Bergvesenet

Postboks 3021, 7002 Trondheim

Rapportarkivet

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Tittel

Report on geological fieldwork in the Misvær and Hoset districts.

Forfatter	Dato	Bedrift
COLE & LANGLEY	1970	Sulitjelma Gruber A/S

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

Fagområde	Dokument type	Forekomster
Råstofftype	Emneord	

Sammendrag

Generell berggrunnskartlegging i Hoset og Misvær. Hovedvekt pa kontaktsonene mellom to gabbroer og de omkringliggende bergartene. Hovedbergartene i omradet er gabbro, marmor, basiske gneiser og granitt. I Misvaer i tillegg serpentinitt og gronnskifer. Gabbroen og granitten har intrudert omradet, men har ikke fort til okonomisk interessante mineraliseringer. Gabbro.

OLDEREID PROJECT
(Mapping Gabbro).
loc 154
working up the river

Marble bands which are complexly folded (flow folds) contain bandins of hornblend granite + stringers of hornblend granite. The majority of these are ll to the main foliation 050 dip not possible) 55° SE 050 - in places however the same type of

granite cuts the foliation - in no particular direction

Further up stream (25m) biotite granite with tourmaline (a very black & white looking rock) is seen in massive outcrop.
cutting this granite with the same 050 trend are small veins of quartz rich biotite granite (no tourmaline!).

DC 109 - aplite - that was ll to foliation in marble
DC 110 = marble
DC 111 hornblende granite
DC 112 Biotite tourm gran

Granite continues in the stream bed, at very much the same level - but the granite is much whiter of musc & little biotite granite DC 113

The granite then becomes more coarse grained & felspars

tend to be pinked
DC 114 - qtz, felsp
biotite granite

loc 155
This same granite
type - but without
pinked felspars
continues up the
stream

a 20 cm fine grained
acid dyke cuts the
granite in the stream
- this region also
has 5 - 2 cm small
stringers no =
main trend

The slope then changes
& the stream water falls
over a basic v. dyke
- this is a felsp, biotite
dark rock + some qtz DC 115
- apophyses to
main gabbro? 070 = trend

loc 156
- diff type granite
DC 118
This continues with
very little absolute
variation - in
places felsps are
pinker than
others. The stream

mans underground
where a marble vein
(10cm x 20cm with
stains of malachite
green DC17 are
found.
20° N 10°E.
In places the calcite
of the marble is
mosaic & coarsely
crystalline.
Good foliation planes
in places where
the stream is at
surface
Granite on either
side

About 50 m of granite is passed over before the next marble band 20×20 m. The contact zone suggests the presence of boudins, a pale green zone with tributaries is seen at the granite/marble contact. DC 118 38° N 095 = contact

The granite apparently arches over the marble - The marble has foliation planes the granite is unfoliated

150
90
40

After a further 40m a 30x10m marble - edged island and same trend as previously seen 50° SE 040

The next marble body is interesting in that it has contacts developing on either side of the stream, yet the stream has eroded down to granite level

bc 157

Traverse down stream towards lake

- a small 2m 'dyke' of basic material cuts the stream. Other rock both sides - granite ? basic = apophyses to main gabbroic mass

Thanos hypoth

The marble was once a sad rock. This was

Saturday 08th Aug

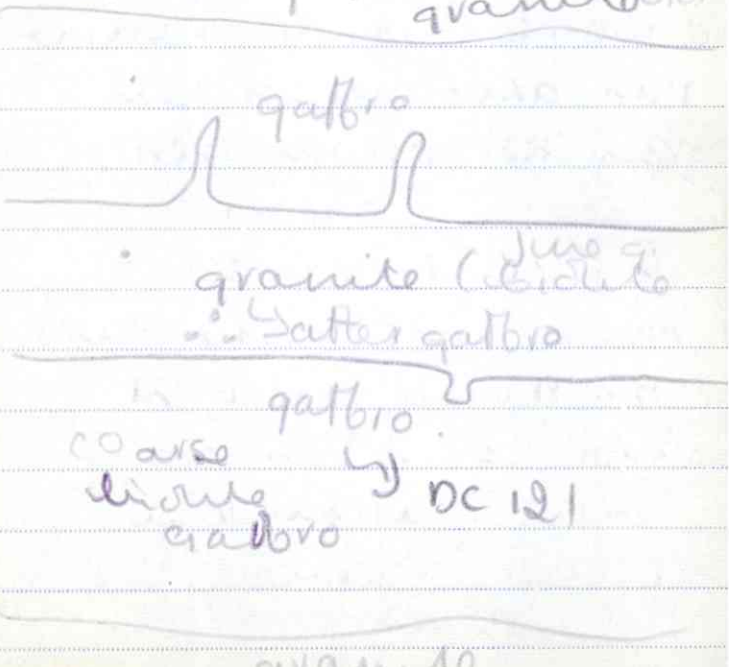
loc 15f

Traverse down N bound river in north direction 50m from junct with lake - coarse grained biotite granite DC120

This granite contains as the main rock type for 200m then gabbro with retrograde (net) veins 5-9 cms wide of granite. This gabbroic zone is about 10m wide then granite is

resumed on the main rock type

Granite veins 3/4 m with small apophyses cut a gabbro



in this same region
a small marble band
3m wide with
hornblende granite
below it is seen
in the bank
2 smaller marble bands
are also seen in
granite on the opposite
side of the river.

Where a stream comes
into the river from the
east there is a
wide expanse of
coarse grained biotite
granite

this contains veins of more aplitic granite. At the point where the stream enters a marble containing beautiful boudins of granite ¼ – 1m long are seen. There are several rows of smaller boudins round the larger ones.

One of these boudins is a basic gabbro/dol rock surrounded by aty

Say when the gabbro intruded, granite was remobilized & not veined the gabbro & fingered into nearby marbles - then diversion of magmas on the top caused banding

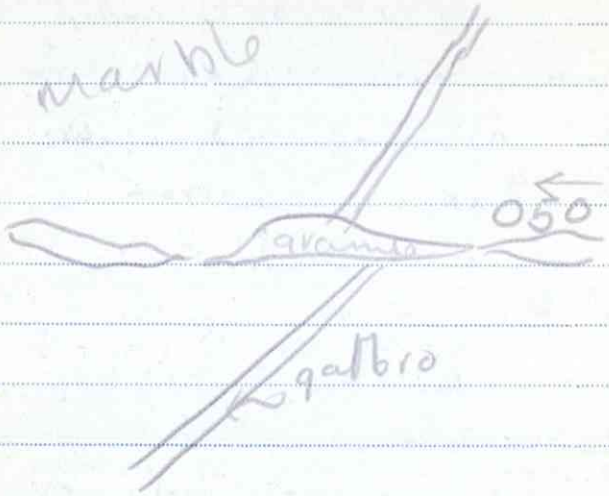
N & S marbles well away from the gabbro contact do not contain granite bands

30 m of banded granite

then also trending marble band with a gabbro veiny fingering into the hornb granite
↑ the marble
∴ hornb granite is pregabbro

This marble is very extensive (atleast 50m wide) & contains large boudins of strongly bi foliated - segregated granite DC 128

Main trend of marble 045°



The granite boodins have displaced the gabbro vein

1) Gabbro vein
2) Granite vein
3) Gabbro cutting granite boodins

The river then continues to cut through marble as the main rock type. However gabbro fringed with granite is often seen - this suggests a nearby contact

Trend of marble 030

Monday 31st aug.

loc 159

West side of river
- narnblend biotite
granite of mixed
grain size.

loc 160

Fine grained biotite
granite continues
100 m west of the
river up a small
stream

The slope then flattens
out & the stream
becomes sinuous. It
is possible that this
flat portion could

mark the start of a marble band. The slope becomes steeper again & granite (coarse biotite) outcrops.

There is then another bog with a further slope to the west. In this slope a 4m long x 4m high outcrop of marble is exposed - foliation 050.

Above this is a steep sided hill

-gabbro.

The traverse is continued westwards in an attempt to find the gabbro/granite contact the other side

Before the top of the hill is reached a coarse grained biotite granite outcrops. Thus the top of the hill is granite

loc 161

Down the NE trending stream to reach the main river

Warkend granite at the top of the stream

Marble with granite bandwis, then soon trend 035, with down the stream 70 m

There is then a waterfall as the stream changes direction

There is then 1.5m
of coarse grained
gabbro and fine grain
size. Part of the
main mass.
Below this biotite
granite
This continues for
250 m, then a ~~fine~~ coarse
marble with thin gold
structures is seen.
This marble is fairly
extensive - but 5 m of
granite in the section
are quite possibly
of a boudin in the
marble (marble with

Joos usually contain boudins

Then after a further 10 m of mafic dikes granite become the dominant rock type for ~

In this granite veins of basic gabbroic material are found

Granite dom
Mild stream is met by another larger stream (no)

marked on the map)
gabbro in sound
under the Dale Fell
made by the passing
stream.
Granite again

Then 50 m of gabbro
with a 5 m band
of marble on the fells
to the east of it
Then a further 200 m
of gabbro & micro
granite to the east
of it

Gabbro at just to the
north

loc 162

Traverse down main stream in a N and direction
gabbro

Tuesday Sept 1st.

Loc 163

Traverse eastwards downstream towards coast.

Mineral granite (fine grained biotite granite at top).

Below a 5m band of many dikes with fine grained granite - every in appearance Spec. DC 123

This stream is then

Mar abandoned because it bifurcates.
loc 164
Next stream 1,000m to the north.
The granite has a huge waterfall, falling over marble with granite boudins
Trend 040

There is then 75m of granite. Then a 10m marble band crossing the stream. This is followed immediately by a 5m zone of net

veined gabbro with small mafic zones. The veins are granitic gabbro zone 15m. wide.

Next mafic band is 150 m wide with granite boudins.

Mafic granite - coarser grained than before is found. This extends down stream

Loc 165.

Fine biotite granite downstream.

Up to the west granite - jointed in marble 30 m wide. OKO (few gabbroic bands and Reticulate veined gabbro 40 m wide.

Then (as in river stream) a marble band 10 m wide.

then gabbro. 15 m - granite - rock of steep slope & waterfall upstream

Jan 40 m
At the very top of
the water fall granite/
gabbro contact. Once
again reticulate veins
are in evidence near
the contact. The
gabbro contains the
numerous veins of
coarse grained granite.
Fine grained biotite
granite cuts both
the granite & the
gabbro.
A small 5 m
mantle is then
seen then

coarse biotite granite
50m.
Then marble is
encountered for the
stream section - 25m.
Then further up
- granite - this
continues up the
hill

Thursday 3rd Sept

loc 167.
Over the hill just below the N/S granite scarp — gneiss 10m wide.
43 N 065

REPORT ON GEOLOGICAL FIELDWORK IN THE MISVAER AND HOSET DISTRICTS

Cole and Langley

(August 4th - September 5th 1970)

Contents

1. Introduction

The aim of the fieldwork was to investigate and map the contacts of two gabbroic bodies, previously investigated by Rekstad, J., (1929), with the surrounding rock-types, and to ascertain as to the presence or not, of any bodies of economic importance in this area.

An A.M.S. series, sheet no. 2029, II scale 1:50 000, was used for the geological mapping.

The two gabbroic bodies are located in two separate areas, as indicated by Rekstad, J., (1929). For the purposes of this report, the geology related to these gabbroic bodies, is described separately for each area. The areas are:

a) An area of approx. 18 sq. km extending S.W. from Hoset, 970/540.

b) An area of approx. 18 sq.km. extending south from Misvaer 000/450.

2. Topography and vegetation

The topography S.W. of Hoset, consists almost entirely of the western slope of Misvaer fjord. This slope is dissected by numerous stream valleys. South of Misvaer, there is an undulating plateau, approx. 300 m o.d., deeply dissected by several large valleys. The vegetation in both areas consists dominantly of extensive woodland, with the tree-line almost entirely above the ground investigated. Lack of geological outcrop was thus a major problem, and the fieldwork was concentrated in stream-sections, particularly in the area S.W. of Hoset.

3. General geology (including structural aspects)

a) Area south-west of Hoset

Four main rock-types occur in this area, gabbro, marble, basic gneiss and granite. The granite is the dominant rock-type, with the remaining rock-types, forming numerous elongated lenticular bodies, varying in length from approx. 10 cm to at least 5 km, and in width from approx. 5 cm to 500 m. These bodies are distributed randomly within the granite, but the basic gneiss also outcrops over extensive areas to the N.W. of the granite.

The distribution of these rock-types appears to be entirely structurally controlled, the trend of elongation of the lenticular bodies being parallel to the strike of foliation, i.e. N.E. - S.W.

Granitic net-veining in the gabbros, suggests that the gabbros post-date the granite, and it seems probable that both these rock-types post-date the marbles. Further stratigraphical relationships could not be determined.

Structure consists entirely of a set of foliation planes in the gneisses and marbles, striking N.E. - S.W., and dipping N.W. at between 30° and 60°. Several structural units can be defined by these foliation planes, correlating lithologically with lenticular bodies of gabbro, marble and basic gneiss. The basic gneiss to the N.W. of the granite would thus form a major unit, higher in the structural succession.

b) Area south of Misvaer

Present in this area, is a body of gabbro, 4 km N-S by 3 km E-W, with several different rock-types marginal to this gabbro. The discordant relationship of this gabbro to these marginal rock-types, suggests that the gabbro is intrusive, post-dating the other rock-types. Two separate bodies of gabbro approx. 300 m by 50 m also occur within granite, to the east of the main body.

The dominant rock-types marginal to the gabbro, consist of granite, basic gneiss, serpentinite, mica-schist, greenschist and conglomerate, and the following general succession is present in the Vikdalen valley, 010/400, south of the main gabbro:

Conglomerate
Greenschist
Conglomerate
Greenschist
Mica-schist

This succession strikes N-S, perpendicular to the gabbro and oblique to the foliation present. This succession was not observed in the remaining area investigated, and its stratigraphical relationship to other rock-types marginal to the gabbro could not be determined. Similarly, the age-relationships of the granites, basic gneiss and serpentinites could not be determined.

The structure consists of a set of foliation planes in the schists and gneisses, striking approx. N-S and dipping west at between 35° and 60°. In the south of the area, the foliation strikes NE-SW and dips N.W. at between 30° and 50°. Structural units, as defined by the foliation planes, could not be related to lithological units in this area.

4. Rock-types

a) Area south-west of Hoset

Granite
This is the dominant rock-type in this area, and consists largely of pinkish-white, bte. - musc. granite varying in grain-size from medium to coarse. There are numerous variations locally, including coarse hb.- and tourmaline-granites and extremely fine-grained, green, acidic rocks.

Gabbro
Two distinct varieties are present, forming separate bodies. There is a dark grey coarse-grained bte.-gabbro and a dark grey fine-grained bte.-gabbro. Both varieties contain granitic net-veining with max. vein width, 50 cm. This net-veining is related to the adjacent areas of granite. A few gabbros, locally grade into the granite, with a zone of max. width ^5 m, composed of a light grey, quartz-dioritic rock containing bte.

Marble
This consists of foliated, greyish-white, crystalline calcite. Grain-size varies from fine to coarse and malachite is present locally. Marbles in close proximity to the gabbros, contain lenticles and boudins, of between 5 cm and 10 m in length, composed of gabbro, granite or quartzite, as well as granitic veins, discordant to foliation. The marbles often grade into the granite, where gabbroic bodies are not present, and there is a zone of max. width 15 cm, composed of coarse crystalline calcite, with chlorite, musc. and quartz.

Gneiss

This is found forming lenticular bodies in the granite and an extensive area to the N.W. of the granite. It is mainly a medium-grained, light grey, banded, quartz- biotite-gneiss, that locally contains quartz lenticles.

b) Area south of Misvaer

Gabbro
This is metamorphosed and consists largely of a dark greyish-green, coarse, hb.-bte.-gabbro. Is is locally finer-grained and biotite-rich. It weathers easily. Quartz and aplite veins are locally present, with the aplites rarely containing traces of pyrite and chalco-pyrite. Where gabbro is in contact with granite or gneiss, there is often a gradational zone approx. 10 m wide, consisting of a light grey quartz-dioritic rock.

Granite
This outcrops on the S.W. and N.E. margins of the main gabbro. It consists dominantly of white, medium - to coarse -grained bte.-musc.-granite, with a local development of coarse-grained hb. or tourmaline granite. S.W. of Skar at 988/405, coarse hb.-granite with chlorite and pyrrhotite occurs in an outcrop 30 m by 5 m.

Gneiss
This outcrops on the N., N.W., W., S., and S.E. margins of the main gabbro, and in lenticular bodies within the granite. It is dominantly light grey, banded, qtz.-bte.-gneiss, but varies locally, and can be qtz.-rich, chlorite-rich, schistose, or with garnet porphyroblasts.

Serpentinite
Four separate bodies are present.

1. 600 m S.E. Misvaer 007/438.
   Size of body 50 m by 10 m and it is situated along a granite/gabbro contact. It is coarse, crystalline, and has quartz veins locally.
2. 3 km S.E. Misvaer 013/421.
   Size of body 150 m by 30 m. It is situated along a granite/gabbro contact and is fine-grained, light green, with isolated pyrite crystals.
3. 5 km S. Misvaer 007/397.
   Size of body 30 m X 5 m. It is situated along a grey mica-schist/greenschist contact, and is fine-grained, light green and slightly foliated.
4. 5 km S. Misvaer 010/399.
   Size of body 20 m by 5 m. It is situated along a greenschist/conglomerate contact and is fine-grained, slightly foliated, with isolated pyrite crystals.

Greenschist
This outcrops on the southern margin of the main gabbro and forms two horizons in an east-west succession in the Vikdalen valley. It consists of fine- to medium- grained light green, quartz-chlorite-schist, locally containing isolated pyrite crystals or garnet porphyroblasts.

Mica-schist
This occurs at the base of the east-west succession noted above, and consists of dark grey, crenulated, bte.-musc.-schist.

Conglomerate
This forms two horizons near the top of the east-west succession. It consists of numerous stretched pebbles of max. length 1 m, composed of quartzite and dolomite with a greenschist matrix similar to that located in the succession.

Quartzite
This forms several N.-S. elongated bodies of max. width 10 m, within the granite and along the granite/gneiss contact to the west of the main gabbro. It is yellowish-orange, medium-grained and banded due to layers of bte. and musc. There is also a 30 m wide N.-S. band of coarse, white, massive quartzite, present within the gabbro, 3 - 5 km south of Misvaer, 004/413.

Marble
This forms an outcrop 5 m by 3 m at 982/417 along a quartzite/gneiss contact, west of the main gabbro. It consists of massive, greyish-white, crystalline, calcite.

5. Economic prospects

The area S.W. of Hoset contains nothing of significant economic importance, and south of Misvaer, only localised traces of pyrite, chalcopyrite and pyrrhotite are present. No evidence of ore, both within and peripheral to the two areas investigated was found.

6. Catalogue of rock specimens

a) Area south-west of Hoset

D.C. 110	Yellowish-white, foliated marble typical of the entire area.	922/477
D.C. 113	Pinkish-white, coarse-grained, musc.-bte.-granite	919/480
D.C. 120	White, medium-grained, musc.-bte.-granite	930/478
D.C. 124	Light green, fine-grained acidic rock with biotite and quartz crystals, found only in localised bands	953/526
D.C. 117	Coarse crystalline marble with chlorite, muscovite and quartz crystals, typical of granite/marble contacts	918/490
D.C. 114	Grey, fine-grained, bte.-gabbro	912/487
D.C. 121	Dark grey, coarse-grained, bte.-gabbro.	934/480

b) Area south of Misvaer

K.L. 10	Dark greyish-green, coarse-grained, hb.-bte.-gabbro typical of the gabbros in this area	010/438
D.C. 83	Grey quartz-biotite-microdiorite with aplite vein typical of gabbro/basic gneiss contacts.	014/406

K.L. 12	Grey, banded, quartz-biotite-gneiss, typical of gneisses in the area	002/440
D.C. 82	Green, banded, quartz-chlorite-gneiss, found only localised to S.E. of main gabbro	018/403
K.L. 8	White, medium-grained, musc.-bte.-granite typical of entire area	011/438
D.C. 91	White, medium-grained hb.- tourmaline granite, localised to west of main gabbro	982/426
D.C. 93	Pinkish-white, coarse-grained, hb.-granite with chlorite and small quantities of pyrrhotite, localised to one outcrop S.W. of main gabbro	988/405
D.C. 77	Dark grey, crenulated, musc.-bte.-schist, confined to S.E. of main gabbro	007/393
D.C. 78	Light green, qtz.-chlorite-greenschist with weathered pyrite crystals, typical of greenschist S.E. of main gabbro	008/398
K.L. 13	Stretched conglomerate with quartzite and dolomite pebbles in a greenschist matrix, typical of conglomerate, S.E. of main gabbro	009/399
D.C. 69	Coarse crystalline serpentinite with quartz vein, typical of body 1, described previously	007/438
D.C. 75	Light green, fine-grained, serpentinite with scattered pyrite crystals, typical of bodies 2, 3 and 4, described previously.	013/421
D.C. 86	Yellowish-orange, medium-grained, musc.-bte. banded quartzite, typical of quartzites west and south-west of main gabbro.	986/392
D.C. 92	Greyish-white, massive, coarse, crystalline marble localised to one outcrop, west of main gabbro.	982/417

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This outcrops on the S.W. and N.E. margins of the main gabbro. It consists dominantly of white, medium - to coarse -grained bte.-musc.-granite, with a local development of coarse-grained hb. or tourmaline granite. S.W. of Skar at 988/405, coarse hb.-granite with chlorite and pyrrhotite occurs in an outcrop 30 m by 5 m.

Gneiss
This outcrops on the N., N.W., W., S., and S.E. margins of the main gabbro, and in lenticular bodies within the granite. It is dominantly light grey, banded, qtz.-bte.-gneiss, but varies locally, and can be qtz.-rich, chlorite-rich, schistose, or with garnet porphyroblasts.

Serpentinite
Four separate bodies are present.

1. 600 m S.E. Misvaer 007/438.
   Size of body 50 m by 10 m and it is situated along a granite/gabbro contact. It is coarse, crystalline, and has quartz veins locally.
2. 3 km S.E. Misvaer 013/421.
   Size of body 150 m by 30 m. It is situated along a granite/gabbro contact and is fine-grained, light green, with isolated pyrite crystals.
3. 5 km S. Misvaer 007/397.
   Size of body 30 m X 5 m. It is situated along a grey mica-schist/greenschist contact, and is fine-grained, light green and slightly foliated.
4. 5 km S. Misvaer 010/399.
   Size of body 20 m by 5 m. It is situated along a greenschist/conglomerate contact and is fine-grained, slightly foliated, with isolated pyrite crystals.

Greenschist
This outcrops on the southern margin of the main gabbro and forms two horizons in an east-west succession in the Vikdalen valley. It consists of fine- to medium- grained light green, quartz-chlorite-schist, locally containing isolated pyrite crystals or garnet porphyroblasts.

Mica-schist
This occurs at the base of the east-west succession noted above, and consists of dark grey, crenulated, bte.-musc.-schist.

Conglomerate
This forms two horizons near the top of the east-west succession. It consists of numerous stretched pebbles of max. length 1 m, composed of quartzite and dolomite with a greenschist matrix similar to that located in the succession.

Quartzite
This forms several N.-S. elongated bodies of max. width 10 m, within the granite and along the granite/gneiss contact to the west of the main gabbro. It is yellowish-orange, medium-grained and banded due to layers of bte. and musc. There is also a 30 m wide N.-S. band of coarse, white, massive quartzite, present within the gabbro, 3 ½ 5 km south of Misvaer, 004/413.

Marble
This forms an outcrop 5 m by 3 m at 982/417 along a quartzite/gneiss contact, west of the main gabbro. It consists of massive, greyish-white, crystalline, calcite.

5. Economic prospects

The area S.W. of Hoset contains nothing of significant economic importance, and south of Misvaer, only localised traces of pyrite, chalcopyrite and pyrrhotite are present. No evidence of ore, both within and peripheral to the two areas investigated was found.

6. Catalogue of rock specimens

a) Area south-west of Hoset

D.C. 110	Yellowish-white, foliated marble typical of the entire area.	922/477
D.C. 113	Pinkish-white, coarse-grained, musc.-bte.-granite	919/480
D.C. 120	White, medium-grained, musc.-bte.-granite	930/478
D.C. 124	Light green, fine-grained acidic rock with biotite and quartz crystals, found only in localised bands	953/526
D.C. 117	Coarse crystalline marble with chlorite, muscovite and quartz crystals, typical of granite/marble contacts	918/490
D.C. 114	Grey, fine-grained, bte.-gabbro	912/487
D.C. 121	Dark grey, coarse-grained, bte.-gabbro.	934/480

b) Area south of Misvaer

K.L. 10	Dark greyish-green, coarse-grained, hb.-bte.-gabbro typical of the gabbros in this area	010/438
D.C. 83	Grey quartz-biotite-microdiorite with aplite vein typical of gabbro/basic gneiss contacts.	014/406

K.L. 12	Grey, banded, quartz-biotite-gneiss, typical of gneisses in the area	002/440
D.C. 82	Green, banded, quartz-chlorite-gneiss, found only localised to S.E. of main gabbro	018/403
K.L. 8	White, medium-grained, musc.-bte.-granite typical of entire area	011/438
D.C. 91	White, medium-grained hb.- tourmaline granite, localised to west of main gabbro	982/426
D.C. 93	Pinkish-white, coarse-grained, hb.-granite with chlorite and small quantities of pyrrhotite, localised to one outcrop S.W. of main gabbro	988/405
D.C. 77	Dark grey, crenulated, musc.-bte.-schist, confined to S.E. of main gabbro	007/393
D.C. 78	Light green, qtz.-chlorite-greenschist with weathered pyrite crystals, typical of greenschist S.E. of main gabbro	008/398
K.L. 13	Stretched conglomerate with quartzite and dolomite pebbles in a greenschist matrix, typical of conglomerate, S.E. of main gabbro	009/399
D.C. 69	Coarse crystalline serpentinite with quartz vein, typical of body 1, described previously	007/438
D.C. 75	Light green, fine-grained, serpentinite with scattered pyrite crystals, typical of bodies 2, 3 and 4, described previously.	013/421
D.C. 86	Yellowish-orange, medium-grained, musc.-bte. banded quartzite, typical of quartzites west and south-west of main gabbro.	986/392
D.C. 92	Greyish-white, massive, coarse, crystalline marble localised to one outcrop, west of main gabbro.	982/417

1.

FIELD NOTES ON THE GEOLOGY OF THE AREA SOUTH-WEST OF HOSET

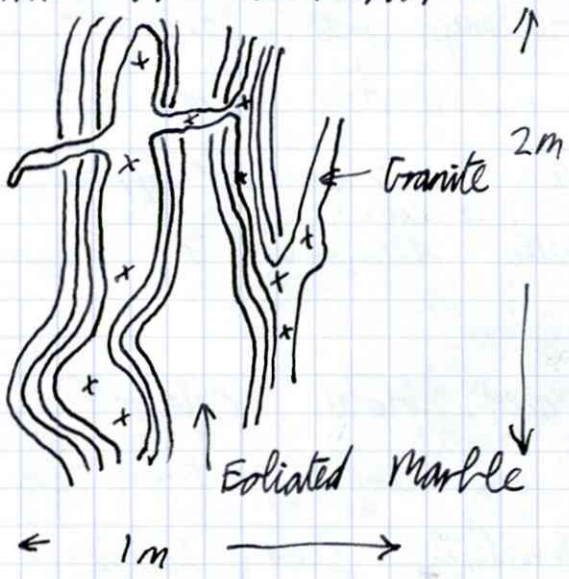
COLE AND LANGLEY, AUGUST, 1970

FRIDAY, AUGUST 28th.

LOCALITY 154 $^{4}923$ $^{14}476$ 200m. N.W. Lake Shredvin stream section.

Rock-type – Foliated, white marble with hornblende-granite and quartzite, up to 3m. wide, lensed into the marble. Cross-cutting granitic and quartz veins are also present.

PLAN OF OUTCROP



Trend of foliation in marble N50E.
Dip of foliation planes W 50 N at 55°.

SPECIMEN DC 110 Beige, foliated marble.
The granite present, varies from predominantly quartz-rich granite to hornblende and biotite granite c.f. D.C. 91.
The quartzite lenses are locally small-scale folded.

TRAVERSE WNW UPSTREAM FROM 154.

Outcrops of marble continue for 50m.

200m WNW 154

Rock-type — Medium biotite-mica-granite, weathering reddish-brown, with some quartzite bands less than 3m. wide.

Outcrops continue in stream section for further 200m. WNW.

SPECIMEN D.C. 120, Medium, white, mica-granite.

600m. WNW 154

Rock-type — Coarse biotite-granite with pink feldspar. Outcrops continue for 50m. further WNW.

SPECIMEN D.C. 113 Coarse, pink, mica-granite.

LOCALITY 155 $^{4}916$ $^{74}481$ 1200m. WNW 154.

Rock-type — Coarse mica-granite c.f. D.C. 113.

TRAVERSE NW UPSTREAM FROM 155

Coarse mica-granite continues outcropping for 300m N.W., with cross-cutting felsitic veins up to 40cm. wide.

400m N.W. 155.

Rock-type — Fine, grey, biotite gabbro with felsitic and granitic net-veining. The veins are up to 50cm. thick. This gabbro outcrops on a waterfall and forms a band at least 15m. wide. Granite, c.f. D.C. 113 outcrops to NW and SE of gabbro. The net-veining forms part of the main granitic mass to the N.W. Trend of gabbroic band N70E.

LOCALITY 156 $^{4}912$ $^{74}488$ 600m N.W. 155 in stream-section.

Rock-type — Coarse, mica-granite, c.f. D.C. 113. Outcrops are extensive

TRAVERSE ENE UPSTREAM FROM 156.

Outcrops of granite c.f. D.C. 113 continue for 300m ENE.

300m E.N.E. 156.

Rock-type — White, coarse, crystalline marble with malachite c.f. D.C. 92.

2 This marble forms a band approx. 20m. wide trending N-S. It is slightly foliated. Dip of foliation planes W 16 N at 20°. Granite outcrops to east and west of marble band.
The marble continues outcropping for 100m. E N E, narrowing to 5m. wide. Further E.N.E., granite c.f. D.C. 113 outcrops in stream-section.

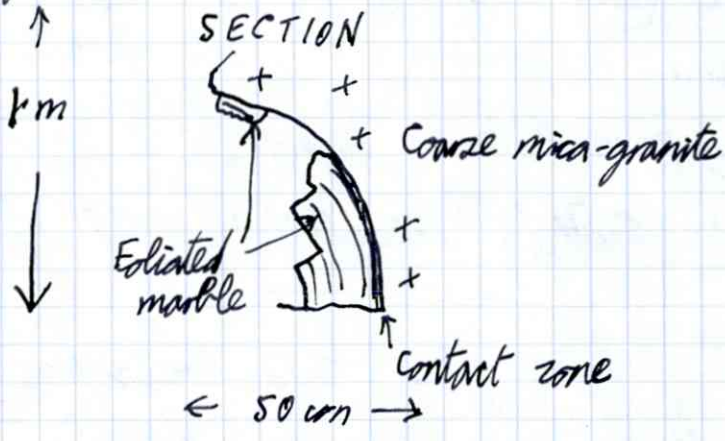
600m. E.N.E. 156.

Rock-type - marble, c.f. D.C. 92, slightly foliated. Dip of foliation planes W 5 N at 32°. The marble forms an outcrop 30m. X 2m. There is a contact zone 20cm. thick with the granite. This contact zone consists of marble with chlorite, muscovite and quartz.

SPECIMEN D.C. 117 Crystalline marble with chlorite, muscovite and quartz.

650m. ENE 156

Rock-type - marble c.f. D.C. 92, with contact with granite ~~recrs~~ exposed.



The contact zone, c.f. D.C. 117, is 5cm thick, and foliation planes in the marble are parallel to the contact.

800m ENE 156

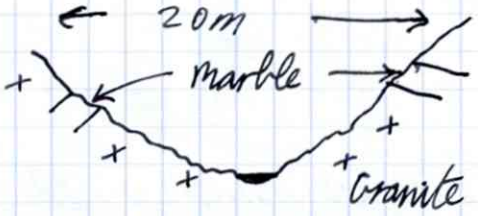
Rock-type - Marble c.f. D.C. 92 forming outcrop 2m X 3m, within Coarse, mica-granite c.f. D.C. 113.

Dip of foliation planes in marble S 50 E at 50°.

900 m. ENE 156

Rock-type — marble c.f. D.C. 92. This outcrops within granite c.f. D.C. 113 on both N and S sides of stream. These outcrops form part of an anticline.

N-S PROFILE ACROSS STREAM



1200m ENE. 156.

Outcrops of coarse mica-granite become extensive.

TRAVERSE EAST ACROSS HILL 548m.

Outcrops of granite c.f. D.C. 113 occur for 1.5 km. east.

LOCALITY 157 4926 74486 1500m. ESE 156 in stream-section

Rock-type — Gabbro c.f. D.C. 114. This extends 30m. south, downstream and is net-veined by granite c.f. D.C. 113. This granite forms extensive outcrops further north and south of gabbroic band.

TRAVERSE SOUTH DOWNSTREAM FROM 157.

Granite, c.f. D.C. 113, outcrops for 200m. south of 157.

400m. S. 157.

Rock-type — Gabbro c.f. D.C. 114. This outcrops in stream section, with granite, c.f. D.C. 113, to west of stream.

450m. S. 157

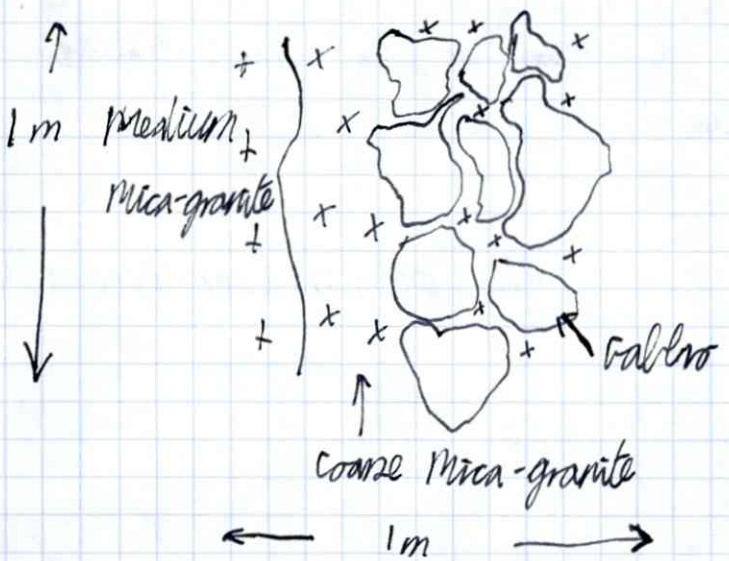
Rock-type — Marble c.f. D.C. 110. This forms band, 10 m. wide in stream with granite, c.f. D.C. 113, further west.

Gabbro, c.f. D.C. 114, outcrops to east of marble.

Further south, contact of biotite-gabbro with medium, mica-granite, c.f. D.C. 120, exposed in stream.

3.

PLAN



The gabbro outcrops to the east and is net-veined by coarse granite, c.f. D.C. 113. This coarse granite forms a zone 15 cm. wide, where it is marginal to medium, mica-granite, c.f. D.C. 120, outcropping to the west. A chilled margin, 3cm. wide, is present in the medium granite.

500m. S 157.

Rock-type – Gabbro with granitic net-veining, c.f. D.C. 114.

600m S. 157

Rock-type – Marble with granitic lenses, c.f. D.C. 110. This continues outcropping for a further 100m. south. Trend of foliated marble, N 40 E. A small outcrop of gabbro present within marble.

700m. south of 157.

800m. S. 157

Rock-type – Gabbro, c.f. D.C. 114. East of this outcrop, micro-diorite, c.f. D.C. 83, is present, gradational with the gabbro.

900m. S 157

Rock-type – Marble, c.f. D.C. 110, with alluvium further south as far as Lake Shrader.

SATURDAY, AUGUST 29th.

LOCALITY 158 $^{+}$931 ^{74}478. 100m east of lake Skredv.

Rock-type — Coarse mica-granite c.f. D.C. 113. This outcrops in river-section.

TRAVERSE NE DOWN RIVER SKREDELVEN ~~FROM~~ FROM 158.

200m NE 158

Outcrop 3m X 3m of gabbro, c.f. D.C. 114.

250m NE 158

Outcrop of gabbro, c.f. D.C. 114 with coarse, granitic, reticulate veining. This forms a band 10m. wide. Further N.E., outcrops of coarse, biotite-granite c.f. D.C. 113 occur.

300m NE 158

Gabbro, c.f. Rock-type — Coarse, biotite-gabbro, with granitic net-veining. This outcrops for a further 150m. NE.

SPECIMEN D.C. 121 Grey, coarse, biotite-rich gabbroic rock.

Outcrops of hornblende-granite, with a marble body 5m X 2m are present to south of river.

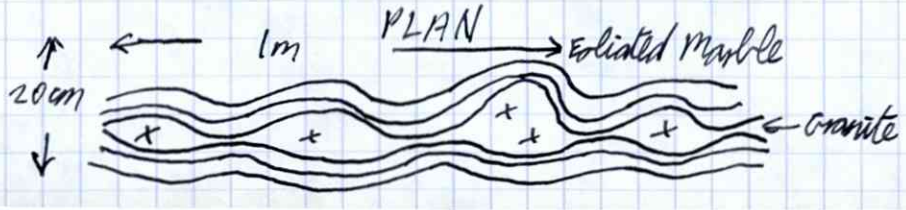
450m. NE 158

Rock-type — Coarse mica-granite c.f. D.C. 113 with 2 bands of coarse, crystalline, marble 1m. thick, within this granite. The granite outcrops extensively further N.E.

500m NE 158

Rock-type — Foliated marble, c.f. D.C. 110, with granitic lenses. This forms band 5m. wide, south of river. North and south of this band, coarse granite, c.f. D.C. 113, outcrops.

The granitic lenses in the marble vary in size from 5cm X 10cm to 50cm X 100cm. Trend of foliation planes N50W.



4. Some gabbroic lenses are also present in the marble, with granitic ~~net~~ net-veining, c.f. D.C. 114.

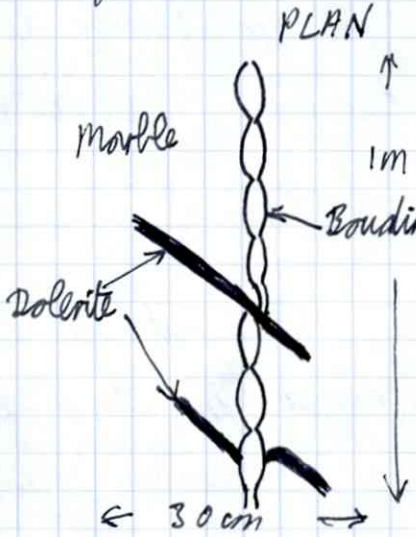
The marble band outcrops for 40m N.E.

600m NE 158.

Rock-type — Marble c.f. D.C. 110 with granitic and gabbroic lenses. Granite is coarse-grained, c.f D.C. 113 and gabbro, fine-grained, c.f. D.C. 114. The lenses are up to 5m x 3m in size. To south of river, granite, c.f. D.C. 113, outcrops. Further NE., marble outcrops extensively in gorge.

800m NE 158

Rock-type — Marble, c.f. D.C. 110. Trend of foliation planes N50E.



Locally, a boudinaged granitic vein within the marble is cross-cut by a dolerite dyke, but cross-cuts an earlier dolerite dyke. This indicates 3 phases of veining in the marble.

1.5km. NE 158

Marble continues outcropping in gorge with trend of foliation N30E. Both granitic and gabbroic lenses are present.

This marble continues outcropping NE downstream for at least 100m.

TRAVERSE ALONG TRACK SOUTH OF SKREDELVEN TO LAKE SKRED.

Isolated outcrops of coarse ~~a~~ mica-granite occur.

MONDAY, AUGUST 31st

LOCALITY 159 ^{4}932 ^{74}481 200m NNE 158.

Outcrop on hillside of granite c.f. D.C. 120. This medium, mica-granite continues for 100m NE of 159.

LOCALITY 160 ^{4}933 ^{74}484 300m NNE 159.

Outcrop in small stream of mica-granite, c.f. D.C. 120.

TRAVERSE NORTH FROM 160.

Mica-granite outcrops for 100m north of 160.

200m N 160

Mica-granite outcrops for a further 100m north.

400m N 160

Rock-type - Marble, c.f. D.C. 110, with granitic lenses. Trend of foliation planes N50E. 30m further north, gabbro, c.f. D.C. 121 outcrops for 150m north.

600m N 160

Rock-type - Coarse mica-granite c.f. D.C. 113 outcrops extensively.

LOCALITY 161 ^{4}935 ^{74}493 1km. NNE 160 in stream-section

Rock-type - coarse, mica-granite c.f. D.C. 113. 10m. further downstream, marble, c.f. D.C. 110 with granitic lenses outcrop. Trend of foliation planes N35E.

TRAVERSE ~~EAST~~ S.E. DOWNSTREAM FROM 161.

200m S.E. 161

Rock-type - Marble c.f. D.C. 110.

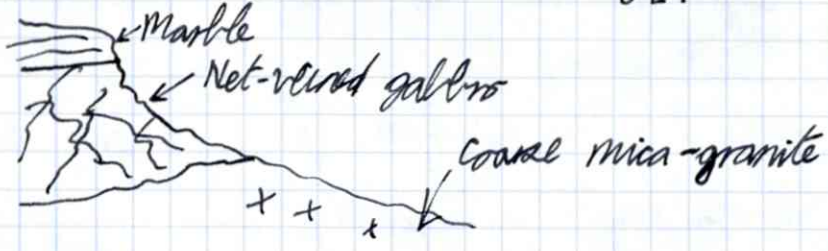
230m S.E. 161

Waterfall with marble at top and coarse gabbro, c.f. D.C. 121 at base. Contact is parallel to foliation of marble, N35.

10m further downstream, coarse mica-granite, c.f. D.C. 113 outcrops.

5. PROFILE ALONG WATERFALL

NW ← 30m → SE.



300m SE 161

Rock-type – Medium mica-granite c.f. D.C. 120. 20m further south-east, marble, c.f. D.C. 110 outcrops extensively. Foliation in marble is locally folded.

400m SE 161

Rock-type – Marble c.f. D.C. 110, with fine, granitic dyke, 30 cm. wide cross-cutting the marble. This continues for a further 100m. south-east, with granitic and gabbroic lenses. Trend of foliation planes N40E.

500m. SE 161

Rock-type – Coarse mica-granite, c.f. D.C. 120.

600m SE 161

Net-veined gabbro c.f. D.C. 121 forms band 10m wide, with mica-granite c.f. D.C. 120 further S.E. This granite continues outcropping for a further 100m south-east, and is locally coarser-grained, c.f. D.C. 113. A band of gabbro, c.f. D.C. 114, is present, 1m wide within the granite.

900m SE 161

Rock-type – Gabbro, c.f. D.C. 121. This forms a band 3m. wide. Further S.E., marble, c.f. D.C. 110 outcrops. This marble contains granitic and gabbroic lenses, and continues outcropping as far as the Shredelven river. 2 gabbroic bands, c.f. D.C. 121, 10m wide are present in the marble.

LOCALITY 162 4942 7487 1.2m. S.E. 161 on Skredelven River.
Rock-type – marble, c.f. D.C. 110 with large gabbroic and granitic lenses.

TRAVERSE EAST FROM 162 DOWN SKREDELVEN RIVER.
Marble continues outcropping on both sides of river, with gabbroic lenses up to 30m X 10m. The marble extends as far as Standen, 1300m E 167. Further downstream, glacial drift to present. A further outcrop of marble occurs 200m S.W. of Standen above river valley.

TRAVERSE WEST ALONG TRACK TO LAKE SKRED.
Marble outcrops along track for 300m west, with granite, c.f. D.C. 113, further west.

TUESDAY, SEPTEMBER 12t.

LOCALITY 163, 4937 7495 200m NE 161 in stream-section.
Rock-type – fine, mica-granite, c.f. D.C. 120. This outcrops extensively.

100m ESE 163
Outcrop of quartz microdiorite, c.f D.C. 83, 5m. wide in stream.
Granite outcrops further S.E.

LOCALITY 164 4935 7499 400m N 163
Waterfall with white, crystalline marble containing lenses and veins of coarse, mica-granite, c.f. D.C. 113. This extends 30m. NW upstream, with medium, mica-granite, c.f. D.C. 120 further north-west. Trend of foliation planes in marble N40E. The marble outcrops for 300m S.W.

TRAVERSE S.E. DOWNSTREAM FROM 164
Marble outcrops for 100m S.E.

6. 150m. S.E. 164

Rock-type — Coarse gabbro, c.f. D.C. 121 with granitic net-veining. This continues for 15m. downstream with band of marble 2m. wide, present within gabbro. Further S.E., marble, c.f. D.C. 110 outcrops for 50m. downstream. Trend of foliation planes N50E.

300m SE 164

- Rock-type — Coarse granite, c.f. D.C. 113. This outcrops extensively for at least 50m further S.E.
- TRAVERSE NE FOR 1 km TO STAPELVEN RIVER.

Outcrops of coarse and fine mica-granite occur.

- LOCALITY 165 4947 74507 1300m ENE 164 in river section

Rock-type — Fine mica-granite, c.f. D.C. 120. This outcrops for at least 40m. east, downstream.

TRAVERSE NW UPSTREAM FROM 165

20m NW 165

- Marble band, c.f. D.C. 110, 30m wide outcrops. Trend of foliation planes N40E. Further upstream, coarse gabbro, c.f D.C. 121,
- with reticulate granitic veining, outcrops. This outcrops for 40m NW. Further NW, 10m band of fine, mica-granite,
- c.f. D.C. 120, outcrops.

100m NW 165

Rock-type — Foliated marble with granitic and gabbroic lenses.

120m NW 165

Gabbro, c.f.D.C. 121, outcrops for 15m. upstream.

250m N.W. 165

Fine, mica-granite, c.f. D.C. 120, outcrops for 50m NW to base of waterfall. At top of waterfall, gabbro, c.f.D.C. 121, outcrops for 50m N.W. upstream. Coarse, mica-granite

that forms part of net-veining in gabbro, outcrops further upstream.

400m NW 165

Marble, c.f. D.C. 110, forms band 30m. wide within coarse, mica-granite. Trend of foliation planes in marble N40E.

500m NW 165

Coarse mica-granite continues outcropping for at least 300m. N.W. upstream.

WEDNESDAY, 2nd SEPTEMBER

LOCALITY 166 $^{49}42$ $^{74}516$ 1km N.W. 165 near hill 498m.

Rock-type — Coarse mica-granite, c.f. D.C. 113. A band of marble, c.f. D.C. 110, 5m. wide outcrops in stream.

TRAVERSE EAST DOWNSTREAM FROM 166

100m E 166

Band of marble 3m wide outcrops within granite.

Stream direction changes to south-east.

TRAVERSE S.E. DOWNSTREAM

200m. ESE 166

2m. wide band of quartz microdiorite, c.f. D.C. 83 outcrops within coarse, mica-granite.

300m SE 166

20m wide band of marble, c.f. D.C. 110, outcrops. Trend of foliation planes N45E. Further S.E., coarse gabbro, c.f. D.C. 121, outcrops. This is 15m. wide. Further S.E, 20m wide band of marble outcrops, with coarse mica-granite further S.E.

500m S.E. 166

10m. wide band of gabbro, c.f. D.C. 121, outcrops within the granite.

7. The coarse, mica-granite outcrops for at least 200m. further S.E.

TRAVERSE SW TO 165

Isolated outcrops of granite occur.

TRAVERSE WEST FROM 165 UP STAPELVEN RIVER.

20m. wide band of marble, c.f. D.C. 110, outcrops.

5m. wide band of gabbro, c.f. D.C. 121, outcrops further S.E.

200m. W 165

- Marble outcrops for 5m. upstream.

230m W 165

- 5m. wide band of gabbro, c.f. D.C. 121, outcrops, with a 10m. wide outcrop of coarse, mica-granite further west.

300m W 165

3m wide outcrop of gabbro, c.f. D.C. 121, occurs, with coarse, mica-granite for 50m. further west.

- 350m. W. 165

15m. wide band of coarse gabbro, c.f. D.C. 121, outcrops,

- with marble further west, for 30m.

400m. W. 165

- Coarse mica-granite outcrops for 20m upstream.

440m W. 165

3m. wide band of gabbro outcrops, with 20m. wide band of marble further west to base of waterfall. Gabbro, c.f. D.C. 121, forms 20m. thick band in waterfall. At top of waterfall, granitic net-veining in gabbro, grades into coarse, mica-granite, c.f. D.C. 113. This granite continues outcropping for at least 300m. ~~west upstream.~~ further west.

THURSDAY, 3rd SEPTEMBER

LOCALITY 167 $^{4}934$ $^{74}507$ 800m N 164 on Stapeliven. stream.

Rock-type — Foliated basic gneiss with quartz lenses, c.f. K.L.12. This forms 10m. wide band in stream. Dip of foliation planes W 65 N at 43°. Coarse, mica-granite, c.f. D.C. 113, outcrops extensively further N.E. downstream.

50m. NE 167

Band of marble, c.f. D.C. 110, 3m. wide outcrops within granite.

150m. NE 167

Outcrop of marble 3m × 3m, within granite. Dip of foliation planes W 50 N at 55°.

LOCALITY 168 $^{4}952$ $^{74}527$ 2km. NE 166 in stream-section.

Rock-type — Coarse, mica-granite, c.f. D.C. 113.

TRAVERSE SE DOWNSTREAM FROM 168.

200m. SE 168

Coarse, mica-granite outcrops extensively, with 3m. wide band of light green, fine-grained acidic rock-type. Folded quartz veins are also present in the granite

SPECIMEN D.C. 124 light green, fine-grained acidic rock.

250m. S.E. 168

15m. wide band of foliated, basic gneiss, c.f. K.L. 12, with granitic veins outcrops within granite. Dip of foliation planes W 56 N at 58°. Further S.E., granite with lenses of gneiss up to 1m. wide, outcrops.

350m. S.E. 168

10m. wide band of coarse gabbro, c.f. D.C. 121, outcrops within coarse mica-granite.

400m. S.E. 168

5m. wide band of fine gabbro, c.f. D.C. 114, outcrops within granite

450m. S.E. 168

Rock-type — Coarse gabbro, c.f. D.C. 121, with granitic net-veining. This outcrops for 30m. S.E. and contains a 3m. wide band of granite.

500m. S.E. 168

5m. wide ~~band~~ outcrop of foliated marble, c.f. D.C. 110, occurs. Dip of foliation planes W 50N at 58°. Further S.E., coarse mica-granite outcrops.

600m. S.E. 168

Coarse mica-granite outcrops for at least 100m. further S.E.

LOCALITY 169 4955 7521 700m. SE 168 on southern tributary of main stream.

Rock-type — Coarse mica-granite.

TRAVERSE WEST UPSTREAM FROM 169.

Coarse mica-granite outcrops for 200m. upstream.

400m. W 169

Outcrop of coarse mica-granite in waterfall.

600m. W 169

Isolated outcrops of coarse mica-granite occur, and continue west, upslope, for at least 300m.

FRIDAY, 4th SEPTEMBER

LOCALITY 170 4969 7535 2.5km. NE 169 at Hozet.

River-section

Rock-type — Foliated basic gneiss, c.f. F.L. 12, containing granitic lenticles up to 50cm. long. Dip of foliation planes W24N at 30°. 5m. wide band of marble, c.f. D.C. 110, ~~occurs~~ outcrops west, upstream. Dip of foliation planes W55N

at 40°.

TRAVERSE WEST UPSTREAM FROM 170.

Medium mica-granite, c.f. D.C. 120, outcrops west of marble band.

30m. W. 170

3m. wide band of marble, c.f. D.C. 110, with net-veined gabbro, c.f. D.C. 114, further west.

100m. W. 170

Coarse granitic net-veining becomes extensive in gabbro, with 2m. wide band of marble present.

120m. W. 170

Medium mica-granite, c.f. D.C. 120 outcrops in stream.

140m. W. 170

Gabbro, c.f. D.C. 121, outcrops in stream.

200m. W 170

Foliated marble, c.f. D.C. 110, forms 10m. wide outcrop. Dip of foliation planes W 38 N at 40°. Further west, fine gabbro, c.f. D.C. 114, outcrops.

Stream changes direction to S.W.

300m S.W. 170

Foliated marble, c.f. D.C. 110, outcrops in stream, trending S.W. upstream.

400m. S.W. 170

Stream flows underground for 50m. beneath band of marble.

500m. S.W. 170

100m. wide outcrop of marble, c.f. D.C. 110, occurs. Dip of foliation planes W 42 N at 38°.

Stream changes direction to WNW.

9. 650m. S.W. 170

40m. wide band of gabbro, c.f. D.C. 121, outcrops, with marble to NE and coarse, mica-granite, c.f. D.C. 113, to SW.

700m S.W. 170

Coarse, mica-granite outcrops for at least 300m. WNW upstream.

TRAVERSE NE ALONG HILLSIDE

Granite, c.f. D.C. 113, outcrops for 1.4m.

LOCALITY 171 $^{4}965$ $^{74}541$ 700m. NW 170 in stream-section.

Rock-type – Coarse mica-granite, c.f. D.C. 113.

TRAVERSE SE DOWNSTREAM FROM 171

100m SE 171

3m. wide band of fine gabbro, c.f. D.C. 114, with coarse, mica-granite further SE.

200m SE 171

10m. wide band of fine gabbro with coarse, mica-granite further SE.

240m. SE 171

10m. wide outcrop of foliated marble. Dip of foliation planes W 34 N at 40°.

260m. SE 171

Outcrop of fine gabbro, c.f. D.C. 114, in stream.

400m. SE 171

Outcrop of medium, mica-granite, c.f. D.C. 120, in stream.

430m. SE 171

Fine, light-green acidic rock, c.f. D.C. 124, outcrops in stream.

440m. SE 171

Fine gabbro, c.f. D.C. 114, outcrops for 20m. S.E., with 3m. wide band of coarse, mica-granite within gabbro.

500m. S.E. 171

5m. wide outcrop of gabbro, c.f. D.C. 114, with medium, mica-granite further SE.

530m. SE 171

5m. wide outcrop of fine gabbro, c.f. D.C. 114. Glacial moraine present further S.E.

LOCALITY 172 4975 74549 1500m. NE 171 on hillside 300m. NW of Sand.

Rock-type → Coarse mica-granite, c.f. D.C. 113.

Glacial moraine occurs at base of hill to S.E.

TRAVERSE SW FROM 172 ALONG HILLSIDE

200m SW 172

5m. wide band of marble within granite.

Dip of foliation planes in marble W30N at 60°.

10m. further NW, coarse gabbro, c.f. D.C. 121, occurs in band 100m X 5m within granite.

400m. SW 172

outcrop of fine gabbro, c.f. D.C. 114, occurs within granite this forms band 3m wide and extends 50m. further S.W. coarse mica-granite, c.f. D.C. 113, outcrops for further 100m. SW.

LOCALITY 173 4968 74545 1.5km. SW 172 in stream-section.

Rock-type — Medium mica-granite, c.f. D.C. 120. SE, downstream, 10m. wide outcrop of foliated marble, c.f. D.C. 110, occurs. Dip of foliation planes W42N at 55°.

TRAVERSE SE DOWNSTREAM FROM 173.

Coarse mica-granite, c.f. D.C. 113, outcrops SE of marble

100m. SE 171

5m. wide band of foliated marble within granite outcrop

10. Dip of foliation planes W 60 N at 40°.

250m. SE 173

3m. wide outcrop of fine gabbro, c.f. D.C. 114, occurs.
5m. wide outcrop of foliated marble, c.f. D.C. 110, occurs further SE. Dip of foliation planes W 60 N at 64°.
Further SE, fine gabbro outcrops in 15m. wide band with coarse mica-granite to SE of this.

350m. SE 173

10m. wide outcrop of marble.

400m. SE 173

10m. wide outcrop of coarse mica-granite.

450m. SE 173

5m. wide outcrop of coarse gabbro, c.f. D.C. 121, with 3m. wide outcrop of foliated marble further S.E.
Glacial moraine occurs further S.E. as far as Myran.

SATURDAY 5th SEPTEMBER

LOCALITY 174 4945 7458 400m NE 166 in stream-section.

Rock-type — Medium mica-granite, c.f. D.C. 120. This outcrops for 50m. SE downstream.

TRAVERSE SE DOWNSTREAM FROM 174

200m. SE 174

50m. wide outcrop of granite, c.f. D.C. 120, with 3m wide band of coarse gabbro, c.f. D.C. 121, further S.E.. Foliated marble, c.f. D.C. 110, outcrops further S.E. Dip of foliation planes W 40 N at 55°.

300m SE 174

Outcrop of medium mica-granite.

350m SE 174

1m x 1m outcrop of marble in stream. Further S.E. 1m wide band of fine gabbro, c.f. D.C. 114, outcrops, with coarse granite, c.f. D.C. 113, further SE.

400m SE 174

10m. wide outcrop of fine gabbro, c.f. D.C. 114, occurs in stream.

440m SE 174

1m. wide outcrop of foliated marble, with 10m. wide outcrop of basic gneiss, c.f. K.L 12 further SE.

Dip of foliation planes in gneiss W 48 N at 40°.

480m SE 174

10m. wide outcrop of marble with medium mica-granite further SE.

Stream changes direction to NE, towards 169, with outcrops of granite for at ~~least~~ least 200m NE.

TRAVERSE NW UPSTREAM FROM 166

Outcrops of coarse mica-granite, c.f. D.C. 113, over for 500m. to top of escarpment.

Basic gneiss, c.f. K.L. 12, outcrops for at least 200m. further NW.

Dip of foliation planes in gneiss W 45 N at 60°.

LEGEND FOR 1:50,000 MAP SHEET 2029 11

COLE AND LANGLEY, (July 23 – Sept 7, 1970)

"DERWENT" NO.

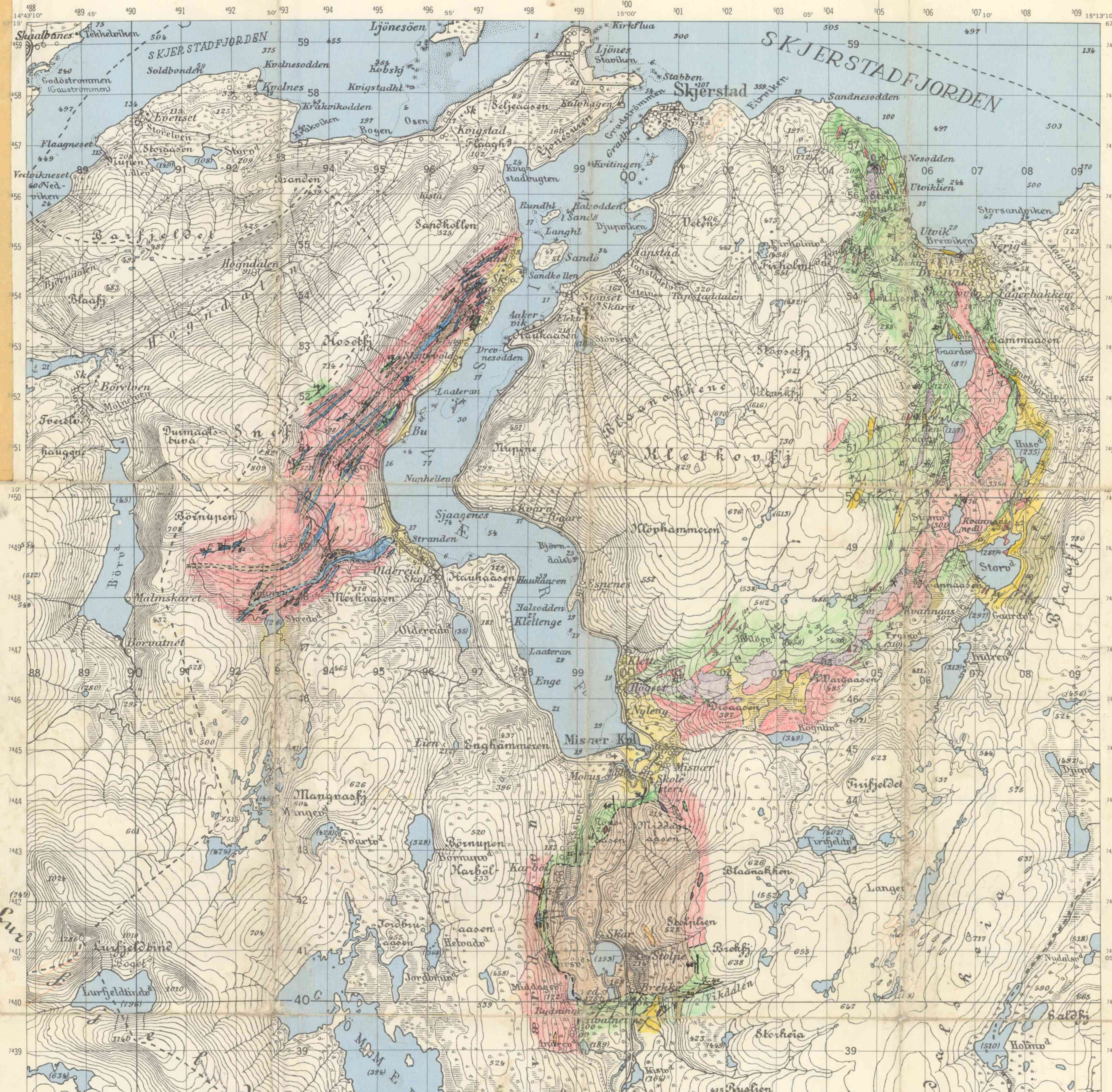
25		Serpentinite
61		Gabbro
15		Granite
46		Gneiss
37		Marble
9		Quartzite
6		Grey Mica-schist
51		Greenschist
44		Conglomerate
3		Drift

Certain Lithological Boundaries

Uncertain Lithological Boundaries

50 Strike of Foliation with Amount of Dip

Ore Bodies



AMS M711 (GSGS 4246)
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 Oppmaling, Sheet K 13, 1944. Sheet size changed and planimetric detail partially revised.

Målestokk, 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

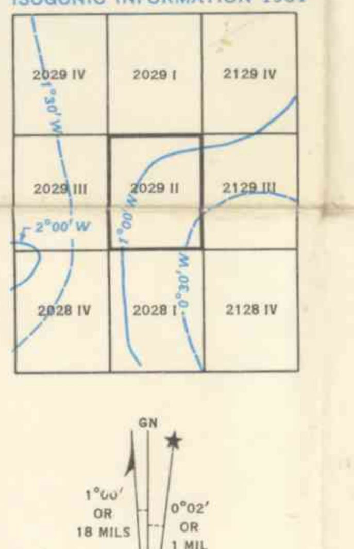
USERS NOTING ERRORS OR OMISSIONS ON THIS MAP ARE URGED TO MARK HEREON AND FORWARD DIRECTLY TO COMMANDING OFFICER, ARMY MAP SERVICE, WASHINGTON, D. C. MAPS SO FORWARDED WILL BE RETURNED OR REPLACED IF DESIRED.

RUTETILVISING (KARTREFERENSE), NAERMESTE 100 m.	SONEOMRÅDE GRID ZONE DESIGNATION: 33W	TO GIVE A STANDARD REFERENCE ON THIS SHEET TO NEAREST 100 METERS
Eksempel: BJORNAALIEN; km aust 01, 1; km nord 35, 2; BJORNAALIEN 011352	100 KM RUTE 100,000 M. SQUARE IDENTIFICATION	SAMPLE POINT: BJORNAALIEN
Merk at komma sløyfes og at 100 km tallenede små tallene 5 aust og 67 nord-IKKE skal tas meo.	VQ WQ 500	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: 01. Estimate tenths from grid line to point: 1
Ved meldinger utover 100 km eller hvis mere enn ett rutenett er merket på kartet, skal også 100 km ruten angis:		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: 35. Estimate tenths from grid line to point: 2
BJORNAALIEN WQ011352	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	SAMPLE REFERENCE: 011352
Ved meldinger utover 9° nord, syd eller 18° aust, vest, skal også soneområde angis:		If reporting beyond 100,000 meters or if sheet bears an overlapping grid, prefix 100,000 Meter Square Identification, as: WQ011352
BJORNAALIEN 33WWQ011352		If reporting beyond 9°N-S or 18°E-W, prefix Grid Zone Designation, as: 33WWQ011352

LEGEND—TEIKNTYDING

- International boundary with marker — Riksgrense, grenseröys, - merke
- Province boundary — Fylkesgrense
- District, town boundary — Heradsgrense, bygrense
- Parish boundary — Soknegrense
- Crown lands boundary — Statsålmenningsgrense
- Main road; Route number—Hovudveg, vegnummer (50)
- 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 sjömalet. Båe under vatnet
- Sandy foreshore flat—Havstrand med fjöre 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, elektrik sporveg
- Railroad under construction — Jarnveg som er i bygging
- Streetcar line — Trallebane, hestejarnveg
- Aerial cableway—Togbaie (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 (mölli), 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. Sjömerke. Luftfyr
- Fishers or hunters cabin, cattle camp, etc. — Fiskarbu, skyttarbu, feæger 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.

INDEX TO ADJOINING SHEETS
ISOGONIC INFORMATION 1951



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 söndre rammekant, med det punkt på skalaen i nordre rammekant, som svarer til misvisingen regnet i forhold til RUTENETT NORD (GN).

TRYKT I NORGES GEOGRAFISKE OPPMÅLING 5-65

GLOSSARY–FORKORTELSER

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

SKJERSTAD, NORWAY

652.002