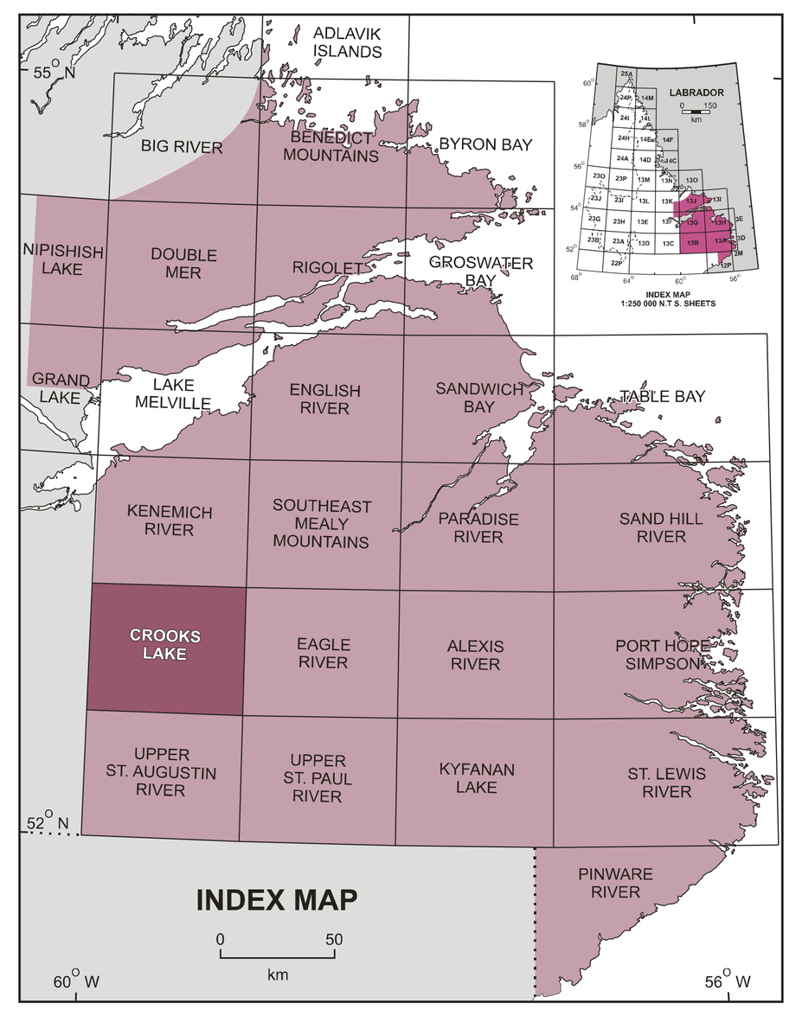
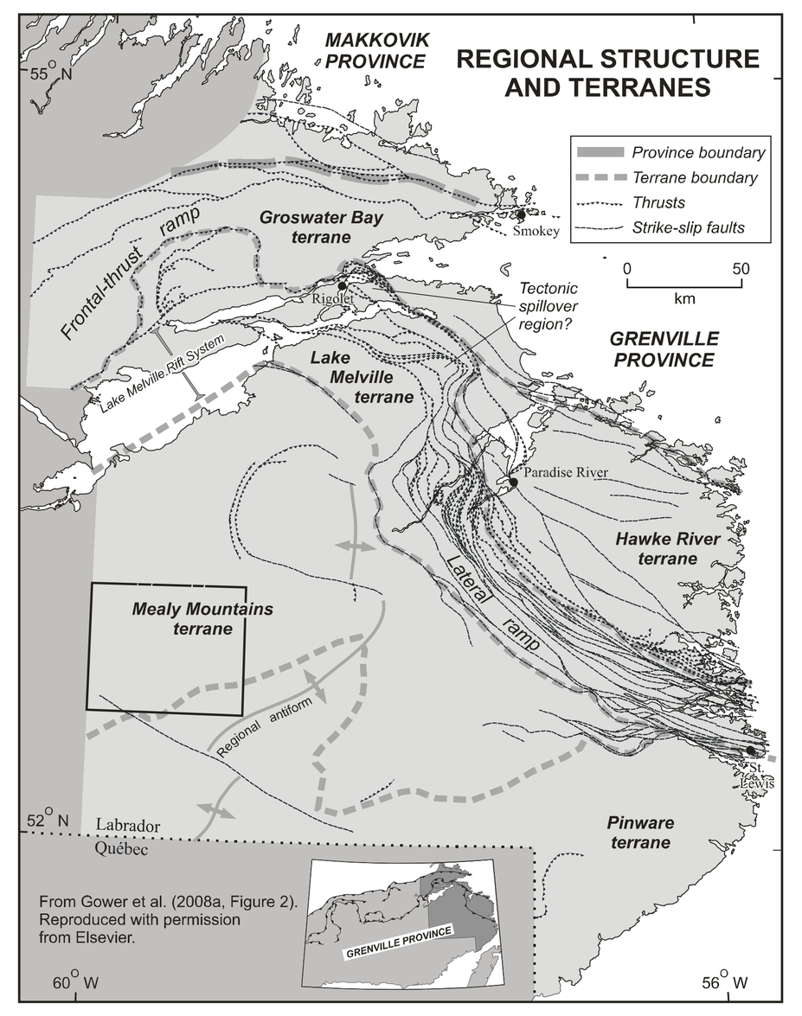
Newfoundland Labrador
NATURAL RESOURCES

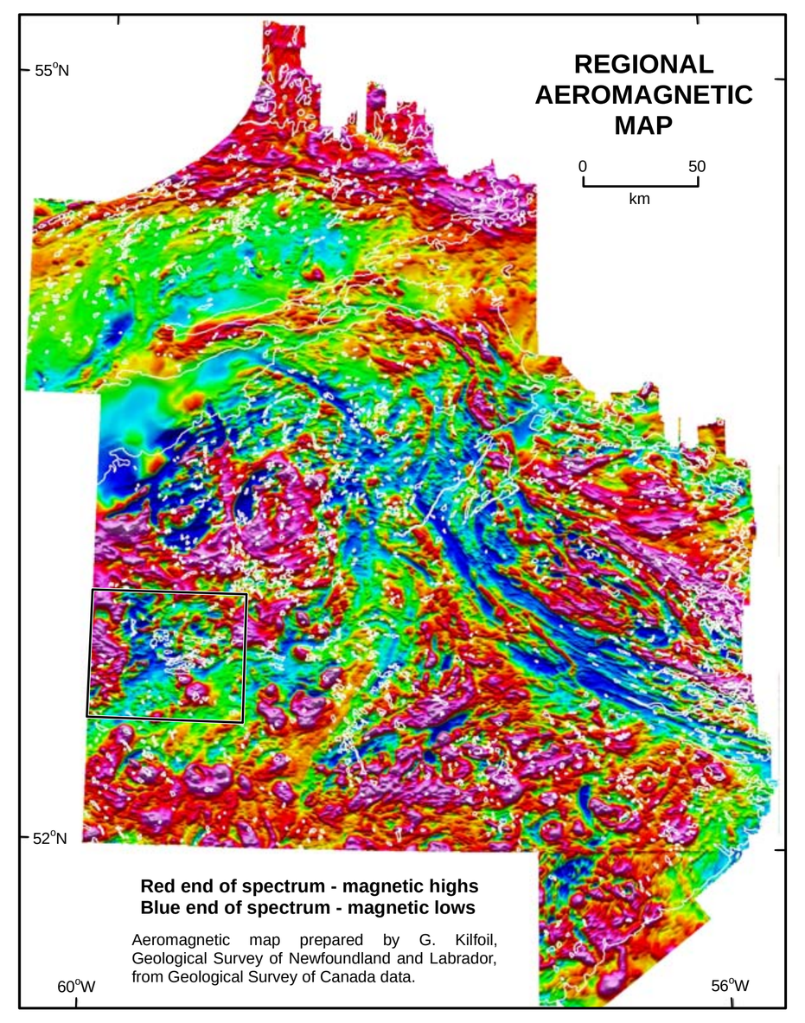
MAP 2010-17

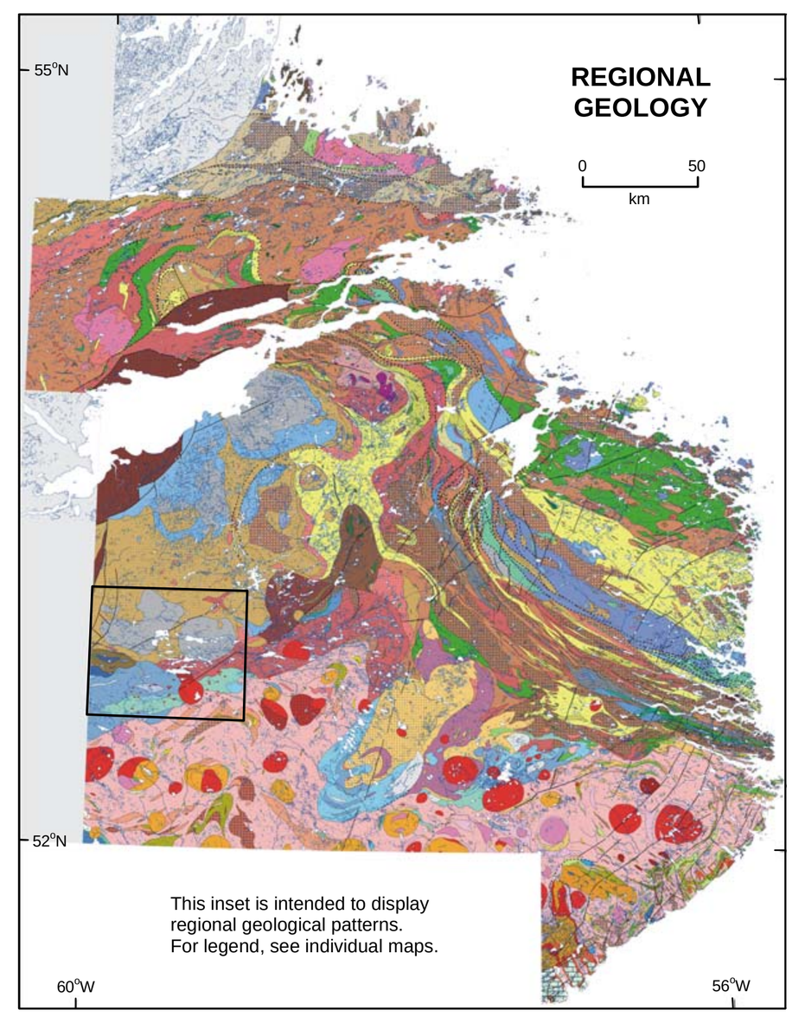
OPEN FILE 013B/0027

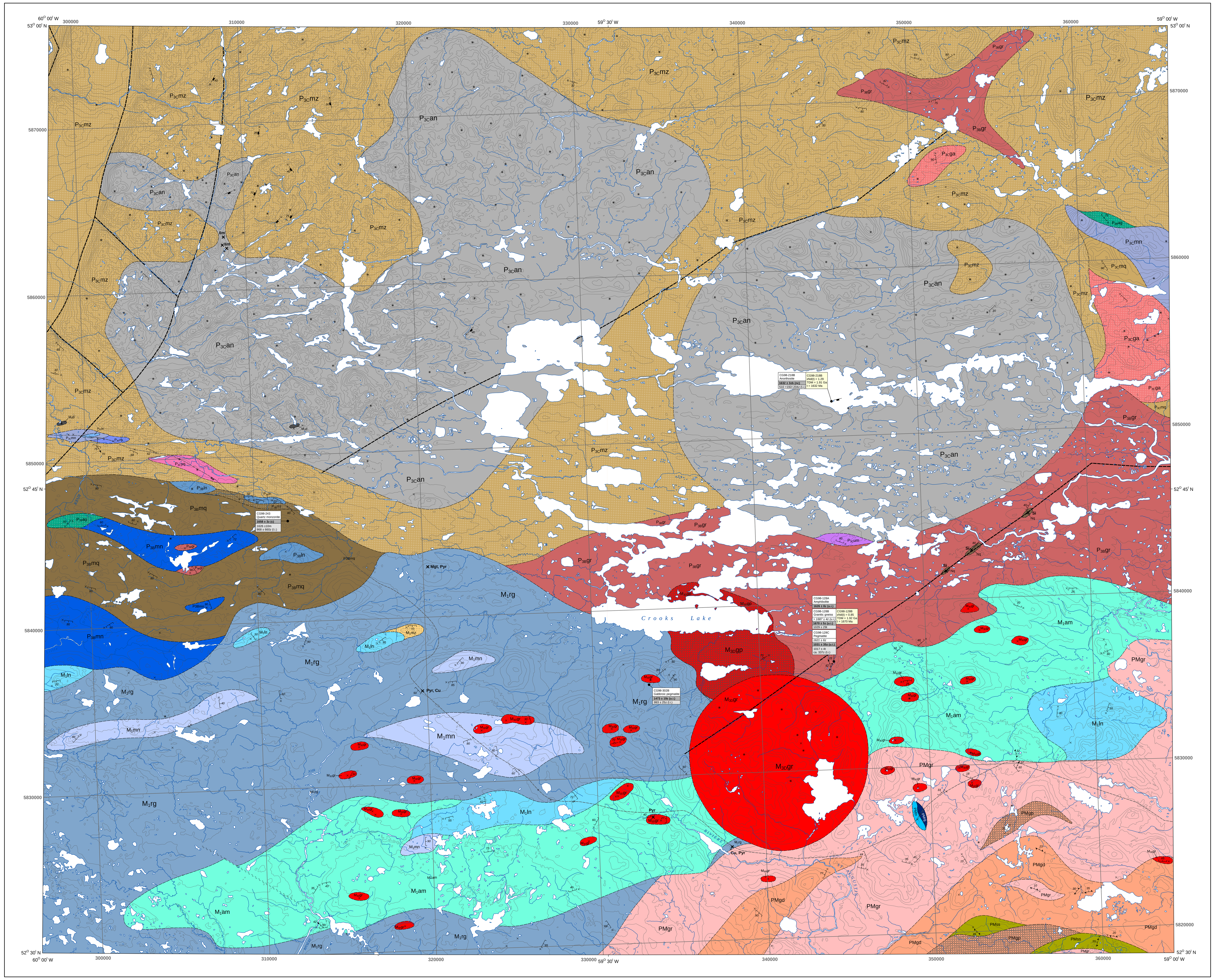
GEOLOGY OF THE CROOKS LAKE AREA (NTS SHEETS 13B/11, 12, 13 & 14) SOUTHEASTERN LABRADOR











LEGEND

CROOKS LAKE

A preliminary coloured version of this map appeared page-size, together with a report based on data collected during the 1998 field season (Gower, 1999), but additional data were collected in subsequent visits, especially during mapping by C.F. Gower in 2009 and 2010 along Highway 510. The present map also incorporates field data recorded by Eade (1962), making use of original field notes recorded by K.E. Eade and assistants.

The present 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 U-Pb geochronological results (Gower et al., 2008b), and Nd-Sm isotopic data (R.A. Creaser, unpublished - see digital database) are also shown. Localities designated as mineral occurrences are based partly on observations made during the 1997 field season, but include earlier discoveries (see Mineral Occurrence Table; current to 2009).

Since the preliminary report, there has been minor re-interpretation and redefinition of geological boundaries and units, mostly resulting from additional data obtained during road construction. Other changes result from a compilation approach applied to the whole of eastern Labrador, and from integration with data from adjacent map areas. Data station locations are based on GPS-supported readings. Geological boundaries are poorly controlled, being positioned from outcrop data and extrapolated using structural observations, regional aeromagnetic data and topographic trends

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.

REFERENCES

Eade, K.E.
1962: Geology, Battle Harbour - Cartwright, coast of Labrador, Newfoundland. Geological Survey of Canada, Map 22-1962.

Gower, C.F.
1999: Geology of the Crooks Lake map region, Grenville Province, southeast Labrador. In Current Research. Newfoundland Department of Mines and Energy, Geological Survey Branch, Report 99-1, pages 41-58.

Gower, C.F., Kamo, S. and Krogh, T.E.
2008a: Indentor tectonism in the eastern Grenville Province. Precambrian Research, Volume 167, pages 201-212.

Gower, C.F., Kamo, S., Kwok, K. and Krogh, T.E.
2008b: Proterozoic southward accretion and Grenvillian orogenesis in the interior Grenville Province in eastern Labrador; evidence from U-Pb geochronological investigations. Precambrian Research, Volume 165, pages 61-95.

Laracy, P.J.
1998: First year assessment report on Licence 4303M, Labrador, Goose South, Labrador. Vulcan Minerals Inc. Newfoundland and Labrador Geological Survey, Assessment Report 013B/13/0024, 9 pages plus appendices.

Recommended citation
Gower, C.F., 2010: Geology of the Crooks Lake area (NTS sheets 13B/11, 12, 13 and 14), southeastern Labrador. Geological Survey, Mines Branch, Department of Natural Resources, Government of Newfoundland and Labrador, Map 2010-17, Open File 013B/0027.

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

Digital NTS base maps (NTS 13B/11, 12, 13 and 14) used for this map are available from Surveys and Mapping Branch, Natural Resources Canada.
Magnetic declination at the centre of the map at the start of 2010 was 22° 18' W.
Elevations are in metres above sea level. Contour interval is 20 metres.
UTM (Universal Transverse Mercator) Grid Zone 21, NAD (North American Datum) 27.

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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 2010-17 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.

MINERAL OCCURRENCE DATA SOURCES

Inventory No.	Map label	Status	Easting	Northing	Reference
013B/11/Cu 001	Cu, Pyr	Indication	337956	5825587	GSNL (field notes; CG09-013)
013B/11/Pyr001	Pyr,Cu	Indication	333271	5827538	GSNL (field notes; CG10-021)
013B/11/Sia001	Si	Indication	351375	5841675	GSNL (field notes; CG98-121)
013B/11/Sia002	Si	Indication	352939	5842895	GSNL (field notes; CG98-120)
013B/11/Sia003	Si	Indication	356400	5845000	GSNL (field notes; CG98-119)
013B/12/Fe 001	Mgt, Pyr	Indication	320282	5843019	GSNL (field notes; CG98-256)
013B/12/Pyr001	Pyr, Cu	Indication	319715	5835587	GSNL (field notes; CG10-013)
013B/13/Ti 001	Ilm	Showing	308891	5862534	Laracy (1998; Fig. 4)
013B/13/Ti 002	Ilm	Showing	308639	5862735	Laracy (1998; Fig. 4)
013B/13/Ti 003	Ilm	Showing	308715	5863211	Laracy (1998; Fig. 4)

GSNL (Geological Survey of Newfoundland and Labrador)

GEOLOGICAL SURVEY NEWFOUNDLAND AND LABRADOR 1864

GEOLOGICAL DATA SOURCES

Personnel	Stations	Year(s) data collected	Project name	Mapping references
C.F. Gower (project geologist)	335	1998; 2009; 2010	Crooks Lake & other visits	Gower (1999); additional data
?. Reynolds (assistant geologist)	20	1961	Battle Harbour - Cartwright	Eade (1962)
D. Mahaffy (assistant geologist)	5	1961	Battle Harbour - Cartwright	Eade (1962)
K.E. Eade (project geologist)	2	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. (2008b)	CG98-128A; CG98-128B; CG98-128C; CG98-218B; CG98-243; CG98-302B
Nd-Sm	Creaser (unpublished)	CG98-128B; CG98-218B
Rb-Sr	no data	
K, Ar	no data	

Scale 1:100 000

0 2 4 6 8 10

Kilometres

MINERAL OCCURRENCE ABBREVIATIONS

SYMBOLS

NOTES