Bergvesenet rapport nr	Intern Journal nr	Internt arkiv nr	Rapport lokalisering	Gradering
5884	Kasse nr. 42			
Kommer fra ..arkiv	**Ekstern rapport nr**	**Oversendt fra**	**Fortrolig pga**	**Fortrolig fra dato:**
Folldal Verk AS		Folldal Verk a.s.		

Tittel

THE RÅNA MAFIC - ULTRAMAFIC INTRUSION/ NI - EXPLORATION POTENTIAL

Forfatter	Dato År	Bedrift (oppdragsgiver og/eller oppdragstaker)
Rosenquist, harry	21.01 1993	Outokumpu Norge A/S

Kommune	Fylke	Bergdistrikt	1: 50 000 kartblad	1: 250 000 kartblad
Ballangen	Nordland		13311	Narvik

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

Råstofgruppe	Råstofftype
Malm/metall	Ni

Sammendrag, innholdsfortegnelse eller innholdsbeskrivelse

Rapporten gir en oppsumering av tidligere gjennomførte undersøkelser, og inneholder også en diskusjon/vurdering over hvor man skal gå igang med undersøkelser i feltet med henblik på å finne mer malm

THE RÅNA MAFIC-ULTRAMAFIC INTRUSION /
NI-EXPLORATION POTENTIAL.

Initial discussion with NGU , Trd 15.1.93

General:

Anticipating an operative responsibility at the Ballangen Ni-mine (Nickel og Olivin AS), Norsulfid allocated a minor exploration budget (NOK 300.000) to cover initial costs 1993 for a tentative Ni-exploration project in the Råna area. A short discussion with appropriate NGU geologists outlined

- the amount of earlier work (by NGU)
- views on unexplored Ni-potential worth considerations.

NGU 15.1.93 , Kl 8 - 10 am.

Ingvar Lindahl (NGU, Nordlandsprogrammet)
Rognvald Boyd
Carl O Mathiesen

Harry A Rosenqvist

ON THE NGU-ACTIVITY:

The main exploration period involving NGU was during 1970-76 (Stavanger Staal AS) when The Bruvann deposit as well as the whole intrusion was explored in a fairly systematic way.

* Reconnaissance prospecting and geological mapping of the Råna intrusion. Bedrock samples were systematically assayed , but only the Bruvann area gave positive indications of potential for sulphide nickel mineralizations . According to Boyd, "Hæklis methods" ie. silicate Ni etc. were emploied.

* A lot of gravity work was also done, indicating that the "root of the Råna intrusion" is revealed by a very prominent positive gravity anomaly in the Northern part of the area; surface geol. mapping also showed the majority of ultramafics in this part of the intrusion.

Gravity data possibly (?) exists in DIGITAL FORM (for renewed interpretation...)

Also EM (Turam-VLF) surveys were carried out but the amount and results were not clearly stated/understood during this short meeting. Some testing of IP-methods and an AMT-survey were also mentioned.

The same is tru for MAG-surveys, which possibly have not (??!!!) been carried out on the ground. An aeromag survey was done in 1972 (Rpt by Håbrekke and Åm)

* Diamond drilling outside the Bruvann deposit (25.000m) was also carried out ; mainly wild cut holes for geological purposes in the Bruvann - Rånbogen - Saltvik area. This drilling showed that the impression gained from geological surface mapping is representative.
It appeared to confirm that ultramafic rocks occure to great depths in the Northern part of the Råna intrusion but mainly as bands/layers within the norite and perhaps not (???) as major accumulations /concentrations (above +0 ie sea level).
Only minor sulphide disseminated portions were intersected (Ni-bearing in the NW /peridotites but virtually without base metals in the Saltvik area/ norite ?)

.....

MISC. INTERPRETATION AND VIEWS (Boyd & Mathiesen):

1. The NW portion of the Råna intrusion is interpreted to represent an overthrusted block (upfaulted..) and thus representing "deeper parts" of the massif. (Boyd and Mathiesen 1979). This "**Arneshesten block**" is distinguished by its relatively high proportion of ultramafic rocks to norite.....and by the presence of large volumes of peridotite with nickel-bearing sulphide disseminations (mainly at Bruvann I assume..?)
In addition to interrupted primary structures within this NW - block ...approx sized 4 * 1-1,5 km... lenses and slabs of country rocks incl. graphite schists have been emplaced within this apparently tectonized block.

2. As sulphide bearing schists incl black schists are said to be common in the surroundings of Råna, sulphur isotope studies were carried out with Råna sulphides. However .... the results suggested that "external sulphur" did not play any significant role in the formation of the Bruvann mineralization.....ONLY LOCALLY though !! ?

3. Publications by Sarah-Jane Barnes conclude that not only the Bruvann sulphide mineralization but possibly the Råna intrusion in general and its sulphides are "PGE - depleted". ... She also states that the "Råna magma in general was depleted in PGE, possibly by the removal of small amount of sulphide prior to emplacement of the magma in its present position . This suggest that the Råna magma had a long history of sulphide segregation"....
Positive or negative interpretation as far as Ni-sulphide potential is concerned..??

.....

Anyway.... The Bruvann deposit, though not of spectacular Ni-grades, is a real example of sulphide accumulation and thus a proof of the fact that economically interestin sulphide segregation does occure! There might be several academic explenations on the reasons for sulphide segregation and accumulation at the Bruvann locality. Boyd is suggesting further microsond work.. ; he is also quoting publications were the "lowering of solubility of sulphur, was caused by assimilation of country rock in the magma and thus addition of silica and alkalis into it".

NGU - REPORTS

It was agreed that

* The "summary report from 1980" , would be copied and mailed to Norsulfid in Gjettum.

* C O Mathiesen would prepare a complete list of "Råna reports" and send to Norsulfid in Gjettum.

Confirming letter encl.

outokumpu NORGE A/S

INITIAL CONCLUSIONS / HAR:

1. The most apparent area for further exploration is the Arnes area ie. **the NW-block of the Råna intrusion.** This would also imply a close cooperation with the N&O mine , particularly the mine geologist(s).

2. A closer look into results of the NGU-exploration is needed incl. information on "practical matters" (data were and in what form / availability, grid details etc. etc). Again this should obviously include discussions with N&O mine geologists (most of the data probably exists in some form at the mine).

1 9 9 3 EXPLORATION / INITIAL PROPOSAL:

3. One possible first approach could include detailed **ground geophysics** complemented by down the hole geophysics and if possible a better (?) understanding of the **structural geology.** This might sound like an overoptimistic "short cut" but at least the most obvious drill targets could be outlined and important systematic data obtained for further exploration.

   * Petrogeophysical parameters of a repr. sample suite
   * Detailed ground mag. (and gravity if not available)
   * EM and/or IP - methods if appropriate ; this could include EM-37 tests in available drill holes at Arnes:

4. Also a general study on the geology, mineralogy, geochemistry etc. etc. of the Råna intrusion could be appropriate for a "top class consultant" with academic background (**Prof. Heikki Papunen**). The aim of this work would be an assessment on the general Ni-ore potential, incl. type of mineralization to be expected.., in Råna.

Gjettum 21.1.1993

Harry A. Rosenqvist
Exploration mgr.

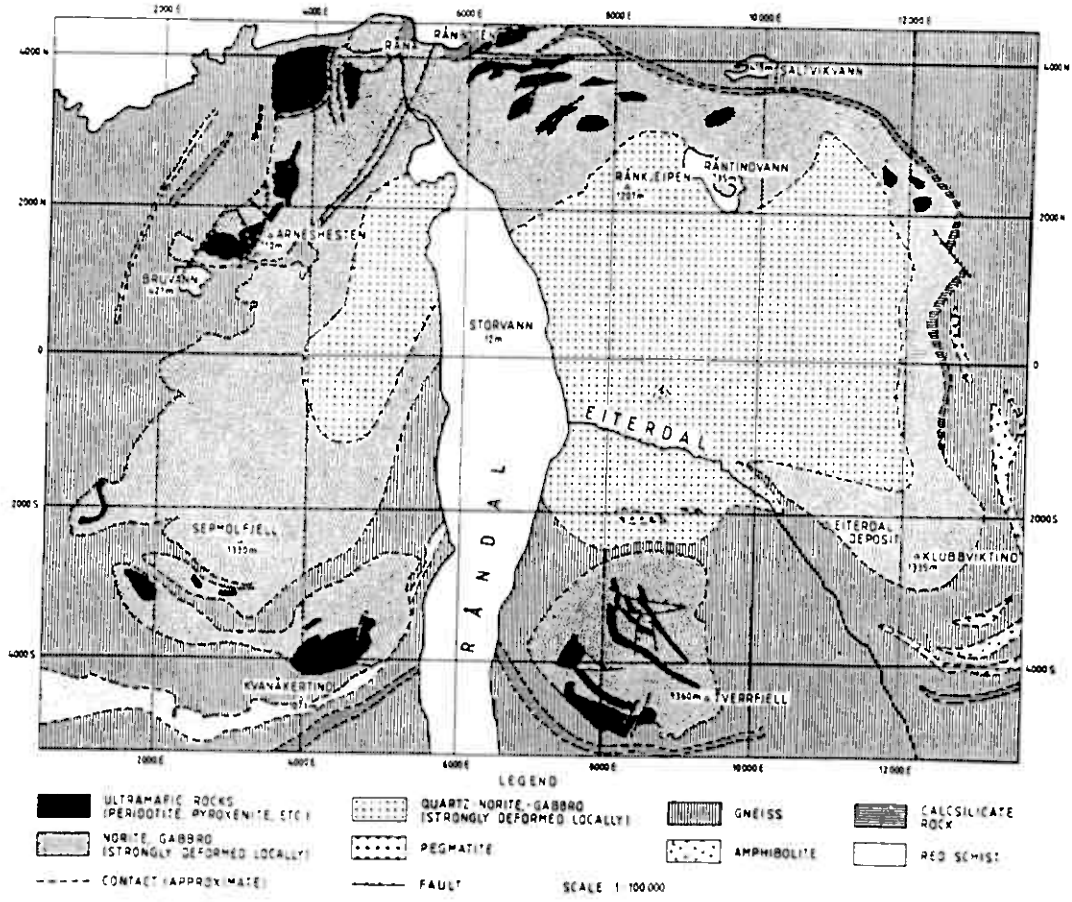

Fig. 5. Geological map of the Råna intrusion (from Boyd & Mathiesen 1979).