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# GEOLOGY OF N.W. NIDDERY LAKE

## NTS. 105 O - 12, 13, & 14

0 5 km

1:50 000 SCALE

Compiled by M.P. Cecile, 1984.

Geology by M.P. Cecile, 1983 and the published maps of S.L. Blusson (1974) and J.O. Wheeler (1954)

LEGEND FOR MAP SYMBOLS

- Geological boundary (defined, approximate, assumed, speculative)
  - Bedding (horizontal, inclined, vertical, overturned)
  - Foliation (inclined, vertical)
  - - - Normal fault (defined, approximate, assumed; symbol on hanging wall)
  - - - Reverse Fault (defined, approximate, assumed; teeth on hanging wall)
  - - - Overturned reverse fault (teeth on overturned hanging wall)
  - Anticline, syncline (arrow in the direction of plunge)
  - Minor folds (showing plunge of fold axis and inclination of axial plane)
  - Anticline, syncline (overturned)
  - Strike-slip fault (arrows indicate relative direction of motion)
  - x Location of valley bottom outcrops
- ZnM - Zinc moss, bright yellow-green sphagnum moss that retains water in droplets at the moss surface. Analysis of waters associated with seven of these moss occurrences showed that all but one had normal aqueous zinc values.
- Zn - Water with zinc moss has a value of 240 ppb Zn.
- Vein deposits: Qtz - quartz, Ga - Galena, Py - pyrite, Cp - Chalcopyrite.
- ⊙ Fossil locality

ACKNOWLEDGEMENTS

Map areas 105-O-12, 13, and 14 were mapped mainly by ground traverses from fly camps, which were supplemented by minor helicopter mapping. Field assistance was provided by Hans Smit. Helicopter support was provided by Northern Mountain Helicopters (mainly piloted by Pete Bachinsky). Expediting support was provided by Ross River Services.

CAMBRIAN TO SILURIAN  
LOWER CAMBRIAN TO LOWER SILURIAN

esv

Basis volcanic lapilli tuff, breccias, flows, sills, dykes, all of which are brown to green and generally massive; volcanoclastic, brown to green; intrusives breccias and conglomerates; thickness in excess of 100 m; unfossiliferous; this map-unit everywhere overlies the *esv* map-unit and near Old Cabin Creek it is directly overlain by *esv* argillite and chert, from which G. Abbott (par. com., 1982) reports collecting Early Silurian graptolites; thus although this unit is clearly homologous with Cambrian argillites and volcanics, it may represent the remnants of distinct volcanic centers that persisted through the Cambrian and Ordovician to early Silurian times; conversely they may be mainly Cambrian in age and because of their relief were sites of erosion or non-deposition during the Ordovician.

CAMBRIAN  
LOWER TO UPPER CAMBRIAN

ea, ev

Interstratified succession of *ea* and *ev* in which volcanic strata are abundant and in some localities exceed 80% of the succession.

CAMBRIAN  
LOWER TO UPPER CAMBRIAN

ea, ev

*ea* - Argillite, buff, green, pale green, thin bedded; interstratified with the argillite are distinct, very thin successions of black shale, siliceous argillite and chert, green and brown calcareous volcanoclastic sandstone, intraclastic conglomerates, lapilli tuff, siliceous breccia, basic flows, sills and dykes, grey quartzite, quartz-pebble conglomerate, argillaceous quartzite; minor thin bedded, buff limestones; estimated thickness in north-eastern 105-O-14 is 400 m, elsewhere it is tectonically thickened; has the trace fossil *Planolites*, and 1/4 m siltstone, ostra-coralites, bedding-plane parallel grazing traces (unidentified). *ev* - Argillite, buff, green, pale green, thin bedded; minor buff limestones and argillaceous limestones; minor lapilli tuff, volcanic breccia, basic flows, sills and dykes; most volcanic strata are calcareous; a single stromatolitic zone collected from a unit of volcanic breccia.

LOWER CAMBRIAN

lma

Argillite, maroon and pale green, thin bedded; minor grey-white quartzite and quartz pebble conglomerate; minor buff argillaceous limestones; measured thickness in the Faint Range (105-O-15) is 50 to 100 m; contains abundant trace fossils including *Olthemia*, *Olthemia rudata*, *Planolites*, *Gondat*, and others that have yet to be identified (see Hofmann and Cecile, 1981).

HADRYNIAN AND CAMBRIAN  
HADRYNIAN AND LOWER CAMBRIAN

hea

Argillite, dark grey, green and buff, thin bedded; minor very thick units of grey quartzite and quartz-pebble conglomerate (6-30% of the succession); minor buff limestones and argillaceous limestones; measured thickness 400 m in the Faint Range (105-O-15), but estimated at 500 m in 105-O-13 and 80 m in 105-O-14; unfossiliferous.

HADRYNIAN

h1

Limestone, grey and dark grey; minor buff calcareous limestones, sandy dolostones, green and dark grey argillite, and in the lowermost and uppermost beds units of argillaceous intraclastic breccia and conglomerate; the map-unit can be divided into an upper resistant member of thick bedded grey limestone, and a lower recessive member of thin bedded dark grey limestone; argillite occurs in thin intervals between very thick successions of limestone; measured thickness at Sisson Lake is 385 m; unfossiliferous except for one occurrence of laterally-thinned hemispherical stromatolites.

HADRYNIAN

hq

Quartzite, grey, thick bedded; calcareous quartzite, brown, thick bedded; argillite, green to dark grey, thin bedded; minor buff argillaceous limestones; minor maroon argillite west of Sisson Creek; the map-unit is comprised of an interstratification of all the above rock types, each in medium to very thick intervals; the amount of quartzite and calcareous quartzite decreases from 80% to 40% downwards; estimated thickness is 500 m; unfossiliferous.

QUATERNARY

Qa

Rock avalanches, unconsolidated deposits comprised of varying size blocks of local rock types; most blocks never larger than 2 m in diameter; the deposits are 10° to 15° in relative complete whereas the others are extensively eroded and covered by talus and valley bottom deposits.

CRETACEOUS

Kg-b, bh

Alteration halos; contact metamorphic zone around Ig intrusions; consists of well indurated slightly recrystallized argillite, shale, siltstone, siltstone, phyllite, argillite, carbonates and shaly; volcanic strata also produce skarn.

DEVONIAN AND MISSISSIPPIAN  
UPPER DEVONIAN AND LOWER MISSISSIPPIAN

DMc

Chert pebble and chert-argillite pebble conglomerate, dark grey, massive and thick bedded; minor siliceous shale and chert; thickness unknown; unfossiliferous.

QUATERNARY

Q

Area covered by unconsolidated Quaternary strata in which even spherulitic contacts cannot be drawn.

CRETACEOUS

Kg-b, bh

Quartz monzonite and granite; b - with biotite; bh - with biotite and hornblende.

DEVONIAN AND MISSISSIPPIAN  
UPPER DEVONIAN AND LOWER MISSISSIPPIAN

DMca, DMc

DMca - Shale, black; chert, black; with major units of brown calcareous shale and/or siltstone; minor quartzite, brown to orange dolostones, grey limestones, and chert pebble conglomerate; thickness unknown; Late Devonian Peltospira were collected from a limestone unit at one locality (identified by A.W. Norris). DMc - Chert, black; shale, black; estimated thickness, where present, is 200 m; unfossiliferous; in places this unit cannot be mapped and is included in the DMca unit.

SILURIAN  
LOWER TO UPPER SILURIAN

sa

Argillite, rusty dark green to buff, thin bedded; minor black shale and chert as thin units or partings in the argillite; minor bright orange dolostones as a single medium to thick bed near the base of the argillite succession; measured thickness is 50 to 80 m; graptolites often are found in the shale beds.

ORDOVICIAN  
MIDDLE AND UPPER ORDOVICIAN

moC

Chert, black, thin bedded; with 20-30% shale, whitish black to black weathering; minor argillite, green near base of succession; measured thickness is 10 to 20 m; abundant graptolites, especially *Diplograptus*; this unit could not be distinguished from the DMca and DMc units in map-area 105-O-14.

LOWER AND MIDDLE ORDOVICIAN

lmoC

Chert, white, dark grey, pale green, and black weathering; and grey from a distance, resistant; thin to medium bedded and argillaceous in lower part; more massive and extensively bioturbated in upper part; minor shale partings; very minor limestone, buff to brown weathering as one to six thin beds near the base of the succession; measured thickness is 100 m; graptolites, especially *Multirachis* forms, are often found in the shale beds.

CAMBRIAN  
LOWER TO UPPER CAMBRIAN

ea, ev

*ea* - Argillite, buff, green, pale green, thin bedded; interstratified with the argillite are distinct, very thin successions of black shale, siliceous argillite and chert, green and brown calcareous volcanoclastic sandstone, intraclastic conglomerates, lapilli tuff, siliceous breccia, basic flows, sills and dykes, grey quartzite, quartz-pebble conglomerate, argillaceous quartzite; minor thin bedded, buff limestones; estimated thickness in north-eastern 105-O-14 is 400 m, elsewhere it is tectonically thickened; has the trace fossil *Planolites*, and 1/4 m siltstone, ostra-coralites, bedding-plane parallel grazing traces (unidentified). *ev* - Argillite, buff, green, pale green, thin bedded; minor buff limestones and argillaceous limestones; minor lapilli tuff, volcanic breccia, basic flows, sills and dykes; most volcanic strata are calcareous; a single stromatolitic zone collected from a unit of volcanic breccia.

LOWER CAMBRIAN

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Argillite, maroon and pale green, thin bedded; minor grey-white quartzite and quartz pebble conglomerate; minor buff argillaceous limestones; measured thickness in the Faint Range (105-O-15) is 50 to 100 m; contains abundant trace fossils including *Olthemia*, *Olthemia rudata*, *Planolites*, *Gondat*, and others that have yet to be identified (see Hofmann and Cecile, 1981).

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HADRYNIAN AND LOWER CAMBRIAN

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DEVONIAN AND MISSISSIPPIAN  
UPPER DEVONIAN AND LOWER MISSISSIPPIAN

EDMc, EDMca, EDMc

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SILURIAN  
LOWER TO UPPER SILURIAN

tSa

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ORDOVICIAN  
LOWER TO UPPER ORDOVICIAN

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Chert, black, thin bedded; with 20-30% shale, whitish black to black weathering; minor argillite, green near base of succession; measured thickness is 10 to 20 m; abundant graptolites, especially *Diplograptus*; this unit could not be distinguished from the DMca and DMc units in map-area 105-O-14.

LOWER AND MIDDLE ORDOVICIAN

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CAMBRIAN  
LOWER TO UPPER CAMBRIAN

tEa, tEv

*tEa* - Argillite, buff, green, pale green, thin bedded; interstratified with the argillite are distinct, very thin successions of black shale, siliceous argillite and chert, green and brown calcareous volcanoclastic sandstone, intraclastic conglomerates, lapilli tuff, siliceous breccia, basic flows, sills and dykes, grey quartzite, quartz-pebble conglomerate, argillaceous quartzite; minor thin bedded, buff limestones; estimated thickness in north-eastern 105-O-14 is 400 m, elsewhere it is tectonically thickened; has the trace fossil *Planolites*, and 1/4 m siltstone, ostra-coralites, bedding-plane parallel grazing traces (unidentified). *tEv* - Argillite, buff, green, pale green, thin bedded; minor buff limestones and argillaceous limestones; minor lapilli tuff, volcanic breccia, basic flows, sills and dykes; most volcanic strata are calcareous; a single stromatolitic zone collected from a unit of volcanic breccia.

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## G.S.C. OPEN FILE

SCHEMATIC STRATIGRAPHIC AND TECTONO-STRATIGRAPHIC CROSS-SECTION

