Bergvesenet rapport nr	Intern Journal nr	Internt arkiv nr	Rapport lokalisering	Gradering
BV 398			Oslo	
Kommer fra ..arkiv	**Ekstern rapport nr**	**Oversendt fra**	**Fortrolig pga**	**Fortrolig fra dato:**
Østlandske	NGU 1750/49G			

Tittel

Geologisk kartlegging på Romeriksåsene, Oslofeltet, Nannestad, Nittedal, Lunner

Forfatter	Dato	Bedrift
	1979	USB

Kommune	Fylke	Bergdistrikt	1: 50 000 kartblad	1: 250 000 kartblad
Nannestad, Nittedal, Lunner	Akershus, Oppland	Østlandske		

Fagområde	Dokument type	Forekomster
Geologi		
Råstofftype	**Emneord**	
Malm/metall		

Sammendrag

UNDERSØKELSE AV
STATENS BERGRETTIGHETER

1979

NGU-rapport nr. 1750/49G

Geologisk kartlegging på Romeriksåsen i Oslofeltet. Nannestad/Nittedal/Lunner, Akershus og Oppland fylker.

Norges geologiske undersøkelse

Leiv Eiriksons vei 39 Postboks 3006 Postgironr. 5168232
Tlf. (075) 15860 7001 Trondheim Bankgironr. 0633.05.70014

Rapport nr. 1750/49 G	Åpen/Fortrolig til 31/12 1980

Tittel:

Geologisk kartlegging på Romeriksåsen i Oslofeltet.

Oppdragsgiver:	Forfatter:
Industridepartementet	Dr. Peter W. Scott University of Hull, England
Forekomstens navn og koordinater:	**Kommune:** Nannestad, Nittedal og Lunner
Fylke: Akershus og Oppland	**Kartbladnr. og -navn (1:50 000):** 1915 III, Nannestad
Utført: Feltarbeid: 1976-79 Rapport : Sept. -79	**Sidetall:** 13 **Tekstbilag:** **Kartbilag:** 1

Prosjektnummer og -navn:
1750 - Undersøkelse av statens bergrettigheter

Prosjektleder: Førstestatsgeolog Ingvar Lindahl

Sammendrag av Svein Olerud:

Det kartlagte området utgjør den nordligste delen av kartblad Nannestad, 1:50 000.

Bergartene i området er hovedsakelig intrusive Oslofeltbergarter av monzonittisk-granittisk sammensetning, de er inndelt i tilsammen 14 enheter. Lavabergarter forekommer som mindre xenolitter. Kambro-siluriske hornfelser og prekambriske gneiser finnes i området.

Hovedtrekkene ved kartet er to sirkulære strukturer. Stryken ringstruktur ligger i vest med senter ved Harestuvatnet, i øst ligger en ufullstendig ringstruktur representert med ekeritt i sentrum og syenitt rundt. Den sistnevnte kan være et ringkompleks som er delvis ødelagt av den sentrale- (og yngste-) ekeritt intrusjonen.

Det er påvist 8 områder med hydrotermal omvandling av bergartene. Disse omvandlingene kan være indikator for mineraliseringer av typen porphyry molybden. Noen av disse områdene bør følges opp med detaljerte undersøkelser.

Nøkkelord		
	Berggrunn	
	Hydrotermale omvandlinger	
	Mo	

Ved referanse til rapporten oppgis forfatter, tittel og rapportnr.

INNHOLD

TEGNING

INNLEDNING - KONKLUSJON

Arbeidet for denne rapporten er gjort av Dr. P.W. Scott, Universitet i Hull, England. Feltsesongen 1976 og 1977 kartla Scott Stryken ringstrukturen som har sitt senter ved Harestuavatnet. Feltsesongen 1979 lyktes det å få Scott til å fortsette kartleggingen lengre østover på kartblad Nannestad, 1:50 000 med støtte fra USB. Deler av arbeidet er gjort med stud.techn. J.S. Sandstad som assistent og i samarbeid med undertegnede.

Hensikten med kartleggingen var følgende:

1) Å sette Elsjøfeltet og dets mineraliseringer i en større strukturgeologisk sammenheng.
2) Feltsesongen -78 ble det gjort et par funn av molybdenglansmineraliseringer på den nordlige delen av kartblad Nannestad i områdene Mosatjern (UTM 058768) og Gåstjern (UTM 053785). Ønsket om å sette disse mineraliseringene inn i en større geologisk sammenheng var derfor endel av hensikten med arbeidet.
3) I tillegg til dette skulle kartleggingen omfatte registrering av hydrotermale omvandlingsfenomener som eventuelt kan ha tilknytning til molybdenmineraliseringer av typen porphyry molybden.
4) Berggrunnskart for kartblad Nannestad 1:50 000 er under arbeid og materialet vil bli brukt på dette kartet.

Resultatet av kartleggingen er at en i tillegg til Stryken ringstrukturen i vest på kartet (Tegn. 1) får fram en ny struktur i det østlige området. Sannsynligvis er det restene av en ringstruktur som er delvis ødelagt av en yngre ekeritt intrusjon. Elsjøfeltet ligger som en kambrosilur rest i utkanten av denne ringstrukturen. Molybdenmineraliseringene og et nytt funn av en blymineralisering er plassert i de sentrale deler av ekeritt intrusjonen.

De nye områdene med hydrotermal omvandling av bergartene som er funnet er interessante, og noen av dem bør følges opp med mer detaljerte arbeider, for å undersøke om de kan være indikatorbergarter for mineraliseringer av typen porphyry molybden.

Området avmerket med 1. på Tegn. 1 ved Høgbrenna er av spesiell interesse da en der har et område på flere hundre meter i diameter med fullstendig omvandling til kvarts-sericitt bergart.

Trondheim, 14. november 1979

Svein Olerud

INSTRUCTION FOR WORK

Location: Northern part of Nannestad 1:50 000 sheet.

Objectives: (a) To map at 1:10 000 scale the area to the north of the Storøyungen granite and to the east of the Stryken Ring Complex.

(b) To search for and note areas of hydrothermal alteration and other signs of potential ore deposition.

DESCRIPTION OF ROCK TYPES AND DISTRIBUTION ON THE MAP

The following main igneous rock types are present: syenite (porphyritic and non-porphyritic), syenite porphyry, peralkaline syenite, ekerite, biotite granite, monzonite, felsite (and felsite porphyry) and breccia. Pre-Cambrian gneiss with a dominant east - west foliation are present in the north-east of the area and probably underlies most of the thickly covered area to the north and north-west of Gardermoen. Hornfelsed Cambrosilurian sediments occupy the inlier of Tripperudhøgda and Engelstadkampen. Similar rocks are present as blocks within syenites adjacent to the inlier.

The major feature of the map is the two circular structures: namely, the Stryken Ring Complex in the west and the incomplete structure represented by the syenite and ekerite in the east. Appropriately, the oldest strata are found on the outside of the circular structure (Pre-Cambrian and Cambrosilurian) and between this structure and the Stryken Ring Complex (monzonites). The Stryken Ring Complex is interpreted as a 'cauldron root' (cf. Segalstad 1975 p. 322) exposed at a deeper level of erosion than other cauldrons in the Oslo region.

Solid geology boundaries have been drawn as a dashed line on the map in the extreme east of the area where there is a thick cover of Quarternary clays. It has been possible to indicate the position of boundaries here as intermittent exposures of solid bedrock are present in the deep valleys occupied by the rivers Leira and Rotua.

The following description of the igneous rock types is based solely on examination of the rocks in the field and may not correspond exactly to descriptions once thin sections have been examined.

Syenite

This rock is equivalent to the Grefsen syenite of Oftedahl (1948) and the nordmarkite type 1 of Barth (1944), ie. it has a significant amount of plagioclase and the ferromagnesian minerals are biotite and hornblende. Small amounts of quartz (<10%) may or may not be present. The rock is overall orange-ish or grey-ish, but typically the plagioclase is present as medium to dark grey crystals. Porphyritic varieties, with medium to dark grey feldspar phenocrysts in an overall grey or more usually orange-ish or red-ish matrix, occur. An attempt has been made on the map to show areas where the porphyritic type is dominant, ie. mainly to the north of Råsjøen and surrounding the felsite north-west of Råbjørn. The syenite around Skotjernet is medium grained, equigranular and orange in colour, but immediately adjacent to the lake, a fine grained syenite is present.

To the north of Råsjøen the porphyritic syenite is in sharp contact with the grey syenite porphyry to the west (see p. 7), but to the south of the lake, areas of porphyritic syenite are present within the syenite porphyry without any sharp contact.

To the north of Bjertnessjøen adjacent to the ekerite, the syenite sometimes contains less biotite and plagioclase becoming more like a peralkaline syenite. This maybe an effect to the later intrusion of the ekerite; but, elsewhere the ekerite is in sharp contact and sends veins into the syenite. Xenoliths of Pre-Cambrian gneisses are common within the syenite near to the contact with the Storøyungen granite.

Syenite porphyry

This rock is equivalent to the Byvatn and Fjellsjøhøgda types of syenite porphyry of Saether (1962). The matrix is always grey in colour in the finer grained varieties with the feldspar phenocrysts being dark grey when fresh, but appearing cream or pink-ish on weathered or joint surfaces. The ferromagnesian minerals are biotite, hornblende and pyroxene. This porphyry forms the outermost ring dyke of the Stryken Ring Complex to the west where its outcrop is narrow and the intrusion is steep-sided. However, it is areally a more extensive intrusion in the eastern part of the ring complex, is overall more coarsely crystallised, and in places forms an even coarser rock indistinguishable from some varieties of the porphyritic syenite. This similarity is to be expected, where conditions favoured the coarser crystallisation, as mineral compositions in the Grefsen syenite and syenite porphyry have been shown by the author to be almost identical.

Peralkaline syenite

This is equivalent to nordmarkite type 2 of Barth (1944) and nordmarkite of Saether (1962). In the present area, apart from the major intrusion around Harestua within the Stryken Ring Complex and the Hakadal nordmarkite, it occurs only as

a local quartz poor development within the major ekerite body. The rock is medium to coarse grained comprises alkali feldspars, greenish amphibole and/or aegirine without biotite. In the field it is the absence of biotite and dark grey feldspar which distinguishes this rock from Grefsen syenite, and the lack of quartz (<10%) which distinguishes it from ekerite.

Ekerite

This alkali granite is dominantly a pale pink-ish or grey rock, ranging from medium to coarse grained. It comprises alkali feldspar, a variable amount of quartz (10-30%) and one of more alkali pyriboles. There is no biotite. Typically one pyribole is late crystallising and forms as fibrous crystals in cavities. Often the ferromagnesian minerals are almost non-existant. A fine grained variety of ekerite is present as small veins and patches throughout the main intrusion. Where this type is dominant it is shown separately on the map.

Biotite granite

In addition to the Storøyungen granite, a small area of biotite granite is present in the north-east edge of the map. The biotite granite is coarse grained with pink and white feldspars, abundant quartz (ca. 30%) and mica. Finer grained varieties are present as small patches within the Storøyungen granite.

Monzonite

Two areas are provisionally mapped as monzonites (larvikite on the map) because of the increased amounts of ferromagnesian minerals in these rocks. One sharp contact of the monzonite south of Råsjøen with the syenite porphyry has been found showing the monzonite to be older. This monzonite is dominantly coarse grained; but, in places, is crammed with xenoliths. The xenoliths range from fine grained grey types to medium grained types with a similar mineralogy to the monzonites. In some fine grained types porphyroblasts of feldspar and mica indicate that the xenoliths are in an advanced stage of assimilation.

The monzonite around Lauvtangen is coarse grained with biotite as the dominant ferromagnesian mineral. The extent of this body southwards is not known.

Felsite, felsite porphyry and breccia

These are dealt with together because they form a single intrusive phase (probably a diatreme) and sharp contacts between these rocks are never observed. The felsite is a grey, brown or white rock, very fine grained, well jointed commonly with manganese staining on joint surfaces. When feldspar phenocrysts are developed it becomes a felsite porphyry. Flow banding is occasionally observed in both varieties. In one small area quartz phenocrysts are also present (quartz feldspar porphyry).

SEQUENCE OF INTRUSION

The general order of intrusion is established as follows:

1. Intrusion of monzonite.
2. Intrusion of syenite porphyry comprising outer ring dyke of Stryken Ring Complex.
3. Explosive event with emplacement of diatremes in outer part of syenite porphyry ring dyke.
4. Intrusion of syenite and porphyritic syenite.
5. Intrusion of nordmarkite of Harestua, nordmarkite of Hakadal, ekerite and biotite granite. The relative ages of the biotite granite and other rocks cannot be established as they are nowhere in observable contact. Olerud has shown that the Hakadal nordmarkite intrudes the Storøyungen granite just to the north of Ås Gård, Hakadal. Thus, it may be that the biotite granites are the earlier intrusions.

HYDROTHERMAL ALTERATION AND OTHER AREAS OF POTENTIAL ORE MINERAL DEPOSITION

1. North-east of Høgbrenna (UTM 008807). Host rock: felsite and porphyritic syenite. Quartz sericitic alternation present. Pyrite present but no molybdenite found. Extent of area of alteration not determined.

2. East of Nordre Skotjernfjell (UTM 996793). Host rock: felsite. Small area of quartz sericitic alteration with a little pyrite (approx. 200 m square).

3. Gåsetjern (UTM 053785). Host rock: ekerite. Small area of alteration beside road. A little pyrite and molybdenite. Road section is approx 20 m long.

4. Between Dalstjernet and Grimstjernet beside new road (UTM 058729). Host rock: porphyritic syenite and biotite granite. Chloritic and probably quartz sericitic alteration. A lot of disseminated pyrite found along with some molybdenite.

5. Åsvegen, on roadside beside Kringler skole and further north towards Hokringler (UTM 096787). Host rock: ekerite. Several vein-like patches of very reddened ekerite cut by veinlets of white clay. Reddened ekerite is surrounded by normal ekerite heavily stained with manganese. No sulphides found.

6. 500 m north of Skottjernet (UTM 089796). Host rock: felsite (or microsyenite). Some of the rock within the felsite is cream to white coloured and may have been affected by hydrothermal alteration. No sulphides have been found.

7. West of Merratjernet, 1,5 km east of Råbjørn (UTM 043792). Host rock: ekerite. Zone of reddened ekerite with narrow vertical white vein in centre of reddened zone. Vein is 27 cms wide and contains abundant galena and pyrite.

8. Økriseter, north-north-west of Håkensbrenna (UTM 047809). Host rock: ekerite. Small area of quartz sericitic alteration. No sulphides found.

With the exception of no. 4 all of the areas of hydrothermal alteration are within either the ekerite or the diatreme structures. More detailed examination of these two rock types may result in further areas of alteration being found.

FURTHER WORK NECESSARY

Although a complete map has been produced, some details of some boundaries need examining and the internal structures

of some intrusions need examining. Areas where further work is needed before publication of the map are as follows:

a. Central part of the ekerite body.
b. Monzonite around Lauvtangen.

The breccia structure is best observed on weathered surfaces as contrast between fragments and matrix is not usually visible on a freshly broken surface. In the major felsite/ breccia structure north-west of Råbjørn, the breccia comprises mostly felsite fragments; but, in the structure 500 m north of Skotjernet, large rhomb porphyry blocks are found. Also in the latter structure the felsite is coarser and contains muscovite (probably this rock is more correctly called a microsyenite). Two small areas of felsite disconnected from the main structure north-west of Råbjørn are thought to have been separated as a result of later intrusion of the porphyritic syenite.

c. Western boundary of monzonite south-west of Råsjøen.
d. Central part of diatreme structure north-west of Råbjørn and detail of contact of diatreme with surrounding rocks.
e. Examination in considerable detail of all areas with hydrothermal alteration.

University of Hull, England
September 1979

P.W. Scott
(sign.)

REFERENCES

Barth, T.F.W. 1944: Studies on the igneous rock complex of the Oslo region II. Systematic petrography of the plutonic rocks. Skr. Norske Vidensk.-Akad. Oslo I. Mat.-Naturv. Klasse. 9, 104 pp.

Oftedahl, C. 1948: Studies on the igneous rock complex of the Oslo region IX. The feldspars. Skr. Norske Vidensk.-Akad. Oslo I. Mat.-Naturv. Kl. No. 3., 71 pp.

Saether, E. 1962: Studies on the igneous rock complex of the Oslo region XVIII. General investigation of the igneous rocks in the area north of Oslo. Skr. Norske Vidensk.-Akad. Oslo I. Mat.-Naturv. Kl. Ny ser., 1, 148 pp.

Segalstad, T.V. 1975: Cauldron subsidences, ring structures, and major faults in the Skien district, Norway. Norsk Geologisk Tidsskrift, 55, 321-333.

LEGEND:

- Unexposed
- Biotite granite - aplite
- Ekerite
- Fine grained ekerite dominant
- Peralkaline quarts syenite = Nordmarkite
- Syenite porphyry (Byvatn type)
- Syenite porphyry. Coarser grained than Byvatn type
- Syenite. Non-peralkalkaline
- Porphyritic syenite } Non-peralkaline
- Fine-grained syenite } Non-peralkaline
- Felsite, Felsite porphyry and flow banded felsite } In diatremes
- Quarts feldspar porphyry } In diatremes
- Breccia } In diatremes
- Ignimbrite } In diatremes
- Rhomb porphyry } In diatremes
- Green porphyry } In diatremes
- Larvikite and other monzonites
- Precambrian gneisses

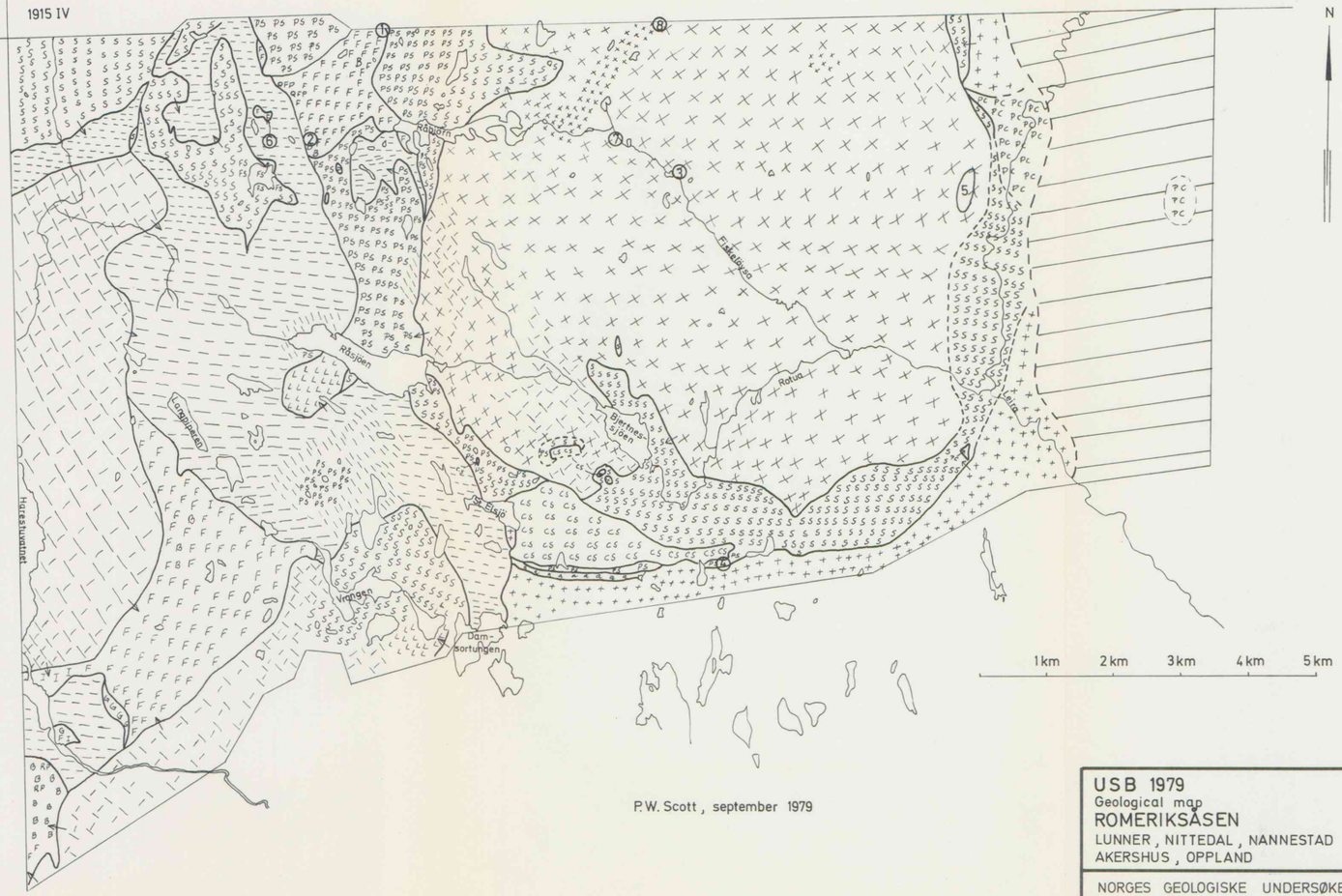
- C.S Cambrosilurian hornfelses
- Mapped contacts
- Inferred contacts under thick cover
- Intrusive contact. Arrow points from intruding rock into its host rock

Where no boundary between rock units is shown the contact is diffuse

① – ⑧ Areas of hydrothermal alteration

1815 I 1915 IV

1815 II



P.W. Scott, september 1979

USB 1979 Geological map **ROMERIKSÅSEN** LUNNER, NITTEDAL, NANNESTAD AKERSHUS, OPPLAND	MÅLESTOKK 1:50 000	OBS. P.W.S.	Aug. -79
		TEGN. "	Sept. -79
		TRAC. L.F.	Nov. -79
		KFR. S.O.	
NORGES GEOLOGISKE UNDERSØKELSE TRONDHEIM	TEGNING NR. 1750/49G-01	KARTBLAD (AMS) 1915 III	