

MAP 2010-50

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GEOLOGY OF THE GRENVILLE PROVINCE AND ADJACENT EASTERN MAKKOVIK PROVINCE, EASTERN LABRADOR

LEGEND FOR GRENVILLE AND EASTERN MAKKOVIK PROVINCES, EASTERN LABRADOR

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LATE L	PALEOPROTEROZOIC (P ₃ 1800 - 1600 Ma) ABRADORIAN GRANITOID INTRUSIONS (P _{3C} 1660 - 1600 Ma)
e.g., Pa	radise Arm intrusion and Hawke Bay intrusive suite P _{3C} ga P _{3C} gd P _{3C} gp P _{3C} gr P _{3C} mn P _{3C} mq P _{3C} mz P _{3C} yq P _{3C}
P _{3C} dr	Diorite, quartz diorite and tonalite; locally grading into leucogabbronoi
P _{3C} ga	Alkali-feldspar granite, granite and quartz syenite forming discrete plu
P _{3C} gd	Granite to granodiorite forming discrete unmigmatized plutons
P _{3C} gp	Megacrystic/porphyritic granite to granodiorite

NEOPROTEROZOIC ∵NDm ∷NGi NSb

NCBa Bateau Formation

Dd > Sandwich Bay and Battle Harbour dykes

NEOPROTEROZOIC – EARLY CAMBRIAN

CLc Lighthouse Cove Formation

Bradore Formation (subdivided into L'Anse-au-Clair, Crow Head and Blanc-Sablon members)

NDm Double Mer Formation NGi Gilbert arkose

DEVONIAN (?)

EARLY CAMBRIAN TCFo Forteau Formation

NSb Sandwich Bay conglomerate

Nc / Nd / Nq

Nc Clastic dykes

Nd Long Range dykes

Nq Quartz veins

LATE MESOPROTEROZOIC (M₃ 1200 – 900 Ma) LATE POST-GRENVILLIAN INTRUSIONS (M_{3D} ca. 975 – 955 Ma)

e.g., Chateau Pond granite

M_{3D}gp Massive to weakly foliated megacrystic/porphyritic granite to quartz monzonite M_{3D}gr Massive to weakly foliated granite to alkali-feldspar granite

M_{3D}ln Massive to weakly foliated leucogabbro to leuconorite

M_{3D}mn Massive to weakly foliated monzogabbro and monzonorite

M_{3D}mq Massive to weakly foliated quartz monzonite; mantled feldspar textures M_{3D}mz Massive to weakly foliated monzonite to monzodiorite

M_{3D}yq Massive to weakly foliated syenite, quartz syenite and alkali-feldspar quartz syenite

M_{3D}d Unnamed mafic dykes

EARLY POST-GRENVILLIAN INTRUSIONS (M_{3C} ca. 985 – 975 Ma) e.g., Beaver Brook and Picton Pond plutons

M_{3C}gr M_{3C}ln M_{3C}mn M_{3C}mq M_{3C}rg M_{3C}yq M_{3C}d \nearrow

M_{3C}gr Weakly to moderately foliated granite to alkali-feldspar granite

M_{3C}In Weakly to moderately foliated leucogabbro to leuconorite M_{3C}mn Weakly to moderately foliated monzogabbro to monzonorite

M_{3C}rg Weakly to moderately foliated gabbro, norite and troctolite

M_{3C}yq Weakly to moderately foliated syenite, quartz syenite and alkali-feldspar syenite

M_{3C}d L'Anse-au-Diable, York Point, Gilbert Bay mafic dykes SYN-GRENVILLIAN INTRUSIONS (M_{3B} ca. 1085 – 985 Ma)

M_{3B}gd M_{3B}gp M_{3B}gr M_{3B}yn M_{3B}d // M_{3B}gd Moderately to strongly foliated granodiorite to quartz diorite

M_{3B}gp Moderately to strongly foliated megacrystic/porphyritic granodiorite to quartz diorite

M_{3B}gr Moderately to strongly foliated granite to alkali-feldspar granite

M_{3B}yn Moderately to strongly foliated aegerine- or nepheline-bearing syenite

PRE-GRENVILLIAN INTRUSIONS (M_{3A} ca. 1200 – 1085 Ma)

M_{3B}d Unnamed mafic dykes (Makkovik Province and adjacent Grenville Province)

e.g., Gilbert Bay pluton M_{3A}gr M_{3A}mn

M_{3A}gr Weakly to strongly foliated granite M_{3A}mn Weakly to strongly foliated monzonite to monzonorite

MIDDLE MESOPROTEROZOIC (M₂ 1350 – 1200 Ma) e.g., Upper North River intrusion

 M_2 gr M_2 rg M_2 yq M_2 d \nearrow

M₂gr Weakly to strongly foliated granite and alkali-feldspar granite M₂rg Weakly to strongly foliated gabbronorite (in database only - Lourdes-de-Blanc-Sablon intrusion,

M₂yq Weakly to strongly foliated syenite, quartz syenite and alkali-feldspar syenite

EARLY MESOPROTEROZOIC (M₁ 1600 – 1350 Ma) e.g., Upper Paradise River, Kyfanan Lake and 13B/12 intrusions, and Michael Gabbro

M₁an Massive or weakly foliated anorthosite to leucogabbronorite, indistinctly layered in places

M₁am Weakly to markedly foliated amphibolite, plus leucocratic and melanocratic variants; granulite facies equivalents

M₁dr Massive, weakly or strongly foliated diorite to amphibolite, may be metamorphic derivative of monzodiorite or leucogabbronorite

M₁gp Moderately to strongly foliated megacrystic/porphyritic granitoid rocks

M₁gr Massive, weakly or strongly foliated granite to quartz monzonite M₁In Massive, weakly or strongly foliated leucogabbronorite and anorthositic gabbro, locally

M₁mn Moderately to strongly foliated monzonorite

grading into gabbronorite, locally coronitic

M₁d Mafic dykes; includes Michael Gabbro

M₁mq Moderately to strongly foliated monzonite to quartz monzonite M₁mz Moderately to strongly foliated monzonite to monzodiorite

M₁rg Massive to strongly foliated gabbro, norite and troctolite, commonly layered; subophitic and locally coronitic; includes recrystallized derivatives retaining igneous textures

M₁um Massive, weakly or strongly foliated ultramafic rocks, commonly layered and locally showing

M₁yq Moderately to strongly foliated syenite and quartz syenite

LATE PALEOPROTEROZOIC AND EARLY MESOPROTEROZOIC (PM 1800 – 1350 Ma)

(Ages generally unknown, but ca. 1650 Ma and 1500 – 1470 Ma rocks identified) RECRYSTALLIZED IGNEOUS ROCKS

PMdrPMgdRMgpPMgrPMlnPMmdPMmqPMrgPMtnPMyqPMam

PMdr Medium-grained, equigranular, recrystallized weakly to strongly foliated diorite, quartz diorite and to leucoamphibolite

PMgd Weakly to strongly foliated granite to granodiorite PMgp Megacrystic/porphyritic recrystallized granite to quartz monzonite

PMgr Medium- to coarse-grained, recrystallized weakly to strongly foliated granite and alkali-feldspar

PMIn Medium- to coarse-grained, recrystallized leuconorite, leucogabbro

PMmd Medium- to coarse-grained, recrystallized, weakly to strongly foliated, monzodiorite to monzonite

PMtn Medium- to coarse-grained, recrystallized, weakly to strongly foliated tonalite to granodiorite

PMmq Medium- to coarse-grained, recrystallized, weakly to strongly foliated quartz monzonite PMrg Medium- to coarse-grained, gabbro, norite and troctolite

PMam Amphibolite; generally thought to be derived from mafic dykes

SUPRACRUSTAL ROCKS PROVISIONALLY ASSIGNED AS PITTS HARBOUR GROUP

PMyq Medium- to coarse-grained, recrystallized, weakly to strongly foliated syenite, alkali-feldspar syenite and quartz syenite

PMsc PMsp PMsq PMss PMsx PMvf PMvm Sedimentary protolith

PMsc Calc-silicate rocks, compositionally layered, medium grained PMsp Pelitic schist and gneiss

PMsq Quartzite, meta-arkose, thin to thick bedded PMss Quartz-feldspar psammitic schist and gneiss; medium grained

PMsx Coarse-grained to pegmatitic-granitic material (diatexite), characteristically associated with psammitic gneiss and quartzite

Volcanic protolith PMvf Fine- to medium-grained, banded quartzofeldspathic rocks; locally having lensoid shapes, possibly indicating felsic volcaniclastic protolith

PMvm Fine- to medium-grained, banded amphibolite containing quartz-feldspar layers and calc-silicate pods; interpreted as mafic volcanic rocks

AGE GENERALLY POORLY CONSTRAINED

β δ β Brittle deformation; cataclastic rocks, pseudotacholite

δ Ductile deformation; mylonite, straight gneiss AGE GENERALLY POORLY CONSTRAINED

f k p q f Aplite, microgranite (felsite)

k Carbonate vein

q Quartz vein

p Pegmatite

1. Uncoloured units do not appear as polygons on maps,

but are in unit-designator strings in database. 2. Some mafic dykes are also shown as polygons (especially where orientation is unknown).

P_{3C}gr Granite and minor alkali-feldspar granite P_{3C}mn Monzonorite and monzogabbro

P_{3C}mz Monzonite, including minor syenite

P_{3C}mq Quartz monzonite, including rare quartz syenite

P_{3C}yq Syenite to quartz syenite forming discrete plutons

P_{3C}d Unnamed mafic dykes

LATE LABRADORIAN ANORTHOSITIC AND MAFIC INTRUSIONS (P_{3C} 1660 – 1600 Ma) e.g., White Bear Arm complex and Sand Hill Big Pond intrusion

P_{3C}ag P_{3C}am P_{3C}an P_{3C}rg P_{3C}ln P_{3C}lt P_{3C}um

P_{3C}ag Weakly to markedly foliated mafic granulite, plus leucocratic and melanocratic variants P_{3C}am Weakly to markedly foliated amphibolite, plus leucocratic and melanocratic variants

P_{3C}an Massive to strongly foliated anorthosite and leucogabbronorite

P_{3C}rg Massive to strongly foliated gabbro and norite, commonly layered; subophitic and locally

P_{3C}ln Primary textured to recrystallized leucogabbronorite and leucogabbro; coronitic locally P_{3C}lt Primary textured to recrystallized leucotroctolite

P_{3C}um Massive, weakly or strongly foliated ultramafic rocks, commonly layered and locally showing

EARLY LABRADORIAN MAFIC AND ASSOCIATED ROCKS (P_{3B} 1710 – 1660 Ma) e.g., Alexis River anorthosite (assigned here although age is uncertain) _{3B}ag: P_{3B}an P_{3B}In P_{3B}mn P_{3B}rg P_{3B}um

P_{3B}ag Weakly foliated to gneissic amphibolite and mafic granulite, plus leucocratic and melanocratic variants

P_{3B}an Weakly foliated to gneissic anorthosite and leucogabbronorite

 P_{3B} In Weakly foliated to gneissic leucogabbronorite and leucogabbro; coronitic locally

P_{3B}mn Weakly foliated to gneissic monzonorite and monzogabbro P_{3B}rg Weakly foliated to gneissic gabbro and norite

P_{3B}um Massive, weakly or strongly foliated ultramafic rocks, commonly layered and locally

EARLY LABRADORIAN GRANITOID AND ASSOCIATED ROCKS (ca. 1678 and 1671 Ma)

e.g., Neveisik Island and Red Island events P_{3B}dr P_{3B}gd P_{3B}gp P_{3B}gr P_{3B}mq P_{3B}mz P_{3B}ya P_{3B}am

P_{3B}dr Foliated to gneissic diorite to quartz diorite, and compositionally equivalent well-banded gneiss; in part derived from leucogabbronorite P_{3B}gd Foliated to gneissic granodiorite and compositionally equivalent well-banded gneiss

P_{3B}gp Foliated to gneissic megacrystic/porphyritic granitoid rocks, augen gneiss

P_{3B}gr Foliated to gneissic granite and alkali-feldspar granite, and compositionally equivalent well-P_{3B}mq Foliated to gneissic quartz monzonite, grading into diorite or syenite, and compositionally

equivalent well-banded gneiss P_{3B}mz Foliated to gneissic monzonite and monzodiorite, and compositionally equivalent well-banded

P_{3B}ya Foliated to gneissic syenite, alkali-feldspar syenite and alkali-feldspar granite, and

PRE-LABRADORIAN GRANITOID ROCKS (P_{3A} 1800 – 1710 Ma)

P_{3A}ag: P_{3A}dr P_{3A}gd P_{3A}gp P_{3A}gr P_{3A}ln P_{3A}am

compositionally equivalent well-banded gneiss

P_{3A}ag Mafic granulite skialiths, lenses and layers

P_{3B}am Amphibolite skialiths, lenses and layers (mainly remnants of former dykes)

P_{3A}dr Foliated to gneissic diorite to quartz diorite, and compositionally equivalent well-banded gneiss P_{3A}gd Foliated to gneissic granodiorite and compositionally equivalent well-banded gneiss

P_{3A}gp Foliated to gneissic megacrystic/porphyritic granitoid rocks, augen gneiss

P_{3A}gr Foliated to gneissic granite and alkali-feldspar granite, and compositionally equivalent well-P_{3A}ln Foliated to gneissic leucogabbronorite, and compositionally equivalent well-banded gneiss

P_{3A}am Amphibolite skialiths, lenses and layers (mainly remnants of former dykes)

PRE-LABRADORIAN SUPRACRUSTAL ROCKS (P_{3A} 1800 – 1710 Ma) (Age uncertain; certainly pre-1670 Ma, probably 1800 – 1770 Ma)

P_{3A}SC P_{3A}SP P_{3A}SQ P_{3A}SS P_{3A}SX P_{3A}Vf P_{3A}Vm

P_{3A}sc Calc-silicate rocks, compositionally layered, medium grained

P_{3A}sp Fine- to medium-grained pelitic schist and gneiss

P_{3A}sq Quartzite, meta-arkose, thin to thick bedded

P_{3A}ss Quartz-feldspar psammitic schist and gneiss; medium grained and commonly rusty-weathering P_{3A}sx Metasedimentary diatexite; coarse grained to pegmatitic and characteristically white-weathering

P_{3A}vf Fine- to medium-grained, banded quartzofeldspathic rocks; locally have lensoid shapes, possibly

indicating felsic volcanoclastic protolith P_{3A}vm Fine- to medium-grained, banded amphibolite containing quartz-feldspar layers and calc-silicate

MID PALEOPROTEROZOIC (P₂ 2100 - 1800 Ma) LATE MID PALEOPROTEROZOIC (P_{2C} 1900 – 1800 Ma)

pods; interpreted as mafic volcanic rocks

Granitoid and related intrusive rocks P_{2C}dr P_{2C}ga P_{2C}gd P_{2C}gp P_{2C}gr P_{2C}mq P_{2C}mz P_{2C}ya P_{2C}yq

P_{2C}dr Foliated to gneissic diorite to quartz diorite, and compositionally equivalent well-banded gneiss P_{2C}ga Alkali-feldspar granite, granite and quartz syenite

P_{2C}gd Foliated to gneissic granodiorite and compositionally equivalent well-banded gneiss

P_{2C}gp Foliated to gneissic megacrystic/porphyritic granitoid rocks, augen gneiss

P_{2C}gr Foliated to gneissic granite and alkali-feldspar granite, and compositionally equivalent well-banded P_{2C}mq Foliated to gneissic quartz monzonite, grading into diorite or syenite, and compositionally

equivalent well-banded gneiss P_{2C}mz Foliated to gneissic monzonite to monzodiorite, and compositionally equivalent well-banded gneiss

P_{2C}ya Foliated to gneissic syenite to alkali-feldspar syenite, and compositionally equivalent well-banded

P_{2C}yq Syenite to quartz syenite Mafic and associated intrusive rocks

P_{2C}am Amphibolite skialiths, lenses and layers (mainly remnants of former dykes)

P_{2C}rg Massive to strongly foliated gabbro and norite, commonly layered; subophitic and locally

Sedimentary protolith

P_{2C}d Unnamed mafic dykes

P_{2C}sc P_{2C}so P_{2C}sp P_{2C}sq P_{2C}ss P_{2C}sc Calc-silicate rocks, compositionally layered, medium grained

P_{2C}so Conglomerate and agglomerate, partially of volcanic origin P_{2C}sp Fine- to medium-grained pelitic schist and gneiss

P_{2C}sq Quartzite, meta-arkose, thin to thick bedded P_{2C}ss Quartz-feldspar psammitic schist and gneiss; medium grained and commonly rusty-weathering

indicating felsic volcanoclastic protolith

Volcanic protolith P_{2C}vb P_{2C}vf P_{2C}vi P_{2C}vm P_{2C}vp

P_{2C}vb Volcanic breccia, angular clasts, grading into agglomerate P_{2C}vf Fine- to medium-grained, banded quartzofeldspathic rocks; locally have lensoid shapes, possibly

P_{2C}vi Intermediate volcanic rocks P_{2C}vm Fine- to medium-grained, banded amphibolite containing quartz-feldspar layers and calc-silicate

pods; interpreted as mafic volcanic rocks P_{2C}vp Felsic volcanic porphyry interpreted to be hypabyssal

Gower, C.F., 2010: Geology of the Grenville Province and adjacent eastern Makkovik Province, eastern Labrador. Geological Survey, Mines Branch, Department of Natural Resources, Government of Newfoundland and Labrador, Map 2010-50, Open File Lab/1575. Geological cartography by T. Paltanavage, Cartographic Unit, Department of Natural Resources.

Digital NTS base maps used for this map are available from Surveys and Mapping Branch, Natural Resources Canada. Correspondence Dr. C.F. Gower, Geological Survey, Mines Branch, Department of Natural Resources, Government of Newfoundland and Labrador, P.O. Box 8700, St. John's, NL, A1B 4J6, Canada. Email: cgower@gov.nl.ca.

Copies of this map may be obtained from the Geoscience Publications and Information Section, Geological Survey, Mines Branch, Department of Natural Resources, Government of Newfoundland and Labrador, P.O. Box 8700, St. John's, NL, A1B 4J6, Canada. Email: pub@gov.nl.ca. This map is a compilation based on twenty-five 1:100 000-scale maps on the geology of the Grenville Province and adjacent eastern Makkovik Province, eastern Labrador.

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