Saskatchewan Energy and Mines

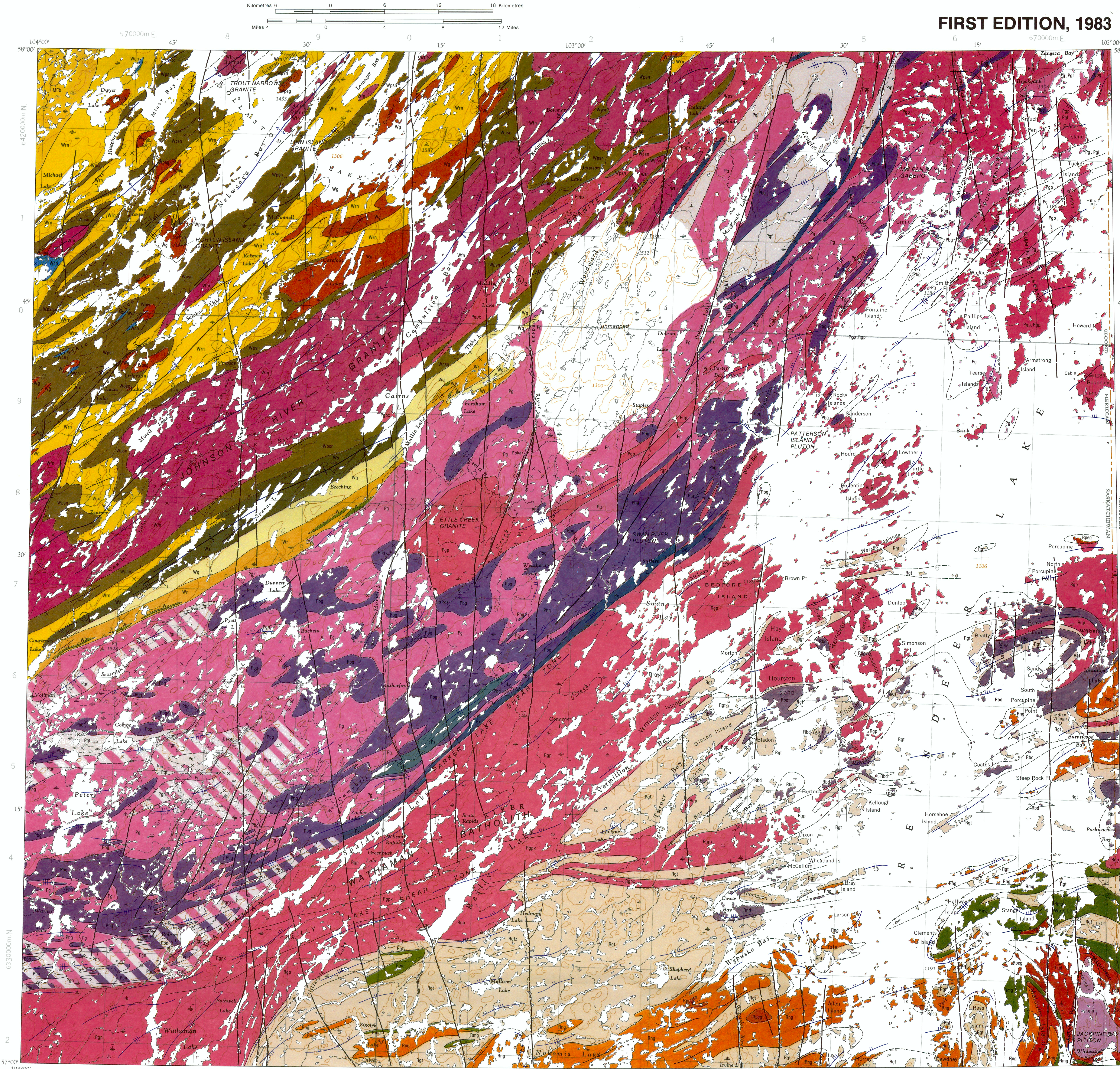
Saskatchewan Geological Survey

Map 232A. COMPILATION BEDROCK GEOLOGY SERIES

REINDEER LAKE NORTH, NTS AREA 64E

Scale 1:250,000

FIRST EDITION, 1983



LEGEND

PALEOHELIKIAN

ATHABASCA GROUP

- MFb — **Manitou Falls Formation:** unmetamorphosed fluviatile quartz sandstone with 2 to 20 percent interstitial clay, locally interbedded with clast-supported conglomerates; overlying deeply weathered basement

  sc: conglomerate and sandstone (Reilly Lake exposure; relation to Athabasca Group not certain)

WOLLASTON DOMAIN

LATE APHEBIAN (HUDSONIAN[1])

- Wpeg — **Granitic pegmatite:** variable grain size, generally massive, ± biotite ± muscovite ± garnet; contacts with migmatitic supracrustal gneisses commonly gradational
- Wg — **Granite and alaskite:** fine to coarse grained, massive to weakly foliated, ± biotite ± hornblende ± magnetite ± microcline megacrysts; contacts with migmatitic supracrustal gneisses commonly gradational; *Horton Island granite has strongly discordant intrusive contacts with country rocks*

EARLY TO MIDDLE APHEBIAN (in general stratigraphic order)

Wollaston Group

- Wcn — **Calc-silicate gneiss, marble and amphibolite:** medium grained to pegmatitic, variable composition and texture, + diopside ± albite ± hornblende ± biotite ± actinolite/tremolite ± calcite ± scapolite ± grossularite; occurring as conformable bands and lenses in supracrustal sequence
- Wrn — **Meta-arkosic gneiss:** fine to medium grained, massive to foliated to gneissic, locally layered, ± biotite ± hornblende ± diopside ± muscovite ± sillimanite ± garnet ± cordierite ± magnetite ± pyrite; locally interlayered with metaquartzite, pelite and calc-silicate rock; commonly anatectic with more than 50 percent leucogranitic neosome
- Wpsn — **Pelitic to psammopelitic gneiss:** fine to medium grained, foliated to gneissic, + biotite + quartz ± feldspar ± graphite ± sillimanite ± muscovite ± cordierite ± garnet ± pyrite/pyrrhotite; interlayered metaquartzite, meta-arkose, calc-silicate rock and marble with psammitic types locally abundant; commonly anatectic with more than 50 percent leucogranitic to tonalitic neosome, especially in north-central part of area

COURTENAY-CAIRNS LAKE BELT:

- Ws — **Mixed metasediment:** variable unit both along and across strike, generally fine grained and foliated; interlayered laminated slate, meta-argillite, metaquartzite, metachert, meta-arkose, calc-silicate rock, marble and rare banded iron formation; *possible facies equivalent to unit Wpsn*
- Wq — **Metaquartzite:** fine grained, massive to foliated, locally layered, ± muscovite ± biotite ± garnet ± feldspar ± hornblende ± sulphide; local conglomerate and interlayered graphitic meta-argillite ± andalusite ± garnet ± sulphide; *equivalent to upper part of Souter Lake group (Scott, 1970)*

PROBABLY EARLY APHEBIAN (LATE ARCHEAN?)

- Wr — **Meta-arkose:** fine to medium grained, massive to foliated, locally layered and cross stratified, ± muscovite ± magnetite ± lithic fragments; local conglomerate with granite, granite gneiss, metavolcanic and metasedimentary clasts; local interbedded pelitic schist ± andalusite ± staurolite ± garnet; *equivalent to Courtenay Lake group and lower part of Souter Lake group (Scott, 1970)*
- Wv — **Amphibolite:** fine grained, massive to poorly foliated, locally pillowed; local intercalated pelitic gneiss; *occurs conformably within unit Wr*

~~~~~~~~~~ UNCONFORMITY ~~~~~~~~~~

ARCHEAN, DEFORMED AND METAMORPHOSED WITH APHEBIAN SUPRACRUSTAL ROCKS DURING THE HUDSONIAN OROGENY

- Wfn — **Felsic granitoid gneiss:** fine to coarse grained, foliated to gneissic, generally homogenous rocks of syenogranitic to granodioritic composition ± biotite ± amphibole ± sillimanite, with rare hypersthene (of granulite facies metamorphic origin); local inclusions of amphibolite and/or pelitic schist; locally partially anatectic with leucogranite neosome; *dated outside the area by Rb-Sr and U-Pb methods at c.2515 Ma*

ROTTENSTONE DOMAIN

APHEBIAN (HUDSONIAN) WITH POSSIBLE ARCHEAN ELEMENTS

WATHAMAN BATHOLITH (c.1880 Ma):

- Rgp — **Megacrystic granitoid:** medium to coarse grained, massive to foliated, with local igneous flow banding; microcline megacrysts ± biotite ± hornblende quartz monzonite, monzogranite and granodiorite; local pelite, amphibolite and/or metadiorite xenoliths; locally abundant pegmatite, aplite and non-megacrystic granitoid toward margins

  Rgpx: sheared variants, with strongly foliated groundmass and flasered microcline megacrysts, locally submylonitic (Reilly Lake Shear Zone)

- Rbd — **Quartz monzodiorite, diorite and gabbro:** fine to coarse grained, massive to foliated, + hornblende + plagioclase ± potassium feldspar ± quartz ± biotite; local paragneiss inclusions; contact zones commonly injected with granitic material; *compositionally similar and possibly in part equivalent to unit Pbg*
- Rpeg — **Granitic pegmatite:** massive to foliated, ± biotite ± muscovite ± hornblende ± garnet

ROTTENSTONE MIGMATITE COMPLEX:

- Rgt — **Tonalite, granodiorite and trondhjemite:** compositionally variable, generally potassium feldspar-poor, fine to coarse grained, locally pegmatitic, massive to foliated, + biotite ± muscovite ± garnet ± hornblende, local amphibolite and/or pelite inclusions; *considered to have undergone multistage intrusion, anatexis and migmatization*

  Rgtz: metasomatized leucotonalite, pink, massive, porphyroblastic, with introduced potassium feldspar and quartz in aureole of Wathaman Batholith

- Rmg — **Amphibolite and derived migmatite:** *paleosome* fine to medium grained, foliated, locally layered, + hornblende + feldspar ± biotite ± muscovite ± garnet ± quartz; local pelitic to psammitic gneiss and calc-silicate gneiss; *neosome* tonalitic, granodioritic or trondhjemitic (50 to 90 percent of unit), medium to coarse grained to pegmatitic, massive to foliated, ± biotite ± muscovite ± garnet ± hornblende
- Rng — **Pelitic to psammitic gneiss and derived migmatite:** *paleosome* fine to medium grained, well foliated to gneissic, locally layered, + biotite + quartz + feldspar ± muscovite ± garnet ± sillimanite ± graphite; *neosome* tonalitic, granodioritic or trondhjemitic (50 to 90 percent of unit), medium to coarse grained to pegmatitic, massive to foliated, + biotite ± muscovite ± garnet ± hornblende

PETER LAKE DOMAIN

APHEBIAN AND ARCHEAN ROCKS, STRONGLY REWORKED PROBABLY LATE IN THE HUDSONIAN

- Px — **Mylonite:** fine grained to aphanitic, streaky to finely laminated; interlayered mafic and felsic gneiss

PARKER LAKE GNEISSES:

- Pgn — **Felsic gneiss:** medium grained, strongly foliated to gneissic, locally submylonitic granitoid rock ± biotite ± hornblende ± flasered microcline megacrysts; *probably largely derived from unit Pg*
- Pbn — **Mafic gneiss:** fine to medium grained, foliated to gneissic, locally submylonitic, + hornblende + plagioclase ± biotite ± quartz ± potassium feldspar; local pods of weakly foliated to massive mafic rock; *probably largely derived from unit Pbg*

HUDSONIAN WITH POSSIBLE ARCHEAN ELEMENTS

PETER LAKE COMPLEX:

- Pg — **Felsic granitoid:** generally medium to coarse grained, locally megacrystic, multiply intrusive, granodioritic to syenitic to alaskitic and aplitic; local relict igneous textures, generally only weakly foliated except in discrete shear zones; ± biotite ± amphibole; local amphibolite and/or pelite inclusions; intrusive in part into unit Pbg; *magmatic rocks, possibly in part derived by anatexis of supracrustal rocks*

  Pgl: late granodioritic to alaskitic and aplitic intrusive sheets of the Zangeza Bay area

- Pgp — **Megacrystic granitoid** (indistinguishable in places from unit Rgp)

  Pgpx: sheared variants (Middle Lake granite)

PROBABLY MAINLY ARCHEAN

- Pbg — **Mafic plutonic rocks:** fine to coarse grained, massive to weakly foliated, metatonalite to metadiorite to metagabbro; local relict ophitic to subophitic texture; ± hornblende ± plagioclase ± biotite ± actinolite/tremolite, with local metasedimentary xenoliths; appears to intrude 'Campbell River Group'; *includes amphibolitic rocks of possible metavolcanic origin*

  Pba: layered metagabbro, minor anorthosite, ultramafic rock and granodiorite (McLean Bay gabbro)

  Pbp: megacrystic diorite, massive with potassium feldspar megacrysts (Patterson Island pluton); *intrusive into unit Pbg, age uncertain*

- Pqf — **Quartzofeldspathic gneiss:** fine to medium grained, equigranular, generally well foliated to gneissic, locally compositionally banded, granitic to granodioritic + biotite ± hornblende; local biotite-hornblende gneiss lenses; *probably partly of supracrustal origin*

'Campbell River Group'

- Psl — **Slate, phyllite and biotite schist:** very fine to fine grained, well foliated, locally layered, + biotite + muscovite + pyrite/pyrrhotite ± carbonaceous material; local hornblende-biotite schist, psammite, amphibolite and metagabbro

[1]The term 'Hudsonian' has been used by most authors in Saskatchewan to indicate the tectonometamorphic activity or orogeny which affected Aphebian rocks and older basement during the interval approximately 1900 to 1650 Ma ago. In this legend the term 'Hudsonian s.s.' (sensu stricto) refers to the more specific peak of activity fixed by Rb-Sr isochron determinations on plutonic rocks at c.1750 to 1740 Ma (see Douglas, 1980; Bell and Macdonald, 1982).

LA RONGE DOMAIN

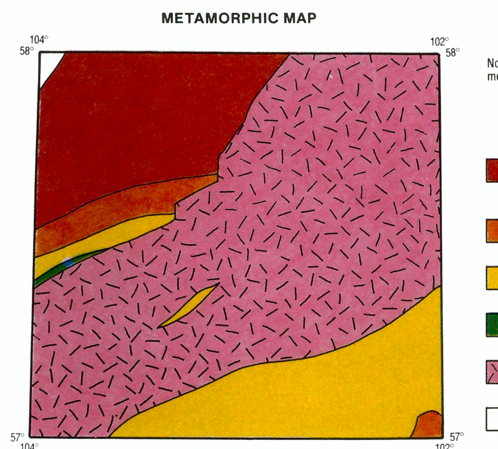
PROBABLY 'HUDSONIAN s.s.' (c.1740 Ma)

- Lgd — **Granodiorite and quartz monzonite:** medium grained, well foliated to gneissic, biotite ± hornblende; abundant xenoliths of paragneiss and unit Lgm
- Lgm — **Quartz monzodiorite:** fine to coarse grained, foliated to gneissic; + hornblende ± biotite; abundant xenoliths of paragneiss and amphibolite; neosomes of granodioritic to quartz monzonitic material in migmatitic contact zone

SYMBOLS

- Single bedrock exposure; approximate area of abundant bedrock exposure
- Geological contact: defined to approximate; inferred
- Structural lineament, possible to probable fault, as interpreted from geological, geophysical and/or airphoto evidence
- Major fold axial trace: antiform; synform
- Trend and approximate dip of dominant foliation surface: dip shallow (0-29°); moderate (30-59°); steep (60-84°); subvertical (85-90°)
- Mineral prospect:
  1. George Lake, Zn-Pb (Karup-Møller and Brummer, 1970; Coombe, 1977)
- Sample location (geochronology):
  1. 1575±55 Ma, K-Ar muscovite (Wanless et al., 1970)
  2. 1765±30 Ma, Rb-Sr whole rock isochron (Bell and Macdonald, 1982); map location is approximate centre of collecting area

METAMORPHIC MAP

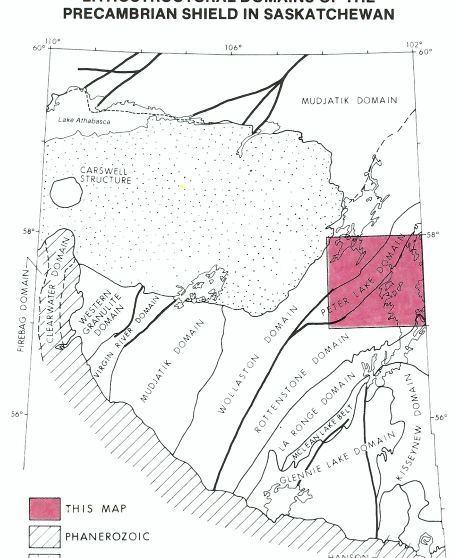


After Rees (1982)

Note: All recorded metamorphic features in this area have been ascribed to one major metamorphic event of Hudsonian age

Metamorphic facies	Isograds
	hypersthene
Upper amphibolite	
	cordierite+garnet (muscovite out)
Middle amphibolite	
	sillimanite
Lower amphibolite	
	staurolite,cordierite,diopside
Upper greenschist	
	garnet,andalusite
Mainly synorogenic plutonic rocks, regional metamorphic grade undefined	
Unmetamorphosed rocks	

LITHOSTRUCTURAL DOMAINS OF THE PRECAMBRIAN SHIELD IN SASKATCHEWAN



Modified from Lewry and Sibbald (1977) and Macdonald and Broughton (1980)

BASE MAP LEGEND

Base map, with acknowledgement, by Surveys and Mapping Branch, Energy, Mines and Resources Canada from aerial photographs taken in 1955 and 1956 and field surveys in 1955 and 1958; compiled 1960 and printed 1963.

GRID ZONE DESIGNATION 13V

100,000 M SQUARE IDENTIFICATION: EQ FQ / EP FP

TO GIVE A REFERENCE TO NEAREST 1000 METRES

EXAMPLE **Mineral prospect**

SQUARE Read letters of 100,000 m square	EP
EASTING Read number on grid line immediately to left of point; Estimate tenths of a square from this line eastward to point	7 / 4 / 74
NORTHING Read number on grid line immediately below point; Estimate tenths of a square from this line northward to point	7 / 0 / 70
MILITARY GRID REFERENCE (to nearest 1,000 metres)	EP7470
If reporting beyond 18° in any direction prefix Grid Zone Designation as	13V EP7470

TEN THOUSAND METRE UNIVERSAL TRANSVERSE MERCATOR GRID ZONE 13

- Horizontal control point
- Boundary monument
- Spot elevation, in feet ... 2550
- Rapids; falls
- Marsh or swamp
- Depression contours
- Surveyed line
- Road, all weather
- Wagon or winter road
- Trail or portage
- Town
- Village or settlement
- Post office
- Building

Transverse Mercator Projection
North American Datum 1927
Contour Interval 100 feet
Elevations in feet above Mean Sea Level
Magnetic declination 18°23′ east at centre of map 1963.
Annual change (decreasing) 2.3′

Geology compiled by R. Macdonald, assisted by R. George, 1980. Revisions, including detailed legend and geological notes, by R. Macdonald and M.W. Thomas, 1982, 1983.

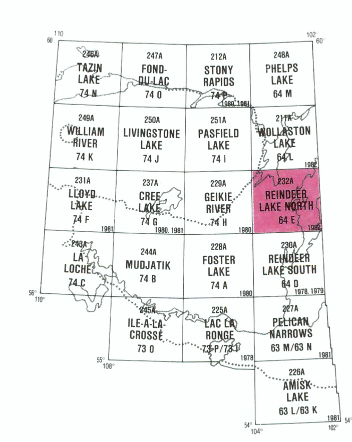
Map scribed by R. Pearce, 1983. Colour reproduction by electronic scanning of hand-coloured original. Legend and text phototypeset via in-house text-processing equipment and custom typesetting by Brigdens, Regina.

Published 1983

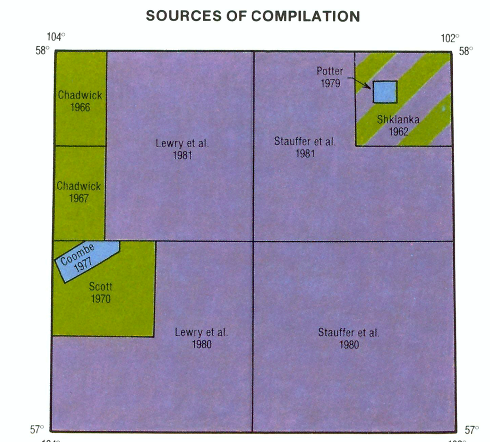
Series Coordinator: R. Macdonald
Production Editor: R.F. Davie

No portion of this map should be reproduced for any purpose other than private use without the permission of Saskatchewan Energy and Mines.

INDEX TO MAPS OF THE COMPILATION BEDROCK GEOLOGY SERIES



SOURCES OF COMPILATION



- Saskatchewan Geological Survey 1:63 360 scale mapping
- Saskatchewan Geological Survey 1:100 000 scale reconnaissance mapping
- Saskatchewan Geological Survey detailed scale mapping

REFERENCES[2]

Bell, K. and Macdonald, R. (1982): Geochronological calibration of the Precambrian Shield in Saskatchewan; *in* Summary of Investigations 1982, Saskatchewan Geological Survey; Sask. Energy Mines, Misc. Rep. 82-4, p17-22.

Chadwick, B. (1966): The geology of the Nekweaga Bay area (west half), Saskatchewan; Sask. Dep. Miner. Resour., Rep. 109, 40p.

__________ (1967): The geology of the Morell Lake area (west half), Saskatchewan; Sask. Dep. Miner. Resour., Rep. 116, 24p.

Coombe, W. (1977): La Ronge - Wollaston Belts base metals project: George, Hills, Johnson and Kaz Lakes and Geikie River areas; *in* Summary of Investigations 1977, Saskatchewan Geological Survey; Sask. Dep. Miner. Resour., p85-104.

Douglas, R.J.W. (1980): Proposals for time classification and correlation of Precambrian rocks and events in Canada and adjacent areas of the Canadian Shield, Part 2: A provisional standard for correlating Precambrian rocks; Geol. Surv. Can., Pap. 80-24, 19p.

Johnston, W.G.Q. (1979): Compilation bedrock geology, Reindeer Lake South (NTS area 64D); *in* Summary of Investigations 1979, Saskatchewan Geological Survey; Sask. Miner. Resour., Misc. Rep. 79-10, p39-50.

Karup-Møller, S. and Brummer, J.J. (1970): The George Lake zinc deposit, Wollaston Lake area, northeastern Saskatchewan; Econ. Geol., v65, p862-874.

Lewry, J.F. and Sibbald, T.I.I. (1977): Variation in lithology and tectonometamorphic relationships in the Precambrian basement of northern Saskatchewan; Can. J. Earth Sci., v14, p1453-1467.

__________ (1980): Thermotectonic evolution of the Churchill Province in northern Saskatchewan; Tectonophysics, v68, p45-82.

Lewry, J.F., Roberts, K. and Rees, C.J. (1980): Geology of the area around Spalding Lake; Sask. Miner. Resour., Rep. 199, 18p.

Lewry, J.F., Thomas, D.J., Rees, C.J. and Roberts, K. (1981): Geology of an area around Compulsion Bay, Wollaston Lake; Sask. Miner. Resour., Rep. 205, 27p.

Macdonald, R. and Broughton, P. (1980): Geological map of Saskatchewan, provisional edition; Sask. Miner. Resour., scale 1:1 000 000.

MacQuarrie, R.R. (1980): Reconnaissance bedrock geology: Wollaston Lake northeast area (part of NTS 64L); *in* Summary of Investigations 1980, Saskatchewan Geological Survey; Sask. Miner. Resour., Misc. Rep. 80-4, p4-7.

McRitchie, W.D. (1977): GS-2 Reindeer Lake - Southern Indian Lake (regional correlation programme); *in* Report of Field Activities 1977; Manit. Dep. Mines Resour. Environ. Manage., Miner. Resour. Div., p13-18.

__________ (1981): GS-2 Zangeza Bay (parts of NTS 64K/4, 64L/1, 64E/16, 64F/13); *in* Report of Field Activities 1981; Manit. Dep. Energy Mines, Miner. Resour. Div., p9-10.

Potter, D. (1979): Investigation of basic igneous rocks, Peter Lake Domain; *in* Summary of Investigations 1979, Saskatchewan Geological Survey; Sask. Miner. Resour., Misc. Rep. 79-10, p56-60.

Ray, G.E. and Wanless, R.K. (1980): The age and geological history of the Wollaston, Peter Lake and Rottenstone domains in northern Saskatchewan; Can. J. Earth Sci., v17, p333-347.

Rees, C.J. (1982): Metamorphism in the Canadian Shield of northern Saskatchewan; Sask. Miner Resour., Open File Rep. OF 82-2, 136p.

Scott, B.P. (1970): The geology of the Combe Lake area, Saskatchewan; Sask. Dep. Miner. Resour., Rep. 135, 32p.

Shklanka, R. (1962): The geology of the McLean Bay area, Saskatchewan; Sask. Dep. Miner. Resour., Rep. 74 (map with marginal notes).

Stauffer, M.R., Langford, F.F., Coleman, L.C. and Mossman, D. (1980): Geology of the Reindeer Lake North (southeast) area; Sask. Miner. Resour., Rep. 200, 21p.

Stauffer, M.R., Fumerton, S.L., Coleman, L.C., Mossman, D. and Langford, F.F. (1981): Geology of the Ballentin Island vicinity, Reindeer Lake; Sask. Miner. Resour., Rep. 206, 22p.

Walters, S. (1980): personal communication (informal seminar, Univ. Regina, December, 1980).

Wanless, R.K., Stevens, R.D., Lachance, G.R. and Delabio, R.N. (1970): Age determinations and geological studies: K-Ar isotopic ages, Report 9; Geol. Surv. Can., Pap. 69-2A, p51.

[2]A more complete bibliography for Reindeer Lake North, NTS 64E is available from the Saskatchewan Geological Survey, Regina.

GEOLOGICAL NOTES

The Reindeer Lake North area lies in the Churchill structural province of the Canadian Shield (Douglas, 1980). Late Archean to Aphebian medium to high grade metamorphosed supracrustal and plutonic rocks exposed in the area have been variously affected by orogeny during the interval c.1900 to 1650 Ma ago. Unmetamorphosed Paleohelikian sandstones and conglomerates of the Athabasca Group are exposed in the northwest. A small outlier of sandstone and conglomerate exposed at the southern end of Reilly Lake may also be equivalent to the Athabasca Group (Lewry et al., 1980).

The area is cut by mainly north-south trending lineaments, fractures and faults which are part of the regional Tabbernor fault system in the eastern part of the Saskatchewan Shield (Macdonald and Broughton, 1980). Bedrock exposure is excellent in the southern and eastern parts of the area but towards the northwest Pleistocene glacial drift is more prevalent.

The pre-Athabasca basement comprises rocks of four lithostructural domains recognized regionally in the Saskatchewan part of the Canadian Shield (Lewry and Sibbald, 1977, 1980; Macdonald and Broughton, 1980; Ray and Wanless, 1980; see domain map, this sheet).

Wollaston Domain

The Wollaston Domain in the area contains elongate inliers of generally uniform, foliated granitoid Archean basement (unit Wfn). Of these, the Johnson River granite inlier has been dated in the adjoining area to the west at c.2515 Ma by the Rb-Sr isochron and U-Pb zircon methods (Ray and Wanless, 1980; Bell and Macdonald, 1982). The basement inliers are overlain by metamorphosed supracrustal rocks of Aphebian age (Lewry and Sibbald, 1980; Ray and Wanless, 1980). In the Wollaston Group, basal pelites and psammopelites (unit Wpsn) are generally overlain by meta-arkosic gneisses (unit Wrn).

Supracrustal rocks of the Courtenay-Cairns Lake belt (Scott, 1970; Lewry et al., 1981) lying on the southeastern flank of the Johnson River granite are more varied compositionally. The status of units Wq and Ws is uncertain; they may represent lateral variations of the Wollaston Group (Coombe, 1977; Lewry et al., 1981).

Immature meta-arkoses and volcanogenic amphibolites (units Wr and Wv) are equivalent to the Courtenay Lake group and lower part of the Souter Lake group of Scott (1970), and to the 'lower meta-arkose unit' of Coombe (1977). These rocks are considered to predate Wollaston Group deposition.

Rocks of the Wollaston Domain are folded on northeasterly trending doubly plunging regional axes. The folding event is ascribed broadly to the Hudsonian orogeny (see note under the legend for a brief statement on the use of the term 'Hudsonian'). Coeval metamorphism locally reached granulite facies (Lewry et al., 1981) and anatexis of supracrustal rocks is widespread. In the Courtenay-Cairns Lake belt the metamorphic grade is generally lower at about upper greenschist facies.

Peter Lake Domain

The Peter Lake Domain comprises the Peter Lake Complex, the 'Campbell River Group' and the Parker Lake Gneisses. The Peter Lake Complex is a plutonic segment showing relict igneous features and relatively little pervasive foliation, except where cut by shear zones or mylonite, and is composed of an early basic suite intruded by later granitoids.

The mapped bodies of unit Pbg, described in the northeast by Stauffer et al. (1981) as the 'Swan River gabbroic rocks', appear to represent a number of intrusive complexes. Composition ranges from ultramafic to dioritic, and there are probable volcanic (amphibolitic) components derived from tholeiitic basaltic to picritic komatiitic material (Walters, 1980). Primary igneous layering (Potter, 1979) and chilled margins (Lewry et al., 1980; Stauffer et al., 1981) have been reported. In the adjoining area to the west, similar rocks have yielded a U-Pb zircon date of 2538±10 Ma (Ray and Wanless, 1980).

The felsic granitoids of the Peter Lake Complex (unit Pg, including the 'Lueaza River granitoids' of Stauffer et al., 1981) comprise a variety of mainly magmatic rocks, typically medium to coarse grained and massive to weakly foliated. Multiphase intrusive features are recorded particularly in the northeast around Zangeza Bay where exposure is better. Some of the granitoids in the northeast are megacrystic (Stauffer et al., 1981). Shklanka (1962) and McRitchie (1981) have also described a late to post-tectonic component of leucocratic granodiorite, aplite, alaskite and pegmatite (subunit Pgl) which outcrops in masses, sills and dykes in the Zangeza Bay area.

Components of the felsic granitoids intrude older foliated granitoids, as well as the unit Pbg mafic rocks. Lewry et al. (1980) suggest that some of the less felsic granitoids may be derived by contamination with or differentiation from the mafic complexes. The felsic granitoids are probably broadly Hudsonian to post-Hudsonian, but may also include late Archean elements.

Quartzofeldspathic gneiss (unit Pqf) may be Archean, as similar gneisses to the northeast are cut by mafic plutonic rocks resembling unit Pbg (MacQuarrie, 1980). The 'Campbell River Group', composed of low grade, fine-grained metasediments, is similarly apparently intruded by metagabbros, suggesting an Archean age (Lewry et al., 1980). Late basic dykes of unknown age have been reported by Shklanka (1962) and Walters (1980).

The Parker Lake Gneisses (units Px,Pgn and Pbn) are strongly foliated and sheared mafic to felsic rocks which contain recognizable elements of the Peter Lake Complex (Lewry et al., 1980).

The nature of the junction between the Peter Lake and Wollaston Domains is obscure, mainly due to lack of outcrop in critical areas. The sheared Middle Lake granite, which locally intervenes at this junction, has yielded a Rb-Sr isochron date of 1765±30 Ma (Bell and Macdonald, 1982).

Rottenstone Domain

Granitoid rocks of Hudsonian age are dominant in the Rottenstone Domain.

The Wathaman Batholith (unit Rgp), composed mainly of megacrystic quartz monzonite, is a major pluton extending across the Saskatchewan Shield northeasterly into Manitoba (Chipewyan Batholith; McRitchie, 1977) In the southwest, its margin with the Peter Lake Domain is marked by intense shearing along the Parker Lake Shear Zone. In the northeast, however, the distinction between megacrystic granitoids of the Wathaman Batholith and megacrystic granitoids of the Peter Lake Domain is less clear and in this region a complex transition between the two domains appears likely. The Wathaman granite has been dated by U-Pb zircon and Rb-Sr isochron methods at c.1880 Ma (Ray and Wanless, 1980; Bell and Macdonald, 1982).

The Rottenstone Migmatite Complex, part of a well-defined zone lying along the southeast margin of the Wathaman Batholith, is represented dominantly by tonalite-granodiorite-trondhjemite neosomes, and by discrete paleosomes which include pelitic to psammitic gneisses and amphibolites. The complex displays polyphase deformation, with coeval generation and interaction of neosomal material, probably during one extended event. A metamorphic aureole along part of the contact with the Wathaman Batholith (Lewry et al., 1980) suggests that the complex predates the batholith.

La Ronge Domain

The granitoid units Lgd and Lgm outcropping in the extreme southeast have been assigned tentatively to the La Ronge Domain because they appear to more closely resemble plutonic rocks of the La Ronge Domain (Johnston, 1979) than those of the Rottenstone Migmatite Complex. Similar granitoids in the La Ronge Domain have been dated by Rb-Sr isochrons at c.1740 Ma (Bell and Macdonald, 1982).

Economic Geology

Although the area has not yielded a producing mine, a variety of potential economic mineral prospects exists.

Significant sediment-hosted zinc-lead mineralization has been identified at the George Lake prospect (Coombe, 1977; Karup-Møller and Brummer, 1970), and numerous other small base metal showings are known to occur in the supracrustal rocks of the Wollaston Domain.

The gabbroic intrusions (unit Pbg) of the Peter Lake Complex have been explored for platinum and other metals. Copper mineralization has been identified in the McLean Bay gabbro (Potter, 1979). The 'Campbell River Group' contains occurrences of copper-zinc (Lewry et al., 1980). Stauffer et al. (1980) describe zinc-lead-copper mineralization at the Brown prospect near the Manitoba border.

Shklanka (1962) and McRitchie (1981) have both recorded molybdenite in the late aplitic granite of the Zangeza Bay area. Scott (1970) records beryliferous pegmatites from the Combe Lake area, also in the Peter Lake Domain.

This publication may be referenced as:

Macdonald, R. and Thomas, M.W. (1983): Compilation Bedrock Geology, Reindeer Lake North, NTS Area 64E; Saskatchewan Energy and Mines, Report 232 (1:250 000 scale map with marginal notes).

Map 232A. Compilation Bedrock Geology Series
REINDEER LAKE NORTH, NTS AREA 64E
1:250 000 Scale
~~~~~~~~~~