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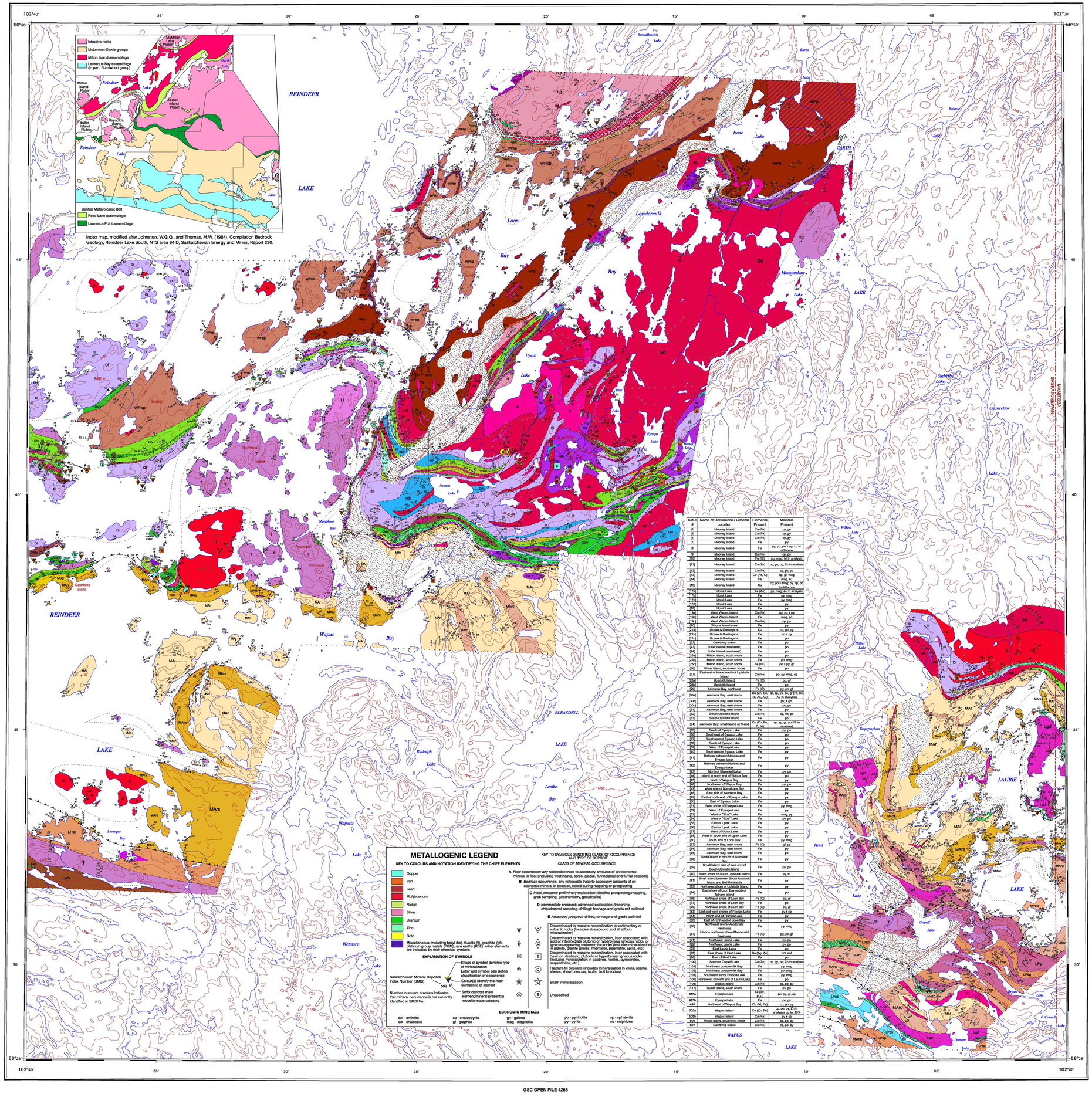
Saskatchewan Industry and Resources



LEGEND

PRECAMBRIAN - PALEOPROTEROZOIC[1]

INTRUSIVE ROCKS

FELSIC INTRUSIVE ROCKS

P — *Granitoid pegmatite; white to pink, coarse to very coarse grained, massive to weakly foliated; plagioclase, microcline, quartz, ± muscovite ± biotite ± magnetite ± apatite*
Pg - muscovite-garnet ± tourmaline ± sillimanite
Pm - pink magnetite-rich granite pegmatite
Pw - white pegmatite; biotite ± muscovite ± K-feldspar
Pu - white uraniferous pegmatite

Lgd — *Leucogranodiorite; light grey to light pinkish grey, medium to coarse grained, equigranular, homogeneous, massive to moderately foliated; up to 25 percent quartz, less than 5 percent biotite*

Lg — *Leucogranite; moderate orange pink to pinkish grey, medium to coarse grained, equigranular, massive to weakly foliated/lineated; up to 30 percent each of quartz, microcline and plagioclase; less than 5 percent biotite ± hornblende; 1 percent magnetite (partly hematized)*
Lgg - interbanded leucogranite-granodiorite
Lgm - strongly migmatized
Lga - aplite
Lgt - two-mica leucogranite

G — *Granite; pink to pink grey, medium to coarse grained, equigranular, massive to weakly foliated/lineated; up to 30 percent each of quartz, microcline and plagioclase; up to 15 percent biotite; ± muscovite ± hornblende*

Gd — *Granodiorite; light grey, light medium grey to light pinkish grey, medium to coarse grained, equigranular, massive to moderately foliated; up to 30 percent of both plagioclase and quartz; 10 to 15 percent microcline; 5 to 30 percent hornblende, biotite and/or epidote*

Gp — *Megacrystic granite-granodiorite-quartz monzonite; light grey to pinkish grey, medium to very coarse grained, inequigranular, with 1 to 5 cm large sub- to euhedral plagioclase megacrysts, massive to strongly foliated/lineated; 40 percent plagioclase; 15 to 25 percent quartz; 10 to 15 percent microcline; 5 to 15 percent hornblende, biotite and epidote; sphene*

Lt — *Leucotonalite; white to very light grey, coarse to medium grained, equigranular, massive to weakly foliated, rarely lineated; up to 60 percent plagioclase; 20 to 35 percent quartz; some microcline; less than 5 percent biotite*

T — *Tonalite; light grey to light medium grey, medium to coarse grained, equigranular, massive to strongly foliated/lineated; up to 50 percent plagioclase; 20 to 30 percent quartz; 5 to 15 percent hornblende > biotite > epidote, ubiquitous magnetite (partly hematized) ± garnet*
Tg - garnetiferous tonalite
Tq - quartz-rich tonalite
Tm - migmatite with leucotonalite melt
Tmx - agmatite

INTERMEDIATE TO ULTRAMAFIC INTRUSIVE ROCKS

Di — *Diorite; medium grey, brownish grey to greenish grey, medium to coarse grained, hornblende porphyroblastic, massive to strongly foliated/lineated; up to 60 percent plagioclase; 20 to 30 percent hornblende > retrograde biotite > epidote; up to 5 percent quartz; ± pyrite*
Dil - leucocratic diorite
Dim - microdiorite
Dip - porphyritic diorite
Dx - xenolith-rich diorite
Diz - monzodiorite

Qdi — *Quartz diorite; medium grey, brownish grey to greenish grey, medium to coarse grained, hornblende porphyroblastic, massive to weakly foliated/lineated; 15 to 20 percent hornblende and biotite, 10 to 15 percent quartz*
Qdix - agmatitic/xenolith-rich diorite

Ga — *Gabbro; dark greenish grey to greenish black, medium to coarse grained, hornblende porphyroblastic, massive; 40 to 65 percent amphibole; up to 50 percent plagioclase; relict clinopyroxene ± biotite ± microcline ± pyrite ± pyrrhotite*
Gal - leucogabbro-anorthosite
Gap - porphyritic gabbro
Gad - diabase

Am — *Mafic-ultramafic dyke; greenish black, fine grained, granoblastic, massive to well foliated; mafic to ultramafic; interpreted as dykes and sills; hornblende, tremolite-actinolite, plagioclase*

U — *Ultramafic Rock; greenish black, olive green to dusky green, fine to very coarse grained, massive to well foliated; includes pyroxenite, peridotite and minor gabbro; ± actinolite ± hornblende ± diopside ± orthopyroxene ± olivine ± serpentine ± plagioclase ± magnetite ± chromite ± pyrite ± pyrrhotite ± chalcopyrite*
Ua - actinolite schist
Ub - banded mafic-ultramafic tectonite
Up - pyroxenite
Us - serpentinite (peridotite, harzburgite, websterite)

SUPRACRUSTAL ROCKS

McLENNAN-SICKLE GROUPS

MAr — *Feldspathic psammite; light grey, light pinkish grey to moderate orange pink, fine to medium grained, granoblastic, gneissic, weakly to strongly foliated; laminated to medium-bedded; locally with trough cross-bedding and lag deposits; in part migmatitic with up to 30 percent pink granitic leucosome; up to 70 percent plagioclase and quartz; 10 to 20 percent K-feldspar; < 5 percent muscovite; < 5 percent biotite; ± magnetite (in part hematized)*

MArc — *Calcic feldspathic psammite-psammopelite; light grey, maroon to greenish grey, fine grained; thinly to medium bedded; local trough cross-bedding, lag deposits, and thin conglomerate beds; 5 to 20 percent disseminated diopside, hornblende or epidote occur in distinct layers and as cross-cutting component (alteration?); up to 70 percent plagioclase and quartz; 10 to 20 percent K-feldspar; < 5 percent muscovite; magnetite*

MArs — *Aluminous feldspathic psammite; light grey to light pinkish grey, fine to medium grained, granoblastic, in part gneissic, well foliated; migmatitic with up to 30 percent pink granitic leucosome surrounded by biotite-rich melanosome; 10 to 20 percent K-feldspar; up to 10 percent sillimanite fiaserkiesel and/or sheet-like masses; < 5 percent biotite; ± retrograde muscovite ± magnetite ± ilmenite*

MPsp — *Psammopelite; light grey to light pinkish grey, fine to medium grained, granoblastic, well foliated; 10 percent pink granitic leucosome; up to 55 percent plagioclase and K-feldspar, 25 to 30 percent quartz, 5 to 10 percent biotite, 2 to 5 percent sillimanite, 2 to 5 percent garnet; magnetite*

MCg — *Polymictic conglomerate; light grey to light pinkish grey, well foliated; medium to thickly bedded, poorly sorted with strongly flattened pebble- to boulder-sized volcanic-sedimentary-plutonic clasts set in a fine- to medium-grained psammitic matrix; plutonic clasts dominate locally; injected by 5 to 30 percent pink muscovite-bearing granitic melt material; less than 10 percent biotite and/or hornblende; ± muscovite ± garnet ± magnetite*

MILTON ISLAND ASSEMBLAGE (includes Crew Lake Belt)

WDt — *Diatexite/metatexite; white, medium grey to light pink, fine to coarse grained, massive to in part strongly gneissic; heterogeneous; leucogranodioritic leucosome with relict pelite to psammitic paleosome; in part inequigranular with neoblastic garnet or sillimanite or plagioclase; up to 40 percent each of both plagioclase and quartz; up to 25 percent biotite ± hornblende ± garnet ± K-feldspar ± sillimanite*

WPs, WPg — *Pelite; light medium grey to brownish grey, fine to medium grained, granoblastic, well foliated, schistose; thinly to medium bedded; up to 50 percent psammopelitic and psammitic intercalations; minor diopside-garnet psammite intercalations; typically with 20–30 percent quartzofeldspathic leucosome; hatching indicates areas intruded by abundant pegmatite; up to 60 percent plagioclase and quartz; 20 to 25 percent biotite; up to 10 percent sillimanite, largely retrogressed to muscovite, graphite; ± apatite ± tourmaline ± garnet*

WPsp — *Psammopelite; medium grey to brownish grey, fine to medium grained, granoblastic, well foliated, schistose to gneissic; thinly to medium bedded; up to 30 percent pelitic and psammitic intercalations; minor diopside-garnet psammite intercalations; typically with 5 to 10 percent quartzofeldspathic leucosome; plagioclase and quartz; 10 to 15 percent biotite; ± sillimanite ± muscovite ± apatite ± tourmaline ± garnet*

WPs — *Psammite; medium grey, fine to medium grained, granoblastic, well foliated and locally lineated, gneissic; medium bedded; up to 50 percent pelitic and psammopelitic intercalations; minor diopside-garnet psammite and impure quartzite intercalations; typically with 5 percent tonalitic leucosome; 60 percent plagioclase; 40 percent quartz; up to 5 percent biotite; ± garnet ± hornblende ± diopside ± muscovite ± apatite ± tourmaline*

WWfe — *Ferruginous psammopelite-psammite; brownish grey to rusty brown, fine to medium grained, poorly layered; intercalations of diopside-garnet psammite, impure quartzite and iron-formation; plagioclase, quartz, biotite, muscovite and graphite; traces of pyrrhotite and pyrite*

CENTRAL METAVOLCANIC BELT - SEDIMENTARY ROCKS

CPp — *Pelite; medium grey, brownish grey, rusty brown to dark grey, fine to medium grained, well foliated; locally occurring as thinly bedded interturbiditic deposits; interlayered with diopside facies iron-formation; 15 to 30 percent biotite; 5 to 30 percent garnet; ± hornblende ± magnetite ± cordierite ± muscovite ± graphite*

CCs — *Calc-silicate rock; light greenish grey to medium grey, fine grained, rarely medium grained, heterogeneous, well foliated, schistose; compositionally variable from felsic to intermediate with occasional mafic intercalations, strongly banded to lineaid fabrics, in part gossanous; intercalated calcic sediments, thin bands of chert, sulphide facies iron-formation, gritty quartzite, marble and minor felsic tuffs; plagioclase, quartz, hornblende, tremolite-actinolite, diopside, garnet, carbonate, quartz; ± biotite ± graphite ± pyrite ± pyrrhotite*

CMw — *Amphibolite; dark greenish black to dark grey, fine grained, well foliated; laminated to thinly bedded; locally with well developed graded bedding, flame structures, channel fills and scour surfaces; in part interbedded with mafic tuffs and gradational with CUw; 25 to 50 percent amphibole, plagioclase, up to 10 percent quartz*

CUw — *Ultramafic sediment; pale green to dusky green, fine to medium grained, well foliated, schistose; laminated to thinly bedded ultramafic to mafic sediments; in part gradational with CMv*

CPsp — *Psammopelite; medium grey to brownish grey, fine to medium grained, granoblastic, well foliated; poorly layered to thinly bedded, plagioclase, quartz, 10 to 20 percent biotite, 5 to 10 percent garnet commonly porphyroblastic; ± hornblende*

CWfe — *Ferruginous psammite; brownish grey, medium grey to rusty brown, fine grained, massive to well foliated; compositionally layered, thin to medium bedded; minor chert, silicate facies iron-formation and psammopelite intercalations; up to 15 percent biotite and/or hornblende and garnet; ± diopside ± pyrrhotite ± pyrite ± hematite ± ilmenite ± graphite*

CCg — *Volcanogenic conglomerate; grey, brownish grey to pink, strongly foliated to protomylonite, poorly layered, poorly sorted with strongly flattened, pebble- to boulder-sized rounded volcanic and subvolcanic clasts set in a fine-grained psammito to psammopelite to amphibolitic matrix; matrix 5–20 percent biotite and/or hornblende; ± magnetite*

CENTRAL METAVOLCANIC BELT - VOLCANIC ROCKS

CAv — *Altered volcanic rock; light grey, green grey to dark green, buff to rusty brown, fine to coarse grained, granoblastic, well foliated; compositionally variable from felsic to mafic; plagioclase, quartz, hornblende, biotite; ± garnet ± cummingtonite ± tremolite-actinolite ± anthophyllite ± cordierite ± pyrite ± pyrrhotite ± chalcopyrite ± magnetite*
CAvs - anthophyllite-cordierite ± garnet
CAvb - anthophyllite-cummingtonite ± garnet
CAvc - cummingtonite ± garnet

CFv — *Felsic volcanic (dacite ± rhyodacite); light grey to medium grey, very fine to fine grained, well foliated; laminated to thinly layered; largely pyroclastic rocks including ash tuff, tuff breccia, debris flow; minor lava flows; plagioclase, quartz and K-feldspar; 5 to 15 percent biotite; ± garnet ± hornblende ± magnetite ± cummingtonite ± anthophyllite*

Clv — *Intermediate volcanic rock (andesite); medium grey, greenish grey to brownish grey, very fine to fine grained, equigranular, occasionally hornblende porphyroblastic, well foliated/lineated; in part layered; largely pyroclastic rocks including tuff breccia, ash and crystal tuff; minor lava flow; up to 60 percent plagioclase; 15 to 30 percent hornblende and biotite; quartz; ± garnet ± epidote ± pyrite ± pyrrhotite*

CMv — *Mafic volcanic rock (basalt and basaltic andesite); greenish black to dark greenish grey, very fine to fine grained, uniform, well foliated; locally net-veined with carbonate and/or feldspar; rare epidosite pods; in part hornblende porphyroblastic; in part laminated to thickly bedded; largely pyroclastic rocks including ash, crystal and lapilli tuffs, and tuff breccia; minor lava flows; up to 60 percent hornblende; plagioclase; ± diopside ± garnet ± epidote ± quartz ± magnetite ± pyrite ± pyrrhotite*

CGm — *Banded amphibolite; light greenish grey, dusky yellow green and greenish black, fine grained, distinctly banded, heterogeneous, in part pillowed, strongly foliated/lineated; interpreted as altered and strongly tectonized pillowed mafic flows; plagioclase; 40 to 60 percent hornblende, diopside and tremolite-actinolite; up to 10 percent carbonate; ± garnet*

LAm — *LEVESQUE BAY ASSEMBLAGE (includes MacLean Lake gneisses)*
Banded amphibolite; light greenish grey, dusky green and greenish black, fine grained to rarely medium grained, distinctly banded, heterogeneous, strongly foliated/lineated; local preserved pillows and fragmental layers; interpreted as altered and strongly tectonized (?)pillowed mafic flows; plagioclase, 40 to 60 percent hornblende, diopside and tremolite-actinolite; up to 10 percent carbonate; ± garnet ± cummingtonite ± hypersthene ± epidote

LPp — *Garnet pelite; grey to dark grey, fine to medium grained, granoblastic, well foliated; heterogeneous, migmatitic with 20 to 40 percent leucosome; locally intercalated with calc-silicate and amphibolite layers; up to 30 percent of both plagioclase and quartz; 20 to 25 percent biotite; 5 to 10 percent garnet; 1 to 2 percent graphite ± sillimanite*

LPpb — *Biotite pelite; grey to dark grey, fine grained, equigranular, granoblastic, well foliated; layered; 40 percent biotite; pink pegmatitic leucosome commonly forms porphyroclastic texture*

LCs — *Calc-silicate rock; pale to dark green to green-black, in part rusty weathering, coarse grained, well layered; diopside, plagioclase, quartz, hornblende, ± scapolite ± garnet ± sphene ± carbonate ± pyrite ± pyrrhotite ± chalcopyrite; commonly with quartz veining; interlayered with impure marble, quartzite and felsic layers (with disseminated pyrrhotite) of possible volcanic origin*

LPsp — *Pelite-psammopelite; medium grey, fine to medium grained, granoblastic, well foliated; interbedded with psammitic layers; locally with calc-silicate boudins; heterogeneous, migmatitic with 10 to 20 percent leucosome; up to 70 percent plagioclase and quartz; 10 to 20 percent biotite; 0 to 10 percent graphite; 0 to 5 percent garnet ± diopside ± orthopyroxene ± cummingtonite*

LPcs — *Calcic psammopelite; grey, greenish grey to rusty brown, fine to medium grained, granoblastic, well foliated; poorly layered; 20 percent leucosome; plagioclase, microcline, 10 to 15 percent quartz, 15 percent diopside, 10 percent hornblende; sphene, graphite ± biotite ± garnet ± orthopyroxene ± magnetite ± pyrrhotite*

LWfe — *Ferruginous psammite-psammopelite-pelite; brownish grey, medium grey to rusty brown, fine grained, massive to well foliated; compositionally layered; thin to medium bedded; local intercalations of chert and silicate facies iron-formation; plagioclase, quartz, up to 30 percent biotite and/or hornblende, magnetite ± garnet, ± diopside ± pyrrhotite ± pyrite ± hematite ± ilmenite ± graphite*

Area of high strain

Glacial till, fluvioglacial sand, gravel, glaciolacustrine clay

[1]Note: all supracrustal rocks and most intrusive rocks have been metamorphosed under lower to upper amphibolite-facies metamorphic conditions; locally, granulite-facies conditions exist.

Geological contact (defined to approximate, assumed)

*Thrust fault (inferred from lithological age and field relationships; in part coincides with high strain zones; teeth point towards present-day hanging wall and do not indicate direction of movement) *see note below*

Lineament/fault

Esker

Limit of mapping

Glacial striae

Outcrop examined

Diamond drill hole

Bedding: top unknown, known, overturned

Main (first and second generation) foliation (schistosity, gneissosity); inclined, vertical, horizontal

Second generation foliation: inclined, vertical

Third generation foliation: inclined, vertical

Lineation: all generations, all types

Inclined fold axial plane; unknown age, first generation (isoclinal), second generation (tight-isoclinal), third generation (open to close)

Vertical fold axial plane; unknown age, first generation (isoclinal), second generation (tight-isoclinal), third generation (open to close)

Fold axis (symmetry unknown): age unknown, first generation, second generation, third generation

Fold axis (symmetrical): age unknown, first generation, second generation, third generation

Fold axis (s-fold): age unknown, first generation, second generation, third generation

Fold axis (z-fold): age unknown, first generation, second generation, third generation

Notes:

1. This map specifically shows the area jointly mapped by the Saskatchewan Geological Survey and the Geological Survey of Canada between 1996 and 1999. The bedrock geology of the map area and surroundings was previously published at 1:250 000 scale in the Saskatchewan Energy and Mines Compilation Bedrock Geology Map Series (Johnston, W.G.Q. and Thomas, M.W. (1984). Compilation Bedrock Geology, Reindeer Lake South, NTS Area 64 D, Saskatchewan Energy and Mines, Report 230).
2. Thrust symbols on the map correspond to zones of localized high strain containing steeply-plunging mineral and stretching lineations. Shear-sense is locally derived from kinematic indicators, but is for the most part inferred from tectonostratigraphic relationships. Although the general structural style is typical of fold-thrust belts, some of the stratigraphic repetitions observed within the supracrustal sequences may be primary.

Geological mapping by R.O. Maxiner, C. Harper, and D. Corrigan, 1996–2000

Metallogeny by D.G. MacDougall

Geological compilation by R.O. Maxiner

Digital cartography by D. Viner, Earth Sciences Sector Information Division (ESS Info)

This map was produced from processes that conform to the ESS Info Publishing Services Subdivision 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

Mean magnetic declination 2003, 10°05'E, decreasing 10.9' annually

Elevations in feet above mean sea level

GSC OPEN FILE 4288

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GEOLOGY

SOUTH REINDEER LAKE (EAST SHEET)

SASKATCHEWAN

Scale 1:50 000/Échelle 1/50 000

kilometres 1 0 1 2 3 4 kilomètres

Universal Transverse Mercator Projection
North American Datum 1927

Projection transverse universelle de Mercator
Système de référence géodésique nord-américain, 1927

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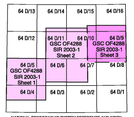

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2003
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Sheet 3 of 3, Geology

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