays						
						Cu	Mo	Pb	Zn	Au	Ag	
		disrupted with disharmonic folding	APV-82-01									
		55.00-55.12: quartz - vein										
		with irregular stringers of										
		graphite and mica - schist										
		Min: po, cy. some spots.										
		55.29-55.32: Graphitic interval										
		laminated										
		55.94 - 56.01: "										
		57.10 - 57.91: "										
		58.22 - 59.05: quartz - vein										
		with irregular shaped										
		particles of greenstone										
		and biotite - schist.										
		Some carbonate.										
		Min: po, ± cy. irregular										
		spots.										
		59.23-86.00: greenstone to green schist										
		massive to bedded with fine stringers										
		of carbonate. bedding planes: 0-10°										
		86.00 - 86.54: talc, chlorite - schist										

ДІВНІТ СУОККАДАС

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D.D.H. No.	Azimuth	Started	Directional surveys						
Property	Angle	Finished	Depth	Azim.	Dip.	Depth	Azim.	Dip.	
JAB-82-01	250°	09.08.1982							
JABHATSUOKKADAS	-45°	11.08.1982							
L3+00S 2+75R	53.60 (stuck)	FDP							
From	To	Description	Interval	% Cu	% Mo	% Pb	% Zn	% Au	% Ag
0.00	6.75	overburden							
6.75	36.92	volcanic sedimentary interval alternating bedding of a graphite-felsite breccia with altered basic volcanics, like: mica-carbonates and talc-biotite-chlorite schists. Interbedded small sections of clastic mat., like: metasilstones and quartzites. The contacts between the graphite and volcanics are mostly sharp, sometimes more or less distorted. Gradual changes are very rare.							
		6.75-7.18: mica-carbonate stringers and bands (mm) of graphite, extremely distorted with small scale folding. some brecciation. Min: po. disseminated, besides that some spots (remobilisation) (1 Vol.-%) 7.18-7.45: graphite-felsite breccia angular to rounded pieces (0.1-0.5 cm in Ø)	JAB-82-55 6.70 10.00	0.03		trace	0.06	-	- 3.3

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From	To	Description	DDH No. <u>DAB-82-01</u>	Interval		%		%		Assays		ppm Au	ppm Ag
				From	To	Cu	Mo	Pb	Zn				
		cementation by quartzite and carbonate. Min: <u>po</u>, network like, mostly restricted to the carbonate. (± 5 Vol.-%) 8.45-8.33: <u>mica-carbonate with talc-diotite-chlorite schist</u> some stringers of graphite, slightly distorted. Min: <u>po</u>, <u>cy</u>, <u>po</u>, disseminated <u>cy</u>: some spots total sulfide content (1 Vol.-%) 8.33-10.10: <u>graphite-felsite breccia</u> angular to rounded rock pieces (0.1-1.0 cm in ϕ) cemented by quartzite Min: <u>po</u>: network like, restricted to the carbonate and quartzite <u>cy</u>: some stringers, mostly following later fracture planes total sulfide content: 3-10 Vol.-% 9.90-10.10: high <u>cy</u> content (1 Vol.-%) restricted to irregular carbonate mining											
		10.10-10.40: <u>mica-carbonate to high carbonate diotite-chlorite-talc schist</u>		<u>DAB-82-1</u> 10.00	12.00	0.02		+	0.03	+	+		2.0 m

FOLLDAL VERK A/S

From	To	Description	DDH No. <u>DAB-82-01</u>	Interval		%		%		Assays		Ham Au	Ham Ag
				From	To	Cu	Mo	Pb	Zn				
		with some stringers of graphite extremely distorted. bedding planes: 90° Min: <u>10</u> , spots and lenses following primary structures (5 Vol.-%) cy. v. rare spots											
		<u>10.40-11.96: graphite-felsite breccia</u> angular to rounded rock pieces (0.1-3.0 cm in Ø) cemented by quartzite and epidote Min: <u>10</u> , restricted to the quartzite occurs as networks, irregular spots and lenses with extending veinlets or stringers (10-15 Vol.-%)											
		<u>11.96-12.00: carbonate - sand</u> with some pieces of graphite-felsite (0.1-1.0 cm in Ø). Min: <u>py</u> , <u>10</u> , <u>10</u> , mostly disseminated (total sulfide content: 5 Vol.-%)											
		<u>12.00-13.77: alternating bedding</u> <u>mica-carbonate, graphite-bearing mica-</u> <u>carbonate, quartzitic metapelite.</u> Min: <u>10</u> , disseminated (3 Vol.-%)		<u>DAB-82-56</u> 12.00 14.00		0.02		-	0.04	-	-	2.00	

From	To	Description	DDH No. <u>DAB-82-01</u>	Interval		% Cu		% Mo		% Pb		Assays		H ₂ O ₂		H ₂ O ₂	
				From	To							Zn	Au	Ag			
		cy, some small spots only in carbonate-bands, and there connected with po.															
		13.77 - 15.01: talc-chlorite-biotite-schist		<u>DAB-82-57</u>	<u>14.00</u> <u>16.00</u>	0.03				-		0.03	-	Trace	2.0		
		laminated with different carbonate content, some laminae of graphite and reversed particles of graphite-felsite.															
		irregular carbonate veining. Bedding planes: 43°															
		Min: po. disseminated (1 Vol.-%)															
		14.50-14.60: interval with reversed graphite felsite															
		rounded rock pieces (0.1-3.0 cm in Ø) cemented by carbonate or chlorite-carbonate															
		Min: po. mostly connected with carbonate mat. (10 Vol.-%)															
		15.01-15.18: massive metasilicstone															
		with fine stringers of graphite															
		Min: po. some spots and stringers, than disseminated (5-7 Vol.-%)															

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From	To	Description	DDH No. <u>DAB-82-01</u>	Interval		%		%		Assays		mm Au	mm Ag
				From	To	Cu	Mo	Pb	Zn				
		15.18 - 15.51: <u>graphite slate</u> alternating bedding of graphite slate, brecciated graphite - felsite and mica - carbonate Min: <u>po</u> , netsoor ₂ like, irregular spots with small extensions. (10 - 12 Vol.-%)											
		15.51 - 16.45: alternating bedding <u>quartzite</u> , <u>mica - orthoclase - carbonate</u> bedding planes: 57° Min: <u>po</u> , disseminated. (3 Vol.-%)											
		15.88 - 16.15: graphite slate alternating bedding see: 15.18 - 15.51		DAB-82-2 16.00	18.00	0.03		+	0.05	+	+	2.0 mm	
		16.45 - 17.82: <u>graphite - felsite breccia</u> see: 1840 - 1896											
		17.82 - 23.22: <u>fine laminated quartzitic metasandstone</u> with sandy metapelite, biotite - stringers, some fine stringers of graphite interbedded local massive quartz - rich siltstone or mica - rich quartzite Min: <u>po</u> , disseminated (1 - 2 Vol.-%)		DAB-82-58 19.00	20.00	0.01		trace	0.01	-	-	2.0 mm	
				DAB-82-59 23.00	25.00	0.03		-	0.15	0.034	-	2.0 mm	

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From	To	Description	DDH No. <u>DAB-82-01</u>	Interval		%		%		Assays		ppm Au	ppm Ag
				From	To	Cu	Mo	Pb	Zn				
		23.22 - 24.08: <u>graphite-felsite breccia</u> see: 10.40 - 11.96 Min. secondary py veining 24.44 - 24.45: <u>biotite schist</u> 24.45 - 25.20: <u>mica-carbonate</u> with stringers and stripes of graphite extremely distorted with small scale disharmonic folding Min. <u>py</u> disseminated (7 Vol.-%) 26.50 - 26.70: <u>graphite-felsite breccia</u> cement: <u>py</u> (30 Vol.-% total sulfide).											
				<u>DAB-82-3</u> 25.00	27.00	0.04		+	0.15	0.034	-	2.0 m	
				<u>DAB-82-60</u> 27.00	29.00	0.02		-	0.06	0.034	-	2.0 m	
		27.08 - 27.90: <u>talch-chlorite-biotite-actinolite-carbonate</u> with stringers and some rock pieces of graphite-felsite extremely distorted Min: <u>py</u> , <u>cy</u> . some spots 27.90 - 28.45: <u>graphite-felsite breccia</u> see: 10.40 - 11.96 28.45 - 31.65: <u>talch-chlorite-biotite-actinolite-carbonate</u> see: 27.08 - 27.90											
				<u>DAB-82-61</u> 31.00	33.00	0.02		-	0.04	-	-	2.0 m	

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From	To	Description	DDH No.	Interval		%		%		Assays	
				From	To	Cu	Mo	Pb	Zn	Au	Ag
		31.65-32.02, <u>laminated graphite slate</u> with laminae of carbonate. extremely distorted with small scale disharmonic and sich's folding carbonate in stringers, fine veins, small lenses concordant to crosscutting Min: <u>po.</u> in stringers, small veins; con- cordant to primary structures and also crosscutting. restricted to the carbonate (3 Vol.-%)	DAB-82-01								
		32.02-32.52, <u>laminated graphite-bearing metasediments</u> with high amounts of altered volcanics laminae of carbonate and secondary veining Min: <u>po.</u> disseminated and also strictly following bedding planes (1 Vol.-%)									
		32.52-33.02: <u>tall-chlorite-biotite-orthoclase-carbonate</u> see: 27.08-27.90									
		33.02-33.45: <u>graphite-felsite to laminated graphite slate</u> highest graphite content at the hanging portion. laminae of carbonate Min: <u>po.</u> following primary sed. structures.		DAB-82-62 33.00	35.00	0.02		trace	0.04	-	trace 2.0 m

From	To	Description	DDH No. <u>DAB-82-01</u>	Interval		% %		% %		Assays ppm		ppm Au	ppm Ag	
				From	To	Cu	Mo	Pb	Zn					
		In greater irregular formed remobilisations and veinlike spots crosscutting, restricted to the carbonate (1-2 Vol.-%)												
		33.45 - 35.28: <u>talk-chlorite-biotite-orthoclase-carbonate</u>												
		see: 27.08 - 27.90												
				<u>DAB-82-4</u>										
				35.00	37.00	0.11		-	0.03	+	-			2.0m
		35.28 - 35.36: <u>graphite-felsite breccia</u>												
		rounded rock pieces of mm size cemented by carbonate												
		Min: <u>py</u> , <u>py</u> . restricted to the cement (1-2 Vol.-%)												
		35.36 - 35.60: <u>graphite-felsite to laminated graphite slate</u>												
		see: 33.02 - 33.45												
		35.60 - 36.70: <u>graphite-felsite breccia</u>												
		rounded to angular rock pieces of mm to cm size cemented by carbonate (about 10%) and <u>py</u>												
		Min: <u>py</u> as a cover round rock pieces (±10 Vol.-%)												
		36.70 - 36.92: <u>laminated graphite-bearing metasandstone</u>												
		see: 32.02 - 32.52												

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From	To	Description	DDH No.	Interval		%		%		Assays		ppm	ppm
				From	To	Cu	Mo	Pb	Zn	Au	Ag		
			DAB-82-01										
		Min: 10. cu, some spots. (2 Vol.-% total)											
36.92	45.96	<u>banded quartzite</u>											
		alternating bedding of quartzite with <u>cummingtonite/garnet</u>											
		and metapellites. bands of mm to cm size with											
		sharp walls.											
		sometimes slightly distorted with small scale											
		zigzag folding or harmonic folding.											
		Min: <u>mt.</u> strictly accompanying the <u>Al-silicates</u>											
		(garnet, amphibol). idiomorphic to xenomorphic											
		as mesostasis in garnet bands.											
		(very irregular 1 to 10 Vol.-%)											
		10. disseminated (1-2 Vol.-%)											
		38.92-39.10: <u>quartzitic greenstone</u>											
		massiv											
		42.20-43.23: <u>cummingtonite/garnet schist</u>											
		Min: <u>mt.</u> following in idiomorphic xx											
		primary sedimentary structures											
		(2-8 Vol.-%)											
		44.96-45.60: <u>cummingtonite/garnet schist</u>											
		see: 42.20-43.23											

From	To	Description	DDH No.	Interval		% %		% %		Assays		ppm Au	ppm Ag	
				From	To	Cu	Mo	Pb	Zn					
45.96	55.60	<u>Volcanic sedimentary interval</u>	JAK-82-01	JAB-82-65 46.00	48.00	0.01		trace	0.01	0.034	-	2.0 m		
		45.96 - 46.45: <u>quartzite with carbonate and bands of muscovite-graphite-felsite</u> Min: <u>no</u> irregular spots (1-2 Vol.-%)												
		46.45 - 48.18: <u>graphite slate with brecciated graphite-felsite</u> lamina of carbonate and biotite schist, veining of carbonate Min: <u>no</u> in spots, stringers and lenses concordant to bedding planes and also crosscutting. sometimes only cement in graphite-felsite breccia (2 Vol.-%) <u>py.</u> secondary veining												
		48.18 - 50.00: <u>quartzitic amphibolite</u> massiv Min: <u>py.</u> spots, stringers, veinlets (<u>< 1 Vol.-%</u>)												
		50.00 - 51.10: <u>quartzitic amphibolite</u> downwards grading into <u>high carbonate</u>												

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From	To	Description	DDH No. <u>DAK-82-01</u>	Interval		Assays						
				From	To	Cu	Mo	Pb	Zn	Au	Ag	
		<u>amphibolite</u>										
		massiv										
		Min: py. spots, stringers, veinlets										
		($\ll$ 1 Vol.-%)										
		51.10 - 51.45: laminated interval										
		<u>graphite with arctinolite</u>										
		51.45 - 52.13: <u>high carbonate quartzitic arctinolite</u>										
		with some fine stringers of graphite										
		extremely distorted										
		52.13 - 52.86: <u>quartzitic arctinolite</u>										
		massiv										
		Min: po, py. disseminated										
		52.86 - 53.25: <u>graphite-felsite</u>										
		extremely distorted and brecciated, car-										
		bonate veining										
		Min: po, py. irregular stringers, spots,										
		lenses. (1-2 Vol.-%)										
		53.25 - 54.20: <u>sandy to quartzitic arctinolite</u>										
		extremely distorted										
		54.20 - 54.98: <u>graphite-felsite breccia</u>										
		carbonate veining										

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D.D.H. No.		Azimuth	Started	Directional surveys					
				Depth	Azim.	Dip.	Depth	Azim.	Dip.
JAB-82-02		250°	11.08.82						
Property JABMUTSUOKI & DAS		-45°	15.08.82						
Co-ord.		Depth	Logged by						
L 3+00S 2+85E		121.90	FDP						
From	To	Description	Interval From To	% Cu	% Mo	% Pb	% Zn	ppm Au	ppm Ag
0.00	10.25	overburden							
10.25	52.00	volcanic-sedimentary interval alterating bedding of graphite-felsite breccia with basic volcanics. 10.25-12.30: quartzitic metapelite laminated to massive with low graphite content. laminae: 70° to 90° Min: po, strictly following primary structures, occurring as veinlets and small lenses mostly in carbonate bearing mat. (1-2 vol.-%) 12.30-13.00: graphite-felsite breccia angular to rounded rock pieces of 0.1 to 2.0 cm in diameter cemented by quartzite and sulfides Min: po, ± py, ± cy. in irregular shaped spots. total content (7-10 vol.%)	JAB-82-66 12.00 14.00	0.03			0.21		
									2.0 wt%

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From	To	Description	DDH No.	Interval		% %		% %		Assays ppm ppm		
				From	To	Cu	Mo	Pb	Zn	Au	Ag	
			DAB-82-02 amphibole (femolite) schist	DAB-82-68 16.00	18.00	0.01		—	0.02	—	—	2.0 m
		15.70 - 18.10: <u>high quartzitic talc-chlorite</u> Min: <u>po, t py</u> . mostly disseminated (total content 1-2 Vol.-%)										
				DAB-82-69 18.00	20.00	0.04		—	0.31	0.034	trace	2.0 m
		18.10 - 20.63: <u>graphite-felsite breccia</u> angular to subrounded pieces of graphite of 0.1 to 3.0 cm in diameter. light porcel. cemented by quartzite and sulfides. in areas with fine coarsened brecciation slightly bedded (60 to 65°) Min: <u>po, py</u> . accompanying the quartzite (10 Vol.-%)		DAB-82-70 20.00	22.00	0.03		trace	0.08	0.034	—	2.0 m
		20.63 - 20.77: <u>graphite bearing quartzitic metapelite</u> see: 14.35 - 14.60										
				DAB-82-71 23.00	25.00	0.04		trace	0.03	trace	trace	2.0 m
		20.77 - 26.00: <u>alternating bedding</u> <u>graphite-felsite breccia with</u> <u>quartzite, quartzitic metapelite</u> <u>and diorite-carbonate</u> extremely distorted. bedding angles 90° Min: <u>py, po</u> . some spots and stringers		DAB-82-72 25.00	27.00	0.04		trace	0.03	—	trace	2.0 m
		26.00 - 28.00: <u>actinolite-chlorite-talc-diorite schist</u> with some lamina of graphite.										

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From	To	Description	DDH No. <u>DAB-82-02</u>	Interval		%		%		Assays		ppm Au	ppm Ag
				From	To	Cu	Mo	Pb	Zn				
		orientation: 45°. some distortion with small scale folding. Min: <u>po</u> . irregular spots and stringers (1-2 Vol.-%)											

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From	To	Description	DDH No. <u>DAB-82-02</u>	Interval		%		%		Assays		ppm		ppm	
				From	To	Cu	Mo	Pb	Zn	Au	Ag				
		34.80 - 35.80: <u>high quartzitic actinolite - chlorite - biotite schist</u> see 32.60 - 33.90 Min: <u>cy, py, po</u> total content: 2 Vol.-% in stringers, spots, veins very irregular.													
		35.00 - 39.10: <u>graphite - felsite breccia</u> with interbedded <u>actinolite - talc - chlorite - biotite schist</u> extremely distorted and disharmonic folded. Min: <u>py, po</u> (50/50). some spots of <u>cy</u> . sulfides bordering graphite - felsite bits. sometimes filling up whole interspace. (10 - 15 Vol.-%)		<u>DAB-82-7</u> 36.00	<u>38.00</u>	0.05		-	0.03	+	-			2.0m	
		39.10 - 44.85: <u>carbonate bearing talc - chlorite - amphibol schist (act. hem.)</u> with stringers and unsorted particles of <u>graphite - felsite</u> Min: <u>po</u> . irregular bands, lenses, stringers (5 - 8 Vol.-%).		<u>DAB-82-74</u> 38.00	<u>40.00</u>	0.06		-	0.34	-	-			2.0m	
				<u>DAB-82-75</u> 40.00	<u>42.00</u>	0.04		trace	0.06	-	-			2.0m	
				<u>DAB-82-8</u> 42.00	<u>44.00</u>	0.03		-	0.08	-	-			2.0m	
				<u>DAB-82-76</u> 44.00	<u>45.00</u>	0.02		trace	0.02	-	-			1.0m	
				<u>DAB-82-9</u> 45.00	<u>47.00</u>	0.03		+	0.25	-	-			2.0m	

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From	To	Description	DDH No. <u>DAB-82-02</u>	Interval		Assays					
				From	To	Cu	Mo	Pb	Zn	Au	Ag
		42.70 - 42.80: <u>graphite-felsite breccia</u> carbonate cement Min: 10. bordering graphite-felsite rock pieces. sometimes filling up whole interspaces (10 Vol.-%)									
		43.17 - 43.25: <u>graphite-felsite breccia</u> see: 42.70 - 42.80 Min: 10, ± cy									
		45.20 - 45.70: <u>graphite-felsite breccia</u> cement of carbonate, chlorite, biotite and sulfides Min: 10, 14, ± cy, ± int bordering graphite-felsite rock pieces. as veins, veinlets, lumps, spots sometimes net-work like structures (total content 10 Vol.-%)									
		46.95 - 46.70: <u>graphite-felsite breccia</u> see: 45.20 - 45.70									

From	To	Description	DDH No. <u>DAB-82-02</u>	Interval		% %		% %		Assays ppm		ppm Au	ppm Ag	
				From	To	Cu	Mo	Pb	Zn					
		47.85-48.92, <u>graphite-slate</u> well laminated with stringers and small lenses of carbonate. slightly brecciation (rock pieces: 0.1-0.2 cm) bedding planes: 90° Min: <u>po</u> , <u>± cy</u> concordant to bedding planes and crosscutting: restricted to the carbonate (5 Vol.-%)		DAB-82-10 47.00	49.00	0.03		-	0.01	-	+			2.0 m
		48.92-52.00, <u>graphite-felsite breccia</u> angular to rounded rock pieces crushed again and cemented by carbonate and sulfides (0.1-3.0 cm in dia- meter) Min: <u>po</u> , <u>py</u> , <u>± cy</u> . banding the graphite-felsite rock pieces (5 Vol.-%).		DAB-82-11 49.00	52.00	0.05		-	+	-	-			3.0 m
52.00	59.45	<u>banded quartzite</u> alternating bedding of quartzite with <u>cummingtonite/garnet</u> and metapelite. bands of mm to cm size with sharp walls bedding planes: 65° to 90°, local slightly distortion		DAB-82-77 52.00	54.00	-		-	0.01	-	-			2.0 m
				DAB-82-12 54.00	56.00	+		-	0.02	-	-			2.0 m
				DAB-82-78 56.00	57.00	trace		trace	0.01	0.102	-			1.0 m
				DAB-82-79 57.00	58.00	0.04		trace	trace	-	trace			1.0 m
				DAB-82-13 58.00	59.00	0.07		-	+	+	-			1.0 m

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From	To	Description	DDH No.	Interval		% Cu		% Mo		% Pb		% Zn		Assays		ppm Au		ppm Ag	
				From	To														
62.35	63.62	alternating bedding felsite-chlorite-biotite schist with graphitic slate some bands (mm to cm) of quartzite highly distorted	DAB-82-02																
		Min: 10. veinlets, spots, very irregular (2 Vol.-%)		DAB-82-31	63.00 66.00	0.01				-		0.03		-		+		3.0m	
63.62	75.62	bedded quartzite		DAB-82-32	66.00 68.00	+				-		0.03		0.544		+		2.0m	
		see: 52.00 - 59.45		DAB-82-33	68.00 70.00	+				-		+		0.102		-		2.0m	
75.62	94.05	volcanic-sedimentary interval		DAB-82-34	70.00 72.00	+				-		+		0.238		-		2.0m	
		alternating bedding of graphite-felsite breccia		DAB-82-35	72.00 74.00	-				-		+		-		-		2.0m	
		with basic volcanics and some clastic		DAB-82-30	74.00 76.00	0.01				+		0.01		-		-		2.0m	
		sediments.																	
		75.62 - 78.42: graphite-felsite breccia		DAB-82-14	76.00 78.00	0.05				-		0.13		-		-		2.0m	
		angular to rounded rock pieces (0.2 - 3.0 mm																	
		in diameter) surrounded by quartzite,																	
		carbonate and sulfides, sometimes																	
		slightly lamination, irregular																	
		carbonate mining.																	
		Min: 10, 14, ± 4% bordering graphite-																	
		felsite rock pieces, besides that		DAB-82-81	78.00 80.00	0.02				+		0.04		-		-		2.0m	
		local the only matrix.																	
		(10 - 15 Vol.-%)																	

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From	To	Description	DDH No.	Interval		% %		Assays %		ppm Au	ppm Ag	
				From	To	Cu	Mo	Pb	Zn			
		78.42-79.40: alternating bedding graphite slate with chlorite-biotite-car- bonate extremely distorted (small scale folding) with irregular carbonate veining Min: 10, 14 (70/30). sometimes following primary structures and crosscutting, mostly connected with carbonate and Al-silicates (4 Vol.-%)	DAB-82-02									
		79.40-83.85: actinolite-biotite-talc-chlorite schist some stringers of graphite in the upper portion, highly distorted		DAB-82-82 80.00 82.00		0.02		+	0.02	-	-	2.0m
				DAB-82-83 82.00 84.00		0.02		+	0.02	-	-	2.0m
		83.85-86.00: graphite-felsite breccia angular to rounded rock pieces (0.1 - 1.5 cm in diameter) cemented by quartz and sulfides Min: 10, 14 (60/40), ± cy. as stringers spots, lumps; very inhomogeneous (8 Vol.-%)		DAB-82-15 84.00 86.00		0.05		+	0.27	+	-	2.0m

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From	To	Description	DDH No. <u>DAB-82-02</u>	Interval		%		%		Assays		ppm		ppm
				From	To	Cu	Mo	Pb	Zn	Au	Ag			
		86.00 - 86.40: <u>slightly carbonatic quartzite</u> massiv irregular carbonate veining Min: <u>po</u> . disseminated (1 Vol.-%) <u>py</u> . some fracture fillings		<u>DAB-82-16</u> 86.00	88.00	0.03			+	0.08	-	-	2.0m	
		86.40 - 87.54: <u>quartzitic biotite-chlorite schist</u> fine stringers of graphite (graphite- content increasing to the hanging wall, quartz-content decreasing) laminated (45°) Min: <u>po</u> , <u>py</u> (50/50). as fine stringers and also disseminated. stringers following primary structures and sometimes crosscutting												
		87.54 - 88.10: <u>graphite-slate</u> small stringers and irregular spots of quartzite. highly distorted with some slightly brecciation Min: <u>po</u> , <u>py</u> (50/50). stringers, lenses, spots, lumps with extending stringers concordant to crosscut. (8 Vol.-% total amount)		<u>DAB-82-17</u> 88.00	90.00	0.04			-	0.09	+	+	2.0m	

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From	To	Description	DDH No. <u>DAB-82-02</u>	Interval		Assays						
				From	To	Cu	Mo	Pb	Zn	Au	Ag	
		88.10-88.34: <u>quartzitic biotite-chlorite schist</u> see: 86.40 - 87.54										
		88.34-88.59: <u>graphite-felsite breccia</u> angular to subrounded rock pieces (0.1-3.0 cm in diameter) cemented by quartzite and sulfide Min: <u>po, py</u> (60/30). Vains, spots, lumps. very inhomogeneous with highest concentration in the lower portion (5 Vol.-%)										
		88.59-88.66: <u>quartzitic biotite-chlorite schist</u> see: 86.40 - 87.54										
		88.66-89.50: <u>graphite-felsite breccia</u> with sections of <u>graphite slate</u> see: 88.34 - 88.59										
		89.50-89.86: <u>graphite bearing sandy biotite-carbonate</u> lamination by changing sand and graphite-content irregular carbonate veining Min: <u>po</u> . disseminated (1-2 Vol.-%)										

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From	To	Description	DDH No.	Interval		% Cu		% Mo		% Pb		% Zn		Assays		ppm Au		ppm Ag	
				From	To														
		89.86 - 90.01: <u>graphite-felsite breccia</u> see: 88.34 - 88.59	DAB-82-02																
		90.01 - 90.10: <u>graphite-bearing greenschist</u> (actinolite, biotite, chlorite) Min: <u>po, py</u> (70/30). concordant to bedding (1 Vol.-%)		DAB-82-18 90.00	92.00	0.03		-		0.39	+	+	2.0						
		90.10 - 90.20: <u>graphite-felsite breccia</u> angular to rounded 100 pieces of 0.1 - 1.5 cm in diameter, often elongated, cemented by quartzite Min: <u>po, py</u> (70/30). fine stringers, spots (1 Vol.-%)																	
		90.20 - 90.40: <u>graphite-bearing greenschist</u> see: 90.01 - 90.10 Min: <u>po, py</u> (20/20), $\pm$ cy (1-2 Vol.-% total)																	
		90.40 - 91.15: <u>graphite slate</u> some brecciation (0.1 - 1.5 cm in dia- meter, mostly elongated) Min: <u>po, py</u> (80/20). in stringers, stripes, lenses concordant. only local crosscutting (3 Vol.-%)																	

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From	To	Description	DDH No. <u>DAB-82-02</u>	Interval		%		%		Assays		ppm		ppm	
				From	To	Cu	Mo	Pb	Zn	Au	Ag				
		<u>91.15-92.10: graphite-felsite breccia</u> mostly angular to subangular rock pieces (0.1 - 4.0 cm in diameter), lightly pocked. cemented by quartzite with some sulfide. Min: <u>py</u> (70/30), <u>±</u> <u>cy</u> in bands (mm), small stringers, spots (5-7 Vol.-%)													
		<u>92.10-92.51: quartzitic mica-carbonate</u> massiv		<u>DAB-82-19</u> 92.00	94.00	0.07		+		0.07	-	-			2.0 mc
		<u>92.51-92.71: graphite-felsite breccia</u> see: 91.15-92.10													
		<u>92.71-93.25: mica-carbonate to carbonatic green-</u> <u>schieist</u> massiv													
		<u>93.25-93.57: graphite slate</u> see: 90.40-91.15													
		<u>93.57-93.72: quartzitic mica-carbonate</u> see: 92.10-92.51 Min: <u>py</u> , some fine stringers } (1 Vol.-%) <u>py</u> disseminated													

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From	To	Description	DDH No. <u>DAB-82-02</u>	Interval		% Cu		% Mo		% Pb		% Zn		ppm Au		ppm Ag	
				From	To												
		93.72 - 94.05: <u>graphite-bearing greenschist</u> see: 90.01 - 90.10															
94.05	121.90	<u>greenschist (meta-basalt)</u>															
		94.05 - 97.02: <u>greenschist</u> some small bands (mm) of graphite (200)		DAB-82-84 96.00	98.00	+				+		-		-		-	2.0 m
		97.02 - 98.40: <u>quartz-feldspar mica-actinoliteschist</u> slightly disturbed		DAB-82-85 98.00	100.00	+				+		-		-		-	2.0 m
		98.40 - 99.12: <u>greenschist</u> small bands (mm to cm) of carbonate															
		99.12 - 99.59: <u>quartz-feldspar mica-actinoliteschist</u>		DAB-82-86 100.00	102.00	-				-		-		-		-	2.0 m
		99.59 - 103.30: <u>greenschist</u> some garnets															
		103.30 - 104.90: <u>actinoliteschist</u> massiv, some carbonate veining															
		104.90 - 105.45: <u>greenschist</u> some garnets															
		105.45 - 110.62: <u>actinoliteschist</u> massiv to slightly bedded some carbonate veining		DAB-82-87 110.00	112.00	+				0.01		+		-		-	2.0 m

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From	To	Description	DDH No. <u>DAB-82-02</u>	Interval		% Cu		% Mo		% Pb		Assays Zn		ppm Au		ppm Ag	
				From	To												
		110.62 - 113.00: <u>greenstone</u>															
		distorted. with quartz-bands and irregular carbonate veining															
		113.00 - 113.38: <u>quartzite</u>															
		some stringers of greenschist															
		113.38 - 121.06: <u>greenschist</u>															
		some garnets, slightly distorted															
		121.06 - 121.40: <u>graphitic slate</u>															
		lamination by greenschist and carbonate															
		Min: <u>po.</u> concordant to bedding planes (2 Vol.-%)															
		121.40 - 121.90: <u>greenstone</u>															

D.D.H. No.		Azimuth		Started		Directional surveys					
DAB-82-03		250°		17.08.82		Depth	Azim.	Dip.	Depth	Azim.	Dip.
Property		Angle		Finished							
DABMILTSUOKKADAS		-45°		21.08.82							
Co-ord.		Depth		Logged by					%		
L 4+50 N 6000		125.05		FDP							

From	To	Description	Interval		% Cu		% Mo		% Pb		Assays		mm Au	mm Ag
			From	To					Zn					
0.00	7.20	overburden												
7.20	36.65	greenstone interval												
		7.20 - 23.00: actinolite												
		massiv to slightly bedded (25°)												
		8.20 - 8.56: quartzite-band												
		11.80 - 12.01: "												
		23.00 - 28.00: core missing												
		28.00 - 29.50: greenstone												
		18.85 - 19.05: quartzite-band												
		29.50 - 34.90: core missing												
		34.90 - 35.25: greenstone												
		35.25 - 36.25: core missing												
		36.25 - 36.65: greenstone												
36.65	42.00	quartz banded iron-ore												
		alternating bands (mm to cm) of quartzitic metasandstone (slightly consolidated) and int-ore. highest int-amount in the lower portions.												

DAB-82-36										
36.00	38.00	+		-	+	-	-	-	2.0 m	
DAB-82-37										
38.00	40.00	-		-	+	-	-	-	2.0 m	
DAB-82-38										
40.00	42.00	+		-	+	-	-	-	2.0 m	

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From	To	Description	DDH No. <u>DAK-82-02</u>	Interval		% Assays		% Assays		ppm		
				From	To	Cu	Mo	Pb	Zn	Au	Ag	
42.00	44.75	core missing										
44.75	48.30	<u>banded quartzite</u>		<u>DAB-82-39</u> 44.75	47.00	+		-	-	-	-	2.25 m
		alternating bedding of quartzite, cummingtonite/ garnet bands and <u>mt</u> -bands. in general sharp contacts. bedding planes: 25° Min: <u>mt</u> (5 Vol.-%)		<u>DAB-82-40</u> 47.00	49.00	-		-	+	-	-	2.0 m
48.30	77.00	<u>volcanic interval</u>										
		48.30-50.55: <u>garnet-actinolite schist</u> with small amounts of biotite some irregular carbonate veining Min. 10. some spots										
		50.55-63.15: <u>actinolite schist</u> some bands (mm to cm) of carbonate bedding planes: 55° 50.60-50.69: <u>quartz-band</u> 51.52-51.90: <u>quartzite</u> with small beds of actinolite 62.85-63.10: <u>mica-carbonate-bands</u>		<u>DAB-82-41</u> 50.00	53.00	+		-	-	-	-	3.0 m
		63.15-64.27: <u>garnet-actinolite schist</u> very inhomogeneous with wavy bedding										

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From	To	Description	DDH No. <u>DAB-82-03</u>	Interval		% Cu		% Mo		% Pb		Assays Zn		ppm Au		ppm Ag	
				From	To												
		stringers and stripes of carbonate, some irregular carbonate veining															
		64.27-64.83: <u>greenschist</u> irregular carbonate veining															
		64.83-66.08: <u>carbonate-bearing to high carbonate</u> <u>biotite - quartzite schist</u>															
		66.08-72.00: <u>talr- chlorite - actinolite schist</u> slightly laminated with stringers and small stripes of carbonate and quartzite. some irregular carbonate veining. bedding planes: 42°		DAB-82-42 66.00	68.00	-				-		+		-	-		2.0 m
				DAB-82-43 68.00	70.00	-				-		-		-	-		2.0 m
				DAB-82-44 70.00	72.00	0.01				-		+		-	-		2.0 m
		72.00-77.00: <u>garnet - biotite - actinolite schist</u> stringers, veins and mm-bands of carbonate Min: <u>py.</u> some spots															
77.00	79.98	<u>banded quartzite</u> see: 44.75-48.30 Min: <u>po.</u> disseminated (1 Vol.-%)		DAB-82-20 77.00	79.00	+				-		-		-	-		2.0 m
79.98	85.20	<u>green schist interval (meta-basalt)</u> 79.98-82.18: <u>carbonate-bearing garnet - actinolite</u> <u>schist</u>															

DIAMOND DRILL LOG

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From	To	Description	DDH No. <u>DAB-82-03</u>	Interval		%		%		Assays		ppm Au	ppm Ag
				From	To	Cu	Mo	Pb	Zn				
		Min: py. some irregular spots along fracture planes											
		80.69-80.87: <u>quartzite</u>											
		80.83-80.92: <u>banded quartzite</u>											
		see: 44.85-48.30, with some stringers of graphite											
		82.18-85.20: <u>actinolite schist</u>											
		stringers and bands of carbonate											
		bedding planes: 12°											
85.20	91.60	<u>graphitic slate</u>		DAB-82-21 86.00 88.00		0.06		-	0.06	-	-	2.0 m	
		laminated with wavy bedding. local some brecciation (rock pieces 0.1-0.2 cm in diameter). variations in quartz and carbonate content. irregular carbonate veining		DAB-82-45 88.00 91.00		0.03		+	0.12	-	-	3.0 m	
		Min: po, py, ± cy. very inhomogeneous. stringers, spots, lumps, network structures (1 to 3 vol.-% total content)											
		87.50-87.60: <u>quartz-carbonate</u>											
		Min: po, py. as irregular lumps (0.3 cm in diameter) (3 vol.-%)											
		87.89-87.81: <u>mica-carbonate</u>											

DIAMOND DRILL LOG

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%

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From	To	Description	DDH No. <u>DAB-82-03</u>	Interval		%		%		Assays		ppm Au	ppm Ag	
				From	To	Cu	Mo	Pb	Zn					
		Min. <u>po.</u> network like (10 Vol.-%)												
		<u>88.78 - 88.85: mica-carbonate</u>												
		see 87.79 - 87.81												
91.60	125.05	<u>Volcanogenous sedimentary sequence</u>		<u>DAB-82-22</u> 91.00	93.00	0.03		-	0.05	+	-			2.0 m
		91.60 - 93.15: <u>wavy bedded quartzite with mica-carbonate</u>												
		some stringers of graphite												
		Min: <u>py.</u> disseminated (3 Vol.-%)												
		<u>po.</u> as fine spots mostly connected with the graphite (here 5 Vol.-%)												
		93.15 - 93.82: <u>quartzite</u>		<u>DAB-82-46</u> 93.00	94.00	0.01		+	+	-	-			1.0 m
		interbedded some bands of garnet-actinolite and stringers of graphite phyllite.												
		Min: <u>po.</u> disseminated (< 1 Vol.-%)												
		93.80 - 93.81: <u>carbonate-band</u>												
		93.82 - 94.30: <u>wavy bedding quartzite with garnet-actinolite schist</u>												
		slowly changing into garnet-actinolite schist (see below)												

DIAMOND DRILL LOG

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From	To	Description	DDH No.	Interval		%		%		Assays		μm	μm
				From	To	Cu	Mo	Pb	Zn	Au	Ag		
		94.30-95.88: <u>garnet - biotite - actinolite schist</u> wavy bedded, some lenses of quartzite and carbonate	DAB-82-03										
		95.88-96.35: <u>talz - chlorite - actinolite schist</u>											
		96.35-97.50: <u>carbonate - H₂O biotite - actinolite schist</u> wavy bedded with some lenses and bands of quartzite Min: <u>po.</u> some spots											
		97.50-97.86: <u>garnet - actinolite schist</u> wavy bedded											
		97.86-98.20: <u>quartzite</u> interbedded stringers and stripes of garnet - cummingtonite / gneiss											
		98.20-99.13: <u>garnet - actinolite schist</u> wavy bedded		DAB-82-47 99.00	102.00	0.02		+	0.03	-	-		30m
		99.13-99.32: <u>graphite - felsite</u> brecciated (1082 pieces 0.1-0.5 cm in diameter) Min: <u>po.</u> irregular spots and stringers											

DIAMOND DRILL LOG

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From	To	Description	DDH No. <u>DA3-82-03</u>	Interval		Assays					
				From	To	Cu	Mo	Pb	Zn	Au	Ag
		99.32-99.60: <u>high carbonate actinolite</u>									
		99.60-99.99: <u>laminated interval</u>									
		<u>graphitic slate with mica-carbonate</u>									
		99.99-100.35: <u>graphitic slate</u>									
		<u>laminated with slightly distortion</u>									
		<u>irregular carbonate veining</u>									
		Min: <u>no. irregular spots (1-2 Vol.-%)</u>									
		100.35-100.70: <u>quartzite</u>									
		<u>some stripes of greenstone, graphitic</u>									
		<u>slate, sulfide</u>									
		Min: <u>no. py. concordant to</u>									
		<u>bedding (1 Vol.-%)</u>									
		100.70-101.05: <u>graphite-felsite breccia</u>									
		<u>angular to rounded rock pieces of</u>									
		<u>0.1 - 0.5 cm in diameter cemented</u>									
		<u>by sulfide and carbonate</u>									
		Min: <u>no. (5 Vol.-%)</u>									
		101.05-101.81: <u>garnet-chlorite-fels-actinolite</u>									
		<u>schist</u>									
		<u>wavy bedding, irregular carbonate</u>									
		<u>veining</u>									

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From	To	Description	DDH No. <u>DAB-82-03</u>	Interval		Assays					
				From	To	Cu	Mo	Pb	Zn	Au	Ag
		101.81 - 102.00: <u>graphite-bearing talc-chlorite schist</u> zigzag folding (small scale), irregular carbonate veining at the footwall graphite-felsite breccia Min: <u>10, 14</u> (60/40) (2 Vol-%)									
		102.00 - 102.63: <u>actinolite schist</u> with stringers, stripes and lenses of quartzite and carbonate bedding: 15°									
		102.63 - 103.00: <u>carbonate-rich quartzitic diorite-</u> <u>chlorite-actinolite</u> with bands and laminae of graphite									
		103.00 - 105.10: <u>actinolite schist</u> with stringers, stripes and bands of quartzite and carbonate 104.82 - 105.05: quartzite-band									
		105.10 - 106.71: <u>actinolite-carbonate</u> wavy bedded									
		106.71 - 107.13: <u>garnet-actinolite schist</u>									

DIAMOND DRILL LOG

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From	To	Description	DDH No. <u>DAB-82-03</u>	Interval		%		%		Assays		ppm Au	ppm Ag	
				From	To	Cu	Mo	Pb	Zn					
		107.18 - 107.20: <u>actinolite - carbonate</u>												
		107.20 - 107.80: <u>quartzite</u> bands of garnet - epidote Min: <u>int.</u> some spots												
		107.80 - 111.09: <u>graphite - bearing garnet phyllite</u> some laminae of altered basic volcanics, interbedded graphite- felsite breccia (rock pieces 0.1 - 0.2 cm in diameter) Min: <u>po</u> (1 Vol.-%) <u>py</u> as platelets on fracture planes		DAB-82-48 108.00 110.00		0.03		-	0.06	-	-			2.0 m
				DAB-82-49 110.00 112.00		0.01		+	0.02	-	-			2.0 m
		111.09 - 112.60: <u>greenschist</u> irregular carbonate veining		DAB-82-50 112.00 114.00		-		+	-	-	-			2.0 m
		112.60 - 112.70: <u>carbonate - band</u>												
		112.70 - 120.20: <u>high carbonate biotite - talc - chlorite schist</u> local extremely distorted Min: <u>po</u> , disseminated (2 Vol.-%)		DAB-82-51 114.00 115.00		-		+	0.01	-	-			1.0 m
				DAB-82-23 115.00 117.00		-		-	-	-	-			2.0 m
				DAB-82-52 117.00 120.00		0.01		-	+	-	-			3.0 m
		120.20 - 121.00: <u>high carbonate actinolite - biotite - chlorite schist</u>												

FOLLDAL VERK A/SHamar Trykk A/S

DAEMWTSUOKKADAS
NORTH

FOLLDAL VERK A/S

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D.D.H. No.		Azimuth		Started		Directional surveys					
	DAB-82-04		253°		22.08.82	Depth	Azim.	Dip.	Depth	Azim.	Dip.
Property	NORTH	Angle	-45°	Finished	26.08.82						
	DABHUTSUOKKADAS										
Co-ord.		Depth		logged by							
	L 1+50N F+25E		28.20(stuck)	FDP							
From	To	Description									
0.00	23.00	overburden									
23.00	28.20	banded quartzite alternating bedding (mm to cm) of quartzite, garnet-bearing cummingtonite/ garnetite, biotite/permin-rich layers (metapelites) and sometimes carbonate Min: po. mostly fine spots or stringers following bedding planes (1 vol.-%)									
			Interval								
			From	To	Cu	Mo	Pb	Zn	Au	Ag	
			DAB-82-98								
			26.00 27.62								

DIAMOND DRILL LOG

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From	To	Description	DDH No	Interval		Assays						
				From	To	Cu	Mo	Pb	Zn	Au	Ag	
		28.82 - 29.40: <u>talx-chlorite-biotite-carbonate</u> wavy bedding	DAB-82-05									
		29.40 - 30.58: <u>actinolite schist</u> see: 28.00 - 28.30										
		30.58 - 30.70: <u>quartzite</u>										
		30.70 - 31.54: <u>chlorite-biotite-actinolite schist</u>										
		31.54 - 31.77: <u>quartzite</u> some stringers of chlorite-biotite schist										
		31.77 - 32.00: <u>talx-carbonate schist</u> schistosity: 15°										
		32.00 - 33.00: <u>garnet-actinolite schist</u> carbonate-banding (cm) (veining)										
		33.00 - 33.30: <u>talx-schist</u> laminated with some stringers of biotite schist and bands (mm) of carbonate										
		33.30 - 33.75: <u>garnet-talx-chlorite-actinolite schist</u> with some bands (mm to cm) of quartzite. wavy bedding										

DIAMOND DRILL LOG

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From	To	Description	DDH No. <u>DAB-82-05</u>	Interval		% ^{0/0}		% ^{0/0}		Assays ^{0/0}		ppm ^{ppm}	
				From	To	Cu	Mo	Pb	Zn	Au	Ag		
33.75	37.82	<u>banded quartzite</u> alternating bedding (mm to cm) of quartz, garnet-bearing cummingtonite/grossite, biotite/permin-rich bands local accompanied by garnets (metapelite) and mixed mica-amphibole layers. sometime lenses and small bodies of carbonate. very distinct bedding with sometimes wavy character Min: μ_0 , μ_4 (50/50) mostly disseminated in the quartz-rich bands, in stringers and small stripes in Al-silicate-rich layers. (1 Vol.-%) 36.25-36.39: <u>talcs-chlorite-actinolitic schist</u> some garnets including wavy bedding		<u>DAB-82-24</u> 36.00	38.00								
37.82	39.00	<u>carbonaceous interval</u> 37.82-38.32: <u>graphite-bearing metapelite</u> massive to slightly laminated Min: μ_0 , μ_4 (70/30). μ_0 : network like μ_4 : in spots and flakes along		<u>DAB-82-95</u> 38.00	39.00	0.04		+	0.07	0.068	-	1.0 m	

DIAMOND DRILL LOG

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From	To	Description	DDH No.	Interval		Assays						
				From	To	Cu	Mo	Pb	Zn	Au	Ag	
		fracture planes (1-2 Vol.-%; local 10 Vol.-%)	DAB-82-05									
		38.32-39.00: <u>graphite-felsite breccia</u>										
		angular to subrounded 100 pieces (0.1 - 1.0 cm in diameter) cemented by quartz and sulfide										
		Min: <u>μ₀</u> , <u>μ₄</u> (70/30) <u>μ₄</u> : only on fracture planes, here sometimes building lumps (3 Vol.-%; local up to 9 Vol.-%)										
39.00	39.30	<u>banded quartzite</u> alternating bedding of quartz, cummingtonite/ garnet sometimes accompanied by garnets and biotite / permin (metapelite) slightly wavy bedded, bedding planes: 18° Min: <u>μ₀</u> irregular stripes and stringers concordant and crosscutting (1 Vol.-%)										
39.30	43.34	<u>mafic volcanics</u>										
		39.30-40.05: <u>high carbonate garnet-biotite-actinolite</u> <u>schist</u>										

DIAMOND DRILL LOG

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From	To	Description	DDH No. <u>DAB-82-05</u>	Interval		% %		% %		Assays ppm		ppm Au	ppm Ag
				From	To	Cu	Mo	Pb	Zn				
		well laminated by various amounts of mica and carbonate											
		Min: <u>10</u> in stringers and small bands (mm) concordant to crosscutting (1 Vol.-%)											
		40.05 - 40.73: <u>talz - actinolite schist</u>											
		lenses (mm) and stringers of quartzite and carbonate											
		40.73 - 43.00: <u>greenschist</u> (garnet-actinolite) bands (mm - cm) and veining of carbonate											
		local small bands of talz - clonite schist											
		garnets: 0.1 cm in ϕ											
		43.00 - 43.34: <u>high carbonate garnet-biotite - talz-actinolite schist</u>											
		see: 39.30 - 40.05											
43.34	46.80	<u>Banded quartzite</u>		<u>DAB-82-25</u> 43.50	44.50	+		-	+	+	-	1.0 m	
		see: 39.00 - 39.30											
		bedding planes: 20°		<u>DAB-82-94</u> 46.00	48.00	-		+	0.02	+	-	1.0 m	

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From	To	Description	DDH No.	Interval		% Cu		% Mo		% Pb		% Zn		ppm Au	ppm Ag
				From	To										
46.80	49.80	<u>carbonaceous interval</u>	DAB-82-05												
		consists of <u>intercalated graphites</u> and layers of mixed carbonations and volcanoclastic material		DAB-82-26 47.00	49.00	0.04				+		0.06		0.102	- 2.0m
		46.80 - 48.55: <u>laminated interval</u>													
		<u>quartz-rich graphite-bearing talc-</u>													
		<u>biotite - chlorite schist</u>													
		decreasing graphite content to hanging portions.													
		Min: <u>po. disseminated</u> (1 Vol.-%)													
		48.55 - 48.41: <u>graphite-felsite breccia</u>													
		angular to subrounded rock pieces (0.1 - 0.5 cm, local up to 3.0 cm in diameter) cemented by quartz and sulfide.													
		Min: <u>po. stringers, network like, spots;</u>													
		<u>very irregular</u> (5 - 7 Vol.-%)													
		48.41 - 48.42: <u>laminated interval</u>													
		see: 46.80 - 47.55													
		48.42 - 49.15: <u>graphite-felsite breccia</u>													
		see: 47.55 - 48.41													
				DAB-82-91 49.00	50.00	0.01				-		0.07		-	- 1.0m

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From	To	Description	DDH No. DMB-82-05	Interval		Assays						
				From	To	Cu	Mo	Pb	Zn	Au	Ag	
		58.34 - 58.41										
		59.27 - 59.45 graphite bearing <u>mt</u> : in mm bands concordant to bedding planes. These mostly connected to metapelites. Disseminated one type mostly connected with cummingtonite/ garnet. (1-2 Vol.-%, local 10 Vol.-%) high <u>mt</u> concentrations.										
		52.58 - 52.80										
		59.80 - 59.95										
		60.35 - 60.50										
		61.50 - 65.75										
68.55	114.51	greenschist sequence (metabasalt) metabasalt with interlayered altered ultra- basics 68.55 - 70.48: quartz-rich actinolite some stringers and small bands of ser- pentine and chlorite. Bands (mm) of carbonate. bedding: 0°										

DIAMOND DRILL LOG

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From	To	Description	DDH No.	Interval		% Cu		% Mo		% Pb		% Zn		Assays ppm		ppm	
		70.48 - 94.42: <u>actinolite</u>	DAB-82-05														
		sands (mm to cm) of carbonate and		DAB-82-92													
		biotite schist, mostly massive with		76.00 78.00		-				+		+		-	-	2.0 m	
		local crystallized garnets (0.1 cm in Ø)		DAB-82-93		-				+		+		-	-	2.0 m	
		89.92 - 90.10: core missing		84.00 86.00													
		94.42 - 97.48: <u>talx-actinolite schist</u>															
		interbedded some bands (mm) of															
		graphite.															
		97.48 - 98.10: alternating bedding															
		<u>actinolite schist with carbonate</u>															
		98.10 - 99.00: <u>actinolite schist</u>															
		99.00 - 99.30: <u>talx-actinolite schist</u>															
		99.30 - 114.51: <u>actinolite</u>															
		see: 70.48 - 94.42															

GISSARO AVV. NORTH

FOLLDAL VERK A/S

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D.D.H. No.		Azimuth	Started	Directional surveys					
				Depth	Azim.	Dip.	Depth	Azim.	Dip.
GES-82-01		310°	01.09.1982						
Property GESSAROAVVI North		Angle -45°	Finished 12.09.1982						
Co-ord. L 6+00S O +75E		Depth [m] 137.00 *	Logged by F.D.P.						
From	To	Description	Interval From To	% Cu	% Mo	% Pb	% Zn	Assays Au	Assays Ag
0.00	9.75	overburden							
9.75	53.82	greenstone sequence (metabasalt) massive to slightly bedded with local small bands (mm to cm) of carbonate. some carbonate veining. garnets (0.1 cm in diameter) at different levels present laying: 25°	GES-82-7 36.00 38.00	0.02		-	+	-	-
		21.62 - 21.80: quartz-carbonate vein irregular walls Min: cy, po. some spots	GES-82-1 21.50 22.50	0.01		-	+	-	-
		22.28 - 22.30: quartz-carbonate vein							
		26.60 - 26.96: core missing							
		28.40 - 29.00: "							
		33.93 - 34.20: quartz-carbonate veining	GES-82-8 33.50 34.50						
		51.40 - 51.49: actinolite-feldspar							
53.82	70.80	banded quartzite formation mixed with metabasalts and altered basic volcanics * pd green at top							

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From	To	Description	DDH No. <i>GES-82-01</i>	Interval		%		%		Assays		g/m Au	g/m Ag
				From	To	Cu	Mo	Pb	Zn				
		<u>53.82-53.85: banded quartzite</u> alternating bedding of quartz, cummingtonite/garnetite-rich layers and metapelites											
		<u>53.85-53.91: mica-carbonate</u>											
		<u>53.91-53.98: graphite-bearing quartzite</u> well laminated, some bands (mm to cm) of interstratified graphite-felsite (rock pieces angular to subrounded, 0.1-0.3 cm in diameter) Min: μ , in stringers and small elongations, sometimes networks. highest concentration at the footwall of horizon, here accompanied by some spots of cy (total content: 1-4 vol.-%)											
		<u>53.98-54.50: banded quartzite</u> alternating bedding of quartz, cummingtonite/garnetite-layers, metapelites bedding planes. 20° rising quartz-content from to bottom											

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From	To	Description	DDH No. <i>GES-82-01</i>	Interval		% %		% %		Assays		g/g Au	g/g Ag	
				From	To	Cu	Mo	Pb	Zn					
		58.25-63.03: <u>banded quartzite to quartz-banded</u>		<i>GES-82-10</i>		0.02		-	+	-	-			1.8m
		<u>metapelite</u>		<i>GES-82-3</i>		+		-	+	-	-			3.0m
		alternating bedding of quartz, meta- pelite (biotite / permin), cummingtonite/ garnet-rich layers and <u>mt</u> Min: <u>pd</u> in stringers and stripes con- cordant to bedding planes. local disseminated and some bigger spots (1-2 Vol.-%) <u>mt</u> : in bands 59.10 - 63.03												
		63.03 - 64.10: <u>garnet-actinolite schist (metabasalt)</u> garnets: 0.1 mm in diameter some quartz-bands, carbonate veining												
		64.10 - 64.40: <u>talc-actinolite schist</u>												
		64.40 - 68.04: <u>garnet-actinolite schist (metabasalt)</u> see: 63.03-64.10, some sections with biotite-flakes quartz-bands: 65.65-65.71 66.24-66.38												

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From	To	Description	DDH No. <i>GES-82-01</i>	Interval		% Cu		% Mo		% Pb		Assays Zn		ppm Au		ppm Ag	
				From	To												
		67.50 - 67.56															
		67.60 - 67.62															
		68.04 - 69.10: <u>alternating bedding</u> <u>quartzite with garnet - biotite schist</u> Min: <u>10%</u> disseminated (1 Vol.-%) 68.72 - 69.05: (7 Vol.-%)		<i>GES-82-9</i> 68.00	70.00	0.01				-	-	-	-	-	-	2.0	u
		69.10 - 70.80: <u>banded quartzite</u> <u>alternating bedding of quartz with mica-</u> <u>garnet schist, graphite-bearing talc-chlorite</u> <u>schist, metapelites and cummingtonite/</u> <u>garnetite - rich layers</u> Min: <u>10%</u> mostly disseminated with some rare bigger spots (1 Vol.-%) <u>int. bands and disseminated</u> 70.00 - 70.12															
70.80	101.48	<u>arenaceous sediments</u>															
		70.80 - 75.26: <u>laminated graphite-bearing quartzite - rich</u> <u>metasilstone to graphite-bearing</u> <u>quartzite</u> well laminated, sometimes with stripes		<i>GES-82-4</i> 73.00	74.00	-				-	-	+	-	-	-	1.0	u

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From	To	Description	DDH No. <u>GES-82-01</u>	Interval		% Cu		% Mo		% Pb		Assays Zn		ppm Au		ppm Ag	
				From	To												
		of talk-biotite schist															
		Min: <u>po</u> , <u>py</u>															
		<u>po</u> : mostly disseminated															
		<u>py</u> : as platelets or small lenses															
		following bedding planes															
		(total content: 1-3 Vol.-%)		<u>GES-82-11</u>													
				75.00	78.00	0.01				-		0.02		-		-	
		75.26 - 80.00: laminated interval															
		<u>quartz-biotite schist</u> , <u>graphite-bearing</u>															
		<u>metapelite</u> , <u>talk-biotite schist</u> , <u>biotite-</u>															
		<u>biotite schist</u>															
		Min: <u>po</u> : disseminated (1 Vol.-%)															
		80.00 - 101.48: <u>greywacke</u>															
		fine to coarse grained with gradual															
		changes between. bedding: 20°															
		varying amounts of actinolite, talk,															
		biotite. some stringers of graphite															
		Min: <u>po</u> disseminated (1 Vol.-%)		<u>GES-82-12</u>													
				89.00	90.00												
		89.75 - 89.99: <u>graphite-bearing greywacke</u>															
		decreasing graphite content															
		from the bottom to the top															
		Min: <u>po</u> diss. with some diggs															
		<u>spob</u> (1 Vol.-%)															

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From	To	Description	DDH No. <u>GES-82-01</u>	Interval		% %		% %		Assays Hm Hm		
				From	To	Cu	Mo	Pb	Zn	Au	Ag	
		92.84-92.85: <u>high sulfide</u> conduct (8 Vol.-%) mixed <u>po</u> and <u>py</u> in stringers and spots		<u>GES-82-13</u> 92.00	95.00	0.02		-	0.04	-	+	3.0 m
		93.68-94.05: <u>graphite-bearing</u> section Min: <u>po</u> in stringers, lenses, spots (3 Vol.-%)										
		94.62-95.00: see: 93.68-94.05										
		95.00-95.50: <u>graphitic greywacke</u> Min: <u>po</u> , <u>py</u> in stringers, stripes (2 Vol.-%)		<u>GES-82-5</u> 95.00	97.00	0.04		-	0.16	-	-	2.0 m
		95.50-97.40: see: 93.68-94.05 Min: <u>po</u> , <u>py</u> in stringers, lenses, spots very irregular (3 Vol.-%)		<u>GES-82-6</u> 97.00	99.00	0.01		+	0.02	-	-	2.0 m
101.48	102.43	<u>Banded quartzite</u> alternating bedding of quartz with cummingtonite/ garnet-rich layers, <u>po</u> , greenstone (metabasalt) Min: <u>po</u> bands and lamina (1 Vol.-%)		<u>GES-82-14</u> 101.50	102.40	+		-	0.01	+	-	0.9 m
102.43	137.00	<u>Volcanic section</u> 102.43-104.05: <u>quartz-rich</u> actionolite with some garnets (0.1 cm in Ø) and biotite flakes										

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From	To	Description	DDH No	Interval		%		%		Assays		ppm	ppm
				From	To	Cu	Mo	Pb	Zn	Au	Ag		
		104.05 - 108.00: <u>greenstone (metabasalt)</u>	GES-82-01										
		some bands and veins of carbonate											
		108.00 - 137.00: <u>chlorite - actinolite - talc schist</u>		GES-82-15	108.00 110.00	+		-	+	-	-	2.0 m	
		laminated		GES-82-16	117.00 120.00	-		-	+	-	-	3.0 m	
		Min. <u>sl.</u> elongated, tabular crystals,		GES-82-17	120.00 123.00	+		-	+	-	-	3.0 m	
		discriminated (2 Vol.-%)		GES-82-18	123.00 126.00							3.0 m	
				GES-82-19	126.00 129.00	-		-	+	-	+	3.0 m	
				GES-82-20	129.00 132.00	-		-	+	-	-	3.0 m	
				GES-82-21	132.00 135.00	0.01		-	+	-	-	3.0 m	