Bergvesenet

Postboks 3021, N-7441 Trondheim

Rapportarkivet

Bergvesenet rapport nr	Intern Journal nr	Internt arkiv nr	Rapport lokalisering	Gradering
5351				

Kommer fra ..arkiv	Ekstern rapport nr	Oversendt fra	Fortrolig pga	Fortrolig fra dato:
Grong Gruber AS		Grong Gruber a.s.		

Tittel

SKIFTESMYR GEOLOGICAL REPORT

Forfatter	Dato	År	Bedrift (oppdragsgiver og/eller oppdragstaker)
Langley			Grong Gruber AS

Kommune	Fylke	Bergdistrikt	1: 50 000 kartblad	1: 250 000 kartblad
Grong	Nord-Trøndelag	Trondheimske	18234	Grong

Fagområde	Dokument type	Forekomster (forekomst, gruvefelt, undersøkelsesfelt)
Geologi		Skiftesmyr

Råstoffgruppe	Råstofftype
Malm/metall	

Sammendrag, innholdsfortegnelse eller innholdsbeskrivelse

Contents:

SKIFTESMYR GECLOGICAL REPORT LANGLEY

CONTENTS:-

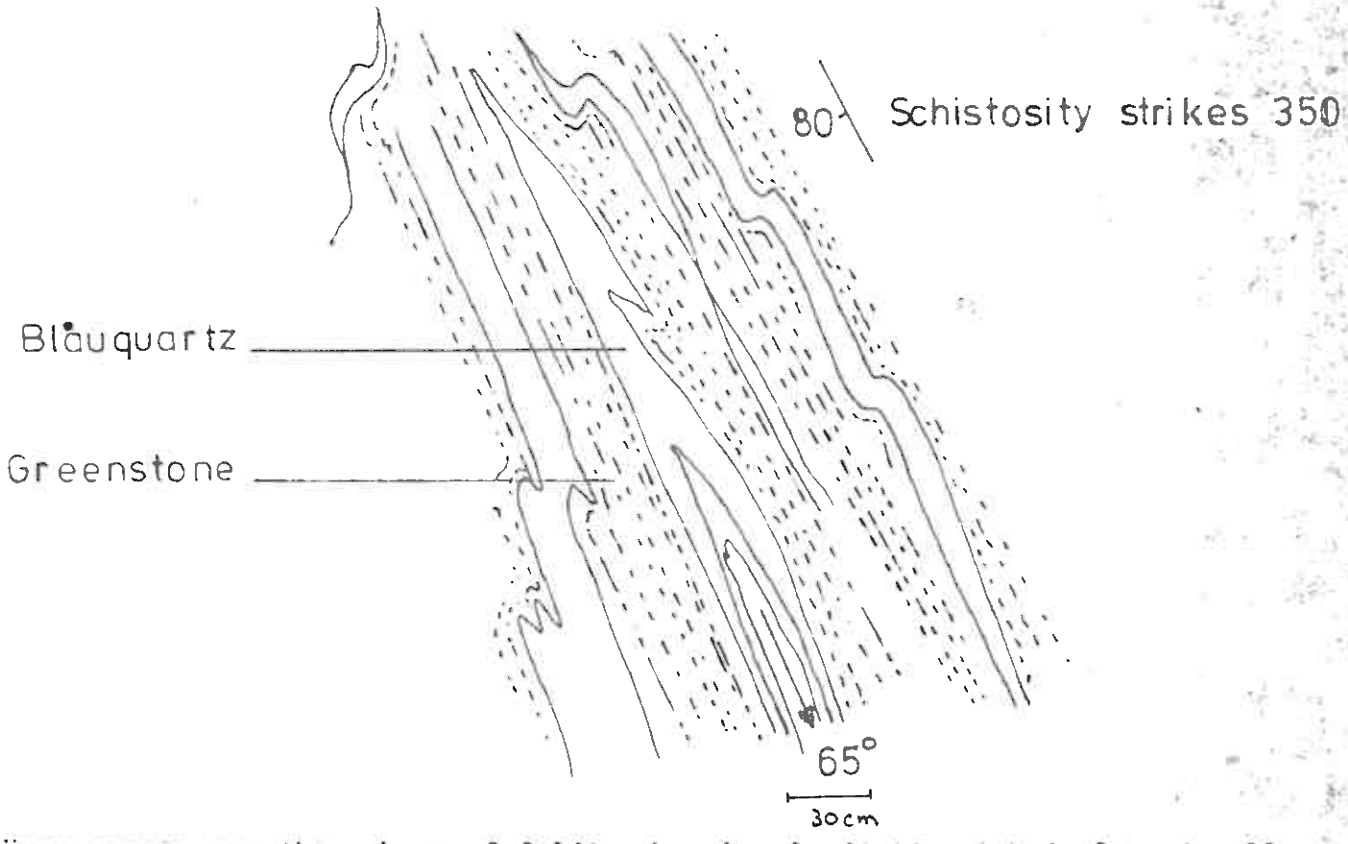
GEOLOGICAL HISTORY OF THE SKIFTESMYR AREA

1) The volcanic sequence was laid down. This consisting of tuffs, lavas, aglomerates, keratophyric lavas and associated sulphide rich phases.

2) The first phase of folding F1.

This style of folding is tightly isoclinal and involved a great deal of crustal shortening. This can be seen for example at L335 (6415N 4300V). Here there is a nearly vertival axial plane with an axis dipping 65 south.

Sketch of the folds as seen at L335

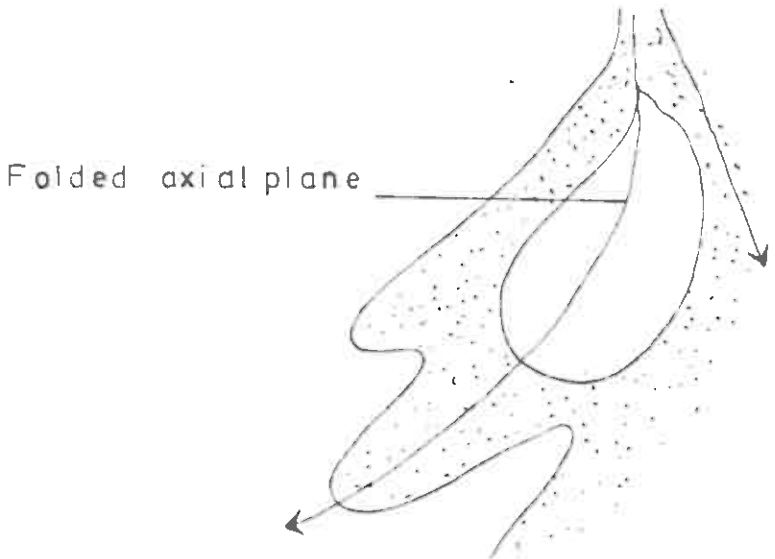


Very rarely can this phase of folding be clearly distinguished. Occasionally it can be seen as "flyct " torn folds. However it is this phase of folding that is responsible for the main directions of the schistosity in the area.

3) Later Folds, here called F2 and F3 folds.

These are minor folds of the type 3 form (ie. with axial thickening and thinning on the limbs) All folds of this phase are related to a large open structured fold which is hardly ever seen because of the small general size of their outcrop in the forest. (But eg. I1101 at 5300N 4040V) In places it is possible to distinguish separate F2 and F3 folds at the same locality. It then seems that the folds with a northerly dipping axis predate those with a westerly dipping axis. eg. L504 (6510N 4910V)

Here the axial plane related to the 030/30 axis has been folded by the movement involved with the 305/30 axial direction.



Nowhere where only F2 and F3 folds intersect each other is ore found. But it seems likely that these later folds have overprinted the original F1 folds and modified the ore zone, causing thickening of the ore zone where the two different sets of axes intersect.

3) cont

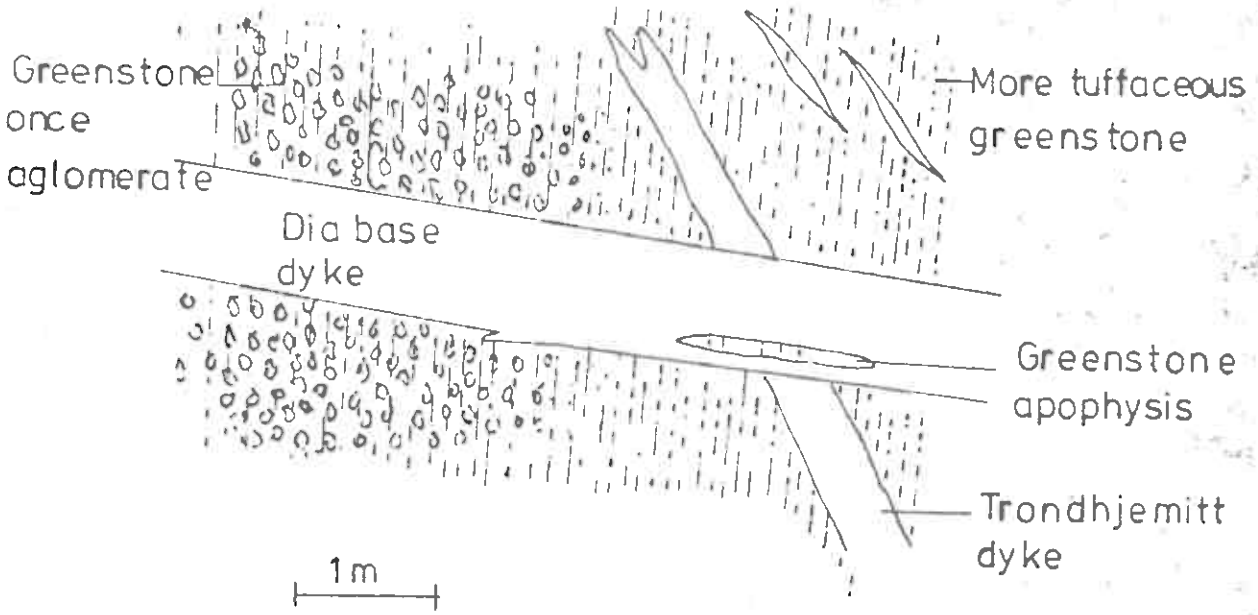
In other localities in the region eg. L505 (6490N 4900V) crenulation folds with axes dipping in a westerly direction are parellel exactly to epidote filles joints which cut notrhty dipping type 3 folds.

However further to the south these two phases are rarely seen at the same locality, and because they relate to the same large open fold it seems that they can be classed as aproximately the same event.

In general terms, the axes of the F2/F3 folds dip at a steeper angle northwards in the Skiftesmyr region (65°- 75°) than in the valley near the road and Mõklevasselven where the dips are mostly in the 35° region.

4) Dykes of Trondhjemittcan be seen cutting the schistosity of the greenstone. eg. L443 (6500N 4350V)

5) This in turn is cut by a diabase dyke at the same locality.



THE ROCKS OF THE SKIFTESMYR AREA

A) THE GREENSTONES

In some places it is possible to relate the present greenstones to their original volcanic form. ie some of the greenstones look as if they could well have been aglomerates, while others look more tuffaceous. More massive greenstones could well have been lavas, although greenstones of this more massive type are quite rare in the Skiftesmyr area. Most of the greenstones are well foliated, non calcarious rocks. Nowhere was it possible to distinguish primary "way up " criteria.

For the perposes of mapping, the rocks were classified according to their visually estimated mineralogical composition.

Most of the greenstones are fine grained, the grain size being in the region of 0.05 - 0.3mm.

A typical greenstone in the area (Geomap 54P) has the following general composition, plus or minus 10% of any of the constituent minerals.

Amphibole 50% felspar 40% Quartz 10%

The colour of the rocks according to the Geomap rock chart is usually 52, 55, 45 or 60.

A quartz rich greenstone (Geomap 54Q) has a general composition as follows.

Amphibole 40% felspar 30% Quartz 30%

The amount of amphibole does not exceed 40%.

The colour of these rocks according to the chart is 45, 60 or 62.

A granular quartzite is really a quartz rich greenstone that is exceedingly rich in quartz, with relatively little amphibole or felspar.

Ampibole 10% Felspar 20% Quartz 70%

The colour of these rocks according to the colour chart is normally 62, 63, or 73.

A biotite rich greenstone (Geomap 54S) has the following mineralogical composition.

Amphibole 30% Felspar 40% Biotite 30%

Sometimes where epidote is present, it is present at the expense of the felspar.

The colour of these rocks according to the chart is normally 42, 52, or 49.

Biotite containing greenstone (Geomap 54P/S) has the same composition as ordinary greenstone, but it contains about 10% biotite rather than quartz.

Diabase, although having the same mineralogical composition as the ordinary 54P type greenstone is considerably coarser grained, and thus was easily distinguished as a different rock type.

B) THE KERATOPHYRES

Most of the keratophyres in the area are fairly massive, not well foliated non pophyritic rocks containing just felspar and quartz. Their colour on the colour chart being 79, 94, or 1. But some, in this nonporphyritic goeup contain, in occasional cases quite large quantities of muscovite and/or sericite. Their colour being 16, 1, or 31. They are found particularly in the area imediately th the east of Skiftesmyr, and also to the north east of this same area. Naturally when they contain micas they are much more schistose than their non micacious counterparts.

The Porphritic Keratophyres usually contain 10%- 20% quartz porphyries. These are rounded and about 3mm in diameter. Occasionally they contain up to 10% garnet porphyries, which are less than 3mm in diameter and have well developed crystal faces.

The colour of these rocks is normally 94, 79 or 1.

Other keratophytes tend to be rather more foliated.

The major differences in the keratophyric types is probably due to deformation and difference in localised metamorphic grade rather than to reasons dependent upon the primary nature of the lava.

SURFACE AREAS OF SULPHIDE INTEREST.

From the evidence available in the area, no absolute possition of the primary sulphur rich or sulphide rich phase can be put in the volcanic sequence. It seems likely that the sulphide phase occured very near a keratophyric phase, but whether it occured before, after or during, is impossible to say from the evidence available.

By looking at the pyrite symbols on the map, it can be seen that the pyrite rich zones do not stay in one rock unit. In places they are in greenstone in other places the same pyrite zone is in keratophyre. Thus, although the sulphide probably started in one particular zone, in the primary sequence, it is apparent that the pyrite has been remobilised during deformation, the latest deformation having the most obvious effect. So the possition of the ore is influenced by both stratigraphic and structural controles.

Almost inevitably the "ore" zones are found in or very close to the keratophyres. eg L949 (5670N 5625V) Here 20%-30% pyrite is found in a keratophre 5 metres away from a folded greenstone contact. But the pyrite down by the river L304 and L347 (6340N 4350V) which follows the same geophysical trend, is in greenstone.

The main prospect is of course Skiftesmyr L78 (5425N 5000V) This is the only outcrop at surface where anything other than pyrite is found. At this locality there is both chalcopyrite and sphalerite. The most massive ore is in the core of a synclinal fold whose axis plunges at 75 to the north.

The pyrite ore (20% - 30%) found at L813 (5300N 4850V) in quartz rich greenstone is also in the core of a fold hinge.

THE MAP AND MAPPING

Mapping the area by means of the geophysisists grid was really the only way anything like an acurate outcrop map could be obtained in this area. The density of the forest would have made the more usual methods of mapping quite impractical. But a lot of time was spent looking for pegs rather than outcrops. It would have been quicker had it been possible for the geologist to do the geology at the same time as the geophysisits were working with their cables and lines laid out in the field. It would also have been helpful if the pegs had been placed in more obvious possitions, ie firmly stuck in the ground rather than hidden under fallen trees and undergrowth.

Nowhere was it possible to follow an actual contact, with only small spot localities available under wind blown tree roots and the like. Thus although all the contacts are hypothetical, they have been emplaced using logic and such topographic features as are available. In the case of the contacts within the greenstones, many of these are of course gradational, eg the amount of biotite or quartz changes slowly from place to place.