



Bergvesenet

Postboks 3021, N-7441 Trondheim

Rapportarkivet

Innlegging av nye rapporter ved: John

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Kommer fra arkiv Grong Gruber AS	Ekstern rapport nr	Oversendt fra Grong Gruber a.s.	Fortrolig pga	Fortrolig fra dato:
Tittel Visletten 1978				
Forfatter Halls og Mellin		Dato År August 1978	Bedrift (oppdragsgiver og/eller oppdragstaker) Grong Gruber AS	
Kommune Røyrvik	Fylke Nord-Trøndelag	Bergdistrikt	1: 50 000 kartblad 19243 19244	1: 250 000 kartblad Grong
Fagområde Geologi	Dokument type		Forekomster (forekomst, gruvefelt, undersøkelsesfelt) Visletten skjerp, Møkkelvikelv	
Råstoffgruppe Malm/metall	Råstofftype Cu, Zn,			
Sammendrag, innholdsfortegnelse eller innholdsbeskrivelse En strukturgeologisk og litografisk kartlegging av Visletten skjerp og området på nord og vestsiden av Møkkelvikelva.				

V I S L E T T E N

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FORELESNINGSHEFTE

Rutet 5 × 5 mm med ramme – 24 blad – Nr. 2921



INTRODUCTION.

During the period August 9 - 18 geologists Halls and Mellin undertook a general examination of the Völkten skjeip and the geology of the immediate surroundings.

The objective was to try and refine the observations made by Kollung as reported in 1976, and to give a descriptive basis for further evaluation of the core obtained during the diamond drilling programme.

RESULTS.

Preliminary geological observations were recorded on the 1:5000 topographic map sheet DN 158-5-2 giving attention to the area immediately surrounding the prospect and the associated VLF anomalies. The exposed mineralization and associated broken rock lies at an altitude of 725 m in the bed of an easterly flowing stream which has a confluence with the Mörkelvikelva in a marshy basin at an altitude of 685 m. The stream occupies a steeply sloping valley rising to 850 m some 600 m to the west of its confluence with the Mörkelvikelva and the small lake which occupies the marshy basin. The main

area of interest, lying in the steep valley, is
confrined both to the north and south by ridges
extending from the upper slopes of the main
fjell which rises to an altitude of 1030 + m
to the W.S.W. The area so topographically
defined is some 700 m E-W and about 500 m N-S
extending westwards from the nokkenikewo.

In the first instance it was possible to confirm
the presence of a significant mass of gabbro
lying in the NW part of the area of interest.
This mass clearly has a sheet-like form,
modified by folding, and outcrops over a length
of some 100 m at an altitude of 850 m.
This gabbro is evidently the one marked by
Kelling at 1380 West 880 S. The mass has
a conspicuously coarse meta-ophitic texture and
despite the extent of its outcrop is probably
not more than 5-10 m thick.

In all probability this gabbro body is related
to the occurrence of numerous thinner bands
of gabbro which are found in the lavas
close to the volcanostrophic level in
which the main mineralisation is located.

(See Geological Detail 1:1000 - Visletten Prospect
which accompanies this report.)

At higher altitudes 880 m to 930 m on this slope there is an abundance of sills and dykes of trondhjemite interfolded with the greenstones.

The principal greenstone lithology in the area, forming the slopes to the higher ground on the ridges to the north and south of the prospect stream section is basaltic lava, designated by Kollvig as 'homogeneous greenstone'. The most conspicuous feature of these basaltic lavas is the abundance of pre-tectonic epidote knots from 5 - 20 cm in size, now flattened parallel to the prevailing schistosity (S₁). Otherwise a range of vesicular and pillow-related structures are visible in these rocks. A most interesting section is that observed in the small waterfall at 690-695 m altitude where the Mörselvikelva enters the marshy basin. Flattened pillow structures of size c. 50 cm x 20 cm can be seen with distinctive chilled margins, epidote knots and, in particular, well developed inter-pillow cusps which are distinctly magnetic. Similar lithologies are exposed in the southern flank of the ridge extending westwards to 748 m.

The basic lavas are cut by sills of quartz-feldspar porphyry which are assumed to be related to the larger intrusive bodies lying further to the west.

The other, easily defined lithologies which can be recognised in the vicinity of the prospect are coarse grained trondhjemite with conspicuous large quartz grains (see 1200 V, 1020 S - 1:1000 geological detail); quartz-keratophyre with smaller quartz and feldspar phenocrysts, some disseminated pyrite and a distinctive joint structure, which, depending on the degree of flattening of the rock, the position in the structure and the relative plane of section revealed by the exposure, may appear in a polygonal (1200 V, 950 S) or coarsely lenticular form (1100 V 980 S). The joints are marked by the dark green colour imparted to the pale rock by the increased concentration of chlorite along these joint surfaces.

The three rock types readily distinguished are

- ① Trondhjemite (Granodiorite)
- ② Quartz-feldspar porphyry
- ③ Quartz-keratophyre

In addition to the acid lithologies, a group of porphyritic dykes / sills characterised by abundant feldspar phenocrysts and pseudomorphs after a ferromagnesian mineral (probably augite) were also recognised. These are designated as augite - feldspar porphyry and are shown at two locations on the 1:1000 map of geological detail (1120 W, 950 S). The cross-cutting relationship mapped at 1200 V, 1005 S shows that the augite - feldspar porphyry post-dates the quartz - feldspar porphyry at this locality.

The hydrothermal mineralization occurs in various facies in the area concerned. At the main skarn the mineralised material consists of a thin band of sphalerite-bearing pyrite-chalcopyrite ore involved in tight folds of probable F₁ age modified by later post-schistosity deformation. The general level of the mineralization is marked by conspicuous amounts of hydrothermal silica which have formed a distinctive horizon of banded grey-buff coloured cherts with abundant disseminated pyrite. There is little reason to doubt that this horizon is stratigraphically related to one of the contacts of the quartz keratophyre.

In addition to the sulphide-rich pyritic facies of the main mineralised horizon it is also possible to observe more oxidised iron-rich exhalite facies, as, for instance, on the southern border of the region where a horizon with magnetite-chlorite-shipsonite and pyrite can be observed at an altitude of 735 m (DN 158-S-2 Co-ord. X 756 075 Y 760). Magnetite and pyrite rich banded cherty horizons are also observed notably on the slopes to the south of the main stream section along a subparallel trend (DN 158-S-2 Co-ord. X 756 170 Y 725).

The mineralisation of the main stream section is broadly related to a larger, more difficult to define rock unit which has been defined by Kolung as Åregrönsten. This rock is intrinsically variable and appears to be a unit composed, in part of silicified basic lavas and tuffs with thin bands of keratophyre and a significant amount of interbedded hydrothermal chert. The unit is also cut by numerous quartz veins, which together with the chert bands, have suffered compression and flattening during early deformation. This unit is locally heavily impregnated by pyrite and

thus weathers characteristically with a brownish rugose surface. Because of the locally banded character of this unit, the development of minor fold structures is quite prominent.

The lithology of the unit is difficult to describe in simple terms, a useful general appellation would be 'mixed laminated - pyroclastic greenstone with hydrothermal cherts' (= Åre grønnstein).

With regard to the geophysical survey carried out using the Proton magnetometer, it is reasonable to assume that high values will be associated with zones containing magnetite-rich hydrothermal cherts and highs may also be expected where magnetite-rich facies of the pillow lavas and their associated cherts are found.

Note - magnetic high at 1000 V, 1080 S cm in all probability be related to the magnetite rich horizon plotted on DN 158-5-2 at (X 756 170 Y 725).

STRUCTURE OF THE AREA



On the large scale the most conspicuous feature of the area is the open flexuring of the S_1 schistosity the general axis of which lies in a nearly E-W direction (see stereographic projection of structural data accompanying this report). This open flexuring is typical of the major F_2 structures of the Skrorovás - Gjessvik area.

It is probable that the flexuring takes a domal or periclinal form with a major E-W axis.

The main mineralized horizon appears to lie on the southern limb of this F_2 flexure.

Numerous minor fold structures were observed in the laminated greenstones and also shales at this unit, (e.g. 1075 W 960 S),

These folds have an ENE - WSW trend, with variable plunge and also, in the vicinity of the mineralized horizon, quite variable axial planes. Kollung has interpreted these structures as of post-schistosity age (F_2 minor structures). Some of these structures may indeed be of F_2 age, congruent with the main trend of the open antiformal structure.

however it seems most probable that these minor structures are mostly F_1 minor structures since they often have axial plane schistosity parallel to the S_1 of the surrounding rocks. These structures are naturally most obvious in the rocks which have an original hydrothermal or pyroclastic banding. The structure of the area is undoubtedly complex but all the evidence we have observed suggests that the F_1 axial trend in the Visliden area lies roughly ENE - WSW. As the stereographic plot of the structural data displays, the axes are comparatively shallow dipping.

An attempt was made to locate the minor structures identified by Kollung as F_1 with a SSE axial trend. This was not successful. It is possible that apparent F_1 folds with SSE axial trends could be produced as a result of flattening of pillow cusps.

The acceptance of the predominance of an ENE trend of F_1 axes with shallow plunge about horizontal ENE - WSW can be used to explain the subparallel trend of the VLF anomalies; these can be seen as anomalies arising from mineralization

ADDITIONAL NOTE ON STRUCTURE

The line occupied by the steep stream appears to be, in part, a shear zone initiated as a zone of weakness during F_1 and activated as a horizon of compositional adjustment during F_2 .

It appears to lie along, or close to, the axial plane of an F_1 mylonite, minor F_2 folds could be expected close to such a structure.

Further evidence of F_1 closures of this type may seem in the head of the stream section at altitude 850 m. as shown in the preliminary geological observations.

Further detailed mapping should be carried out to refine this interpretation.

in the limbs or along the axes of isoclinal or compressed F₁ folds.

The much simplified contact between the Åregrönstein and the Homogen Grönstein mapped by Kallung also suggests this solution.

CONCLUSIONS

A relatively short time was spent in examining the Visleten prospect and extensive detailed mapping at 1:1000 scale was not possible. The initial results can be considered useful, however, and it is recommended that if further serious work is to be done in this area that a proper geological map at 1:1000 scale should be constructed and studies extended to the East of the Mökresvikens for at least 700 m.

Such a map would facilitate the proper correlation of drill-hole data and geophysics.

A project of this scale would occupy a team of 2 men for a period of 5-6 weeks.

NOTE REGARDING THE RELATIONSHIP OF THE
GABBRO SILLS TO THE MINERALISED HORIZON.

The rocks exposed in the stream section above
the main skarn show quite frequent thin
bands of meta dolerite / gabbro. It would
appear that the contact between the quartz
keratophyre and the laminated greenstone has
been exploited as a weak zone by the
later-intruded basic lava.

The gabbros are strongly folded and
bedded and display schistose margins
and lateral tectonic facies.