



# Bergvesenet

Postboks 3021. N-7441 Trondheim

## Rapportarkivet

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| Tittel<br>Synopsis of fieldwork in the Grong field, 1973 |  |  |   |   |
| Forfatter<br>Gale, G.H.                                  |  | Dato    År<br><input type="text" value="24.10"/> <input type="text" value="1973"/> | Bedrift (Oppdragsgiver og/eller oppdragstaker)<br>NGU                                       |   |
| Kommune<br>Grong   | Fylke<br>Nord-Trøndelag                    | Bergdistrikt   | 1: 50 000 kartblad<br>18231 18242   | 1: 250 000 kartblad<br>Grong                |
| Fagområde<br>Geologi                                     | Dokument type                              |  | Forekomster (forekomst, gruvefelt, undersøkelsesfelt)<br>Gjersvik<br>Gaizervatn<br>Langvatn |   |
| Råstoffgruppe<br>Malm/metall                             | Råstofftype<br>Mo, Cu, Py                  |  |   |   |

### Sammenheng, innholdsfortegnelse eller innholdsbeskrivelse

Som en foreløpig rapport over feltarbeidet i feltet i perioden mai-September 1973.  
Det beskrives kort geologiske resultater fra Trangen og østover til Langvatn og vider nordøstover til Gazervatn og Blåmuren. hensikten var å rekartlegge litologiene samt bestemme de strukturelle stilene. Stort sett ble det slått fast at geologiske forhold og bergartstyper er mer komplekse enn det som framkommer på Foslies kart.  
De forskjellige mineraliseringstypene blir ramset opp, inkludert hvordan Mo opptrer og en blokk med høy Cpy i keratofyr.  
Avsluttes med et sett av konklusjoner og forslag til ytterligere arbeider.

Synopsis of fieldwork in the Grong field, 1973: G.H. Gale.

## Area investigated:

Fieldwork was undertaken during the period May 20 - September 25. A field assistant was employed for 2 months (June 20 - August 20). Three field trips, each of two days duration, were undertaken in the Gjersvik area in order to supervise the fieldwork <sup>of</sup> Ole Lutro.

The Cambro-Silurian rocks lying south of the Sanddøla trondhjemite mass and north of the Sanddøla river were mapped from Trangen to Langvatn and followed northeastwards as far as Gaziervatn and Blåmurenfjell in order to remap the lithologies and to determine structural styles. In addition some 200 <sup>km<sup>2</sup></sup> ~~sq.~~ <sup>kms.</sup> of gneisses on the 1:50 000 Grong (1823 IV) sheet were mapped in order to fill in the unmapped portions of the map sheet.

## Results:

Trangen - Langvatn.

The greenstone terrain has been separated into '~~the~~ massive lava' and 'sedimentary - volcanic' units. The 'sedimentary - volcanic' unit is a mixed unit containing tuffs, waterlain tuffaceous sediments and some clastic sediments derived mainly from a basic volcanic source. It is apparent from the past season's work that the clastic sedimentary <sup>ent</sup> contact of the "greenstones" decrease northwards away from the limestone unit towards the massive lavas.

Although the rocks at Trangen are in thrust contact and are apparently of lower metamorphic grade than those of Tømmeråsfjell a few km westward, they have a similar tectonic history, i.e. early recumbent tight to isoclinal syn-schistosity recumbent folds that are refolded by close to open northwest and northeast trending folds with steep axial planes and locally <sup>have</sup> an associated axial plane cleavage. Metamorphic grade decreases eastward. A locality east of Berg containing good 'way-up' criteria-graded bedding and load casting - indicates that the succession may be overturned to the south. The relationship of schistosity-bedding could not be established and the absence of a fold structure in the outcrop leads one to question the validity of this data until more structures are found in the area.

### Langvatn - Gazier/Blåmuren:

In this area detailed mapping has been confined to the volcanic units and their contacts with adjacent rock types <sup>and</sup> whereas the arkosic rocks of the Blåmuren - Langløftfjell were studied in several places to determine the major tectonic styles. Geological relationships and rock types were found to be substantially more complex than shown on Foslie's 1:100 000 maps. The major differences found were: 1) The greenstone terrain contain a high proportion of intrusive medium grained trondhjemite; 2) The Sanddøla trondhjemite, especially in the vicinity of Langvatn, contains bodies of very fine grained trondhjemite/keratophyre (?); 3) The units of 'tuffitic greenstone' and 'granite arkose' shown on Foslie's Sanddøla and Trones map sheets contain a high proportion of trondhjemite and keratophyre. 4) The unit 'granite arkas' is a misnomer since the rocks are of volcanic rather than sedimentary origin. 5) The 'calcareous phyllite' mass between Blåmurenfjell and Klingervatn is actually a 'calcareous psammite'.

Many of the high angle faults which have pronounced topographic expressions, have relatively small displacements whereas major transported sheets rarely exhibit any topographic features. The dominant regional fabric is a vertical penetrative schistosity ( $S_2$ ) which can often be seen to intersect an earlier foliation ( $S_1$ ). In the Trangen - Berg area this steep schistosity is rarely present, but a strain-slip lineation on the  $S_1$  surfaces is considered to be the expression of  $S_2$  since the second deformation was less pronounced in the Trangen - Berg area than in the region northeast of Langvatn. Abundant way-up criteria in the arkoses and conglomeratic arkoses indicate that these rocks are essentially 'right-way up', but locally they are slightly overturned towards the east.

### Economic.

The area contains a number of pyrite occurrences, the largest of which have been shown on Foslie's maps. The occurrences in the Trangen - Berg area have not been studied in detail while these in the Berg - Gazier area have been investigated for economic potential.

The majority of the occurrences are pyritized keratophyre horizons in which the pyrite content rarely exceeds 5%, and heavy metal minerals are virtually absent, i. e. none could be detected with a 10 x hand lens. Several occurrences of massive pyrite, less than 2 x 0,2 m, occur on the south east side of Skarfjelli (Langvatn).



At the south end of Gaziervatn a loose angular block of keratophyre containing an estimated 5% chalcopyrite and 5 - 10% pyrite was found near an occurrence of pyritized keratophyre. The lost rock is comparable with that of the keratophyre found in that general area, and thus the block is considered to be of local derivation.

A pyritized fine grained trondhjemite/keratophyre north of Langvatn contains a finely disseminated bluish gray mineral which has been identified as molybdenite by XRD. Spectrographic analyses<sup>1</sup> of Cu and Fe (probably due to traces of chalcopyrite in the sample submitted for analyses). The amount of molybdenite in the rock is variable but is not thought to exceed 1%. *1. Show that the main constituent is MoO<sub>3</sub> with minor*

The present field work indicates that the large body of 'tuffitic greenstone' south east of Langlættfjell is the same age and rock type as the greenstones of the Sanddøla area, and despite the absence of known sulfide occurrences these rocks should not be considered to be totally 'dead' in mineral potential.

#### Conclusions:

1. The absence of marker horizons in the Sanddøla area increases the difficulty in trying to correlate on a tectono-stratigraphic basis the ore deposits of Shiftesmyr and Godejorde.
2. The early tight to isoclinal folds in the Sanddøla area should be the dominant factor in determining the overall form of the deposits. The later open folds which affect the deposit can be expected to produce local thinning on the <sup>hinges</sup> ~~brinks~~ and thickening in the <sup>2</sup> ~~lenses~~ <sup>lenses</sup>.
3. The occurrence of molybdenite in a pyritized fine grained trondhjemite/keratophyre (?) at the edge of the main trondhjemite mass is extremely exciting in terms of a 'porphyry-type molybdenum' deposit in an island arc terrain. The occurrence of disseminated molybdenite in this area lends further support to my earlier suggestion that the Sanddøla trondhjemite is an ideal location to explore for a porphyry - <sup>Cu</sup> ~~in~~ deposit.
4. The chalcopyrite-bearing erratic at the south end of Gaziervatn indicates that the area mapped as 'tuffitic greenstone' and 'granite arkose' has economic potential.
5. The previously known sulfide occurrences in the Langvatn - Gazier area do not appear to warrant further investigation.

**Future studies:**

- Detailed mapping to extend K. Langlie's mapping to the south and southwest to include the Godejorde deposit.
- Continued mapping in the Gazier area to fill in the unmapped areas between the area covered this year and the work by Dag Huseby and the student team under Dr. Christopher Halla.
- Reconnaissance geological and geochemical studies of the Sanddøla trondhjemite mass and follow up studies on the Mo occurrence at Langvatn.
- Establish if a correlation exists between the rocks east of Klinger-  
vatn and the host rocks of the Joma and Stekkenkjokk deposits  
since if these are the same stratigraphic units then there is a large  
area with relatively little exposure in the eastern part of the Grong  
concession and could be covered by airborne geophysical and  
regional geochemical techniques.

October 24, 1973

George H. Gale