



MAP 2010-16
OPEN FILE LAB/1564
GEOLOGY OF THE SAND HILL RIVER AREA
(NTS SHEETS 03E/04 & 05; 13H/01, 02, 07 & 08)
SOUTHEASTERN LABRADOR


LEGEND

EVIAN (T)


 Sandwich Bay and Batts Harbour dykes


EARLY CAMBRIAN

 Porcupine Formation


 Bralorne Formation (subdivided into L'Anse-au-Cat, Cove Island and Blanc Sablon members)


NEOPROTEROZOIC – EARLY CAMBRIAN


 Lighthouse Cove Formation



 Batzeau Formation


NEOPROTEROZOIC


 Dm Double Mer Formation


 Gt Gilbert arkose

 Sb Sandwich Bay conglomerate

Ne  **Nd**  **Nz**

 Clastic dykes

 Long Range dykes

 Quartz veins

ATE MESOPROTEROZOIC (M ₁ 1200 – 900 Ma)									
ATE POST-ORENILLITE INTRUSIONS (M ₂ ca. 975 – 955 Ma)									
g, Chateau Pond granite									
M ₂ gpp	M ₂ gpc	M ₂ gln	M ₂ grn	M ₂ mgz	M ₂ mzr	M ₂ qzr	M ₂ qd		
gpp	Massive to weakly foliated megacrystic/porphyritic granite								
gln	Massive to weakly foliated granite to alkali-leihsper granite								
grn	Massive to weakly foliated leucogabbro to leuconcorite								
mgz	Massive to weakly foliated monzogabbro and monzonite								
mzr	Massive to weakly foliated quartz monzonite, mantled felsic gneiss								
qzr	Massive to weakly foliated monzonite to monzodiorite								
qd	Massive to weakly foliated syenite, quartz syenite and alkali feldspar syenite								

[illegible]

L'Anse-au-Diable, York Point, Gilbert Bay mafic dykes	
NG-GRENVILLIAN INTRUSIONS (Ma ca. 1065 – 985 Ma)	
Magd	Moderately to strongly foliated granodiorite to quartz diorite
Magd	Moderately to strongly foliated megacrystic/cyclophyritic granite
Magd	Moderately to strongly foliated granite to alkali-feldspar granite
Magd	Moderately to strongly foliated aegirine- or nepheline-bearing granite
Magd	Unnamed mafic dykes (Makkovik Province and adjacent)

RE-GRENVILLIAN INTRUSIONS (M₃ ca. 1200 – 1085 Ma)
g., Gilbert Bay pluton

M₃ **M₄**

Weekly to strongly foliated granite

Weekly to strongly foliated monzonite to monzonorite

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

M₁ **M₂** **M₃** **M₄** **M₅**

Weekly to strongly foliated granite and alkali-feldspar granite

Weekly to strongly foliated gabbroic granite (in database only Quebec)

Weekly to strongly foliated syenite, quartz syenite and alkali

	Mam	Mam	Mdr	Mgp	Mgr	Mjn	Mmn	Mmx	h
an	Massive or weakly foliated anorthosite to leucogabbro								
am	Weakly to moderately foliated amphibolite, plus leucocratic granitoid facies equivalents								
di	Massive, weakly or strongly foliated diorite to amphibolite of monodiorite or leucogabbro								
gp	Moderately to strongly foliated megacrystic amphibolytic gabbro								
g	Medium- to weakly or strongly foliated megacrystic amphibolytic gabbro								

h	Massive, weakly or strongly foliated gneiss to quartz monzonite
h	Massive, weakly or strongly foliated leucogabbrogranites or grading into gabbrogranites, locally coronitic
h	Moderately to strongly foliated monzonite
h	Moderately to strongly foliated monzonite to quartz monzonite
h	Moderately to strongly foliated monzonite to monzodiorite
h	Massive to strongly foliated gabbro, norite and troctolite, and locally coronitic; includes recrystallized derivatives near mafic dykes
h	Massive, weakly or strongly foliated ultramafic rocks, commonly cumulate textures
h	Moderately to strongly foliated syenite and quartz syenite
h	Mafic dykes; includes Michael Gabbro

	PgMz	PgMz	PgMz	PgMz	PgMz	PgMz	PgMz	PgMz
Adi	Medium-grained, equigranular, recrystallized weakly to strongly to leucopelitic							
Gd	Weakly to strongly foliated granite to granodiorite							
Gp	Megacrystic/porphyritic recrystallized granite to quartz monzonite							
Grg	Medium- to coarse-grained, recrystallized weakly to strongly to granite							
Grn	Medium- to coarse-grained, recrystallized leucocratic, less to more							

trnd	Medium- to coarse-grained, recrystallized, weakly to strongly deformed				
trng	Medium- to coarse-grained, recrystallized, weakly to strongly deformed				
trng	Medium- to coarse-grained, gabbro, norite and troctolite				
trn	Medium- to coarse-grained, recrystallized, weakly to strongly deformed				
trng	Medium- to coarse-grained, recrystallized, weakly to strongly deformed				
trng	Amphibolite; generally thought to be derived from mafic dikes				
UPCRUSTAL ROCKS PROVISIONALLY ASSIGNED AS PIT					
P _{Msc}	P _{Msp}	P _{Mss}	P _{Mss}	P _{Mt}	P _{Am}
Sedimentary protolith					
P _{Msc}	Calc-silicate rocks, compositionally layered, medium grain size				

Msq	Politic schist and gneiss
Msq	Quartzite, meta-arkose, thin to thick bedded
Mss	Quartz-feldspar pegmatitic schist and gneiss; medium grained
Msc	Coarse-grained to pegmatitic-granitic material (diatexite), pegmatitic gneiss and quartzite
Volcanic protolith	
Mf	Fine- to medium-grained, banded quartzofeldspathic rock possibly indicating felsic volcanoclastic protolith
Mm	Fine- to medium-grained, banded amphibolite containing pods; interpreted as mafic volcanic rocks

AGE GENERALLY POORLY CONSTRAINED

β	δ
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β Brittle deformation; cataclastic rocks, pseudotachylite

δ Ductile deformation; mylonite, straight gneiss

AGE GENERALLY POORLY CONSTRAINED

f	k	p	q
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f Aplite, microgranite (felsite)

k Carbonate vein

p Pegmatite

q Quartz vein

[illegible]

EARLY LABRADORIAN MAFIC AND ASSOCIATED ROCKS (Pw 1710 – 1660 Ma) e.g. Alexits River anorthosite (assigned here although age is uncertain)						
Pg _{Wt}	Pg _{Al}	Pg _{Al}	Pg _{Tr}	Pg _{Tr}	Pg _{Tr}	Pg _{Tr}
Pg _{Wt}	Weakly foliated to gneissic amphibolite and mafic granulite, plus leucocratic and melanocratic variants					
Pg _{Al}	Weakly foliated to gneissic anorthosite and leucogabbro/anorthite					
Pg _{Al}	Weakly foliated to gneissic leucogabbro/anorthite and leucogabbro; chromitic locally					
Pg _{Tr}	Weakly foliated to gneissic monzonite and microgabbro					
Pg _{Tr}	Weakly foliated to gneissic gabbro and norite					
Pg _{Wt}	Massive, weakly or strongly foliated ultramafic rocks, commonly layered and locally					

showing cumulate textures.

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

	Pap ₁	Pap ₂	Pap ₃	Pap ₄	Pap ₅	Pap ₆	Pap ₇	Pap ₈
Pap ₁	Foliated to gneissic diorite to quartz diorite, and compositionally equivalent well-banded gneiss in part derived from leucogabbroites							
Pap ₂	Foliated to gneissic granodiorite and compositionally equivalent well-banded gneiss							
Pap ₃	Foliated to gneiss megacrystic-granitic; granitic rocks, augen gneiss							
Pap ₄	Foliated to gneissic granite and alkali-felspar gneiss, and compositionally equivalent well-banded gneiss							
Pap ₅	Foliated to gneissic quartz monzonite, grading into diorite or gneiss, and compositionally equivalent well-banded gneiss							
Pap ₆	Foliated to gneissic monzonite and monzonite, and compositionally equivalent well-banded gneiss							
Pap ₇	Foliated to gneissic syenite, alkali-felspar gneiss and alkali-felspar granite, and compositionally equivalent well-banded gneiss							
Pap ₈	Amorphous to (sub)volcanic and (rare) dykes (syenitic composition of former dykes)							

PRE-LABRADORIAN GRANITOID ROCKS (P_{HL} 1600 – 1710 Ma)

P_{Gdnp}	P_{Gdpr}	P_{Gdpr}	P_{Gdpr}	P_{Gdpr}	P_{Gdpr}	P_{Gdpr}
P_{Gdnp}	Matte-granulite schists, lenses and layers					
P_{Gdpr}	Foliated to gneiss; diorite to quartz diorite, and compositionally equivalent well-banded gneiss					
P_{Gdpr}	Foliated to gneiss; granulodiorite and compositionally equivalent well-banded gneiss					
P_{Gdnp}	Foliated to gneissic megacrystic porphyritic granitoid rocks, augen gneiss					
P_{Gdpr}	Foliated to gneissic; granite and alkali-feldspar granite, and compositionally equivalent well-banded gneiss					
P_{Gdpr}	Foliated to gneissic leucogranitoid, and compositionally equivalent well-banded gneiss					
P_{Gdnp}	Amphibolite schists, lenses and layers (mainly remnants of former dykes)					

PRE-LABRADORIAN SUPRACRUSTAL ROCKS (P_{1-4} 1400 – 1710 Ma)
(Age uncertain; certainly pre-1670 Ma, probably 1600 – 1770 Ma)

P_{1-3c}	P_{1-3d}	P_{1-3e}	P_{1-3f}	P_{1-3g}	P_{1-3h}	P_{1-3i}	P_{1-3j}	P_{1-3k}
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Sedimentary protolith

P_{1-3c} Calc-silicate rocks, compositionally banded, medium grained

P_{1-3d} Fine- to medium-grained pelitic schist and gneiss

P_{1-3e} Quartzite, meta-arkose, thin to thick bedded

P_{1-3f} Quartz-keloid; psammic schist and gneiss; medium grained and commonly rusty-weathering

P_{1-3g} Metasedimentary gneiss; medium grained

P_{1-3h} Metasedimentary gneiss; coarse grained to pegmatitic and characteristically rusty-weathering

Volcanic protolith

P_{1-3i} Fine- to medium-grained, banded quartz/diaphanous rocks; locally have lensoid shapes, possibly

[illegible]

$P_{10}P_{91}$	Foliated to gneissic quartz monzonite, grading into diorite or syenite, and compositionally equivalent well-banded gneiss
$P_{10}P_{92}$	Foliated to gneissic monzonite to monzodiorite, and compositionally equivalent well-banded gneiss
$P_{10}P_{93}$	Foliated to gneissic syenite to alkali-feldspar syenite, and compositionally equivalent well-banded gneiss
$P_{10}P_{94}$	Syenite to quartz syenite
Mafic and associated intrusive rocks	
$P_{10}P_{95}$	$P_{10}P_{95a}$ $P_{10}P_{95b}$ $P_{10}P_{95c}$
$P_{10}P_{96}$	Amphibole schists, lenses and layers (mainly remnants of former dykes)
$P_{10}P_{97}$	Massive to strongly foliated gabbro and norite, commonly layered, subophic and locally corundum

Unran mafic dykes

Sedimentary protholith

P _{3C26}	P _{3C20}	P _{3C27}	P _{3C24}	P _{3C25}
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P_{3C30} Calc-silicate rocks, compositionally layered, medium grained

P_{3C30} Conglomerate and agglomerate, partially of volcanic origin

P_{3C30} Fine- to medium-grained pelitic schist and gneiss

P_{3C30} Quartzite, meta-schists, thin to thick bedded

P_{3C33} Quartz-feldspar psammitic schist and gneiss; medium grained and commonly rusty-weathering

Volcanic Protholith

P _{3C21}	P _{3C22}	P _{3C23}	P _{3C24}	P _{3C25}
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	Volcanic	Subvolcanic	Plutonic	Hydrothermal
P ₁ crb	Volcanic breccia, angular clasts, grading into agglomerate			
P ₁ crf	Fine- to medium-grained, banded quartzofeldspathic rocks; locally have lensoid shapes, possibly indicating felsic volcanoclastic protolith			
P ₁ cvi	Intermediate volcanic rocks			
P ₁ csm	Fine- to medium-grained, banded amphibolite containing quartz-feldspar layers and calc-silicates; interpreted as mafic volcanic rocks			
P ₁ csp	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 malleic dykes also shown as polygons (especially where orientation is unknown).

[illegible]

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1992: Palaeogeography of Eocene-Early Oligocene Stage dykes and Doudie Mafic Formation from Labrador, Canada. *Canadian Journal of Earth Sciences*, Volume 29, Pages 1025-1024.

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1990: Is and the isotopic and petrological evidence for the age and origin of the White Bear Basalt Complex and associated units, north-western Ontario, Canada. *Journal of Petrology*, Volume 31, Part 1, Pages 1-27.

1991: Geologic Association of Canada's Eastern Provinces. *Geological Survey of Canada*, Pages 65-76.

Sahni, S.
1987: Rapidly condensed crustal formation 1-7 Ga from evidence with chondritic isotopic signatures, eastern Labrador, Earth and Planetary Science Letters, Volume 102, Pages 119-133.

Sahni, S. and Gower, C. F.
1986: Crustal evolution in eastern Labrador: Constraints from precise U-Pb ages. *Precambrian Research*, Volume 38, Pages 405-427.

MINERAL OCCURRENCE DATA SOURCES

Inventory No.	Host	Mineral	Location	Sampling	Reference
0104-04-04-01	Pt	Native	369114	1984-05-13, 1984, Pt mine, OMA-046	1984
0104-04-04-02	Pt	Native	369115	1984-05-13, 1984, Pt mine, OMA-046	1984
0104-04-04-03	Pt	Native	369116	1984-05-13, 1984, Pt mine, OMA-046	1984
0104-04-04-04	Pt	Native	369117	1984-05-13, 1984, Pt mine, OMA-046	1984
0104-04-04-05	Pt	Native	369118	1984-05-13, 1984, Pt mine, OMA-046	1984
0104-04-04-06	Pt	Native	369119	1984-05-13, 1984, Pt mine, OMA-046	1984
0104-04-04-07	Pt	Native	369120	1984-05-13, 1984, Pt mine, OMA-046	1984
0104-04-04-08	Pt	Native	369121	1984-05-13, 1984, Pt mine, OMA-046	1984
0104-04-04-09	Pt	Native	369122	1984-05-13, 1984, Pt mine, OMA-046	1984
0104-04-04-10	Pt	Native	369123	1984-05-13, 1984, Pt mine, OMA-046	1984
0104-04-04-11	Pt	Native	369124	1984-05-13, 1984, Pt mine, OMA-046	1984
0104-04-04-12	Pt	Native	369125	1984-05-13, 1984, Pt mine, OMA-046	1984
0104-04-04-13	Pt	Native	369126	1984-05-13, 1984, Pt mine, OMA-046	1984
0104-04-04-14	Pt	Native	369127	1984-05-13, 1984, Pt mine, OMA-046	1984
0104-04-04-15	Pt	Native	369128	1984-05-13, 1984, Pt mine, OMA-046	1984
0104-04-04-16	Pt	Native	369129	1984-05-13, 1984, Pt mine, OMA-046	1984
0104-04-04-17	Pt	Native	369130	1984-05-13, 1984, Pt mine, OMA-046	1984
0104-04-04-18	Pt	Native	369131	1984-05-13, 1984, Pt mine, OMA-046	1984
0104-04-04-19	Pt	Native	369132	1984-05-13, 1984, Pt mine, OMA-046	1984
0104-04-04-20	Pt	Native	369133	1984-05-13, 1984, Pt mine, OMA-046	1984
0104-04-04-21	Pt	Native	369134	1984-05-13, 1984, Pt mine, OMA-046	1984
0104-04-04-22	Pt	Native	369135	1984-05-13, 1984, Pt mine, OMA-046	1984
0104-04-04-23	Pt	Native	369136	1984-05-13, 1984, Pt mine, OMA-046	1984
0104-04-04-24	Pt	Native	369137	1984-05-13, 1984, Pt mine, OMA-046	1984
0104-04-04-25	Pt	Native	369138	1984-05-13, 1984, Pt mine, OMA-046	1984
0104-04-04-26	Pt	Native	369139	1984-05-13, 1984, Pt mine, OMA-046	1984
0104-04-04-27	Pt	Native	369140	1984-05-13, 1984, Pt mine, OMA-046	1984
0104-04-04-28	Pt	Native	369141	1984-05-13, 1984, Pt mine, OMA-046	1984
0104-04-04-29	Pt	Native	369142	1984-05-13, 1984, Pt mine, OMA-046	1984
0104-04-04-30	Pt	Native	369143	1984-05-13, 1984, Pt mine, OMA-046	1984
0104-04-04-31	Pt	Native	369144	1984-05-13, 1984, Pt mine, OMA-046	1984
0104-04-04-32	Pt	Native	369145	1984-05-13, 1984, Pt mine, OMA-046	1984
0104-04-04-33	Pt	Native	369146	1984-05-13, 1984, Pt mine, OMA-046	1984
0104-04-04-34	Pt	Native	369147	1984-05-13, 1984, Pt mine, OMA-046	1984
0104-04-04-35	Pt	Native	369148	1984-05-13, 1984, Pt mine, OMA-046	1984
0104-04-04-36	Pt	Native	369149	1984-05-13, 1984, Pt mine, OMA-046	1984
0104-04-04-37	Pt	Native	369150	1984-05-13, 1984, Pt mine, OMA-046	1984
0104-04-04-38	Pt	Native	369151	1984-05-13, 1984, Pt mine, OMA-046	1984
0104-04-04-39	Pt	Native	369152	1984-05-13, 1984, Pt mine, OMA-046	1984

[illegible][illegible]

		Scale	
		0 2 4	
		Kilometres	
MINERAL OCCURRENCE ABERRATIONS			
Ame	Amesburyite		
An	Gold		Geological context:
Bt	Biotite		Normal fault
Cf	Chlorite		Springside fault
Cr	Crystalline		Thrust fault
Cu	Copper		
Fe	Iron		
Fel	Feldspar		Normal fault basins
Fl	Fluorite		
Gne	Gneiss		
Lst	Listwaite		Fold axial planes (16°)
Lil	Lilliputite		
Mg	Magnetite		S-fold axis (1°)
Mn	Manganese		Z-fold axis (1°)
Ms	Muscovite		
Neph	Nephtalite		Dyke infilling unroofed
Ni	Nickel		Fault (sense of movement)
Po	Potash		
Py	Pyrite		
Pl	Platinum		
Pyr	Pyroxene		
Sp	Sphalerite		
Stk	Stibnite		Linear fabric (14, 20°)
Sr	Silver		Fold axis (16, 20, 22°)
Sls	Siderite zone		
Th	Thorium		Dikezone
Tm	Tennantite		
Tz	Tremolite		Geological data areas
U	Uranium		
V	Vanadium		Geological data areas
Zn	Zinc		
Zr	Zirconium		
(?)	Occurrence reported but reliability suspect		Building types known
NOTE:			
All mineral occurrence and structural symbols do not appear on section maps.			
Vertical structures use 90° dip value.			
* Generation of structures only applicable at observation site.			
PALEOMAGNETIC DATA:			
Paleomagnetism file number			
Reference source			
Mineral occurrences			
Geochronology notes			

[illegible]

Medium to coarse-grained, recrystallized weakly to strongly foliated gneiss and alkali-feldspar gneiss	P ₄ met	P ₄ met	Amphibolite
Medium to coarse-grained, recrystallized, weakly to strongly foliated, monzonitic	P ₄ met	P ₄ met	Amphibolite
Medium to coarse-grained, recrystallized, weakly to strongly foliated quartz monzonite to monzonite	P ₄ met	P ₄ met	Monzonite
Medium to coarse-grained, recrystallized, weakly to strongly foliated quartz monzonite to monzonite	P ₄ met	P ₄ met	Monzonite
Medium to coarse-grained, gabbro, norite and troctolite	P ₄ met	P ₄ met	Monzonite
Medium to coarse-grained, gabbro, norite and troctolite	P ₄ met	P ₄ met	Monzonite
Medium to coarse-grained, recrystallized, weakly to strongly foliated tonalite to granodiorite	P ₄ met	P ₄ met	Monzonite
Medium to coarse-grained, recrystallized, weakly to strongly foliated syenite, alkali-feldspar gneiss and quartz syenite	P ₄ met	P ₄ met	Monzonite
Amphibolite, generally thought to be derived from mafic dykes	P ₄ met	P ₄ met	Monzonite
CRUSTAL ROCKS PROVISIONALLY ASSIGNED TO FELSIC HARBOUR GROUP			
Granite, gabbro, norite, troctolite, monzonite, quartz monzonite, gabbro, norite, troctolite	P ₄ met	P ₄ met	Monzonite
Calc-silicate rocks, compositionally banded, medium grained	P ₄ met	P ₄ met	Monzonite
Felsic schists and gneiss	P ₄ met	P ₄ met	Monzonite
Quartzite, meta-arkose, thin to thick bedded	P ₄ met	P ₄ met	Monzonite
Quartz-feldspar psammite schist and gneiss, medium grained	P ₄ met	P ₄ met	Monzonite
Quartzite, medium to fine-grained, granitic to syenitic, granitic material (dolerite), characteristic associated with syenitic gneiss and quartz	P ₄ met	P ₄ met	Monzonite
Metaschists			
Medium to coarse-grained, banded quartz-feldspar gneiss, locally having lensoid shapes, possibly reducing felsic volcanaritic protolith	P ₄ met	P ₄ met	Monzonite
Medium to coarse-grained, banded amphibolite containing quartz-feldspar layers and calc-silicate rocks interpreted as mafic volcanaric rocks	P ₄ met	P ₄ met	Monzonite
Laterally poorly constrained			
Little deformation, cataclastic rocks, pseudotachylite	P ₄ met	P ₄ met	Monzonite
Ductile deformation, mylonite, strain gneiss	P ₄ met	P ₄ met	Monzonite
Laterally poorly constrained			
Quartzite, medium to fine-grained, granitic to syenitic, granitic material (dolerite), characteristic associated with syenitic gneiss and quartz	P ₄ met	P ₄ met	Monzonite
Quartzite, medium to fine-grained, granitic to syenitic, granitic material (dolerite), characteristic associated with syenitic gneiss and quartz	P ₄ met	P ₄ met	Monzonite
Carbonate vein	P ₄ met	P ₄ met	Monzonite
Pyroclastic	P ₄ met	P ₄ met	Monzonite
Quartz vein	P ₄ met	P ₄ met	Monzonite

dykes, lenses and layers (mainly remnants of former dykes)
 locally isolated gabbro and norite, commonly layered, subopacified and locally
 dykes
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