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NATMAP
CARTNAT
Canada's National Geoscience Mapping Program
Le Programme national de cartographie géoscientifique du Canada

Saskatchewan Energy and Mines / Saskatchewan Geological Survey
Manitoba Energy and Mines / Geological Services
Geological Survey of Canada / Commission géologique du Canada

GSC OPEN FILE 2658

GEOLOGY

GEOLOGY OF THE FLIN FLON AREA

MANITOBA-SASKATCHEWAN

Scale 1:50 000 - Échelle 1/50 000

Kilometres 1 0 1 2 3 4 Kilometres

Universal Transverse Mercator Projection
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LOCATION MAP - LOCALISATION DE LA CARTE

NATIONAL TOPOGRAPHIC SYSTEM REFERENCE
SYSTÈME NATIONAL DE RÉFÉRENCE CARTOGRAPHIQUE

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**Manitoba Geological Services; †Saskatchewan Geological Survey; ‡Geological Survey of Canada.*

Contribution to Canada-Manitoba Partnership Agreement on Mineral Development (1990-1995), a subsidiary agreement under the Canada-Manitoba Economic and Regional Development Agreement

Contribution to Canada-Saskatchewan Partnership Agreement on Mineral Development (1990-1995), a subsidiary agreement under the Canada-Saskatchewan Economic and Regional Development Agreement

Manitoba PARTNERSHIP ASSOCIATION Canada
Saskatchewan PARTNERSHIP ASSOCIATION Canada

LEGEND

PHANEROZOIC

ORDOVICIAN
- O1 — Red River Formation (dolomite)

PALEOPROTEROZOIC

SHEAR ZONE ROCKS
- T1 — Tectonites
  - a) mafic phyllonite
  - b) felsic phyllonite
  - c) silicified +/- carbonatized mafic tectonite
  - d) felsic to mafic gneiss in high-strain zones
  - e) brittle deformation in basalt, diabase

MISSI GROUP
- M5 — Minor intrusive rocks: a) trachyandesite
- M4 — Mudstone, siltstone, sandstone
- M3 — Sandstone: a) arkosite; b) quartz-rich sandstone
- M2 — Pebbly sandstone, pebble conglomerate: a) pebbly sandstone, pebble conglomerate; b) mycelitic-rich pebbly sandstone, pebble conglomerate
- M1 — Polymictic conglomerate: a) polymictic conglomerate; b) mycelitic-rich conglomerate; c) foresite boulder conglomerate

INTRUSIVE ROCKS
- I16 — Pegmatite, aplite: a) pegmatite
- I14 — Felsic dykes: a) quartz-feldspar porphyry; plagioclase porphyry; b) aplitic rhyolite
- I13 — Mafic porphyry dykes: a) plagioclase-pyroxene porphyry; plagioclase porphyry
- I12 — Intrusion breccia: a) intrusion breccia with basaltdiabase matrix
- I11 — Heterogeneous "hybrid" intrusive rocks: a) hornoblendite, quartz diorite, tonalite, granodiorite, feldspar diorite porphyry; abundant volcanic and plutonic xenoliths
- I10 — Granite: a) muscovite-biotite granite
- I9 — Granodiorite: a) hornblende granodiorite; b) biotite-hornblende granodiorite; c) biotite granodiorite; d) quartz phyric granodiorite; e) monzodiorite phyric granodiorite
- I8 — Quartz monzodiorite: a) equigranular quartz monzodiorite; b) hornblende phyric quartz monzodiorite; c) hornblende-plagioclase phyric quartz monzodiorite
- I7 — Tonalite, leucotonalite: a) equigranular tonalite; b) quartz phyric tonalite; c) leucotonalite; d) hornblende phyric tonalite; f) tonalite with abundant xenoliths
- I5 — Quartz diorite: a) equigranular quartz diorite; b) biotite-hornblende quartz diorite; c) hornblende quartz diorite; d) plagioclase phyric diorite; gg) quartz diorite with abundant xenoliths
- I5 — Diabase: a) equigranular diabase
- I4 — Diorite, bronzitedorite: a) equigranular diorite; b) diorite with abundant xenoliths
- I3 — Amphibolite
- I2a-d — Gabbro, diorite: a) equigranular gabbro, diorite; b) pyroxene phyric gabbro; c) plagioclase phyric gabbro; d) olivine gabbro; f) melagabbro and derived amphibolite; mg coarse grained gabbro
- I2e — I2f — I2g — I2m
- I1 — Ultramafic rocks: a) peridotite; b) pyroxenite

LAYERED MAFIC/ULTRAMAFIC INTRUSIONS
- L5 — Heterogeneous multiphase gabbro, diorite
- L4a — Fractionated dioritic/quartz diorite sills: a) magnetiferous hornoblende; b) coarse grained quartz diorite; c) fine grained quartz diorite
- L4b — L4c
- L3a — Fractionated tholeiitic sills: a) gabbronorite; b) gabbro; c) melagabbro; d) quartz bernditebiotite/ferrotonalite, leucotonalite
- L3b — L3c — L3d
- L2a — Layered gabbro/ultramafic intrusions: a) peridotite, pyroxenite; b) gabbro; c) leucogabbro, anorthosite
- L2b — L2c
- L1 — Ultramafic rocks: a) peridotite, dunite; b) pyroxenite; c) lamprophyre

SCHIST LAKE ASSEMBLAGE
- S1a — Epiclastic rocks with sheahonitic provenance: a) conglomerate, greywacke; b) greywacke, mudstone; c) siliceous argillite, rhyolite crystal tuff
- S1b,c
- S2a — Sheahonitic tuff with tektolite bedforms: a) sheahonitic tuff; b) finely interbedded tuff, mudstone, chert; c) interbedded graphitic mudstone tuff
- S2b,c

FLIN FLON ASSEMBLAGE

- F19 — Felsic dykes and intrusions: a) quartz-feldspar porphyry; plagioclase porphyry, quartz porphyry; b) aplitic rhyolite
- F18 — Mafic porphyry dykes: a) plagioclase-pyroxene porphyry, plagioclase porphyry
- F16 — Quartz diorite: a) equigranular quartz diorite
- F15 — Diorite, gabbro: a) diorite, gabbro; b) porphyritic diorite, gabbro; c) olivine gabbro
- F13 — Fractionated gabbro sills
- F12 — Volcanogenic sedimentary rocks: a) greywacke, arkosic, mudstone; b) mafic mudstone, wacke, greywacke; c) granitic mudstone; pyritic mudstone; d) interbedded felsic tuff and mudstone
- F11 — Volcanic conglomerate: a) monomictmonolithologic volcanic conglomerate
- F10 — Mixed volcaniclastic rocks: a) heterolithologic breccia, dominantly mafic fragments; b) heterolithologic breccia, dominantly felsic fragments
- F9 — Felsic volcaniclastic rocks: a) felsic breccia; b) felsic crystal tuff, lapilli tuff, tuff breccia; c) dacite tuff
- F8 — Rhyolite, dacite: a) aphyric rhyolite, dacite flows; b) quartz-plagioclase phyric rhyolite, dacite flows
- F7 — Intermediate volcaniclastic rocks: a) intermediate lapilli tuff, breccia; b) intermediate tuff, lapilli tuff
- F6 — Andesite: a) plagioclase phyric andesite flows
- F5a — Mafic volcaniclastic rocks: a) pillow fragment breccia; b) mafic cyrocastite breccia, wacke breccia; c) mafic tuff, plagioclase crystal tuff, lapilli tuff, tuff breccia; d) monolithologic tuff breccia, lapilli tuff
- F5b
- F5c-d
- F1a — Basalt, basaltic andesite flows: a) aphyric basalt, basaltic andesite; b) plagioclase phyric basalt; basaltic andesite; c) pyroxene and pyroxene-plagioclase phyric basalt, basaltic andesite
- F1b
- F1c
- F — Flin Flon Assemblage, undivided

ATHAPAPUSKOW ASSEMBLAGE

- A7 — Fractionated gabbro sills
- A6 — Diabase: a) equigranular diabase; b) ophiolitic diabase
- A5 — Gabbro, diorite: a) equigranular gabbro, diorite
- A4a — Mafic volcaniclastic rocks: a) volcanic breccia, greywacke, siltstone; b) monolithologic tuff breccia, lapilli tuff; c) heterolithologic tuff breccia, lapilli tuff; d) mafic tuff, plagioclase-crystal mafic tuff
- A4b-d
- A3 — Tectonically laminated basalt and diabase
- A2a — Basalt: a) pillowed basalt; b) felsbasalt
- A2b
- A1 — Basalt with aphidite veins: a) massive basalt; b) pillow basalt; c) plagioclase phyric basalt
- A — Athapapuskow Assemblage, undivided

MYSTIC LAKE ASSEMBLAGE

- Y5 — Felsic pfufinitic rocks: a) tonalite, tonalite intrusion breccia
- Y4a — Felsic hypabyssal rocks: a) aplyric and porphyritic chyolite; diabase; b) fine grained quartz diorite, leucotonalite
- Y4b
- Y3a — Volcaniclastic rocks: a) mafic plagioclase crystal tuff, breccia; b) laminated felsic and intermediate tuff
- Y3d
- Y2 — Mafic volcanic and intrusive rocks: a) basalt, pillow basalt, derived gneissic amphibolite and laminated mafic hotsnitic diabase
- Y1 — Tholeiites: a) mafic; b) interlayered mafic and felsic

Geological contact
Geological contact (unconformable)
Fault
Shear zone
Fold axial trace (antiform)
Fold axial trace (synform)
Stratigraphic way-up (generalized)
Orebody
Mineral deposit

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Geological Reference:
Syme, E.C., Thomas, D.J., Bailes, A.H., Reilly, B.A. and Sibbmon, W.L. 1994: Geology of the Flin Flon area, Manitoba and Saskatchewan (parts of NTS 63K/13, 14, 63N/3, 4); Geological Survey of Canada, Open File 2658, 1 sheet, scale 1:50,000.

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