



Bergvesenet

Postboks 3021, 7002 Trondheim

Rapportarkivet

Bergvesenet rapport nr BV 1349	Intern Journal nr	Internt arkiv nr	Rapport lokalisering Trondheim	Gradering Fortrolig
Kommer fra ..arkiv	Ekstern rapport nr	Oversendt fra Norsk Hydro	Fortrolig pga Utmål	Fortrolig fra dato:
Tittel Notes on the geology of the area around Soknedalen. (Ringerike)				
Forfatter Ryan M. J.		Dato våren 1972	Bedrift Norsk Hydro A/S	
Kommune Ringerike	Fylke Buskerud	Bergdistrikt Østlandske	1: 50 000 kartblad 18153	1: 250 000 kartblad Hamar
Fagområde Geologi	Dokument type Rapport		Forekomster Ertelien	
Råstofftype Malm/metall	Emneord Ni Cu			
Sammendrag Det er bare 4 sideres notat (mangler noen sider?) Det ligger med et godt geologisk kart med forekomstene avmerket				

Oppgave: "Geologisk Kompilasjon Ringebu" 100 40 5/11K av 3.11.77

Vrålstad

Notes on The Geology of The Area Around Soknedalen.

M.J. Ryan.

Winter 1971-72.

M	I & F. etal	Selt	Eksp.
	Harg		
	Frank		
	Bygn. avd.		
	Elektro/Instr.		
	Engineering		
	Extern Eng.		
	Konstr.		
	Mekantisk		
	Miljøvern		
	Planlegging		
	Pros. tekn.		
✓	Prospektering		
	Tekn. best. ktr.		
	Tekn. sokr.		
×	U. o. s. l. o. i.		
Besvart (dato)		Sign.	

Frit Skjellby:

5 kopier des 14/272.

Fordeling: Vokes

Sølfidematium

Vrålstad

Heggen

Krølland

Orig. ved Hk arkiv

6

The 'Geological Map of The Area Around Soknedalen' has been compiled from the following reports:

1. Geological Reconnaissance of The Nickel Potential in the Sigdal-Hønefoss area of Norway - 1963.
by S.N. Charteris.
2. Report from the survey of the basic mass near Ulleren, at Tyristrand in Buskerud, Norway.
by E. Overwien, September-October 1963.
3. Report from the survey of the basic massive South of Lunder and some airborne electromagnetic anomalies in the Sigdal-Tyristrand area in Buskerud, Norway.
by E. Overwien, October-November 1963.
4. Rapport over Feltarbeidene i Ringerike. ~~72~~
Sommeren 1969.
by F.M. Vokes and T. Vrålstad.
5. Preliminary Report on Field-work in Ringerike.
Summer of 1970.
by M.J. Ryan.
6. Report on Field-work in The Sokna-Hønefoss-Randsfjord-Vaelsvatn District. Summer of 1971.
by M.J. Ryan.

All six reports agree - more or less - on the general geological history of the region. The compiled map simplifies the geology of the gneisses and expands, slightly, on that of the basic metamorphic and igneous rocks.

The "Banded amphibolitic gneiss" group, which makes up the bulk of the western part of the map-area, consists of a variety of rock types including adamellitic-granodioritic-quartz dioritic gneiss (the "hornblende-bearing dioritic gneiss of Charteris") with thin

amphibolite layers and lenses and minor pink gneiss, pegmatitic gneiss and "acid mica gneiss" as well as rare, thin bands of rusty, graphitic gneiss. The amphibolites within this group show no relict igneous textures, except for possible volcanic agglomerate structures seen in the well exposed Tyrifjord coast section. Most amphibolites are concordant with the lithological layering (which itself generally parallels the foliation) of the associated gneisses - but some are discordant. Except on Høgasen, sulphides are present only in trace quantities. This banded amphibolitic gneiss unit probably represents an original pile of mainly greywacke type sediments and basic volcanics and dykes with minor feldspathic, arkosic sandstones etc.

The leucocratic "Biotite ± garnet gneiss/schist" of the north-eastern part of the area appears to dip beneath the banded amphibolitic gneiss group. This may indicate a basement/cover relationship but direct evidence of this is lacking at present. Except for the body of massive amphibolite/metagabbro near to and running parallel with Begna river, significant amounts of basic rocks are absent in this biotite gneiss group.

"Pyroxene granulite (with red feldspathic gneiss)" occurs as a large lens north of Vaeleren lake. This unit is the "finkornige mørke og lyserøde gneiser" or "pyriclasite" of Vokes and Vrålstad who found from thin section examination that the very fine to fine grained, dark coloured rocks consist of about 50% orthopyroxene and 50% plagioclase. In the field the rock may resemble very fine grained basic amphibolite (or even dark, glassy quartzite) which accounts for the discrepancy between the Vokes-Vrålstad map and that of Charteris.

It is interesting that this unusual lithology lies close to the line of prospects and mines that runs from Ertelia-E. of Vaeleren-Langdalen-Høgasen-Soknedalen. This close spatial association may be

simple coincidence or there may be some genetic significance. The origin of the lens of granulite, after only reconnaissance mapping, is problematical. Mylonites occur along the S.E. shore of Vaeleren and it may be that the lens is allochthonous, having been "sliced" into the amphibolite facies gneisses etc., which surround it. On the other hand the lens may be an autochthonous relic of former widespread granulite facies rocks (or due to some other cause) around which some shearing has occurred. During deformation the compact, dry granulite lens would have behaved differently from the migmatitic amphibolitic gneisses around it. The axial planes of the NNW-SSE or N-S folds which form the major structural elements of the area appear to be either vertical or steeply dipping to the east. With a major syncline axial plane trace running through Vaeleren so that the granulite lens is occupying the axial region of the fold, some broad control on the line of sulphide bearing intrusions etc., may have existed. (If this speculation is correct it may be worthwhile carrying out more reconnaissance further west where similar large structures occur - see report by W. Walker: "Geology of The Sigdal-Modum Area, Norway.")

Basic rocks can be divided into four broad groups:

1. Amphibolite
2. Metagabbro/massive amphibolite
3. Gabbro (-Peridotite) of Heieren Complex type
4. Gabbro/Norite of Ertelien type

The first group, as already mentioned, show no recognisable igneous textures etc., although volcanic agglomerate structures may be present. The amphibolites are dark, sometimes greenish coloured rocks, frequently migmatized and generally lacking significant sulphides, except at Høgasen and probably Støverntangen on the southern side of Soknedalen.

The second group crop out as subconcordant/concordant sheets or bosses with sheared, foliated, migmatized margins and massive, garnetiferous interiors with good relict gabbroic texture.

The Heieren gabbro consists of purple-grey feldspar and greenish ferromagnesian minerals, similar to the gabbro and olivine gabbro "coronites" of the Bamble Sector where such rocks are considered to be (late) syntectonic intrusions with associated rutile-albitites and apatite veins etc.

Rocks of the fourth group appear to have suffered little or no metamorphism with fresh feldspar etc., well preserved and appear to be late or even after the main tectonic-metamorphic event.

Sulphides:

Nearly all of the significant sulphide occurrences fall in the Ertelia-Vaeleren-Langdalen-Högasen-Soknedalen belt and a variety of associations is present.

The Skog (Skang) mines mineralisation appears to be of fahlband type (Vokes and Vrålstad p. 25-26) while at Ask (not along the line mentioned), Högasen and Støverntangen the association is with amphibolite/metagabbro? dykes. At Tysklands mine, and possibly Langedals mine also, there appears to be an association with small gabbro/norite intrusions that are related to structures in the gneisses and the Ertelien mines are in the large norite ? boss or ? funnel shaped intrusion, not (at present) obviously related to any local structure. As well as that listed above, weak disseminated sulphide mineralisation is present in the Heieren Complex and occasionally in the gneisses. The sparse sulphides in the basic massif south of Lunder (Overviken) complete the picture if Pb-Zn veins of Oslo province type are omitted.

GEOLOGICAL MAP OF THE AREA AROUND SOKNEDALEN



LEGEND

- | | |
|--|---|
| Ultramafite (peridotite) | Biotite ± garnet gneiss/schist |
| Gabbro/norite | Granitic gneiss |
| Metagabbro / massive amphibolite | Granite |
| Amphibolite | Pegmatitic gneiss |
| Banded amphibolitic gneiss | Pink gneiss |
| Pyroxene granulite (with red feldspathic gneiss) | Drift |
| Mine or prospect | Fault |
| Road | Strike & dip of lithological layering (usually the same as foliation) |

Scale 1:50,000

0 1 2 3 4 5 6 km

Geological map of the area around Soknedalen

BY 1349

58468

1998-40