Bergvesenet

Postboks 3021, 7002 Trondheim

Rapportarkivet

Bergvesenet rapport nr	Intern Journal nr	Internt arkiv nr	Rapport lokalisering	Gradering
BV 2246				**Fortrolig**
Kommer fra ..arkiv Sulitjelma Bergverk A/S	Ekstern rapport nr "522230006"	Oversendt fra	Fortrolig pga	Fortrolig fra dato:

Tittel

Geologi Os, Rognan.

Forfatter	Dato	Bedrift
NEEDHAM R.	1967	Sulitjelma Gruber A/S

Kommune	Fylke	Bergdistrikt	1: 50 000 kartblad	1: 250 000 kartblad

Fagområde	Dokument type	Forekomster
Råstofftype	Emneord	

Sammendrag

Generell berggrunnskartlegging soraust for Rognan. Omradet er intenst folda, noe som vanskeliggjor lithologisk og strukturell tolking. Bergartene Fauske Marmor, div. amfibolitter, glimmerskifre, kvartsitter og gneiss er skildra. Mineralisering av magnet- og arsenkis i amfibolittbergart, pa arer av kvarts og biotitt.

R.S. Needham, Os, Rognan. Report July - Sept. 67.

Introduction.

The rocks of the area, having been subjected to great forces of pressure in the Caledonian are of course metamohpic in type but with a wide assortment of rock types. Folding is intense throughout and is displayed expecially well by the isoclined folds in the centre of the area. The littologies have a general N-S trend and the Fauske Marble outcrops along the vally of Saltdal which is occupied by a large anticline. Although the rocks to the last display a dip to the west and the rocks to the west display a dip to the east, it is difficult to assume any broad synclinal form over the whole area due to the lack of correlatory and structural evidence. This question is the major problem discovered as a result of the mapping, and embraces the correlation of various littologies, and the exact structural translation. Although no conslusive answer is present in this area it is possible from the evidence put forward to sugget an answer, to be discussed later in the report.

Succession and Rock Description from west to east.

Fauske Marble.

Although the exposure is largely masked by drift deposits, that which is exposed is far from uniform. Although a general steel-greyblue colour is generally characteristic, there are numerous groups of white quartzitic bands, biotite-rich bands and also occurrence of pyrite, graphite etc. as patches or along bedding planes. "Grain" size varies from coarse saccaroidal to microcrystalline. In spite of its massive appearance the Fauske Marble is tightly compressed and folded, best seen by the colour banding in the rock.

Various Amphibolites.

Lying above the Fauske marble and forming the steeper part of the valley slope is a large group of amphibolites, varying from fine-grained amphibole quartzites to coars-grained garben schists. Folding causes a thin wavybandet appearance and littology varies greatly, bands beeing only 5 metres wide in places. The lowest amphibolits are dark in colour with quartz eyes and hornblende crystals reaching 6 cm in length in places. The general texture is however one of a fine-grained amphibole quartzite, and is distinguishable from the succeeding coarser deavage garben schist.

Here is a high percentage of biotite present in the rock, whilst garnets appear at the base and at the upper limit of this division. In between the garnetiferous zones the rock is thin bedded with shaley bands, in ports papery,

consisting of a high chloritic content. Above the garben schists are more fine grained rocks, quartzitic in texture, but biotite and graphite beeing characteristic of the zone. The final zone of the assorted amphibolite comes next, and consists of a very fine-grained amphibolite. As the amphibolites are tightly folded, banding can still be seen although there is less variation in rock type within this zone.

Occassional bands of papery schists occur, and the upper part of this zone can be mapped separately due to the presense of igneous dykes of "granite". They are about a metre wide and are fine-grained and light in colour, consisting of intergrown quartz and felspar and about 10 % biotite which is sub-lineated.

Micaschists.

The termination of igneous intrusion with a change in country rock type from fine amphibolite to mica schists. The lower parts are rusty brown in colour but eastwards the rusty colour is lost and the biotite content drops to give fine micaceous quartzites.

Impure Marble.

Perhaps the most distinct lithology in the mapping area, this zone consists of an alternation of "marble", a very micacerous quartzite, and a quite pure white quartzite. The pure quartzite is hard and result in an undulating topography, with these hard bands forming the crests to the ridges. The crests are flanked by bands of marble, and the "valleys" are formed of micacerous quartzite. The distance from ridge to ridge is about 20 metres, and this topography can be seen well just NW of Baatskar. The marble is charactilistically a grey-blue colour with a calc-silecate mineral being present throughout (probebly Tremolite) except for some bands of pure saccharoital marbles which reach 5 metres in width (eg. N.end. of Langvatn).

Quartzites with injected "Granites".

An abrupt change in lithology is marked by a thin glimmerschiefer band followed by a garnet gneise, which is the division between the "Irensolite Marble" and a great extent of rocks with a high quartz content, ranging from pure and micaceous quartzites in the west to garnet mica schists and gneisses in the east. There is extensive "granite" intrusion throughout, but although this "granite" is similor to the one mentioned above, it is much coarser, has large felspars in places and has muscovite in predominanse over biotite, in fact biotite is often completely absent. There has been at least 2 phases of injection and early injections have suffered folding.

The injections are not large bodies which can be mapped on this scala, but occurs as dykes from 10 cm to about 8 metre in width.

Furulund Gneiss.

Following the quartzites is the first lithology able to be correlated by rock type with preveously known lithologies in other regions. This is the Furulund Gneiss, but which is represented here by rusty garnet glimmerschiefer, garnet gneiss (rusty) and a clean pale garnet muscovite schist from west to east. An amphibole shale is also present in the rusty glimmerschiefer, but this is discontinous.

Calcschists with amphibolite bands.

The lower Furulund rocks here count of a loge expanse of calcschists fine grained with a charactiristic dimpled wealthed surface - with thin bands of amphibolite. The amphibolite varies from fine amphibole quartzites to the east, to very coarse "spotted" amphibolites to the west.

Sjønstå.

The orset of the Sjønstå is taken as the presence of interbedded arkosic sandstones and medium grained biotite gneiss.

The lower Sjønstå is recognised as a corse grained rusty garnet gneiss, but the boundery between upper and lower is difficult pinpoint due to a gradual transition of rock type over 100 - 150 metres. Likewise the boundary between the Furulund above is hard to discern, but the first edeschist was taken to represent the orset of the Furulund.

The division between lower Sjønstå and the upper Steinkjerringo was taken as the very distenct amphibolite zone, because although the Steinkjerringo gneisses and schists definately contain graphite, it is by no means great in quantity and a division based on the presence of graphite was not possible, as the rock types of the 2 major rock littologies are very similar here.

Steinkjerringo.

The amphibolite band is very distinctive, but is reduced in size northwards, whilst it reaches a thicknes of up to 6 ½ metres to the south. Rock types in the band vary from amphibole slates to pure black hard amphibole rock displaying a beautiful garben texture. Below this there is the gneiss and glimmerschiefer containing graphite which was mentioned above, and which has garnets in places. Between this and the Pieske Marble is a mica schist, rusty in colour and containing biotite and muscovite.

The Pieske Marble throughout is impure and brown and contains much biotite. There are also beds of glimmerschiefer in the Marble.

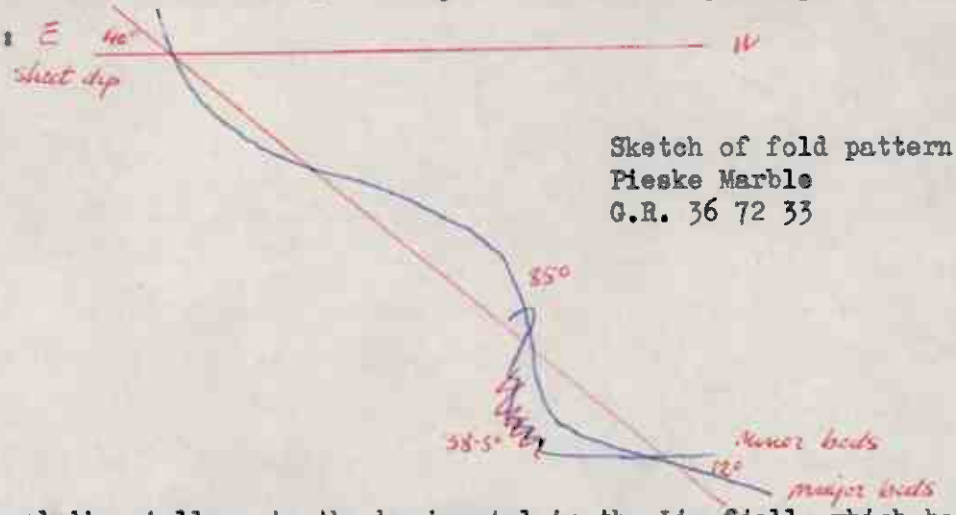
Liggfjell.

Below the Pieske Marble, and forming the lowest littology on the east of the map, is the Liggfjell complex. In spite of the extent it is quite uniform in rock type, with coarse gneisses containing quartzes, and rusty in places, with very large gemets (up to 1 ½ cm diam.)

There are old calcareous and nongornetiferous bands, but these are discontinuouns and can not be traceds.

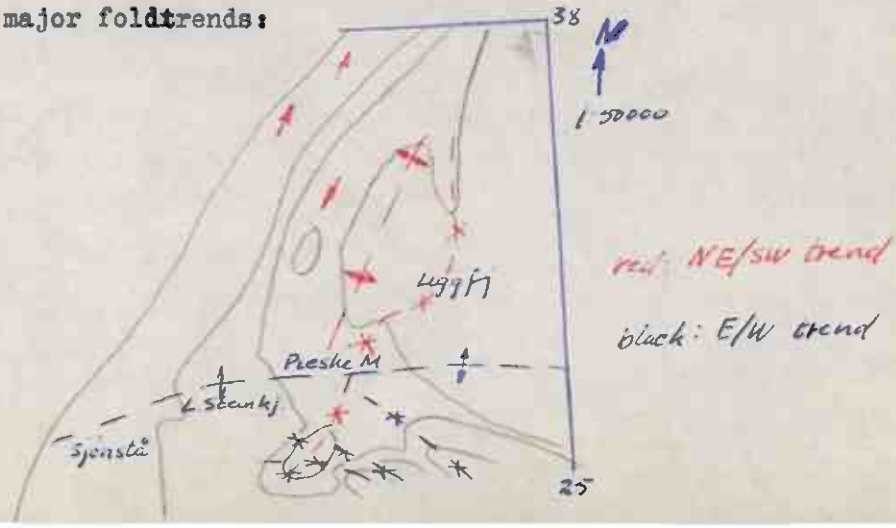
Structure and interpretations.

The rocks to the west of the area can be seen to dip steeply to the east, with the dip niarearing from 70 to 90 from Fauske Marble to the quartzites. All littologies are tighty folded and it is obvious that the greater part of the Furulund are isoclinally folded, giving a large area of outcrop.
The Sjønstå and Steinkjerringo to the east have a schist dip which increases to the west, but also display "drag" folding with axialplane dip of about 20° to the east. Folds seen in the Sjønstå and Steinkjerringo thus follow a pattern:

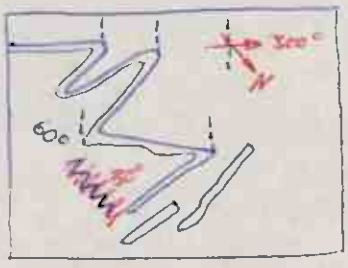


Sketch of fold pattern in Pieske Marble G.R. 36 72 33

The westward dip stallows to the horizontal in the Liggfjell, which has a broad anticlinal from which lines running E-W. Hexares become more local and produce a more complicated outcrop pattern, due to a very steep dip to the S along the southern flank of Storfjellet, reaching 90° to the west. Here there are 2 major foldtrends:

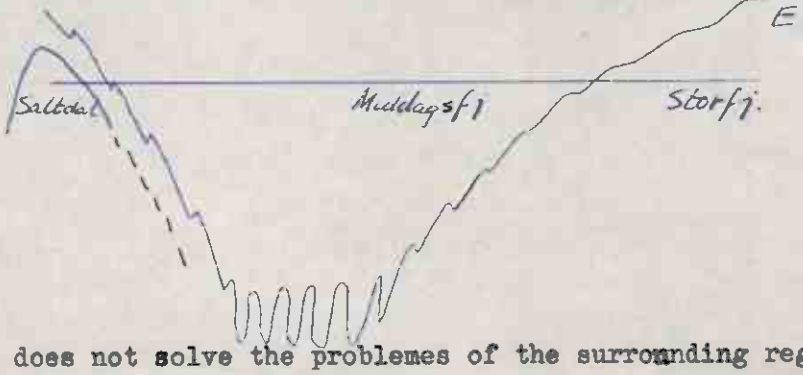


The reduction of sheet dip in the Liggfjell from west to east does not mean the rocks have suffered any less amount of folding, as is displayed by folds seen in Knallerdalen:



The folding described so far is quite straight forward in interprelation, but it is the overall structure of the area which is difficult to assess.

Refolded folds and schistosities are evidence of more than one major phase of activity, suggesting that the picture may be more complicated than at first it might seem. It is unlikely that the overall structure is a straight forward syncline due to the complicated folds seen in the Furulund and the quartzites and more expressly due to the complete inability to correlate across the structive. The latter fact could suggest a straight forward sequence from west to east, but the easterly dip to the west and the westerly dip to the east are so apparent as to dull the probability of this. The complicated folding and the incomparability of rock suggest more a very complicated picture based upon a synclinal structure. Throughout it has been stressed that compressional folds are evident everywhere, posing the fact that great distances of the primary rock material have been compressed into this form, so great as to include facies changes from one limb of the fold to the other. Correlation, even after many weeks in the field in this area, is still as tenuous as could be, due to the vast differance in rock type.



This area does not solve the problemes of the surromnding regions at all by itself, but is hoped that in conjuction with other data of might assist twowards a greater understanding of the geology. Any opineouns expressed

herein are ideas and impressions alone, and are subject to alternation if and when the correct interpretation is found.

Ore Zones.

Zone A1 is about 1 metre in width and runs in the fine amphibolites on the steep slope of the Saltdal vally side.

Specimens show the presence of Arsenopyrite and pyrrothite. It occurs with veins of biotite and quartz and can be traced only by exposures in streams and difficult to place exactly on the map due to tree cover.

Zone A2 is about 2 metre wide and occurs in a quartzite band within the tremolite marbles. Iron pyrites is finely disseminated and distributed and imparts a general rusty colour to the rock.

Zone A3 can be traced from Botnvatn to the southern edge of the area, and although the occurence of more minerals is sporadic, general deeply weathered brown zone can be traced easely.

Minerals present are Arsenopyrite, iron pyrite and chalcopyrite.

Needham

KEY

Western Succession

- **Quartzites**
  - Biotite garnet schists
  - Mic. quartzites with limits of igneous intrusion
  - "Tremolite" marble
  - Mica schists
- **Amphibolites**
  - Psammitic baidsin amph
  - Fine dark amphibolites
  - Graphitic Mica schists
  - Garben schist
  - Dark hornblende quartzite
- **Fauske Marble Group.**
  - Fauske Marble

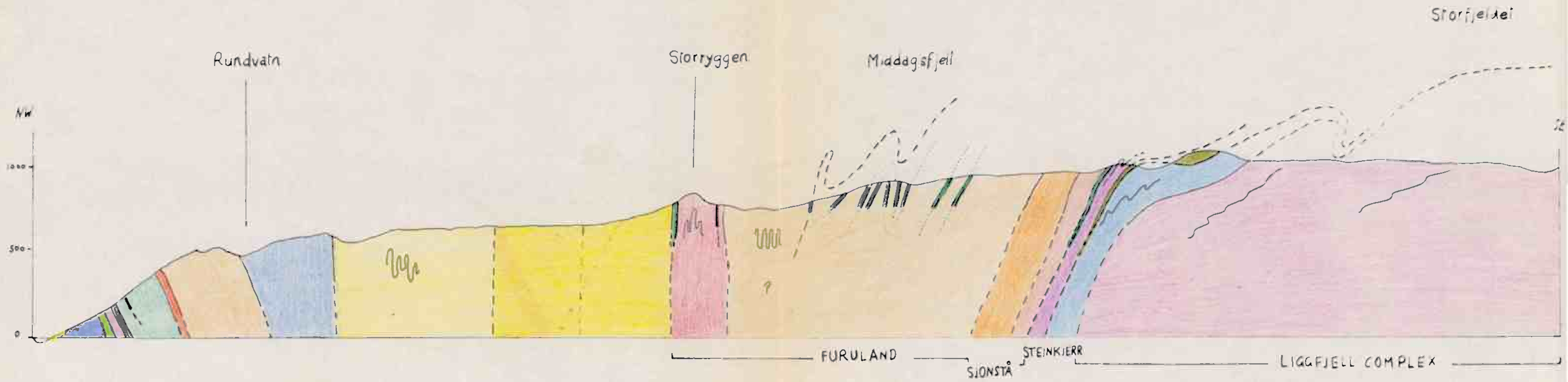
101/6
999/160
101/26
101/7
101/8
101/21
999/230
101/140

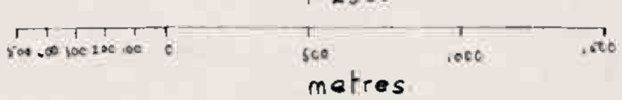
Eastern Succession

- **Furulund**
  - Amphibolite shale
  - Furulund Gneiss
  - Cale schists + amph. bands.
- **Sjöhstå**
  - U: Medium grained gneiss
  - L: Glimmer schists + gneiss & garnets.
- **Steinkjerk**
  - U: Amphibolite band
  - Graphitic schists
  - Mica schists + psammits.
  - L: Pieske Marble
- **Ligfjell**
  - Quartz bist. garnet gneiss

999/20
101/26
999/30
999/59
101/9
999/110
999/25
101/2
101/21

STRUCTURAL PROFILE A-B.





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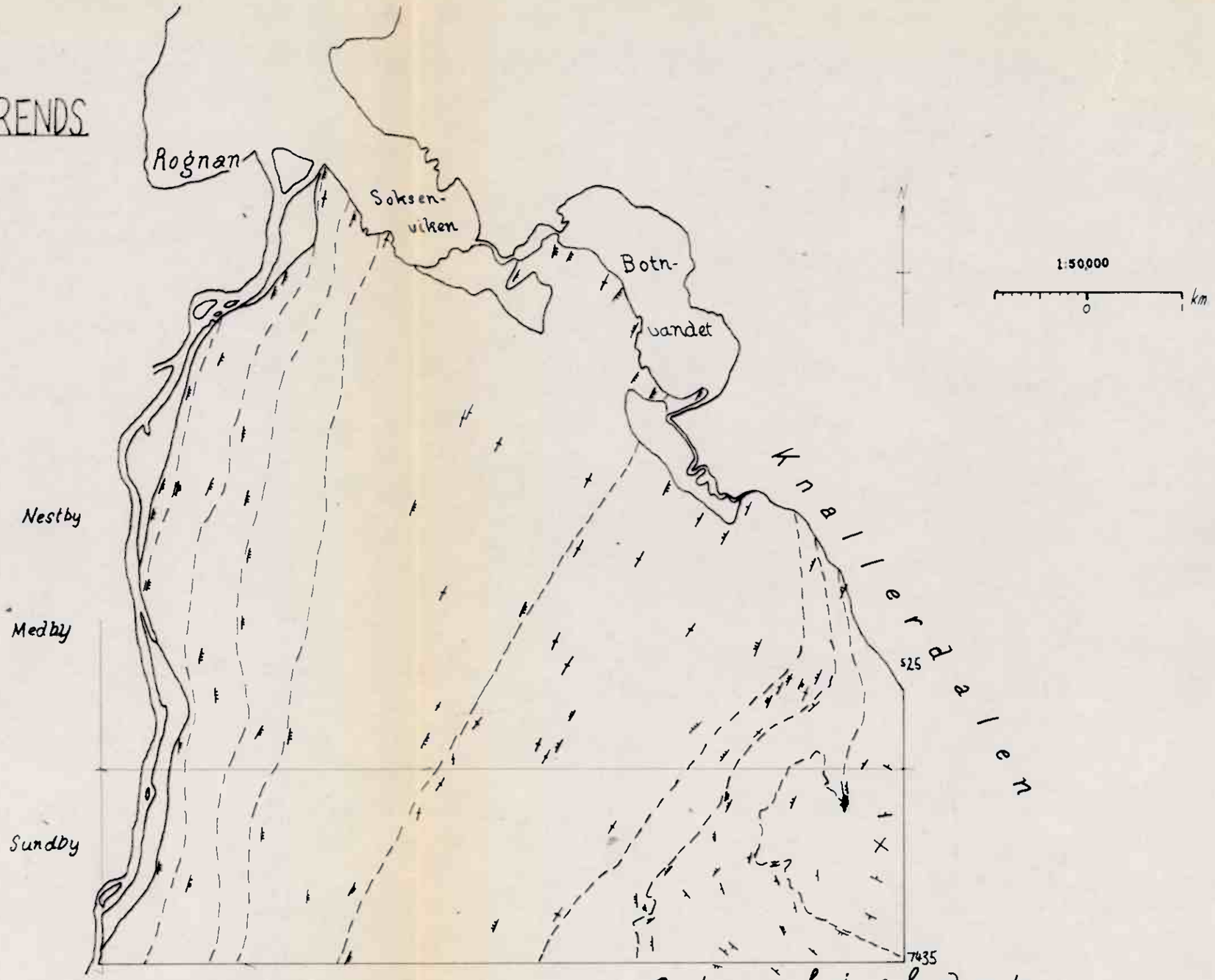
S-TECTONICS: SCHISTOSIC TRENDS



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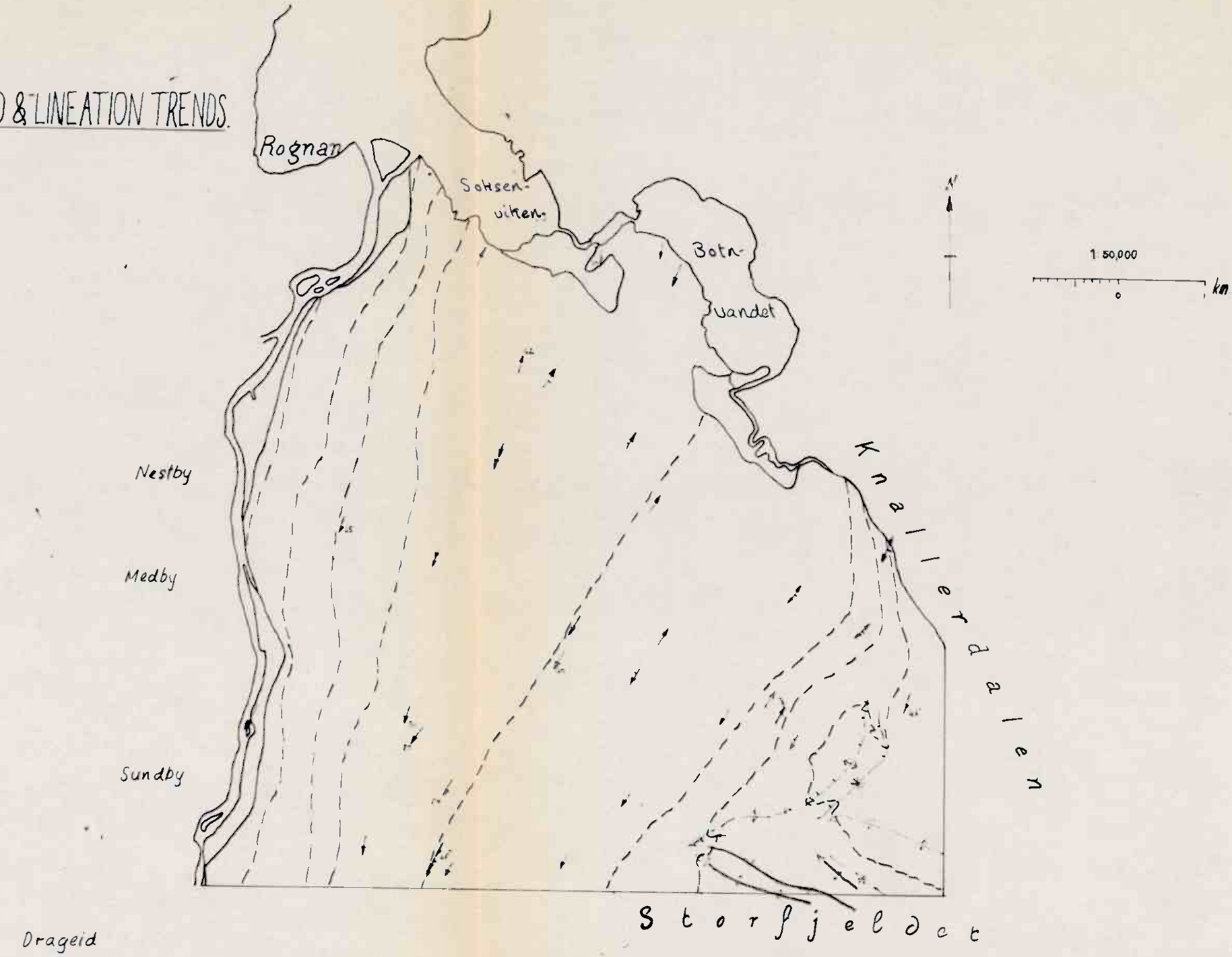
B-TECTONICS: FOLD & LINEATION TRENDS.



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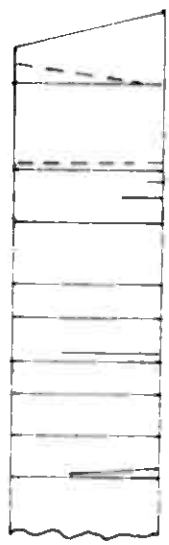
Needham.

KEY

Western Succession



- QUARTZITES
  - Biotite garnet schists
  - Mic. quartzites with limitz of igneous intrusion — 101/ 8
  - "Tremolite" marble — 999/160
  - Mica schists — 101/26
- AMPHIBOLITES
  - Psammitic bands in amph — 101/ 7
  - Fine dark amphibolites — 101/ 8
  - Graphitic Mica schists
  - Garben schist — 101/21
  - Dark hornblende quartzite — 999/230
- FAUSKE MARBLE GROUP.
  - Fauske Marble — 101/140

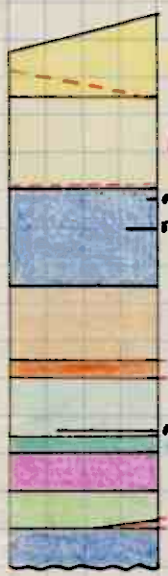
Eastern Succession

- FURULUND
  - Amphibolite shale — 999/20
  - Furulund Gneiss
  - Cale schists + amph. bands. — 101/ 26
- SJÖHSTÅ
  - U: Medium grained gneiss — 999/30
  - L: Glimmer schists + gneiss & garnets. — 999/ 59
- STEINKJER
  - U: Amphibolite band — 101/9
  - Graphitic schists — 999/110
  - Mica schists + psammits. — 999/25
  - L: Pieske Marble — 101/2
- LIGFJELL
  - Quartz bist. garnet gneiss — 101/21

Needham

KEY.

WESTERN SUCCESSION.



QUARTZITES.
- Biotite garnet schists. — 101 6
- Mic. quartzites with limits of igneous intrusion.
- "Tremolite" marble. — 999 160

AMPHIBOLITES.
- Mica schists. — 101 26
- Psammitic bands in amph. — 101 7
- Fine dark amphibolites. — 101 9
- Graphitic Mica Schist.
- Garben schist. — 101 21
- Dark hornblende quartzite. — 999 230

FAUSKE MARBLE GROUP.
- Fauske Marble. — 101 140

EASTERN SUCCESSION.

FORULUND
- Amphibolite shale.
- Feruslund Gneiss. — 999 20
- Calc schists + amph. bands. — 101 26

SJONSTÅ
- U. Medium-grained biot.-gneiss. — 999 30
- L. Glimmerschists + gneiss ± garnets. — 999 57

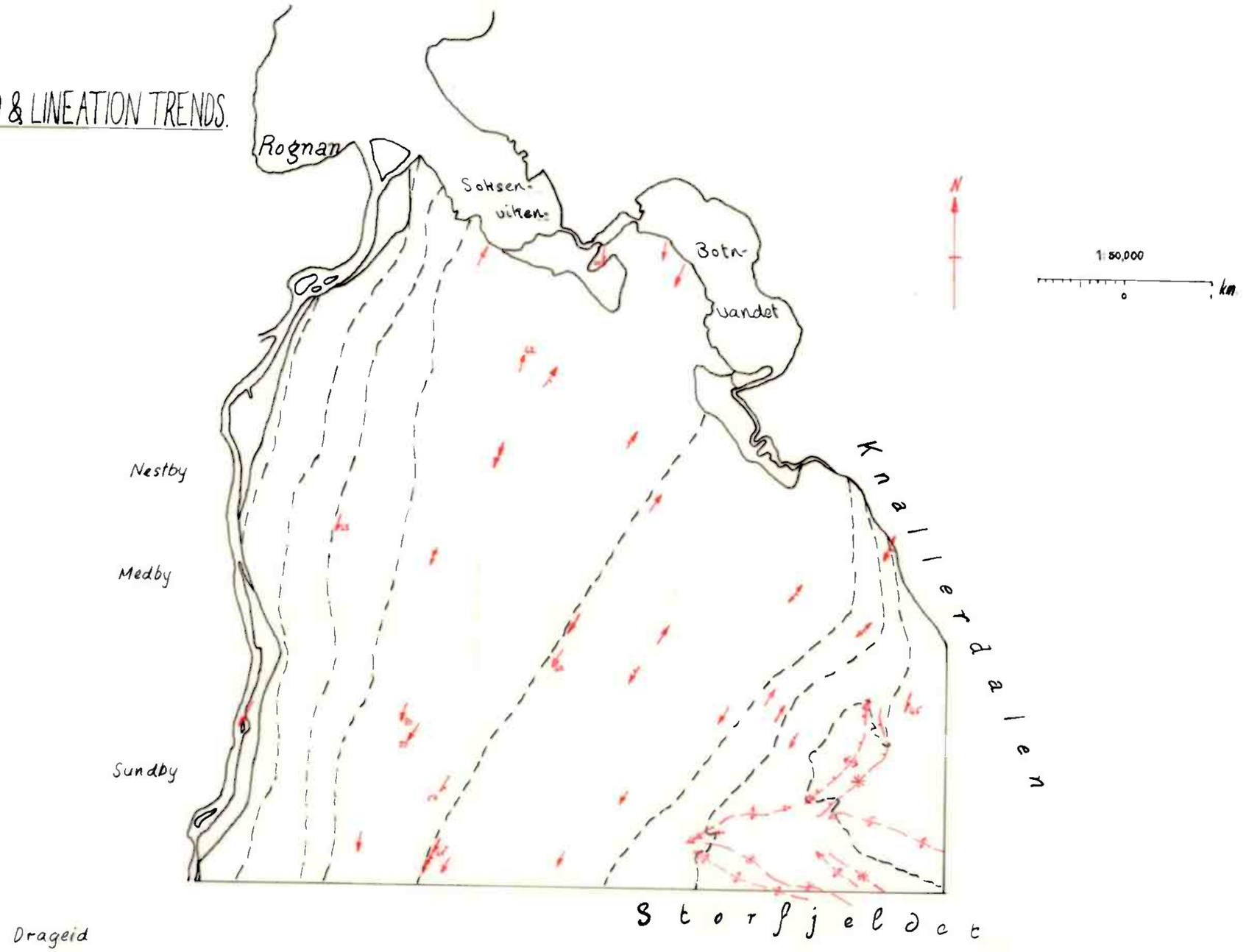
STEINKJER.
- U. Amphibolite band. — 101 9
- Graphitic schists. — 999 110
- Mica schists + psammits. — 999 25
- L. Pieske Marble. — 101 2

LIGFJELL.
- Quartz biot. garnet gneiss. — 101 21.

022.021

P.S. Neeham

B-TECTONICS: FOLD & LINEATION TRENDS.



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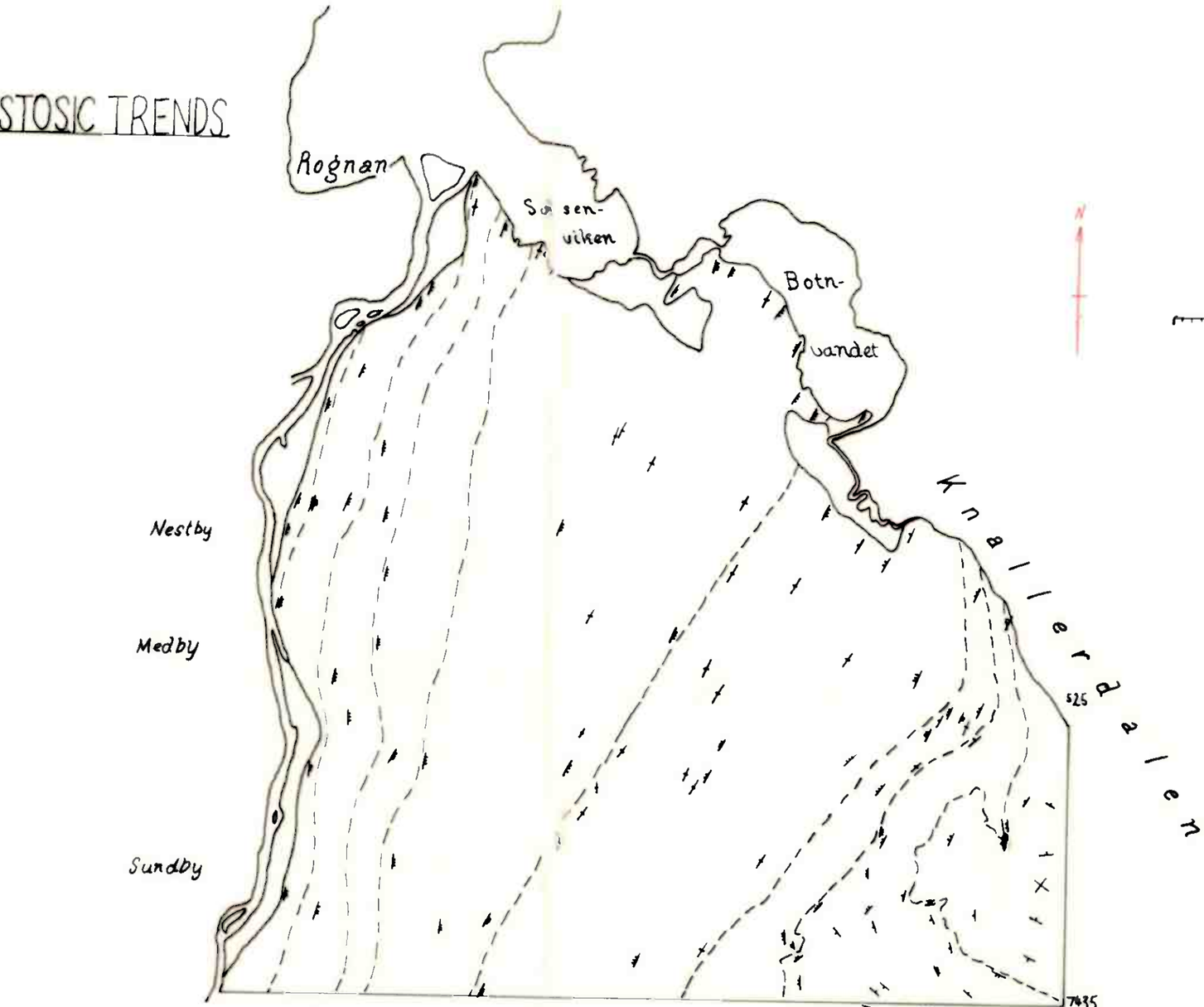
S-TECTONICS: SCHISTOSIC TRENDS



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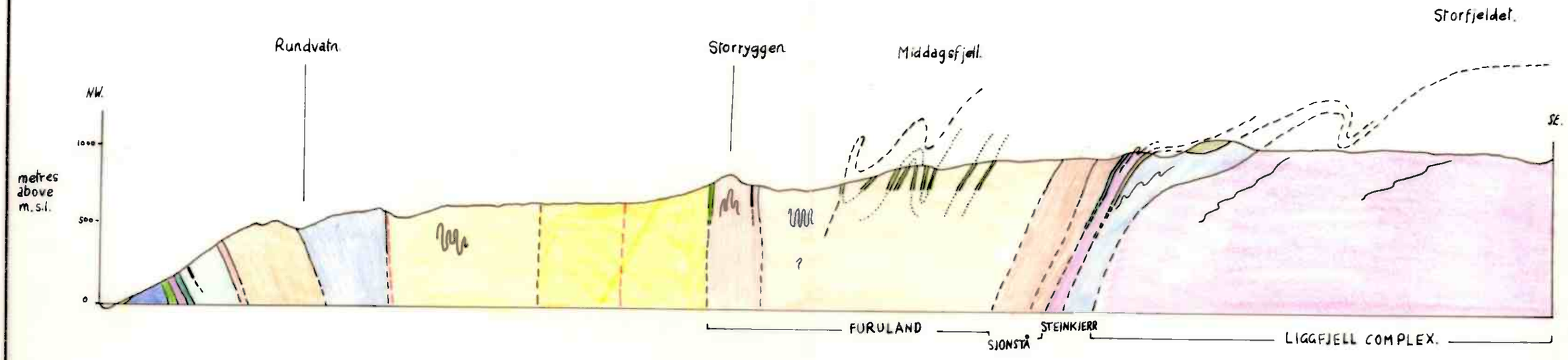
Format A3

R.S.Needham

STRUCTURAL PROFILE A-B.



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metres.

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Needham 1967		
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A.s Tarrkost. A 3. 12 000. 9-65. Sentrum Trykkeri

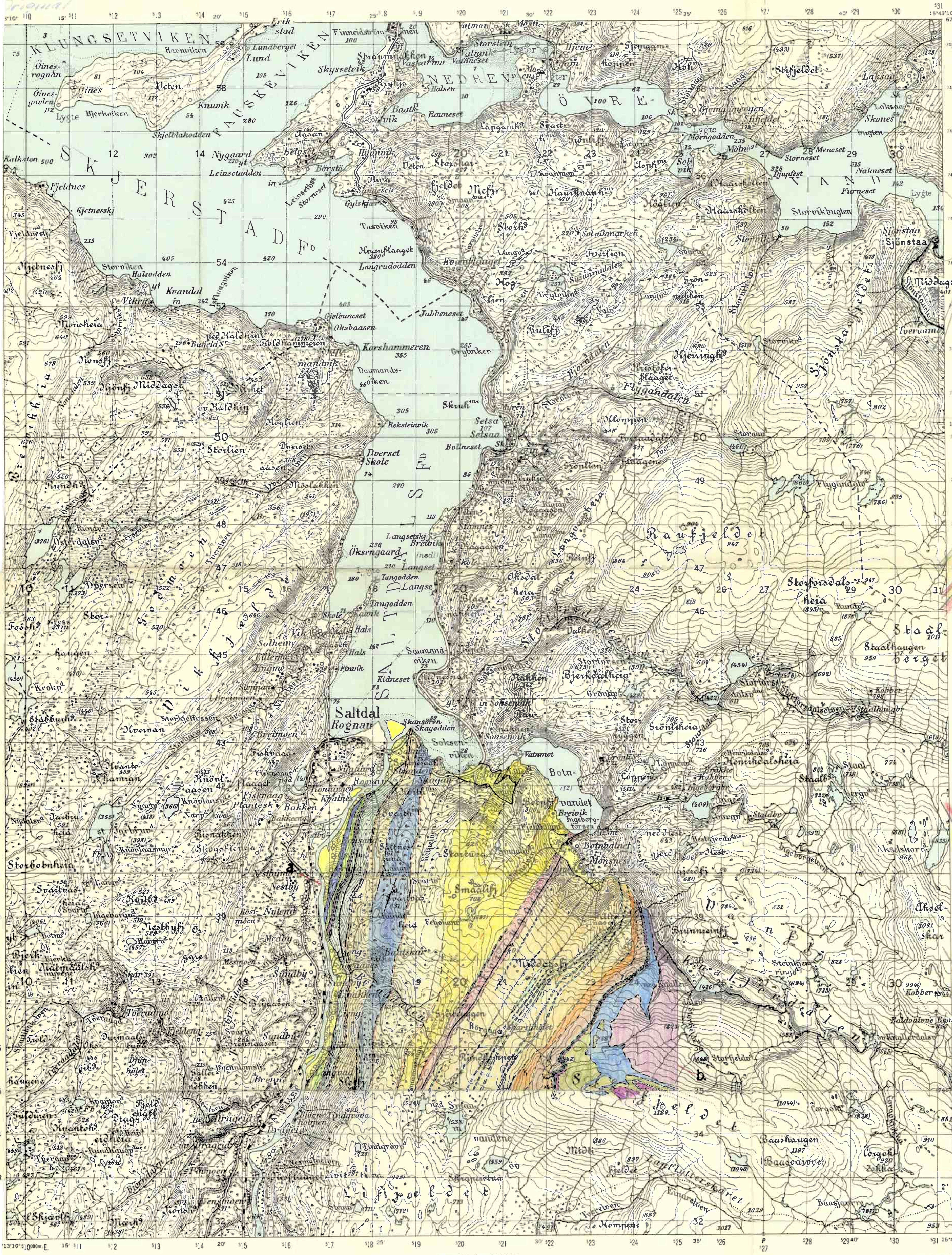
Format A3

NORWAY-NORGE 1:50,000 FIRST EDITION—AMS

SALTDAL

SHEET 2129 III
SERIES M711

4.35



M711
First Edition-AMS

Prepared by the Army Map Service (AM), Corps of Engineers, U. S. Army, Washington, D. C.
Copied in 1952 from Norge 1:50,000, Norges Geografiske Oppmåling, Sheet L 13, 1944. Sheet size changed and planimetric detail partially revised.

Malestokk, Scale 1:50,000

1 ½ 0 1 2 3 Miles
1000 500 0 1000 2000 3000 4000 Meters
1000 500 0 1000 2000 3000 4000 Yards

EKVIDISTANSE. CONTOUR INTERVAL 30 METERS

TRANSVERSE MERCATOR PROJECTION

HORIZONTAL DATUM: EUROPEAN DATUM

BLACK NUMBERED LINES INDICATE THE 1.000 METER UNIVERSAL TRANSVERSE MERCATOR GRID, ZONE 33, INTERNATIONAL SPHEROID
RUTENETT UTM SONE 33 SORTE TALL

THE LAST THREE DIGITS OF THE GRID NUMBERS ARE OMITTED
TALLENE ANGIR KM.

HEIGHTS AND DEPTHS IN METERS

USERS NOTING ERRORS OR OMISSIONS ON THIS MAP ARE URGED TO MARK HEREON AND FORWARD DIRECTLY TO COMMANDING OFFICER, ARMY MAP SERVICE, WASHINGTON, D. C. MAPS SO FORWARDED WILL BE RETURNED OR REPLACED IF DESIRED.

LEGEND—TEIKNTYDING

International boundary with marker — Riksgrense, grenserøys, -merke
Fylke boundary — Fylkesgrense
Herad town boundary — Heradsgrense, bygrense
Sokn boundary — Soknegrense
Crown lands boundary — Statsålmenningsgrense
Main road; Route number—Hovudveg, vegnummer
Secondary road—Bygdeveg
Private road—God privat köyreveg
Cart road—Kjerreveg
Winter road; Track—Vinterveg. Lite synleg stig (ferdaveg)
Path, distinct—Klövveg, gangveg, tydeleg tråkka stig
Path with markers—Vardesett stig og blåmerkt skogsveg
Telephone or telegraph line; Station — Telefon-telegraflinje, stasjon
Power transmission line; Power station, transformer station — Elektrisk leidning, kraft el. transformatorst.
Rocks: Awash; Sunken—Båe i sjømålet. Båe under vatnet
Sandy foreshore flat—Havstrand med fjøre og slaggrunnslinje
Marsh—Myr
Coniferous woods—Barskog
Deciduous woods—Lauvskog
Railroad, double track; Stations; Halt — Jarnveg (tvisporal), stasjon, stoppestad
Railroad, single track; Caretakers house — Jarnveg (einsporal), vaktarhus
Railroad, narrow gauge, electric tramway — Tertiær jarnveg, elektrisk sporveg
Railroad under construction — Jarnveg som er i bygging
Streetcar line — Trallebane, hestejarnveg
Aerial cableway—Togbane (taubane)
Church; Parish, chapel—Hovudkyrkje, Soknekyrkje, Kapell
Cemeteries—Kyrkjegard
Factory, power station, etc.; Mill — Större fabrikk, drift, kraftverk, mylne o.l.
Brickworks; Small mill; Sawmill — Teglverk, Mylne (mölle), kvern, Sag
Mine, mining claim; Quarry—Gruve, skjerp, Steinbrot
Wireless telegraph station—Trådlaus stasjon
Airfield; Parade ground—Flyplass. Eksismo
Horizontal control points—Trigonometrisk punkt
Lighthouse, light; Beacon; Air navigation light — Fyr, lykt, Sjømerke, Luftfyr
Fishers or hunters cabin, cattle camp, etc. — Fiskarbu, skyttarbu, felæger o.l.
Farms; Farm, mountain pasture—Gard, småbruk, plass, sæter
Cottage, school, hotel, meetinghouse, tourist shelter, inn, sports-hunters cabin, small farm, small power station, mill, etc. — Villa, skole, hotell, bedehus, turisthytte, gjestgjevarhus, sports-jakthytte, mindre bruk, lite kraftverk, mölle o.l.

RUTETILVISING (KARTREFERENSE) NAERMESTE 100 m			SONEOMRÅDE GRID ZONE DESIGNATION 33W 100 KM RUTE 100,000 M. SQUARE IDENTIFICATION	TO GIVE A STANDARD REFERENCE ON THIS SHEET TO NEAREST 100 METERS	
Eksempel: SK			WQ	SAMPLE POINT: SK	
km aust	20.3			1. Locate first VERTICAL grid line to LEFT of point and read LARGE figures labeling the line either in the top or bottom margin, or on the line itself: Estimate tenths from grid line to point:	20 3
km nord		43.6		2. Locate first HORIZONTAL grid line BELOW point and read LARGE figures labeling the line either in the left or right margin, or on the line itself: Estimate tenths from grid line to point:	43 6
SK	203436				
Merk at komma sløyfes og at 100 km tallene de små tallene 5 aust og 67 nord IKKE skal tas med. Ved meldinger utover 100 km eller hvis mere enn ett rutenett er merket på kartet, skal også 100 km ruten angis:				SAMPLE REFERENCE:	203436
SK	WQ203436		IGNORE the SMALLER figures of any grid number; these are for finding the full coordinates. Use ONLY the LARGER figures of the grid number; example: 7432000	If reporting beyond 100,000 meters or if sheet bears an overlapping grid, prefix 100,000 Meter Square Identification, as:	WQ203436
Ved meldinger utover 9° nord, syd eller 18° aust, vest, skal også soneområde angis:				If reporting beyond 9°N-S or 18°E-W, prefix Grid Zone Designation, as:	33WWQ203436
SK	33WWQ203436				

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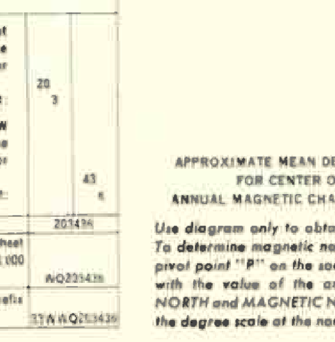
ISOGONIC INFORMATION 1951

2029 I	2129 IV	2129 I
2029 II	2129 III	2129 II
2028 I	2128 IV	2128 I



APPROXIMATE MEAN DECLINATION 1952 FOR CENTER OF SHEET
ANNUAL MAGNETIC CHANGE 8' EASTERLY

Use diagram only to obtain numerical values. To determine magnetic north line, connect the pivot point "P" on the south edge of the map with the value of the angle between GRID NORTH and MAGNETIC NORTH, as plotted on the degree scale at the north edge of the map.

MISVISING 1952 I GRADER OG MINUTTER OG I STREKER
ÅRLIG FORANDRING 8' ELLER 2.4' AUST

Diagrammet gir bare tallverdiene. Retningen for Magnetisk Nord bestemmes ved å forbinde pivotpunktet "P" i søndre rammekant, med det punkt på skalaen i nordre rammekant, som svarer til misvisingen regnet i forhold til RUTENETT NORD (GN).

TRYKT I OFFSET EMIL MOESTUE A/S, OSLO. 12-63.

GLOSSARY-FORKORTELSER

Bh	bedehus	meetinghouse
bg	berg	mountain, rock
Bvs	brannvaktstasjon	fire station
bk	bekk	brook, creek
Ds	dampskipsstoppested	port
Elektr Vk	elektrisitetsverk	power station
ev	elv	river
Fbr	fabrikk	factory
Fb	fiskarbu	fishers cabin
fj	fjell	mountain
fd	fjord	fiord
fs	foss	waterfall
Fl	felæger	cattle camp
gd, gd	gard	farm
hg	haug	hill, hillock
hd	höyde, högd, hovd	hill
amr	hamar	crag
hl	holme	islet
in, ind	indre	inner
Jh	jakthytte	hunters cabin
Kp	kamp	hill, hilltop
Kpl	kapell	chapel
Kn	knapp	peak
Knt	knatt	peak
Kl	kolle	knoll
L	låde, låe	barn
ld	land	land
Ldh	landhandleri	shop
l	lille, litle, lisle	little
LS	losstasjon	pilot station
M	meieri	dairy
m	mellom, midtre	middle
ned	nedre	lower
n	nordre	northern
nt	nut	peak
PÅ	postapneri	post office
Pgd	prestegard	vicarage
RS	redningsstasjon	rescue station
San	sanatorium	sanatorium
Sph	sportshytte	sports cabin
skj	skjær	rock, skerry
Sk	skole	schoolhouse
Sb	skytterbu	hunters hut
st	store	great
str	straum	stream, current
sd	sund	sound
sr	sæter	mountain-pasture
sl	stöl	shieling
s	söndre	southern
TS	telegrafstasjon	telegraph station
td	tind	peak, pinnacle
tj	tjern, tjörn	lakelet, pool
Th	turisthytte	tourists shelter
Tk	tömmerkoie	lumber shanty
UH	Ungdomshus	meetinghouse
vn	vann, vatn	lake (lakelet)
v	vestre	western
Vk	verk	factory, works
Vb	vokterbolig	caretakers house
Vl	voll	plain, meadow
yt	ytre	outer
ö	östre, austre	eastern
öv	övre	upper

SALTDAL, NORWAY