



LEGEND

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

EXPLOITS SUBZONE

SILURIAN

- BIGWOOD GROUP**
 - SW: WIGWAM FORMATION (Lower Silurian): mainly red to green, locally crossbedded, micaceous sandstone, siltstone and conglomerate.
 - SRL: ROSEBERG LAKE FORMATION (Lower Silurian): mainly red to grey, polydeformed conglomerate, and minor micaceous sandstone and siltstone. Rare limestone beds. Clasts are dominantly derived from underlying volcanic and plutonic rocks, but also include jasper, shale, and red sandstone. Locally includes clastic and gabbroic dykes.

CAMBRIAN-MIDDLE ORDOVICIAN

RED CROSS GROUP (Arenig-Caradoc)

- OPF: PINE FALLS FORMATION (Caradoc-Caradoc): mainly light greyish-green to green basalt and associated minor gabbro ranging in composition from MORB-like to island arc tholeiite to calc-alkaline. At least in part pillowed, intertuff, and interbedded with minor limestone and dark grey to black, graphitic shale, and siltstone. The black shale locally contains thin fossiliferous beds and is transformed into a broken formation or mélange with felsic volcanic rocks near major faults. The dark grey to black shale and siltstone are mapped as the Lake of the Woods Group.
- OST: STORM BROOK FORMATION (Arenig-Llanvirn): mainly felsic tuffaceous sandstone, conglomerate, siltstone and shale, locally pyroclastic, rare limestone, quartz and felsic dykes. In some localities, the Storm Brook Formation is interbedded with the base of the Caradoc and associated gabbro ranging in composition from MORB-like to calc-alkaline. The volcanic rocks are designated as the Carter Lake Member. The clastic sedimentary rocks are commonly graded and locally contain abundant dark grey to black quartz xenocrysts.

VICTORIA LAKE SUPERGROUP

- OH: HARPOON GABBRO SUITE (Arenig-Llanvirn): Green, locally plagioclase-phyric gabbro, diorite and diabase.
- OLH: NOEL PAUL'S BROOK GROUP (Arenig-Caradoc): LAWRENCE HARBOUR FORMATION (Caradoc): black shale, locally intertuff with thin felsic ash fall beds. In part transformed into broken formation or mélange.
- OSW: STANLEY WATERS FORMATION (Arenig-Llanvirn): mainly volcanic sandstone and siltstone, minor chert, and red shale. Locally includes some mafic and felsic volcanic rocks.
- CB: TALLY POND GROUP (Lower-Middle Cambrian)
- CLA: BINDONS POND FORMATION: mainly rhyolite, locally flow banded and/or quartz-phyric, rhyolite breccia, light tuff, quartz porphyry, and crystal tuff.
- COMp: LAKE AMBROSE FORMATION: mainly vesicular and amygdaloidal, generally pillowed basalt, mafic to andesitic tuff, and volcanic breccia.

NEOPROTEROZOIC

- NCF: CRIPPLEBACK INTRUSIVE SUITE (Gros Morne): Suite includes Crippleback Lake, Valerius Lake, and Llanvirn Lake intrusions. Mainly medium-grained quartz-muscovite and granodiorite. Locally contains abundant mafic dykes.
- NSB: SANDY BROOK GROUP: Undivided, mainly felsic and mafic volcanic rocks, and minor alloctone sedimentary rocks. Felsic rocks include quartz-phyric rhyolite. The mafic volcanic rocks include compositionally basaltic to and calc-alkaline basalt to andesite.

MEELPAED SUBZONE

DEVONIAN

- DBG: NORTH BAY GRANITE SUITE: Medium- to coarse-grained, generally light red to grey K-feldspar porphyritic to equigranular biotite granitic (Black Lake phase) and coarse-grained granodiorite. Locally contains grey to white, equigranular hornblende-bearing quartz diorite to granodiorite and muscovite-bearing granite. Pluton and linear structures are generally moderately to weakly developed or absent. Foliation is generally well developed close to shear zones. Locally includes patches of migmatite and screens of gneisses.
- Dlg: Medium-grained, white muscovite-biotite leucogranite.

CAMBRIAN-MIDDLE ORDOVICIAN

- COsb: SPURGE BROOK FORMATION: mainly light grey quartz-rich sandstone and minor shale. Includes locally mafic dykes.
- COMcp: Many amphibole facies psammite and sandstone derived from the Cambro-Ordovician Gander Group, locally weakly migmatized by granitic and pegmatitic veins. Sandstone commonly contains siltstone, but locally contains also staurolite and/or garnet. Contains amphibole dykes. In many amphibole facies lithological equivalent of the Spurge Brook Formation. Is cut by the Pease Stripes Suite.

SYMBOLS

Geological boundary (approximate, assumed)

Fault, undefined (approximate or assumed)

Stratigraphic boundary (approximate or assumed)

Uncertainty (approximate or assumed)

Outcrop (this study (single, area))

Outcrop, compiled from Evans et al. (1994)

Backing, top known (inclined, overturned)

Backing, top unknown (inclined, vertical)

Backing, top known, from pillow level, dip if known (inclined)

Foliation: S₁, main and/or composite (inclined, vertical)

Foliation (generation - S₁, S₂, S₃)

Lithology: main, mineral or orientation

Lithology: Mixture or interstratification (generation - L₁)

Z-fold, plunge and plunge direction (generation - F₂)

Strike fault (motion - unknown)

Shear zone (sense of motion - dextral)

U-Pb zircon age determination

Limestone

Mineral occurrence; National Mineral Inventory Number

Dike/vein with surface projection

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Table 1. U-Pb Geochronology

Sample number	U-Pb geochron database	UTM (zone 21, MAD E3) easting	UTM (zone 21, MAD E3) northing	Crystallization age (Ma)	Year of analysis	Laboratory	Reference
84-02-07	8121	539989	5388718	513 ± 2	1980	RDM	Evans et al. (1990)
DA-011	8048	538919	538181	307 ± 8	1983	FSU	Dallwitz et al. (1983)
OPF-GC1 (27038)		537560	5386629	on 509	2002	GSC	McNeil and Pollock, unpublished
PJMO2-GC1 (27039)		537418	5386172	514 ± 7	2003	GSC	McNeil, unpublished, in Squires and Moore, 2004
PJMO2-GC1 (27445)		537302	5386229	512 ± 2	2003	GSC	McNeil, unpublished, in Squires and Moore, 2004
PJMO2-GC1 (27653)		537044	5386064	on 503	2003	GSC	McNeil and Rogers, unpublished

FSU: Florida State University, Tallahassee, USA
 GSC: Geological Survey of Canada, Ottawa, Canada
 RDM: Royal Ontario Museum, Toronto, Canada

Table 2. Mineral Occurrences

Mineral occurrence #	UTM (zone 21, MAD E3) easting	Name	Alternate name	Commodity	Status
Ag001	547000	538250	Burnt Pond Southwest, Grid #8	Ag, Pb, Zn	Showing
Ag002	540200	538550	Tally Pond Northeast #3	Ag, Pb, Zn, Fe	Indication
Ag003	540200	538550	Tally Pond Northeast #3	Ag, Pb, Zn, Fe	Indication
Ag004	540200	538550	Shoulderback Lake	Ag, Pb, Zn, Mo, Fe	Showing
Ag005	541100	538400	Shoulderback Lake	Ag, Pb, Zn, Mo	Showing
Co001	543700	539760	Crippleback Lake South #2	Cu	Indication
Co002	543700	539760	Crippleback Lake South #2	Cu	Indication
Co003	543700	539760	Crippleback Lake South #2	Cu	Indication
Co004	543700	539760	Crippleback Lake South #2	Cu	Indication
Co005	543700	539760	Crippleback Lake South #2	Cu	Indication
Co006	543700	539760	Crippleback Lake South #2	Cu	Indication
Co007	543700	539760	Crippleback Lake South #2	Cu	Indication
Co008	543700	539760	Crippleback Lake South #2	Cu	Indication
Co009	543700	539760	Crippleback Lake South #2	Cu	Indication
Co010	543700	539760	Crippleback Lake South #2	Cu	Indication
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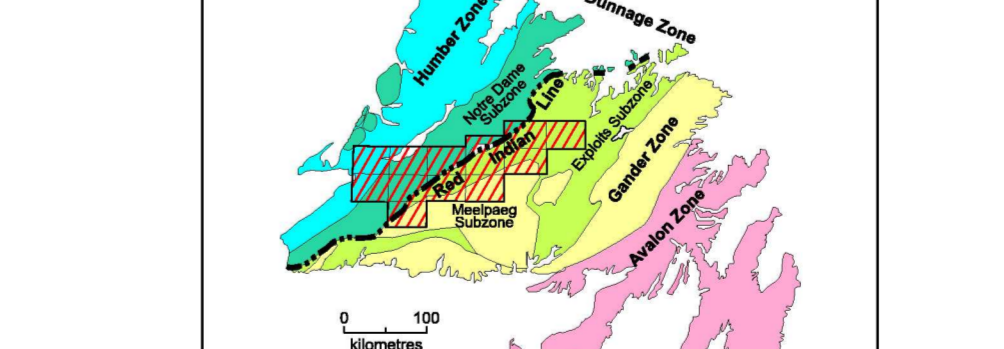


Figure 1. The principal tectonic zones of Newfoundland and Labrador and the position of the Red Indian Line.

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New geology and interpretation by N. Rogers, C.R. van Staal, P. Valverde-Vaquero, and G.C. Squires (2001-2003)

Additional unpublished geochronological data from V.J. McNeil (2001-2003) and J. Pollock (2001-2002)

Geological compilation by N. Rogers, 2003

Pre-existing geological data presented on map compiled from Evans et al., 1994

Distribution of units and position of geological boundaries in part inferred from geophysical data (Osseseck et al., 2001, 2002)

OPEN FILE 4547
GEOLOGY
NOEL PAUL'S BROOK
NEWFOUNDLAND AND LABRADOR

Digital cartography by D. Viner, Earth Sciences Sector Information Division (ESS Info)

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

Mean magnetic declination 2005, 21°35' W, decreasing 10.5" annually

Elevations in metres above mean sea level

12 816	12 818	12 814	12 815	12 816	2 013
12 819	12 817	12 811	12 815	OF4546	OF4545
OF4921	OF1668	OF1669	OF4544	OF4547	2 012
12 818	12 818	12 818	12 817	12 818	2 005
OF1666	OF1664	OF1667	OF4987		
12 811	12 814	12 810	12 812	12 811	2 014

Scale 1:50 000/Echelle 1/50 000

UNIVERSAL TRANSVERSE MERCATOR PROJECTION / Projection transverse universelle de Mercator

North American Datum 1983 / Système de référence géodésique nord-américain, 1983

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