Newfoundland Labrador
Natural Resources

LEGEND

An extended legend describing the characteristics of each of the map units is available with this open file map; the Open File number is the same.

POST-METAMORPHIC COVER

LATE DEVONIAN TO LATE MISSISSIPPIAN?
TAILINGS POND SEQUENCE

MD:T Variably indurated, terrestrial sedimentary strata

- MD:Tcm — Tailings Pond polymictic conglomerate

Plutonic rock units not included in the Robert's Arm volcanic belt
MID PALEOZOIC INTRUSIONS
UNMETAMORPHOSED INTRUSIVE ROCKS

SILURO-DEVONIAN?
TOPSAILS PLUTONIC SUITE
SD:SH and SD:Ti Post-lower Springdale Group intrusive rocks

- SD:SHs — Skull Hill quartz syenite
- SD:SHs? — Skull Hill syenite
- SD:SHp — Skull Hill felsic porphyry
- SD:SHd — Skull Hill diorite

EARLY SILURIAN
HODGES HILL INTRUSIVE SUITE
eS:Hi Post-metamorphic plutonic suite in the Robert's Arm volcanic belt

- eS:Hrpgd — Rocky Pond granodiorite
- eS:Hlgb — Long Pond hornblende gabbro
- eS:Hlcgb — Crooked Lake gabbro

EARLY SILURIAN
TOPSAILS PLUTONIC SUITE
eS:Ti Post-metamorphic intrusive suite in the Robert's Arm volcanic belt

- eS:Tldgd — Dawes Pond granite
- eS:Tldpgd — Dawes Pond granodiorite
- eS:Tlsb — South Brook granodiorite
- eS:Tlsh — Skull Hill Brook granodiorite
- eS:Tlg — Little Joe Glodes Pond granodiorite

METAMORPHOSED INTRUSIVE ROCKS

LATE ORDOVICIAN–EARLY SILURIAN
Syn-metamorphic intrusions in schistose and gneissic rocks of the Robert's Arm volcanic belt

- eS:Tldgb — Dawes Pond metagabbro
- OS:BPgg — Tower Hill felsic orthogneiss

Stratified rock units not included in the Robert's Arm volcanic belt
PRE-CARBONIFEROUS TERRESTRIAL OVERSTEP SEQUENCE
REGIONALLY METAMORPHOSED ROCKS (SILURIAN OR YOUNGER EVENT)
EARLY–MIDDLE SILURIAN
SPRINGDALE GROUP (lower part)
S:S Volcanosedimentary basin fill (Kings Brook sequence)

- S:SSc — Kings Brook conglomerate
- S:SVx — Kings Brook volcanic breccia
- S:SVf1 — Kings Brook rhyolite
- S:SVm1 — Kings Brook basalt

PRE-MIDDLE SILURIAN MARINE OVERSTEP SEQUENCES
REGIONALLY METAMORPHOSED ROCKS (SYN-SILURIAN EVENT)
LATE ORDOVICIAN–EARLY SILURIAN
BADGER GROUP (lower part)
OS:B Synorogenic turbidite basin fill (Badger Brook sequence)

- OS:Bc — Badger Brook conglomerate
- OS:Bg — Badger Brook wacke

ROCKS FORMED IN THE IAPETUS OCEAN

ROCKS OF THE ROBERT'S ARM VOLCANIC BELT
EARLY ORDOVICIAN–LATE ORDOVICIAN
Stratified rock units from the Mid-Iapetan realm of the Dunnage Zone
REGIONALLY METAMORPHOSED ROCKS (LATE ORDOVICIAN-EARLY SILURIAN AND YOUNGER EVENT)
MIDDLE AND LATE ORDOVICIAN
Robert's Arm volcanic belt (southeast part)

Late Ordovician and older
Powderhorn Lake structural tract (PLT)
IO:PB Powderhorn Brook division

- IO:PBs — Powderhorn Brook metapelite
- IO:PBv — Powderhorn Brook metarhyolite

Baker Brook structural tract (BBT)
IO:Brb Rocky Brook division

- IO:Brb3 — Rocky Brook argillite
- IO:Brb2 — Rocky Brook wacke
- IO:Brb1 — Rocky Brook rhyolite
- IO:Brbu — unseparated Rocky Brook succession

Late Middle Ordovician
Baker Brook structural tract (BBT)
mO:Beb Eastern Baker Lake Brook division

- mO:Beb2 — Eastern Baker Lake Brook metawacke
- mO:Beb1 — Eastern Baker Lake Brook metarhyolite tuff

Late Middle Ordovician
Catamaran Brook structural tract (CBT)
mO:CB Joes Lake division

- mO:CBv2 — Joes Lake basaltic and rhyolitic tuff
- mO:CBv1 — Joes Lake basaltic andesite
- mO:CBv3 — Joes Lake pillowed tholeiite

Middle Ordovician?
Burnt Pond structural tract (BPT)
mO:BP Julies Harbour division

- mO:BPgd — Julies Harbour migmatitic paragneiss
- mO:BPhs — Julies Harbour hornfelsic schist
- mO:BPs — Julies Harbour phyllitic metaturbidite

Stratified rock units from the Notre Dame Subzone of the Dunnage Zone
REGIONALLY METAMORPHOSED ROCKS (ORDOVICIAN AND SILURIAN EVENTS)
EARLY AND MIDDLE ORDOVICIAN
Robert's Arm volcanic belt (northwest part)

Middle Ordovician?
South Brook structural tract (SBT)
mO:Rgi Black Gull Island division

- mO:Rgi — Black Gull Island pillowed tholeiite

Late Early Ordovician
Guillbridge structural tract (GT)
eO:R Robert's Arm volcanic belt in the Dawes Pond–Great Gull Lake–Loon Pond area
eO:Rph Powderhouse division

- eO:Rphw — Powderhouse tuffaceous wacke
- eO:Rgb — Gull Brook Bridge tuff and jasperite
- eO:Rgb2 — Gull Brook Bridge pumiceous wacke
- eO:Rgb1 — Gull Brook Bridge basaltic andesite
- eO:Rgbu — unseparated Gull Brook Bridge succession, including amphyrhyllite schist

eO:Rdb Dawes Pond Brook division

- eO:Rdb3 — Dawes Pond Brook calc-alkalic pillow breccia
- eO:Rdb2 — Dawes Pond Brook rhyodacite and aquagene tuff
- eO:Rdb1 — Dawes Pond Brook rhyolite tuff and red mudstone
- eO:Rdbm — Dawes Pond Brook pillow lava
- eO:Rdbf — Dawes Pond Brook rhyolite breccia
- eO:Rdbu — Dawes Pond Brook unseparated

eO:Rwb West Lake Brook division

- eO:Rwb6 — West Lake Brook high-Mg gabbro
- eO:Rwb4 — West Lake Brook calc-alkalic gabbro
- eO:Rwb3 — West Lake Brook basaltic andesite
- eO:Rwb2 — West Lake Brook arc tholeiite
- eO:Rwb1 — West Lake Brook high-alumina basalt
- eO:Rwbu — West Lake Brook unseparated

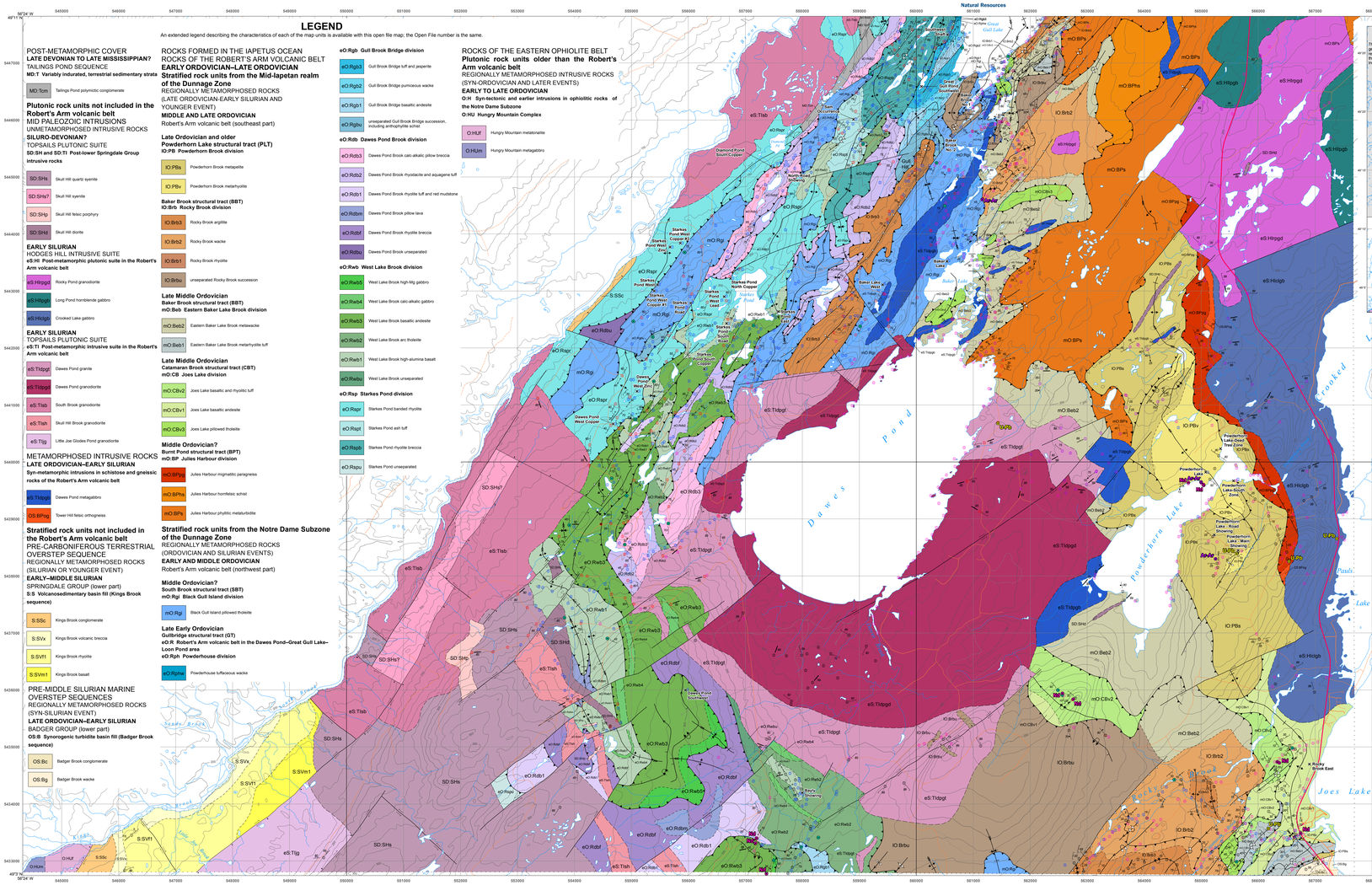
eO:Rsp Starkes Pond division

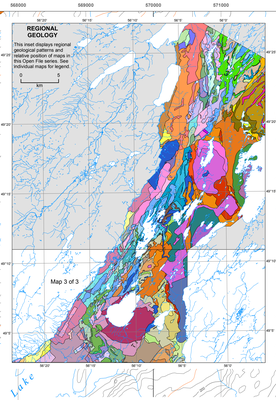
- eO:Rspr — Starkes Pond banded rhyolite
- eO:Rspt — Starkes Pond ash tuff
- eO:Rspb — Starkes Pond rhyolite breccia
- eO:Rspu — Starkes Pond unseparated

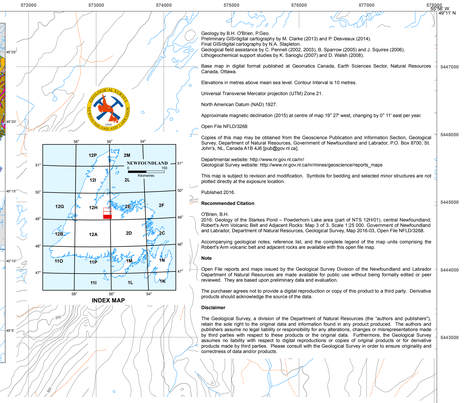
ROCKS OF THE EASTERN OPHIOLITE BELT

Plutonic rock units older than the Robert's Arm volcanic belt
REGIONALLY METAMORPHOSED INTRUSIVE ROCKS (SYN-ORDOVICIAN AND LATER EVENTS)
EARLY TO LATE ORDOVICIAN
O:H Syn-tectonic and earlier intrusions in ophiolitic rocks of the Notre Dame Subzone
O:HU Hungry Mountain Complex

- O:HUf — Hungry Mountain metatonalite
- O:HUm — Hungry Mountain metagabbro







Geology by B.H. O'Brien, P.Geo.
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Elevations in metres above mean sea level. Contour Interval is 10 metres.

Universal Transverse Mercator projection (UTM) Zone 21.

North American Datum (NAD) 1927.

Approximate magnetic declination (2015) at centre of map: 19° 27' west, changing by 0° 11' east per year.

Open File NFLD/3268

Copies of this map may be obtained from the Geoscience Publication and Information Section, Geological Survey, Department of Natural Resources, Government of Newfoundland and Labrador, P.O. Box 8700, St. John's, NL, Canada A1B 4J6 [pub@gov.nl.ca].

Departmental website: http://www.nr.gov.nl.ca/nr/
Geological Survey website: http://www.nr.gov.nl.ca/nr/mines/geoscience/reports_maps

This map is subject to revision and modification. Symbols for bedding and selected minor structures are not plotted directly at the exposure location.

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Accompanying geological notes, reference list, and the complete legend of the map units comprising the Robert's Arm volcanic belt and adjacent rocks are available with this open file map.

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SYMBOLS

- Mineral occurrence (metallic)

Geochronology

- U-Pb (zircon, titanite) sample site
- Ar-Ar (biotite, hornblende) sample site

Geochemistry

- Neodymium (Nd) isotope (Whole rock) sample site
- Lithogeochemistry (Whole rock) sample site

Sample Stations

- S. Swinden and P. Sacks (1986)
- L. Dickson (1999)
- B. O'Brien (2003)
- B. O'Brien (2005)
- B. O'Brien (2006)

Minor Structures

- Bedding (tops known, overturned; tick for dip direction, dot for stratigraphic facing direction)
- Bedding (tops unknown; tick for dip direction)
- M-fold axis (generation unknown)
- W-fold axis (generation unknown)
- S-fold axis (generation unknown, 2nd)
- Z-fold axis (generation unknown, 2nd)
- Fold axis (2nd generation)
- Fold axial surface (generation unknown)
- Axial surface of Z-asymmetric kink fold
- Metamorphic foliation (generation unknown, 1st, 2nd)
- Inclined mylonite foliation
- Ductile shear zone (reverse, sinistral)
- Linear shape fabric (generation unknown, 2nd)
- Intersection lineation (2nd generation)
- Fracture (inclined)
- Joint (direction of dip indicated)
- Dyke (direction of dip indicated)
- Vein (direction of dip indicated)

Major Structures

Axial Trace of Early Formed Folds

- Late stage synform in klippe; upright or steeply inclined asymmetrical; plunge direction indicated by multiple arrows on axial trace
- Late stage antiform in fenster; upright or steeply inclined asymmetrical; plunge direction indicated by multiple arrows on axial trace
- Overturned syncline or synform; tick on axial trace indicates dip direction of axial surface; plunge direction indicated by single arrow
- Overturned anticline or antiform; tick on axial trace indicates dip direction of axial surface; plunge direction indicated by single arrow
- Upright syncline or synform; plunge direction indicated by single arrow on axial trace
- Upright anticline or antiform; plunge direction indicated by single arrow on axial trace

Axial Trace of Late Formed Folds

- Overturned syncline or synform; tick on axial trace indicates dip direction of axial surface; plunge direction indicated by single arrow (subhorizontal to reclined)
- Overturned anticline or antiform; tick on axial trace indicates dip direction of axial surface; plunge direction indicated by single arrow (subhorizontal to reclined)
- Upright syncline or synform; plunge direction indicated by single arrow on axial trace (variably plunging to vertical)
- Upright anticline or antiform; plunge direction indicated by single arrow on axial trace (variably plunging to vertical)

Trace of Early Formed Faults

- Folded thrust fault (barbs drawn on hangingwall plate; teeth indicate present direction of fault dip; approximate)
- Synmetamorphic reverse fault flanking fenster or klippe (transparent barbs drawn on hangingwall plate; teeth indicate original fault dip; approximate)

Trace of Late Formed Faults

- Synmetamorphic reverse fault associated with late formed folds (white barbs drawn on hangingwall plate; teeth indicate original fault dip; approximate)
- Ductile reverse fault affecting overstep sequence strata (barbs drawn on hangingwall plate; teeth indicate original fault dip; approximate)

Trace of Late Stage Faults

- Transcurrent or lateral fault (sinistral strike-slip; approximate)
- Transcurrent or lateral fault (dextral strike-slip; approximate)
- Dextral oblique-slip normal fault (solid circle indicates dip direction; approximate)
- Normal fault (solid circle on downthrown side; approximate)

Contacts

- Unconformity, approximate
- Stratigraphic contact, approximate
- Intrusive contact, approximate
- Limit of geological mapping

Transportation

- Trans Canada Highway
- Paved public road
- Unpaved public road
- Resource road
- Abandoned resource road
- Winter road
- Unknown road/trail

MAP 2016-03

OPEN FILE NFLD/3268

GEOLOGY OF THE STARKES POND – POWDERHORN LAKE AREA (PART OF NTS 12H/01), CENTRAL NEWFOUNDLAND; ROBERT'S ARM VOLCANIC BELT AND ADJACENT ROCKS: MAP 3 OF 3

Scale 1:25 000

0 — 2 — 4 — 6
Kilometres