GEOLOGICAL SURVEY BRANCH
DEPARTMENT OF MINES AND ENERGY
GOVERNMENT OF NEWFOUNDLAND AND LABRADOR

PROTEROZOIC II OR LATER

5 **Diabase dykes** *(pre and posttectonic with respect to the Grenvillian orogeny)*

PROTEROZOIC II

4 **Two-mica granite:** *buff, coarse to very coarse grained, undeformed, biotite-muscovite granite containing rare, small, sillimanite-bearing, paragneiss restite xenoliths.*

LATE PROTEROZOIC I

3 **Granitoid plutonic rocks** [*Trans-Labrador batholith (circa 1650 Ma) and its approximately coeval equivalents*]

3a *K-feldspar-megacrystic granitoid rocks: $3a_1$, buff to brown, coarse grained, weakly to strongly foliated, biotite quartz monzonite ± primary orthopyroxene; $3a_2$, pink, buff and grey, medium grained, weakly to moderately foliated, rarely migmatitic, biotite quartz monzonite and granodiorite (interspersed with $3b_1$); $3a_3$, buff and grey, medium grained, moderately to strongly foliated or gneissic, relict K-feldspar-megacrystic, hornblende biotite quartz monzonite ± abundant sphene, locally containing hornblende-porphyroblastic migmatitic sweats*

3b *Non-megacrystic granitoid rocks: $3b_1$, grey, fine to medium grained, weakly to moderately foliated, homogeneous or random to lit-par-lit migmatitic, biotite granodiorite and minor tonalite (interspersed with $3a_2$); $3b_2$, fine to coarse grained pink-granite-layered, grey, fine to medium grained, foliated, biotite granodiorite and tonalite; $3b_3$, pink, fine to coarse grained, weakly foliated to locally anatectic, biotite granite, microgranite and aplite*

2 *Gabbroid plutonic rocks (associated with the Trans-Labrador batholith (circa 1650 Ma) or the Shabogamo Intrusive Suite (circa 1400 Ma))*

2a *Two-pyroxene metabasic rocks: $2a_1$, grey, fine to medium grained, undeformed to moderately foliated, metamorphic and rarely relict-igneous-textured, rarely layered, biotite leucogabbronorite and leuconorite ± augite, and hypersthene gabbro and leucogabbro (rarely corona textured and generally hornblende bearing); $2a_2$, rocks of $2a_1$ with amphibolite-facies haloes*

2b *Amphibolite-facies metabasic rocks; $2b_1$, grey, and black or green and white, commonly rusty-weathering, fine to coarse-grained, isotropic to strongly foliated, rarely schistose or gneissic, garnet ± biotite amphibolite and metagabbro (commonly containing orthopyroxene and clinopyroxene and characterized by wide metamorphic coronas consisting of clinopyroxene, amphibole and garnet); $2b_2$, rocks of $2b_1$ exhibiting either compositional or grain-size layering*

2c *Mount Fyne Pluton -a partly layered and partly homogeneous, predominantly undeformed, troctolitic, olivine noritic and gabbronoritic complex characterized by narrow, subsolidus(?) corona textures around olivine and some orthopyroxene and magnetite: $2c_1$, black, medium to coarse grained, locally foliated to mylonitic (in narrow shear zones), layered and/or laminated hypersthene leucotroctolite and troctolite, and olivine leuconorite; $2c_2$, dark grey to black, coarse grained to pegmatitic, undeformed, layered, intergranular-textured leucogabbronorite and gabbronorite ± olivine; $2c_3$, black to dark-grey or green, medium to very coarse grained (locally containing pegmatitic patches), locally foliated to schistose, homogeneous leucogabbronorite and gabbronorite ± olivine*

LATE PROTEROZOIC I OR EARLIER

1 **Paragneiss:** *predominantly sillimanite(± kyanite in the north)-bearing, metatexitic to diatexitic migmatites*

1a *Pink, buff or grey, pelitic to semipelitic paragneiss containing fine to very coarse grained pink or buff granitic leucosome; $1a_1$, rocks of 1a containing light to dark blue-grey, mostly fine grained, commonly lineated, sillimanite ± magnetite-rich, biotite, ± garnet, cordierite and orthopyroxene restite: $1a_2$, rocks of 1a containing black and white, commonly medium to coarse grained, mostly mimetic sillimanite ± biotite-rich, magnetite, ± garnet restite*

1b *White to grey, fine to medium grained, poorly layered psammitic paragneiss: $1b_1$, quartzite*

1c *Black, dark green- or brown-weathering, fine to medium grained basic gneiss, commonly containing quartz-vein layering and crosscutting tonalitic or enderbitic leucosomes*

NOTES: *No chronological order is implied between Late Proterozoic I Units 2 and 3*

Granitoid terminology follows IUGS recommendations (Streckeisen, 1976; Earth Science Reviews, Volume 12, pages 1-33)

SYMBOLS

Outcrop, large outcrops
Area of abundant outcrops, with data stations
Geological boundary (defined, approximate, assumed)
Fault (inferred)
Major thrust and/or shear zone – see notes (approximate, inferred)
Minor thrust – extrapolated from Wardle, 1985 (inferred)
Amphibolite-granulite facies boundary, tick on higher grade side (approximate)
Facies boundary assumed coincident with major structure
Bedding, tops unknown (inclined)
Igneous layering, tops known (inclined, overturned)
Igneous layering, tops unknown (inclined)
Igneous lamination (inclined)
Layering and lamination parallel
Paragneissosity – S_0 (inclined, vertical, dip unknown)
Orthogneissosity – S_1 (inclined, vertical)
Mineral foliation – S_1 (subhorizontal, inclined, vertical, dip unknown)
Cleavage – S_3 (inclined, dip unknown)
Paragneissosity and foliation (S_2) parallel (inclined, vertical, dip unknown)
Orthogneissosity and foliation (S_3) parallel (inclined, vertical)
Lineation (mineral, aggregate, rodding)
Lineation – syn-S_1 (inclined)
Lineation on foliation surfaces, down dip (S_1, S_2, S_3 + S_4)
Lineation on foliation surfaces, oblique pitch (S_1, S_1, S_2, S_3 + S_4)
Lineation on foliation surfaces, horizontal (S_3)
Lineation parallel fold axes
Major shear zone – (approximate)
Minor shear zone – (inclined, sinistral)
– with parallel foliation (inclined, vertical)
Foliation in shear zone (inclined, dip unknown)
Lineation on shear-zone foliation (subhorizontal)
Synform (inferred, with plunge direction)
Antiform (inferred, with plunge direction)
Minor fold axes – syn-S_1 (inclined, vertical), post-S_1 (inclined)
Minor folds – Z (syn-S_2, various schematic examples)
– S (syn-S_2, various schematic examples)
– antiforms
Axial plane – post-S_2
B lineations (crenulation, mullions)
Glacial lineations – striae (direction known, unknown)
– roche moutonée
Dykes with subunit designations (inclined, vertical, folded, dip unknown)
Net veins with subunit designation
Mineral occurrences (allanite, hematite, copper bloom and/or sulfide) — All, Fe, Cu
Age-date locality, age in millions of years — A 1150

Pb-Pbz,m	Lead – lead zircon, model age
U-Pbz,c	Uranium – lead zircon, concordia age
U-Pbm,c	Uranium – lead monazite, concordia age
U-Pbs,c	Uranium – lead sphene, concordia age
U-Pbs, d	Uranium – lead sphene, discordia age, upper intercept / lower intercept — 1694 / 993

Power lines
Summer road
Earth-filled dyke, with control structure

NOTES: *g, m and s respectively denote gentle, moderate and steep estimated readings.*

The major thrusts are based on limited ground observations and are largely inferred from the topography, aeromagnetic data and lithological and geochronological contrasts.

S_2 development probably occurred during the Late Proterozoic I Labradorian orogeny (1700-1600 Ma) and preceded emplacement of the plutonic suites (Units 2 and 3).

North of the inferred major thrust, S_1 and S_3 probably developed during the Grenvillian orogeny (1100-1000 Ma). South of the thrust it is not known whether S_1 is of Labradorian or Grenvillian age. Post-S_3 structures are Grenvillian.

A question mark implies uncertainty relating to the information that follows it.

Compiled and interpreted by G.A.G. Nunn, 1987, from geology by R.J. Wardle, 1981, and G.A.G. Nunn, A. Christopher, T. Van Nostrand and D. Wood, 1982, of the Geological Survey Branch, Department of Mines and Energy, St. John's, Newfoundland. Field assistance was supplied by D. Taylor and J. Blagdon.

Copies of this map may be obtained from the Publications and Information Section, Geological Survey Branch, Department of Mines and Energy, P.O. Box 8700, St. John's, Newfoundland, A1B 4J6.

Base maps at 1:50,000 scale were published in 1959 (north half) and 1964 (south half) by the Surveys and Mapping Branch, Department of Energy, Mines and Resources, Ottawa; contours at 50-foot intervals. These maps have been revised, using 1:50,000 scale airphotos to show normal flooding levels of the Ossokmanuan and Twin Falls Reservoir systems – shoreline positions are approximate; however, the Twin Falls Reservoir has since been drained and this correction has not been made.

Approximate magnetic declination, 1985, was 27°15' at the centre of the map area; decreasing 5.5' annually.

Elevation in feet above mean sea level.

Some of the names of lakes shown on this map are of informal usage and are not shown on NTS maps of the area.

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*This **preliminary bedrock geology map** is based mostly upon field observations. In areas of poor control, contacts have been assumed with recourse to aeromagnetic and topographical data where these were deemed significant. This map was compiled at 1:50,000 and photographically reduced, and is subject to revision and correction.*

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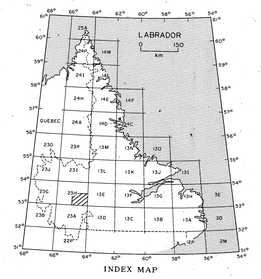
GEOLOGY OF THE JULIAN RIVER MAP AREA, 23H/SE

SCALE 1:100,000 ÉCHELLE

Miles 1 0 1 2 3 4 5 Milles

Kilometres 1 0 1 2 3 4 5 6 Kilomètres

MAP 87-08



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