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Råstoffgruppe Malm/metall	Råstofftype Au,Cu, Zn, Pb, As			

Sammendrag, innholdsfortegnelse eller innholdsbeskrivelse

Hensikten med dette årets undersøkelser var korrekt prøvetaking i forhold til gull på veddefinerte målområder.

Tidligere undersøkelser gjennomgås.

Undersøkelsene viser at Au i Varden Øst har sammenheng med en grafitt og sulfidholdig bergart forhold til en markert lineasjon.

Hundalen viste negative resultater.

Ved Sildvikvatnet er det påvist opp til 2,1 ppm Au i en pyrittisk kvartsåre med sulfider inne i Rombakgranitten.

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RAPPORT: ROMBAKEN PROSJEKTET, NARVIK KOMMUNE, 1989

Vi oversender herved en kopi av vår rapport fra prospekterings-
arbeidene i Narvik Kommune 1989.

Arbeidene ble utført på oppdrag fra ARCO Norway Mineraler A/S,
for midler bevilget av Distriktenes Utbyggingsfond.

Vennligst behandel rapporten som Konfidensiell.

Med vennlig hilsen



Boye Flood

Vedlegg

REPORT NO. 89 - 28 - 01

ARCO NORWAY MINERALER A/S

Sampling for gold at Varden East
and Hunddalsbotn.

The Rombaken Project, North-Norway, 1989

Geologiske
Jenester a.s.

R E P O R T N O. 89 - 28 - 01

ARCO NORWAY MINERALER A/S

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The Rombaken Project, North-Norway, 1989

Boye Flood
Torgrim Haug

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Oslo, December 19, 1989

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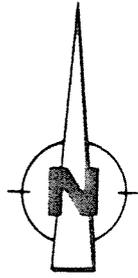
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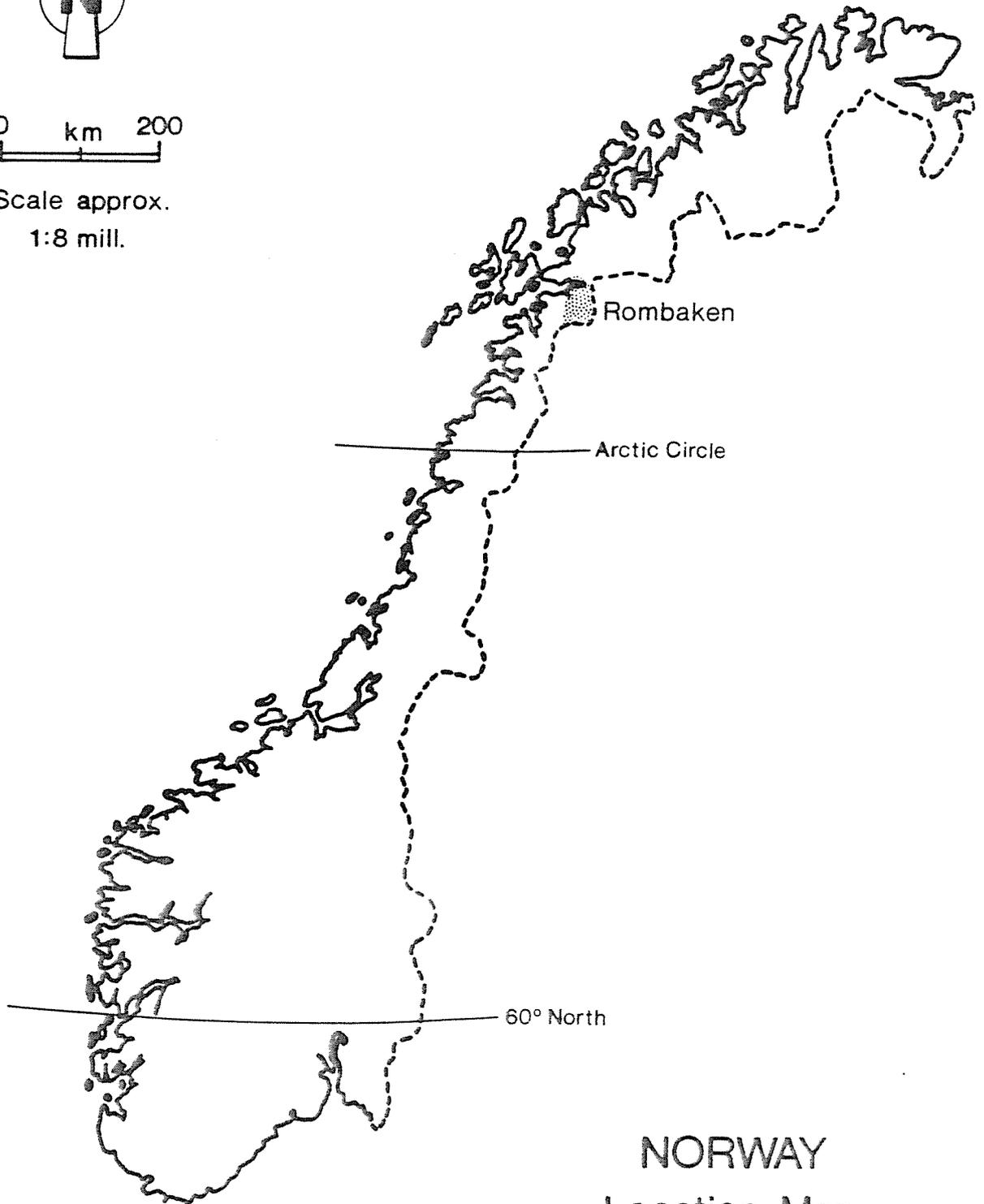
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0 km 200

Scale approx.
1:8 mill.



NORWAY

Location Map

Fig. 1

SAMPLING FOR GOLD AT VARDEN EAST
AND HUNDDALSBOTN.
THE ROMBAKEN PROJECT, NORTH-NORWAY, 1989.

1. INTRODUCTION:

1.1 Localities and infrastructure:

These localities both belonging to the Rombaken project, see fig. 1, are situated within Narvik kommune, Nordland county.

Varden E is found around 4 km north of the head of Rombaksbotn, see fig. 2. The flycamp, which was helicopter lifted, could be reached by foot either from the main road to Sweden, or from the Søsterbekk st. on the Narvik-Kiruna railway line. Both routes implying around 1 1/2 hours walk. From the camp most of the actual area could be reached by foot within 1/2 hour.

Hunddalen is found around 10 km south of the head of Rombaksbotn. Also here the flycamp was lifted in by helicopter. Normal access was by vehicle from Katterat st. along a road built during the hydroelectric development scheme, to the Hunddalen hut. From here it was a one hour walk to the camp, fig. 2. From the camp most of the sampling area could be reached by foot within 1 hour.

1.2 Project background:

Background for the work done this season is found in the results from three earlier field seasons. These indicated a potential for both base metal and gold mineralization within Proterozoic greenstone belts, see below.

Previous work has concentrated on the base metal problem outlining large anomalous systems, and a number of uneconomic mineralizations. Initially, also this years program included a further search for lead-zinc-silver deposits, but due to a budget cut it was decided to focus all the resources on the most promising gold targets defined during previous efforts.

1.3 Objective:

The main objective with this work has been to ensure that proper sampling for gold was done on well defined targets. These targets were defined based on the highest concentration of coexisting gold anomalies in standard stream sediments, in stream sediments heavy fraction material and in chip samples. Although chip samples were also collected this year, proper sampling meant drilling and blasting of fresh material.

2. GENERAL GEOLOGY AND PREVIOUS WORK:

All relevant information regarding general geology and results from the first exploration period, 1983-84, are treated in the two Company reports: ARCO Norway Inc. Report no. 84-670-19 and 85-67-47 summarizing the 1983 and 1984 programs and results respectively. In these reports there are also references to the detailed reports as well as to earlier literature.

In Geologiske Tjenester's report no. 89-26-01 for Resources Exploration Norway A/S, the second period, 1988's work program and results have been treated in detail.

3. LAND STATUS AND FINANCING:

The mineral rights (Mutinger) in the Rombaken project area have since 1983 been controlled by ARCO Norway Mineraler A/S. The number of mutinger (each 0,25 km²) has gradually been decreased from a maximum of 938 in 1984 to 200 last year and 80 for 1989, see fig.2.

The first period of exploration was financed by ARCO Norway Inc. and the 1988 program by East West Minerals Inc., USA through its Norwegian subsidiary Resources Exploration Norway A/S based on an exploration agreement with ARCO.

As East West Minerals terminated the agreement with ARCO last spring the current program has been funded entirely by Distrik-tene's Utbyggingsfond based on an application for the 1988 season.

4. SUMMARY OF THE EXPLORATION PROGRAM, 1989:

The initial program in Rombaken was planned based on a budget of Nkr. 1.000.000,- Due to the pulling out of East West Minerals Inc. in late April, the plans had to be changed to fit a total expenditure of Nkr. 500.000,- which was then focused on the gold problems in Rombaken.

4.1 Timing, completed program and personnel:

Varden E: The field work commenced June 26 and was terminated July 20 when camp and equipment was shifted over to Hunddalen.

The weather during this period was mainly very bad with persisting cold northwesterly winds, rain and occasional snow. Late smelting of the winter snow hampered the work.

The work included:

- Lifting in of camp, equipment and personnel by helicopter.
- Erecting a 1 km baseline along 18800 E, from 96000N to 97000N, one peg each 50 m.
- Magnetic survey of an area approximately 1 km²
- Geological mapping scale 1:5000 of same area, including some chip sampling of sulphide bearing (rusty) zones.
- Drilling, blasting and sampling of five selected localities within the target area.
- Assaying of 84 samples for Cu, Pb, Zn, As, Ag, Au and Fe, and assessment.

Hunddalen: The work commenced July 20 and was completed August 11.

The weather during this period was mainly very good. Helicopter breakdown during the trenching program caused problems, and it was necessary to make some shortcuts to be able to finish within the budgeted time frame.

The work included:

- Lifting in of camp, equipment and personnel by helicopter.
- Erecting a N-S baseline in Hunddalen 1,2 km long and pegged each 50 m.
- Using the former 1:20.000 geological map as base map, a detailed search for, and plotting of sulphide alteration zones was carried out within an area of around 3 km²
- Extensive chip sampling was carried out of scree and bedrock in less accessible parts of the target area.
- Drilling, blasting and sampling of 9 trenches within 3 selected localities in the target area.
- Assaying of 120 samples for same elements as at Varden E., and assessment.

The following personnel was hired for the project:

Torgrim Haug, geologist	BSc, graduate student, University of Tromsø. Fieldassistant in Rombaken 1983-84 and geologist on the project 1988.
Trond Blomlie, field-coordinator	BSc, University of Tromsø. Field-assistant in Rombaken 1984 and 88.

5. EXPLORATION PROGRAM AND RESULTS:

During the first period of exploration on Haugfjellet, 1983-84, the "greenstone belts" were divided into two major areas based on the geochemical and geophysical response.

Area 1: This comprises the westernmost belt from the head of Rombaksbotn to the 1984 camp area, and west of the first granite dike, see fig. 3 and 4. Virtually all the Dighem anomalies are concentrated within this area and along the dike. This was a pattern which coincided well with frequent stream sediment base metal anomalies. Most of the work prior to this season has been carried out within this area.

Area 2: This included the reminder part of the Haugfjellet supracrustals, to the east of the first granite dike. Only a few geochem. anomalies and almost a complete lack of Dighem anomalies, except for the southernmost part, are characteristic for this area. Later geological mapping (Report no. 89-26-01) largely confirmed the differences indicated through the geophysical-geochemical patterns.

5.1 Varden East:

Generally, Varden East is the part of Area 2 displaying Dighem anomalies. Geologically it resembles Area 1 by the presence of graphite bearing units and a generally high content of iron sulfides. The abrupt termination of the Dighem anomalous field around UTM 96600 N, fig. 4, however, has been a puzzle.

Rock geochemistry from 1984, however, showed a clear difference between Area 1 and the Varden East area, the latter having lower Pb, Zn and higher Au values.

	Au	Mean:	Au	90%ile:
Haugfjellet Grid, Area 1 (n=323)		5 ppb		13 ppb
Varden East (n=57)		21 "		45 "

This fact, coupled with heavy fraction gold anomalies in the main stream system, fig. 5, and new gold anomalous rock samples collected during the 88 field season triggered off the current field program, mainly concentrated between UTM 96 and 97000 N.

5.1.1 Geological mapping:

The geological map in scale 1:5.000 is shown in fig. 5 and emphasising some of the main features of this area. Mapping has been carried out along E-W lines with 100 m spacing. Outcrop is good, around 70 %, but the wintersnow still covered depressions along fractures and shears. As these structures were of special interest, this unusual situation for this time of the year proved to be a nuisance.

Lithologies: As for the rest of the Haugfjellet area, the supracrustal units lacks discrete marker horizons. Also the small contrasts observable, between the different fine grained lithologies, have to a great extent been masked by the growth of lichens.

The easiest recognizable rocks are the granites. Varden East border the main granitic massive to the east and the "first granitic dike" to the west, see fig. 3. Both these granites belongs to the Rombaken type, being coarse grained and porphyritic.

The contacts may be sheared and sericitic.

East of, and partly along the "main lineament", see above, the supracrustal package is intruded by a number of light, fine-grained granitic dikes and veins from around 10 cm to 20 m thick. These are in places strongly sheared and/or folded. Although similar veins-dikes are also seen along the western side of the "main lineament" between 96100 and 96500N it is most characteristic for the eastern "block" and may indicate an uplift of this side along the lineament structure.

Around 96000N/19400E a strongly rusty unit, previously mapped as part of the Langfonn formation (Rapport no. 89-26-01), enters the map area from the south. The rusty unit which is up to 100 m wide consists mainly of graphite schist, graphite fels and fels, with some more coarse grained quartz-biotite schists/quartzites interlayered, the latter dominating the eastern and less rusty part of the unit.

Although the graphite schist most likely represent primary beds, the strong tectonization of this area has left them mainly as boudins, irregular lenses due to fold thickening and smeared sheets.

The fels term has been used for a generally grey cherty rock with or without finely disseminated graphite and /or sulfides, see below.

This unit, hereafter called "the graphite bearing unit" is the most likely is the source of the Dighem anomalies and has it's most prominent appearance in the SW corner of the map sheet. It reappears on both sides of the "main lineament" between 96400 and 96600N. North of 96600N only local rusty and/or graphitic zones have been observed. The unit is apparently folded back towards the south and occur along the "main lineament" as graphite schist beds and lenses. This apparent closure of an anticlinorium around 96000N should adequately explain the absence of Dighem anomalies further to the north.

South of the fold closure the sequence is dominated by mainly weakly banded grey to grey-green sand and siltstones. In places like around base line at 96000N, it shows a strong resemblance to the Varden Formation, see Report no. 89-26-01.

North of the graphitic unit, particularly west of the "Main lineament" between 96400 and 96600N, strongly banded sandstones-/micaceous siltstones occur. The bands vary between 10 and 30 cm, the difference in competence between the layers stands out very clearly revealing a prominent folding with fold axis pointing 5-10° N, with a plunge of around 70°. These banded sediments are different from what is observed elsewhere on Haugfjellet.

Otherwise the northern part of Varden East is dominated by fine-grained quartz-biotite schists with varying amounts of weakly banded sand/siltstones. They are in places weakly rusty, but without observable sulfides, except along some local and weakly graphitic shears.

Structures: The interest in Varden East was based on the geochemical gold anomalies, and the apparent spatial relationship between these anomalies and some major lineaments with extension N-S and ENE-WSW. Other marked lineament direction are NNW-SSE, WNW-ESE and E-W.

The lineaments within Varden East are due to shearing and fracturing and appear as topographical depressions from a few m up to around 50 m wide. The extension may vary from less than a 100 m to several km. The "main lineament" can for instance be followed on satellite photo from just south of Varden East for about 7 km towards the north, see fig.3. Some are partly or

wholly intruded by granitic dikes as demonstrated on fig. 3 and 5.

Whether these structures are fault related is uncertain, some like the E-W fracture zones appear not to have caused any displacement. A vertical movement along the "main lineament" is possible, as explained above.

Where several of these zones intersect, like at 96500N-19850E, a strong brecciation occurs.

Most of the lithologies within this area show a moderate to strong schistosity which is either vertical or dipping steeply to the west.

Bedding is not easily observable in the less competent rocks due to deformation. The strongly bedded unit, described above, has helped interpreting the main fold structure and confirming that the graphite bearing rocks, even discontinuous, belong to the same horizon. Drag folding around 96500N-19600E supports this picture as do the bedding observations in the southeastern part of the map sheet. The formation of an antiform at this part of Haugfjellet was already indicated by T. Haug in a profile based on the general 1:20,000 mapping of Haugfjellet last year.

A strong crenulation with same direction and plunge as the above fold axes is often observed within the graphite bearing unit. Sulfides are often smeared out on these crenulation surfaces.

Mineralization: The observable mineralization is due to rust derived from pyrite and pyrrhotite. The largest amounts of these minerals are found in the graphite schist as stringers and dissemination and may push the iron content in these schists up to 10-15%. Also the interbedded graphite fels, felses and schist-gneisses carry from nil to a few percent of iron sulfides, mainly as a fine-grained dissemination.

Finely disseminated chalcopyrite was often observable in the felses, and the presence of galena and sphalerite as stringers and dissemination was revealed during the trenching program. The latter minerals were often associated with cm quartz and calcite veins.

In the graphite schist and felses green mica in flakes up to a few mm is very common with the sulfides. Biotite, sericite and chlorite may occur in varying amounts with sulfides within the graphite bearing unit.

5.1.2 Geophysics:

The magnetic survey carried out on the grid revealed a too weak

magnetic contrast between the different lithologies for any meaningful interpretation.

There was made no automatic adjustment for diurnal variation, which might have given a better result.

5.1.3 Sampling:

Virtually all the sampling was carried out south of line 96600N and confined to the graphite bearing unit. As both the geological map fig. 3 and the sample map fig. 6 show, this unit is best developed along the western granite contact south of 96300N and along and around the main lineament between 96300 and 96600N.

The few other samples are either related to the main lineament further north or to local rusty and graphitic shear zones.

The samples were either collected as chip samples or by blasting of shallow trenches and separate holes across the mineralized zones. The latter are marked as trenches on fig. 6 and the sample density in the trenches appear on the log-sheets in Appendix 1, together with assay results for base metals, silver arsenic and the highest gold values. The complete assay sheets together with sample sheets are shown in Appendix 1.

The trench sampling was done after drilling of holes around 40 cm deep with a petrol driven PICO drill, and blasting. Except for some of the sampling of graphite schist this procedure was sufficient to obtain fresh unweathered samples. Trench log sheets are shown in Appendix 2.

The samples which each has weight of around 2 kg was sent to OMAC Laboratories Ltd. in Ireland for assaying on the following elements: Cu, Pb, Zn, As, Ag, Au and Fe. Gold wet assays were done on 50 g splits. Later a new 50 g split was taken from all the samples from Haugfjellet and assayed for gold by fire assay, lead collection/AA. These result are also shown in Appendix 1.

The highest gold values from the two assays are shown on the sample map.

5.1.4 Results:

The sampling this year has confirmed the general picture from Haugfjellet that the area is highly anomalous in base metals and arsenic. Anomalous silver also occur, mainly associated with high lead values.

The sampling has also confirmed that the Varden East has a consistent high background in gold compared to the rest of the

Haugfjellet area. This was already indicated in 1984, see p.5 and enhanced last year. Then 18 out of 100 samples came from Varden East, and 8 of these assayed between 50 and 500 ppb Au, while only 7 samples showed similar values from the remainder part.

From a total of 79 samples coming from Varden East this year

21	>= 50	ppb Au
10	> 100	" "
2	> 1000	" "

The 10 samples assaying > 100 ppb has been plotted in Table 1 to demonstrate the relationship, if any, between gold and the other elements. In general the pattern is inconsistent and vary from one locality and one mineralization type, to another.

Although highly anomalous in gold the mineralization sampled around and close to the "main lineament" does not show any values above 230 ppb.

The sampling in the southwest corner of the map sheet, however, indicate a gold bearing system. Sample 239 on line 95800N which was chipped over a width of 15 m show 680 ppb. Two hundred meters to the north Trench 2 revealed values up to 1245 ppb, sampled over 2 m, see Appendix 1, with 433 ppb for the next 2 m. An other 200 m to the north in Trench 3 a system with quartz and calcite veins assay from 150 to 1540 ppb Au. The latter samples do not represent any significant width, but indicate that the mineralization is either carried with or remobilized during the vein introduction. All these results were confirmed by assaying of a second split, rejecting a simple nugget effect.

In the context of exploration significant gold values are encountered over a strike length of more than 400 m. The mineralized graphite bearing unit and the possible significant lineament occupied by the "first granite dike" continue for several hundred meters further to the south. Seven new mutinger have been place to cover this area.

5.2 Hunddalen:

Previous mapping and minor sampling during the 1984 season revealed a number of rusty sulphide bearing zones in the Hunddalen area. Scree samples close to the andesite contact 1 km to the north of Trench no 4, see fig. 8, gave up to 0,8 ppm Au, and the Hunddalen drainage system offered a number of heavy fraction gold anomalies. Systematic sampling of mineralized shears and alteration zones had not been carried out.

5.2.1 Geology and mineralization:

A geological map, modified after Thomassen 1984: ARCO report no. 84-67-34, is shown as fig. 7. The main difference between the Varden East and the Hunddalen area is the presence of massive andesitic rocks and the sedimentary breccias within Hunddalen. The mineralization can roughly be divided into three types being associated with 1. Greywackes, 2. Quartzites and 3. Andesites.

1: The greywackes also include quartz-biotite-chlorite schists and a number of graphite rich beds (schist and fels). The latter are generally also rusty and show from weak pyrrhotite dissemination to several percent of iron sulfides with minor sphalerite and chalcopyrite. This is well demonstrated in Trench 8 and 9. A number of shear zones occur. These are often graphitic, in places strongly silicified, with varying amounts of iron sulfides.

2: The sulphide bearing quartzites are most prominent around the lake Basejavri where they occur in contact with the andesites. They also continue to the south of the andesites and may represent a recrystallized felsic volcanic. The mineralization mainly consist of disseminated iron sulfides. The unit is anomalous in copper.

3: The texture of the andesite vary, but mainly it is seen as a massive amygdaloid rock. Mineralization within the andesites was scarce according to earlier information. A closer investigation between Basejavri and Klubbvatnet about 2 1/2 km to the north confirmed this impression, with one marked exception.

About 1 km north of Hunddalsbotn, see fig. 7, there occur a number of highly altered zones, at least partly associated with shears.

These are rich in iron sulfides and show all transitions between a "normal" andesite with pyrite rich amygdules to a fine grained alteration product consisting of chlorite-quartz-pyrite. On this locality also the contact between andesite and breccias are often sheared and rich in iron sulfides.

5.2.2 Sampling:

The sampling has been carried out much the same way as at Varden East. Altogether 112 two kg. samples were collected. Sample type and localities are shown in fig. 8.

Complete sample and assay sheets are found in Appendix 1, and log sheets for the 9 trenches in Appendix 3.

We have used the same laboratory and assayed for the same element as at Varden East. Due to the largely negative results,

it has not been assayed for gold on a second split.

5.2.3 Results:

From the 112 samples collected:

3 > 50 ppb Au
1 > 100 ppb Au

The gold anomalous samples which are shown in fig. 8 are evenly distributed within the area and partly associated with elevated base metal values.

Combined lead-zinc reaches around 1,7 % in sample 315 collected in sheared sedimentary breccia. Otherwise combined base metal values do not exceed 0,5 %.

A number of mineralization types in different rocks and structures have been sampled without revealing any significant mineralization.

5.3 Other areas:

Two other area has been briefly examined and sampled:

5.3.1 Varden South:

One and a half km north of the head of Rombaksboten a 0,5m wide zone rich in arsenopyrite and carbonate was sampled last year, assaying 0,5 ppm Au.

The locality was resampled this season, see sample no. 284-87, Sample sheet no. 6, Appendix 1. The assay results confirmed elevated gold, 0,88 ppm Au in the same zone, assaying 7,1% As.

However, this zone had a strike extension of only a few meters, and the adjacent rock unit, also sampled and clearly anomalous in As, Zn and Cu, did not show any gold.

5.3.2 Sildvikvatnet:

During the 1988 season we gave field support to a research student G. Bax, at the time with the Norwegian Geological Survey (NGU). After he had left NGU last spring, samples left after him were assayed for gold, and the Survey could inform us that on sample from the SE end of Sildvikvatnet assayed:

2,1 ppm Au

The sample was collected in a < 2 m wide pyritic quartz vein in granite.

The locality was briefly examined this year and resampled, see fig. 9. The quartz vein, see photo no. 4, occur in coarse grained Rombaken granite around 5 m west of a sheared contact between the latter granite and the more fine grained Sildvikgranite. The adjacent granite and the quartz vein was sampled from west to east:

1,0 m granite 0,75ppm Au, - , 0,38% Pb, 46ppm Ag, 12,7% Fe
0,6 m quartz 1,89ppm Au, 0,17% Cu, 0,38% Pb, 41ppm Ag, 25,4% Fe

The quartz vein carry stringers and veins of pyrite with cubes < 1 cm. In addition it was observed fluorspar, fuchsite, chlorite, galena and chalcopyrite.

Earlier work by ARCO had shown 5 ppm Au in a stream sediment sample around 1 km to the NNW. Since this was not confirmed in a later heavy fraction sample, no further work was done. However, the same heavy fraction survey displayed an anomaly of 4,0 ppm Au at the SE corner of Sildvikvatn, some 3 km to the SE.

It is conceivable that this is all parts of a lager system, and 3 new mutinger have been placed to cover the northern part of this system.

6. SUMMARY AND CONCLUSION:

The 1989 exploration program was a follow up of earlier work by ARCO 1983-84, and by Resources Exploration Norway A/S in 1988. The reported work has concentrated on the two gold targets, Varden East and Hunddalen, in addition a brief examination has been carried out on two other areas.

Varden East: Gold both from stream sediments and rocks had shown a distinctly higher level here than in other parts of Haugfjellet.

The current program consisted mainly of mapping and sampling of a defined area of around 1 km². A magnetic survey of same area was largely unsuccessful due to lack of magnetic contrasts in the bedrock.

Of the 79 samples collected, mainly from shallow trenches and blasted holes, 21 showed gold values => 50 ppb, the best result was:

2 m of 1,2 ppm Au

The work has indicated a spatial relationship between: - a graphite and sulphide bearing rock unit, - major lineaments with

extension NNW-SSE and N-S, - and the anomalous gold values.

A considerable area, mainly to the south of the area reported upon here, remains to be properly examined and sampled. Seven new mutinger have been placed to secure this potential ground.

Hunddalen: Gold in stream sediments and in rock samples from the northernmost part of this locality rendered Hunddalen an interesting target.

The current program consisted of mapping and sampling of a defined area of around 3 km². Graphitic beds and shear zones with sulfides and silicification were sampled in schists-greywackes and quartzites (metavolcanics?). Sheared and sulphide bearing contacts towards andesites, as well as alteration zones with quartz, sulfides and chlorite within the andesites were also carefully examined and sampled.

Of the 112 samples collected in a similar way as at Varden East only 3 showed gold values => 50 ppb, the best result was a scree sample assaying 148 ppb Au.

Sufficient work has been done to classify these negative results as conclusive. The 21 mutinger covering Hunddalen will be relinquished.

Other areas: At Varden South, 1,5 km north of the head of Rombaksbotn a narrow carbonate rich zone carry up to 7 % As and between 0,4 and 0,8 ppm Au. The zone appears to have no strike extension, neither do the adjacent rock units show any gold values. No further work is warranted.

At Sildvikvatnet, 3 km south of Rombaksbotn in the granites, there occur a sulfide bearing quartz vein < 2 m wide assaying from 1,8 to 2,1 ppm Au, with 1 m of 0,7 ppm Au in the adjacent granite. The vein may be associated with a major shear extending NNW-SSE. Significant gold values in stream sediments have been encountered along this trend, 1 km to the north and 3 km to the south.

Tree new mutinger have been placed to cover the northern part of this trend and further work is recommended.

General: Also this year the work has confirmed the overall widespread base metal and gold mineralization within the Rombaken "greenstone belts". In addition it has shown that gold may also occur within the Precambrian granites. This should draw attention to the number of stream sediment gold anomalies within the granitic terrain not yet subject to follow up work.

Boye Flood

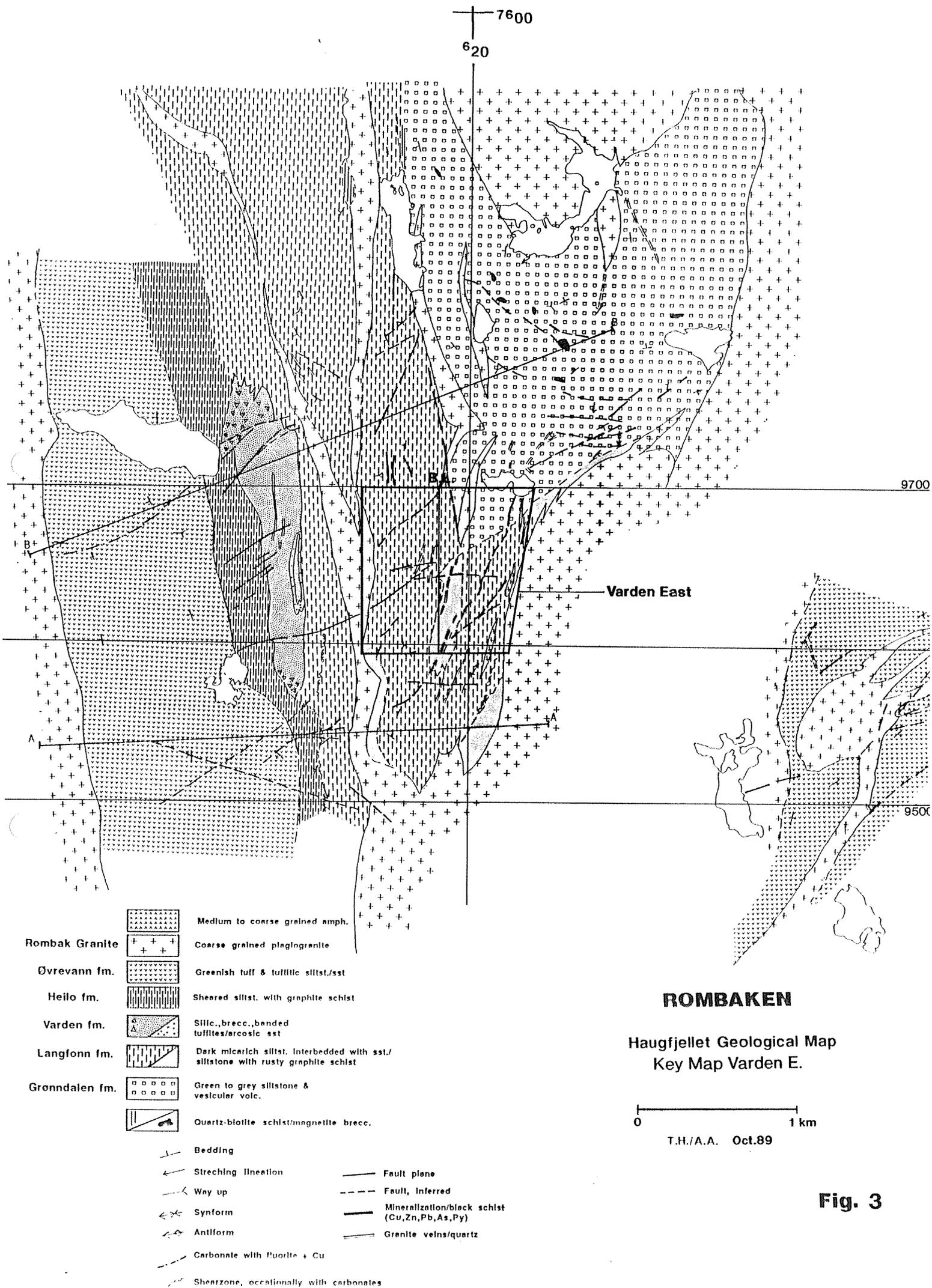
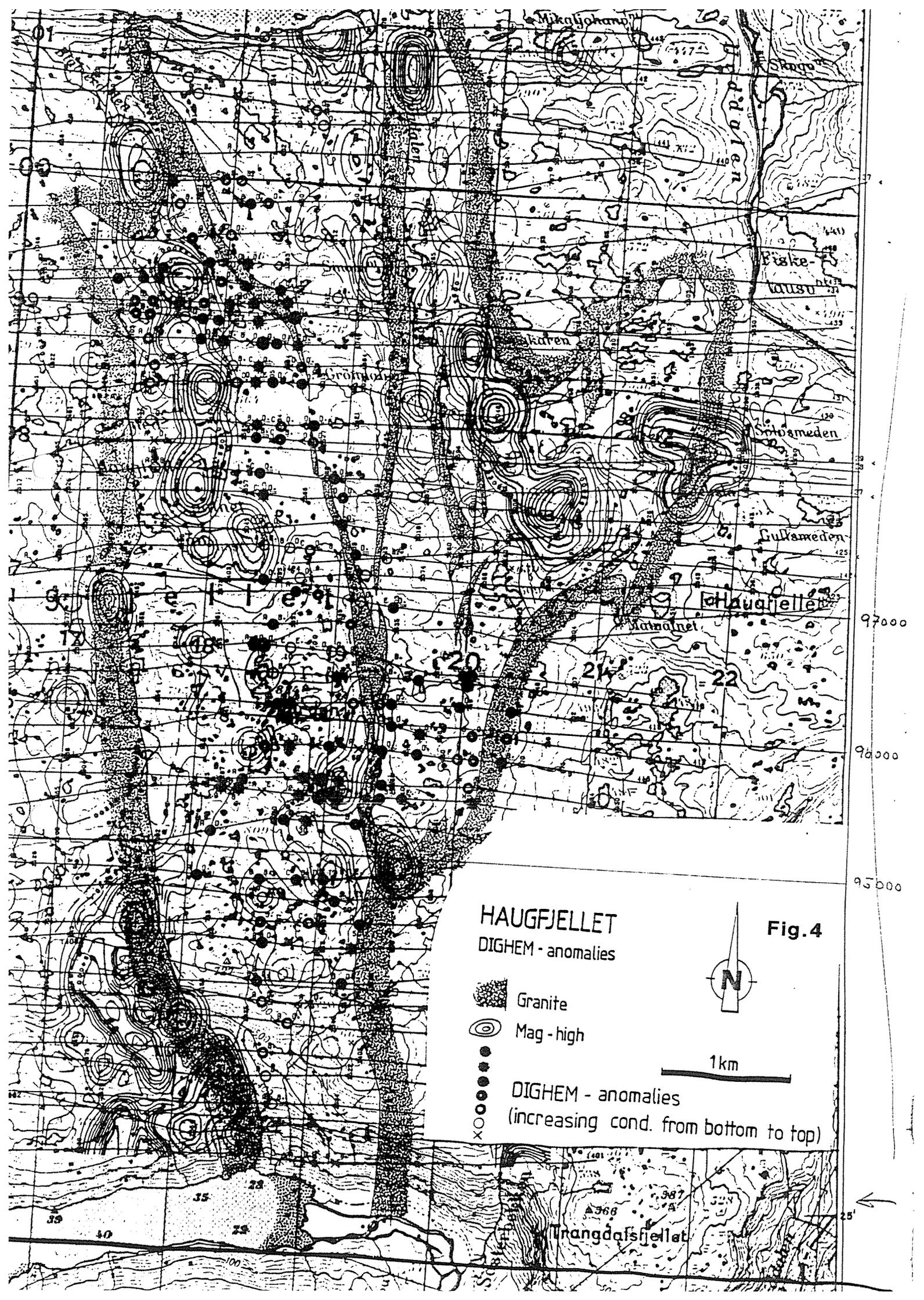


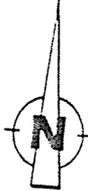
Fig. 3



HAUGFJELLET
DIGHEM - anomalies

Fig. 4

-  Granite
-  Mag - high



1 km

DIGHEM - anomalies
(increasing cond. from bottom to top)

-
- ⊙
- ⊖
- ⊕
- ⊗

Trangdalsfjellet

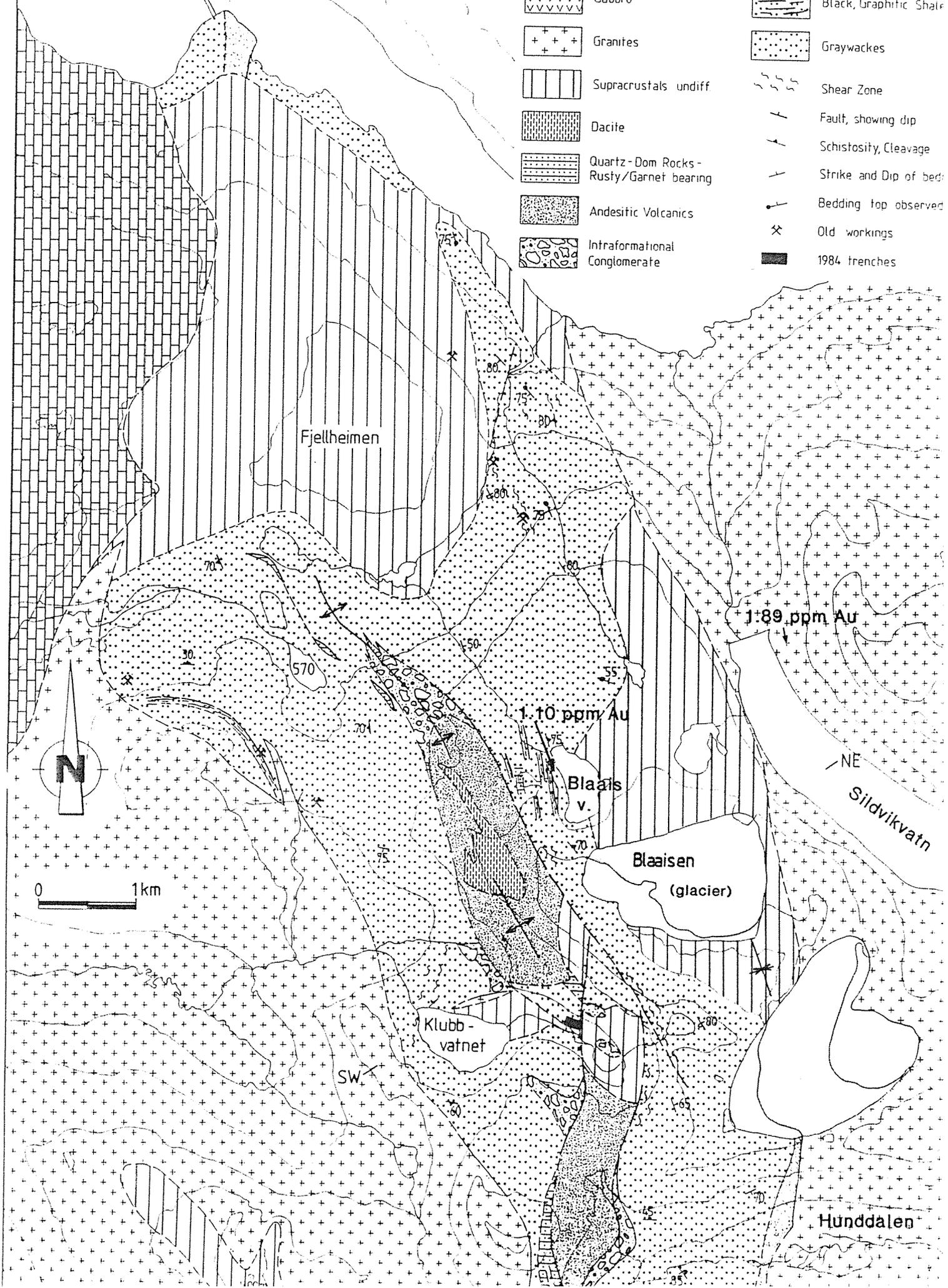
HUNDDALEN - KLUBBVATN - SILDVIKVATN

GEOLOGICAL MAP

Legend:

- Caledonian Rocks
- PROTEROZOIC WINDOW:
- Gabbro
- Granites
- Supracrustals undiff
- Dacite
- Quartz-Dom Rocks-Rusty/Garnet bearing
- Andesitic Volcanics
- Intraformational Conglomerate
- Black, Graphitic Shale
- Graywackes
- Shear Zone
- Fault, showing dip
- Schistosity, Cleavage
- Strike and Dip of bed
- Bedding top observed
- Old workings
- 1984 trenches

Fig. 9



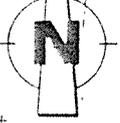
1:89 ppm Au

1:10 ppm Au

Blaaisen
(glacier)

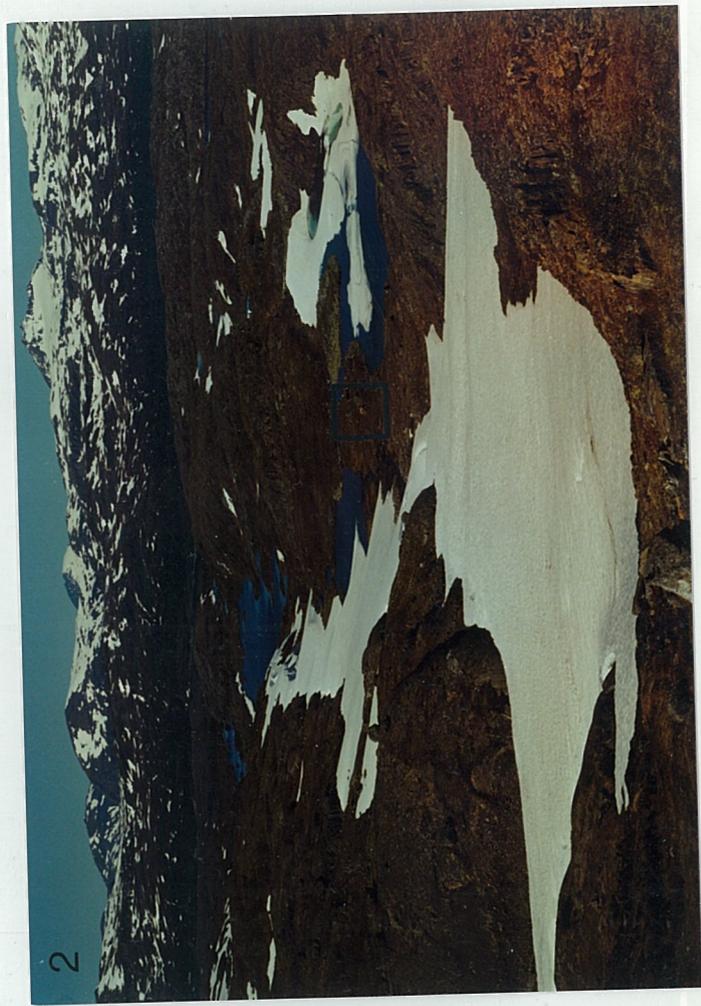
Klubb-
vatnet

Hunddalen



0 1km

- Photo nr. 1 The camp at Varden East. Seen towards NE
- Photo nr. 2 The Main Lineament at Varden East, seen from
96350 N towards the N. □ = camp
- Photo nr. 3 Trenching at Varden East. Trench 2 seen towards
the E
- Photo nr. 4 The quarry face at Sildvikvatn. R=Rombaken
granite, Q=quartz vein, S=shear zone, SI=
Sildvik granite



A P P E N D I X 1

Project Code: **28**
 Sample Type: **Rock**

Project Name: **KOMZAK**
 Date: **18/07-87**
 Submitted By: **TB**
 Supervisor: **BF**

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 Norway Phone: 02-42 28 38

Assay Sub- on
 1: **As, Au, Ag, Pb, Fe, Zn, Cu,**
 2:
 3:

Rock Sample Data Sheet
 No. of Samples on the Sheet: **30**
 No. of Samples for Assay: **30**
 Batch No.:

Sheet No.	Sample No. (Serial)	UTM								Rock Type	Su. No.	Occ. No.	Map Sheet	Sam-plier	Thih Sec.	Assay Sugg.	Locality	Sample Description (use more lines if necessary)
		5	6	7	8	9	10	11	12									
ROO1	8708301	19	19	19	19	19	19	19	19	20	21	22	23	24	1	VARDEN	Fels, lys, prøve tatt fra 19960-19970 E	
	8708302	19	19	19	19	19	19	19	19	20	21	22	23	24	2	EAST	Duflux	
	8708303	19	19	19	19	19	19	19	19	20	21	22	23	24	3		Fels, prøve tatt fra 19970-19980 E	
	8708304	19	19	19	19	19	19	19	19	20	21	22	23	24			Lys Fels, prøve over 19980-19990 E	
	8708305	19	19	19	19	19	19	19	19	20	21	22	23	24			Mørk Fels, prøve tatt over 19990-2000 E	
	8708306	19	19	19	19	19	19	19	19	20	21	22	23	24			Mørk Fels / gneiss, prøvetatt 2000-2000 E	
	8708307	19	19	19	19	19	19	19	19	20	21	22	23	24			Fels, prøvetatt over 2000-2000 E	
	8708308	19	19	19	19	19	19	19	19	20	21	22	23	24			Stort Fels, prøvetatt 2000-2000 E	
	8708309	19	19	19	19	19	19	19	19	20	21	22	23	24			Stort Fels, prøvetatt 2000-2000 E	
	8708310	19	19	19	19	19	19	19	19	20	21	22	23	24			Gneiss, prøve for granittgang.	
	8708311	19	19	19	19	19	19	19	19	20	21	22	23	24			Antikorn i gneiss, med nær mot v. / Skjersone	
	8708312	19	19	19	19	19	19	19	19	20	21	22	23	24			Prove tatt fra v. over 5 m pr. prøve.	
	8708313	19	19	19	19	19	19	19	19	20	21	22	23	24			Rustsone i kvartskifer, samlet i 40 m Ø for felt.	
	8708314	19	19	19	19	19	19	19	19	20	21	22	23	24			Rustsone i kvartskifer, samlet, 20 m SE for 8708315	
	8708315	19	19	19	19	19	19	19	19	20	21	22	23	24			Konglomerat i skjersone	
	8708316	19	19	19	19	19	19	19	19	20	21	22	23	24			Rustsone i gneiss / granittkontakt med vest v. Umb.	
	8708317	19	19	19	19	19	19	19	19	20	21	22	23	24			Stor blokk i massive Nord for Umb, nye sulfider	
	8708318	19	19	19	19	19	19	19	19	20	21	22	23	24			Rustsone i gneiss, meget forvitret. Skjersone N-S	
	8708319	19	19	19	19	19	19	19	19	20	21	22	23	24			Blanding av gneiss / kvartskifer, Rustsone N-S	
	8708320	19	19	19	19	19	19	19	19	20	21	22	23	24			Rustsone i sparske av Umb, 100 m o.k.	
	8708321	19	19	19	19	19	19	19	19	20	21	22	23	24			Rustsone i sparske av Umb, 100 m o.k.	
	8708322	19	19	19	19	19	19	19	19	20	21	22	23	24			Rustsone i sparske av Umb, 100 m o.k.	
	8708323	19	19	19	19	19	19	19	19	20	21	22	23	24			Rustsone i sparske av Umb, 100 m o.k.	
	8708324	19	19	19	19	19	19	19	19	20	21	22	23	24			Fra Rustsone N.E. i dalen ca. 70 m bred	
	8708325	19	19	19	19	19	19	19	19	20	21	22	23	24			Knall fra over 50 cm, 2 kg pr. 10 m	
	8708326	19	19	19	19	19	19	19	19	20	21	22	23	24				
	8708327	19	19	19	19	19	19	19	19	20	21	22	23	24			Knallprøve, 100 m	
	8708328	19	19	19	19	19	19	19	19	20	21	22	23	24			Knallprøve, 100 m	
	8708329	19	19	19	19	19	19	19	19	20	21	22	23	24			Rustsone i kontakt mellom gneiss - komponent i stort Mineraliserte kontakt	
	8708330	19	19	19	19	19	19	19	19	20	21	22	23	24			Mineraliserte kontakt	

Project Code:

28

Sample Type:

Rock

Sheet No. 1 2 3 4

Year 5 6 7 8 9 10 11

Serial No. R001

Regr. 1 2 3 4 5 6 7 8 9 10 11

Sample No.

Assay Specif.

Sample Lab. No.

Assay Lab:

Lab. Report No.

Sample Prep:

Return Results By:

Paper Copy

Computer

Assay Specificatio

1:

2:

3:

Comments:

Pulp and rejects must not be discarded

Return Results to:

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Jenester a.s.

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Norway
Phone: 02-42 28 38

Sheet No.	Year	Serial No.	Regr.	Sample No.	Assay Specif.	Sample Lab. No.	Cu	Pb	Zn	Ag	Fe %	As	A4	A4 rep	Area split
1							112	14	89	0.5	3.36	29	-20		20
2							115	24	86	0.7	3.19	37			10
3							135	45	103	1.1	4.10	60			20
4							93	11	112	0.4	4.30	53			10
5							86	6	131	0.3	5.00	225			10
6							107	10	149	0.3	4.80	45			10
7							145	14	720	0.6	4.10	167			10
8							121	11	182	0.5	3.90	119			10
9							207	11	820	0.8	5.80	310	38	39	50
10							158	149	173	0.5	3.68	105	-20		10
11							510	38	1180	0.7	4.90	610	35		50
12							399	15	105	0.4	5.90	1710	166	174	230
13							1020	30	148	0.8	6.90	25	-20		10
14							1080	41	184	1.0	6.00	13			80
15							116	1480	15400	2.0	2.68	3			
16							155	101	371	0.9	7.60	26			
17							251	79	3750	0.8	15.40	14			
18							66	15	52	0.5	1.20	1			
19							116	19	56	0.6	4.80	22			
20							56	14	85	0.6	3.69	31			
21							106	43	168	1.2	5.60	26			
22							104	30	231	0.6	5.50	27			
23							32	15	48	-0.3	4.10	110			
24							28	9	77	"	3.52	95			
25							81	12	123	0.4	4.80	32			
26							103	89	174	2.9	1.98	16	45		
27							142	61	189	2.1	3.30	18	46	54	
28							71	22	58	0.5	2.70	41	-20		
29							55	114	179	0.4	3.41	1			
30							92	27	154	-0.3	5.60	3			

Project Code: 28

Project Name: RØMP

Date: July/Aug 89

Submitted By: JB

Supervisor: BF

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Norway
Phone: 02-42 28 38

Assay Suggestion

1: Cu, Pb, Zn, Hg, Ag, Au, Fe
2:
3:

Rock Sample Data Sheet

No. of Samples on the Sheet: 20
No. of Samples for Assay: 20
Batch No.:

Sheet No.	Sample No.	Sample Type	UTM		Rock Type	Occ. No.	Map Sheet	Sampler	Thin Sec.	Assay Sugg.	Locality	Sample Description
			East	North								
1	8908331		154005	119000			143-IV	7B		1	HANDLEN	LOVÅL RUSSENE I ANDRETTI, FOS CA, Pk
2	8908332		153758	222000								Knutstve, 20 m bred, stjønsone i øst Andessitten. NS
3	8908333		153608	222000								Knutstve pr. 50 cm over 7-8 m p. p. river.
4	8908334		153688	222000								Ø+Ø8332, Ø8334, Ø8334+V
5	8908335		153508	223500								Knutstve pr. tvers av rutsone, lange stjønsone NS
6	8908336		153408	223500								ved nedbøtt, ved øst i skard, ca. 15 m bred
7	8908337		158008	226800								MATE. IFA FUS1 i LOSRØNNE, GRATTI Pk, CA, FOS
8	8908338		151808	222000								Knutstve pr. tvers av rutsone i stjønsone i
9	8908339		151858	222000								Skard, knokt mellom Andessitt/brekke. langstrøket.
10	8908340		152008	224000								Stjønsone lukt i Andessitten. Fos ca
11	8908341		149508	225000								Ruttsone med knokt i vest av brekke.
12	8908342		149508	225000								40 m bred. Rike på Pkt.
13	8908343		150008	224000								50 m knoktve Øst-Vest, Apes av bred rutsone
14	8908344		150008	224000								Avt, Fos, gammel bratt leire, kjerne, l. l.
15	8908345		150008	224000								oppå hele lengden knokt, knokt brekke- overvekt
16	8908346		150008	224000								Andessitt i ch. / l. / rutsone. Sulfidene knokt og splintet.
17	8908350		153008	222000								Største kvarts/sulfidene i stjernedd. Bergartstjerne og
18	8908X07		169508	88125								stjønsone 25 m øst for dam. Observerte mineralisering:
19	8908X02		169508	88125								Fuorapat, Tachmitt, Kbnitt, bløttans, pyrit, pyrrhotit, Cu Zn
20	8908X03		169508	88125								Nettlight ca 4 m høy, 1,5 bred i / over ut i sidebølg. 1.0

Project Code:

28

Sample Type:

Rock

Assay Lab:

Lab. Report No.:

Sample Prep:

Return Results By:

Paper Copy

Computer

Assay Specification

1:

2:

3:

Comments:

Pulp and rejects must not be discarded

Return Results to:

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Jenester a.s.

Wergelandsvn.7, 0167 Oslo 1
Norway

Phone: 02-42 28 38

Sheet No.	Year	Sample No.	Assay Specif.	Sample Lab. No.	Cy	Pb	Zn	Ag	Tl	Fe %	As	A4	Assay Values (in ppm)	Av rep
112	314	518	718	910	11									
R002	8908	331			45	17	187	-0.3	6.00	3	-20			
		332			23	8	125	7	6.10	7	7			
		333			12	17	132	7	5.80	11	7			
		334			23	41	120	0.4	5.50	12	12			
		335			25	98	69	0.3	3.36	6	6			
		336			29	10	81	-0.3	5.00	4	4			
		337			359	2740	2490	8.6	10.20	14	49			35
		338			21	18	108	-0.3	5.20	6	-20			
		339			28	10	113	-0.3	6.30	5	7			-20
		340			56	86	215	0.7	5.50	4	4			
		341			69	177	253	1.2	5.20	3	3			
		342			74	19	70	0.6	5.90	4	4			
		343			43	386	1110	1.2	5.70	2	2			
		344			23	120	167	0.7	4.80	3	3			
		345			22	19	143	0.3	4.04	4	4			
		346			60	7	71	0.3	3.55	41	41			
8908	350				115	16	115	0.5	10.50	10	10			
8908	X01				560	3890	146	46.4	12.70	166	246			753
	X02				1710	3810	620	41.0	25.40	200	1899			1453
	X03				24	84	84	0.9	2.92	7	-20			

Project Code: **28**
 Project Name: **Romb.**
 Date: **7/4/89**
 Submitted By: _____
 Supervisor: **BSF**

G giske
 jeimester a.s.
 Wergelandsvn. 7, 0167 Oslo 1
 Norway
 Phone: 02-42 28 38

Assay Station
 1: **Cu, Pb, Zn, As, Ag, Au, Fe**
 2: _____
 3: _____

Rock Sample Data Sheet
 No. of Samples on the Sheet: **18**
 No. of Samples for Assay: **18**
 Batch No.: _____

Sheet No.	Sample No. Year, Serial, Reg.	Sample Type	UTM East	UTM North	Rock Type	Sample Size	Map Sheet	Assay Sugg.	Locality	Sample Description
R003	8908219		10872	96500		40	1431-4	X	Varden E	F.K. grø kvartfjell m. dissement py + ep + biot + gr. gl.
	220		74			50		X	TRENNH	Som orient., men mindre sulf., ikke biot. Gr. gl.
	221		76			70				Som spredte 2 mm flek.
	222		79			100		X		Grø skift. m. dissement. Po og på spr. Litt gr. gl. som orient.
	223		81			70				Grø graf. f. b., delvis rik på ep + dissement. Py.
	224		84			170				Overg. til graf. skift.
	225		86			180				Grø skift. m. py i sliker.
	226		88			190				Som orient.
	227		90			130				"
	228		92			90				Grø skift. som orient. m. overg. til graf. f. b. m. py + (ep)
	229		95			80				Grø graf. f. b. m. py + (ep)
	230		97			150				Grø skift. m. lite sulf. 1-2%
	231		99			60+				Som orient.
	232		19900			70				Veksl. graf. skift - graf. f. b. Veksl. sulfid innh.
	233		02			120				"
	234		04			190				Lys grø f. b. kvartfjell (cherty) m. meget f. b.
	235		06			280				fin fordelt py po!
	236		10			30+				Som orient.
			12			40				"
			33			400				Grø skift rik på py + gr. gl.
										"
										Knetikk prøve: Grø skift. m. f. b. leg
										vekal. innh. av py po!

Project Code:

28

Sample Type:

Rock

Assay Lab:
Lab. Report
Sample Prep:

Return Results By:
 Paper Copy
 Computer

Assay Specificatic

1:
2:
3:

Comments:

Pulp and rejects must not be discarded

Return Results to:

Geologiske
Jenester a.s.

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Norway
Phone: 02-42 28 38

Sheet No.	Sample No.	Assay Specif.	Sample Lab. No.	Cu	Pb	Zn	Ag	Fe %	As	Au	Au rep	Au split
1	2			210	59	238	0.8	3.72	30	-20		10
2	20			170	10	245	-0.3	4.90	34	↗		10
3	21			720	1050	2190	7.9	9.80	52			20
4	22			740	680	1130	6.4	8.70	480			30
5	23			560	480	1430	4.3	8.40	495			30
6	24			620	720	1060	5.1	9.70	380	↘		30
7	25			530	239	1750	2.9	8.90	205	80		40
8	26			540	162	430	2.3	7.80	540	-20		20
9	27			630	216	1230	3.2	10.90	520	-20		20
10	28			520	180	1480	2.6	9.00	550	116		40
11	29			520	111	1630	2.3	8.60	360	-20	-20	50
12	30			540	49	3350	1.3	8.70	540	59		60
13	31			420	27	620	1.3	8.50	570	82	77	110
14	32			188	16	183	0.6	5.10	87	-20	-20	10
15	33			167	52	296	0.7	4.90	88	↗		10
16	34			218	36	88	0.8	4.10	153			20
17	35			530	243	910	3.7	10.20	290			30
18	36			275	211	2820	2.5	6.80	330	↘		10

Project Code:

28

Sample Type:

Rock

Assay Lab:

Lab. Report No.:

Sample Prep:

Return Results By:

Paper Copy
Computer

Assay Specification

1:

2:

3:

Comments:

Pulp and rejects must not be discarded

Return Results to:

Geologiske
Jenester a.s.

Wergelandsvn. 7, 0167 Oslo 1
Norway
Phone: 02-42 26 38

Sheet No.	Sample No. Year (Serial) Reg.	Assay Specif.	Sample Lab. No.	Cu	Pb	Zn	Ag	Fe %	As	Au	Assay Values (in ppm)	Au ref.	Au split
1	2	3	4	5	6	7	8	9	10	11			
	R004	8908	237	300	214	660	3.7	12.00	1100	65		87	80
			238	86	176	152	0.8	4.04	460	-20			20
			239	120	36	125	0.9	6.00	35	507		601	680
			240	45	178	93	0.3	1.59	25	-20			30
			241	183	7800	9700	19.0	5.60	93	328			290
			242	218	314	318	1.2	5.80	68	39			70
			243	210	12100	15200	28.3	7.50	163	1245		1152	1180
			244	83	162	1390	0.4	5.00	171	433			290
			245	124	71	279	-0.3	5.10	24	72			50
			8908	91	382	440	2.0	5.60	300	34			40
			251	89	24	440	-0.3	5.50	76	-20			250
			252	91	49	430	0.4	6.20	117	7			30
			253	165	385	470	3.1	7.80	108	7			40
			254	120	20	317	0.4	6.90	51	30			40
			255	33	35	187	-0.3	4.80	28	47			40
			256	131	11	303	0.3	5.30	49	-20			30
			257	134	12	163	0.3	6.20	51	-20			20

Project Code:

28

Sample Type:

Rock

Project Name: *Rosm. b.*

Date: *24. 89*

Submitted By:

Supervisor: *B.F.*

G *giske*
Wergelandsvn. 7, 0167 Oslo 1
Norway
Phone: 02-42 28 38

Assay Station

1: *Cu, Pb, Zn, Ag, Au, Fe*
2:
3:

Rock Sample Data Sheet

No. of Samples on the Sheet

18

No. of Samples for Assay

18

Batch No. _____

Sample Description (use more lines if necessary)

Locality

Assay Sugg.

Sampler

Map Sheet

Width (cm)

Surface Area (cm²)

Rock Type

UTM East

UTM North

Sample Type

Serial No.

Year

Sheet No.

1 2 3 4

5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31

8908258

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8908246

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248

8908262

8908249

8908263

264

265

266

267

268

269

270

271

19955

19955

19970

19970

96235

96235

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Project Code: 28
 Sample Type: Rock

Assay Lab: Lab. Report 1
 Sample Prep:

Return Results By: Paper Copy Computer

Assay Specification
 1: _____
 2: _____
 3: _____
 Comments: _____

Return Results to: Geologiske Jensenester a.s.
 Wergelandsvn. 7, 0167 Oslo 1
 Norway Phone: 02-42 28 38

Sheet No.	Sample No. Year	Serial	Reg.	Assay Specif.	Sample Lab. No.	Cu	Pb	Zn	Ag	Fe%	As	Au	Au split
112314	890825	8	11			132	87	165	0.3	3.78	55	A4	10
		259				48	44	59	-0.3	1.72	49		10
		260				217	101	1340	0.5	4.10	73		10
		261				210	148	343	0.7	3.98	52		10
890824	6					134	52	66	-0.3	2.75	65		20
		247				68	102	149	0.7	5.10	14		40
		248				68	202	116	0.6	3.23	27		40
890826	2					244	530	1260	3.8	5.30	26		20
890824	9					165	19	242	-0.3	7.10	54		20
890826	2					342	1530	940	7.9	15.00	5		50
		264				89	29	193	-0.3	4.80	160		70
		265				800	1360	6500	8.1	8.50	14		40
		266				339	1570	1740	7.1	5.70	3	1310	1540
		267				920	4700	13300	8.2	7.40	4	93	150
		268				410	45	2120	1.0	9.30	650		40
		269				430	26	1400	1.1	8.10	69		30
		270				400	20	1870	0.8	7.10	350		20
		271				680	16	286	0.9	7.50	135		30



Project Code: **28**
 Project Name: **Ramb.**
 Date: **July, 89**
 Submitted By: **BS**
 Supervisor: **BS**
 Sample Type: **Rock**

Gjensiktige
Jenester a.s.
 Wergelandsvn. 7, 0167 Oslo 1
 Norway
 Phone: 02-42 28 38

Sheet No.	Year	Serial	Reg.	Sample No.	Sample Type	East	North	Rock Type	Subst.	Map Sheet	Sampler	Assay Sugg.	Locality	Sample Description	Assay															
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
				8908278		19965	96530			1431-4		1	Varden E	Graf. r. k. skiferig f. l. s. Rik på py + gr. pl. + litt ep																
				8908272		78			120			7	↑	Lys grø m. k. ker - til f. k. grø f. l. s. m. litt py																
				273		81			270					Lys grø f. l. s. m. n 1/2 py																
				274		84			320		X			Sone ovenf. Løskall litt Zn.																
				275		88			360					"																
				276		90			230					"																
				277		94			340		X		↓	Vekal. graf. f. l. s. f. l. s. og litt graf. skif.																
				8908279		20050	96535		120				Varden E	Granitt kont. mot sørt. k. biot. fuls m. g. aier + slirer og linser av gr. sk. m. py + po + ep.																
				280		20100	96530		60				↑	Skjærsoner m. graf. skif. - graf. f. l. s. m. spreng. grep i graf. skif. m. po (ep).																
				8908281		19630	97000		~200				↓	Knokkeprøve: Rustsone av grø f. l. s. og lys eilist. ba m. py (ep)																
				282		19400	97000		150					" Rustsone																
				283		19950	96640		300					"																
				8908284		18630	94170		300				Varden S	Knokkeprøve: F. k. gr. stein m. po + ep																
				285		18620	94100		400				↑	" Båndet eilist. f. l. s. m. po (ep)																
				286		18600	94050				X		↓	innkl. et tynt C-skif. lag																
				287		18600	94050		500				↓	Ca/g bruksje + f. k. ten biot. skif. m. Noget rik As mineralisering																
														Knokkeprøve over 5 m, utvakt. innlegg. av mineralisert ler.																

Project Code:

28

Sample Type:

ROCK

Assay Lab:

Lab. Report 1

Sample Prep:

Return Results By:

Paper Copy
Computer

Assay Specification

1:
2:
3:
Comments:

Pulp and rejects must not be discarded

Return Results to:

Geologiske
Jenester a.s.

Wergelandsvn.7, 0167 Oslo 1
Norway Phone: 02-42 28 38

Sheet No.	1	2	3	4	5	6	7	8	9	10	11	Assay Specif.	Sample Lab. No.	Cu	Pb	Zn	Ag	Fe %	As	Au	Alum	Au Split
8908278	8908278	8908278	8908278	8908278	8908278	8908278	8908278	8908278	8908278	8908278	8908278			217	11	410	8.9	5.10	230	52		60
8908279	8908279	8908279	8908279	8908279	8908279	8908279	8908279	8908279	8908279	8908279	8908279			107	8	179	0.4	3.94	78	-20		10
273	273	273	273	273	273	273	273	273	273	273	273			91	6	195	0.4	4.10	86			40
274	274	274	274	274	274	274	274	274	274	274	274			111	7	209	0.5	5.40	370			-20
275	275	275	275	275	275	275	275	275	275	275	275			103	8	197	0.4	5.30	48			
276	276	276	276	276	276	276	276	276	276	276	276			109	9	153	0.4	4.00	54			
277	277	277	277	277	277	277	277	277	277	277	277			218	11	106	0.9	4.40	55			
8908279	8908279	8908279	8908279	8908279	8908279	8908279	8908279	8908279	8908279	8908279	8908279			80	146	1110	3.6	5.60	8			
280	280	280	280	280	280	280	280	280	280	280	280			249	168	1040	0.9	8.20	1080			
281	281	281	281	281	281	281	281	281	281	281	281			124	335	232	2.7	4.70	33			20
282	282	282	282	282	282	282	282	282	282	282	282			202	225	1590	0.9	5.90	550			-20
283	283	283	283	283	283	283	283	283	283	283	283			326	13	242	0.4	8.60	43			
284	284	284	284	284	284	284	284	284	284	284	284			134	10	77	-0.3	3.65	121			
285	285	285	285	285	285	285	285	285	285	285	285			162	14	153	-0.3	5.30	340			
286	286	286	286	286	286	286	286	286	286	286	286			256	93	131	0.6	9.40	71500	843		882
287	287	287	287	287	287	287	287	287	287	287	287			135	263	11700	1.0	3.85	2710	-20		-20

Project Code: 28
 Sample Type: Rock

Project Name: Rosendals
 Date: Aug-89
 Submitted By: TH
 Supervisor: BF

Geologiske
 Jensenster a.s.
 Wergelandsvn. 7, 0167 Oslo 1
 Norway Phone: 02-42 28 38

Assay Su... on
 1: As, Ag, Au, Pb, Fe, Zn, Cu
 2:
 3:

Rock Sample Data Sheet
 No. of Samples on the Sheet: 20
 No. of Samples for Assay: 20
 Batch No.:

Sheet No.	Sample No.	Year, Serial, Reg.	UTM						Rock Type	Su	Occ.	Map Sheet	Sam-pler	Thln Sec.	Assay Sugg.	Locality	Sample Description (use more lines if necessary)
			East	North	20	21	22	23									
ROOT	8908166	169100	81545								1434	TH			Husdalalen	Granitfels / skifer, sterkt tektonisert, uregelmessig, høytt	
	167														"	"	
	168														"	"	
	169														"	"	
	170														"	"	
	171														"	"	
	172														"	"	
	8908017	15700	81500													Kvartittisk vakuu m. granitt - py - fcs, massiv, grovtt	
	18	15125	81075													knudret fm 3 fersm. pkt. 0.5 m over in lunde på 6 m,	
	29	16500	82050													Vakre prøve fra bekk	
	30	16600	81220													Rustsone, vakke, 900 m.o.h. i skardet ved Rosendals, py - fcs	
	31	16800	81300													Blottemat: granittfels, skallet over py fcs 575 m.o.h	
	346	15000	81070													Kvartitt, store og små granitt, fcs, As, 800 m.o.h	
	8908021	16285	82655													Blottemat: kvartitt med sulfidmin, py - fcs (As?)	
	22	16550	83000													Rustsone, 12 fersm.o.h. i skardet ved Rosendals, py - fcs	
	23	16295	82750													Granittskifer 116 m. over og 1425 m.o.h. i skardet ved Rosendals, py - fcs	
	24	15100	81400													Blottemat: kvartitt med sulfidmin, py - fcs (As?)	
	25	15100	81400													Rustsone, 12 fersm.o.h. i skardet ved Rosendals, py - fcs	
	26	15380	82250													Granittskifer i skardet ved Rosendals, lite sulfid, 1100 m	
	27	15380	82250													provd ca 20 m mot 0	
																Kv - best skifer + 2 m karbonat, prøvet 1 m, med 1	
																lite sulfid.	

2 se Root

Project Code:

28

Sample Type:

Rock

Assay Lab:
Lab. Report:
Sample Prep:

Return Results By:
 Paper Copy
 Computer

Assay Specification:

1: _____
2: _____
3: _____

Comments: _____

Pulp and rejects must not be discarded

Return Results to:

Geologiske
Jenester a.s.

Wergelandsvn. 7, 0167 Oslo 1
Norway
Phone: 02-42 28 38

Sheet No.	Sample No.	Assay Specif.	Sample Lab. No.	Cu	Pb	Zn	Ag	Fe%	As	Assay Values (In ppm)	Remarks
1	2	3	4	5	6	7	8	9	10	11	12
Root	8908166			143	57	132	0.6	13.00	24		As 14 mp
	167			155	34	276	0.6	11.80	27		
	168			151	32	2560	0.4	14.10	16		
	169			155	23	2460	0.4	14.30	7		
	170			149	22	271	0.4	13.10	14		
	171			108	21	1380	0.4	9.40	8		
	172			118	32	287	-0.3	8.60	17		
?	8908017										
	018			169	9	65	0.6	6.80	28		
8908029				112	154	770	1.4	4.00	119		
	030			101	64	860	0.4	4.50	2060	148	12.5
	031			122	132	139	2.6	6.30	110	-20	
?	8908346										
8908021				100	23	84	0.3	3.84	63	-20	
	022			111	46	690	0.5	3.90	40	7	
	023			90	950	430	0.9	1.76	67		
	024			115	107	1540	0.9	8.20	21		
	025			78	23	61	-0.3	4.20	20		
	026			59	50	450	-0.3	4.60	20	Y	
	027			331	1580	1350	2.0	4.50	17	25	

PROJECT CODE:

28

Assay Lab:

Lab. Report

Sample Prep:

Return Results By:

Paper Copy

Computer

Assay Specification

1: _____

2: _____

3: _____

Return Results to:

Geologiske
Jenester a.s.
Wergelandsvn.7, 0167 Oslo 1
Norway
Phone: 02-42 28 38

Comments:

Pulp and rejects must not be discarded

Sample Type:
Rock

Sheet No. 1 2 3 4

Sample No. Year Serial Reg

8908071

8908072

8908073

8908074

8908075

8908076

8908077

8908078

8908079

8908080

8908081

8908082

8908083

8908084

8908085

8908086

8908087

8908088

8908089

8908090

8908091

8908092

8908093

8908094

8908095

8908096

8908097

8908098

Assay Specif.

Sample Lab. No.

Cu

Pb

Zn

Ag

Fe%

As

Al

Alu rep

37

10

74

-0.3

6.00

7

-20

58

164

800

0.5

4.60

5

78

31

119

-0.3

5.40

3

70

10

132

-0.3

5.30

4

31

274

1260

0.9

3.36

3

20

9

247

-0.3

5.10

2

41

12

206

-

6.10

4

33

18

177

-

5.60

6

36

12

143

-

5.50

5

29

37

216

0.3

5.90

4

35

15

135

-0.3

5.40

2

31

10

232

-

5.50

3

36

9

75

-

5.30

4

36

17

96

-

5.20

7

30

12

86

-

5.20

8

112

17

88

0.5

7.70

24

290

33

93

1.2

13.90

21

66

35

98

-0.3

5.10

57

169

8

114

0.3

7.50

42

65

165

212

0.7

5.10

115

31

23

272

-0.3

2.71

84

40

21

139

-

3.37

40

45

113

580

-

4.00

8

39

45

40

-

2.95

61

810

165

2080

4.7

8.20

12

620

227

2770

4.6

8.10

48

920

224

3810

5.3

7.60

31

271

37

112

0.9

5.20

43

233

20

327

0.6

4.20

46

Project Code: 28
 Sample Type: Rock
 Project Name: Rombak
 Date: 9/8-87
 Submitted By: TH
 Supervisor: BT
 Geologiske tjenester a.s.
 Wergelandsvn. 7, 0167 Oslo 1
 Norway Phone: 02-42 28 38

Assay Subst. on
 1: As, Au, Ag, Pb, Fe, Zn, Cu
 2:
 3:
 Stream-Sediment Sample Data Sheet
 No. of Samples on the Sheet: 29
 No. of Samples for Assay: 29
 Batch No.:

Sheet No.	Sample No. (Serial)	Sample No. (Reg.)	Bedrock							UTM East	UTM North	Map Sheet	Sampler	Sam. Month / Day	Stream Cond. Width (Fl. St. Pol.)	Assay Sugg.	Comments
			1	2	3	4	5	6	7								
29	81080	32								14880	81090	14317	TH	08/09	Hundal	7	Kv-biot - bloritt, biog. (kvantitativ) Py, Cu, Fe, Zn, (6 tillg. f. 11)
	81083	33								14890	81095						
	81084	34								14895	81095						Kvantitativ Py, Cu, Fe, Zn, biog. suv. anal. v. kvant. f. 11
	81085	35								14917	81107						Kvantitativ (Kv-biot - bloritt), mässiv, Py - Cu - Fe - Zn
	81086	36								14922	81110						
	81087	37								14924	81110						Analysert Kv-biot - bloritt biog., lite sulfid, py - Fe - Cu - Zn
	81088	38								14933	81112						Analysert Kv-biot - bloritt biog., lite sulfid, py - Fe - Cu - Zn
	81089	39								14953	81120						Analysert Kv-biot - bloritt biog., lite sulfid, py - Fe - Cu - Zn
	81090	40								14960	81130						Kv-biot - bloritt - bloritt skiffer, anal. av skifer med kv. og py - Cu - mässiv, anal. kvantitativ
	81091	41								14875	81075						Kvantitativ, skiffer, kvantitativ, Py - grafit
	81092	42								15400	82350						Kv-biot - bloritt skiffer, lite sulfid, h.o.h. 1062 m
	81093	43								"	"						Kv-biot - bloritt skiffer, lite sulfid, h.o.h. 1055 m
	81094	44								"	"						Kv-biot - bloritt skiffer, lite sulfid, h.o.h. 1058 m
	81095	45								"	"						Tektoniseret konglomerat/biotitt, sulfidmässiv, mässiv, kvantitativ, h.o.h. 1050 m
	81096	46								"	"						Konglomerat/biotitt, kvantitativ, kvantitativ, lite sulfid, h.o.h. 1048 m
	81097	47								"	"						Konglomerat/biotitt, kvantitativ, kvantitativ, lite sulfid, h.o.h. 1045 m, lite sulfid, py
	81098	48								"	"						Kv-biot - bloritt skiffer, lite sulfid, h.o.h. 1040 m
	81099	61								"	"						Tektoniseret andesitt, py - grafit, h.o.h. 1040 m
	81100	49								"	"						Andesitt med kvantitativ grafit, kvantitativ, mässiv, py - Cu
	81101	50								"	"						Andesitt, kvantitativ, kvantitativ, py - Cu, kvantitativ, kvantitativ, h.o.h. 1038 m
	81102	62								15311	82200			08/10			Sulfid, kvantitativ, kvantitativ, sulfid, kvantitativ, kvantitativ, py - Cu - Fe
	81103	63								15312	"						Tektoniseret andesitt, py - Cu - Fe
	81104	64								15313	"						
	81105	65								15314	"						Andesitt (mässiv), py - Fe
	81106	66								15315	"						
	81107	67								15316	"						
	81108	68								15317	"						
	81109	69								15318	"						
	81110	70								15319	"						

Py - Cu - Fe - Zn - (kvantitativ)

Project Code:

28

Sample Type:

Rock

Assay Lab:

Lab. Report

Sample Prep:

Return Results By:

Paper Copy

Computer

Assay Specification

1: _____
2: _____
3: _____
Comments: _____

Pulp and rejects must not be discarded

Return Results to:

**Geologiske
Jenester a.s.**

Wergelandsvn. 7, 0167 Oslo 1
Norway

Phone: 02-42 26 36

Sheet No.	Sample No.				Assay Specif.	Sample Lab. No.	Cu	Pb	Zn	Ag	Fe %	Assay Values (in ppm)		Remarks
	Year	Serial	Run	Reg								As	A4	
R009	89	08	03	2		98	26	83	0.4	4.80	94	A4	As rep.	
			03	3		89	11	89	0.3	4.00	77			
			03	4		133	15	94	0.5	5.90	52			
			03	5		65	10	71	0.4	4.50	46			
			03	6		101	16	86	0.4	4.30	33			
			03	7		115	16	50	0.3	4.40	23			
			03	8		105	10	53	0.3	3.52	17			
			03	9		113	32	53	1.1	5.40	35			
			04	0		110	11	52	0.5	4.10	10			
			04	1		88	11	54	0.4	3.53	3			
			04	2		55	11	1280	-0.3	3.70	2			
			04	3		85	540	930	0.5	3.09	3			
			04	4		64	680	281	0.9	2.70	6			
			04	5		19	115	280	-0.3	2.72	29			
			04	6		45	339	1280	0.4	3.16	7			
			04	7		34	22	410	-0.3	3.07	7			
			04	8		35	5	195		3.36	2		-20	
8908	06	1				75	67	163		5.40	11			
8908	04	9				54	35	159		4.10	9			
			05	0		61	66	162		5.80	9			
8908	06	2				29	30	103		5.70	9			
			06	3		26	157	127	1.0	6.30	11			
			06	4		19	102	159	0.7	5.70	10			
			06	5		22	8	135	-0.3	5.20	10		-20	
			06	6		29	153	173	1.2	5.90	11			
			06	7		21	293	337	1.2	6.30	10			
			06	8		22	16	166	-0.3	6.00	8			
			06	9		40	7	148	0.3	6.70	9			
			07	0		96	6	158	0.7	7.10	4			

A P P E N D I X 2

GEOLOGISKE
TJENESTER A/S

Direction 90°

Trench no. 2

Started 15.7.89

Varden F

Completed 16.7.89

Proj. 28

Coord. 19357 E

95975 N

TRENCH Record

METRIC Scale 1 : 100

Notes By B.F.

Sheet 1 of 2

m	Struc.	Sample no.	Rock Type and Alteration	ASSAYS						
				Section cm	Cu	Pb	Zn	As	Ag	Au
2		243	F.g. - m.g. g-biot.-seric. gneiss and fol. fels. Pb, Zn + py + (sp) cons. and stretched out along lin. and frida g-veins, 2-3cm. Some chlorite and/or C	200	210	12100	15200	163	28.3	1245
4		244	As above, but less mineral.	200	83	162	1370	171	0.4	433
6		245	As above with sulph. dissem.	60	124	71	279	24	-0.3	72
10		250	Gray schist and fels with sulph. dissem. 3cm granite v. with cpt + Pb along cont.	160	91	382	440	300	2.0	40
12		251	Grey fels with py-po dissem. sulph.-chlor.-gr. mica cons. along cont. pl.	140	89	24	440	76	-0.3	250
14		252	As above	170	91	49	430	117	0.4	30
16		253	Graph. fels with sulph. as above	150	165	385	470	108	3.1	40
18		254	Graph. schist. rusty	330	120	20	317	51	0.4	40
20		255	Interbedded graph. schist and graph. fels	280	33	35	187	28	-0.3	47

GEOLOGISKE
TJENESTER A/S

Direction ~ 90° "Trench" no. 3

Started 16-7-89

Completed 17-7-89

Coord. _____

TRENCH Record

METRIC Scale 1 : 100

Notes By BF Sheet 2 of 2

m	Struc.	Sample no.	Rock Type and Alteration	ASSAYS							
				Section cm	Cu	Pb	Zn	As	Ag	Au	
		8908									
34		247	Light grey fels w. q-veins and py dissem.	200	68	102	149	14	0.7	40	
36		248	As above, but more rusty and with graph. rich zones	200	68	202	116	27	0.6	40	
38											
50		262	Graph. fels - fels antifr. Sampled across.	50	244	530	1260	26	3.8	20	
63		249	W-limb of antifr in graph. schist/graph. fels with dissem. py. Sampled across	120	165	19	242	54	-0.3	20	
70		263	Graph. schist, red weathering and very sulph. rich.	130	342	1530	940	5	7.9	50	
90		264	Cherty graph. fels. Partly fol. w. py.	40	89	29	193	160	-0.3	70	
100		265	As sample 263. Antiform	50	800	1360	6500	14	8.1	40	
110		266	Grey fig. biot. fels w. q veins 45mm and q-lens rich in fuchsite and Zn+Pb+py+(cp)	100	339	1570	1740	3	7.1	1540	
120		267	Folded q-Ca veins w. Zn+Pb+py+cp. Sampled along strike.	80	920	4700	1.3%	4	8.2	150	

A P P E N D I X 3

GEOLOGISKE
TJENESTER A/S

Direction N 74° Trench no. 1
 Started 9/10 - 89 Hundalsbotn
 Completed 9/10 - 89 Froi 28
 Coord. 14900 E / 81095 N
 Notes By TH Sheet 2 of 3

TRENCH Record
 METRIC Scale 1 : 100

m	Struc.	Sample no. 8908	Rock Type and Alteration	ASSAYS							
				Section cm	Cu	Pb	Zn	Ag	As	Au	
22											
24											
26		036	Silic. q - biot - chlor. schist, w. q-veins. Weak py dissemin.	100	101	16	86	0.4	33	-20	
28											
30											
32		037	As above. Thin q-veins some graph.	80	115	16	50	0.3	23	-20	
34											
36											
38											
40		038	As above	75	105	10	53	0.3	17	-20	

Ca 20 m before next sample

GEOLOGISKE
TJENESTER A/S

Direction N 250°

Trench no. 2

Hunilalsbotn, NV-skand.

Started 9/8-89

Completed 9/8-89

Coord. 15400 E / 82350 N

TRENCH Record

METRIC Scale 1 : 100

Notes By TH

Sheet 1 of 3

m	Struc.	Sample no.	Rock Type and Alteration	ASSAYS									
				Section CE	Cu	Pb	Zn	Ag	As	Au			
		8908											
		042	g-biot-chlor. schist	75	55	11	1280	-0.3	2	-20			
2													
4													
		043	As above + thin g. veins + py. dissem.	50	85	540	930	0.5	3	-20			
6													
8													
10													
12													
14													
16													
18													
20	0°	044	Light grey gr. g-biot-chlor. schist / siltst. w. py dissem.	70	64	680	281	0.9	6	-20			

GEOLOGISKE
TJENESTER A/S

Direction N 250°

Trench no. 2

Hundalsbakk. NV-skand.

Started 7/8-89

Completed 9/8-89

Coord. 15400E/82350N

TRENCH Record

METRIC Scale 1 : 100

Notes By TH

Sheet 2 of 3

m	Struc.	Sample no. 8908	Rock Type and Alteration	ASSAYS							
				Section cm	Cu	Pb	Zn	Ag	AS	Au	
22											
24		045	Cgl./brecc. light grey gr. some rust. + extensive py min. + light mica.	150	19	115	280	-0.3	29	-20	
26		046	Shear w. py	25	45	339	1280	0.4	7	-20	
28											
30		047	Cgl./brecc. strongly fec. w: Sulph. along thin frac.	90	34	22	410	-0.3	7	-20	
32			2 samples 1 assay								
34		047		60	34	22	410	-0.3	7	-20	
36											
38											
40		048	g-biot.-chlor. schist.	80	35	5	195	-0.3	2	-20	

GEOLOGISKE
TJENESTER A/S

Direction N34°

Trench no. 3

Started 10/8-89

Hundalsbotn.

Completed 10/8-89

NV-skandet.

TRENCH Record

Coord. 153000/82200N

METRIC Scale 1 : 100

Notes By TH

Sheet 1 of 1

m	Struc.	Sample no. 8908	Rock Type and Alteration	ASSAYS						
				Section cm	Cu	Pb	Zn	Ag	As	Au
2		062	Schistose andes. w. q + py in amygdules, minor graph.	65	29	30	103	-0.3	9	-20
		063	Schistose andes. rich in py	70	26	157	127	1.0	11	-20
			Not sampled							
4		064	As above	50	19	102	159	0.7	10	-20
		065	Massive andes. rich in py	50	22	8	135	-0.3	10	-20
6										
		066	As above, some sil's.	120	27	153	173	1.2	11	-20
8		067	As above	150	21	293	337	1.2	10	-20
10		068	As above.	60	22	16	166	-0.3	8	-20
12		069	As above w. shear zones	100	40	7	148	0.3	9	-20
14		070	Massive andes. - py rich.	85	96	6	158	0.7	4	-20
16										
		071	As above w. q + py filled amygdules	110						
18										
		072	As above	80	37	10	74	-0.3	7	-20
20										

E.O.T

GEOLOGISKE
TJENESTER A/S

Direction N 30-40°

Trench no. 8
Hundalsboen

Started 12/8-89

Completed 12/8-89

Coord. 16700 E
81900 N

TRENCH Record
METRIC Scale 1 : 100

Notes By TH

Sheet 1 of 1

m	Struc.	Sample no. 8908	Rock Type and Alteration	ASSAYS						
				Section	Cu	Pb	Zn	Ag	AS	Au
		094	Graph. fels f.g. massive strongly rusty w. py + po + cp	50	810	165	2080	4.7	12	21
2										
4										
6		095	Weakly schistose graph. fels. g rich veins w. py + cp + po	70	620	227	2770	4.6	48	41
8										
10		096	As above	70	920	224	3810	5.3	31	72
12										
14		097	light grey graph. fels w. thin g filled veins	90	271	37	112	0.9	43	-20
16										
18		098	Graph. schist w. g. veins + py dissemin.	70	233	20	327	0.6	46	-20
20			E.O.T.							

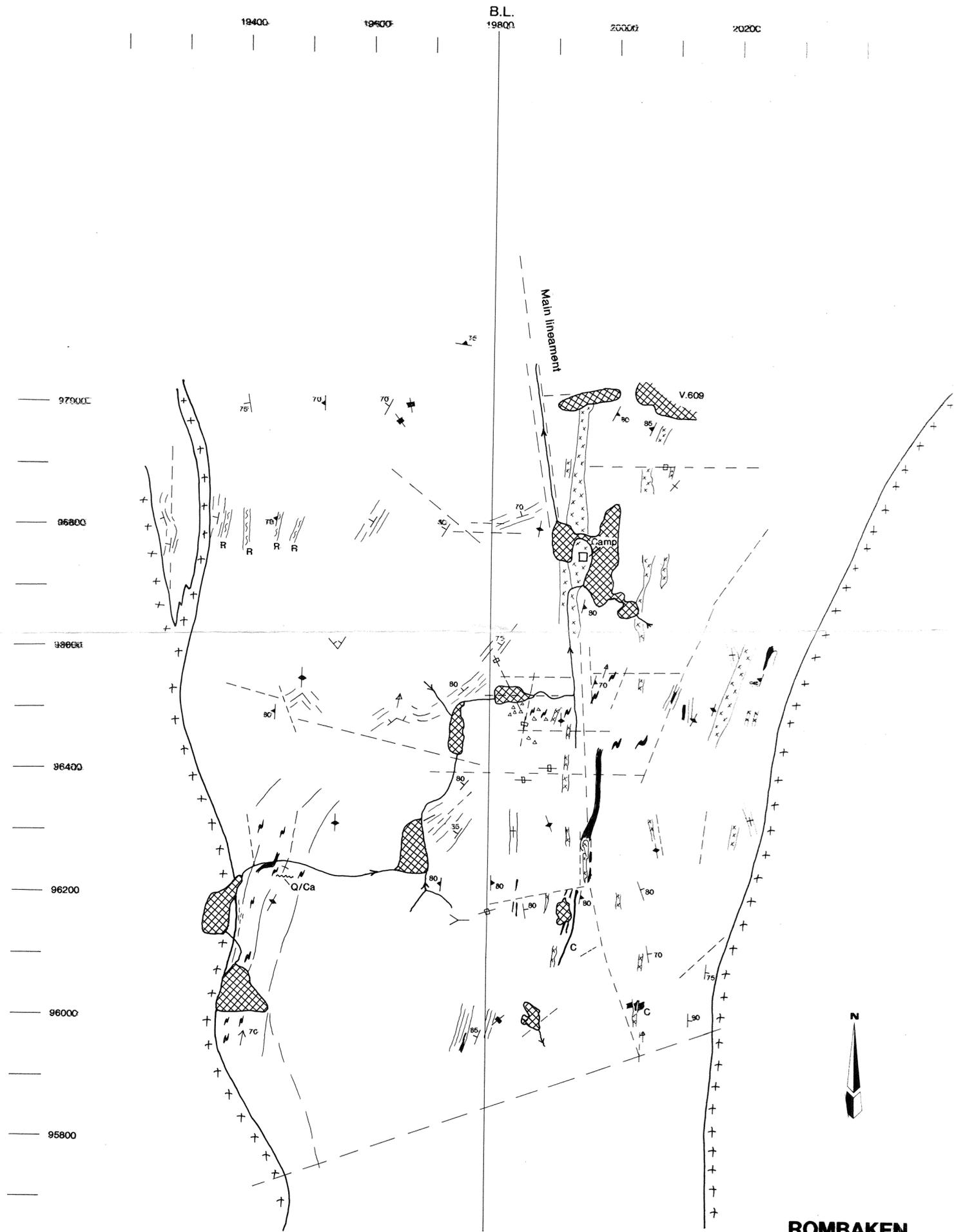
GEOLOGISKE
TJENESTER A/S

Direction N 0° Trench no. 9
 Started 12/8-89
 Completed 12/8-89 Coord. 16900 E
81545 N
 Notes By TH Sheet 1 of 1

TRENCH Record
 METRIC Scale 1 : 100

m	Struc.	Sample no.	Rock Type and Alteration	ASSAYS							
				Section cm	Cu	Pb	Zn	Ag	AS	Au	
		8708									
2		166	Silicif. grayw. rich in py, po. + graph.	40	143	57	132	0.6	24	-20	
4		167	As above	70	155	34	276	0.6	27	37	
6											
8											
10											
12											
14											
16			Fracture 121/66								
		168	As above. Less graph. weak banding	30	151	32	2560	0.4	16	-20	
		169	As above. Waxy rusty	100	155	23	2460	0.4	7	23	
18		170/171	As above 171 sampled along strike → E to 6 m.		149	22	271	0.4	14	-20	
					108	21	1380	0.4	8	-20	
20											
			Silic. grayw. w. py + po + graph. Three sep. zones.	10							
					118	32	287	-0.3	17	-20	
				10-15							
22		172		20							

E. O. T.



- Rombak Granite, porphyritic
- Granite dykes, fine grained
- Graphite schist
- Graphite schist folded
- Breccia
- Rust strong/weak
- Q/Ca Quartz - carbonate veins

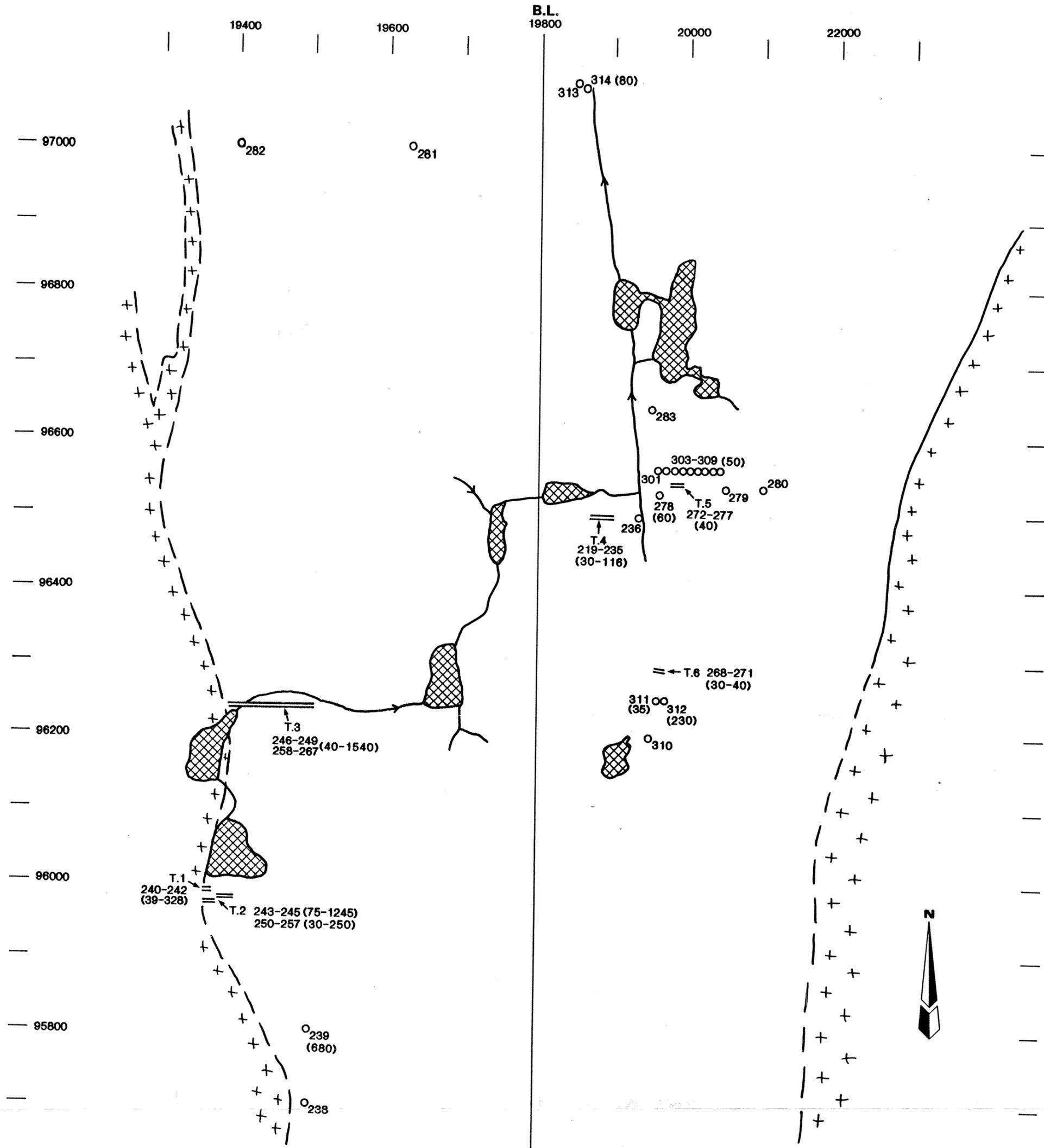
- Geological boundaries
- Compositional banding
- Shear fractures
- Way-up
- Fold axes
- Lineation

- Strike/dip, bedding
- Strike/dip, foliation
- Strike/dip, fractures
- Strike/dip, quartz veining

ROMBAKEN
Varden East
Geological Map

1:5000
BF7AA Oct.89

Fig.5



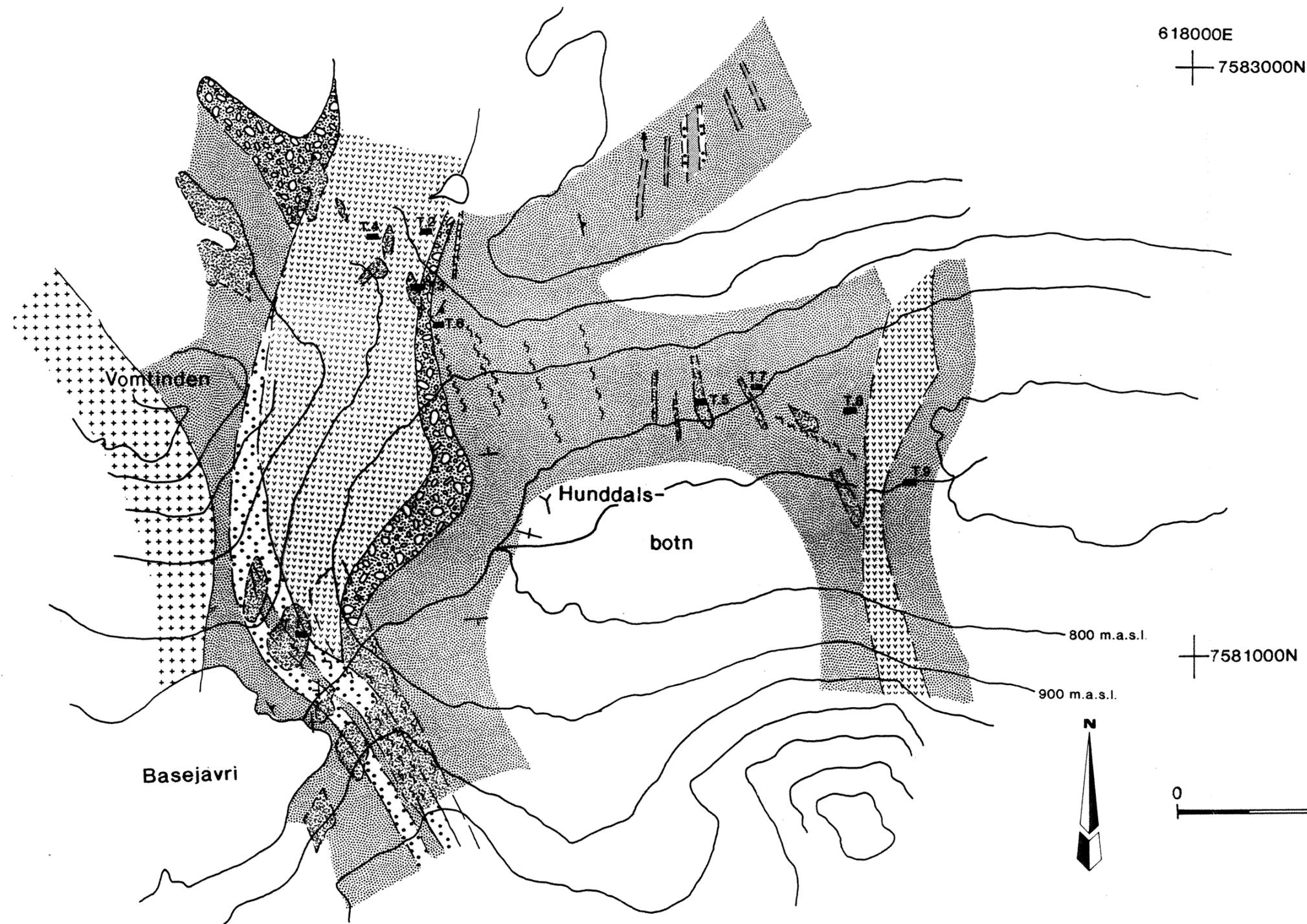
Granite Contact
 T.1 240-242 (39-328) Trench no.1 with samples no.8908240-242 with 39-328 ppb Au
 O₂₈₃ Chip sample no. 8908283

ROMBAKEN

Varden East
Sample Map

1:5000

Fig.6

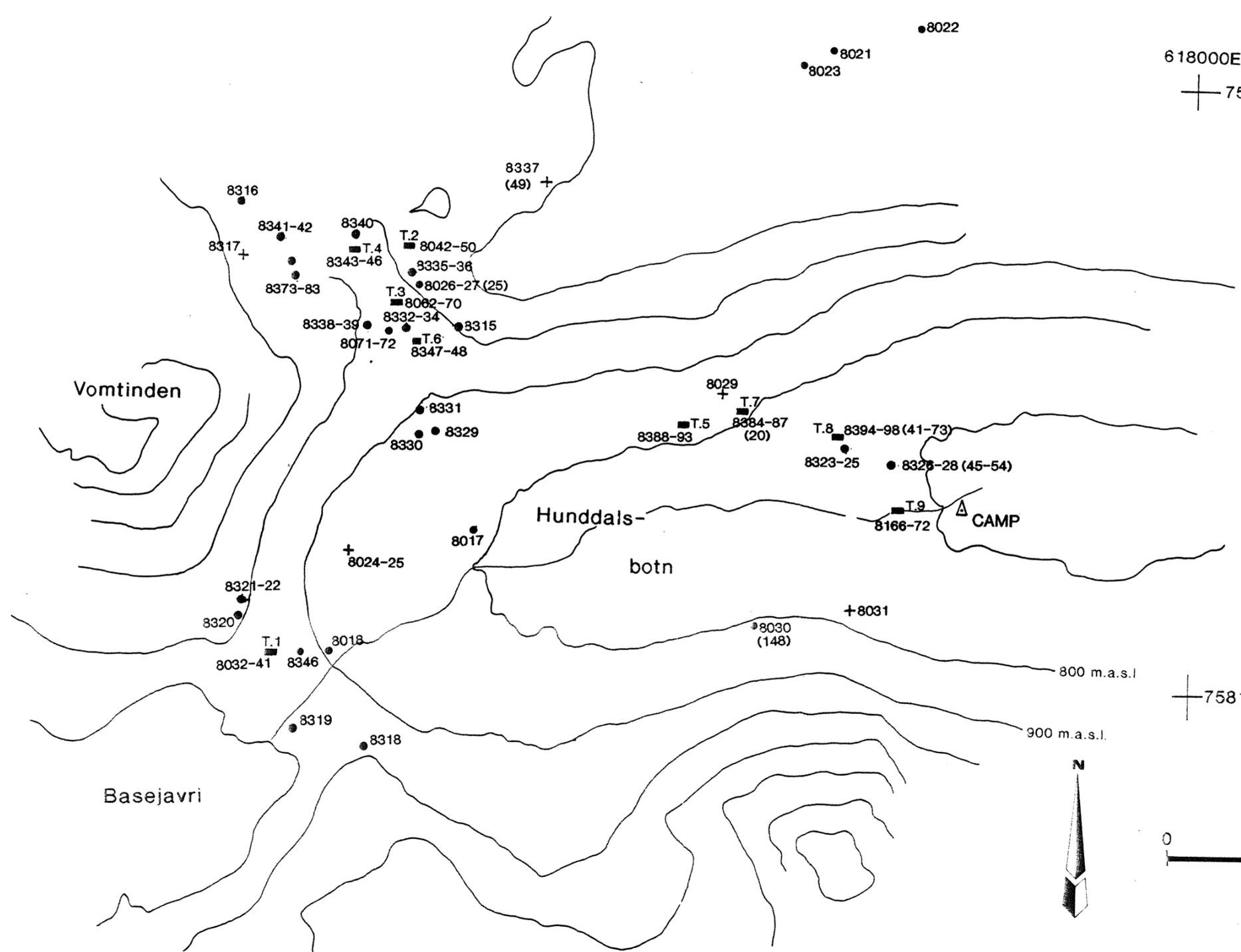


-  Granite
-  Andesite
-  Sedim. breccia
-  Quartzites
-  Carbonate
-  Schists-greyw.
-  Graphite schists
-  Sulphide alteration
-  Shear zone
-  Trench no. 1
-  Strike/dip bedding
-  Strike/dip foliation
-  Fold axes
-  Way-up

**ROMBAKEN
HUNDDALSBOTN
GEOLOGICAL MAP**
(modified after B.Thomassen, 1984)

0 1km

Fig. 7



- 8337 + Scree sample no. 8908337 with 49 ppb Au
- 8018 ● Chip sample no.8908018
- T.9 ■ Trench no.9 with samples no.8908166-72

**ROMBAKEN
HUNDDALSBOTN
SAMPLE MAP**

7581000N



Fig. 8