



- QUATERNARY**
- Q Glacial and glacially deposited sand, gravel, boulder clay, etc.
- CARBONIFEROUS**
- C SHANADITH FORMATION: mainly poorly indurated red and grey sandstone and conglomerate, minor limestones and siltstone.
- NOTRE DAME-DASHWOODS SUBZONES**
- SPRIGDALE GROUP (circa 429 Ma)
    - SPgr Belge to pink to grey, fine-grained rhyolite and rhyolite breccia.
    - SPgd Belge to grey, felsic tephritic breccia.
  - TOPSAILS INTRUSIVE SUITE (circa 429 Ma)
    - STma Biotite subvolcanic granite.
    - STmb Biotite-amphibole subvolcanic granite.
    - STmc Biotite-amphibole hypovolcanic granite.
    - STmd Amphibole-biotite hypovolcanic granite.
    - STme Arfvedsonite-bearing hypovolcanic granite.
  - LAKE OF THE HILLS INTRUSIVE SUITE (circa 430 Ma)
    - SLha Pink to red, medium- to coarse-grained, equigranular, arfvedsonite-bearing hypovolcanic granite. May include minor unit STm, in large part peralkaline.
    - SLhb White to pink, medium- to coarse-grained, biotite-amphibole subvolcanic granite. Contains pink, fine- to medium-grained granites with perthitic patches near margins.
    - SLhc Pink to red, medium- to coarse-grained, biotite-amphibole subvolcanic granite. Contains pink, fine- to medium-grained granites with perthitic patches near margins.
    - SLhd White to pink, medium-grained, biotite-muscovite, subvolcanic granite.
    - SLhe Leucocratic, white to pink, fine- to medium-grained, muscovite-garnet, subvolcanic granite.
- LAKE OF THE HILLS INTRUSIVE SUITE (continued)**
- SLhf Pink to red, medium- to coarse-grained, biotite-amphibole subvolcanic granite.
  - SLhg Pink, fine- to medium-grained, biotite hypovolcanic granite.
  - SLhd White to pink, biotite-amphibole, subvolcanic granites to granodiorite.
  - SLhe White to pink medium-grained, biotite-muscovite, subvolcanic granite.
  - SLhf Leucocratic, white to pink, fine- to medium-grained, muscovite-garnet, subvolcanic granite.
- LAKE OF THE HILLS INTRUSIVE SUITE (continued)**
- SPgd Foliated to unfoliated, dark grey to green, mainly medium- to coarse-grained, partly amphibole-bearing equigranular to plagioclase-phylic hornblende diorite, gabbro, or diabase. Gabbro locally contains spherulitic pyroxene and perthitic pods. Cut by pink felsic dykes of the Lake of the Hills Intrusive Suite (SLh). Mafic rocks commonly have mixed and/or non-calc-alkaline compositions.
- RAINY LAKE COMPLEX (circa 436 Ma)**
- SR Mainly massive, fine- to coarse-grained, compositionally anorthic, calc-alkaline hornblende (foliocystenite) gabbro, diorite and quartz dykes, and amphibole-biotite granodiorite. Complex includes Boogie Lake and related intrusions.
- ORDOVICIAN**
- SOUTHWEST BROOK COMPLEX (circa 451 Ma)
    - OSgd Foliated, white and pink, K-feldspar porphyritic to equigranular, medium- to coarse-grained, hornblende-biotite granodiorite. Characteristically contains abundant lath-shaped, feldspar phenocrysts with variable degrees of hematization and epidote alteration.
    - OSgb Generally well foliated, white, medium- to coarse-grained, mainly biotite- and/or hornblende-bearing, tonalite and/or granodiorite. Includes minor quartz-diorite. Commonly contains abundant mafic enclaves or schollen or locally so abundant that the rock appears aegirine. The mafic enclaves or schollen in part probably represent relict co-mingling structures largely destroyed by continuous veiling by tonalite. Commonly displays epidote alteration; locally includes coexisting pink muscovite-bearing quartz, granite, and perthitic dykes of the Lake of the Hills (SLh) and gabbro or diorite of the Puddle Pond Complex (SPm).
    - OSbd Generally well foliated, grey, fine- to medium-grained, biotite-bearing, hornblende diorite, hornblende gabbro, amphibolite, and rare hornblende; locally contains abundant tonalite dykes and veins (OSbg).
  - LEWASEECH BROOK COMPLEX (circa 462 Ma)
    - OLBq Massive to slightly foliated, beige, quartz-epidite porphyritic biotite-hornblende tonalite to granodiorite.
    - OLBg Foliated, buff, equigranular hornblende-biotite granodiorite.
    - OLBk Foliated, white and pink, K-feldspar porphyritic hornblende-biotite granodiorite.
    - OLBj Foliated, white, equigranular biotite-hornblende granodiorite to tonalite.
- LOWER-MIDDLE ORDOVICIAN**
- RED INDIAN LAKE GROUP (Anegic-Llanvirn)
    - OHb Reddish-brown, quartz and feldspar porphyritic biotite-hornblende tonalite to granodiorite. Includes minor quartz-diorite. Commonly contains abundant mafic enclaves or schollen or locally so abundant that the rock appears aegirine. The mafic enclaves or schollen in part probably represent relict co-mingling structures largely destroyed by continuous veiling by tonalite. Commonly displays epidote alteration; locally includes coexisting pink muscovite-bearing quartz, granite, and perthitic dykes of the Lake of the Hills (SLh) and gabbro or diorite of the Puddle Pond Complex (SPm).
    - OHm Mainly massive, fine- to coarse-grained, compositionally anorthic, calc-alkaline hornblende (foliocystenite) gabbro, diorite and quartz dykes, and amphibole-biotite granodiorite. Complex includes Boogie Lake and related intrusions.

**LEGEND**

- BUCHANAN GROUP (Anegic)
  - OHb Undivided, mainly felsic and mafic arc-related volcanic rocks and associated sedimentary rocks and massive and/or disseminated siltstone.
- OTTER POND COMPLEX (Anegic-Llanvirn)
  - OO Mainly white to beige, aphyric, bedded, strongly foliated muscovite rhyolite, locally interbedded with granitic schist, mica schist and amphibolite. Dated at circa 468 Ma.
  - OOg Orange grey, fine- to medium-grained, biotite-muscovite paragneiss, mica schist and migmatite paragneiss with common biotite-muscovite granite in foliation parallel sheets.
- LLOYDS RIVER OPHIOLITE COMPLEX (Llanvirn)
  - OOb Mainly massive, fine- to coarse-grained, compositionally anorthic arc-related gabbro and sheeted diabase.
- STAR BROOK KINEOSU SUITE: mainly greenish to amphibolite facies gabbro (OSgb), sheeted diabase (OSdb), pillow basalt (OSpb) and minor enclaves to nonvolcanic (OSna). Anorthositic dated at circa 473 Ma. Mafic rocks have predominantly MORB-like compositions.
  - OSgb Mainly foliated to unfoliated, medium- to very coarse-grained, layered to massive gabbro, olivine gabbro and oxide gabbro. Contains locally pyroxenite layers, perthitic gabbro, and is cut by diabase to nonvolcanic dykes. Varies from amphibolite and/or greenschist facies assemblages.
  - OSdb Mainly foliated to unfoliated, medium- to very coarse-grained, layered to massive gabbro, olivine gabbro and oxide gabbro. Contains locally pyroxenite layers, perthitic gabbro, and is cut by diabase to nonvolcanic dykes. Varies from amphibolite and/or greenschist facies assemblages.
  - OSpb Enclaves of mainly layered troctolite, olivine gabbro, and minor anorthositic, included in and cut by gabbro (OSgb) and minor diabase dykes.
- STAR LAKE (S) OPHIOLITE COMPLEX (circa 480 Ma)
  - OSsd Mainly rhyolite to moderately foliated amphibolite, probably highly metamorphosed equivalent of unit OSgb, commonly interbedded with synorogenic sheets of tonalite and diorite of the Southwest Brook Complex; locally may include screens of tonalite.
- STAR LAKE (N) OPHIOLITE COMPLEX (circa 480 Ma)
  - OSnd Mainly rhyolite to moderately foliated amphibolite, probably highly metamorphosed equivalent of unit OSgb, commonly interbedded with synorogenic sheets of tonalite and diorite of the Southwest Brook Complex; locally may include screens of tonalite.
- STAR LAKE (E) OPHIOLITE COMPLEX (circa 480 Ma)
  - OSed Mainly rhyolite to moderately foliated amphibolite, probably highly metamorphosed equivalent of unit OSgb, commonly interbedded with synorogenic sheets of tonalite and diorite of the Southwest Brook Complex; locally may include screens of tonalite.
- STAR LAKE (W) OPHIOLITE COMPLEX (circa 480 Ma)
  - OSwd Mainly rhyolite to moderately foliated amphibolite, probably highly metamorphosed equivalent of unit OSgb, commonly interbedded with synorogenic sheets of tonalite and diorite of the Southwest Brook Complex; locally may include screens of tonalite.
- STAR LAKE (S) OPHIOLITE COMPLEX (continued)
  - OSna Mainly rhyolite to moderately foliated amphibolite, probably highly metamorphosed equivalent of unit OSgb, commonly interbedded with synorogenic sheets of tonalite and diorite of the Southwest Brook Complex; locally may include screens of tonalite.
- STAR LAKE (S) OPHIOLITE COMPLEX (continued)
  - OSnb Mainly rhyolite to moderately foliated amphibolite, probably highly metamorphosed equivalent of unit OSgb, commonly interbedded with synorogenic sheets of tonalite and diorite of the Southwest Brook Complex; locally may include screens of tonalite.
- STAR LAKE (S) OPHIOLITE COMPLEX (continued)
  - OSnc Mainly rhyolite to moderately foliated amphibolite, probably highly metamorphosed equivalent of unit OSgb, commonly interbedded with synorogenic sheets of tonalite and diorite of the Southwest Brook Complex; locally may include screens of tonalite.
- STAR LAKE (S) OPHIOLITE COMPLEX (continued)
  - OSnd Mainly rhyolite to moderately foliated amphibolite, probably highly metamorphosed equivalent of unit OSgb, commonly interbedded with synorogenic sheets of tonalite and diorite of the Southwest Brook Complex; locally may include screens of tonalite.
- STAR LAKE (S) OPHIOLITE COMPLEX (continued)
  - OSne Mainly rhyolite to moderately foliated amphibolite, probably highly metamorphosed equivalent of unit OSgb, commonly interbedded with synorogenic sheets of tonalite and diorite of the Southwest Brook Complex; locally may include screens of tonalite.
- STAR LAKE (S) OPHIOLITE COMPLEX (continued)
  - OSnf Mainly rhyolite to moderately foliated amphibolite, probably highly metamorphosed equivalent of unit OSgb, commonly interbedded with synorogenic sheets of tonalite and diorite of the Southwest Brook Complex; locally may include screens of tonalite.
- STAR LAKE (S) OPHIOLITE COMPLEX (continued)
  - OSng Mainly rhyolite to moderately foliated amphibolite, probably highly metamorphosed equivalent of unit OSgb, commonly interbedded with synorogenic sheets of tonalite and diorite of the Southwest Brook Complex; locally may include screens of tonalite.
- STAR LAKE (S) OPHIOLITE COMPLEX (continued)
  - OSnh Mainly rhyolite to moderately foliated amphibolite, probably highly metamorphosed equivalent of unit OSgb, commonly interbedded with synorogenic sheets of tonalite and diorite of the Southwest Brook Complex; locally may include screens of tonalite.
- STAR LAKE (S) OPHIOLITE COMPLEX (continued)
  - OSni Mainly rhyolite to moderately foliated amphibolite, probably highly metamorphosed equivalent of unit OSgb, commonly interbedded with synorogenic sheets of tonalite and diorite of the Southwest Brook Complex; locally may include screens of tonalite.
- STAR LAKE (S) OPHIOLITE COMPLEX (continued)
  - OSnj Mainly rhyolite to moderately foliated amphibolite, probably highly metamorphosed equivalent of unit OSgb, commonly interbedded with synorogenic sheets of tonalite and diorite of the Southwest Brook Complex; locally may include screens of tonalite.
- STAR LAKE (S) OPHIOLITE COMPLEX (continued)
  - OSnk Mainly rhyolite to moderately foliated amphibolite, probably highly metamorphosed equivalent of unit OSgb, commonly interbedded with synorogenic sheets of tonalite and diorite of the Southwest Brook Complex; locally may include screens of tonalite.
- STAR LAKE (S) OPHIOLITE COMPLEX (continued)
  - OSnl Mainly rhyolite to moderately foliated amphibolite, probably highly metamorphosed equivalent of unit OSgb, commonly interbedded with synorogenic sheets of tonalite and diorite of the Southwest Brook Complex; locally may include screens of tonalite.
- STAR LAKE (S) OPHIOLITE COMPLEX (continued)
  - OSnm Mainly rhyolite to moderately foliated amphibolite, probably highly metamorphosed equivalent of unit OSgb, commonly interbedded with synorogenic sheets of tonalite and diorite of the Southwest Brook Complex; locally may include screens of tonalite.
- STAR LAKE (S) OPHIOLITE COMPLEX (continued)
  - OSno Mainly rhyolite to moderately foliated amphibolite, probably highly metamorphosed equivalent of unit OSgb, commonly interbedded with synorogenic sheets of tonalite and diorite of the Southwest Brook Complex; locally may include screens of tonalite.
- STAR LAKE (S) OPHIOLITE COMPLEX (continued)
  - OSnp Mainly rhyolite to moderately foliated amphibolite, probably highly metamorphosed equivalent of unit OSgb, commonly interbedded with synorogenic sheets of tonalite and diorite of the Southwest Brook Complex; locally may include screens of tonalite.
- STAR LAKE (S) OPHIOLITE COMPLEX (continued)
  - OSnq Mainly rhyolite to moderately foliated amphibolite, probably highly metamorphosed equivalent of unit OSgb, commonly interbedded with synorogenic sheets of tonalite and diorite of the Southwest Brook Complex; locally may include screens of tonalite.
- STAR LAKE (S) OPHIOLITE COMPLEX (continued)
  - OSnr Mainly rhyolite to moderately foliated amphibolite, probably highly metamorphosed equivalent of unit OSgb, commonly interbedded with synorogenic sheets of tonalite and diorite of the Southwest Brook Complex; locally may include screens of tonalite.
- STAR LAKE (S) OPHIOLITE COMPLEX (continued)
  - OSns Mainly rhyolite to moderately foliated amphibolite, probably highly metamorphosed equivalent of unit OSgb, commonly interbedded with synorogenic sheets of tonalite and diorite of the Southwest Brook Complex; locally may include screens of tonalite.
- STAR LAKE (S) OPHIOLITE COMPLEX (continued)
  - OSnt Mainly rhyolite to moderately foliated amphibolite, probably highly metamorphosed equivalent of unit OSgb, commonly interbedded with synorogenic sheets of tonalite and diorite of the Southwest Brook Complex; locally may include screens of tonalite.
- STAR LAKE (S) OPHIOLITE COMPLEX (continued)
  - OSnu Mainly rhyolite to moderately foliated amphibolite, probably highly metamorphosed equivalent of unit OSgb, commonly interbedded with synorogenic sheets of tonalite and diorite of the Southwest Brook Complex; locally may include screens of tonalite.
- STAR LAKE (S) OPHIOLITE COMPLEX (continued)
  - OSnv Mainly rhyolite to moderately foliated amphibolite, probably highly metamorphosed equivalent of unit OSgb, commonly interbedded with synorogenic sheets of tonalite and diorite of the Southwest Brook Complex; locally may include screens of tonalite.
- STAR LAKE (S) OPHIOLITE COMPLEX (continued)
  - OSnw Mainly rhyolite to moderately foliated amphibolite, probably highly metamorphosed equivalent of unit OSgb, commonly interbedded with synorogenic sheets of tonalite and diorite of the Southwest Brook Complex; locally may include screens of tonalite.
- STAR LAKE (S) OPHIOLITE COMPLEX (continued)
  - OSnx Mainly rhyolite to moderately foliated amphibolite, probably highly metamorphosed equivalent of unit OSgb, commonly interbedded with synorogenic sheets of tonalite and diorite of the Southwest Brook Complex; locally may include screens of tonalite.
- STAR LAKE (S) OPHIOLITE COMPLEX (continued)
  - OSny Mainly rhyolite to moderately foliated amphibolite, probably highly metamorphosed equivalent of unit OSgb, commonly interbedded with synorogenic sheets of tonalite and diorite of the Southwest Brook Complex; locally may include screens of tonalite.
- STAR LAKE (S) OPHIOLITE COMPLEX (continued)
  - OSnz Mainly rhyolite to moderately foliated amphibolite, probably highly metamorphosed equivalent of unit OSgb, commonly interbedded with synorogenic sheets of tonalite and diorite of the Southwest Brook Complex; locally may include screens of tonalite.

OPEN FILE 1669  
GEOLOGY  
STAR LAKE  
NEWFOUNDLAND AND LABRADOR

Scale 1:50 000/Échelle 1/50 000

Authors: C.J. Liesenberg, A. Zagorevskii, N. Rogers, C.R. van Staal, and J.B. Whalen

New geology and interpretation by C.J. Liesenberg, A. Zagorevskii, N. Rogers, C.R. van Staal, and J.B. Whalen (2005-2006)

Additional unpublished geochronological data from V.J. McNicol (2001-2003)

Geological compilation by N. Rogers, C.J. Liesenberg, A. Zagorevskii, and C.R. van Staal (2003)

Pre-existing geological data presented on map compiled from Dunning (1986), Keen (1979), and Whalen (1992)

Geological boundaries locally based on unpublished data obtained from Mesozoic Mineral Inventory (South Tula Project)

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

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

This map was produced from processes that conform to the ESS Info Publishing Services Division 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°35' W, decreasing 10.3' annually

Elevations in metres above mean sea level

12 876	12 875	12 874	12 873	12 872	12 871	2 013
12 880	12 879	12 878	12 877	12 876	12 875	2 012
12 884	12 883	12 882	12 881	12 880	12 879	2 011
12 888	12 887	12 886	12 885	12 884	12 883	2 010
12 892	12 891	12 890	12 889	12 888	12 887	2 009
12 896	12 895	12 894	12 893	12 892	12 891	2 008
12 900	12 899	12 898	12 897	12 896	12 895	2 007
12 904	12 903	12 902	12 901	12 900	12 899	2 006
12 908	12 907	12 906	12 905	12 904	12 903	2 005
12 912	12 911	12 910	12 909	12 908	12 907	2 004

NATIONAL TOPOGRAFICAL SYSTEM REFERENCE AND INDEX TO ADVANCED GEOLOGICAL SURVEY OF CANADA MAPS

**Table 1. U-Pb geochronology**

Sample number	U/Pb ratio	Age (Ma)	Reference			
BK65-14	8119	484000	5373303	1990	ROM	Evens et al. (1990)
DEAR-105	5094	481659	5370118	1990	ROM	Evens et al. (1990)
WONF-63 (2782)	475700	5389900	ca. 466	1993	GSC	Whalen and van Breeman, unpublished
WONF-103 (2028)	491100	5394800	ca. 478	1994	GSC	Whalen and van Breeman, unpublished
WONF-104A (2782)	484230	5379130	ca. 427	2003	GSC	McNeil and Whalen, unpublished

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

**Table 2. Mineral occurrences**

Mineral occurrence	UTM (zone 21, NAD 83)	Name	Mineral	Commodity	Status
Au001	45430 5378580	Roboucks Falls Gold	Au, Pb, sp. py	Indication	
Mo001	467300 5397500	Whalen's Molybdenum	Mo	Indication	
Po001	468760 5397500	Roboucks Brook Lead	Pb, Au, Sb	Indication	
Zn001	465075 5373000	Tulks Prospect	Tulks Hill	Developed prospect	
Zn002	490200 5375840	Tulks East 'A' + 'B' Zones	Zn, Pb, Cu, Ag, Au, py, sp	Developed prospect	
Zn003	466560 5376000	Tulks East 'C' Zone	Zn, Pb, Cu, Ag, py	Developed prospect	

Note: Modified after the Mineral Occurrence Data System (MODS) of the Geological Survey of Newfoundland and Labrador. Mineral Inventory Number has the form 012A11Au001

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 of unpublished industry data, to produce a new compilation of the geology.

**OPEN FILE DOSSIER PUBLIC 1669**

Les données publiées sont des données de base et ne sont pas destinées à être utilisées sans le consentement de la GSC.

Les données publiées sont des données de base et ne sont pas destinées à être utilisées sans le consentement de la GSC.

Modified citation:  
Liesenberg, C.J., Zagorevskii, A., Rogers, N., van Staal, C.R., and Whalen, J.B.  
2005. Geology, Star Lake, Newfoundland and Labrador. Geological Survey of Canada, Open File 1669, scale 1:50 000.