PROTEROZOIC III OR LATER

9 *Gabbro dykes (posttectonic with respect to the Grenvillian orogeny)*

LATE PROTEROZOIC II

8 *Granite, aplite, pegmatite and quartz dykes and veins (commonly muscovite bearing; related to the Grenvillian orogeny)*

7 *Former rapakivi-textured granitoid rock (rapakivi texture not preserved in the map area, c. 1150 to 1100 Ma; spatially associated with the Atikonak River Massif in the map area to the south). Pink, moderately foliated, coarse grained biotite\quartz monzonite to quartz syenite*

6 *Atikonak River Massif (anorthosite-related rocks), black to light grey, or red-brown, dark grey to white weathering, predominantly coarse to very coarse grained or pegmatitic, commonly foliated and locally igneous and/or corona textured*

6a *layered and laminated, rarely foliated troctolite, leucotroctolite and anorthosite containing abundant hydrous coronas replacing olivine*

6b *layered and laminated or layered and intergranular-textured, massive to strongly foliated (locally a flaggy, white gneiss) leuconorite and anorthosite commonly containing Fe-Ti oxide-rich pods, layers and elongate patches, red-brown plagioclase and narrow, biotite coronas around orthopyroxene and, less commonly, oxide minerals*

6c *rusty cream weathering, intergranular-textured, locally strongly foliated, Fe-Ti oxide-rich leuconorite rarely containing a crude layering*

LATE PROTEROZOIC I OR PROTEROZOIC II

5 *Diabase dykes (posttectonic with respect to the main Labradorian orogeny-related fabrics; may include some Unit 9)*

LATE PROTEROZOIC I

4 *Tonalite, granodiorite and minor granite (and their pyroxene-bearing enderbitic to charnockitic equivalents) sheets, dykes and veins (intimately, but not exclusively, associated with subunits 1d, 2b and 2c; related to the Labradorian orogeny)*

3 *Granitoid plutonic rocks [Trans-Labrador Batholith (c. 1650 Ma) and its approximately coeval equivalents]*

3a *K-feldspar-megacrystic rocks: $3a_1$, pink and grey, medium grained, weakly to strongly foliated, rarely migmatitic biotite quartz monzonite, granodiorite and monzogranite; $3a_2$, buff to brown, medium grained, weakly to moderately foliated biotite farsundite and opdalite*

3b *non-megacrystic rocks: grey, fine to medium grained, predominantly equigranular, moderately foliated, homogeneous or stromatic biotite granodiorite, quartz monzonite and quartz monzodiorite*

2 *Gabbronoritic plutonic rocks (largely associated with the Trans-Labrador Batholith, c. 1650 Ma)*

2a *grey, medium to very coarse grained, seriate, undeformed augite olivine norite*

2b *grey, black or brown, medium to very coarse grained, equigranular or seriate, undeformed, rarely layered gabbronorite, norite and gabbro*

2c *grey and brown, fine to medium grained, predominantly equigranular, weakly to moderately foliated, metamorphic-textured gabbronorite and norite (commonly containing more or less deformed granitic net-veining and leucosomes of Unit 4; despite its polygonal texture, this rock may contain a relict igneous texture, especially normal to the lineation, and igneous layering)*

2d *black and white, commonly rusty-weathering, medium grained, moderately foliated, possibly relict cumulate-layered, plagioclase – hornblende – pyroxene – garnet ± biotite coronite metagabbro*

2e *grey, or green and white, medium grained, isotropic to moderately foliated, commonly intergranular-textured, plagioclase – hornblende – garnet ± biotite metagabbro (commonly coronitic)*

2f *black, rusty-weathering, inequigranular, weakly foliated biotite pyroxenite*

1 *Supracrustal gneisses, predominantly sillimanite-bearing, metatexitic to diatexitic migmatites*

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

1b *grey or buff, fine to medium grained, weakly stromatic psammitic paragneiss*

1c *white or grey, medium grained, well-bedded quartzite (commonly containing diopside)*

1d *black, dark green- or brown-weathering, fine to medium grained basic gneiss (commonly containing quartz-vein layering and crosscutting tonalitic or enderbitic leucosomes; intimately associated with Unit 4)*

1e *white, pink or grey, medium grained calc-silicate and marble*

1ab, 1ac, 1ad: layers or areas of predominantly pelitic to semipelitic paragneiss containing common strips, layers and inclusions of subunits 1b, 1c and 1d respectively

NOTES: A chronological order is only locally known between Late Proterozoic I Units 2 and 3 and these units may overlap

Granitoid terminology follows IUGS recommendations (Streckeisen, A., 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, assumed)

Major shear zone – see notes (assumed)

Amphibolite – granulite facies boundary, tick on higher grade side (assumed)

Facies boundary assumed coincident with major structure

Bedding (S_0) – tops unknown (inclined)

Igneous layering – tops unknown (inclined)

Dykes with unit designations (inclined, vertical, dip unknown)

Intersecting dykes, relative ages indicated

Paragneissosity (S_p) (inclined, vertical, subhorizontal, dip unknown)

Orthogneissosity (S_n) (inclined)

Mineral foliation (S_n) (inclined, vertical, dip unknown)

Minor shear zone (S_2) (inclined, vertical, sinistral)

Foliation in shear zone (S_2) (inclined, vertical)

Foliation in dykes (S_2) (inclined, vertical)

Paragneissosity and bedding parallel ($S_0 + S_p$) (inclined)

Paragneissosity and foliation parallel ($S_0 + S_p$) (inclined, vertical)

Minor shear zone with parallel foliation (inclined)

Undulating structures (examples only) – strike (subhorizontal, inclined, vertical)

– dip (inclined, vertical)

More than one reading typical at outcrop or in area (examples only) 20,35 4,38

Synform (inferred, with plunge direction)

Antiform (inferred, with plunge direction)

Minor folds – Z (syn-S_n, post-S_n, various schematic examples)

– S (syn-S_n, post-S_n, various schematic examples)

– M,W (syn-S_n, post-S_n, various undifferentiated schematic examples)

– isoclines

– antiformal

– synformal

– neutral (syn-S_2)

– plotted (stereonet) fold axes (syn-S_n, post-S_n)

Minor fold axes – syn-S_1 (inclined, vertical, horizontal)

– post-S_2 (inclined, vertical, horizontal)

β lineations – syn-S_1 (crenulation, mullions, intersections)

– post-S_1 (crenulation mullions)

Syn-S_1 lineation on S_2 surfaces (oblique pitch)

Post-S_2 lineation on S_2 surfaces (oblique pitch, down dip)

α lineations – syn-S_1 (inclined, vertical, horizontal)

– syn-S_2 (inclined)

– syn-S_3 (inclined)

Syn-S_2 lineation (mineral, aggregate, rodding, undifferentiated)

Syn-S_1 lineation on foliation surfaces – down dip ($S_2 \cap S_1$, $S_2 \cap S_3$)

– oblique pitch ($S_2 \cap S_1$, $S_2 \cap S_3$, $S_1 \cap S_3$, $S_1 \cap S_2$)

– vertical (S_2)

– horizontal (S_2)

Syn-S_3 lineation on foliation surfaces – oblique pitch (S_2)

Syn-S_3 lineation on foliation surfaces – oblique pitch (S_2)

α lineation parallel β lineations or equivalent structures – syn-S_1 (fold axes)

– post-S_1 (crenulation, mullions)

Glacial lineations – striae (direction known, unknown)

– roche moutonée and striae (direction known)

Mineral occurrences (copper bloom and/or sulfide, Fe-Ti oxides) Cu Ox

Power transmission lines

NOTES: g, m and s respectively denote gentle, moderate and steep estimated readings. Wavy strike lines and dip ticks denote generalized measurement of undulating structures.

The major thrusts and facies boundaries are defined in the map areas to the north and northeast (NTS 23H/SE, NTS 13E/SW) where they are based on limited ground observations and are mainly inferred from the topography, aeromagnetic data, and lithological, geochronological and structural contrasts; they have been extrapolated into this map area.

S_2 development probably occurred during the Late Proterozoic I Labradorian orogeny (c. 1710 to 1630 Ma) and preceded emplacement of the plutonic suites (Units 2 and 3).

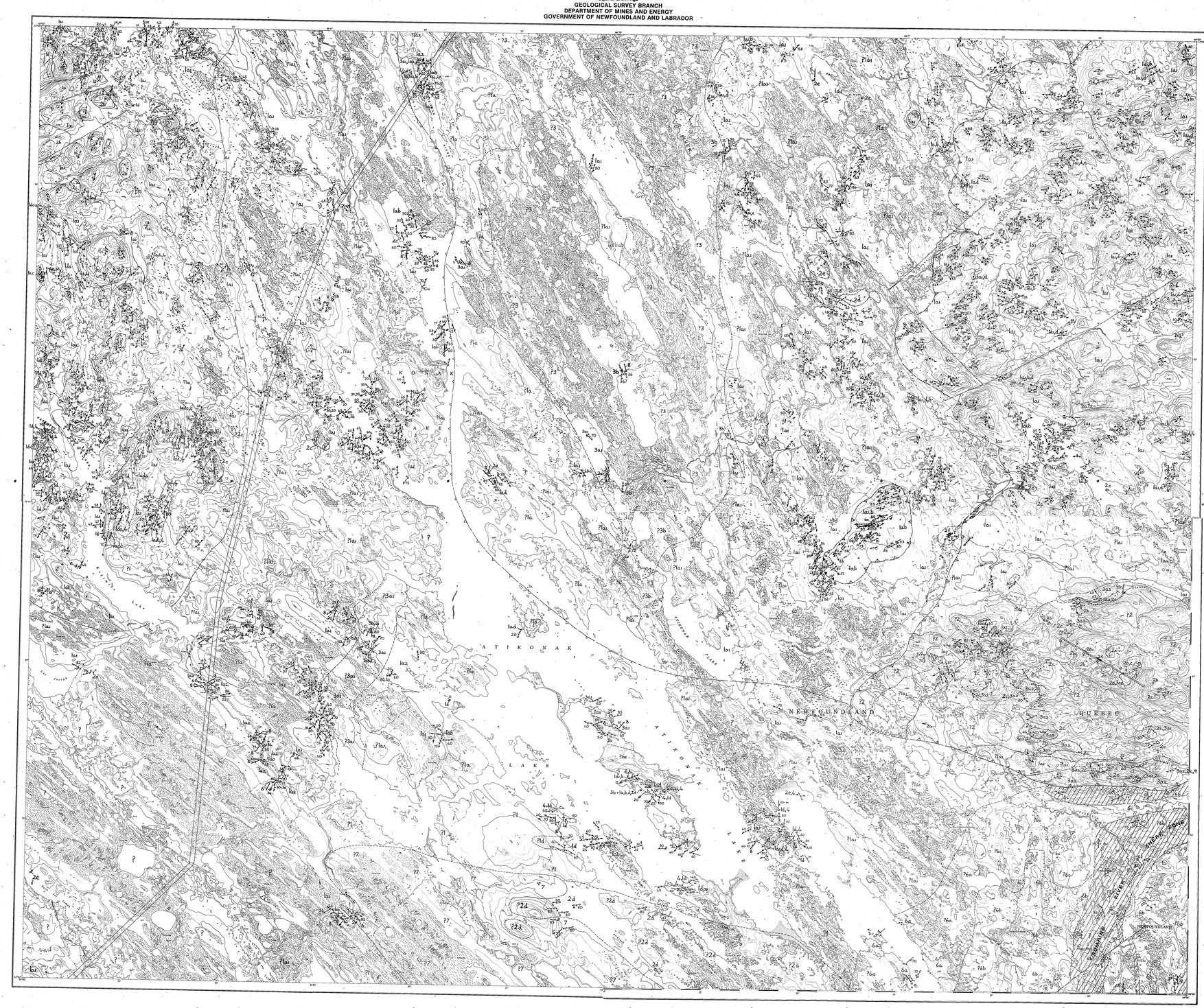
In the lowland areas, S_1 and S_3 probably developed during the Grenvillian orogeny (c. 1150 to 970 Ma). In the upland areas of the east and northwest, S_1 is probably of Labradorian age. S_2 and S_3 are syn-S_2 or younger in whichever part of the map sheet they occur.

The map pattern assigned to the Romaine River Shear Zone is based on that known to the south (NTS 23A/8).

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

23A(85)

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



Compiled and interpreted by G.A.G. Nunn, 1987, from geology by G.A.G. Nunn, N. Noel and N.G. Culshaw, 1983, of the Geological Survey Branch, Department of Mines and Energy, St. John's, Newfoundland and the Geological Survey of Canada, Department of Energy, Mines and Resources, Ottawa, Ontario (NGC). Field assistance was supplied by L.V.J. Crisby-Whittle, T. Rees, D. Bishop, G. Whelan and G. Lynch.

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 1964 and 1982 (NTS 23A/9) by the Surveys and Mapping Branch, Department of Energy, Mines and Resources, Ottawa; contours at 50-foot intervals.

Approximate magnetic declination, 1985, was 26°48' at the centre of the map area; decreasing 5.1' 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.

Field work and publication costs were provided under the Canada-Newfoundland Co-operative Mineral Program, 1982-1984 by contributions from the Federal Department of Energy, Mines and Resources and the Newfoundland Department of Mines and Energy.

This preliminary bedrock geology map is based mostly upon field observations. In areas of poor cohtrol, 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.

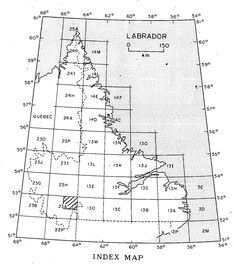
MAP 87-09

GEOLOGY OF THE ATIKONAK LAKE MAP AREA, 23A/NE

SCALE 1:100,000 ÉCHELLE

Miles 1 0 1 2 3 4 5 Milles

Kilometres 1 0 1 2 3 4 5 6 Kilomètres



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