Map GR2016-1-1

Bedrock geology of the Paint Lake area, Manitoba (parts of NTS 63O8, 9, 63P5, 12)

Legend

PALEOPROTEROZOIC ROCKS

12 Carbonatite
- a — Dolomite carbonatite (not resolvable at this scale): grey to white carbonate-rich dikes containing variable amounts of serpentinized olivine, amphibole, phlogopite, titanite, apatite and clinopyroxene
- b — Calcite carbonatite (not resolvable at this scale): pink to white carbonate-rich dikes containing variable amounts of amphibole, apatite, scapolite, allanite, biotite, titanite, magnetite, clinopyroxene and sulphide

11 Granitic pegmatite: dikes and irregular bodies of simple quartz-feldspar pegmatite; dikes are present in almost all outcrops; locally aplitic; locally allanite- or magnetite-bearing

10 Melasyenite: abundant coarse-grained brick red to black K-feldspar phenocrysts in a groundmass of biotite, amphibole, K-feldspar and quartz

9 Pyroxenite: coarse-grained amphibolitized pyroxenite with variable amounts of phlogopite and quartz

8 Ospwagan group: Manasan formation quartzite and semipelite, and locally Thompson formation calcsilicate and marble (Zwanzig et al., 2007)

7 Paint sequence
- a — Wacke: contains 15–35% biotite, garnet and orthopyroxene in varying proportions; grades into subunit 7b; contains intercalations of subunits 7b and 7c
- b — Psammite: quartz-rich, contains 5–15% biotite, garnet and orthopyroxene in varying proportions; grades into subunit 7a; contains intercalations of subunits 7a and 7d
- c — Iron formation: dominantly silicate-facies iron formation, locally strongly magnetic; commonly occurs as intercalations in subunit 7a
- d — Pelite: migmatitic garnet-biotite gneiss with variable amounts of sillimanite and local cordierite; typically interbedded with subunit 7b
- e — Banded gneiss: gradational, alternating mafic, intermediate and felsic bands that are laterally continuous; spatially associated subunits 7a and 7b; tentatively interpreted as volcaniclastic rock

ROCKS OF UNCERTAIN AGE

6 Granodiorite: small foliated dikes and larger elongate bodies containing 10–15% biotite and/or hornblende

5 Plagioclase amphibolite (not resolvable at this scale): occurs as discontinuous bands and boudins throughout the map area; likely consists of a mixture of Archean and Paleoproterozoic mafic rocks

4 Enderbitic gneiss
- a — Biotite enderbite: contains 20–30% mafic minerals as varying proportions of biotite and orthopyroxene, along with local minor hornblende, clinopyroxene and garnet
- b — Hornblende enderbite: contains 20–30% mafic minerals dominated by hornblende, along with lesser biotite and orthopyroxene

ARCHEAN ROCKS

3 Siliceous gneiss: quartz-rich tonalitic gneiss with <12% mafic minerals as varying proportions of garnet and magnetite, and locally biotite and hornblende; varies from gneissic to massive

2 Multicomponent gneiss: consists of varying proportions of intermixed hornblende gneiss and biotite gneiss with discontinuous bands and boudins of units 5 and 6, injections of unit 11 and local boudins and blocks of assorted ultramafic rock

1 Amphibolitic gneiss
- a — Mafic amphibolitic gneiss: varying proportions of clinopyroxene, orthopyroxene, garnet, hornblende and plagioclase, with minor biotite and quartz; mafic minerals typically >40% and dominated by hornblende
- b — Felsic amphibolitic gneiss: variable proportions of orthopyroxene, garnet, hornblende, plagioclase and quartz, with minor clinopyroxene and magnetite; mafic minerals make up <30% of the rock and locally as little as 5%
- c — High-Mg amphibolitic gneiss: varying proportions of clinopyroxene, orthopyroxene, hornblende and plagioclase, with minor biotite and quartz; mafic minerals typically >40%

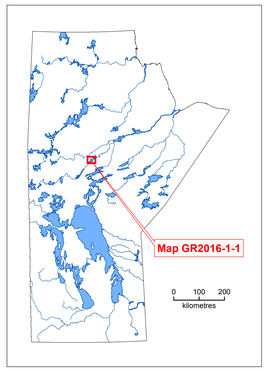
Symbols

- Bedding: tops known, tops unknown
- Foliation: S_2, S_3
- Shear, generation unknown, sense unknown
- Fold-axial plane, generation unknown
- Fold axis, generation unknown: asymmetry unknown, symmetric, S-asymmetric, Z-asymmetric
- Fold axis, F_2: asymmetry unknown, S-asymmetric
- Fold axis, F_3: symmetric, S-asymmetric, Z-asymmetric
- Mineral lineation
- Rodding
- Slicken striae
- Carbonatite dike
- Mafic dike
- Contact: approximate, underwater
- Limit of mapping
- Antiform axial trace
- Synform axial trace
- Alkali-metasomatized rock associated with carbonatite dikes
- Shear zone
- T — Type outcrop
- Crd - cordierite occurrence
- Mo - molybdenite occurrence
- Sil - sillimanite occurrence

Infrastructure

- Road
- Limited-use road
- Power line
- Railway (decommissioned)
- Park boundary

Location Map



Thompson nickel belt rock types (Macek et al., 2006)

Meta-intrusive rocks, Paleoproterozoic/Archean
- pm — Pegmatite
- gr — Granite
- gd — Granodiorite
- gl — Granulite, leucocratic
- en — Enderbite
- hsL — Hornblende syenite
- gm — Garnetiferous gabbro
- db — Diabase, mainly Molson dikes
- um — Ultramafic rock

Metamorphic supracrustal rocks
- B — Burntwood group, greywacke-migmatite
- O — Ospwagan group, undivided
- Ao — Archean gneiss and Ospwagan group, undivided

Archean basement
- Ae — Basement gneiss

Scale 1:50 000

0 1 2 3 4 5
kilometres

NAD 1983 UTM Zone 14

Geology by C.G. Couëslan (2008, 2009, 2010)

Cartography by M. Timcoe

Recommended reference for Map GR2016-1-1:
Couëslan, C.G. 2016: Bedrock geology of the Paint Lake area, Manitoba (parts of NTS 63O8, 9, 63P5, 12); Manitoba Growth, Enterprise and Trade, Manitoba Geological Survey, Geoscientific Report GR2016-1, Map GR2016-1-1, scale 1: 50 000.

This map accompanies Geoscientific Report GR2016-1:
Couëslan, C.G. 2016: Geology of the Paint and Phillips lakes area, Thompson nickel belt, central Manitoba (parts of NTS 63O1, 8, 9, 63P5, 12); Manitoba Growth, Enterprise and Trade, Manitoba Geological Survey, Geoscientific Report GR2016-1, 44 p. and 1 colour map at 1:50 000 scale.

References:
Macek, J.J., Zwanzig, H.V. and Pacey, J.M. 2006: Thompson Nickel Belt geological compilation map, Manitoba (parts of NTS 63G, J, O, P and 64A and B); Manitoba Science, Technology, Energy and Mines, Manitoba Geological Survey, Open File Report OF2006-33, 1 CD-ROM.
Zwanzig, H.V., Macek, J.J. and McGregor, C.R. 2007: Lithostratigraphy and geochemistry of the high-grade metasedimentary rocks in the Thompson nickel belt and adjacent Kisseynew Domain, Manitoba: implications for nickel exploration; Economic Geology, v. 102, no. 7, p. 1197–1216.

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Winnipeg MB R3G 3P2
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