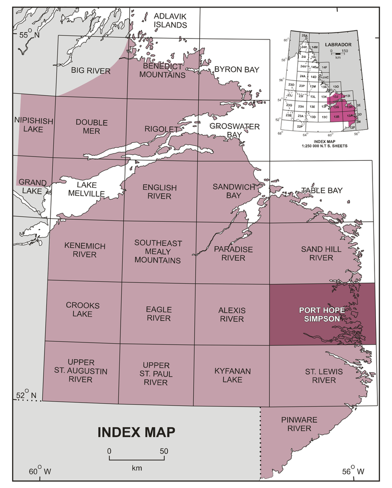
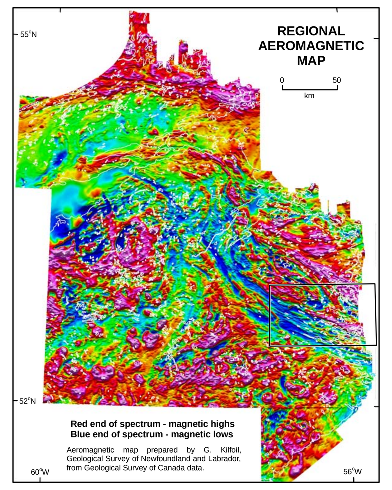
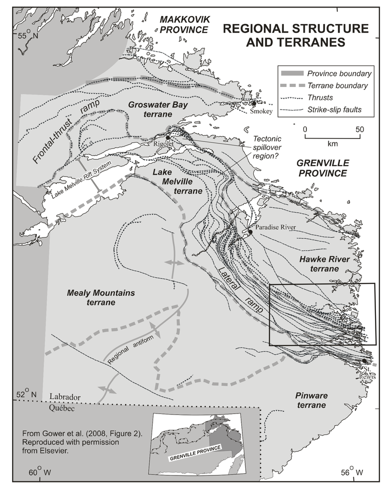
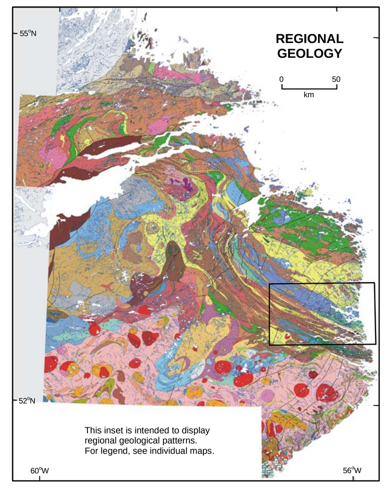
Newfoundland Labrador
NATURAL RESOURCES









PORT HOPE SIMPSON

A preliminary version of this map was originally published uncoloured (Gower et al., 1988) and a brief description of rock types in the area was given earlier by Gower et al. (1987). Most of the map is based on investigations carried out in 1986, but additional field data were collected in subsequent visits, especially during mapping by Gower in 2003 and 2004 along highways 510, 514 and 515. The present map incorporates field data collected by Eade (1962), Wardle (1976, 1977), and Hanmer and Scott (1990), making use of original field notes recorded by K.E. Eade and assistants, R.J. Wardle and S. Hanmer.

The map is augmented by follow-up examination of stained slabs, petrographic thin sections, and whole-rock geochemical analyses. U-Pb geochronological results (Gower et al., 1991; Scott et al., 1993; Kamo et al., 1996; Wasteneys et al., 1997), Nd-Sm isotopic data (R.A. Creaser, unpublished - see digital database, J.S. Daly, unpublished - see digital database), Rb-Sr isotopic data (Prevec et al., 1990) and K-Ar isotopic data (Krueger Enterprises Inc., unpublished – see digital database) are included. Paleomagnetic sites of G. Murthy et al. (unpublished - see digital database) and McCausland et al. (unpublished data, 2010) are also shown. Localities designated as mineral occurrences are based mostly on observations made during the 1987 and 2003 field seasons, but include earlier and later reported discoveries (see Mineral Occurrence Table; current to 2009).

Since the preliminary map was published, interpretation for the region has evolved significantly, so there are major differences between the current and preliminary versions of this map, particularly in the depiction of additional strike-slip faults and thrusts, most of which are yet to be confirmed. Unit modification is partly related to an integrated compilation approach applied to the whole of eastern Labrador, but border regions of the map have been revised as a result of data collected from adjacent map areas. Geological boundaries are poorly controlled, especially away from shorelines and roads, and have been extrapolated using structural observations, regional aeromagnetic data and topographic trends. Re-interpretation in some southern and central segments was assisted by industry high-resolution aeromagnetic data. Pre-1994 data station sites have been digitized from where originally located on aerial photographs or (rarely) on topographic maps, so reliability of location is likely mostly dependent on initial plotting accuracy. Subsequent locations are based on GPS-supported readings.

As is characteristic of metamorphic and plutonic terranes, individual outcrops are typically very complex, and commonly embody several different rock types. Generally, the unit polygon depicted is based on what was judged to be the dominant rock type present, but this approach was not universally followed, due to the exigencies of specific situations, such as the need to emphasize minor rock types deemed to have high significance. All rock types recorded from any individual outcrop may be determined by consulting the 'Unit designator' string for that locality given in the digital database. The user is alerted to the fact that, in the digital database, no attempt has been made to reconcile rock names applied to field outcrops, versus those applied to stained slabs, or petrographic thin sections. Differences may be due to subsequent, more refined identifications, but other reasons may apply, such the sample (or thin section) not being representative of its source material. Unit designator and polygon labels applied are based on an awareness of such factors.

Recommended citation
Gower, C.F., 2010: Geology of the Port Hope Simpson area (NTS sheets 03D/12 and 13; 13A/09, 10, 15 and 16), southeastern Labrador. Geological Survey, Mines Branch, Department of Natural Resources, Government of Newfoundland and Labrador, Map 2010-20, Open File LAB/1565.

Geological cartography by T. Paltanavage, Cartographic Unit, Department of Natural Resources.

Digital NTS base maps (NTS 03D/12 and 13; 13A/09, 10, 15, and 16) used for this map are available from Surveys and Mapping Branch, Natural Resources Canada.
Magnetic declination at 52° 00' N, 57° 00' W at the start of 2010 was 22° 14' W.
Elevations are in metres above sea level for NTS sheets 13A/09, 10, 15 and 16, and in feet for NTS sheets 03D/12 and 13. Contour interval is 20 metres or 40 feet.
UTM (Universal Transverse Mercator) Grid Zone 21, NAD (North American Datum) 27.

Correspondence
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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.

NOTE: Map 2010-20 is one of twenty-five maps on the geology of the Grenville Province in eastern Labrador and adjacent eastern Makkovik Province produced by the Geological Survey, Mines Branch, Department of Natural Resources, Government of Newfoundland and Labrador.

Mines Branch website: http://www.nr.gov.nl.ca/nr/mines/index.html.

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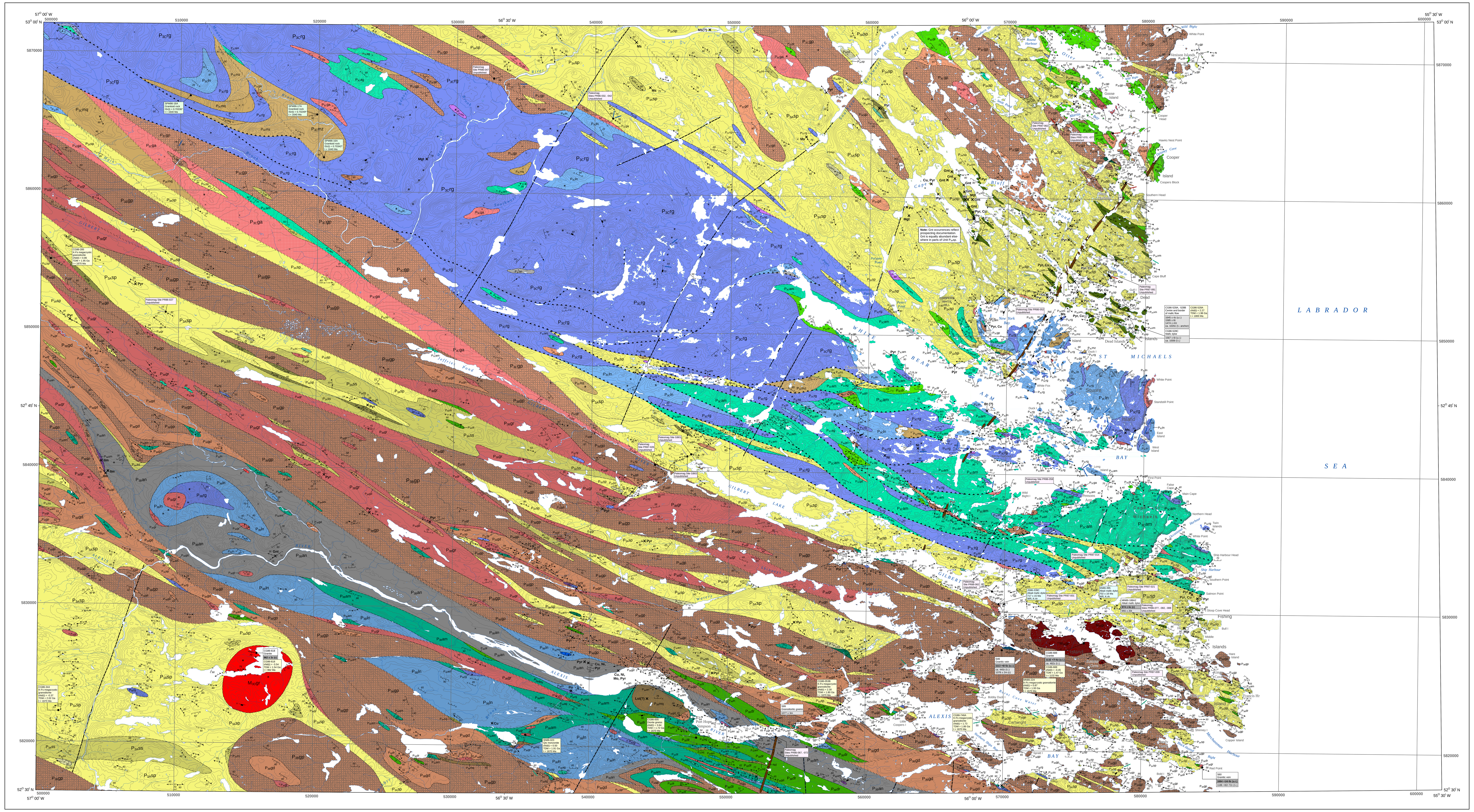

MINERAL OCCURRENCE DATA SOURCES

Inventory No.	Map label	Status	Easting	Northing	Reference
003D/12/Cu 001	Cu	Showing	580400	5832550	Bradley (1966, Plate VII); Eaton (1950)
003D/12/Cu 002	Cu	Indication	577336	5821137	GSNL (field notes; CG86-721)
003D/12/Cu 003	Cu	Indication	577838	5825948	GSNL (field notes; MN86-210)
003D/12/Cu 004	Cu	Indication	571275	5832461	GSNL (field notes; MN86-264)
003D/12/Cu 005	Cu	Indication	569178	5827338	GSNL (field notes; SN86-221)
003D/12/Fe 001	Mgt	Indication	583034	5829015	Eaton (1950)
003D/12/Mic001	Bt	Indication	577795	5842797	Bradley (1966); GSNL (field notes; SN86-373)
003D/12/Mic002	Bt (?)	Indication	568600	5844600	GSNL records. Source of information unknown
003D/12/Mic003	Ms	Indication	578642	5843116	Butler (1996)
003D/12/Mic004	Bt	Indication	567469	5841616	GSNL (field notes; JS86-387)
003D/12/Pyr001	Pyr	Indication	575784	5827874	GSNL (field notes; JS86-207)
003D/12/Pyr002	Pyr	Indication	583442	5831563	GSNL (field notes; JS86-462)
003D/12/Pyr003	Pyr	Indication	583976	5831148	GSNL (field notes; JS86-463)
003D/12/Pyr004	Pyr	Indication	583301	5830074	GSNL (field notes; JS86-467)
003D/12/Pyr005	Pyr	Indication	569937	5817470	GSNL (field notes; JS86-488)
003D/12/Pyr006	Pyr	Indication	579748	5833806	GSNL (field notes; MN86-401)
003D/12/Pyr007	Pyr	Indication	573237	5832290	GSNL (field notes; SN86-387)
003D/12/Pyr008	Pyr	Indication	579079	5832824	GSNL (field notes; SN86-397)
003D/12/Pyr009	Pyr	Indication	579677	5832676	GSNL (field notes; SN86-398)
003D/12/Pyr010	Pyr, Cu	Indication	583585	5831433	van Nostrand (1995)
003D/12/Pyr011	Pyr	Indication	584195	5831349	van Nostrand (1995)
003D/12/Pyr012	Pyr, Cu	Indication	583957	5829740	van Nostrand (1995)
003D/13/Cu 001	Cu	Indication	575851	5854229	GSNL (field notes; MN86-373)
003D/13/Cu 002	Cu	Indication	569843	5846992	van Nostrand (1996b)
003D/13/Cu 003	Cu	Indication	570258	5847164	van Nostrand (1996b)
003D/13/Cu 004	Cu	Indication	572850	5853062	van Nostrand (1996a)
003D/13/Cu 005	Cu	Indication	572892	5852882	van Nostrand (1996a)
003D/13/Fe 001	Fe (?)	Showing	577300	5854500	Christie (1951, p.17)
003D/13/Fe 002	Cu	Indication	577468	5854343	Wardle (1976; RW75-397)
003D/13/Fe 003	Mgt	Indication	570954	5847888	van Nostrand (1996b)
003D/13/Gnt001	Gnt	Indication	567385	5859900	Squires et al. (1997; Rock descrip., p. 7; BEM96-161)
003D/13/Gnt002	Gnt	Indication	567540	5858500	Squires et al. (1997; Rock descrip., p. 17; 178523)
003D/13/Mic001	Bt	Indication	572000	5850350	Christie (1951, p.17)
003D/13/Mic002	Bt, Ms	Showing	568750	5848250	Christie (1951, p.17)
003D/13/Mic003	Ms	Indication	573900	5851350	Meyer and Dean (1988, p. 254 and Fig. 5)
003D/13/Po 001	Po	Indication	567510	5858670	Squires et al. (1997; Rock descrip., p. 11; 178260)
003D/13/Pyr001	Cu	Indication	578796	5851538	Wardle (1976; RW75-434)
003D/13/Pyr002	Pyr, Cu	Indication	576145	5851546	Donohoe (1966); GSNL (field notes; CG86-542)
003D/13/Pyr003	Pyr, Cu	Indication	576700	5854100	Donohoe (1966)
003D/13/Pyr004	Pyr, Cu	Indication	575400	5852600	Donohoe (1966)
003D/13/Pyr005	Pyr, Cu	Indication	575400	5855250	Donohoe (1966)
003D/13/Pyr006	Pyr, Cu	Indication	576270	5855200	Donohoe (1966)
003D/13/Pyr007	Pyr, Cu	Indication	573200	5854800	Donohoe (1966)
003D/13/Pyr008	Pyr, Cu	Indication	578100	5852200	Wardle (1976; no stn); GSNL (field notes; CG84-191; JS86-410-414)
003D/13/Pyr009	Pyr	Indication	567800	5857000	Donohoe (1966)
003D/13/Pyr010	Pyr, Cu	Indication	567450	5859000	Donohoe (1966)
003D/13/Pyr011	Pyr	Indication	567900	5861450	Donohoe (1966)
003D/13/Pyr012	Pyr	Indication	574766	5867465	GSNL (field notes; CG86-363)
003D/13/Pyr013	Pyr	Indication	574506	5858076	GSNL (field notes; CG86-404)
003D/13/Pyr014	Pyr	Indication	574385	5857047	GSNL (field notes; CG86-405)
003D/13/Pyr015	Pyr	Indication	573071	5853411	GSNL (field notes; CG86-507)
003D/13/Pyr016	Pyr	Indication	568543	5852412	GSNL (field notes; CG86-520)
003D/13/Pyr017	Pyr	Indication	579955	5852021	GSNL (field notes; CG86-526)
003D/13/Pyr018	Pyr	Indication	579309	5850578	GSNL (field notes; CG86-530)
003D/13/Pyr019	Pyr	Indication	578092	5851189	GSNL (field notes; CG86-532)
003D/13/Pyr020	Pyr	Indication	575057	5853264	GSNL (field notes; CG86-537)
003D/13/Pyr021	Pyr	Indication	577057	5853181	GSNL (field notes; CG86-546)
003D/13/Pyr022	Pyr	Indication	578752	5852019	GSNL (field notes; JS86-403)
003D/13/Pyr023	Pyr	Indication	575213	5854541	GSNL (field notes; MN86-374)
003D/13/Pyr024	Pyr	Indication	574830	5854030	GSNL (field notes; MN86-378)
003D/13/Pyr025	Pyr	Indication	580506	5866452	GSNL (field notes; MN86-344)
003D/13/Pyr026	Pyr	Indication	577790	5861813	GSNL (field notes; SN86-312)
003D/13/Pyr027	Pyr	Indication	578472	5861202	GSNL (field notes; SN86-318)
003D/13/Pyr028	Pyr	Indication	578856	5860322	GSNL (field notes; SN86-320)
003D/13/Pyr029	Pyr	Indication	579705	5854397	GSNL (field notes; SN86-347)
003D/13/Pyr030	Pyr	Indication	577837	5855599	GSNL (field notes; SN86-352)

Inventory No.	Map label	Status	Easting	Northing	Reference
003D/13/Pyr031	Pyr, Cu	Indication	568410	5850740	Meyer and Dean (1988, p. 252 and Fig. 5); Hodge (1996)
003D/13/Pyr032	Pyr	Indication	574690	5868090	GSNL (field notes; CG86-362)
003D/13/Pyr033	Pyr	Indication	574677	5866897	GSNL (field notes; CG86-364)
003D/13/Pyr034	Pyr	Indication	567470	5858503	Squires et al. (1997; Rock descrip., p. 11; 178258)
003D/13/Pyr035	Pyr	Indication	571984	5852948	van Nostrand (1996a)
013A/09/Cu 001	Cu, Ni, Mo, Pyr	Indication	542100	5825500	Piloski (1955; Area E, p. iii)
013A/09/Cu 002	Cu, Ni, Pyr	Indication	539920	5826040	Jolliffe (1997; Grid G7)
013A/09/Cu 003	Cu, Pyr	Indication	549229	5822075	GSNL (field notes; SN86-066)
013A/09/Cu 004	Cu	Indication	565320	5842470	Anderson et al. (1996; Rock sample 10836; Appendix D)
013A/09/Cu 005	Cu, Pyr	Indication	545718	5825032	GSNL (field notes; CG03-227)
013A/09/Cu 006	Cu	Indication	542958	5838474	GSNL (field notes; CG04-043)
013A/09/Gem001	Tourm	Indication	564916	5825750	GSNL (field notes; JS86-218)
013A/09/Lst001	Lst (?)	Indication	544200	5823500	GSNL records. Source of information unknown
013A/09/Ni 001	Ni	Indication	563625	5841835	Anderson et al. (1996; Rock sample 10833; Appendix D)
013A/09/Ni 002	Ni	Indication	561240	5841288	Anderson et al. (1996; Rock sample 10834; Appendix D)
013A/09/Ni 003	Ni	Indication	539017	5831419	GSNL (field notes; CG03-243)
013A/09/Po 001	Po	Indication	538700	5824000	GSNL records. Source of information unknown
013A/09/Pyr001	Pyr	Indication	551550	5828910	Eade (1962, map)
013A/09/Pyr002	Pyr	Indication	539650	5826120	Jolliffe (1997; Grid G7)
013A/09/Pyr003	Pyr	Indication	548891	5825408	GSNL (field notes; CG86-070)
013A/09/Pyr004	Pyr	Indication	543907	5834917	GSNL (field notes; CG86-478)
013A/09/Pyr005	Pyr	Indication	554791	5829149	GSNL (field notes; CG86-772)
013A/09/Pyr006	Pyr	Indication	553844	5826252	GSNL (field notes; CG86-778)
013A/09/Pyr007	Pyr	Indication	557497	5821222	GSNL (field notes; JS86-215)
013A/09/Pyr008	Pyr	Indication	559255	5826572	GSNL (field notes; MN86-027)
013A/09/Pyr009	Pyr	Indication	538755	5827881	GSNL (field notes; MN86-037)
013A/09/Pyr010	Pyr	Indication	558356	5833495	GSNL (field notes; MN86-316)
013A/09/Pyr011	Pyr	Indication	558332	5829409	GSNL (field notes; MN86-465)
013A/09/Pyr012	Pyr	Indication	566780	5826692	GSNL (field notes; SN86-225)
013A/09/Pyr013	Pyr	Indication	552167	5817932	GSNL (field notes; CG03-212)
013A/09/Pyr014	Pyr	Indication	540841	5837214	GSNL (field notes; CG04-051)
013A/09/Pyr015	Pyr	Indication	546590	5842915	GSNL (field notes; CG04-074)
013A/09/Pyr016	Pyr	Indication	565726	5837321	GSNL (field notes; CG04-104)
013A/10/Cu 001	Cu	Indication	533000	5821600	GSNL records. Source of information unknown
013A/10/Gnt001	Gnt	Indication	517183	5833553	GSNL (field notes; SN86-262)
013A/10/Pyr001	Pyr	Indication	520636	5839503	GSNL (field notes; CG86-232)
013A/10/Pyr002	Pyr	Indication	523958	5836794	GSNL (field notes; MN86-269)
013A/10/Pyr003	Pyr	Indication	528343	5836147	GSNL (field notes; CG04-137)
013A/10/Ti 001	Ilm	Indication	504992	5839619	GSNL (field notes; JS86-260)
013A/10/Ti 002	Ilm	Indication	504829	5839441	GSNL (field notes; JS86-261)
013A/10/Ti 003	Ilm	Indication	504490	5840350	GSNL (field notes; CG01-001)
013A/15/Fe 001	Mgt	Indication	527850	5862422	GSNL (field notes; MN86-071)
013A/15/Pyr001	Pyr	Indication	523745	5844557	GSNL (field notes; CG86-221)
013A/15/Pyr002	Pyr	Indication	506850	5853160	GSNL (field notes; CG86-280)
013A/15/Pyr003	Pyr	Indication	502126	5850594	GSNL (field notes; CG03-366)
013A/16/Cu 001	Cu, Pyr	Indication	564404	5861000	Eade (1962, map); Donohoe (1966)
013A/16/Fe 001	Mgt	Indication	562800	5858680	Squires et al. (1997; Rock descrip., p. 14; 178517)
013A/16/Fe 002	Mgt	Indication	567060	5859900	Squires et al. (1997; Rock descrip., p. 14; BEM96-17)
013A/16/Gnt001	Gnt	Indication	566750	5860950	Squires et al. (1997; Rock descrip., p. 7; 178254)
013A/16/Gnt002	Gnt	Indication	565870	5861900	Squires et al. (1997; Rock descrip., p. 2; GCS96-85)
013A/16/Gnt003	Gnt	Indication	566793	5860448	Squires et al. (1997; Rock descrip., p. 10; 178510)
013A/16/Gnt004	Gnt	Indication	565560	5861300	Squires et al. (1997; Rock descrip., p. 15; BEM96-12)
013A/16/Gnt005	Gnt	Indication	566100	5861400	Squires et al. (1997; Rock descrip., p. 18; 178525)
013A/16/Gnt006	Gnt	Indication	567150	5859340	Squires et al. (1997; Rock descrip., p. 7; BEM96-163)
013A/16/Mic001	Ms (?)	Indication	548250	5872000	Notman (1954)
013A/16/Mic002	Ms	Indication	566900	5859910	Squires et al. (1997; Rock descrip., p. 18; 178524)
013A/16/Mic003	Ms	Indication	542947	5871031	GSNL (field notes; CG86-256)
013A/16/Mic004	Ms	Indication	543980	5867760	GSNL (field notes; JS86-077)
013A/16/Mic005	Ms	Indication	555323	5864302	GSNL (field notes; JS86-107)
013A/16/Po 001	Po	Indication	562650	5859300	Squires et al. (1997; Rock descrip., p. 11; 178262)
013A/16/Pyr001	Pyr	Indication	556723	5867539	Eade (1962, map)
013A/16/Pyr002	Pyr	Indication	564900	5860270	Squires et al. (1997; Rock descrip., p. 10; 178257)
013A/16/Pyr003	Pyr	Indication	560572	5866428	GSNL (field notes; CG86-124; CG86-125)
013A/16/Pyr004	Pyr	Indication	566227	5847861	GSNL (field notes; JS86-435)
013A/16/Pyr005	Ms, Bt	Indication	561592	5848575	GSNL (field notes; SN86-345)
013A/16/Pyr006	Pyr	Indication	559157	5846356	GSNL (field notes; CG04-001)

GSNL (Geological Survey of Newfoundland and Labrador)

GEOLOGICAL DATA SOURCES

Personnel	Stations	Year(s) data collected	Project name	Mapping references
C.F. Gower (project geologist)	985	1986, -87; 2001, -03, -04, 07	Port Hope Simpson & other visits	Gower et al. (1987, 1988); additional data
R.J.Wardle (project geologist)	574	1975	Francis Harbour - Snug Harbour	Wardle (1976; 1977)
J. Smyth (assistant geologist)	527	1986, -87	Port Hope Simpson & other visit	Gower et al. (1987, 1988)
M. Newman (assistant geologist)	473	1986	Port Hope Simpson	Gower et al. (1987, 1988)
S. Neuland (assistant geologist)	456	1986	Port Hope Simpson	Gower et al. (1987, 1988)
S. Hanmer (project geologist)	102	1989	Gilbert River	Hanmer and Scott (1990)
D. Mahaffy (assistant geologist)	54	1961	Battle Harbour - Cartwright	Eade (1962)
?. Reynolds (assistant geologist)	40	1961	Battle Harbour - Cartwright	Eade (1962)
D.J.Scott (assistant geologist)	26	1989	Gilbert River	Hanmer and Scott (1990)
M. Harris (assistant geologist)	15	1986	Port Hope Simpson	Gower et al. (1987, 1988)
D. Brown (assistant geologist)	12	1986	Port Hope Simpson	Gower et al. (1987, 1988)
K.E. Eade (project geologist)	8	1961	Battle Harbour - Cartwright	Eade (1962)

ISOTOPIC DATA

U/Pb Geochronology

Sample number
Rock type
Inherited/detrital age
Emplacement age
Metamorphism/closure/cooling/undefined
Pb loss age

Mineral abbreviations:
a - allanite
b - baddeleyite
m - monazite
r - rutile
t - titanite
x - xenotime
z - zircon

Concordia abbreviations:
c - concordant
nc - near-concordant
l.i. - lower intercept
u.i. - upper intercept

Nd/Sm Geochronology

Sample number
Rock type
Epsilon value
Depleted mantle age
Age of rock
(? age inferred)

Rb/Sr Geochronology

Sample number
Rock type
Initial Sr ratio calculated from time t
Age of rock
(? age inferred)
(* one of two or more analyses)

K/Ar Geochronology

Sample number
Rock type
Age
Mineral; Method
(* average of two or more analyses)

Biot - biotite
Hbl - hornblende
Musc - muscovite
WR - whole rock
plat - plateau age
tot. gas - total gas age

ISOTOPIC DATA SOURCES

Method	Reference(s)	Samples
U-Pb	Gower et al. (1991)	CG86-618; CG86-688
U-Pb	Kamo et al. (1996)	CG86-528A; CG86-528B; CG86-528C
U-Pb	Scott et al. (1993)	S46; S60; S99
U-Pb	Wasteneys et al. (1997)	MN86-188A2
Nd-Sm	Creaser (unpublished)	CG86-528A
Nd-Sm	Daly (unpublished)	CG86-005; CG86-053B; CG86-285; CG86-344; CG86-618; CG86-688; CG86-746A; MN86-224; SN86-023
Rb-Sr	Prevec et al. (1990)	SPM86-16A; SPM86-16B; SPM86-17A; SPM86-17B; SPM86-18A; SPM86-18B
K-Ar	Krueger Enterprises, Inc. (unpub.)	JS86-339C; SN86-395

Scale 1:100 000
0 2 4 6 8 10
Kilometres

MINERAL OCCURRENCE ABBREVIATIONS

Amz	Amazonite
Au	Gold
Bt	Biotite
Cly	Clay
Cr	Chromium
Cu	Copper
Fe	Iron
Fel	Feldspar
Fl	Fluorite
Gnt	Garnet
Ilm	Ilmenite
Lst	Limestone
Mgt	Magnetite
Mo	Molybdenite
Ms	Muscovite
Neph	Nepheline
Ni	Nickel
Pb	Lead
Pd	Paladium
Po	Pyrrhotite
Pt	Platinum
Pyr	Pyrite
Saph	Sapphire
Si	Silica
Stn	Dimension stone
Th	Thorium
Tourm	Tourmaline
Tpz	Topaz
U	Uranium
V	Vanadium
Zn	Zinc
Zr	Zirconium
(?)	Occurrence reported but validity suspect

NOTE:
All mineral occurrence and structural symbols do not appear on each map.

Vertical structures use 90° dip value.

* Generation of structure only applicable at observation site.

PALEOMAGNETIC DATA

Paleomagnetic site number
Reference source

SYMBOLS

Geological contact
Normal fault
Strike-slip fault
Thrust fault
Normal fault reactivating thrust
*Fold axial plane (1st, 2nd, 3rd generation)**
S-fold axis (1st generation)
Z-fold axis (1st generation)
Dyke (affinity unspecified)
Fault (sense of movement unknown, dextral, sinistral, normal)
Joint
*Linear fabric (1st, 2nd, 3rd generation)**
*Fold axis (1st, 2nd, 3rd generation)**
Slickenside
Geological data station
Geological data station (no fabric measured)
Bedding (tops known, unknown)
Enclave
*Foliation (1st, 2nd, 3rd generation)**
*Gneissosity (1st, 2nd generation)**
Igneous layering (tops known, unknown)
Vein
Shear zone (sense of movement unknown, dextral, sinistral, reverse)
Mineral occurrence
Geochronology location

MAP 2010-20
OPEN FILE LAB/1565

GEOLOGY OF THE PORT HOPE SIMPSON AREA (NTS SHEETS 03D/12 & 13; 13A/09, 10, 15 & 16) SOUTHEASTERN LABRADOR

LEGEND

DEVONIAN (?)

Dd — Sandwich Bay and Battle Harbour dykes

EARLY CAMBRIAN

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

NEOPROTEROZOIC – EARLY CAMBRIAN

NCLc — Lighthouse Cove Formation
NCBa — Bateau Formation

NEOPROTEROZOIC

NDm — Double Mer Formation
NGi — Gilbert arkose
NSb — Sandwich Bay conglomerate
Nc — Clastic dykes
Nd — Long Range dykes
Nq — Quartz veins

LATE MESOPROTEROZOIC (M_3 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 — Weakly to moderately foliated granite to alkali-feldspar granite
M_{3C}ln — Weakly to moderately foliated leucogabbro to leuconorite
M_{3C}mn — Weakly to moderately foliated monzogabbro to monzonorite
M_{3C}mq — Weakly to moderately foliated monzonite to quartz monzonite
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 — 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
M_{3B}d — Unnamed mafic dykes (Makkovik Province and adjacent Grenville Province)

PRE-GRENVILLIAN INTRUSIONS (M_{3A} ca. 1200 – 1085 Ma)
e.g., Gilbert Bay pluton

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

MIDDLE MESOPROTEROZOIC (M_2 1350 – 1200 Ma)

e.g., Upper North River intrusion

M_2gr — Weakly to strongly foliated granite and alkali-feldspar granite
M_2rg — Weakly to strongly foliated gabbronorite (in database only - Lourdes-de-Blanc-Sablon intrusion, Quebec)
M_2yq — Weakly to strongly foliated syenite, quartz syenite and alkali-feldspar syenite
M_2d — Mealy dykes

EARLY MESOPROTEROZOIC (M_1 1600 – 1350 Ma)

e.g., Upper Paradise River, Kyfanan Lake and 13B/12 intrusions, and Michael Gabbro

M_1an — Massive or weakly foliated anorthosite to leucogabbronorite, indistinctly layered in places
M_1am — Weakly to markedly foliated amphibolite, plus leucocratic and melanocratic variants; granulite facies equivalents
M_1dr — Massive, weakly or strongly foliated diorite to amphibolite, may be metamorphic derivative of monzodiorite or leucogabbronorite
M_1gp — Moderately to strongly foliated megacrystic/porphyritic granitoid rocks
M_1gr — Massive, weakly or strongly foliated granite to quartz monzonite
M_1ln — Massive, weakly or strongly foliated leucogabbronorite and anorthositic gabbro, locally grading into gabbronorite, locally coronitic
M_1mn — Moderately to strongly foliated monzonorite
M_1mq — Moderately to strongly foliated monzonite to quartz monzonite
M_1mz — Moderately to strongly foliated monzonite to monzodiorite
M_1rg — Massive to strongly foliated gabbro, norite and troctolite, commonly layered; subophitic and locally coronitic; includes recrystallized derivatives retaining igneous textures
M_1um — Massive, weakly or strongly foliated ultramafic rocks, commonly layered and locally showing cumulate textures
M_1yq — Moderately to strongly foliated syenite and quartz syenite
M_1d — Mafic dykes; includes Michael Gabbro

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

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 granite
PMln — Medium- to coarse-grained, recrystallized leuconorite, leucogabbro
PMmd — Medium- to coarse-grained, recrystallized, weakly to strongly foliated, monzodiorite to monzonite
PMmq — Medium- to coarse-grained, recrystallized, weakly to strongly foliated quartz monzonite
PMrg — Medium- to coarse-grained, gabbro, norite and troctolite
PMtn — Medium- to coarse-grained, recrystallized, weakly to strongly foliated tonalite to granodiorite
PMyq — Medium- to coarse-grained, recrystallized, weakly to strongly foliated syenite, alkali-feldspar syenite and quartz syenite
PMam — Amphibolite; generally thought to be derived from mafic dykes

SUPRACRUSTAL ROCKS PROVISIONALLY ASSIGNED AS PITTS HARBOUR GROUP

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 — Brittle deformation; cataclastic rocks, pseudotacholite
δ — Ductile deformation; mylonite, straight gneiss

AGE GENERALLY POORLY CONSTRAINED

f — Aplite, microgranite (felsite)
k — Carbonate vein
p — Pegmatite
q — Quartz vein

LATE PALEOPROTEROZOIC (P_3 1800 – 1600 Ma)

LATE LABRADORIAN GRANITOID INTRUSIONS (P_{3C} 1660 – 1600 Ma)
e.g., Paradise Arm intrusion and Hawke Bay intrusive suite

P_{3C}dr — Diorite, quartz diorite and tonalite; locally grading into leucogabbronorite
P_{3C}ga — Alkali-feldspar granite, granite and quartz syenite forming discrete plutons
P_{3C}gd — Granite to granodiorite forming discrete unmigmatized plutons
P_{3C}gp — Megacrystic/porphyritic granite to granodiorite
P_{3C}gr — Granite and minor alkali-feldspar granite
P_{3C}mn — Monzonorite and monzogabbro
P_{3C}mq — Quartz monzonite, including rare quartz syenite
P_{3C}mz — Monzonite, including minor 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 — 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 coronitic
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 cumulate textures

EARLY LABRADORIAN MAFIC AND ASSOCIATED ROCKS (P_{3B} 1710 – 1660 Ma)
e.g., Alexis River anorthosite (assigned here although age is uncertain)

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}ln — 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 showing cumulate textures

EARLY LABRADORIAN GRANITOID AND ASSOCIATED ROCKS (ca. 1678 and 1671 Ma)
e.g., Neveisik Island and Red Island events

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-banded gneiss
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 gneiss
P_{3B}ya — Foliated to gneissic syenite, alkali-feldspar syenite and alkali-feldspar granite, and compositionally equivalent well-banded gneiss
P_{3B}am — Amphibolite skialiths, lenses and layers (mainly remnants of former dykes)

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

P_{3A}ag — Mafic granulite skialiths, lenses and layers
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-banded gneiss
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)

Sedimentary protolith

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

Volcanic protolith

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 pods; interpreted as mafic volcanic rocks

MID PALEOPROTEROZOIC (P_2 2100 – 1800 Ma)

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

Granitoid and related intrusive rocks

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 gneiss
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 gneiss
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 coronitic
P_{2C}d — Unnamed mafic dykes

Sedimentary protolith

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

Volcanic protolith

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 indicating felsic volcanoclastic protolith
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

NOTES

1. Legend is common to all maps (Map 2010-01 to Map 2010-25), but all units do not appear on every map.
2. Uncoloured units do not appear as polygons on maps, but are in unit-designator strings in database.
3. Some mafic dykes also shown as polygons (especially where orientation is unknown).