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**Tittel**

Report on the investigatios with percussio drilling over the Gæssemaras property.

Forfatter Tan, T. H.	Dato År 1972	Bedrift Sulfidmalm A/S
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**Sammendrag / innholdsfortegnelse**

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Gæssemaras lies within the Caskias greenstone group. It is only about 8 km from Kautokeino and the road to Bidjovagge copper mine goes right through the sampling area.

The investigation of the bedrock samples indicate that no strong Cu mineralization in the bedrock was encountered during the drilling, but the investigations of the till have indicated a definite Cu dispersion pattern in the basal till near the bedrock.

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FOR FALCONBRIDGE NIKKELVERK A/S

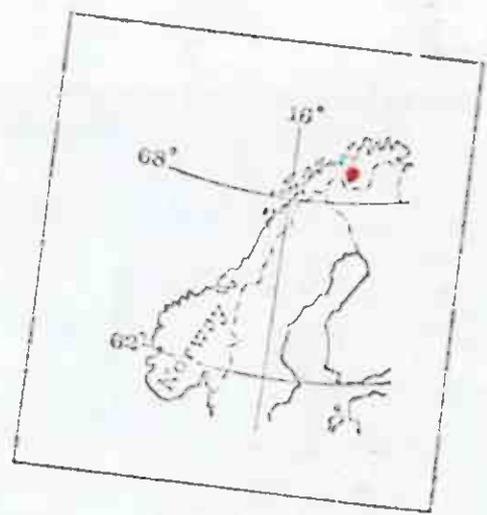
A/S SULFIDMALM

PROJECT 905-02

REPORT ON THE INVESTIGATIONS  
WITH PERCUSSION DRILLING OVER  
THE GÄSSEMARAS PROPERTY.

1972.

T. H. TAN



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## 1. INTRODUCTION AND GENERAL INFORMATION

The work described in this report is essentially a geochemical study of the till over the Gaessemaras property, sampled by means of percussion drilling in winter conditions early in 1972. The report also presents the results of the investigation of the bedrock samples collected during the same operation. The sampling was carried out by a Finnish company, Geotek OY of Helsinki, on a contract basis.

Sulfidmalm's interest in Gaessemaras is already explained by J.B. Gammon in his report "Summary of the work carried out to date in the Gaessemaras area", January 1972. The geological data and hypotheses on which the sampling plan was based, will be presented in chapt.2.

Gaessemaras lies within the Caskias greenstone group. It is only about 8 km from Kautokeino and the road to Bidjovagge copper mine goes right through the sampling area. See fig. 1.

The operation took place from Feb. 8th to May 4th 1972. The mechanical sampling was carried out by a 3-man crew, including the foreman L.Hellgren. In the first two months of the period, Sulfidmalm was represented in the field by E.Kreivi who then acted as geologist in charge. He was responsible for the handling of the samples prior to shipment, the investigation of the bedrock samples under the microscope, and the reports on the field observation at each sample site. He had an almost daily contact with J.B.Gammon in Oslo, where the final sampling plans were made, and with T.H.Tan in Trondheim. In the end of March, Tan came to Kautokeino and the responsibilities were then divided between the two.

The investigation of the bedrock samples indicate that no strong Cu mineralization in the bedrock was encountered during the drilling, but the investigations of the till have indicated a definite Cu dispersion pattern in the basal till near the bedrock.

## 2. GENERAL

### 2.1. Indication by mineralized boulders.

Over 160 boulders of leuco-dabase rock, and more or less mineralized with chalcopyrite were located in a 1600 m long belt,

mostly under 200 m width. This belt was eventually regarded as a block fan converging in the south. No boulders of this rock type were found in the southern part of this so-called fan, its shape and its convergence point was inferred by extrapolation of the assumed fan boundary in the north.

Of the 160 boulders, 32 got the field description of "richly mineralized". An assay of the samples from these 32 boulders gave the following results:

12	1/2%	(4 samples)	over 2% Cu
25	%	(8 samples)	between 1,5% and 2% Cu
12	1/2%	(4 samples)	between 1% and 1,5% Cu
18	3/4%	(6 samples)	between 0,5% and 1% Cu
31	1/4%	(10 samples)	under 0,5% Cu

(In one case as low as 0,1% Cu).

The reason why any rock sample containing as little as 0,1% Cu could be described as "richly mineralized", is not clear. This could be that either the field diagnosis by observer, or the sampling of the boulder was at fault. (or <sup>600</sup>BARREN Fe-SULPHIDE?)

No assay was carried out on the rest of the samples, taken from boulders described as "medium" and "weakly mineralized".

Several opinions have been expressed with regard to the question of the source of these blocks. (See fig. 2).

- a) North of the Cabardasjokka river within the block area, about 300 m south (up-ice) of two boulder clusters (1959-tested by diamond drilling and rejected).
- b) North of the bend of the river and south of the southernmost boulders (1960- partially tested by diamond drilling in 1961 with negative results).
- c) South of the river bend. (Tested by Sulfidmalm in this present operation).

Note:

The diamond drilling in 1961 was very limited with respect to the meterage and number of holes. The negative results might not necessarily be conclusive. Severe difficulties were encountered during the 1961 drilling, both with respect to the overburden and the bedrock itself, and a large portion of the plan had to be cancelled before its fulfillment.

## 2.2. INDICATION BY GEOPHYSICS

In 1963 the geophysical department of the NGU carried out an extensive Turam survey south of the southernmost boulders. This survey was supplemented with small scale model experiments in Trondheim. The result of the field work was the indication of several strong electric conductors believed to be graphite-rich strata. SW of the river bend one of the EM indications suggest a closure of a fold (zone C in fig. 2). The geophysicist (G.R.Sakshaug) was however unable to make out whether this was an anticline or syncline. Sakshaug was able to produce two small-scale model structures consisting of several folds giving the same readings as in the field.

According to one model, zone C was caused by a syncline, according to the other by an anticline, with its crest under the bedrock surface. These folds have a wave-length of a few hundred meters in nature. (fig. 3).

## 2.3. PREVIOUS GEOCHEMICAL STUDIES IN THE OVERBURDEN:

2.3.1. In the year 1960, the Chemical dept. of the NGU started geochemical studies in the upper part of the overburden in and around the block area. Samples of the humus and the underlying C horizon (max sampling depth here 1 m), were analysed by colorimetric Hx method, (with HNO<sub>3</sub> attack).

According to the report of this work, the Cu-values were generally low and no evident dispersion pattern was found to correspond with the block fan. Later some doubts were raised as to the validity of the colorimetric method, and it was pointed out that the use of HNO<sub>3</sub> was unfortunate. (Since 1961, HCl was used instead). Another doubt was whether these samples were really taken from the ground moraine at all. A quarternary geological report says that the sampled area was overlain by "top-moraine" (ablation moraine) thereby implying that the material from this part of the overburden must have been seriously affected by meltwaters during and after its deposition.

In 1961, these studies were extended with a sampling program from greater depths. A number of deep pits were dug, 2x2 m large and up to 2 m deep. Samples were taken from 4 corners from each pit every 25 cm downwards. No report existed at the time of writing but a thesis is under preparation based on these studies, by O.Ø.Hvatum. The data have, however, been made available to us by Messrs. Hvatum and Bølviken NGU. The data from the southernmost pits are reproduced in figures 4 and 5.

This investigation showed that the Cu values in the till in Gaessemaras are very variable. They are mostly around 50 ppm, but very high values occur occasionally, the highest being over 500 ppm. The anomalous values occur mostly, but not always, in the till just above bedrock.

As a rule, however, one got low, normal values from points only 25 cm above these anomalous points. Cu anomalies have never occurred in all the four corners in the same pits. This investigation seemed sooner to demonstrate the erratic nature of the copper values in the Gaessemaras till, and it would be more reasonable to suppose that the cause of these occasional Cu anomalies were the equally erratic chalcopyrite mineralizations that are known to have taken place throughout the greenstone zone.

#### 2.4.1.

The geology of Gaessemaras has some points of resemblance with the geology of the Bidjovagge copper deposits (now under production) and of Suovra-Rappat, both owned by Bleikvassli Gruber a/s.

The rocks of Biddjovagge are built up of:

- a) more or less stratified amphibolitic schists, of varying grain size, ranging from leuco-amphibolitics to hornblenditic schists, assumed to be basic (pyroclastic) volcanics and/or sediments of strong basic composition, and named in the Bidjovagge report "sedimentary greenstone".
- b) Massive and more or less homogenous coarse grained diabasic rocks, assumed to be intrusive and named in the same report as "diabase", "intrusive greenstone" or eruptive greenstone".

A rather foreign, but important rock type occurring among the "sedimentary greenstone" is graphite "schists" occurring in close association with a white coloured, dense rock popularly called "albite fels.". "Graphite schist" was the popular but perhaps not quite correct field name as the rock is often very hard and massive as quartzite. Apart from the graphite, this rock seems to be built up almost entirely of albite, just like the adjacent albite fels. Both these rocks can be severely brecciated at places and the economic copper mineralization seems to have preference here. The diamond drilling at Bidjovagge during the exploration and development stage was concentrated along the graphite schist, previously indicated by extensive EM (Turam) surveys. According to one of the latest Bidjovagge reports, prior to the handing over of the property to Bleikvassli Gruber, four deposits were indicated, having a total tonnage of 3,6 million and with the average of 1,8% Cu.

Some other geologically (though not economically) interesting rock types are: -

- a) A large mass of impure limestone
- b) A number of dykes, both conformable and crosscutting, of a rock called "leucodiabase".

The "leucodiabase" has apparently the same mineral composition as the aforementioned albite fels., but a different grain size and texture. Whereas the albite fels is dense and aphanitic, with a grain size down to 0,02 mm or less, the leucodiabase is medium grained with the albite crystals being lath-shaped or platy with a random orientation. The origin of the "albite fels", leucodiabase" and another leucocratic rock called "albite carbonate rock" and the possible relationship between these, are still a matter of debate. Several suggestions have been put forward that these were magmatic, or metasomatic, or as in the case of the albite-fels, of sedimentary or pyroclastic origin.

These rocks were folded into very tight folds and at Bidjovagge the copper mineralization seems to be confined to the eastern flank of one of the anticlines. The diabasés are intruded more or less conformably at two depths, one stratigraphically below the sedimentary greenschist ("footwall diabase") and one above it ("hanging wall" diabase). The footwal diabase is in part rich in magnetite, giving high magnetic anomalies in the field.

#### 2.4.2.

The geology of the Suovra rappat property is, as far as one can see, similar to Bidjovagge, except for the metamorphism. The metamorphism at Bidjovagge is higher (garnet zone) than at Suovra rappat (chlorite zone). The copper mineralization has again taken place within the graphite "schist"/albite fels association, which is also folded into an anticline (this time wide). The stratigraphical succession is apparently the same, even with respect to the in parts magnetic footwall diabase and the non-magnetic hanging wall diabase. The sedimentary nature is apparent in many greenstone types within the "sedimentary greenstone" series.

#### 2.4.3.

Because of the overburden, the geology of the Gassemaras property is least known before the subsurface studies were carried out. From the diamond drilling operations in 1959 and 1961, however, we now know that the geological environment is the same as the "sedimentary greenschist" series of the two afore-mentioned properties. Diamond drill cores intersect mostly low metamorphic (similar to Suovra rappat) greenschists with clear duffaceous and pyroclastic appearance. Some intrusive types were also encountered.

One drill hole intersected a leuco diabase, having the same composition and texture as the ones in the boulder fan, but the rock was not mineralized except for one single speck of chalcocopyrite on the core surface. The length of the leucod diabase core was 1,80 m.

### 3.0. THE SAMPLING PLAN

The sampling plan was based on two different hypotheses:

The first hypothesis (a) was that the target was a mineralized leucod diabase body, as represented in the boulders of the Gessemaras block fan. The position of this target lies south (up-ice) of the block fan.

The other hypothesis (b) assumed the analogy of the Bidjovagge and Suovra rappat copper deposits. The target is therefore the folded ~~gneiss~~ schist, indicated by afore-mentioned EM studies, S and SW of the Cabardasjokka river bend.

The original plan was to sample along two long lines (4000 N and 3800 N) both south of the river. The idea was to test the till north (down-ice) of the target areas according to these two hypotheses.

The plan, however, was considerably extended in January 1972 and by the end of the operation the sampling comprised of 71 holes (see fig. 5).

As the contractors claimed that they were able to sample also the underlying bedrock, both overburden and bedrock sampling was planned. The bedrock sampling would give us some geological information south of the Cabardasjokka, where no outcrops were to be found.

### 4.0. PROCEDURE

#### 4.1. Geotek sampling equipment

The sampling equipment consisted of a percussion drill mounted on a Valmet tractor, and a 3.6 ton Brookwade air compressor mounted on a trailer, drawn by the same tractor (see photographs). The Valmet tractor proved to be unsuitable on deep snow cover, and a bulldozer had to be hired to clear the snow first.

A 50 mm drill bit is first used until it is necessary to put down casing tubes. Then this bit is replaced with a smaller one. The compressed air is used for the actual drilling (rotation, percussion, feed), the blowing up of the cuttings and other loose material, as well as the lowering and raising of the rods.

The following ways could be used to recover the blown up material:

- a) By placing a tarpaulin around the hole, a reasonably large part of the material would fall back on it about 30-40 cm from the hole.
- b) By one of the crew holding his hands just above the hole and diverting the jet towards a bucket or shovel.
- c) By using a steel diverter (photograph) at the opening and using a strong cloth bag at the other end of the diverter.

The Geotek crew preferred to use the second method (b).

It is not always possible to blow up the material when it is too wet. The percussion drill bit is then replaced with a sample corer (called "seperat provtager", see photograph). The air through the rods and corer is turned off, and the corer is then driven down approx.  $\frac{1}{2}$  to 1 metre. The corer is then raised back to the surface and all the material inside the corer is put into the sample bag.

When the material down in the hole is too waterlogged, sampling with the corer is not possible because of the "suction" effect, and then the percussion drill bit is used again, but this time water is pumped through the rods and the material is then flushed up to the surface. The steel diverter is then used to lead the water to a tank wherethe material is allowed to settle.

After the bedrock is reached, the percussion bit is always used. The air through the rods is turned on at full strength and the material(essentially in the form of powder) is blown up, mostly in dry condition.

According to the terms of the contract, sampling should take place every meter, both in the overburden and in the bedrock. It was furthermore agreed in the field that the penetration in the bedrock should be limited to 3 metres. At the end of the operation this limit was reduced to 2 metres.

#### 4.2. Treatment of the samples in Gessenaras

The samples were registered on a field data sheet, where the coordinates of the hole, sample depth and sample number were recorded. The crew made a special note each time the sampling corer was used. Furthermore the crew noted the conditions at the various depths (whether it was dry, or below ground water level), what type of material sampled (fluvial sand, till or bedrock) and the sand/stone ratio was estimated.

The samples and field data sheets were then handed over to the geologist in charge.

Originally, only the bedrock samples were investigated in Kautokeino. The overburden samples were sent direct to Kristiansand for sieving (-80 mesh) and subsequently shipped to FNM's geochemical laboratory for analysis for Ni, Cu, Co, Zn and Pb. In the last month of the operation, the geologist also made a brief examination of the overburden samples, recording the colour, texture and his own opinion on what kind of material it was and not only quoting the crew's diagnosis.

A part of each bedrock sample was then examined under a binocular microscope after the fine -80 mesh fraction was removed by wet sieving ("washing"). Originally the rock determination was made on the basis of the mineral composition of the washed granular fraction. Towards the end of the period, however, a brief description was made as to colour and other characteristics of the untreated sample (unwashed and unsieved), and the rock determination was made on the larger chips and fragments whenever possible. The washed, granular fraction was still scrutinized under the microscope as before, primarily to detect possible sulphides, but also to estimate the mineral content of the granular fraction.

#### 4.3. Some remarks on the reliability of the work

##### 4.3.1. Sampling methods.

The quality or reliability of the samples is dependent on the method. When the samples are blown up with compressed air, contamination or dilution could be possible when no casing is used. In Gassemarae, casing was used only when the crew feared collapse of the hole. The lower parts of the hole (below 10-15 metres) were never cased.

There is now no doubt that erosion of the uncased parts of the hole could take place and has indeed taken place, by the compressed air in returning back to the surface between the rods and the walls of the hole. We can only accept the contractor's claim that this erosion was generally negligible. The way the material is collected at the surface, is felt to be a more critical matter. If one uses the tarpaulin as in (a) and let the material fall freely on it, one would risk losing the finer fractions because of the winds (however slight) would blow this away from the hole. The crew was therefore told never to do it this way. By stopping the jet with the hands like in (b), one gets a better chance to recover a more or less representative sample. The best way, however,

would have been to use the diverter as described in (c). The crew, however, was very reluctant to do this, and in the end refused, claiming that a larger part of the material, which mostly was a little moist, would freeze against the inner walls of the diverter and soon clog the whole system.

Sampling with the corer is the most reliable method. This, however, is more time-consuming, and the contractor charged kr. 25,- extra for each sample taken this way.

Flushing up the material with water is judged to be the least satisfactory method, because we expect that the erosion on the uncased parts of the walls of the hole would be considerable.

#### 4.3.2. Other observations by the drilling crew.

As stated earlier, the crew recorded the nature of the sampled material. This was based on the behaviour (such as speed etc.) of the percussion drill going through the material and also on direct inspection of the recovered material itself. Certain key words were used as: "lieju" or "muda" (mud), "hiekkä" (sand), "moreni" (till or moraine) "pokjamoreni" (ground moraine), and "kallio" (bedrock).

The drillers' observations were then used in the day to day drilling reports to Oslo by the geologist in charge, originally without further comment. It should, however, be remembered that the drillers' understanding of "moraine" could be quite different from a geologist's. Any material for example consisting of both sand and stones, would be called "moreni", even when this in fact was a glaci-fluvial deposit. Later, therefore, the geologist in charge carried out a check on the overburden samples before further shipment. By this time, however, about 80% of the overburden samples were already shipped to Kristiansand unchecked.

#### 4.3.3. The investigation of the bedrock samples

The bedrock was originally determined on the basis of the mineral composition of the granular fraction, after "washing" away the dust fraction. After "washing", the volume of the original sample was reduced by more than 50% and in some cases as much as 80%.

It was perhaps not sufficiently appreciated that a mineral separation could easily take place during the washing, and that the

mineral composition of the granular fraction would no more be representative of the original unwashed sample. Tectosilicate grains such as quartz and feldspar, which were originally present in the bedrock or have come from the uncased parts of the overlying till, and which might have made up only a negligible part of the untreated bedrock sample, could very easily be enriched in the granular fraction after treatment and thereby causing a faulty determination of the rock.

## 5.0. RESULTS

### 5.1. General

Appendix 1, pp 1-71 are graphical representations of the observations made in the 71 drill holes. The column on the extreme left is the observations, made either by the drilling crew or the geologist in charge, on the nature of the overburden. The mineral composition of the bedrock sample is determined on the basis of the granular fraction.

The sand and stone ratio, presented both numerically and graphically, is based solely on the observation of the crew.

The sample numbers are presented in the next column.

The letter P (for "putki", meaning tube or pipe) means that the sample was taken up with a corer.

The results of the geochemical analyses are presented in the last column.

### 5.2. Till geochemistry

Figures 7, 8, 9, 10, 11 and 12 are vertical sections along 3600 N, 3800 N, 4000 N, 4100 N, 4200 N and 4400 N, presenting the Ni, Cu, Zn and Co values of the sampled material. The difference between "back ground" and "anomalous" values was based on a population of 500 till samples from the Kautokeino district, taken in localities where no dispersion patterns showed up. The data were supplied by the NGU. Values higher than one standard deviation above the median were regarded as anomalous. Values below this were regarded to belong to the "background".

The most striking results seem to come from line 4200 E, between 6900 E and 7100 E, and from line 4100 E between 7000 E and 7100 E. It would be reasonable to assume that the high values from the till just above the bedrock belong to the same dispersion pattern.

A possible dispersion pattern might also be present just above the bedrock surface at 3600 N/7165 E, 3800 N/7125 E, 3800 N/7150 E and 4000 N/ 7165 E. We have, however, two limited data here. The anomalous sample from 3800 N/7125 E were seen to contain fragments of a basic rock (amphibolite or diabase) mineralized with chalcopyrite.

Some high values show up near the surface on line 4000 N, between 6950 E and 7100 E. The significance is not clear.

Fig. 13 summarises the results of the till geochemistry.

### 5.3. The nature of the overburden

Fig. 14 summarises the interpretation of the overburden compiled by E. Kreivi, based on the crew's drilling reports. The exception is made for the 3 westernmost holes on line 4000 N, where the nature of the overburden was determined by the geologist in charge (Tan) from the actual samples and the sand/stone ratio on the field data sheets.

The map is presented with certain reservations, for reasons explained in 4.3.2.

### 5.4. Bedrock geology

Fig. 15 is an interpretation based on the description of the recovered cuttings from the percussion drilling in the bedrock, compiled by E. Kreivi. The bedrock under the sampled area seems to be made up mainly by (probably low metamorphic) greenstones and greenschists, though some more amphibolitic varieties were also reported. A graphitic rock or schist was encountered in one hole, coinciding with a Turun indication. A number of the investigated samples were reported to be more acid rocks, containing a high amount of quartz and feldspar, and were named gneisses.

The bedrock drilling has indicated that a few parts of the bedrock was deeply weathered. This fact was already discovered during the NGU drilling operations north of the river in 1961.

The disadvantages of rock determinations based on the washed, granular fraction of the recovered cuttings, were already pointed out in 4.3.3., and it is hoped that a re-examination can be made of the bedrock samples, this time based on the larger rock fragments.

### 5.5. Mineralization in bedrock

Fig. 15 also indicates the sites where chalcopyrite and other sulphides were observed in the granular fraction of the bedrock samples. Some of these mineralizations were mentioned earlier in the monthly reports. All bedrock samples reported to contain sulphides were sent to Falconbridge Nikkelverk in K stiansand for assaying. The assay results were very low, the highest Cu-assay was 0,12 %, the highest Ni assay 0,03 %. The percussion drilling in the bedrock has therefore not encountered any strong Cu mineralization in any of the 71 holes.

### 6.0. CONCLUDING REMARKS

The mechanical sampling of the overburden, by means of percussion drilling in the Gassemaras locality has indicated:

- a) A definite dispersion pattern near the bedrock at 4100 N, between 7000 E and 7100 E, and at 4200 N, between 6900 E and 7100 E.
- b) A possible dispersion near the bedrock at 3600 N/7120 E. at 3800 N, 7125 E and 7250 E and 4000 N/7165 E.
- c) High Cu values near the surface on line 4000 N, between 6950 E and 7100 E.

The dispersion pattern (a) is the most encouraging indication. The pattern is not sufficiently outlined, but the 10 anomalous holes on the lines 4100 N and 4200 N should be enough for us to consider this indication to be a target for further investigations.

Because of the fact that no high Cu values were encountered up-ice on line 4000 N, one would tend to conclude that the source in the bedrock lies somewhere between 4000 N and 4100 N.

The significance of the other two indications (b) and (c) is not quite clear.

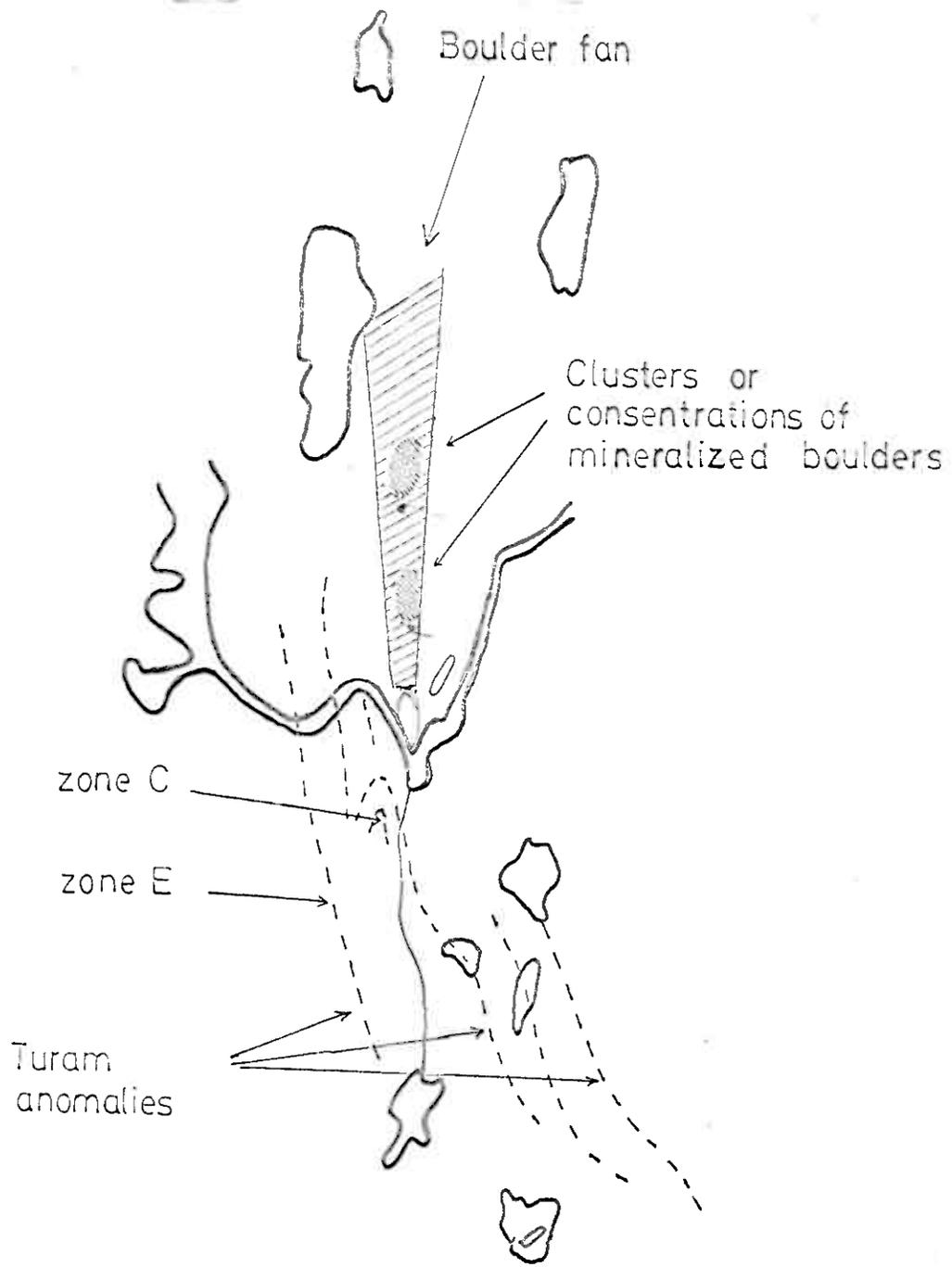
Outside these 3 indications a number of erratic high values for Cu have been noted. No significance has been given these for the time being.

The sampling was mainly concentrated in the area south of the Cabardasjokka river, though around 15 holes were drilled in the river itself. Only 4 holes were actually drilled north of the river bend. The reasons for not applying the present method here were:

- a) This area was partly tested by NGU with diamond drilling in 1961, with negative result.
- b) The technical difficulties experienced by NGU during their drilling operation made it less attractive for us. The NGU had severe difficulties with the overburden, and also with weathered bedrock going down several tens of metres depth.
- c) The overburden north of the river bend seems to be made up of river sediments. It was thought most probable that the fluvial sediments extend downwards practically to bedrock. Any possible till beneath the fluvial sediment should be expected to have undergone (at least in part) some fluvial action, making this rather unreliable.

It should, however, be admitted that this area was not sufficiently tested, neither by NGU nor by us. To test this area for any possible mineralization as represented in the 80 boulders in the block fan, an IP survey seems to be a more reliable method than till geochemistry. Judging from the Turam survey of 1963, this particular area is practically free from electrical conductors such as graphite schists.

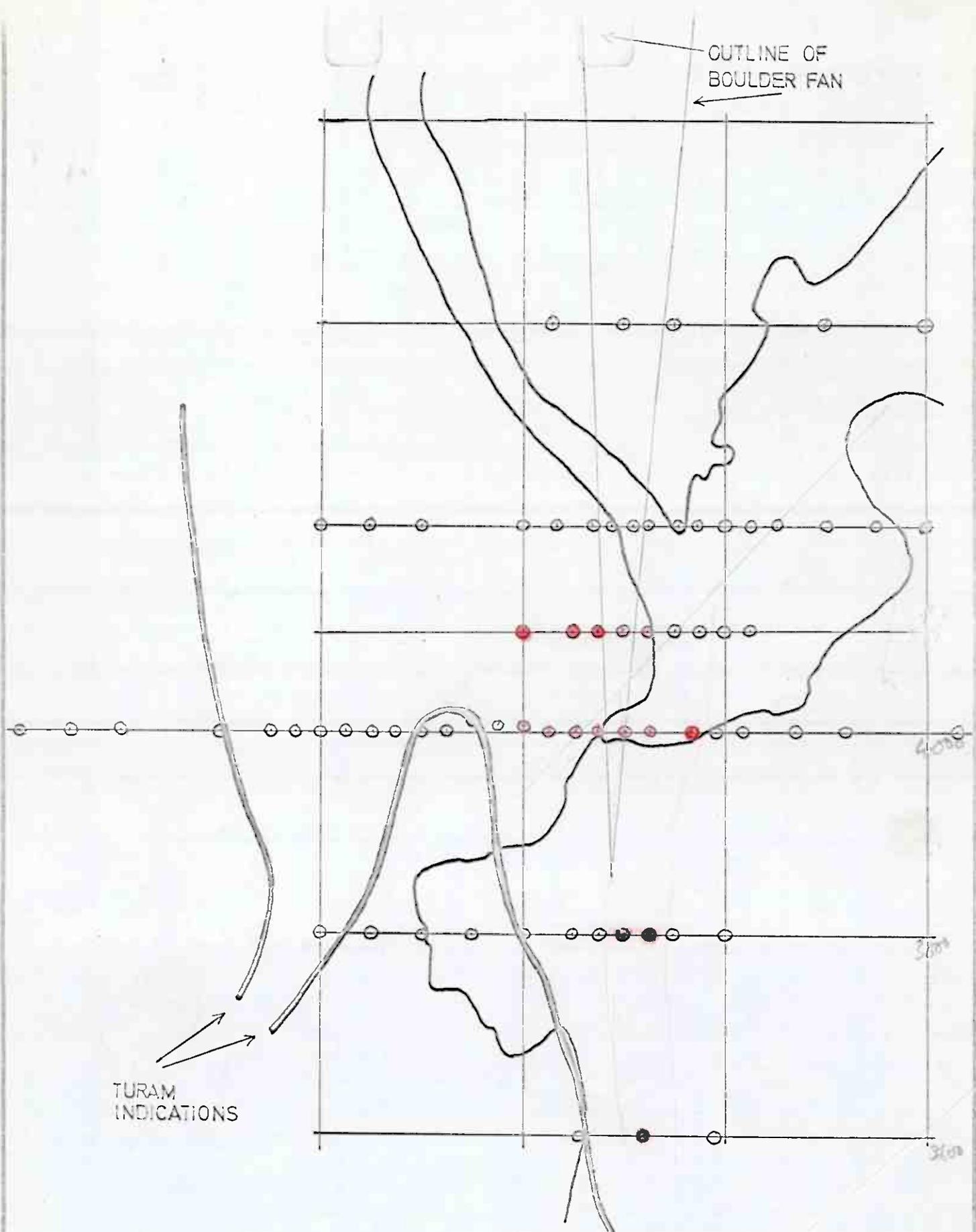
*J.B. APTEH*  
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A/S SULFIDMALM FIG.2.

GÆSSEMARAS  
situation sketch of boulder fan  
and EM - indications

SCALE 1:50-000	DRAWN THT
DATE 20.6.1922	TRACED



A/S SULFIDMALM FIG. 6.	
G/ESSEMARAS sampling points with Geotek percussion drilling 1972	
SCALE 1:5000	DRAWN JBG/YHT
DATE	TRACED

6800 E                      7000 E                      7200 E                      7400 E

4600 N

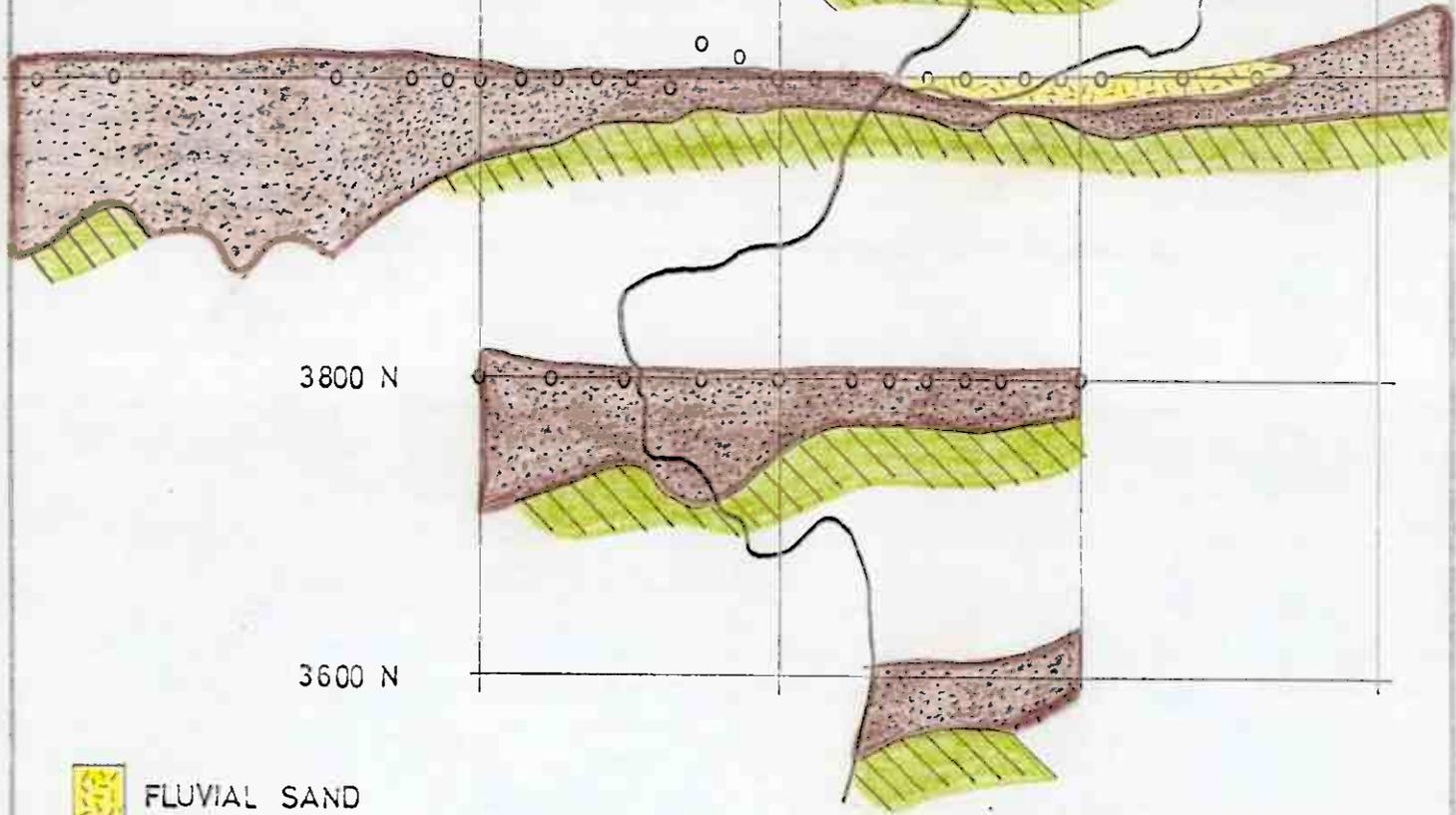
4400 N

4200 N

4100 N

3800 N

3600 N



-  FLUVIAL SAND
-  TILL
-  BEDROCK

A/S SULFIDMALM FIG.14	
GÄSSEMARAS interpretation of the overburden	
SCALE 1:5000	DRAWN EK
DATE	TRACED

PAGE 6:

GEOTEK SAMPLING EQUIPMENT

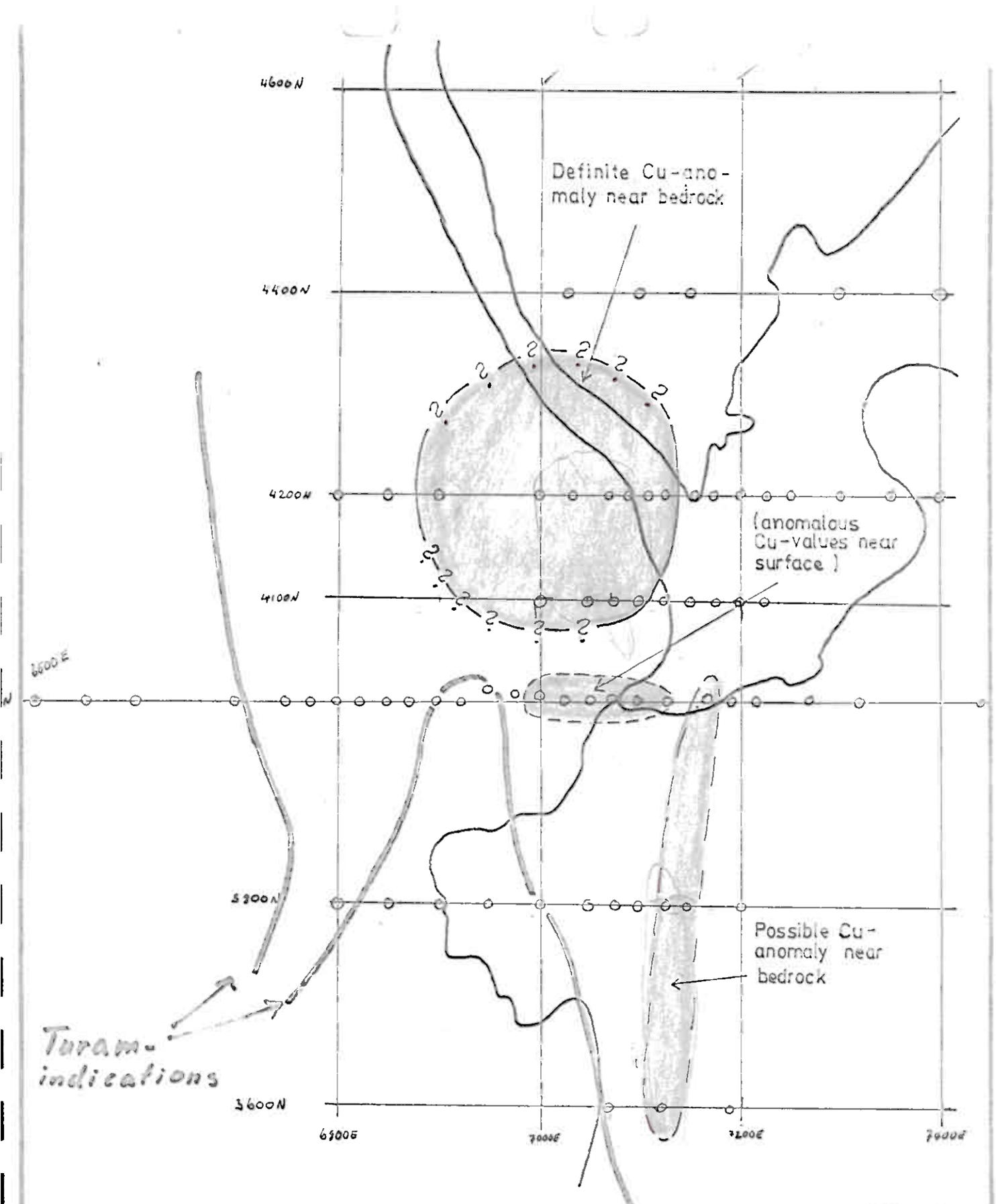


PAGE 7:

GEOTEK SAMPLING EQUIPMENT





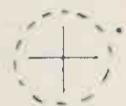
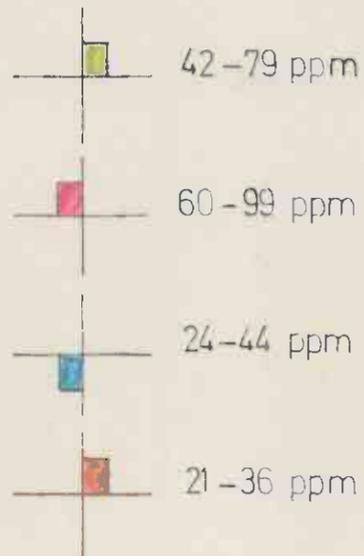
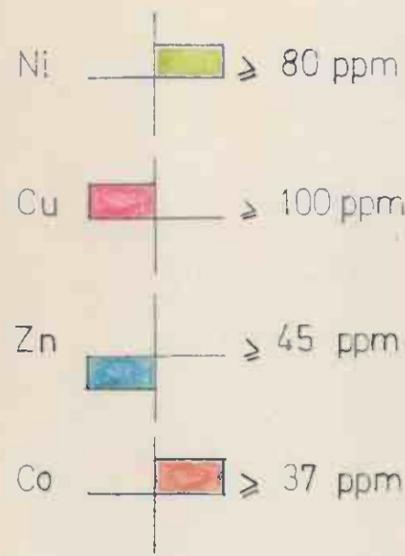


A/S SULFIDMALM FIG.13	
G/ESSEMARAS	
Interpretation of till geochemistry	
SCALE 1:5000	DRAWN T.H. 7.
DATE	TRACED

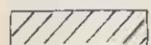
LEGEND FOR FIGURES 7,8,9,10,11 AND 12.

Values higher than  
2 standard deviations  
above median  
 $\geq (M + 2 SD)$

Values between  
1 stand. dev. and  
2 stand. dev. above median  
 $(M + 1 SD) - (M + 2 SD)$



Doubtful sample  
(possibly no till.)



Bedrock

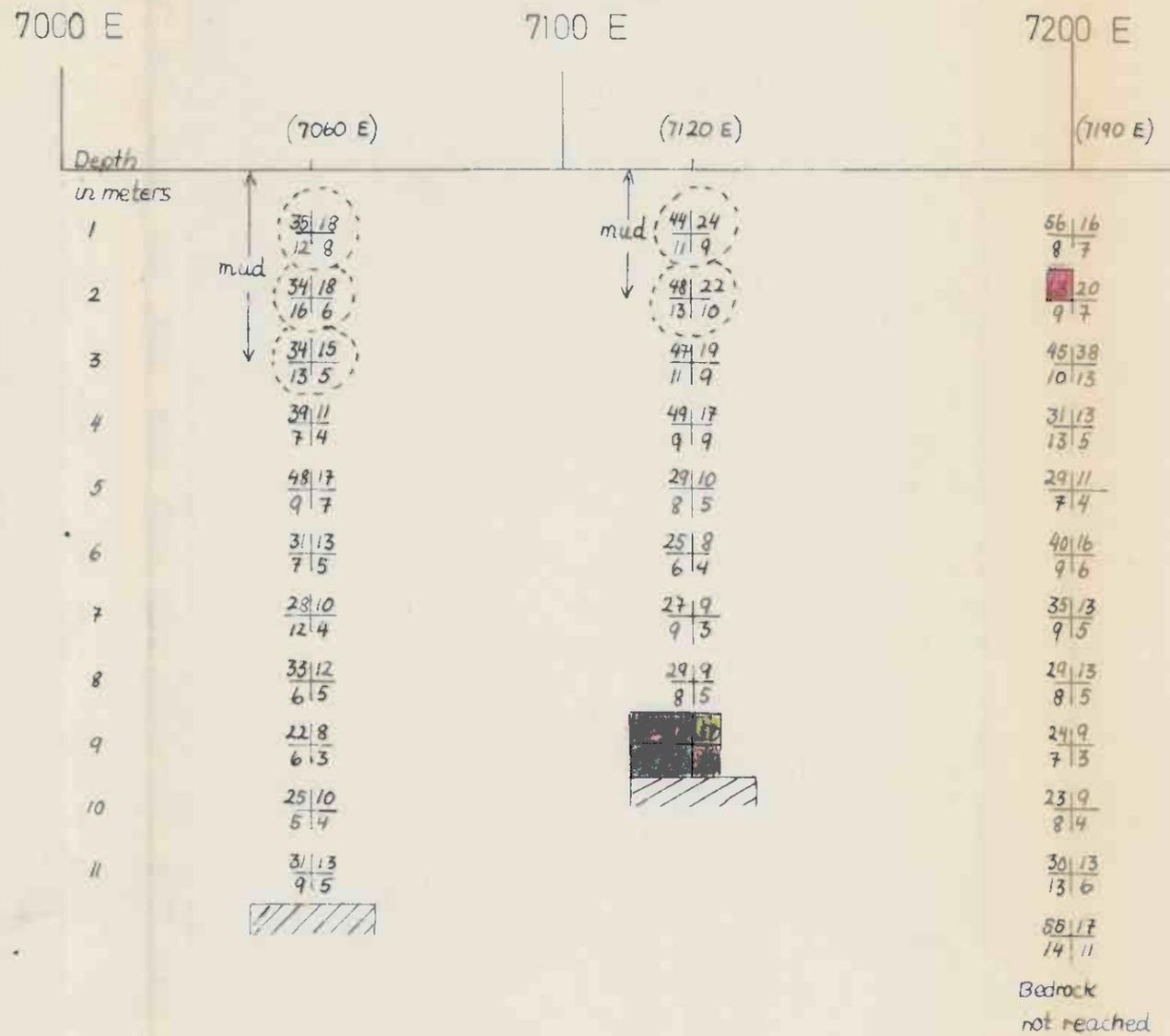


FIG. 7

PROJECT 905-02 GÆSSEMARAS, KAUTOKEINO	SCALE	OBS. Geotek	Feb May 72
	1:250 horiz	DRAW. THT	June 72
TILL GEOCHEMISTRY CROSS SECTION ALONG 3600 N	1:100 vert	TRAC. BL	July 72
		CHK. JBG	July 72
1/8 SULFIDMALM	MAP NO.		
	MAP SHEET		

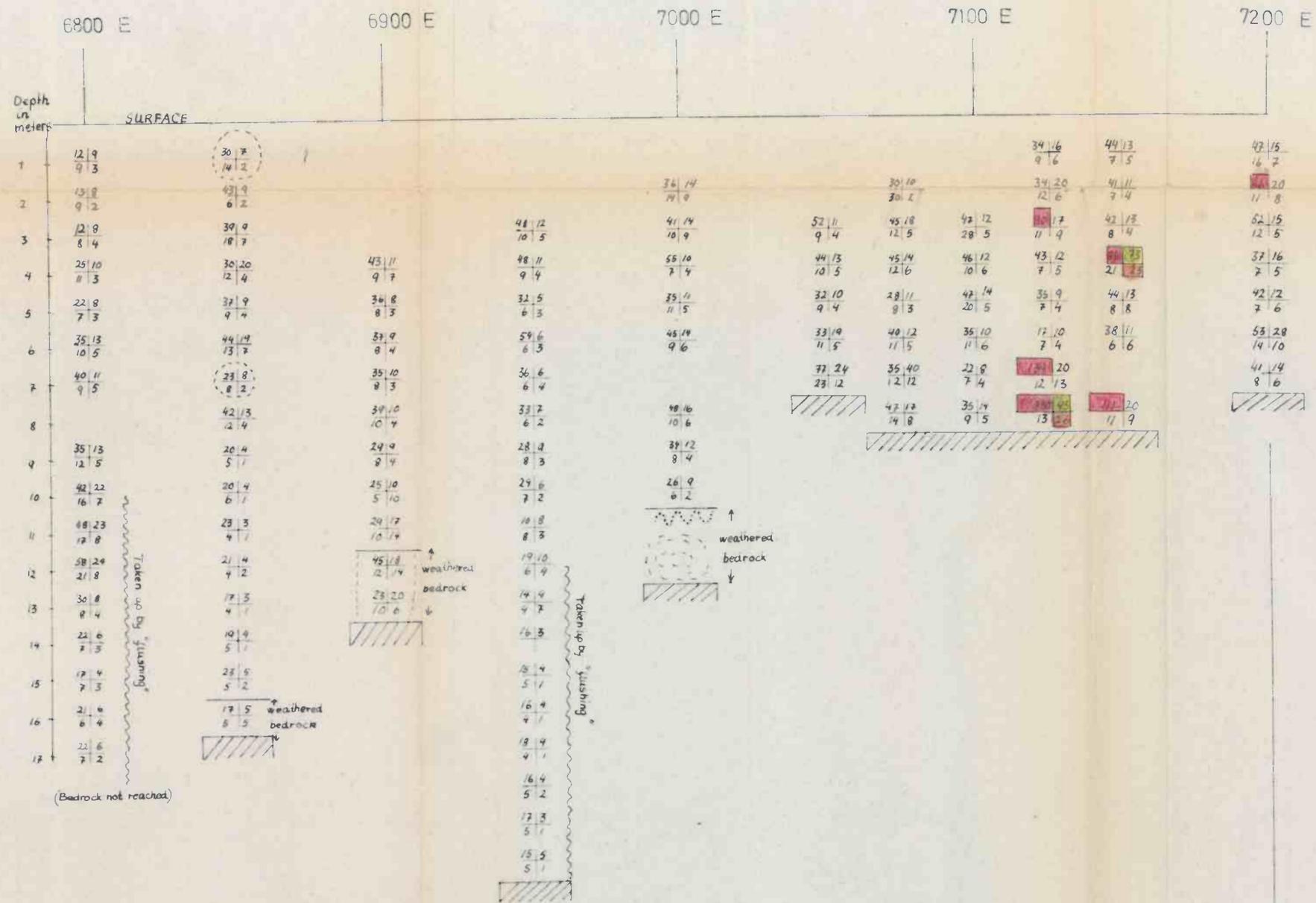


FIG. 8

Project 905-02 GESSEMARAS Kautokeino Till geochemistry Cross section along 3800 N	SCALE	OBS. Geotek	FEB/MAR-72
	1:250 horiz.	DRAW. THT	JUNE-72
	1:100 vert.	TRAC. BL	JULY-72
		CHK. JBG	JULY-72
MAP NO.			
<b>1/2 SULFIDMALM</b>			
MAP SHEET			

6500 E 6600 E 6700 E 6750 E 6800 E 6900 E 7000 E 7100 E 7200 E 7300 E 7400 E 7430 E

Depth in meters (SURFACE)



FIG. 9

PROJECT 905-02 G/ESSEMARAS, KAUTOKEINO TILL GEOCHEMISTRY CROSS SECTION ALONG 4000 N	SCALE	OBS. Geotek	Feb/May 72
	1:1250 horz	DRAW. THT	June 72
	1:100 vert	TRAC. BL	July 72
		CHK. JBG	July 72
% SULFIDMALM	MAP NO.		
	MAP SHEET		



6800 E                      6900 E                      7000 E                      7100 E                      7200 E                      7300 E                      7400 E

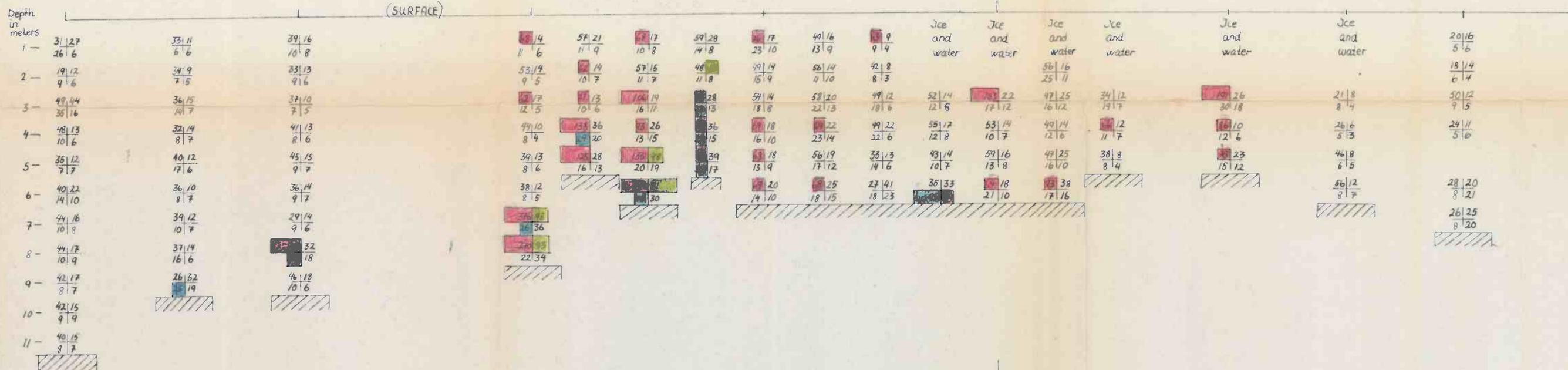


FIG. 11

PROJECT 905-02 GÆSSEMARAS, TILL GEOCHEMISTRY KAUTOKEINO CROSS SECTION ALONG 4200 N	SCALE	OBS. Geotek	Feb May 72
	1:250 horiz	DRAW. THH	July-72
	1:100 vert	TRAC. BL	July-72
		CHK. JBG	July-72
% SULFIDMALM		MAP NO.	
		MAP SHEET	

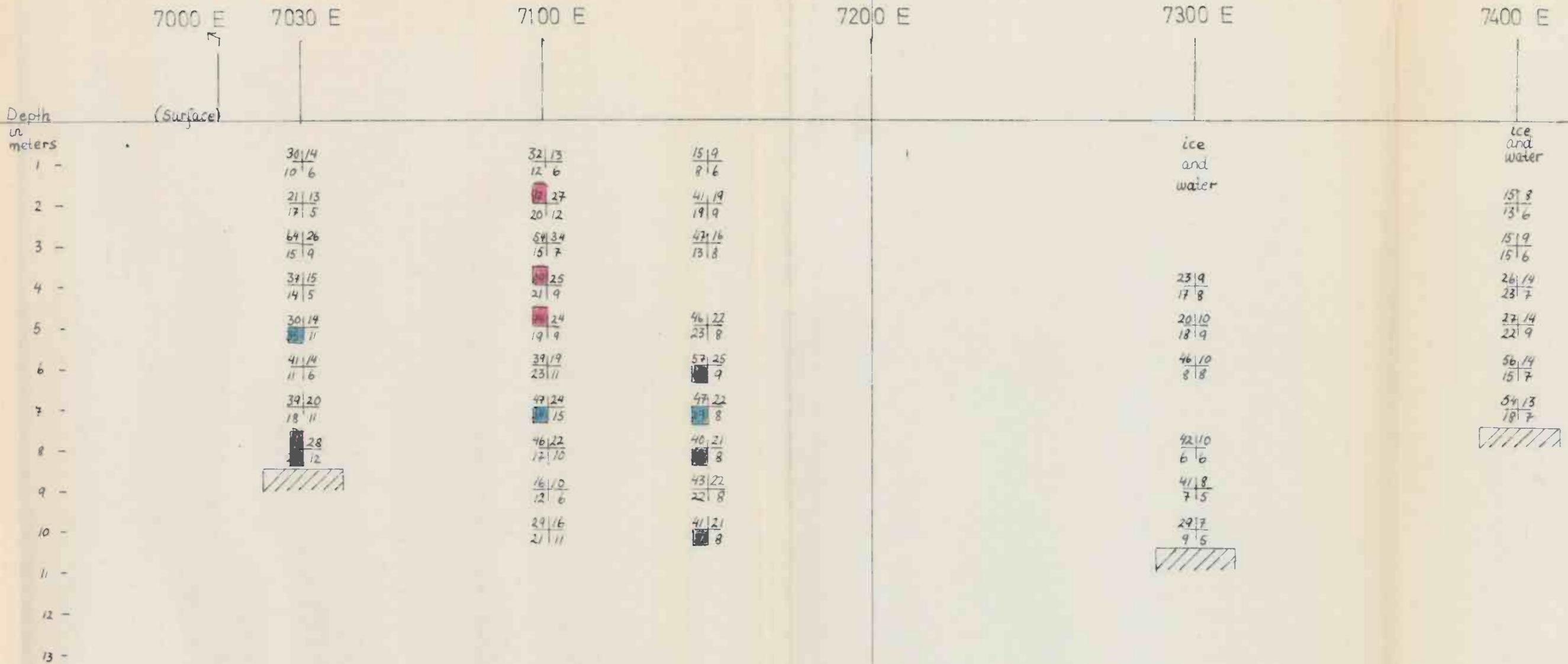
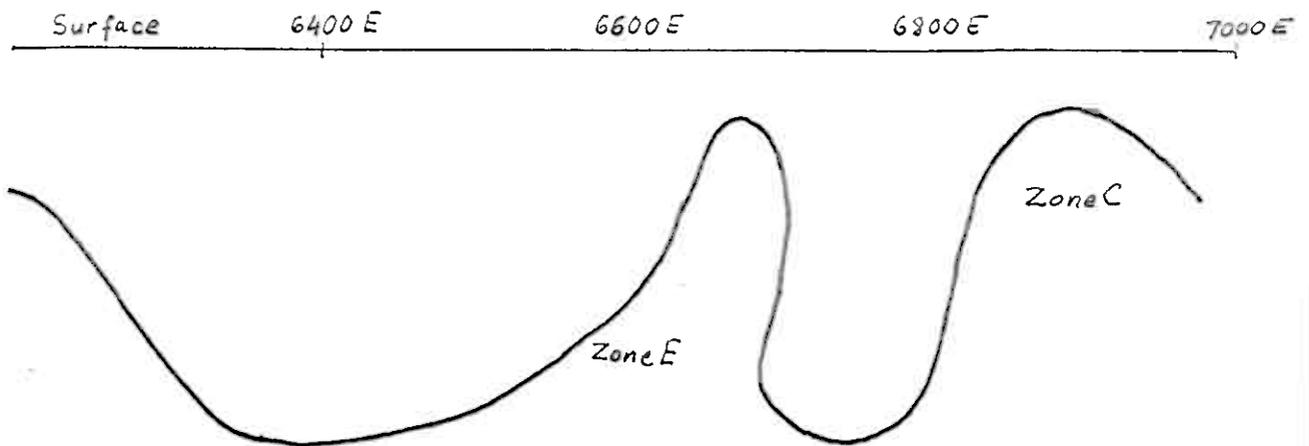
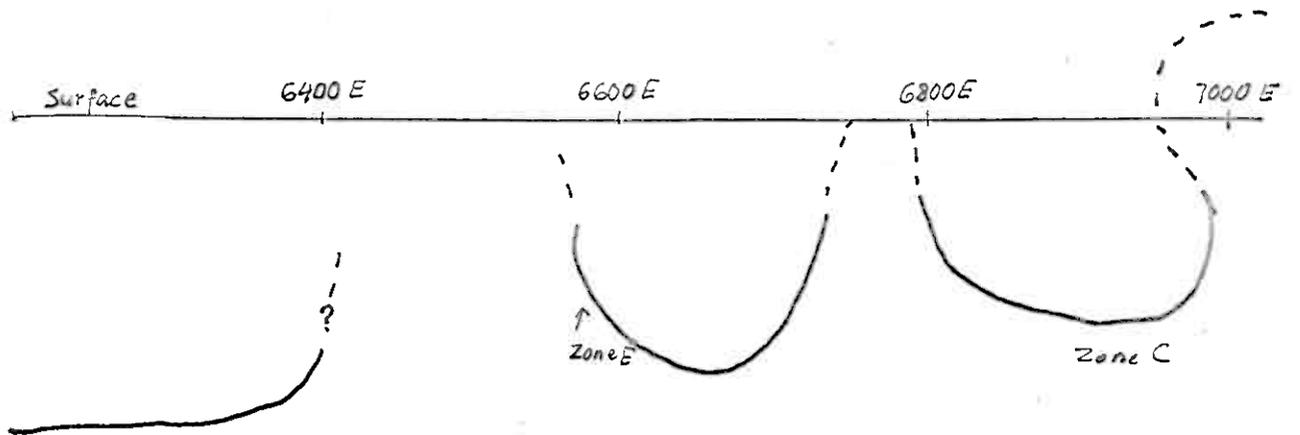


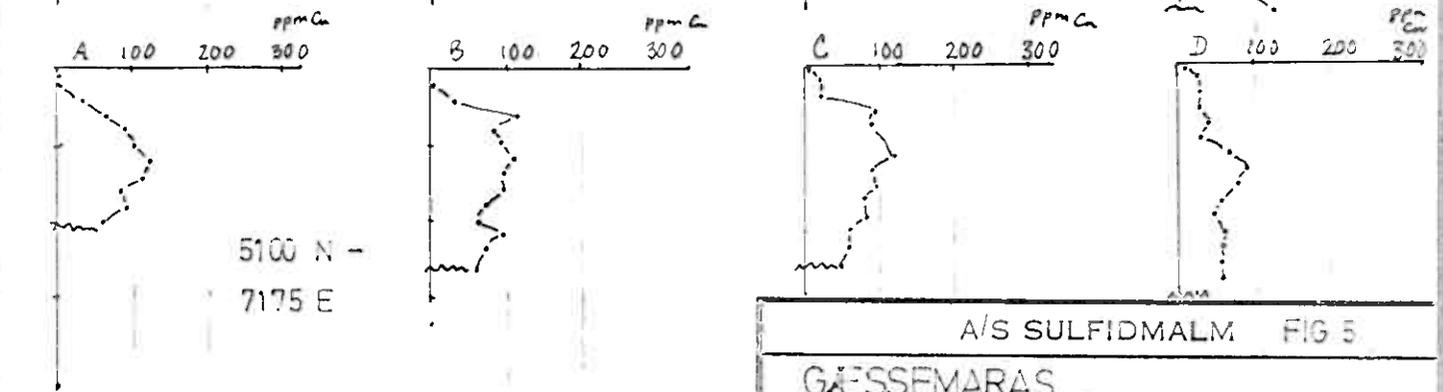
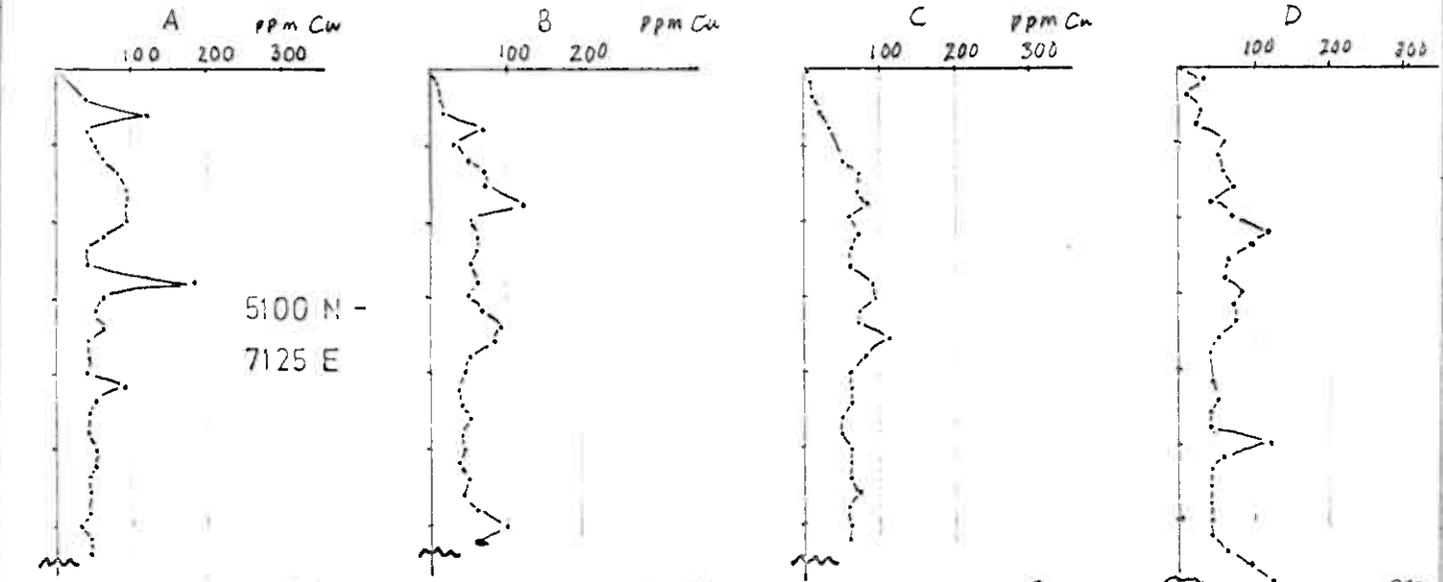
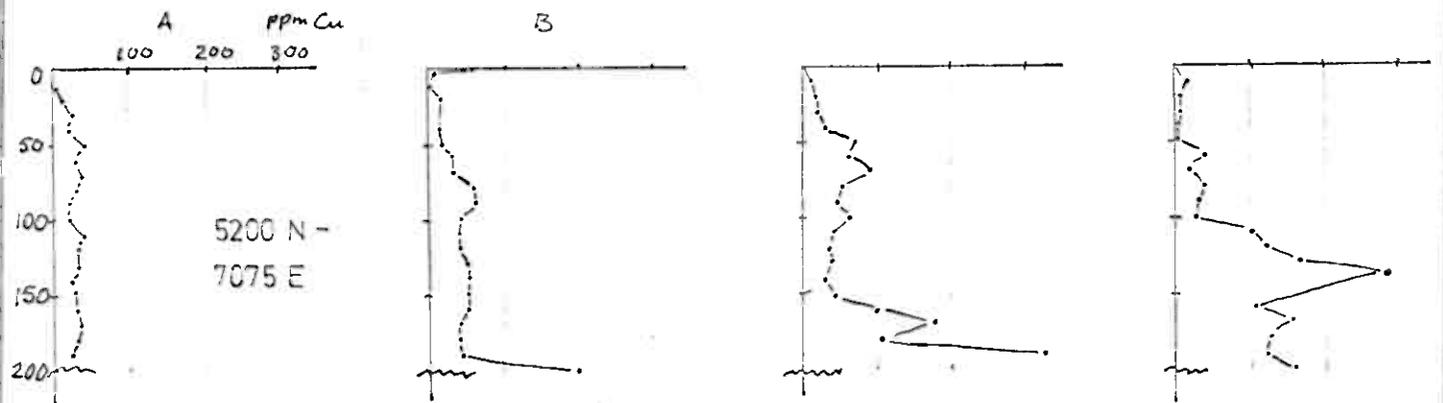
FIG.12

PROJECT 905-02 GÆSSEMARAS, TILL GEOCHEMISTRY KAUTOKEINO CROSS SECTION ALONG 4400 N	SCALE	OBS. Geotek	Feb/May-72
	1:1250 horiz.	DRAW. THT	
	1:100 vert.	TRAC. BL.	July 72
		CHK.	JULY 72
% SULFIDMALM	MAP NO.		
	MAP SHEET		

2 alternative reconstructions of the structure of the  
 el. conductive layer (graphite schist?)  
 just south of the river bend (3800 N) after Sakshaug.

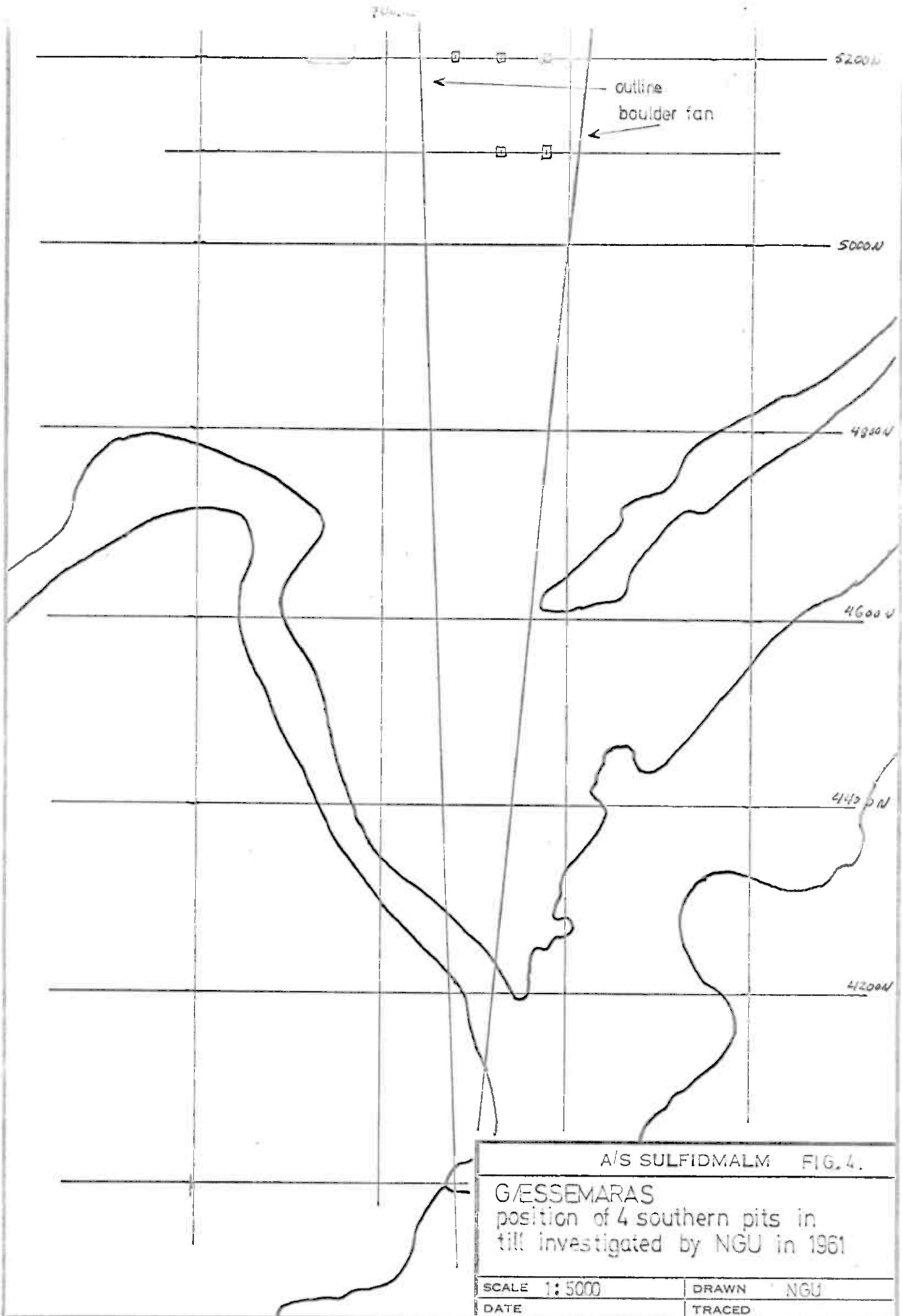


A/S SULFIDMALM . FIG. 3	
GÆSSEMARAS Interpretations of EM- indications (from NGU report.)	
SCALE	DRAWN NGU
DATE	TRACED



A/S SULFIDMALM FIG 5  
 GÆSSEMARAS  
 cu data from NGU-till investigations  
 from 4 pits, 1961

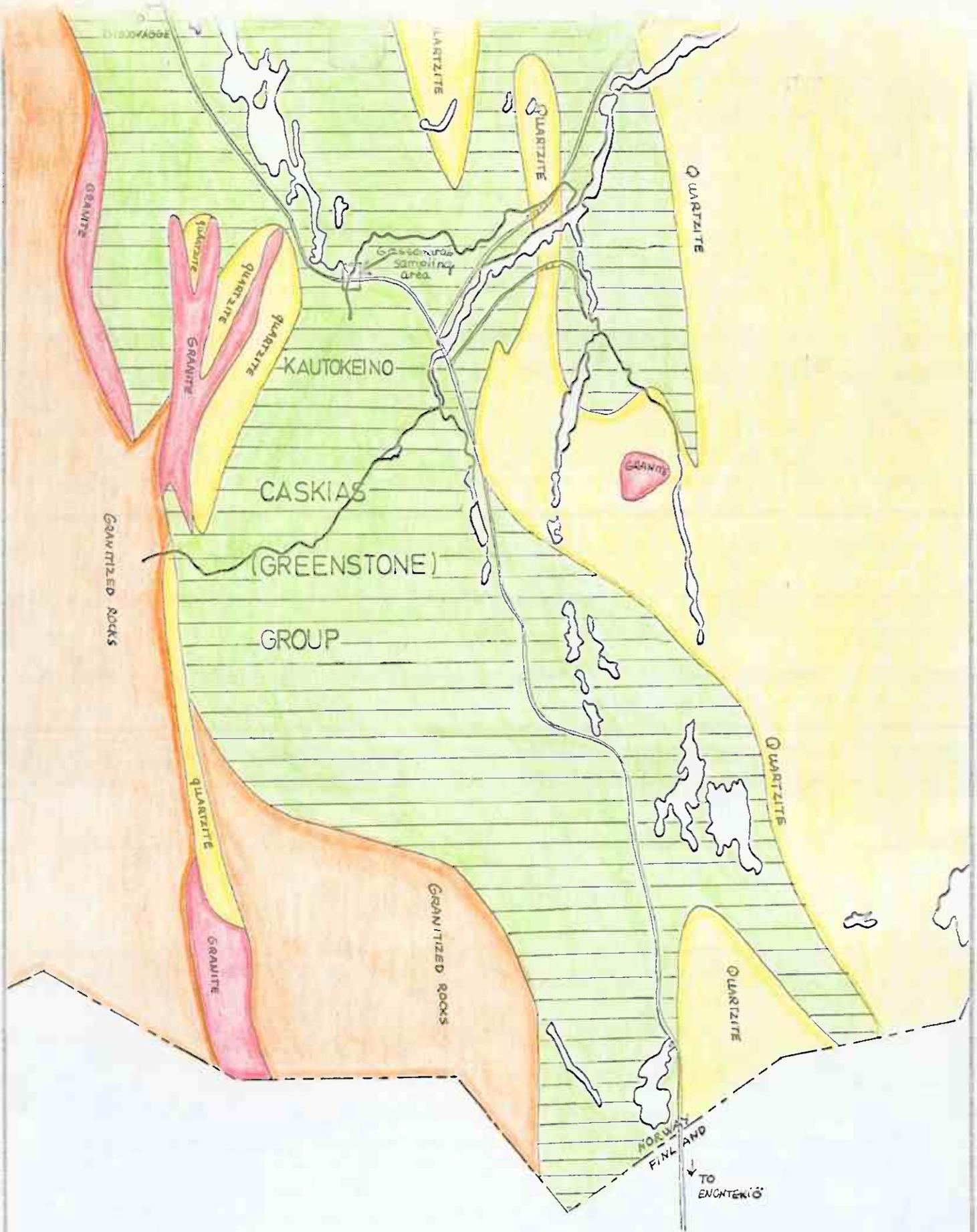
SCALE	DRAWN NGU
DATE	TRACED



A/S SULFIDMALM FIG. 4.

G/ESSEMARAS  
 position of 4 southern pits in  
 till investigated by NGU in 1961

SCALE 1: 5000	DRAWN NGU
DATE	TRACED



A/S SULFIDMALM FIG.1

Geological and general inform. map.

Area around GJESSEMARAS

SCALE 1:250 000

DRAWN THT

DATE

TRACED

Remarks	Sand/Stones [%]	Sample	Ni	Cu	Zn	Pb	Co
Moraine -light gray	70/30	29 41	16	56	8	5	7
		29 42	20	63	9	4	7
	60/40	29 43	38	45	10	5	13
		29 44 P	13	37	13	3	5
	70/30	29 45 P	11	29	7	2	4
		29 46 P	16	40	9	5	6
	60/40	29 47 P	13	35	9	3	5
Ground moraine?	70/30	29 48 P	13	29	8	4	5
	60/40	29 49 P	9	24	7	3	3
		29 50 P	9	23	8	4	4
	70/30	29 51 P	13	30	13	4	6
Bedrock was not reached		29 52 P	17	55	14	5	11

A/S SULFIDMALM	
Gaessemaras, Kautokcino Line 3600N, Geotek - percussion drilling 3600N / 7190 E 24/4 1972	
SCALE	DRAWN E.K.
DATE	TRACED U.T.

Remarks	Sand/Stones [%]	Sample	Ni	Cu	Zn	Pb	Co
Mud -brownish	100/0	1 2963	18	35	12	4	8
		2 2964	18	34	16	4	6
	90/10	3 2965	15	34	13	4	5
Moraine -gray	60/40	4 2966 P	11	39	7	3	4
		5 2967 P	17	48	9	4	7
Ground morains	70/30	6 2968 P	13	31	7	3	5
		7 2969 P	10	28	12	4	4
	60/40	8 2970 P	12	33	6	2	5
		9 2971 P	8	22	6	2	3
	70/30	10 2972	10	25	5	3	4
	60/40	11 2973	13	31	9	5	5
Bedrock -Chl-schist -rare Cp and Mag	Chl 60% Fel 20% Qtz 20%	12 2974 13 2975					
	Carb Cu Mag						

Colour: (light) greyish green  
Bedrock fragments: chl. schist

A/S SULFIDMALM	
Goessemara, Kautokeino Line 3600 N Geotek-percussion drilling 3600 N / 7060 E (27/4 1972)	
SCALE	DRAWN E.K.
DATE	TRACED U.T.

Remarks	Sand / Stones [%]	Sample	Ni	Cu	Zn	Pb	Co
Mud -brown	100/0	1 29 53	24	44	11	11	9
Moraine	80/20	2 29 54	22	48	13	10	10
		3 29 55	19	47	11	5	9
-light gray	70/30	4 29 56 P	17	49	9	4	9
Ground moraine ?	30/70	5 29 57 P	10	29	8	4	5
	60/40	6 29 58 P	8	25	6	3	4
	70/30	7 29 59 P	9	27	9	3	3
	40/60	8 29 60 P	9	29	8	3	5
Bedrock		9 29 61 P	(47) 60	(116) 113	(52) 55	(11) 10	(25) 29
- Chl - schist	Chl 70 %	10 29 62					
- rare Cp-grains and magnetite-grains	Fel 10 % Qtz 10 % Carb 10 % Cu Mag						

Colour: greenish grey

fragments: chlorite-sericite-phyllite

A/S SULFIDMALM	
Gaessemaras, Kautokeino Line 3600 N Geotek-percussion drilling 3600N/7120E (26/4 1972)	
SCALE	DRAWN E.K.
DATE	TRACED U.T.

Remarks	Sand / Stones [%]	Sample	Ni	Cu	Zn	Pb	Co
Light reddish brown, some organic material	90/10						
— " —	80/20	28 09	9	12	9	6	3
Yellowish brown, clayey	20/80	28 10	8	13	9	2	2
Grey, colour and consistency of a till	50/50	28 11	8	12	8	3	4
Light grey	60/40	28 12	10	25	11	4	3
Grey	60/40	28 13	8	22	7	4	3
	70/30	28 14	13	35	10	4	5
		28 15	11	40	9	5	5
No sample	60/40						
	70/30	28 16	13	35	12	4	5
(water used to get material up)	60/40	28 17	22	42	16	6	7
Ground moraine?	60/40	28 18	23	48	17	9	8
— " —	70/30	28 19	24	58	21	10	8
Lower content of fine material, probably due to the use of water to get it up.	60/40	28 20	8	30	8	4	4
— " —	70/30	28 21	6	22	7	4	3
— " —	80/20	28 22	4	17	7	4	3
— " —	60/40	28 23	6	21	6	3	4
— " —		28 24	6	22	7	4	2
		18					

Drilling discontinued at 17 m depth

A/S SULFIDMALM	
Goessemaras, Kautokeino Profile 3800 N Geotek percussion drilling 3800 N / 6300 E (15/4 1972)	
SCALE	DRAWN T. H. T.
DATE	TRACED U. T.

Remarks	Sand / Stones [%]	Sample	Ni	Cu	Zn	Pb	Co
Mud	90/10	28 25	7	30	14	5	2
Moraine - brownish	50/50	28 26	9	43	6	4	2
- light gray	60/40	28 27 P	9	39	18	3	2
	50/50	28 28 P	20	30	12	4	4
	40/60	28 29 P	9	37	9	3	4
Boulder	10/90	28 30 P	19	44	13	4	7
Ground moraine?	40/60	28 31	3	23	3	4	2
	50/50	28 32	13	42	12	4	4
	40/60	28 33	4	20	5	2	1
	50/50	28 34	4	20	6	4	1
	40/60	28 35	3	23	4	3	1
	50/50	28 36	4	21	4	3	2
	60/40	28 37	3	17	4	4	1
	60/40	28 38	4	19	5	2	1
	60/40	28 39	5	23	5	5	2
Weathered bedrock? - soft		28 40	5	17	5	5	5
Bedrock - granitic rock - little magnetite	Qtz 40% Fel 60% Hag Rfb Carb Hc	28 41					
		28 42					
		28 43					

A/S SULFIDMALM	
Gaessemaras, Kautokeino Lina 3300 N Geotek-percussion drilling 3300 N / 6350 E (17/4 1972)	
SCALE	DRAWN E.K.
DATE	TRACED U.T.

Remarks	Sand/Stones [%]	Sample	Ni	Cu	Zn	Pb	Co
Hud -brown	100/	2844	8	34	16	12	6
	50/50	2845 P	9	25	9	4	5
-light gray	60/40	2846 P	16	75	14	6	4
	70/30	2847 P	11	43	9	5	7
	60/40	2848 P	8	36	8	4	3
	50/50	2849 P	7	37	8	6	4
Ground moraine ?	70/30	2850 P	10	55	7	7	3
	60/40	2851 P	10	39	10	6	4
	50/50	2852 P	9	29	8	3	4
	50/50	2853 P	10	25	5	7	10
Weathered bedrock ? -brownish		2854 P	17	29	10	28	14
		2855	18	45	12	42	14
Bedrock -Fel-Carb-rock -brownish	Fel 40% Carb 40% Qtz 10% Afb 10% Ep Py Mag	2856	20	23	10	45	6
		2857					

A/S SULFIDMALM	
Gassemaras, Kautokaino Line 3300 N Geotek-percussion drilling 3300 N / 6900 E (13/4 1972)	
SCALE	DRAWN E.K.
DATE	TRACED U.T.

Remarks	Sand/stones [%]	Sample	Ni	Cu	Zn	Pb	Co
Ice							
Water							
Mud							
	50/50						
Moraine -light gray		2858 P	12	48	10	6	5
	60/40						
		2859 P	11	48	9	7	4
	70/30						
		2860 P	5	32	6	6	3
		2861 P	6	54	6	5	3
Ground moraine?	60/40						
		2862 P	6	36	6	5	4
	70/30						
		2863 P	7	33	6	3	2
	60/40						
		2864 P	9	28	8	4	3
	50/50						
		2865 P	6	29	7	4	2
	60/40						
		2866 P	8	19	8	3	3
By water							
		2867	10	19	6	7	4
	70/30						
		2868	4	14	4	4	2
	50/50						
		2869	3	16			
	60/40						
		2870	4	15	5	3	1
		2871	4	16	4	2	1
	70/30						
		2872	4	13	4	4	1
		2873	4	16	5	3	2
	50/50						
		2874	3	17	5	2	1
Bedrock ?	Qtz 40%						
-light gray	Fel 50%						
-granitic rock	Alb 10%						
	Ep						
	Hem						
	Mag						
		2875	5	15	5	2	1

A/S SULFIDMALM

Gaasemaras, Kautokeino  
Line 3300 N  
Geotek-percussion drilling  
3300N/6950E (19/4 1972)

SCALE	DRAWN
DATE	TRACED

Remarks	Sand/Stones [%]	Sample					
Ice		?					
Moraine	50/50						
-brown		28 76		14	36	14	4 9
-brown and gray	70/30	28 77 P		14	41	10	4 9
-light gray		28 78 P		10	35	7	3 4
Ground moraine ?		28 79 P		11	35	11	4 5
		28 80 P		14	45	9	3 6
	60/40						
		28 81 P		16	43	10	3 6
		28 82 P		12	34	8	4 4
	50/50	28 83 P		9	26	6	4 2
Weathered bedrock ?		28 84 P		14	39	8	4 4
-gray		28 85		14	34	9	3 5
Bedrock	Qtz 30%	28 86		14	42	9	4 5
-granitic rock	Fel 60%	28 87					
	Rfb 10%						
	Carb						
	Mag						
	(Hem)						

A/S SULFIDMALM	
Gaessemaras, Kautokaino Line 3800 N Geotek percussion drilling 3800N/7000 E (20/4 1972)	
SCALE	DRAWN E.K.
DATE	TRACED U.T.

Remaks	Sand/Stones [%]	Sample	Ni	Cu	Zn	Pb	Co
		1 ?					
Moraine - light gray	60/40	2					
	70/30	3 28 88 P	11	52	9	4	4
	50/50	4 28 89 P	13	44	10	5	5
Ground moraine ?	60/40	5 28 90 P	10	32	9	6	4
		6 28 91 P	19	33	11	5	5
		7 ?					
Bedrock - Bt - Chl - Schist	60/40	8 28 92 P	24	77	23	10	12
	Chl 30%	8.5 28 93					
	Bt 20%	9 28 94					
	Fel 40%						
	Qtz 10%						
	Rfb						
	Carb						
	Mag						

A/S SULFIDMALM	
Gaessemanas, Kautokeino Line 3800 N Geotek - percussion drilling 3800N/7050 E (19/4 1972)	
SCALE	DRAWN E.K.
DATE	TRACED U.T.

Remarks	Sand/Stones [%]	Sample	Ni	Cu	Zn	Pb	Co
Ice							
Mud							
-brown	100/	28 95	10	30	30	6	2
Moraine	70/30	28 96	18	45	12	5	10
-brown		28 97 P	14	45	12	6	6
-light gray	60/40	28 98 P	11	28	8	4	3
	40/60	28 99 P	12	40	11	7	5
Ground moraine ?	50/50	29 00 P	40	34	12	8	12
	60/40	29 01 P	17	47	14	7	8
Bedrock		29 02					
-granitic rock	Qtz 40 % Fel 30 % Carb 5 % Mc 5 % Rfb 10 % Chl Ep Mag	29 03					
		29 04					

A/S SULFIDMALM	
Gaessemaras, Kautokino Line 3800 N Geotek-percussion drilling 3800 N / 7075 E (20/4 1972)	
SCALE	DRAWN E.K.
DATE	TRACED U.T.

Remarks	Sand/Stones [%]	Sample	Ni	Cu	Zn	Pb	Co	
Ice Water Mud		1						
Moraine -light gray	70/30	2						
		3	29 05 P	12	47	28	4	5
	50/50	4	29 06 P	12	46	10	5	6
		5	29 07 P	14	47	20	6	5
Boulder -granite rock Ground moraine?	10/90 Qtz 50% Fcl 40% Afb 10% Mc Mag	6	29 08	10	35	11	5	6
	50/50	7	29 09	8	27	7	3	4
		8	29 10	14	35	9	3	5
Bedrock -granitic rock	60% 30% 10% Mag	9	29 11					

A/S SULFIDMALM	
Goessemaras, Kaufokaino Line 3300 N Geotek-percussion drilling 3300N / 7100 E (21/4 - 1972)	
SCALE	DRAWN E. K.
DATE	TRACED U. T.

Remarks	Sand / Stones [%]	Sample	Ni	Cu	Zn	Pb	Co
Moraine - brown	60/40	29 12	16	34	9	6	6
- brownish gray	70/30	29 13	20	34	12	5	6
light gray	60/40	29 14 P	17	90	11	9	9
		29 15 P	12	43	7	7	5
		29 16 P	9	35	7	6	4
Ground moraine? - rusted zone containing little Cp	70/30	29 17 P	10	17	7	6	4
	80/20	29 18 P	20	139	12	7	13
	60/40	29 19 P	45	330	13	10	26
Bedrock - Afb - gneiss	Qtz 60 % Fol 30 % Afb 10 % Heg. Mc	29 20					
		29 21					

A/S SULFIDMALM	
Gaessemana, Kautokaino Line 3800 N Geotek-percussion drilling 3800 N / 7125 E (21/4 - 1972)	
SCALE	DRAWN E.K.
DATE	TRACED U.T.

Remarks	Sand/Stones [%]	Sample	Ni	Cu	Zn	Pb	Co
Moraine - light gray	60/40		(13)	(42)	(7)	(3)	(7)
	— 1	29 22	13	44	7	5	5
	50/50						
	— 2	29 23	11	41	7	3	4
	70/30						
	3	29 24	13	42	8	2	4
	4	29 25 P	73	86	21	10	23
	— 5	29 26 P	13	44	8	5	8
Ground moraine ?	60/40						
	6	29 27 P	11	38	6	4	6
	?						
	70/30						
	7						
	77/23	29 28 P	20	111	11	7	9
Bedrock							
- amphibolite	Afb 30%	9 29 29					
- rare grains of chalcocopyrite and pyrite	Fel 40%	10 29 30					
	Qtz 20%						
	Carb 10%						
	Hc (Cu) (Py)	11 29 31					

Colour bedrock sample  
light brownish green

rock fragments

1. medium grained diabasic rock
2. felspar rich rock probably felsp. rich variety of 1.

A/S SULFIDMALM	
Gaessemaras, Kautokeino Line 3800 N Geotek-percussion drilling 3800 N / 7150 E (21/4 1972)	
SCALE	DRAWN E. K.
DATE	TRACED U. T.

Remarks	Sand/Stones [%]	Sample	Ni	Cu	Zn	Pb	Co
Moraine - brownish gray	50/50	29 32	15	47	16	6	7
			(18)	(64)	(10)	(3)	(7)
	70/30	29 33	20	66	11	4	8
- gray		29 34	15	52	12	4	5
	50/50	29 35 P	16	37	7	4	5
Ground moraine ?		29 36 P	12	42	7	5	6
	60/40	29 37 P	28	53	14	5	10
Bedrock - greenschist	Chl 50% Fel 40% Qtz 10% Mg Carb Rfb	29 38 P	14	41	8	3	6
		29 39					
		29 40					

Colour bedrock sample:  
greenish

rock fragments:

1: (majority): dense greenish dark  
schistose → greenschist.

2: (minority): granitic rock,  
presumably foreign. fragm. from  
overlying till

A/S SULFIDMALM	
Gaessemaras Kautokeino	
Line 3800 N.	
Geotek-percussion drilling	
3800N/7200E 22/4 - 72	
SCALE	DRAWN E.K.
DATE	TRACED U. T.

4000 N/6500 =

Sand/Stones [%] Sample

NI Ca Zn Pb Co

Remarks

Foot  
Moraine

50/50	38 84	10	13	8	6	4
60/40	38 85	14	25	10	6	7
80/20	38 86	13	26	7	4	5

Moraine + sand

	38 87	16	35	7	3	5
	38 88	18	44	11	3	10
50/50	38 89	16	44	11	4	8
	38 90	18	44	11	7	8
	38 91	20	47	11	5	9
	38 92	20	52	12	4	10

Ground Moraine

	38 93	22	45	10	4	8
30/70	38 94	25	49	13	5	9
	38 95	24	47	13	7	9

Boulder

40/60	38 96	24	50	12	5	9
50/50	38 97	27	50	14	6	10
	38 98	26	50	15	7	8
30/70	38 99	26	44	15	8	9

Weathered bedrock

	39 00	8	18	5	1	4
50/50	26 51	18	19	9	2	3
40/60	26 52	6	16	5	4	4
	26 53	9	16	9	2	6
50/50	26 54	9	24	9	3	5
40/60	26 55	6	15	6	3	4

Qtz 50%  
Fcl 40%  
Tourm 10%  
Ep  
Afb  
He  
Couple grains of Cp

Faster bedrock  
- Gneiss ?

	26 56	9	18	6	1	2
	26 57	8	16	9	1	2
	26 58	9	18	9	2	5
	26 59	10	20	9	3	4
	26 60					

Gossemaras Kautokaino

Geotek-percussion drill

4000N/6600 E (6/4 1972)

Remarks	Sand/Stones [%]	Sample	Ni	Cu	Zn	Pb	Co
Boulder Moraine	40/60	1 2661	6	8	8	3	5
		2 2662	18	19	6	2	6
	30/70	3 2663	19	64	10	4	8
	70/30	4 2664	28	49	18	5	6
	40/60	5 2665	20	49	18	5	8
Boulder Moraine	30/50	6 2666 P	26	79	19	7	11
-grapisk, solid, hard and soft layers	60/40	7 2667	18	48	16	7	7
	70/30	8 2668	20	44	18	3	7
	80/20	9 2669	25	50	24	6	8
Ground moraine	60/40	10 2670 P	29	74	28	7	10
	70/30	11 2671	29	54	20	7	8
	80/20	12 2672	25	59	14	6	9
Had to use water pump		13 2673	18	45	19	6	4
...	70/30	14 2674	9	19	9	4	4
	60/40	15 2675	8	20	9	5	5
		16 2676	8	20	9	4	2
	50/50	17 2677	5	18	5	4	3
	60/40	18 2678	5	18	5	1	2
		19 2679	10	21	8	2	3
		20 2680	8	21	6	4	2
	50/50	21 2681	8	20	6	4	2
		22 2682	9	18	9	4	4
	60/40	23 2683	9	24	7	3	1
	70/30	24 2684	8	16	6	3	3
Reached not bedrock	60/40	25 2685	28	54	18	4	6

Remarks	Sand/Stones [%]	Sample	Ni	Cu	Zn	Pb	Co
Boulder Moraine -grayish	30/70	2686	18	69	9	5	4
	60/40	2687	19	38	9	2	4
	70/30	2688	18	48	8	4	4
	50/50	2689	5	15	6	4	1
	Too sticky to blow sample up	2690 P	22	60	16	7	6
		2691 P	24	54	14	7	7
		2692 P	24	48	19	8	9
		2693 P	25	59	18	7	8
		2694 P	20	48	15	10	8
		2695 P	15	39	10	7	4
		2696 P	17	39	19	9	7
	Ground moraine?	2697 P	19	35	14	10	6
		2698 P	30	59	24	15	12
		2699 P	18	38	14	9	6
		2700 P	28	55	18	12	9
		2701 P	17	41	13	5	5
		2702 P	15	42	12	8	5
Too soft to get sample by sample-pipe Bedrock was not reached		18					

A/S SULFIDMALM	
Gaessemara, Kautokeino Line 4000 N Geotek-percussion drilling 4000 N / 6700 E (7-8/4 1972)	
SCALE	DRAWN E.K.
DATE	TRACED U. T.

Remarks	Sand / Stones [%]	Sample	Ni	Cu	Zn	Pb	Co
Light Brown "rusty"	40/60						
"	40/60	27 92	82	90	21	8	22
	40/60	27 93	68	80	17	8	19
Light brownish grey	50/50						
Normal consist only of till	60/40	27 94	47	61	14	5	13
Grey	60/40	27 95	28	57	155	6	9
	70/30	27 96	23	59	69	5	9
	60/40	27 97	14	48	14	6	7
	60/40	27 98	16	50	28	4	8
	50/50	27 99	20	58	19	5	8
	70/30	28 00	21	56	17	8	8
	70/30	28 01	12	39	9	5	5
	60/40	28 02	11	34	11	7	5
	60/40	28 03	12	37	8	4	4
	50/50	28 04	13	38	9	5	4
	70/30	28 05	14	40	11	5	5
		28 06	12	39	11	5	5
No sample	70/30						
	60/40	28 07	24	59	19	10	10
		28 08	28	57	18	10	10

Drilling discontinued before reaching bedrock

A/S SULFIDMALM	
Goessemaras, Kautokeino Line 4000 N Geotek-percussion drilling 4000 N / 6750 E (14/4 1972)	
SCALE	DRAWN T.H.T.
DATE	TRACED U.T.

Remarks	Sand/Stones [%]		Ni	Cu	Zn	Pb	Co
Light brown, silty	80/20	▲					
	1	▲	27 74	30	20	10	4 5
Grey, high content of coarse material probably due to boulders	60/40	▲					
	2	▲	27 75	37	73	13	6 10
Grey	70/30	▲					
Grey, normal consistency of a till	3	▲	27 76	31	65	11	5 8
	70/30	▲					
	4	▲	27 77	17	48	11	7 4
	60/40	▲					
	5	▲	27 78	16	45	11	5 3
	60/40	▲					
	6	▲	27 79	10	40	13	5 3
	50/50	▲					
	7	▲	27 80	11	40	8	4 4
	60/40	▲					
	8	▲	27 81	12	37	9	5 3
	60/40	▲					
	9	▲	27 82	11	42	8	3 3
	70/30	▲					
	10	▲	27 83	12	38	14	1 3
	60/40	▲					
	11	▲	27 84	13	35	9	5 4
	70/30	▲					
	12	▲	27 85	13	39	11	5 4
	60/40	▲					
	13	▲	27 86	14	41	16	8 4
	50/50	▲					
	14	▲	27 87	19	47	270	7 5
	60/40	▲					
	15	▲	27 88	21	50	330	4 7
	70/30	▲					
Same colour and consistency of overlying material	16	▲	27 89	9	38	9	3 3
	17	▲	27 90				
	18	▲	27 91				

Bedrock (2791)  
 Colour: light grey  
 Fragment: no rock fragments.

Composition of + 80 mesh fraction:  
 quartz and feldspar 95%  
 epidote, white mica, opaque minerals (hornblend?) 5%

A/S SULFIDMALM	
Gaessemaras, Kautokine Line 4000 N Geotek-percussion drilling 4000 N / 6775 E (13/4-1972)	
SCALE	DRAWN T.H.T
DATE	TRACED 117

Remarks	Sand/Stone (%)		Si	Ca	Fe	Mg	Al	
Brown, clayey	90/10							
	70/30	1- 27 60	12	47	10	6	4	
Grey, clayey								
"	60/40	2- 27 61	12	31	10	6	3	
"								
Grey, usual consistency of till	60/40	3- 27 62	14	31	9	5	4	
	50/50	4- 27 63	P	9	31	6	3	2
	60/40	5- 27 64	P	18	52	13	5	6
	60/40	6- 27 65	P	24	55	14	5	7
	50/50	7- 27 66	P	18	51	13	4	4
	60/40	8- 27 67	P	19	52	13	3	5
	70/30	9- 27 68	P	22	48	16	7	6
Grey, some what higher content of coarse material.	70/30	10- 27 69	P	14	48	10	5	4
	70/30	11- 27 70	P	46	182	17	4	11
No sample taken		12- 27 71		21	46	14	5	5
Same colour and consistency of overlying material. Is this really from bedrock		13- 27 72						
		15- 27 73						

Bedrock (2773)

Colour fine material : light greenish gray

rock fragments : 1. (majority) dark, fine grained, probably greenstone

2. epidote rich rx
3. quartz (ca 5 mm)
4. medium grained quartz-felspar rock, resembling granite (>5mm)
5. medium grained biotite rich quartz-felspar rock (biotite granite, or gneiss) (>5mm)

Comp. of +80 mesh fraction :  
 Qtz 40%  
 Fel 50%  
 Rfb 10%  
 Chl  
 Mag  
 } EK-determ

A/S SULFIDMALM	
Gaesseraras, Kautokeino	
Line 4000 N	
Geotek-percussion drilling	
4000 N/6800 E (12/4-1972)	
SCALE	DRAWN T. H. T.
DATE	TRACED U. T.

Remarks	Sand/Stones [%]	Sample	Ni	Cu	Zn	Pb	Co
Brownish grey grey, high content of coarse fraction — " — normal grain-size distr. and colour of till grey	60/40	27 46	20	35	16	5	6
	50/50	27 47	13	41	8	1	3
	60/40	27 48	17	36	10	5	6
	70/30	27 49	18	51	10	4	4
	60/40	27 50	13	52	13	4	5
	60/40	27 51	15	54	12	2	4
	50/50	27 52 P	16	46	13	2	5
	60/40	27 53 P	15	47	12	5	5
	50/50	27 54 P	11	21	8	4	2
	50/50	27 55 P	17	45	14	5	5
	50/50	27 56 P	15	48	13	7	4
	dark grey, mixture of basal till and bedrock material?	27 57					
27 58							
27 59							

Bedrock:

Colour of fine material: greenish grey  
fragment: dark fine grained rock,  
probably green

Composition of +80 mesh fraction:

Qtz 20%  
Fcl 25%  
Chl 30%  
Rfb 15%  
Mag 10%  
(Py)

A/S SULFIDMALM	
Gaessemaras, Kautokeino Profile 4000 N Geotek-percussion drilling 4000 N / 6825 E (11/4 1972)	
SCALE	DRAWN T.H.T.
DATE	TRACED U.T.

Remarks	Sand / Stones [%]	Sample	Ni	Cu	Zn	Pb	Co	
clayey	60/40	27 34	18	47	10	5	7	
	70/30	27 35	11	47	7	5	4	
	80/20	27 36	12	53	8	4	4	
	80/20	27 37	13	52	8	9	4	
	60/40	27 38	12	54	8	5	5	
	70/30	27 39	11	50	8	4	4	
	50/5	27 40	P	15	45	12	4	5
	40/60	27 41	P	15	47	13	5	6
	60/40	27 42	P	14	39	9	2	6
	80/20	27 43		24	39	11	2	6
		27 44						
		27 45						

Bedrock : (2745)

colour of fines : greenish grey  
 fragments : 1. reddish felspar (coarse)  
 2. dark fine grained  
 rock (greenstone)

comp. of +80 mesh fraction

Qtz	40 %	} EK
Fel	50 %	
Afb	10 %	
Hag		
Ep		

A/S SULFIDMALM	
Gaessemaras, Kautokeino Profile 4000 N Geotek-percussion drilling 4000 N / 6850 E (11/4 1972)	
SCALE	DRAWN T.H.T.
DATE	TRACED U.T.

Remarks	Sand/Stones [%]	Sam.	Ni	Cu	Zn	Pb	Co
High content of coarse fraction (fragments of boulder?) brownish-red	60/40						
	70/30	1 - 27 24	16	51	10	9	4
normal till colour (grey)	70/30	2 - 27 25	20	70	17	8	7
	70/30	3 - 27 26	19	54	12	5	5
	80/20	4 - 27 27	17	53	13	4	6
	80/20	5 - 27 28	16	50	12	7	7
	50/50	6 - 27 29	14	49	12	8	6
mixed basal till and bedrock light grey	70/30	7 - 27 30 P	15	42	13	4	6
		8 - 27 31					
		9 - 27 32					
		10 - 27 33					

1) Bedrock (2732)

Colour of fine material: greenish light grey  
 fragments: 1. quartz and felspar-rich rock  
 2. dark, fine grained rock, probably greenstone

Comp. of +80 mesh fraction:

2) Bedrock (2733)

Colour of fine mat., greenish light grey  
 fragments: dark fine grained rock, probably greenstone

Comp. of +80 mesh fraction:

Qtz	50 %	} EK	Chl	70 %	} determ. EK
Fel	40 %		Carb	10 %	
1) Chl	5 %	2) Fe	10 %		
Afb	5 %	Qtz	10 %		
Mag			(Py)		
Me			Mag		

A/S SULFIDMALM	
Gaessmaras, Kautokino Profile 4000 N Geotek-percussion drilling 4000 N / 6875 E (11/4 1972)	
SCALE	DRAWN T. H. T.
DATE	TRACED U. T.

Remarks	Sand/Stones [%]	Sample	Ni	Cu	Zn	Pb	Co
Brownish, with high content of coarse fraction (boulder fragments from perc. drilling?)	50/50	2714	12	24	16	5	6
Light brownish grey, Clayey	70/30	2715	18	48	12	9	7
	70/30	2716	17	53	12	8	6
Grey normal consistency of a till.		2717	15	53	13	8	5
	60/40	2718	19	51	13	10	6
		2719	16	53	14	8	6
	60/40	2720	14	41	9	9	4
		2721	0,006	0,016	<0,1	} bedrock assays	
		2722	0,006	0,019	0,10		
		2723	0,005	0,015	<0,1		

Bedrock: (Sample 2721, 2722, 2723)

Colour of fine material: Vary dark grey (graphitic?)

Fragments: 1) dark, fine grained, probably graphitic (dark str.)  
2) (rare) white and red felspar 2-3mm large.

Composition of +80 mesh fraction: Graphitic schist

A/S SULFIDMALM	
Gässenaras, Kautokeino Line 4000 N Geotek-percussion drilling 4000 N / 6900 E (10/4-1972)	
SCALE	DRAWN T. H. T.
DATE	TRACED U. T.

Remarks	Sand/Stones	Depth (m)	Ni	Cu	Zn	Pb	Co
reddish brown with high organic content brownish light grey  "Normal" grey till colour  basal till and bedrock?	70/30	0					
	— 1 —	27 03	11	49	12	7	4
	70/30						
	— 2 —	27 04	16	55	12	7	5
	70/30						
	— 3 —	27 05	18	65	14	4	7
	90/10						
	— 4 —	27 06 P	7	32	8	1	3
	90/10						
	— 5 —	27 07 P	40	54	12	5	7
	90/10						
— 6 —	27 08 P	9	41	8	3	4	
70/30							
— 7 —	27 09 P	17	50	11	5	8	
50/50	27 10 P						
	8						
	9	27 11					
	10	27 12					
	11	27 13					

**Bedrock (2711)**

Colour of fine material: dark grey  
rock fragments: dark, fine grained  
(magnetic) gneiss?

N.B. One fragment rusted iron, probably from Geoteks machine

Comp. + 80 mesh fraction:	Chl	40%	Carb	} determ by EK
	Qtz	10%	Rfb	
	Fel	50%	Mc	
			Mag	

**Bedrock (2712)**

Colour: same

fragments: phyllite rock, magnetic

comp. + 80 mesh fraction:	Chl	30%	} determ. by EK
	Qtz	10%	
	Fel	60%	
	Ep		
	Rfb		
	Carb		
	Mag		

A/S SULFIDMALM	
Gassemaras, Kautokino Profile 4000 N Geotek-percussion drilling 4000 N / 6925 E (10/4 1972)	
SCALE	DRAWN T. T. T
DATE	TRACED U. T.

Remarks	Sand/Stones [%]	Sample	Ni	Cu	Zn	Pb	Co
	90/10	35 85	19	70	12	7	9
	80/20	35 86	16	67	10	7	8
Ground moraine ?		35 87	19	73	15	7	9
	60/40	35 88 P	12	45	9	6	6
Bedrock		35 89 P	8	38	6	6	5
- little magnetite, rare small grains of pyrite(?)	Chl 40% Afb 20% Qtz 20% Fcl 10% Carb 10% Tourm.	35 90					
		35 91					
		35 92					

Legend

-  = amount of stones
-  = amount of fine grained material
- P* = sample taken with sample-pipe

A/S SULFIDMALM	
Gaessemaras Kautokeino Line 4100 N	
Geotek-percussion drilling 4012 N / 6950 E (21-2 1972)	
SCALE 1:100	DRAWN E.K. 2.72
DATE Feb. 72	TRACED UT. 2-72

Remarks	Sand/Stones [%]	Sample	Ni	Cu	Zn	Pb	Co
	60/40						
		35 76	12	45	10	4	6
		2 35 77	17	54	11	3	8
	70/30						
		3 35 78 P	16	49	10	4	7
		4 35 79 P	15	46	10	4	8
Ground moraine ?							
	80/20	5 35 80 P	16	49	12	7	8
		6 35 81	15	43	9	3	8
Bedrock							
- Afb - carb - gneiss	Qtz 40%	7 35 82					
- nonhomogenous	Fcl 20%						
	Afb-Oil 20%	8 35 83					
	Carb 10%						
	Tourm. 10%	9 35 84					
	Musc						
	Ep						

A/S SULFIDMALM	
Goessemaras Kautokeino Line 4000 N	
Geotek - percussion drilling 4008 N / 6975 E (19-2-1972)	
SCALE 1:100	DRAWN E.K. 2-72
DATE Feb 72	TRACED U.T. 2-72

Remarks	Sand/Stones [%]	Sample	Ni	Cu	Zn	Pb	Co
		35 67	20	74	14	7	13
	70/30	35 68	20	70	13	2	12
		35 69	18	63	11	3	11
Ground moraine?	50/50	35 70 P	18	48	13	5	9
	60/40	35 71	17	49	13	4	8
Bedrock		35 72					
- greenstone ?	Afb 30%	35 73					
- couple grains of sulphide (pyrite?)	Qtz 40%	35 74					
	Fel 20%	35 75					
	Carb 10%						
	Tourmaline						
	Epidote						
	Magnetite						

Legend

-  amount of stones
-  amount of fine grained material
- P amount taken with sample-pipe

A/S SULFIDMALM	
Gaessemaras Kautokeino Line 4000 N	
Geotek-percussion drilling 4002 N 7000 E (19-2 1972)	
SCALE 1:100	DRAWN EK. 2-72
DATE FEB. 72	TRACED U.T. 2-72

		Sand/Clones [%]	20	30	40	50		
Moraine	70/30	1	38 62	12	18	9	6	7
	80/20	2	38 63	6	20	4	4	4
	90/10	3	38 64	8	29	6	6	5
	70/30	4	38 65	14	39	8	7	7
		5	38 66	15	44	9	6	7
	60/40	6	38 67	14	41	8	5	9
	50/50	7	38 68	15	44	10	6	7
Ground moraine ?	70/30	8	38 69 P	16	39	9	5	9
		9	38 70 P	14	47	8	5	5
	80/20	10	38 71 P	21	45	11	4	8
		11	38 72 P	18	38	10	4	9
	60/40	12	38 73 P	41	51	17	10	15
		13	38 74 P	24	51	15	19	11
	70/30	14	38 75 P	28	52	17	10	11
	80/20	15	38 76	23	44	22	10	8
		16	38 77	22	42	20	10	9
	70/30	17	38 78	24	42	17	11	9
		18	38 79	23	43	17	10	8
	80/20	19	38 80	39	70	36	15	14
	70/30	20	38 81	38	72	26	16	15
Bedrock - gneiss		21	38 82					
		21.5	38 83					

Qtz 50%  
 Fel  
 Tourm  
 Ep  
 Afb  
 Rare granites  
 Rare magnetite

A/S SULFIDMALM	
Gaassemaras Kautokelino Line 4000 N	
Geotek - percussion drilling 4000 N 6550 E (17-18/3 - 1972)	
SCALE 1:100	DRAWN EK. 2.72
DATE FEB. 72	TRACED UT. 2.72

Remarks	Sand/Stones [%]	Sample	Ni	Cu	Zn	Pb	Co
	50/10	35 59	15	88	9	3	6
	30/30	35 60	17	63	10	4	7
Ground moraine?	65/35	35 61	15	52	10	3	8
	50/50	35 62 P	11	42	8	2	5
	40/60	35 63 P	17	44	17	5	8
Bedrock	Chl 70%	35 64					
- chlorite schist	Carb 20%	35 65					
- little magnetite	Qtz + Fel 10%	35 66					

Legend

-  = amount of stones
-  = amount of fine grained material
- P = sample taken with sample-pipe

A/S SULFIDMALM	
Gaessmaras Kautokino Line 4000 N	
Geotek - percussion drilling 4000 N / 7025 E (18-2-72)	
SCALE 1:100	DRAWN E.K.2.72
DATE Feb. 72	TRACED U.T. 2.72

Remarks	Sand / stones [%]	Sample	Ni	Cu	Zn	Pb	Co
	40/60	35 52	20	120	19	33	9
	50/50	35 53	22	72	17	7	10
	60/40	35 54	17	55	10	5	9
Ground moraine ?	50/50	35 55 P	23	51	24	4	12
Bedrock							
- greenschist (chlorite-schist)	Chl 40%	35 56					
- washed sample	Afb 10%						
seems to have more quartz than original	Qtz 30%	35 57					
	Fld 20%						
	Carb	35 58					
	Tourmal						

Legend

-  = amount of stones
-  = amount of fine grained material
- P = sample taken with sample-pipe

A/S SULFIDMALM	
Gaessemaras Kautokeino Line 4000 N	
Geotek-percussion drilling 4000 N/7050 E (18/2 1970)	
SCALE 1:100	DRAWN E.K. 2.72
DATE Feb. 72	TRACED U.T. 2.72

Remarks	Sand/Stones [%]	Sample	Ni	Cu	Zn	Pb	Co
	50/50	35 43	14	77	15	3	10
		35 44	22	87	13	4	16
	60/40	35 45	19	83	15	6	12
Ground moraine ?	50/50	35 46 P	18	60	11	5	9
Bedrock	60/40	35 47	17	56	12	5	9
- greenschist	RFb 70 %	35 47					
- rare small grains of pyrite, little tourmaline	Felds. 20 %	35 48					
	Qtz + Carb. 10 %	35 49					
		35 50					

Legend

-  = amount of stones
-  = amount of fine grained material
- P = sample taken with sample-pipe

A/S SULFIDMALM	
Goessemuras Kautokaino Line 4000 N	
Geotek-percussion drilling 4000 N / 7075 E (11/2 1972)	
SCALE 1:100	DRAWN E.K. 2.72
DATE Feb. 72	TRACED U.T. 2.72

Remarks	sand /stones [%]	Sample	Ni	Cu	Zn	Pb	Co
	80/20	35 35	15	74	18	5	9
	50/50	2 35 36	22	63	14	4	9
		3 35 37	32	54	14	7	6
Ground moraine ?		35 38 P	25	46	16	5	6
	70/30	5 35 39	33	92	19	8	11
Bedrock		35 40					
- amphibole - pegmatite	Chlorite 40%	6 35 40					
- much tourmaline,	Qtz 40%						
rare epidote, some	Felds. 10%	7 35 41					
magnetite	Tourmal. 10%	8 35 42					

Legend

-  = amount of stones
-  = amount of fine grained material
- P : sample taken with sample-pipe

A/S SULFIDMALM	
Gaessemaras Kautokeino Line 4000 N	
Geotek-percussion drilling 4000N/7100E (17/2 1972)	
SCALE 1:100	DRAWN E.K. 2.72
DATE Feb. 72	TRACED U.T. 2.72

Remarks	sand/stones [%]	Sample	Ni	Cu	Zn	Pb	Co
Ice							
Mud							
Fluvial sand		35 25	12	44	27	8	8
	90/10	35 26	16	53	16	10	9
		35 27	10	29	11	3	5
Ground moraine?	50/50	35 28	15	31	11	3	7
		35 29	8	25	12	2	3
	60/40	35 30	9	27	12	3	4
	70/30	35 31	11	75	14	3	6
Bedrock							
- Greenschist (chlorite-schist)	Chlorite 50%	35 32					
- washed and sieved sample seems to have more quartz than the original, very fine grained sample	Quartz 30%	35 33					
- rare magnetite grains, some grains of epidote	Felds. 10%	35 34					
	Carbonate 10%						

Legend

-  = amount of stones
-  amount of fine grained material
- P Sample taken with sample-pipe

A/S SULFIDMALM	
Gaessemaras Kautokeino Line 4000 N	
Geotek-percussion drilling 4000N/7125E (17/2 1972)	
SCALE 1:100	DRAWN E.K. 2.72
DATE FEB. 72	TRACED U.T. 2.72

Remarks	Sand/Stones [%]	Sample	Ni	Cu	Zn	Pb	Co
Ice							
Water							
Fluvial sand							
	100/0	2- 3519	75	37	15	9	26
Ground moraine?	60/40	3- 3520	25	42	13	7	11
Bedrock							
- greenschist							
- rare pyrite-grains, some tourmaline grains							
	- Alb 50%						
	- Chlor. 30%	5- 3522					
	- Carb. 10%						
	- Plg 10%	6- 3523					
	- Qtz						
		7- 3524					

Legend

-  = amount of stones
-  = amount of fine grained material
- P = sample taken with sample-pipe

A/S SULFIDMALM	
Gaessemaras Kautakeino Line 4000 N	
Geotek - percussion drilling 4000N/7165E (16/2 1972)	
SCALE 1:100	DRAWN E.K. 2.72
DATE Feb. 72	TRACED U.T. 2.72

Remarks	Sand/Stones [%]	Sample	Ni	Cu	Zn	Pb	Co
Fluvial sand		1 35 10	16	42	12	4	12
	100/0	2 35 11	17	60	14	5	10
		3 35 12	17	46	14	6	8
Ground moraine?		4 35 13	17	41	12	9	8
Water level?	90/10	5 35 14	16	36	12	7	8
		6 35 15	15	36	12	7	8
Bedrock		7 35 16					
- greenschist	- Afb 60%	8 35 17					
- Some pyrite grains, a couple of chalcopyrite	- Plg 20% - Carb. 10% - Qtz 10% - Chlorite	9 35 18					

(according to THT: phyllite)

Legend

-  = amount of stones
-  = amount of fine grained material
- P = sample taken with sample-pipe

A/S SULFIDMALM	
Gaessemaras Kautokeino Line 4000 N	
Geotek-percussion drilling 4000N/7190E (16/2 1972)	
SCALE 1:100	DRAWN E.K. 2.72
DATE Feb 72	TRACED U.T. 2.72

Remarks	sand / stones [%]	Sample	Ni	Cu	Zn	Pb	Co
Fluvial sand		1 34 94	10	29	12	7	11
	100/0	2 34 95	14	25	10	4	8
Water level?		3 34 96	16	25	10	6	8
Ground mercurials?		4 34 97	20	30	22	6	10
	70/30	5 34 98 P	19	46	13	6	9
		6 34 99 P	25	26	10	3	8
	90/10	7 35 00 P	54	4	11	5	11
		8 35 01 P	79	30	27	9	18
	100/0	9 35 02 P	64	13	17	6	20
Bedrock		10 35 03	52	8	15	4	18
- broken up to 12 m	- plg 40%	11 35 04					
- plg - carbonate rock	- Carb 30%	12 35 05					
- magnetite little more than before, little muscovite, brown medium grained	- muscov. 10%	13 35 06					
	- quartz 10%	14 35 07					
	- magnetite 10%	15 35 08					
	- amphibolite	35 09					

Legend

- ▲ = amount of stones
- ▽ = amount of fine grained material
- P = sample taken with sample pipe

A/S SULFIDMALM	
Gaessemaros Kautokeino Line 4000 N	
Geotek - percussion drilling 4000N/7215E (15/2 1972)	
SCALE 1:100	DRAWN EK. 2.72
DATE Feb 72	TRACED U.T. 2.72

Remarks	Sand/Stones [%]	Sample	Ni	Cu	Zn	Pb	Co
Fluvial sand	100/0	34 85	11	17	10	4	7
		34 86	11	27	10	6	6
Ground moraine	35/65	34 87	11	24	10	4	4
	95/75	34 88 P	23	110	16	6	9
	80/20	34 89 P	18	59	19	4	6
water level?	40/60	34 90	31	75	25	7	13
Bedrock		34 91 P	32	133	23	8	21
- amphibolite	50%						
- quartz	30%	34 92					
- plg + carb	20%						
couple small grains of sulfides		34 93					
some tourmaline grains, some grains of graphite							

Legend

-  = amount of stones
-  amount of fine grained material
- P sample taken with sample-pipe

A/S SULFIDMALM	
Gaessemaras Kautokeino Line 4000 N	
Geotek - percussion drilling 4000 N/7270 E (14/2 1972)	
SCALE 1:100	DRAWN EK. 2.72
DATE Feb. 72	TRACED U.T. 2.72

Remarks	Sand/Stones: [%]	Sample	Ni	Cu	Zn	Pb	Co
Fluvial sand? - grayish		1 34 74	9	12	9	6	4
	100/0	2 34 76	45	32	13	5	7
		3 34 76 P	8	27	11	3	4
Ground moraine?		4 34 77 P	12	39	11	4	5
	90/10	5 34 78 P	13	50	50	5	5
Water level		6 34 79 P	15	36	11	5	4
	70/30	7 34 80 P	44	42	23	9	18
		8 34 81 P	12	29	9	3	4
Silt	95/5	9 34 82 P	13	32	13	5	7
Bedrock - amphibolite fg, little magnetite, some grains sulfides (Cu?)		10 34 83					
		11 34 84					
	- amphibole 30% - quartz 50% - feldspar (white, Na-rich) + carbonate 20%						

Legend

- ▲ = amount of stones
- ▽ = amount of fine grained material
- P = sample taken with sample-pipe
- fg = fine grained

A/S SULFIDMALM	
Gaessemanas Kautokaino Line 4000 N	
Geotek-percussion drilling 4000N/73205 (11/2 1972)	
SCALE 1:100	DRAWN EKI 2.72
DATE FEB. 72	TRACED U.T. 2.72

Remarks	Sand Stones [%]	Sample	Ni	Cu	Zn	Pb	Co
Might be finer grained than identified by drillers - grayish	60/40	1 3457	15	39	13	3	5
		2 3458	17	45	9	3	5
		3 3459	17	45	9	15	5
More obvious moraine	50/50	4 3460	14	36	11	17	4
		5 3461	12	28	10	7	4
	40/60	6 3462	12	29	11	12	5
Ground moraine?		7 3463	20	31	12	22	5
	50/50	8 3464 P	11	30	10	7	4
		9 3465 P	17	41	13	12	6
Water level Harder (weathered zone?) - fg (silt), some amphibole		10 3466 P	7	33	10	4	4
	30/70	11 3467 P	6	31	11	3	4
	50/50	12 3468 P	8	29	10	3	4
Bedrock - amphibole schist - fg, rare grains of magnetite and couple small grains of pyrite?	80/20	13 3469 P	42	187	53	11	20
		14 3470	58	102	73	12	29
	- amphibole 60%	15 3471					
	- quartz 20%	16 3472					
	- feldspat 20%	17 3473					

Legend

-  = amount of stones
-  = amount of fine grained material
- P = sample taken with sample-pipe
- fg = fine grained

A/S SULFIDMALM	
Gaessemanas Kautokcino Line 4000 N	
Geotek-percussion drilling 4000N/7430E (8-10/2 1972)	
SCALE 1:100	DRAWN E.K. 2.72
DATE FEB 72	TRACED U.T. 2-72

Remarks	Sand/Stones [%]	Sample	Ni	Cu	Zn	Pb	Co
	70/30	35 93	16	47	9	6	3
		35 94	15	58	9	4	7
	60/40	35 95	15	63	9	5	22
	50/50	35 96 P	40	141	24	12	23
Ground moraine ?	40/60	35 97 P	37	153	28	13	36
	70/30	35 98 P	47	103	42	13	5
Bedrock - Greenschist	Chi 50%						
	Afb 20%	35 99					
	Qtz 10%						
	Carb 10%	36 00					
	Fel 10%						
	Tourm.	36 01					

Legend

-  = amount of stones
-  = amount of fine grained material
- p* = sample taken with sample-pipe

A/S SULFIDMALM	
Goessemaras Kautokeino Line 4100 N	
Geotek-percussion drilling 4100 N / 7000 E (21-2-1972)	
SCALE 1:100	DRAWN E.K.2.72
DATE Feb. 72	TRACED U.T. 2-72

Remarks	Sand / stones [%]	Sands	Ni	Cu	Zn	Pb	Co	
Moraine	70/30	1	38 25	16	39	10	3	8
		2	38 26	13	35	9	3	6
	90/10		38 27	10	37	7	4	5
	80/20		38 28	13	41	8	3	6
Ground moraine ?	70/30	5	38 29	15	45	9	4	7
		6	38 30	14	36	9	4	7
	80/20		38 31	14	39	9	7	6
	60/40	7.5	38 32 P	32	206	28	15	18
	70/30		38 33	18	46	10	7	6
Bedrock	Chl	30%	38 34 38 35 38 36					
-greenschist	Afb	10%						
-couple grains of chalcopyrite	Qtz	30%						
-rare pyrite	Fel	25%						
-little magnetite	Carb	5%						
	Tourm.	11.5						
	Ep							
	Mag							
	Py							
	Cp							

(greenish powder + fragments of greenstone, also fragm. of granitic rock, probably from overlying till.

T.H.T., June 1972)

A/S SULFIDMALM			
Gaesseraras Kautokino Line 4200N Geotek-percussion drilling 4200N/6900E (13/3 1972)			
SCALE	1:100	DRAWN	E.K.
DATE	3-72	TRACED	U.T.

Remarks	sand/stones [%]	Sample	Ni	Cu	Zn	Pb	Co
Moraine	60/40	3813	14	68	11	3	6
	70/30	3814	14	53	9	3	5
	60/40	3815	17	62	12	4	5
Ground moraine?		3816 P	10	44	8	2	4
	70/30	3817 P	13	39	8	2	6
		3818 P	12	38	8	2	5
	60/40	3819	48	376	26	15	36
Bedrock		3820	43	270	22	16	34
-greenschist	Chl 15%	3821					
- couple grains of chalcopyrite	Afb 15%	3822					
- original sample contains more dark minerals than washed and sieved sample	Fal 5%	3823					
	Qtz 5%	3824					
	Carb 5%						
	Bt 5%						
	Tourm. 5%						
	Asbestos						
	Ep						
	Cr						

(dark, nearly black, hornblendite or some basic rock, like diabase.  
T.H.T. June 1972)

A/S SULFIDMALM	
Gaasemaras Kautokeino Line 4200 N Geotek - percussion drilling 4200N/7000E (8/3 1972)	
SCALE	1:100
DATE	3-72
DRAWN	E.K.
TRACED	U.T.

Remarks	Sand/Stones [%]	Sample	Ni	Cu	Zn	Pb	Co
Moraine	60/40	3804	21	57	11	3	9
	70/30	3805	14	62	10	3	7
Ground moraine?	60/40	3806	13	71	10	2	6
	50/50	3807 P	36	133	24	8	20
Bedrock	TTT	3808 P	28	125	16	6	13
- greenschist	Chl 20%						
- rare grains of pyrrhotite and magnetite	Rfb 20%	3809					
	Qtz 20%						
	Fel 40%	3810					
	Carb						
	Ep	3811					
	Mag						
	Po	3812					

(Hornblende or amphibolite.  
T.H.T. June 1972)

A/S SULFIDMALM	
Gaessemaras Kautokeino Line 4200 N Geotek. percussion drilling 4200N/7035E (7/3 1972)	
SCALE 1:100	DRAWN E.K.
DATE 3-72	TRACED U.T.

Remarks	Sand/Stones [%]	Sample	Ni	Cu	Zn	Pb	Co
Moraine	70/30	5795	17	63	10	3	8
	60/40 2	5796	15	57	11	4	7
Ground moraine ?		5797 P	19	106	16	6	11
	50/50	5798 P	26	93	13	6	15
	60/40 5	5799 P	48	133	20	9	19
	TT 25	5800 P	81	194	24	10	30
Bedrock	Chl 30%						
- greenschist	Fel 50%	45					
- little pyrrhotite	Qtz 20%						
- rare pyrite	carb	75					
- original sample is richer of chlorite than washed and sieved sample	Pyrrhotite						
	Pyrite	25					

A/S SULFIDMALM	
Gaessermaras Kautokeino Line 4200N Geotek-percussion drilling 4200N/7070E (7/3 1972)	
SCALE 1:100	DRAWN E.K.
DATE 3-72	TRACED U.T.

Remarks	Sand/Stones [%]	Sample	Ni	Cu	Zn	Pb	Co	
Ice								
Water								
Fluvial sand + boulders	44/60							
Boulder	2	3743	28	59	14	8	8	
Ground moraine ?	5	3744	63	48	11	9	8	
	50/50	4	3745	28	73	24	9	13
	5	3746	36	75	29	10	15	
	40/60	6	3747	39	80	32	12	17
Bedrock	chl (scr) 50%	7	3748					
- Chlorite - sericite - schist banded by siliceous material	Fel 20%	8	3749					
little magnetite	Qtz 20%	9	3750					
	Carb 10%	10	3751					
	Tourmaline	11	3752					
	Mag							

A/S SULFIDMALM			
Gaessermarkas Kautokero			
Line 4200 N			
Geotek - percussion drilling			
4200 N / 7095 E (2/3 1972)			
SCALE	1:100	DRAWN	E.K.
DATE	3-72	TRACED	U.T.

Remarks	sand/silt/cl	temp	N	L	U
Ice					
Boulder		3773	17	76	23
-Afb -Fel -rock		3774	14	49	15
-rare mag	40/60	3775	14	54	18
Ground moraine?		3776	12	69	16
	70/30	3777	18	68	15
	80/20	3778	20	69	14
Bedrock ?	70/30	3779			
-sericite - schist	Sev 70%	3780			
-soft, brown, weathered	Fel 10%	3781			
	Qtz 10%	3782			
	Afb 10%	3783			
	Tourm.	3784			
	Ep	3785			
		3786			
		3787			
		3788			
		3789			
		3790			
		3791			
		3792			
		3793			
		3794			

A/S SULFIDMALM	
Gaessermaras Kautokaino Line 4200 N Geotek - percussion drilling 4200N/7110 E (6/3 1972)	
SCALE 1:100	DRAWN E.K.
DATE 3-72	TRACED U.T.

Remarks	Sand/Stones [%]	Sample	Ni	Cu	Zn	Pb	Co
Ice							
Boulder		3725	16	49	15	3	9
- Rfb-Fel-Qtz-rock							
- little mag		3726	14	56	11	7	10
Moraine	50/50						
		3727	20	52	22	6	13
	60/40						
		3728	22	69	23	8	14
Ground moraine?							
	70/30	3729	19	56	17	10	12
		3730	25	68	13	9	15
Bedrock ?	Qtz 60% 60/40						
- weathered arkose?	Fel 20%	3731					
- brown, quite soft,	Mag 10% 80/20						
quite much magnetite,	Mc 5%	3732					
little hematite	Carb 5% 70/30						
		3733					
	80/20						
		3734					
	90/10	3735					
		3736					
		3737					
		3738					
		3739					
		3740					
		3741					
		3742					

A/S SULFIDMALM			
Gassemaras Kautokaino			
Line 4200 N			
Geotek - percussion drilling			
4200N/7125 E (1/3 1972)			
SCALE	1:100	DRAWN	E.K.
DATE	3-72	TRACED	U.T.

Remark	Sand/Stones [%]	Sample	Ni	Cu	Zn	Pb	Co
	70/30						
Boulder	Afb 40%	3715	9	63	9	3	4
- Afb - Carb - Fel - rock	Fel 30%	3716	8	42	8	2	3
- couple grains of chalcopyrite	Carb 20%	3717 P	12	49	18	3	6
	Qtz 10%	50/50					
		3718 P	22	49	22	4	6
	60/40						
Ground moraine?		3719 P	13	33	14	4	6
	70/30						
		3720	141	27	13	5	23
	80/20		2/24	39	22	6	9
Bedrock		3721					
- Gneiss	Qtz 70%						
- rare magnetite	Fel 20%	3722					
	Afb 5%						
	Tourmal. 5%	3723					
	Carb						
		3724					

A/S SULFIDMALM	
Gaessemara Kautokeino Line 4200 N	
Geotek-percussion - drilling 4200 N / 7150 E (29-2-1972)	
SCALE 1:100	DRAWN E.K.
DATE 3-72	TRACED U.T.

Remarks	Sand/Stones [%]	Sample	Ni	Cu	Zn	Pb	Co
Ice							
Water							
Fluvial sand + boulders							
Moraine	60/40	37 08 P	14	52	12	4	8
	50/50	37 09 P	17	55	12	5	8
Ground moraine?	60/40	37 10 P	14	43	10	3	7
Bedrock - Afb - schist	Afb 40 % Chl 10 % Carb 30 % Qtz 10 % Fel 10 % Tourmaline Bt	37 11 P	33	35	95	7	30
		37 12					
		37 13					
		37 14					

A/S SULFIDMALM	
Gessemaras Koutokeino Line 4200 N Geotek - percussion drilling 4200 N / 7175 E (29/2-1972)	
SCALE	DRAWN E. K.
DATE	TRACED U. T.

Remarks	Sand/Stones [%]	Sample	Ni	Cu	Zn	Pb	Co
Ice							
Water							
Fluvial sand + boulders							
Moraine	60/40	3700 P	22	103	17	13	12
Ground moraine ?		3701 P	14	53	10	5	7
	70/30	3702 P	16	59	13	7	8
Bedrock		3703 P	18	64	21	8	10
- Afb - Chl - schist	Afb 30%						
	Chl 30%	3704					
	Carb 25%						
	Qtz 5%	3705					
	Fel 5%						
	Bt 5%	3706					
	Serpentine						
		3707					

A/S SULFIDMALM	
Gessemanas Kautokeino Line 4200 N	
Geotek-percussion drilling 4200 N/7200 E (29/2 1972)	
SCALE	DRAWN E.K
DATE	TRACED U.T

Remarks	Sand/Stones [%]	Sample	Ni	Cu	Zn	Pb	Co
	70/30	3602	9	47	6	4	5
		3603	14	51	6	4	7
	80/20	3604	18	57	9	2	7
Boulder - greenschist	Chl + Rfb 40 % Qtz 40 % Fel + Carb 20 %	3605	31	76	32	7	17
	70/30	3606 P	24	64	17	5	13
Ground moraine ?	60/40	3607 P	26	64	17	6	14
	50/50	3608 P	56	89	26	11	29
Bedrock	7-9 m	3609					
- 7-9 m greenschist	Chl 60 %	3610					
- 9-10 m Ab-Carb-rock, brown	Rfb 10 %	3611					
- 7-9 m little malacite (+calcosite?) contaminated	Fel 20 % Carb 10 % Mag Tourm.						
	9-10 m						
	Fel 50 %						
	Carb 30 %						
	Chl 10 %						
	Qtz 10 %						

Legend

-  = amount of stones
-  = amount of fine grained material
- P = sample taken with sample-pipe

A/S SULFIDMALM	
Gaessemaras Kautokeino Line 4100 N	
Geotek-percussion drilling 4100 N / 7050 E (21-2-1972)	
SCALE 1:100	DRAWN EK. 2.72
DATE Feb 72	TRACED U.T. 2.72

Remarks	Sand/Stones [%]	Sample	Ni	Cu	Zn	Pb	Co
Ground moraine ?	80/20	36 12	13	38	5	2	5
		36 13	13	51	7	2	6
	70/30	36 14	15	54	9	3	8
	20/20	36 15	15	48	7	3	6
	50/50	36 16 P	35	280	15	10	20
Bedrock - greenschist - rusted, some small grains of sulfide (pyrite)	60/40	36 17 P	61	970	28	17	39
	Chl 40%						
	Rfb 30%	36 18					
	Carb 20%	36 19					
	Qtz+Fal 10%	36 20					

Legend

-  = amount of stones
-  = amount of fine grained material
- P = sample taken with sample-pipe

A/S SULFIDMALM	
Gaessemanas Koutakeino Line 4100 N	
Geotek-percussion drilling 4100 N / 7075 E (22-2 1972)	
SCALE 1:100	DRAWN EK. 2.72
DATE FEB 72	TRACED U.T. 2.72

Remark	Sand/Stones [%]	Sample	Ni	Cu	Zn	Pb	Co
	60/40	36 21 P	13	44	9	4	6
Ground moraine ?	50/50	36 22 P	12	43	8	5	6
	60/40	36 23 P	15	48	9	14	7
	70/30	36 24 P	17	57	15	9	8
Bedrock - Bt - Chl - schist - rare grains of pyrite		36 25 P	32	74	15	31	13
	Chl 60%	36 26					
	Bt 20%	36 27					
	Qtz 10%						
	Fel + Carb 10%						
		36 28					

Legend  
 = amount of stones  
 = amount of fine grained material  
 P = sample taken with sample-pipe

A/S SULFIDMALM	
Gaessemaros Kautokino Line 4100 N	
Geotek-percussion drilling 4100 N / 7100 E (22-2 -1972)	
SCALE 1:100	DRAWN E.K. 2-72
DATE Feb. 72	TRACED U.T. 2-72

Remarks	sand/stones [%]	Sample	Ni	Cu	Zn	Pb	Co
Ice water							
	40/60						
Ground moraine		3629 P	15	51	10	5	8
	50/50						
		3630 P	17	63	10	5	8
	60/40						
		3631 P	44	47	24	9	15
Bedrock	35-4,5						
- 3,50-4,50 amphibolite	Afb 30%	4,5 3632					
- 4,5-5,5 chl-sericite schist	Chl 10%						
- 5,5-7,50 phyllite with little graphite in it	Qtz 30%	5,5 3635					
- amphibolite contains some grains of pyrihotite and little magnetite	Fel 20%						
- phyllite contains of rare pyrite - grains	Carb 10%	6,5 3634					
	Diopside						
		7,5 3635					

Legend

- = amount of stones
- = amount of fine grained material
- P = sample taken with sample-pipe

A/S SULFIDMALM	
Gaassemanos Kautokeino Line 4100 N	
Geotek-percussion drilling 4100N/7125E (23-2 1972)	
SCALE 1:100	DRAWN EK 2-72
DATE Feb. 72	TRACED U.T. 2-72

Remarks	Sand/Stones [%]	Sample	Ni	Cu	Zn	Pb	Co
Ice							
Water							
	1.5						
	50/50						
Ground moraine?	3.5	3636 P	19	51	12	3	9
	70/30						
	3.5	3637 P	13	46	8	4	8
Bedrock							
- gneiss	5	3638 P	11	36	9	4	6
- little magnetite	atz 60%	3639					
	Fcl 20%	3640					
	Chl 10%	3641					
	Tourmaline 10%	3642					
	8	3643					
	2						

Legend  
 = amount of stones  
 = amount of fine grained material  
P = sample taken with sample-pipe

A/S SULFIDMALM	
Gaassemaras Koutokcino Line 4100 N	
Geotek-percussion drilling 4100 N / 7150 E (24/2 1972)	
SCALE 1:100	DRAWN EK.2.72
DATE Feb	TRACED U.T. 2-72



Remarks	Sand/Stones [%]	Sample	Ni	Cu	Zn	Pb	Co
Ice							
Water							
	60/40	36 51 P	15	43	8	4	6
Ground moraine ?	75/25	36 52 P	37	49	21	6	12
Bedrock		36 53 P	52	52	25	9	23
- greenschist	Qtz 50%	36 54					
- rare grains of magnetite	Chl + Rfb 40%	36 55					
	Fcl + Carb 10%	36 56					

Legend

-  = amount of stones
-  = amount of fine grained material
- P = sample taken with sample-pipe

A/S SULFIDMALM	
Gaessemaras Kautokaino Line 4100 N	
Geotek - percussion drilling 4100 N / 7200 E (24/2 1972)	
SCALE 1:100	DRAWN EK. 2.72
DATE Feb. 72	TRACED U.T. 2.72

Remarks	Sand/Stone [%]	Sample	Ni	Cu	Zn	Pb	Co
Ice		1					
Water		2					
Moraine	30/50	3					
Bedrock ?	- Qtz 60%	3657 P	10	45	5	2	5
Sand (Fault ?)	- Afb 10%	3658					
Bedrock	- FeI 15%	3659					
- Afb - Qtz - breccia ?	- Carb 5%						
- little magnetite	- Tourmaline 10%	3660					

A/S SULFIDMALM

Gaassemaras Kautokeino  
Line 4100 N  
Geotek - percussion drilling  
4100N/7225 E (24-2-72)

SCALE	DRAWN E.K
DATE	TRACED U.T.

Remarks	Sand/Stones [%]	Sample	Ni	Cu	Zn	Pb	Co
Mud		1 3848	27	31	26	9	6
		2 3849	12	19	9	7	6
Horaine	50/50	3 3850 P	44	49	35	5	16
Ground moraine?		4 3851 P	13	48	10	5	6
		5 3852 P	12	35	7	4	7
	60/40	6 3853 P	22	40	14	8	10
	80/20	7 3854	16	14	10	6	8
	70/30	8 3856	17	44	10	6	9
		9 3856	17	42	8	6	7
	30/20	10 3857	15	42	9	4	9
		11 3858	15	40	8	6	7
Bedrock	Qtz 40%	12 3859					
- bigger particles are greenschist	Fel 40%	13 3860					
- rocktype might be greenschist banded by Qtz - Fel - rock	Chl 5%	15 3861					
- Couple grains of hematite, rare magnetite	Flb 5%						
	Tourm. 10%						
	Mag						
	Hem						
	Ep						

A/S SULFIDMALM	
Gassemaras Kautokaino Line 4200 N Geotek - percussion drilling 4200 N/6300 E (15/3 1972)	
SCALE 1:100	DRAWN E.K.
DATE 3-72	TRACED U.T.

Remarks	Sand/Stones [g/l]	Sample	Ni	Cu	Zn	Pb	Co
Moraine	60/40	3337	11	33	6	3	6
		3338	9	34	7	5	5
	70/30	3339	15	36	14	5	7
	80/20	3340	14	32	8	5	7
Ground moraine?		3341 P	12	40	17	6	6
	60/40	3342 P	10	36	8	4	7
		3343 P	12	39	10	5	7
	80/20	3344 P	14	37	16	6	6
	50/50	3345 P	32	26	25	11	19
Bedrock	Chl 5%	3346					
- according to bigger particles rocktype is greenschist or greenschist is banded by quartz - feldspar rock	Afb 5%						
	Qtz 10%						
	Fel 65%						
	Carb 5%						
	Tourm. 5%						
	Mag 5%						
	Ep	3347					

A/S SULFIDMALM	
Gaessemaras Kautokeino Line 4200 N Geotek - percussion drilling 4200 N / 6850 E (14/3 1972)	
SCALE 1:100	DRAWN E.K.
DATE 3-72	TRACED U.T.

Remarks	Sand/stones [%]	Sample	Ni	Cu	Zn	Pb	Co
Ice							
Water							
Fluvial sand + boulders	50/50						
Moraine	60/40	3692 P	16	56	25	6	11
	60/40	3693 P	25	47	16	6	12
	70/30	3694 P	14	49	12	4	6
Ground moraine ?	60/40	3695 P	25	47	16	5	10
Bedrock	TTTf	3696 P	38	93	17	7	16
- Afb - gneiss	Qtz 40 %						
- little tourmaline and magnetite, rare epidote	Afb 5 %	3697					
	Fel 20 %						
	Carb 5 %	3698					
	CH 20 %	3699					

A/S SULFIDMALM	
Gessemanas kautokeino	
Line 4200 N	
Geotek - percussion drilling	
4200 N / 7225 E (26.2.72)	
SCALE	DRAWN E. K.
DATE	TRACED U. T.

Remarks	Sand/stones [%]	Sample	Ni	Cu	Zn	Pb	Co
Ice							
Water							
Fluvial sand + boulders							
	50/50	36 85 P	12	34	19	4	7
		36 86 P	12	66	11	4	7
Ground moraine?	60/40 TTTTS	36 87 P	8	38	8	4	4
Bedrock	Qtz 60%						
- Afb-gneiss	Afb 5%	36 88					
- rare epidote	Fel 20%						
	Carb 5%	36 89					
	Chl 10%						
		36 90					
		36 91					

A/S SULFIDMALM	
Goessemaras Koutakeiro Line 4200 N Geotek - percussion drilling 4200 N / 7250 E (26/2 1972)	
SCALE	DRAWN E.K.
DATE	TRACED U.T.

Remarks	Sand/Stones [%]	Sample	Ni	Cu	Zn	Pb	Co
Ice							
Water							
Fluvial sand + boulders							
	60/40	3678 P	26	191	30	6	18
Ground moraine ?	50/50	3679 P	10	86	12	3	6
Bedrock	TTTTT	3680 P	23	75	15	5	12
- green schist	Qtz 20%						
- little tourmaline	Afb 20%	3681					
rare epidote	Fel 10%	3682					
	Corb 10%	3683					
	Chl 40%	3684					

A/S SULFIDMALM

Gaessemaras Kautokaino  
Line 4200 N  
Geotek - percussion drilling  
4200N/7300E (26.2.72)

SCALE	DRAWN E.K.
DATE	TRACED U.T.

Remarks	Sand/stones [%]	Sample	Ni	Cu	Zn	Pb	Co
Ice							
Water							
Pluvial Sand							
	90/10	36 71 P	8	21	8	4	4
Ground moraine ?		36 72 P	6	26	5	3	3
	70/30	36 73 P	8	46	6	3	5
		36 74 P	12	56	8	4	7
Bedrock	Qtz 30 %						
- green schist	Afb 20 %	36 75					
- little magnetite,	Fel 5 %						
some pyrite.	Carb 5 %	36 76					
	Chl 40 %						
		36 77					

A/S SULFIDMALM	
Gassemaras Kautokino Line 4200 N Geotek - percussive drilling 4200 N / 7350 E (25-2-72)	
SCALE	DRAWN E. K.
DATE	TRACED U. T.

Remarks	Sand/stones [%]	Sample	Ni	Cu	Zn	Pb	Co
Fluvial sand		36 61	16	20	5	3	6
	90/10	36 62	14	18	6	3	4
		36 63 P	12	50	9	2	5
	8/20	36 64 P	11	24	5	2	6
Ground moraine?	40/60	36 65 P					
	60/40	36 66 P	20	28	8	6	21
Bedrock	Qtz 40 %	36 67 P	25	26	8	3	20
- Albite - gneiss?	Rfb 5 %	36 68	7	22	4	3	6
- little magnetite	Fel 40 %	36 69					
some pyrite	Carb 10 %	36 70					
	Tourmaline 5 %						

(Light pink colour very fine gr. rock resembling albite fels + much weathered ankerite

T.H.T. June 1972)

A/S SULFIDMALM	
Gaesseranas Kautokeino	
Line 4200 N	
Geotek - percussion drilling	
4200 N / 7400 E (24-2-72)	
SCALE	DRAWN E. K.
DATE	TRACED U. T.

Remarks	Sandstone [%]	Sample	Mn	Cu	Zn	Pb	Co
Brownish, sandy-gravel white boulder.	60/40	1 29 85	14	30	10	4	6
Grey till? deficient in fine fraction Moist	10/90	2 29 87	13	21	17	5	5
— " —	20/80	3 29 88	26	64	16	6	9
	30/70	4 29 89 P	15	37	14	7	5
	40/60	5 29 90 P	14	30	35	7	11
Grey till	50/50	6 29 91 P	14	41	11	3	6
yellowish mixture overburden and bedrock	40/60	7 29 92 P	20	39	18	5	11
Phyllite		8 29 93	28	72	28	8	12
		9 29 94					

Quartz feldspar 80%  
amphiboli tourmaline 20%  
magnetite occ

A/S SULFIDMALM	
Gaessernara Kautokeino Line 4400 N Geotek-percussion drilling 4400 N / 7030 E (4/5-72)	
SCALE	DRAWN T.H.T
DATE	TRACED U.T.

Remarks	Sand / Stones [%]	Sample	Ni	Cu	Zn	Pb	Co
Brownish sand, (fluvial sediment)	70/50	1 29 76	13	32	12	5	6
Sand, greyish, (fluvial sediment?)	50/50	2 29 77	27	97	20	9	12
Sand-gravel, greyish	50/50	3 29 78	34	54	15	5	7
greyish till	50/50	4 29 79	25	89	21	8	9
	60/40	5 29 80	24	74	19	6	9
	60/40	6 29 81	19	39	23	9	11
grey, deficit of fine fraction	50/50	7 29 82	24	47	24	7	15
Sandy	40/60	8 29 83	22	46	17	7	10
	40/60	9 29 84	10	16	12	4	6
Greyish till	40/60	10 29 85	(14) 16	(27) 29	(17) 21	(5) 6	(10) 11

Bedrock not reached

A/S SULFIDMALM	
Gaassemaras, Kautokains Line 4400 N Geotek-percussion drilling 4400 N / 7100 E (3/5 1972)	
SCALE	DRAWN T. H. T.
DATE	TRACED U. T.

Remarks	Sand/Stones [%]	Sample	Ni	Cu	Zn	Pb	Co
Yellowish brown, Sandy	60/40	1 29 95	9	15	8	3	6
Grey, gravel/sand	60/40	2 29 96	17	41	19	5	9
Ground water.	50/50	3 27 97	16	47	13	9	8
		no Sample					
Grey, sandy	50/50	4					
	50/5	5 29 98	22	46	23	11	8
Grey	50/50	6 29 97	25	57	40	5	9
Grey, sandy	60/40	7 30 00	22	47	29	7	8
	60/40	8 30 01	21	40	36	6	8
	50/50	9 30 02	22	43	22	7	8
	60/40	10 30 03	21	41	27	7	8

Bedrock not reached

A/S SULFIDMALM	
Goessemoras, Koutokaino Line 4400 N Geotek-percussion drilling 4400 N / 7150 E (4/5 1972)	
SCALE	DRAWN T.H.T
DATE	TRACED U.T

Remarks	Sand/Stones [%]	Sample	Ni	Cu	Zn	Pb	Co
Ice water Fluvial sand							
	90/10	2 3764	8	15	13	3	6
		3 3765	9	15	15	3	6
	80/20	4 3766 P	14	26	23	7	7
		5 3767 P	14	27	22	6	9
Ground moraine?	60/40	6 3768 P	14	56	15	5	7
	70/30	7 3769 P	13	54	18	6	7
Bedrock	Fine material:	8 3770					
- Albite gneiss?	Fel 70%	9 3771					
- According to coarse grained material main rocktype is rather chlorite - schist	Qtz 15%	10 3772					
- little magnetite, some grains of pyrite and ilmenite?	Chl 5%						
	Tourm 5%						
	Carb 5%						
	Mag						
	Py						
	Ilmenite?						

A/S SULFIDMALM	
Gaessemaras Kautokeno Line 4400 N Geotek - percussion drilling 4400 N / 7400 E (5/3 1972)	
SCALE 1:100	DRAWN E. K.
DATE 3-72	TRACED U.T.

Remarks	Sand/Stones [%]	Sample	Ni	Cu	Zn	Pb	Co
Ice							
Water							
Fluvial sand + boulders							
Ground moraine ?	60/40	4 3753 P	9	23	17	2	8
		5 3754 P	10	20	18	4	9
	70/30	6 3755	10	46	8	3	8
		7 3756					
	80/20	8 3757	10	42	6	4	6
		9 3758	8	41	7	4	5
	90/10	3759	7	29	9	3	5
Bedrock - Chlorite - schist banded by albite - gneiss?	Chl 30%	11 3760					
	Fel 40%	12 3761					
	Qtz 25%	13 3762					
	Corb 5%	14 3763					
	Bt Tourmaline Sillimanite						

A/S SULFIDMALM	
Gaessernaras Kautokeino Line 4400 N Geotek - percussion drilling 4400N/7300E (5/3 1972)	
SCALE	1:100
DATE	3-72
DRAWN	E.K.
TRACED	U.T.

A/S SULFIDMALM  
INTER-OFFICE MEMORANDUM

511.00  
02  
ARK

Date: 4th August, 1972  
To: Falconbridge Nikkelverk A/S  
cc: A.M. Clarke, D.R. Lochhead  
T.H. Tan, R.B. Sand/E. Kreivi  
From: J.B. Gammon  
Subject:

Gassemaras

905-2, Gassemaras, Kautokeino area

Please find attached Tan's report on percussion drilling at Gassemaras. This program was designed as summarised on Fig. 2, to test both the up-ice extension of the known boulder fan and the geophysical indications suggestive of conditions similar to those at the Bidjovagge Mine. The location of the area is shown on Fig. 1. The main results are displayed on Figs. 7 to 12 inclusive, while Fig. 13 is a summary of the copper anomalies obtained.

The bulk of Tan's report and Appendix I consist of detailed observations from the 71 holes and the way in which this information was gathered.

The results give some encouragement for further work in this area. Tan has suggested IP for parts of the area. This will be borne in mind if equipment is in Finnmark in connection with our other projects.

J.B. Gammon