PRELIMINARY EDITION

GSC OPEN FILE 2977

PRECAMBRIAN GEOLOGY OF THE AMISK LAKE SHEET

NTS 63L

1:250 000 SCALE

SEM Catalog Number 94-4-(10)

Natural Resources Canada / Ressources naturelles Canada

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

Saskatchewan Energy and Mines
Saskatchewan Geological Survey

GEOLOGICAL SURVEY OF CANADA — COMMISSION GÉOLOGIQUE DU CANADA

LEGEND

EXPOSED PRECAMBRIAN SHIELD

EARLY PROTEROZOIC

Late to post-tectonic intrusions

- peg — Pegmatite; * beryl pegmatite
- Jg — Jan Lake Granite suite; aplogranite-pegmatite sheets, intermixed with host rocks
- gl — Alaskite-aplogranite, locally pegmatitic

Syn to pre-tectonic intrusions/plutons (ca. 1870-1830 Ma)

- gm — Granite-monzogranite-quartz monzonite, local granodiorite
- gd — Granodiorite-tonalite, minor granite; gdh hornblendic; gdl leucocratic; gdt predominantly tonalitic; gdf feldspar megacrystic; gdS migmatic with numerous predominantly supracrustal inclusions; gdm with mafic inclusions
- gdG — Granodiorite-tonalite diatexite with granitic leucosomes
- bq — Tonalite-diorite; bqN tonalite gneiss; bqmz quartz monzodiorite
- bd — Diorite; bdm diorite-quartz monzonite; bdb diorite-gabbro; bdq diorite-quartz diorite; bdm monzodiorite;
- bb — Gabbro; bbd gabbro-diorite; bbs chlorite schist; bbp porphyritic
- u — Ultrabasic; ud ultrabasic-diorite; ub ultrabasic-gabbro

Post-Missi intrusions (not represented on this sheet)

- BI — Boundary Intrusions (1834 +/- 4Ma, Heaman et al, 1991) granitic to ultrabasic
- PMb — Gabbro/diorite
- PMgd — Granodiorite/tonalite

HIGHLY SHEARED AND REFOLIATED GNEISSES, MAINLY OF THE "PELICAN SLIDE" SHEAR ZONE

- fZ — Mylonite to protomylonite, in high strain zones, generally felsic
- mZ — Mylonite to protomylonite, where predominantly mafic
- gdZ — Gneissic to strongly foliated felsic plutonic rocks
- gd(P) — Strained granodiorite intermediary between type gd and gdP
- gdP — Highly strained plutonic diatexite (mainly granodiorite-tonalite) containing prominent feldspathoblasts and clasts
- Qf — Quartofeldspathic gneiss; including highly deformed leucotectonalitic rock with thin diatexitic leucosomes of the Pelican Slide

Low metamorphic grade assemblages of the Flin Flon Belt, Hanson Lake Block (south) and Glennie Domain:

Missi Group of the type area and assumed equivalents (ca. 1842-1847 Ma, Ansdell et al, 1993)

- Mr — Arenaceous metasediments; psammitic metagreywacke, schist, polymictic metaconglomerate, minor quartz pebble metaconglomerate
- Mry — Pebbly arkose
- Mrc — Calcareous wacke (hornblendic)
- My — Polymictic metaconglomerate

Volcanogenic and related rocks of Arc to MORB associations including those previously classified as "Amisk Group" in the type area (ca. 1.90 to 1.86 Ga):

- w — Metagreywacke, calcareous pelite, epiclastic rocks, minor iron formation; we epiclastic/calc-pelite; wc calcareous; wq arenite-feldspathic quartzite; wy with conglomerate; wm mafic wacke; wqf quartzite with fuchsite
- s — Low grade fine grained schist, slate, chert, calcareous and siliceous; metasediments; st staurolite schist
- sa — andalusite schist
- sy — Coarse wacke with polymictic metaconglomerate/diamictite
- fe — Iron formation, chert (chemical metasediment)
- va — Acid volcanics; vai acid-intermediate volcanics
- vd — Dacite
- vi — Intermediate volcanics, mainly andesite
- vb — Basic volcanics; vbi basic-intermediate; vbt mafic tuff; vbb with gabbro sills; vbw mixed with epiclastic sediments
- v — Volcanics, undivided; vy heterolithic breccia, volcanic conglomerate

Volcanic rocks classified by litho tectonic assemblages

- MB.. — Muskeg Bay Assemblage; arc-MORB?, tholeiitic basalts
- WA.. — West Amisk Assemblage; arc, calc-alkaline acid-intermediate
- SB.. — Sandy Bay Assemblage; MORB-plateau type(?) basalts
- B.. — Birch Lake Assemblage; Arc basalts?

Paravolcanic intrusives (Amisk Intrusives)

- if — Felsite; quartz-feldspar porphyry, feldspathophyric dacite, rhyolite porphry (mainly intrusive)
- igd — Granodiorite (includes Vent Suite of Byers)
- ibb — Gabbro, gabbro-diorite

High grade metamorphic assemblages found in the Kisseynew and Glennie domains, Attitti Complex, and the Hanson Lake Block (north):

Possibly in part correlate with Missi Group

- rN — Metapsammite; local meta-arkosic wacke, faserkiesel, calc-silicate noduloids and hornblendic layers, generally with magnetite; rw psammopelite; rq feldspathic quartzite
- rcN — Calcareous (hornblendic) wacke, calc-arenite
- yN — Metaconglomerate; generally polymictic, sheared and foliated

Largely considered to correlate with lower grade volcanogenic rocks of the Flin Flon Belt:

- wN — Gneissic metagreywacke; psammopelitic to pelitic garnet-biotite gneiss and schist ±hornblende±sillimanite±cordierite; wh hornblendic and calc-silicate layers (ex-volcanoclastic wacke); wG metatexite (includes much of the "biotite migmatite" of Kirkland, Pyke and Scott); wc calcareous; wP with prominent feldspathoblasts (deformation texture)
- wG — Metatexitic psammopelite ("biotite migmatite")
- cs — Calc-silicate gneiss
- w/m — Interlayered high grade rocks of generally supracrustal origin
- vaN — Felsic(-mafelsic) gneiss interpreted as derived from acid to intermediate volcanic rock of the Amisk Group
- viN — Mafelsic gneiss interpreted as derived from intermediate volcanogenic rock of the Amisk Group
- vbN — Mafic gneisses (metabasite, amphibolite, etc.) interpreted as derived from basic volcanic (flow or sill) protolith
- vN — Hornblende gneiss of interpreted volcanic protolith

Rocks of uncertain origin

- f — quartzofeldspathic gneiss, generally well foliated; fgt garnetiferous; fbN banded (grey) gneiss, strongly foliated
- h — Hornblende gneiss; generally felsic to mafelsic, locally mafic, ±biotite ±garnet±calc-silicate; volcanogenic and/or plutonic protoliths
- hp — Interlayered hornblende-biotite gneisses
- m — Metabasite/amphibolite/hornblende gneiss, mafic to mafelsic, probably derived from mafic volcanics and sills; ma amphibolite; mc mafic calc-silicate (diopsitic) gneiss; ml strongly laminated amphibolite

ARCHEAN

- Sg — Charnockitic granite (McMillan Point Granite); garnetiferous, retrograded and deformed

SYMBOLS

- Limit of exposed Precambrian Shield
- Lithological contact
- Trace of fault (major, minor)
- Major thrust (with dip direction)
- Major shear or high strain zone
- Limit of mylonitized rocks of the "Pelican Slide" Shear Zone (defined, approximate, assumed)
- Site of geochronological determination
- Significant mineral deposit or mine
- No rock exposure
- Muskeg swamp

BURIED PRECAMBRIAN UNDERLYING PHANEROZOIC OUTCROP

Felsic to intermediate intrusions

- G — Granite-granodiorite; massive to foliated, biotite+/-hornblende monzogranite to granodiorite; minor quartz monzonite
- T — Tonalite-granodiorite-quartz diorite; foliated to gneissic hornblende-biotite tonalite, granodiorite and quartz diorite; minor biotite leucotonalite; Ta tonalite-quartz diorite gneiss commonly containing mafic and metasedimentary enclaves derived from Amisk Group rocks

Mafic and ultramafic intrusions

- Ga — Gabbro-diorite; mafic quartz diorite
- Um — Pyroxene-melagabbro/diorite-peridotite; minor hornblendite and serpentinite

Supracrustal rocks

- Av — Mafic volcanic and volcanoclastic rocks and related mafic intrusions of the Amisk Group
- Aag — Gneisses derived from volcanic, volcanoclastic and sedimentary units of the Amisk Group assemblages and interlayered with plutonic units G and T
- Ah — Metamorphic rocks derived from volcanic and volcanoclastic units of basaltic to rhyolitic composition; related intrusive rocks; subordinate calcic and psammitic metasedimentary rocks (Hanson Lake Block and Glennie Domain)

SYMBOLS

- Geological contact derived from internal fabric, intensity and homogeneity of aeromagnetic patterns and truncation of trends
- Inferred trace of major fault zone

LITHOLOGICAL AND LITHOSTRATIGRAPHIC CONVENTIONS

OTHER LITHOSTRATIGRAPHIC PREFIX DESIGNATIONS (After Delaney, 1988, 1989)

- WL.. Wapawekka Lake Formation (Delaney 1989)
- BG.. Brownell Lake Group (Delaney 1988)
- OL.. Oskikebuk Lake Group (Delaney 1989)
- NL.. Northern Lights Volcanics (Macdonald and Posehn 1976)
- HL.. Hanson Lake Volcanics

Note: Arkose of the Wapawekka Lake Formation (WLr) is not necessarily equivalent to arkose of the Missi Group (Mr)

LITHOLOGICAL (CORE) CODES

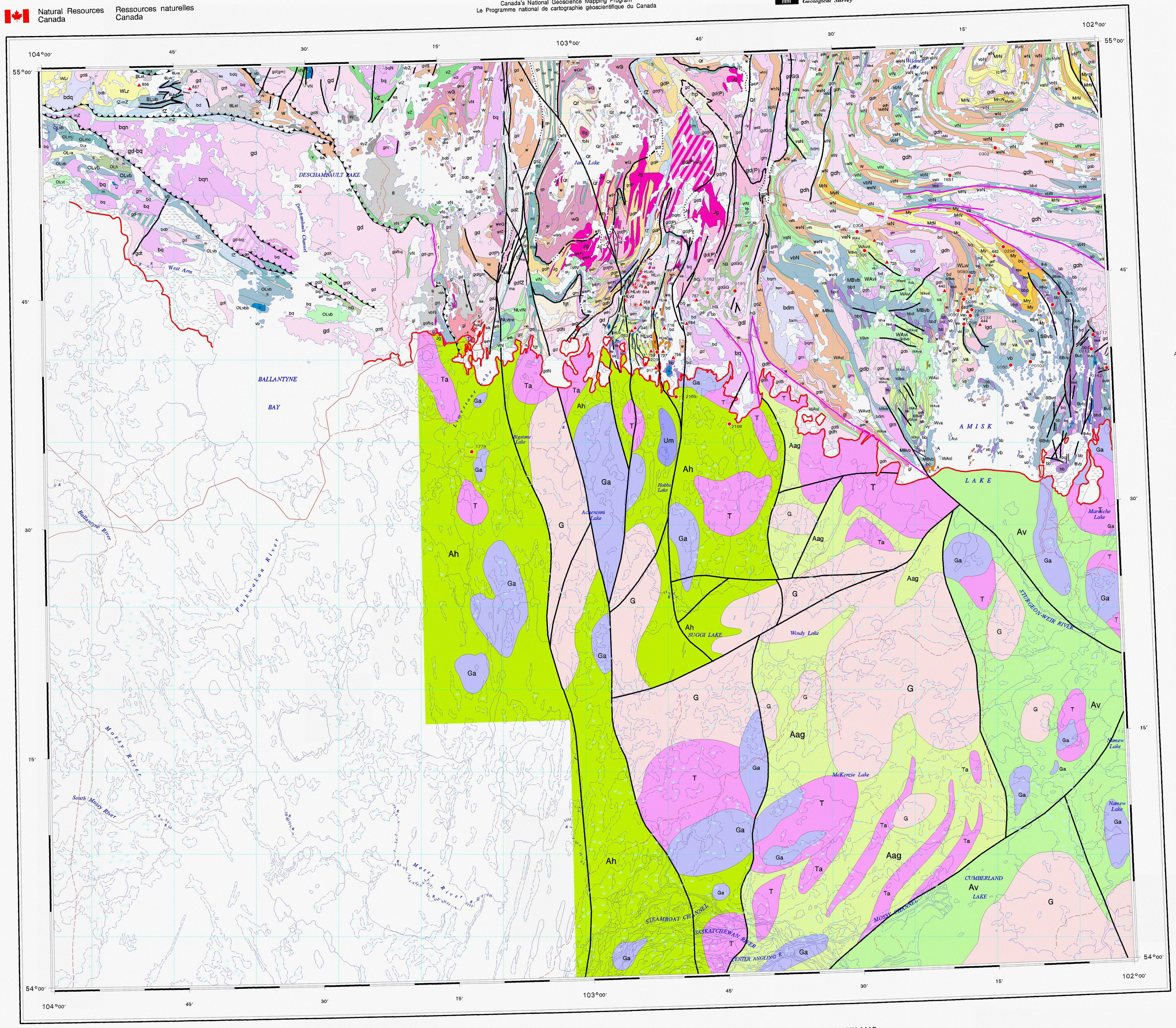
c	calc-silicate
b	basic
e	epiclastic
f	felsic
fe	iron formation
h	hornblendic
i	intrusive
m	mafic, metabasite
n	gneissic
p	pelitic gneiss
r	arkosic, psammitic
s	low grade metasediment
v	volcanic, undivided
va	acid volcanic
vb	basic volcanic
vi	intermediate volcanic
w	wacke, psammopelite
y	conglomerate

gm(mx) dominant and (subordinate) lithology
gd-bq intermixed lithology in generally undetermined proportions

SUFFIXES (DENOTING MODERATORS) *

..P	feldspathoblastic/clastic
..Z	mylonitic, protomylonitic
..ZZ	ultramylonitic
..X	alteration prominent
..M	MORB geochemical affinity
..A	arc, backarc affinity
..G	metataxite
..GG	diatexite
..N	gneissic, well foliated

* Note: These are not given separately in the main rock unit legend



CREDITS

The exposed Precambrian bedrock geology was originally compiled on the 1:250 000 scale topographic base maps produced by the Surveys and Mapping branch, Natural Resources Canada. The information was transferred to the 1:250 000 scale series base maps produced in 1991 by the Saskatchewan Central Surveys and Mapping Agency. The sub-Phanerozoic Precambrian was interpreted from relogged drill core and geophysical data from gravity surveys and high resolution aeromagnetic surveys.

Exposed Precambrian bedrock geology compiled by R. Macdonald, with contributions from W.L. Slimmon (geochronology) and R. Bennett (mineral deposits).

Sub-Phanerozoic geology by A.D. Leclair, Geological Survey of Canada.

Map compilation and publication coordinated by R. Macdonald.

GSC map publication coordinated through the auspices of the NATMAP Shield Project by S. B. Lucas.

Digital cartography by T.D. West, Geological Survey of Canada.

Electrostatic plot produced by the Geological Survey of Canada.

The drafts were digitized with the assistance of Glen McCrimmon, Marc Boris, James MacEachern, David Toop, Andrew Buchanan and Brent Czornobay, 1991-1994.

Except where indicated, all personnel mentioned above are or where employed by Saskatchewan Energy and Mines.

The digital topographic base map was provided at 1:250 000 scale by the Saskatchewan Central Surveys and Mapping Agency (CSMA) in 1993.

UTM grid shown on the map is at 10km interval.

Mean magnetic declination 1994, 12°05′ E, decreasing 9.9′ annually. Readings vary from 10°58′ E in the SE corner to 13°12′ E in the NW corner of the map.

THE COMPILATION PROCESS

The area represented by this set of compilation maps has been surveyed at various scales at different times since World War II. Recent and current revision mapping in the south of the area, often at 1:20 000 scale or better, which covers most of the area, has enabled in places a higher degree of interpretation than in the areas covered only by older mapping.

Since the mid-Seventies, the Precambrian geology of Northern Saskatchewan has been largely described, and to some degree interpreted, in terms of the lithostructural domain classification. Although a usefull prop and basis for geological models, the domain concept generally operates on the regional rather than the local scale. This is particularly true for the present area where, although the domain groupings have been retained in general, they are not everwhere substantiated in detail.

The source map references for the area covered by Ashton's (1992) compilation are to be found on Ashton's original map.

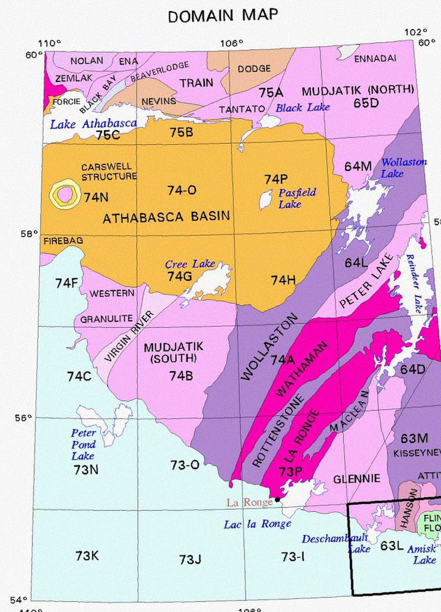
This compilation does not incorporate geological field revisions made in summer 1994.

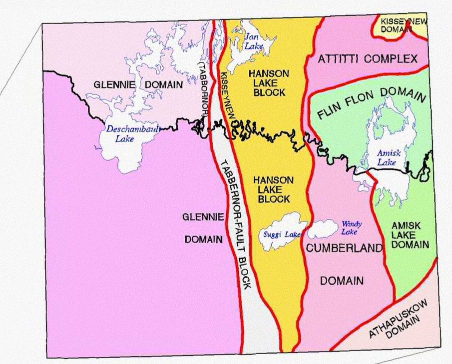
MINERAL DEPOSITS

SMDI No.	DEPOSIT NAME	MAIN COMMODITY	ASSOCIATED MINERALIZATION
0086	Prince Albert Gold Mine (Monarch Mine or Pamon shaft)	Au,Ag	Cu,Mo,Pb,As,Zn
0089	Kent Gold Showing (LOode Gold Showing) LL	Au,As	
0090	Victory Exploration Adits (Amisk Gold Syndicate Showing)	Au,Cu	Zn,Pb,Ag
0096	Sye Gold Showing (Sunset Exploration Shaft)	Au	
0098	Beaver Gold Showing (Exploration Shaft)	Au,Cu	Ag
0102	Grand Lode and Lucky Strike Gold Showings	Au	
0104	AGS Gold Showing (Sunrise Exploration Adit)	Au	
0113	Birch Lake Mine	Cu,Ag	Zn,Au,Se,Te,Cd
0117	Flexar Mine (Birch Lake North Zone)	Cu,Zn	Ag,Au
0142	Echo Lake or Alf Copper-Zinc Zone	Cu,Au	Zn,Ag
0160	Bearcat Gold Showing (Prospect Shaft)	Py	
0182	Quandt, Ramsey or Keputch Deposit	Cu,Zn	
0191	MAL Copper-Zinc Zone	Cu,Zn	Ag,Au
0209	Western Nuclear Mine	Pb,Zn	Cu,Ag,Au,Cd
0296	Graham Gold Mine (Graham Deposits #1 and #2)	Au	
0302	Otonadah Lake Copper Showing (Exploration Shaft)	Cu,Py	Po
0304	FON Zinc-Copper Deposit	Zn,Cu	Pb,Ag,Au,Mo
0305	Abbot Lake Copper-Zinc Zone	Cu,Zn	Ag,Pb,Au
0307	Tyrrell Lake Copper-Zinc Zone (TYR Zone)	Cu,Zn	Ag,Au
1779	Bigstone Lake Copper-Zinc Deposit	Zn,Cu	Ag,Au
1881	PAIT Copper Zone LL	Cu,Po	Py,Cp,Sf,Zn,Au,Ag
2133	Laurel Lake North Gold Zone	Au,Ag	Py
2168	Balsam Copper-Zinc Zone	Zn,Cu	Gn,Py,Po,Mt
2169	McIlvenna Bay Zinc-Copper Deposit	Zn,Cu	Gl,Py,Po,Mt
2207	Laurel Lake, East and Main Gold Zones	Au,Ag	Cu,Zn,Pb

Past producing mine (shown in red)
Developed prospect (shown in black)
SMDI No. = Saskatchewan Mineral Deposit Index number

DOMAIN MAP





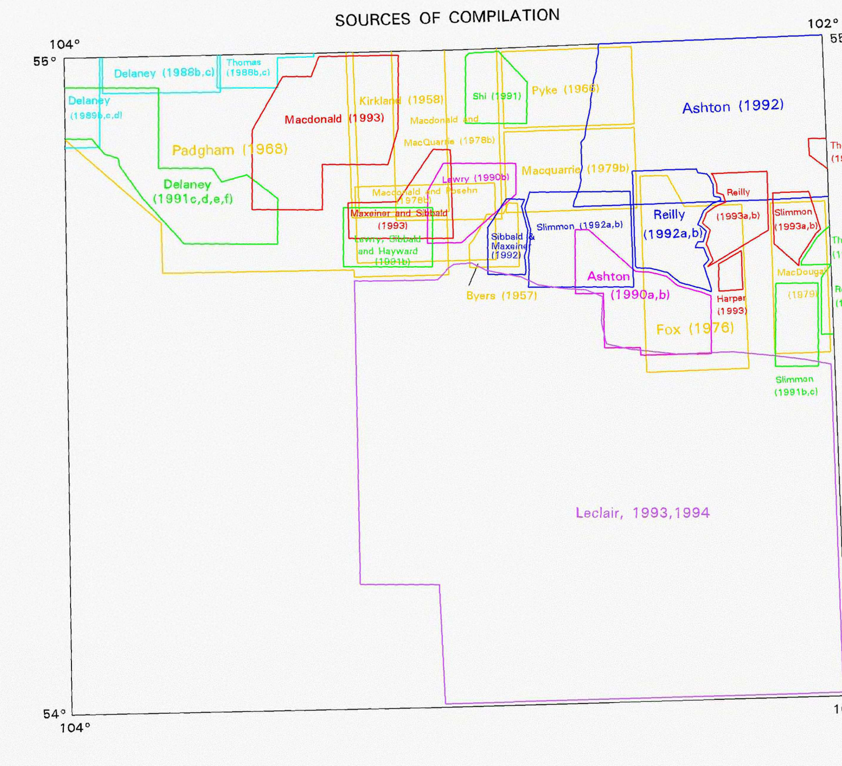
Scale 1:250 000 - Échelle 1/250 000

Kilometres 5 0 5 10 15 20 Kilomètres

Universal Transverse Mercator Projection
© Crown copyrights reserved

Projection transverse universelle de Mercator
© Droits de la Couronne réservés

SOURCES OF COMPILATION



REFERENCES TO SOURCE MAPS

Ashton, K.E.
1990a: Bedrock geology, Snake Rapids area (parts of NTS 63L-9 and -10), Sheet I - Northwest; 1:20 000 scale map with Summary of Investigations 1990, Saskatchewan Geological Survey; Sask. Energy Mines, Misc. Rep. 90-4.
1990b: Bedrock geology, Snake Rapids area (parts of NTS 63L-9 and -10), Sheet II - Southeast; 1:20 000 scale map with Summary of Investigations 1990, Saskatchewan Geological Survey; Sask. Energy Mines, Misc. Rep. 90-4.
1992: Geology of the Mari Lake area, Saskatchewan; 1:50 000 scale map; Geol. Surv. Can., Open File 2444.

Byers, A.R.
1957b: Geology and mineral deposits of the Hanson Lake area, Saskatchewan; Sask. Dep. Miner. Resour., Rep. 30, 47p.

Delaney, G.D.
1988b: Bedrock geology Brownell Lake area (part of NTS 63M-4 and 63L-13), Sheet 1: East; 1:20 000 scale prelim. map with Summary of Investigations 1988, Saskatchewan Geological Survey; Sask. Energy Mines, Misc. Rep. 88-4.
1988c: Bedrock geology Brownell Lake area (part of NTS 63M-4 and 63L-13), Sheet 2: West; 1:20 000 scale prelim. map with Summary of Investigations 1988, Saskatchewan Geological Survey; Sask. Energy Mines, Misc. Rep. 88-4.
1989b: Bedrock geology Maynard-Wapawekka Lakes area (part of 73-I-16, 63L-13, 63M-3, and 73P-1), Sheet 1 Maynard Kidd Lakes; 1:20 000 scale prelim. map with Summary of Investigations 1989, Saskatchewan Geological Survey; Sask. Energy Mines, Misc. Rep. 89-4.
1989c: Bedrock geology Maynard-Wapawekka Lakes area (part of 73-I-16, 63L-13, 63M-3, and 73P-1), Sheet 2 Wapawekka Lake, East; 1:20 000 scale prelim. map with Summary of Investigations 1989, Saskatchewan Geological Survey; Sask. Energy Mines, Misc. Rep. 89-4.
1989d: Bedrock geology Maynard-Wapawekka Lakes area (part of 73-I-16, 63L-13, 63M-3, and 73P-1), Sheet 3 Wapawekka Lake, West; 1:20 000 scale prelim. map with Summary of Investigations 1989, Saskatchewan Geological Survey; Sask. Energy Mines, Misc. Rep. 89-4.
1991c: Revision bedrock geology, Deschambault-Oskikebuk Lakes area (part of NTS 73J-16, 63L-11, -12, 13, and -14), Sheet 1: Wapawekka East; 1:20 000 scale map with Summary of Investigations 1991, Saskatchewan Geological Survey; Sask. Energy Mines, Misc. Rep. 91-4.
1991d: Revision bedrock geology, Deschambault-Oskikebuk Lakes area (part of NTS 73J-16, 63L-11, -12, 13, and -14), Sheet 2: Oskikibuk; 1:20 000 scale map with Summary of Investigations 1991, Saskatchewan Geological Survey; Sask. Energy Mines, Misc. Rep. 91-4.
1991e: Revision bedrock geology, Deschambault-Oskikebuk Lakes area (part of NTS 73J-16, 63L-11, -12, 13, and -14), Sheet 3: West Arm; 1:20 000 scale map with Summary of Investigations 1991, Saskatchewan Geological Survey; Sask. Energy Mines, Misc. Rep. 91-4.
1991f: Revision bedrock geology, Deschambault-Oskikebuk Lakes area (part of NTS 73J-16, 63L-11, -12, 13, and -14), Sheet 4: Deschambault; 1:20 000 scale map with Summary of Investigations 1991, Saskatchewan Geological Survey; Sask. Energy Mines, Misc. Rep. 91-4.

Fox, J.S.
1976: Preliminary bedrock geology of the West Amisk area 63L-7(W) and 63L-16(SW); Sask. Res. Counc., Geol. Div., Misc. Rep.

Harper, C.T.
1993: Revision bedrock geology, western part of Missi Island, Amisk Lake (part of 63L-9): 1:10 000 scale map with Summary of investigations 1993, Saskatchewan Geological Survey; Sask. Energy Mines, Misc. Rep. 93-4.

Kirkland, S.J.T.
1958: The geology of the Deschambault Lake area (east half) Saskatchewan; Sask. Dep. Miner. Resour., Rep. 31, 16p.

Lewry, J.F.
1990b: Bedrock geology, Tulabi-Church Lakes area (part of NTS 63L-14, -15); 1:20 000 scale map with Summary of Investigations 1990, Saskatchewan Geological Survey; Sask. Energy Mines, Misc. Rep 90-4.

Lewry, J.F., Sibbald, T.I.I., and Hayward, N.
1991b: Revision bedrock geology of the Southeast Arm, Deschambault Lake - Northern Lights area (NTS 63L-11 and -14); 1:20 000 scale map with Summary of Investigations 1991, Saskatchewan Geological Survey; Sask. Energy Mines, Misc. Rep 91-4.

Leclair, A.D.
1993: Major geological-geophysical elements of the sub-Phanerozoic basement in NTS 63L, Amisk Lake map area; in Summary of Investigations 1993, Saskatchewan Geological Survey, Sask. Energy Mines, Misc. Rep. 93-4, p129-135.

Leclair, A.D.,Lucas, S.B., Scott, R.G., Viljoen, D., and Broome, H.J.
1994: Regional geology and geophysics of the sub-Phanerozoic Precambrian basement south of the Flin Flon-Snow Lake-Hanson Lake Belt, Manitoba-Saskatchewan; in Current Research 1994-C, Geological Survey of Canada, p215-224.

Macdonald, R.
1981a: Compilation bedrock geology: Pelican Narrows and Amisk Lake areas; 1:250 000 scale prelim. map with Summary of Investigations 1981, Saskatchewan Geological Survey; Sask. Energy Mines, Misc. Rep. 81-4.
1993: unpublished internal Sask. Energy Mines map.

Macdonald, R. and MacQuarrie, R.R.
1978b: Re-investigation geology, Jan Lake area (part of NTS areas 63M and 63L); 1:50 000 scale prelim. map with Summary of Investigations 1978, Saskatchewan Geological Survey; Sask. Energy Mines, Misc. Rep. 78-10.

Macdonald, R. and Posehn, G.A.
1976a: Limestone - Tulabi Lakes (revision mapping), 63L-11(E) (mainly); 1:50 000 scale prelim. map with Summary of Investigations 1976, Saskatchewan Geological Survey; Sask. Energy Mines.

MacQuarrie, R.R.
1979b: Re-investigation geology: Birch Portage south (NTS area 63L-15(S)); 1:50 000 scale prelim. map with Summary of Investigations 1979, Saskatchewan Geological Survey; Sask. Energy Mines, Misc. Rep. 79-10.

Maxeiner, R.O. and Sibbald, T.I.I.
1993: Revision bedrock geology, Hanson Lake area (part of 63L-10); 1:20 000 scale map with Summary of Investigations 1993, Saskatchewan Geological Survey; Sask. Energy Mines, Misc. Rep. 93-4.

McDougall, F.H.
1979: Flin Flon base metals project: east Amish Lake area; 1:50 000 scale prelim. map with Summary of Investigations 1979, Saskatchewan Geological Survey; Sask. Miner. Resourc., Misc. Rep. 79-10.

Padgham, W.A.
1968: The geology of the Deschambault Lake district comprising the Oskikebuk Lake area, Viney Lake area (west half), the northern part of the Ballantyne Bay area and the northeast quarter of the Limestone Lake area; Sask. Dep. Miner. Resour., Rep. 114, 92p.

Pyke, M.W.
1966: The geology of the Pellican MNarrows and Birtch Portage Narrows areas, Saskatchewan; Sask. Dep. Miner. Resour., Rep. 93, 68p.

Reilley, B.A.
1991b: Revision Bedrock Geology, Mystic Lake Area (part of NTS 63L-9, 63K-12), Sheet 1: North; 1:12 500 scale map with Summary of Investigations 1991, Saskatchewan Geological Survey; Sask. Energy Mines, Misc. Rep. 91-4.
1991c: Revision Bedrock Geology, Mystic Lake Area (part of NTS 63L-9, 63K-12), Sheet 2: Central; 1:12 500 scale map with Summary of Investigations 1991, Saskatchewan Geological Survey; Sask. Energy Mines, Misc. Rep. 91-4.
1991d: Revision Bedrock Geology, Mystic Lake Area (part of NTS 63L-9, 63K-12), Sheet 3: South; 1:12 500 scale map with Summary of Investigations 1991, Saskatchewan Geological Survey; Sask. Energy Mines, Misc. Rep. 91-4.
1993a: Revision Bedrock Geology, Amisk Lake northwest (part of NTS 63L-9, -16),Sheet 1: North; 1:12 500 scale map with Summary of Investigations 1993, Saskatchewan Geological Survey; Sask. Energy Mines, Misc. Rep. 93-4.
1993b: Revision Bedrock Geology, Amisk Lake northwest (part of NTS 63L-9, -16),Sheet 2: South; 1:12 500 scale map with Summary of Investigations 1993, Saskatchewan Geological Survey; Sask. Energy Mines, Misc. Rep. 93-4.

Shi, R.
1991: Revision bedrock geology of the Jan Lake area, west (NTS 63L-15); 1:20 000 scale map with Summary of Investigations 1991, Saskatchewan Geological Survey; Sask. Energy Mines, Misc. Rep. 91-4.

Sibbald, T.I.I.
1989c: Geology of part of the Hanson Lake area west(NTS 63L-10); 1:20 000 scale prelim. map with Summary of Investigations 1989, Saskatchewan Geological Survey; Sask. Energy Mines, Misc. Rep. 89-4.

Sibbald, T.I.I. and Maxeiner, R.O.
1992: Geology of part of the Hanson Lake area west(NTS 63L-10); 1:20 000 scale prelim. map with Summary of Investigations 1992, Saskatchewan Geological Survey; Sask. Energy Mines, Misc. Rep. 92-4.

Slimmon, W.L.
1991b: Revision bedrock geology, Table Lake area (part of NTS 63L-9), Sheet 1: North; 1:12 500 scale map with Summary of Investigations 1991, Saskatchewan Geological Survey; Sask. Energy Mines, Misc. Rep. 91-4.
1991c: Revision bedrock geology, Table Lake area (part of NTS 63L-9), Sheet 2: South; 1:12 500 scale map with Summary of Investigations 1991, Saskatchewan Geological Survey; Sask. Energy Mines, Misc. Rep. 91-4.
1992b: Revision bedrock geology, Hanson Lake - Sturgeon-weir River area (part of NTS 63L-10 and -15), Sheet 1: West; 1:20 000 scale prelim. map with Summary of Investigations 1992, Saskatchewan Geological Survey; Sask. Energy Mines, Misc. Rep. 92-4.
1992c: Revision bedrock geology, Hanson Lake - Sturgeon-weir River area (part of NTS 63L-10 and -15), Sheet 2: East; 1:20 000 scale prelim. map with Summary of Investigations 1992, Saskatchewan Geological Survey; Sask. Energy Mines, Misc. Rep. 92-4.
1993a: Revision bedrock geology, Comeback Bay, Amisk Lake (part of NTS 63L-9, -16), Sheet 1: East; 1:12 500 scale map with Summary of Investigations 1993, Saskatchewan Geological Survey; Sask. Energy Mines, Misc. Rep. 93-4.
1993b: Revision bedrock geology, Comeback Bay, Amisk Lake (part of NTS 63L-9, -16), Sheet 2: West; 1:12 500 scale map with Summary of Investigations 1993, Saskatchewan Geological Survey; Sask. Energy Mines, Misc. Rep. 93-4.

Thomas, D.J.
1988b: Bedrock Geology, Palf Lake area (part of NTS 63M-3, -4 and 63L-13, -14), Sheet 1: North; 1:20 000 scale prelim. map with Summary of Investigations 1988, Saskatchewan Geological Survey; Sask. Energy Mines, Misc. Rep. 88-4.
1988c: Bedrock Geology, Palf Lake area (part of NTS 63M-3, -4 and 63L-13, -14), Sheet 2: South; 1:20 000 scale prelim. map with Summary of Investigations 1988, Saskatchewan Geological Survey; Sask. Energy Mines, Misc. Rep. 88-4.
1991b: Revision bedrock geology, Bootleg and Birtch Lakes area (part of NTS 63L-9, 63K-12 and -13), Sheet 1; 1:12,500 scale map with Summary of Investigations 1991, Saskatchewan Geological Survey; Sask. Energy Mines, Misc. Rep. 91-4.
1991c: Revision bedrock geology, Bootleg and Birtch Lakes area (part of NTS 63L-9, 63K-12 and -13), Sheet 2; 1:12,500 scale map with Summary of Investigations 1991, Saskatchewan Geological Survey; Sask. Energy Mines, Misc. Rep. 91-4.
1991d: Revision bedrock geology, Bootleg and Birtch Lakes area (part of NTS 63L-9, 63K-12 and -13), Sheet 3; 1:12,500 scale map with Summary of Investigations 1991, Saskatchewan Geological Survey; Sask. Energy Mines, Misc. Rep. 91-4.
1993: Revision bedrock geology, Hamell Lake area (part of NTS 63K-13, 63L-16); 1:12,500 scale map with Summary of Investigations 1993, Saskatchewan Geological Survey; Sask. Energy Mines, Misc. Rep. 93-4.

REFERENCES TO GEOCHRONOLOGICAL DETERMINATIONS

Ansdell, K.M. and Kyser, T.K.
1990: Age of granitoids from the western Flin Flon Domain: an application of the single-zircon Pb-evaporation technique; in Summary of Investigations 1990, Saskatchewan Geological Survey, Sask. Energy Mines, Misc. Rep. 90-4.

Ashton, K.E., Hunt, P.A., and Froese, E.
1992: Age constraints on the evolution of the Flin Flon volcanic belt and Kisseynew gneiss belt, Saskatchewan and Manitoba; in Radiogenic Age and Isotopic Studies: Report 5; Geol. Surv. Can., Pap. 91-2, p55-69.

Bickford, M.E., Collerson, K.D., and Lewry, J.F.
1988: U-Pb geochronology and isotopic studies of the Trans-Hudson Orogen in Saskatchewan; in Summary of Investigations 1988, Saskatchewan Geological Survey, Sask. Energy Mines, Misc. Rep. 88-4, p112-116.

Bickford, M.E., Van Smus, W.R., Collerson, K.D., and Lewry, J.F.
1987: U-Pb zircon geochronology project: new results and interpretations; in Summary of Investigations 1987, Saskatchewan Geological Survey, Sask. Energy Mines, Misc. Rep. 87-4, p76-79.

Bickford, M.E., Van Sshmus, W.R., Macdonald, R., Lewry, J.F., and Pearson, J.G.
1986 :U-Pb zircon geochronology project for the Trans-Hudson: current sampling and recent results; in Summary of Investigations 1986, Saskatchewan Geological Survey, Sask. Energy Mines, Misc. Rep.

Heaman, L.M., Ashton, K.E., Reilly, B.A., Sibbald, T.I.I., Slimmon, W.L., and Thomas, D.J.
1993: 1992-93 U-Pb geochronological investigations in the Trans-Hudson Orogen, Saskatchewan; in Summary of Investigations 1993, Saskatchewan Geological Survey, Sask. Energy Mines, Misc. Rep.

McNicoll, V.I., Delaney, G.D., Parrish, R.R., and Heaman, L.M.
1992: U-Pb age determinations from the Glennie Lake Domain, Trans-Hudson Orogen, Saskatchewan; in Radiogenic Age and Isotopic Studies, Report 6,Geol. Surv. Can., Pap. 92-2, p57-72.

Mock, T.D. and Bickford, M.E.
1992: Field and isotopic study of lake, undeformed pegmatites and leucogranites in the Glennie Domain and Hanson Lake Block; in Summary of Investigations 1992, Saskatchewan Geological Survey; Sask. Energy Mines, Misc. Rep. 9.

Sangster, D.F.
1972: Isotopic studies of ore-leads in the Hanson Lake - Flin Flon - Snow Lake mineral belt; in Can. J. Earth Sci., v9, no5, p500-513.

Van Schmus, W.R., Bickford, M.E., Lewry, J.F., and Macdonald, R.
1987: U-Pb zircon geochronology in the Trans-Hudson Orogen, northern Saskatchewan, Canada; Can. J. Earth Sci., v24, p407-424.

GEOCHRONOLOGICAL DATA

No.	Age	Sample
*116	1780±44 Ma	Hanson L. stratabound sulphide ore (Sangster, 1972)
292	1850±4 Ma	Deschambault Narrows tonalite (Van Schmus et al., 1987)
317	1888±12 Ma	Hanson L. rhyolite (Bickford et al., 1986)
337	1773±9 Ma	Jan Lake granite (Bickford et al., 1987)
340	1844±12 Ma	Hanson L. granodiorite (Bickford et al., 1987)
358	1870 Ma	Jackpine L. granodiorite (Bickford et al., 1988)
440	1837±5 Ma	Neagle L. Pluton granodiorite (Ansdell and Kyser, 1990)
442	1841±18 Ma	Graham Trail feldspar-porphyry (Ansdell and Kyser, 1990)
444	1848±11 Ma	Missi Island trondhjemite (Ansdell and Kyser, 1990)
579	1783±9 Ma	Post Sturgeon-weir shear zone pegmatite (Ashton et al., 1992)
594	1827±4 Ma	Jackpine L. quartz diorite gneiss (Mock, pers. comm.)
680	1887±3 Ma	Laurel L. rhyolite (Heaman et al., 1993)
684	1844±2 Ma	Hanson L. Pluton granodiorite (Heaman et al., 1993)
713	1806±2 Ma	Pre-Sturgeon-weir shear zone pegmatite (Ashton et al., 1992)
716	1884±1 Ma	Welsh L. Assemblage greywacke (Heaman et al., 1993)
725	1888±3 Ma	Neagle L. rhyolite (Heaman et al., 1993)
727	1875±1 Ma	Hanson L. rhyolite (Heaman et al., 1993)
757	1870±4 Ma	Hanson L. migmatite (Heaman pers. comm.)
758	1843±2 Ma	Hanson L. (Heaman pers. comm.)
759	1848 Ma	Hanson L. (Heaman pers. comm.)
760	1870+7/-5 Ma	Hanson L. Mine Road granite (Heaman pers. comm.)
763	1873±2 Ma	Hanson L. sheared granite (Heaman pers. comm.)
856	1848±1 Ma	Wapawekka Lake Formation meta-arkose (McNicoll et al., 1992)
857	1831±9 Ma	Brownell Lake granite (McNicoll et al., 1992)

* Saskatchewan Precambrian Geochronological Database reference number
All dates are derived from U-Pb zircon determinations

Saskatchewan — PARTNERSHIP / ASSOCIATION — Canada
L'ENTENTE DE PARTENARIAT SUR L'EXPLOITATION MINÉRALE 1990 - 1995
PARTNERSHIP AGREEMENT ON MINERAL DEVELOPMENT 1990 - 1995

OPEN FILE
DOSSIER PUBLIC
2977
GEOLOGICAL SURVEY OF CANADA
COMMISSION GÉOLOGIQUE DU CANADA
OTTAWA
11/1994

PRELIMINARY EDITION

GSC OPEN FILE 2977

PRECAMBRIAN GEOLOGY OF THE AMISK LAKE SHEET

NTS 63L

SEM Catalog Number 94-4-(10)

Recommended citation:
MacDonald, R. and Leclair, A.D.
1994: Precambrian geology of the Amisk Lake sheet,(NTS 63L), Saskatchewan. Geological Survey of Canada, Open File 2977, 1 sheet, scale 1:250 000 Saskatchewan Energy and Mines, Open File Map 94-4-(10), 1 sheet, scale 1:250 000

Canada