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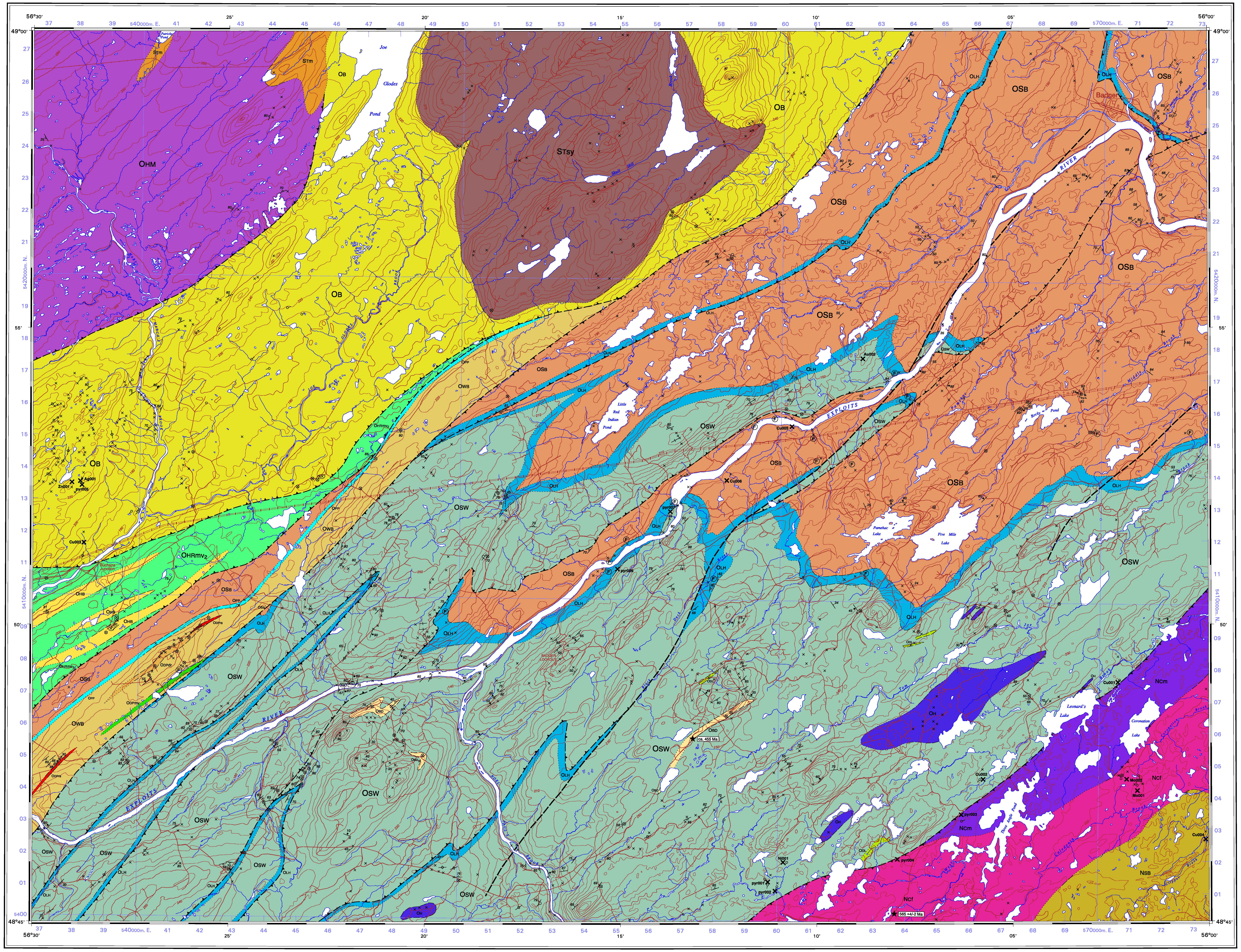
GEOLOGICAL SURVEY OF CANADA / COMMISSION GÉOLOGIQUE DU CANADA



LEGEND

(Ordovician and older rocks are generally foliated and metamorphosed, as are parts of the Silurian and Devonian sequences).

NOTRE DAME/DASHWOODS SUBZONES

SILURIAN

TOPSAILS INTRUSIVE SUITE (circa 429 Ma)

STm — *White to red, fine- to medium-grained, equigranular granite. Minor quartz-feldspar porphyritic granite and aplite.*

STsy — *Red, medium-grained, K-feldspar porphyritic amphibole-biotite subsolvus syenite to granite.*

ORDOVICIAN

HUNGRY MOUNTAIN COMPLEX (> 460 Ma)

OHM — *Undivided. Foliated gabbro to granite with numerous small to large mafic to ultramafic inclusions.*

LOWER–MIDDLE ORDOVICIAN

RED INDIAN LAKE GROUP (Arenig–Llanvirn)

OHB — *HEALY BAY FORMATION (Llanvirn): mainly light grey to white, ash to quartz crystal tuff, minor rhyolite, volcanogenic sandstone and shale. All lithologies are locally interlayered with red shale and/or chert.*

OHRmv2 — *HARBOUR ROUND FORMATION (Llanvirn): mainly green to red haematized, pillow to massive basalt, pillow breccia, diabase, gabbro, and andesite. All lithologies are interlayered with red chert and shale, whereas the pillow basalt locally contains interstitial limestone. The basaltic rocks are divided into two members separated by a largely volcanogenic polymictic conglomerate. The basalt stratigraphically below the conglomerate exhibit predominantly island-arc to transitional island-arc/back-arc compositions. The upper basalt (OHRmv2) is predominantly calc-alkaline.*

BUCHANS GROUP (Arenig)

OB — *Undivided. Mainly felsic and mafic arc-related volcanic rocks and associated sedimentary rocks and massive and/or disseminated sulphide.*

EXPLOITS SUBZONE

ORDOVICIAN–SILURIAN

BADGER GROUP (Caradoc–Llandovery)

OSB — *Grey to light brown sandstone, minor conglomerate, siltstone and shale.*

CAMBRIAN–MIDDLE ORDOVICIAN

VICTORIA LAKE SUPERGROUP

WIGWAM BROOK GROUP (Arenig–Caradoc)

OWB (ODPmv, ODPdr, ODPrs) — *Undivided. Mainly grey to light brown, felsic volcanic rocks of the Dragon Pond Formation and volcaniclastic sandstone, siltstones, and minor shale of the Halfway Pond Formation. Minor locally pillowed, island-arc tholeiitic basalt (ODPmv), red to black, cherty, aphyric dacite and/or rhyolite (ODPdr), and interlayed red shale (ODPrs). Locally includes black shales typical of the Perriers Pond Formation.*

OPP — *PERRIERS POND FORMATION (Caradoc): black shale, locally calcareous, and minor interlayered volcanogenic siltstone and sandstone. In part transformed into broken formation or mélange.*

OH — *Green, locally plagioclase-phyric gabbro, diorite and diabase.*

NOEL PAUL'S BROOK GROUP (Arenig–Caradoc)

OLH — *LAWRENCE HARBOUR FORMATION (Caradoc): black shale, locally interlayered with thin felsic ash tuff beds. In part transformed into broken formation or mélange.*

OSW — *STANLEY WATERS FORMATION (Arenig–Llanvirn): mainly volcanogenic sandstone and siltstone, minor chert and red shale. Locally includes some mafic and felsic volcanic rocks.*

OBD — *BLACK DUCK FORMATION (Arenig–Llanvirn): mainly aphyric to sparsely feldspar-phyric black, grey or green rhyolite, locally flow banded and/or perlitic.*

ODL — *DIVERSION LAKE FORMATION (Arenig–Llanvirn): green, tholeiitic pillowed to massive basalt.*

NEOPROTEROZOIC

CRIPPLEBACK INTRUSIVE SUITE (circa 564 Ma)
Suite includes Crippleback Lake, Valentine Lake, and Lemottes Lake intrusions.

NCf — *Mainly medium-grained quartz-monzonite and granodiorite. Locally contains abundant mafic dykes.*

NCm — *Mainly hornblende gabbro and diorite. Locally net-veined by felsic members of (NCf), which in turn is cut by mafic dykes.*

SANDY BROOK GROUP

NSB — *Undivided. Mainly felsic and mafic volcanic rocks, and minor siliciclastic sedimentary rocks. Felsic rocks include quartz-phyric rhyolite. The mafic volcanic rocks include compositionally island-arc-like and calc-alkaline basalt to andesite.*

Geological boundary (approximate, assumed)
Fault, undefined (approximate or assumed)
Thrust fault, undefined (approximate or assumed)
Outcrop: this study (single, area)
Outcrop, compiled (Carter, 1998, Evans et al., 1994, and Whalen and Currie, 1988)
Bedding, top known (inclined, overturned) 45 45
Bedding, top unknown (inclined, vertical) 45
Bedding, top known, from pillow lavas, dip if known (inclined) 45
Foliation: S_1, main and/or composite (inclined, vertical) 45
Foliation (generation – S_2) 45
Lineation: main, mineral or extension 45
Z-fold, plunge and plunge direction (generation – unknown, F_2) 45 45
M-fold, plunge and plunge direction (generation – F_2) 45
Dyke (inclined) 45
Brittle fault (motion; dextral) 45
Fossil locality F
U-Pb zircon age determination 565 +4/-2 Ma
Mineral occurrence; National Mineral Inventory Number Au002
Drillhole, drillhole with surface projection

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Table 1. U-Pb geochronology

Sample number	NL geochron database	UTM (zone 21, NAD 83) easting	UTM (zone 21, NAD 83) northing	Crystallization age / Ma	Year of analysis	Laboratory	Reference
DE-85-34	8093	563669	5400268	565 +4/-2	1990	ROM	Evans et al. (1990)
RAX02-919 (z7899)		557330	5405669	ca. 455	2003	GSC	McNicoll and Rogers, unpublished

GSC: Geological Survey of Canada, Ottawa, Canada
ROM: Royal Ontario Museum, Toronto, Canada

Table 2. Mineral occurrences (12 A/16)

Mineral occurrence[1]	UTM (zone 21, NAD 83) easting	UTM (zone 21, NAD 83) northing	Name	Alternate name	Commodity	Status
Ag001	538160	5413530	Beaver Pond Silver		Ag, Pb, Zn, Cu, Au	Showing
Au002	562520	5417580	Golden Promise	Jaclyn Zone	Au, Pb, Zn	Prospect
Cu001	570580	5407560	Leonard's Lake Northeast		Cu, py	Indication
Cu002	566400	5404490	Three Angle Pond Northwest		Cu, py, po, Fe	Showing
Cu003	538270	5411620	Buchans Junction North #1		Cu, Fe, py	Showing
Cu004	573370	5402700	Clipper Brook Showing		Cu, py	Showing
Cu005	560330	5415440	Nine Mile Shed-Exploits		Cu, py	Indication
Cu006	558310	5413740	Black Duck Brook		Cu, py	Indication
Mo001	571220	5404190	Coronation Lake South #1		Mo, Cu, py, Au, Ag	Showing
Mo002	570880	5404540	Coronation Lake South #2		Mo, Cu, py, Au, Ag	Showing
Ni001	560180	5401840	Long Tail Pond Southwest #1		Ni, Cu, py, po, Ag	Showing
py001	559710	5401220	Long Tail Pond Southwest #2		py	Indication
py002	559940	5400940	Long Tail Pond Southwest #3		py	Indication
py003	565730	5403380	Three Angle Pond West		py	Indication
py004	563750	5401970	Lake of the Woods Pond NE		py, Ag, Cu	Indication
py005	538180	5413440	Buchans Junction North #2	Beaver Pond	py, Fe	Indication
py006	554930	5410940	Red Indian Falls Southwest		py	Indication
py007	556560	5412750	Red Indian Falls Pyrite		py	Showing
Zn001	537880	5413500	Beaver Pond Zinc		Zn	Showing

Notes:
Modified after the Mineral Occurrence Data System (MODS) of the Geological Survey of Newfoundland and Labrador.
[1] National Mineral Inventory Number has the form 012A/16/Ag001

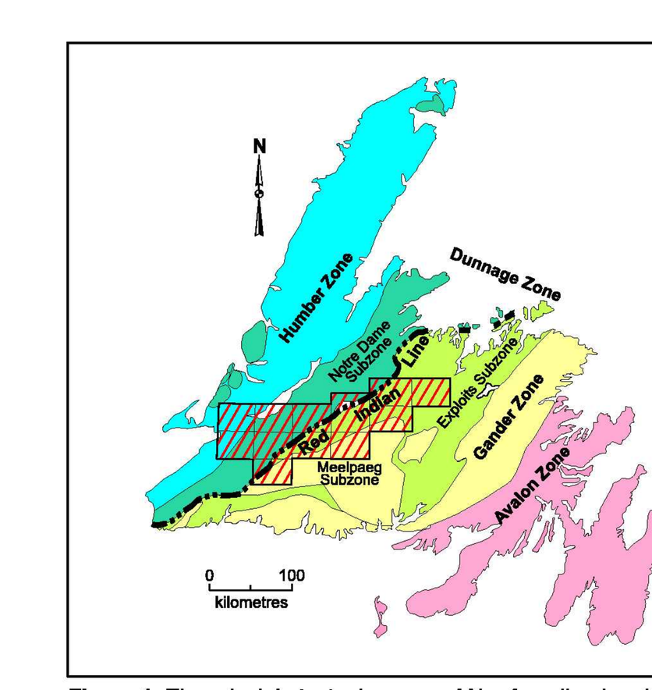


Figure 1. The principle tectonic zones of Newfoundland and Labrador and the position of the Red Indian Line.

Authors: N. Rogers, C.R. van Staal, and V.J. McNicoll

New geology and interpretation by N. Rogers and C.R. van Staal (2000–2003)

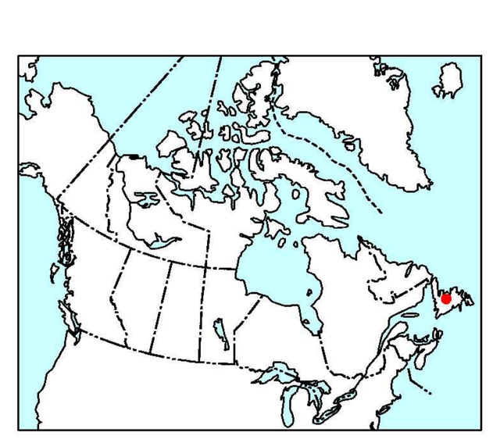
Additional unpublished geochronological data from V.J. McNicoll (2002–2003)

Geological compilation by N. Rogers (2003)

Pre-existing geological data presented on map compiled from Carter (1998), Evans et al. (1994), and Whalen and Currie (1988)

Distribution of units and position of geological boundaries in part inferred from geophysical data (Oneschuk et al., 2001, 2002) and unpublished airborne geophysics provided by Rubicon Minerals Corporation and Placer Dome Incorporated (Golden Promise Project), and Crosshair Exploration & Mining Corporation and Rubicon Minerals Corporation (Southern Golden Promise Project)

Digital cartography by P. Corrigan, Earth Sciences Sector Information Division (ESS Info)



LOCATION MAP

Canada

OPEN FILE 4546

GEOLOGY

BADGER

NEWFOUNDLAND AND LABRADOR

Scale 1:50 000/Échelle 1/50 000

kilometres 1 0 1 2 3 4 kilomètres

Universal Transverse Mercator Projection
North American Datum 1983

Projection transverse universelle de Mercator
Système de référence géodésique nord-américain, 1983

This map was produced from processes that conform to the ESS Info Publishing Services Subdivision Quality Management System, registered to the ISO 9001: 2000 standard

Any revisions or additional geological information known to the user would be welcomed by the Geological Survey of Canada

Digital base map from data compiled by Geomatics Canada, modified by ESS Info

Some geographical names subject to revision

Mean magnetic declination 2005, 21°43'W, decreasing 10.7' annually

Elevations in metres above mean sea level

12 B/16	12 A/13	12 A/14	12 A/15	12 A/16 OF4546	2 D/13 OF4545
12 B/9 OF4921	12 A/12 OF1668	12 A/11 OF1669	12 A/10 OF4544	12 A/9 OF4547	2 D/12
12 B/8 OF1666	12 A/5 OF1664	12 A/6 OF1667	12 A/7 OF4597	12 A/8	2 D/5
12 B/1	12 A/4 OF1665	12 A/3	12 A/2	12 A/1	2 D/4

NATIONAL TOPOGRAPHIC SYSTEM REFERENCE AND INDEX TO ADJOINING GEOLOGICAL SURVEY OF CANADA MAPS

The Targeted Geoscience Initiative is a federally funded program of the Geological Survey of Canada (GSC), carried out with the collaboration and in-kind support of the Geological Survey of Newfoundland and Labrador (GSNL).

The Red Indian Line Project has been conducted by the GSC in areas previously mapped by the GSNL and the GSC. Results of the project have been combined with existing geological and geophysical maps, and unpublished industry data, to produce a new compilation of the geology.

OPEN FILE
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4546
GEOLOGICAL SURVEY OF CANADA
COMMISSION GÉOLOGIQUE DU CANADA
2005

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