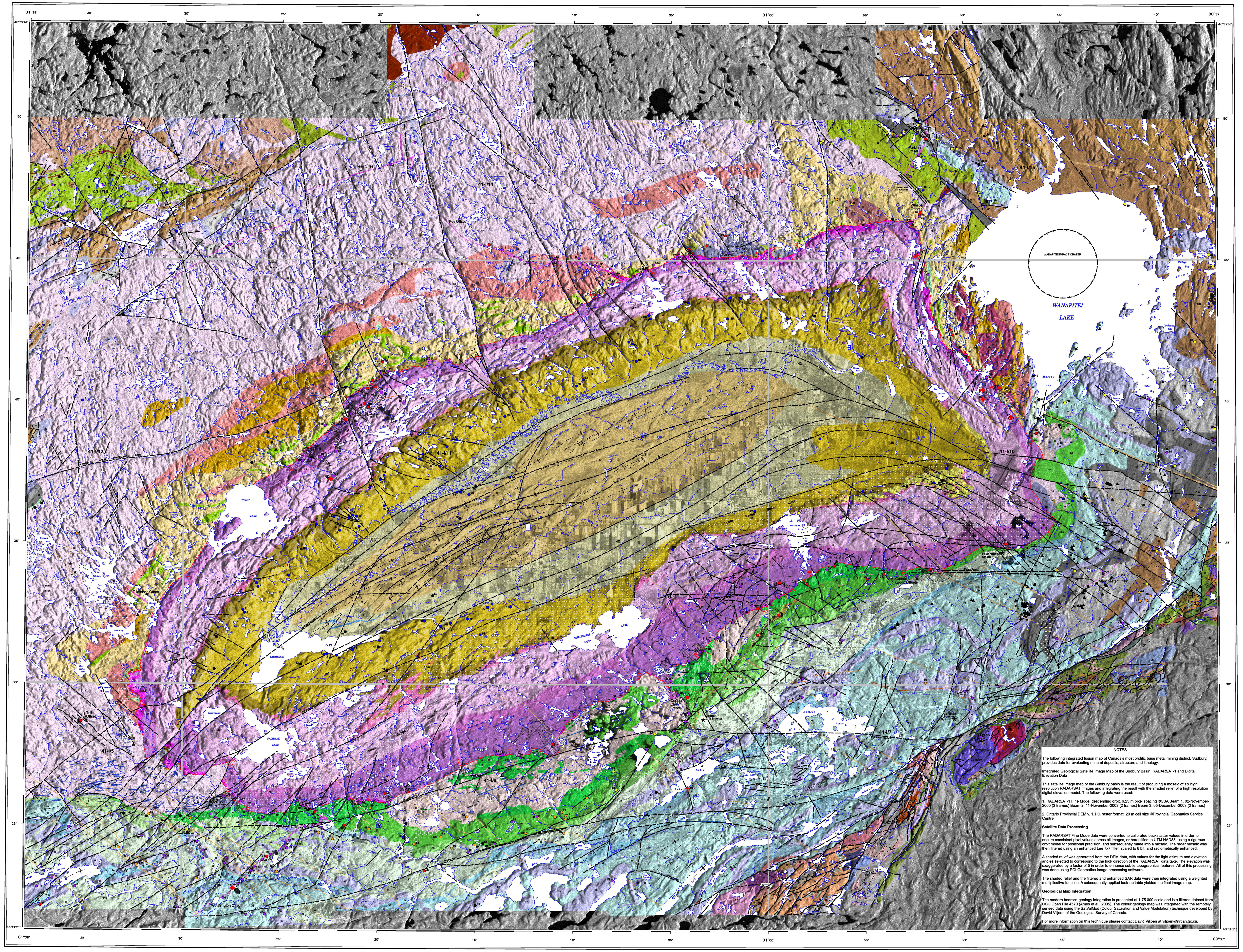
Natural Resources Canada / Ressources naturelles Canada
GEOLOGICAL SURVEY OF CANADA — COMMISSION GÉOLOGIQUE DU CANADA



NOTES

The following integrated fusion map of Canada's most prolific base metal mining district, Sudbury, provides data for evaluating mineral deposits, structure and lithology.

Integrated Geological Satellite Image Map of the Sudbury Basin: RADARSAT-1 and Digital Elevation Data

This satellite image map of the Sudbury basin is the result of producing a mosaic of six high resolution RADARSAT images and integrating the result with the shaded relief of a high resolution digital elevation model. The following data were used:

1. RADARSAT-1 Fine Mode, descending orbit, 6.25 m pixel spacing ©CSA Beam 1, 02-November-2000 (2 frames) Beam 2, 11-November-2003 (2 frames) Beam 3, 05-December-2003 (2 frames)

2. Ontario Provincial DEM v. 1.1.0, raster format, 20 m cell size ©Provincial Geomatics Service Centre

Satellite Data Processing

The RADARSAT Fine Mode data were converted to calibrated backscatter values in order to ensure consistent pixel values across all images, orthorectified to UTM NAD83, using a rigorous orbit model for positional precision, and subsequently made into a mosaic. The radar mosaic was then filtered using an enhanced Lee 7x7 filter, scaled to 8 bit, and radiometrically enhanced.

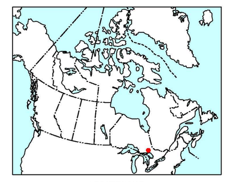
A shaded relief was generated from the DEM data, with values for the light azimuth and elevation angles selected to correspond to the look direction of the RADARSAT data take. The elevation was exaggerated by a factor of 5 in order to enhance subtle topographical features. All of this processing was done using PCI Geomatica image processing software.

The shaded relief and the filtered and enhanced SAR data were then integrated using a weighted multiplicative function. A subsequently applied look-up table yielded the final image map.

Geological Map Integration

The modern bedrock geology integration is presented at 1:75 000 scale and is a filtered dataset from GSC Open File 4570 (Ames et al., 2005). The colour geology map was integrated with the remotely sensed data using the SatValMod (Colour Saturation and Value Modulation) technique developed by David Viljoen of the Geological Survey of Canada.

For more information on this technique please contact David Viljoen at viljoen@nrcan.gc.ca.



LOCATION MAP

Authors: D.E. Ames, V. Singhroy, J. Buckle, and K. Molch

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Geological compilation by D.E. Ames and Grenville Province by A. Davidson, 2005

Digital cartography by J.L. Buckle and 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

Canada

OPEN FILE 4571

GEOLOGY

INTEGRATED BEDROCK GEOLOGY-RADARSAT-DIGITAL ELEVATION DATA OF SUDBURY

ONTARIO

Scale 1:75 000/Échelle 1/75 000

kilometres 1 0 1 2 3 4 5 6 kilomètres

Universal Transverse Mercator Projection
North American Datum 1927
© Her Majesty the Queen in Right of Canada 2006

Projection transverse universelle de Mercator
Système de référence géodésique nord-américain, 1927
© Sa Majesté la Reine du chef du Canada 2006

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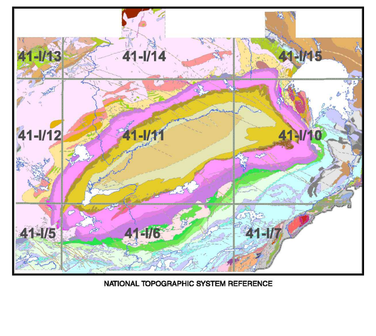
We acknowledge contributions to Consolidating Canada's Geoscience Knowledge Program from Aurora Platinum, Falconbridge, FNX, Inco, and Wallbridge Ltd.

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 Ontario Ministry of Natural Resources, modified by ESS Info

Mean magnetic declination 2005, 10°18'W, decreasing 0.5' annually



NATIONAL TOPOGRAPHIC SYSTEM REFERENCE

LEGEND

PHANEROZOIC
EOCENE

(dashed circle) *WANAPITEI IMPACT CRATER (~37 Ma, Bottomley, 1982; Winzer et al., 1976) (4.5 km diameter; L'Heureux, 2003).*

SUPERIOR, SOUTHERN, AND GRENVILLE PROVINCES

PRECAMBRIAN
NEOPROTEROZOIC

90 *Diabase - Grenville dyke swarm (590 +2/-1 Ma; Kamo et al., 1995).*

MESOPROTEROZOIC (1600–1000 Ma)

89 *Olivine diabase - Sudbury dyke swarm (1238 ± 4 Ma; Krogh et al., 1987; 1235 +7/-3 Ma; Dudás et al., 1994).*

GRENVILLE PROVINCE

MESOPROTEROZOIC

88 *Cataclasite and fault gouge associated with the Grenville Front.*

(dashed box) *Undeformed biotite pegmatite (979 ± 2 Ma, Corfu and Easton, 2001; 979 ± 3 Ma, Davidson and van Breemen, Geological Survey of Canada, unpubl.) (not shown on map).*

87 *Deformed pegmatite (ca. 1150 Ma, Krogh and Wardle, 1983).*

MESOPROTEROZOIC or PALEOPROTEROZOIC

86 *Migmatitic granite orthogneiss (age unknown).*

85 *Undivided granodiorite, diorite, and gabbro orthogneiss; locally garnet-bearing and migmatitic (age unknown).*

PALEOPROTEROZOIC (affected by Grenville)
WANAPITEI MAFIC IGNEOUS COMPLEX

(dashed box) *Narrow, east-trending commingled gabbro-granite dykes (1747 +12/-6 Ma, Davidson and van Breemen, Geological Survey of Canada, unpubl.) (not shown on map).*

84 *Flow-foliated igneous breccia, agmatite, commingled gabbroic and granitic rocks.*

83 *Hornblende gabbro, gabbronorite, layered in part (1747 +6/-5 Ma, Prevec, 1992) (metamorphic age?).*

82 *Coronitic olivine melagabbro.*

81 *Black amphibolite, hornblende-plagioclase gneiss; derived from gabbro. Age unknown; possibly derived from Nipissing gabbro (unit 33).*

80 *Dark green amphibolite with acicular amphibole (age unknown).*

GRANITE GNEISS (2446 ± 7 Ma, Davidson and van Breemen, Geological Survey of Canada unpubl.; 2475+25/-10 Ma, Corfu and Easton, 2000).

79 *Migmatitic granitoid orthogneiss.*

EAST BULL LAKE IGNEOUS SUITE (2470 to 2490 Ma)

78 *Granitoid migmatite at contact of metagabbroic anorthosite (unit 76).*

77 *Migmatitic granitic orthogneiss.*

76 *Metagabbro anorthosite and derived gneiss, commonly with mafic seams.*

75 *Metagabbro, hornblende gneiss.*

74 *Metaultramafic rock: amphibolite with orthopyroxene megacrysts, locally carrying relict olivine; occurs as isolated pods or boudins (2468 ± 5 Ma, Corfu and Easton, 2001).*

SUPRACRUSTAL ROCKS (age unknown) possibly in part derived from Huronian Supergroup (units 19–31)

73 *Undivided metasupracrustal rocks; mainly migmatitic biotite- and hornblende-garnet gneiss, with minor calcsilicate, metaconglomerate and intercalated amphibolite in the northeast; predominantly biotite-garnet gneiss and psammite with intercalated quartzofeldspathic gneiss in the southwest.*

72 *Mainly metaconglomerate and derived gneiss and schist; minor layers of garnet-biotite gneiss.*

71 *Calc-silicate gneiss, minor marble.*

70 *Mainly kyanite-rich garnet-muscovite-biotite-quartz-plagioclase schist and gneiss; locally separated from adjacent unit 64 by a narrow layer of quartzite (unit 69, not shown).*

69 *White quartzite and thinly layered, rusty, quartz-rich gneiss; may contain sillimanite.*

68 *Relatively massive biotite and biotite-garnet paragneiss and migmatite, in part derived from polymictic conglomerate.*

67 *Quartzofeldspathic schist, rusty in part, derived from sandstone, intercalated toward the southeast with biotite-garnet paragneiss and metaconglomerate with sparse, highly flattened pebbles.*

66 *Mainly well-layered biotite-garnet gneiss, migmatitic in part, and intercalated locally with kyanite-garnet-biotite-muscovite schist.*

65 *Layered, light grey, muscovite-bearing quartzofeldspathic gneiss derived from feldspathic sandstone.*

64 *Mainly garnet-hornblende-quartz-plagioclase gneiss and migmatite; may contain calc-silicate layers, and grade to hornblende-rich gneiss.*

NEOARCHEAN (rocks present only in Grenville Province)

63 *Intermediate to felsic plutonic rocks; biotite granodiorite to diorite.*

Migmatitic to metataxitic gneisses (5–20% leucosome)

62 *Mafic gneiss (possibly intrusive); podiform amphibolite to garnet-amphibolite.*

61 *Felsic to aluminous gneiss.*

60 *Biotite-garnet gneiss.*

59 *Mafic gneiss (possibly metavolcanic); migmatitic amphibolite, may contain garnet, gedrite, cummingtonite.*

SOUTHERN PROVINCE

MESOPROTEROZOIC
CHIEF LAKE IGNEOUS COMPLEX

58 *Pine Lake unit; massive, uniform, pink, fine- to medium-grained biotite leucogranite.*

57 *Fern Lake unit; massive, grey hornblende diorite, commonly with hornblende-rich xenoliths; commingled with fine-grained granite in western part; includes numerous rafts of Lorrain Formation quartzite (unit 31).*

56 *Linton Lake unit; pink to grey, foliated to mylonitic, biotite granite to granodiorite with feldspar augen.*

55 *Raft Lake unit; medium- to coarse-grained, massive to foliated, pink, megacrystic granite (1464 +2/-1 Ma; Davidson and van Breemen, 1994).*

54 *Raft Lake unit; gabbro, diorite, in part commingled with megacrystic granite.*

53 *Hornblende gabbro.*

MESO to PALEOPROTEROZOIC

52 *Quartz diabase, commonly altered ('Trap dykes' North Channel swarm of Fahrig and West, 1986).*

PALEOPROTEROZOIC

51 *EDEN LAKE SUITE (1747 ± 3 Ma, Sullivan and Davidson, 1993; 1749 +7/-8 Ma, Davidson and van Breemen, 1994). Biotite granodiorite.*

50 *Carbonatized gabbroic rocks (Sudbury basin).*

49 *Remobilized granitic rocks, aplite largely derived from 2477 Ma felsic plutons (unit 32) (1848 ± 4 Ma; Galley, Ames, and van Breemen, unpubl.).*

SUDBURY IGNEOUS COMPLEX (1850 ± 1 Ma; Krogh et al., 1984)

48 *Contact Sublayer; inclusion and sulphide-bearing gabbronoritic to noritic rock.*

47 *Upper zone; granite, granodiorite, 'granophyre and plagioclase-rich granophyre'.*

46 *Middle zone; quartz monzogabbro, 'quartz gabbro'.*

45 *Lower zone; quartz monzogabbro and quartz gabbro, North Range: 'felsic norite' and 'mafic norite'; South Range: 'norite and quartz-rich norite'.*

44 *Offsets; 'quartz diorite' and breccia, granodiorite, quartz monzodiorite, quartz diorite; marginal inclusion/sulphide-free phase, central sulphide/inclusion-rich phase.*

WHITEWATER GROUP

43 *Chelmsford Formation: turbiditic wacke and siltstone.*

42 *Onwatin Formation: carbonaceous and pyritic argillite, siltstone and minor wacke.*

(dashed box) *Vermilion Formation; thin laminated carbonate rocks intercalated with grey argillite, with minor carbonate micro-concretions (not shown on map, unit too thin).*

Syn-Onaping intrusive rocks

41 *Onaping intrusion; xenolithic quartz diorite with abundant partially assimilated Archean and Proterozoic fragments.*

40 *Aphanitic andesite dykes and sills, commonly flow-banded, spherulitic, xenolithic.*

39 *Undivided, previously mapped as melt bodies (Dressler, 1984) may be unit 37 fluidal fragment units, unit 40 and/or unit 41*

Onaping Formation

38 *Dowling Member: fragmental rocks composed of <30% altered lenticular vitric andesite fragments and >50% matrix; composed of contact, lower, and iridium-bearing (Mungall et al., 2004) middle and upper units, dominantly tuff with minor lapilli-tuff, middle and upper units block and bomb-poor, chlorite-calcite alteration, may contain carbon.*

- - - - - *Erosive contact* - - - - -

37 *Sandcherry Member: fragmental rocks composed of >60% altered blocky vitric andesite fragments, <35% matrix, block and bomb-rich; composed of fluidal fragment units and equant shard units, dominantly lapilli-tuff to lapillistone; in part silicified and/or albitized (1848 +3.9/-1.8 Ma; Ames et al., 1998), may contain carbon.*

36 *Garson Member (South Range only): thick-bedded to massive fragmental rocks dominated by >20 to 85% Huronian quartzite fragments (< 6 cm) and blocks (> 6 cm to 50 m), and containing up to 15% vitric andesite lapilli, and <5% vitric andesite bombs and blocks. Lapillistone and coarse tuff breccia units are most common, the latter with a lapillistone to lapilli tuff matrix. Depositional units are typically massive to reversely graded.*

35 *FOOTWALL BRECCIA. Heterolithic breccia containing footwall rock fragments set in a contact metamorphic, granoblastic, in places granophyric matrix.*

(pattern) *SUDBURY BRECCIA. Randomly oriented blocks of country rock in fine-grained pseudotachylitic and/or cataclastic matrix.*

33 *NIPISSING MAFIC INTRUSIVE SUITE (2210–2217 Ma; Corfu and Andrews, 1986; Noble and Lightfoot, 1992; Buchan et al., 1998). Noritic quartz gabbro and amphibolitic equivalents.*

32 *CREIGHTON, MURRAY (2477 ± 9 Ma-Murray; Krogh et al., 1996) and SKEAD PLUTONS. Quartz monzonite, granite. Only known to intrude Elsie Mountain and Stobie Formations (units 19, 20); may be cogenetic with Copper Cliff Formation (unit 21).*

- - - - - *Intrusive contact* - - - - -

HURONIAN SUPERGROUP (<2480 to >2220 Ma)
COBALT GROUP

31 *Lorrain Formation; crossbedded, ripple and planar laminated arkose, subarkose, quartz arenite, a- minor quartz and jasper pebble conglomerate.*

30 *Gowganda Formation; a- polymict conglomerate, b- lith-arenite, lithic-wacke, massive and finely laminated siltstone and argillite, locally with dropstones.*

- - - - - *Local unconformity* - - - - -

QUIRKE LAKE GROUP

29 *Serpent Formation; crossbedded arkose, subarkose, local pebbly arkose and calcareous sandy-mudstone.*

28 *Espanola Formation; limestone at base (Bruce Member), middle laminated calcareous siltstone, wacke, calcareous arkose and subarkose and local dolostone at top.*

27 *Bruce Formation; matrix-supported polymict conglomerate, minor wacke, arkose and siltstone.*

HOUGH LAKE GROUP

26 *Mississagi Formation; crossbedded subarkose and arkose, minor a- wacke, b- quartz-pebble conglomerate.*

25 *Pecors Formation; laminated to thin planar and wavy laminated wacke, mudstone, siltstone and arenite, knotted staurolite-andalusite schist.*

24 *Ramsey Lake Formation; matrix-supported polymict conglomerate, minor mudstone, wacke, arenite.*

ELLIOT LAKE GROUP (2470 to 2450 Ma)

23 *McKim Formation; laminated, thin- to thick-bedded wacke and siltstone.*

22 *Matinenda Formation; a- crossbedded arkose, b- wacke, c- uraniferous quartz-pebble conglomerate.*

21 *Copper Cliff Formation; (2450 +25/-10 Ma; Krogh et al., 1984 (coeval with Murray pluton); aphyric to quartz and quartz-feldspar porphyritic rhyolitic flows, domes and associated autoclastic breccias, subordinate felsic tuff and felsic quartz ± feldspar crystal lapilli tuffs, a- localized massive and pillowed basalt.*

20 *Stobie Formation; pillowed and massive basalt, mafic and intermediate pyroclastic rocks, wacke in the middle and upper parts; a- intercalated wacke, siltstone, and arenite, b- minor dacite and rhyolite.*

19 *Elsie Mountain Formation; pillowed and massive basalt, mafic and intermediate pyroclastic rocks, minor wacke a- intercalated wacke, siltstone, and arenite, commonly sulphidic, b- minor dacite and rhyolite.*

EAST BULL LAKE IGNEOUS SUITE (2490 to 2470 Ma; Krogh et al., 1984; Prevec, 1992)

18 *Gabbro, gabbro norite, and anorthositic equivalents.*

17 *Melanocratic gabbro, gabbro norite.*

16 *Ultramafic rocks.*

SUPERIOR PROVINCE

PALEOPROTEROZOIC

15 *Diabase - Matachewan dyke swarm (2473 +16/-9 and 2446 ± 3 Ma, Heaman, 1997).*

14 *Glomeroporphyritic to porphyritic diabase (uncertain affinity).*

NEOARCHEAN

13 *Cartier batholith: massive granodiorite, granite (~2640 Ma).*

12 *Monzonite, monzodiorite (~2655 Ma).*

11 *Metatexite, diatexite, rocks similar to Levack gneiss complex units 5 and 6, but containing >30% granitic leucosome.*

Metavolcanic and metasedimentary rocks (Benny Belt)

10 *Metasediments; a- wacke, b- chert, IF- iron-formation.*

9 *Intermediate and felsic metavolcanic rocks; a- flows, b- pyroclastic rocks.*

8 *Mafic metavolcanic rocks; amphibolite and mafic schist, a- massive and pillowed flows, b- pyroclastic rocks.*

LEVACK GNEISS COMPLEX (~2700–2640 Ma)

7 *Early felsic plutonic rocks; foliated granodiorite, granite.*

6 *Heterogeneous diatexite (>30% mobilizate).*

5 *Paragneiss, in part migmatitic (<30% mobilizate).*

4 *Iron-formation.*

3 *Tonalite-granodiorite gneiss, xenolithic tonalite-granodiorite gneiss.*

2 *Mafic, ultramafic, and anorthositic intrusive rocks.*

1 *Mafic and ultramafic gneiss.*

Dip of lower contact of the Sudbury Igneous Complex 32
Fault or lineament
Thrust fault
Grenville Front boundary fault
Normal fault
Anticline
Antiform
Syncline
Synform
Shattercone (orientation unknown, orientation known - positive: up, negative: down) . . . 35
South Range Shear Zone (1658 ± 68 Ma; Bailey et al., 2004)

MINES AND OCCURRENCES

See Table 1 for names and commodities (source of data and NTS locations)

Displayed according to status and coloured according to commodities

Status	Commodity
Advanced prospect	Ni-Cu
Producer	Ni-Cu-PGE
Past producer	Zn-Pb-Cu
Occurrence	Au
	Cu
	Other

Mineralization, orebodies surface projection
Ni-Cu-PGE
Zn-Pb-Cu

Sudbury Smelters (Copper Cliff, Falconbridge, and Coniston)
★ Smelter

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Table 1: Mineral deposits and occurrences of the Sudbury map area.
Listed according to their NTS sheet (41-I/#) and numbered from west to east. See NTS reference map below. Annotated on map according to status and coloured according to commodity. Digital database with full listing and references accompany the map sheet.

NTS Sheet 41-I/13

Ref. #	Name	Commodity
1	Moncrieff Sulphide No.11	Ni
2	Moncrieff Tp Sulphide	Ni
3	Moncrieff Creek	Mo,Cu,Pb,Zn
4	Tracanelli	Co,Ni,Au,Bi,Cu
5	Hollinger	U
6	Munster Sulphide	Cu,Ni
7	Moncrieff Sulphide No.7	Ni
8	Munster Drilled Sulphide	Ni
9	North West Hess Township Sulphide	Mt
10	Munster Township	Mt
11	Geneva Lake mine	Zn,Pb,Ag,Au
12	Central Hess Township	Au
13		Zn,Pb,Cu,Ag
14		Fe
15	Geneva Lake Prospect	As,Pb,Ba

NTS Sheet 41-I/14

Ref. #	Name	Commodity
1	Eams	Cu
2		Ni,Cu
3	Harty Township	Cu
4	Cartier Regional	Ni,Cu
5	South Lake, Botha, Sandfly Lake	Cu
6		Ni,Cu
7	Sandcherry Lake	Ni,Cu
8		Ni,Cu
9	Holmstrom, Venetian Lake	Ag,Cu,Pb,Zn,Au
10	Nickel Offset mine	Ni,Cu,PGE
11	WD 250	Ni,Cu
12	Mcgrindle Lake, Botha, Mccrindle	Cu
13	WD 234	Ni,Cu
14	Crazy Creek	Ni,Cu
15	WD 228	Ni,Cu
16	Copenhagen mine	Cu,Pb,Ni
17	WD 13	Ni,Cu
18	South Zone	Cu,Ni,PGE
19	Broken Hammer Zone	Cu,Ni,PGE
20	WD 16	Ni,Cu

NTS Sheet 41-I/15

Ref. #	Name	Commodity
1	Vermilion River	Au
2		Au
3	Vermillion Placer Gold, Milnet Area Placer Gold	Au
4	Concor-Chibougamau, Milnet Area Placer Gold	Au
5	Harold Barry Dyke	Cu
6		Ni,Cu
7		Zn,Cu,Ni
8		Ni,Cu
9	Brown Gold	Au,Ag,Pb
10		Ni,Cu
11	Norman West	Ni,Cu
12	Se Island Lk	Cu
13	New Dominion	Ni,Cu
14	Golden Pine Property	Au,Ni
15	Aro, George, Midpines Exploration, Leschishin Property	Ag,Au
16	Norpick Gold Mines N Shore	Au
17	Whistle mine	Ni,Cu
18		Ni,Cu
19		Ni,Cu
20	Parkin Marble	Marble
21	Lot 6 Con 2 Parkin, Miron, T.	Ag,Au,Cu,Pb
22	Decade, Mowat Creek	Ag,Au,Pb,Cu,Zn
23	Parkin, J. Mataris, Mowat Creek	Au
24		Ni,Cu
25		Ni,Cu
26		Pt,Ag,Au
27	Norman, Podolsky	Cu,Ni,PGE
28	Falmac Zinc	Zn,Cu
29	Milnet (Jonsmith)	Ni,Cu,PGE
30	W.G. Peacock, R.M. Elliot, Brady, J.	Au,Cu,Ni,Ag,Co
31	Post Creek	Cu
32	Lot 4 Con 2, Parkin Township	Au
33	Free Gold, Mataris, J.	Au
34	Ironco Iron & Smelting	Cu
35	Mataris, J., Brady, J.	Au
36	J. Mataris Lot 1, Con 1, Parkin Township	As
37	Rathbun Township	Fe
38	Dobson, C., Bennett, W.S., Bennett, G.	Au
39		Au
40	Rathbun Lake	Cu,Ni,Pd,Pt,Au
41	Thomas Lake	Au
42	Crystal Mine	Au

NTS Sheet 41-I/12

Ref. #	Name	Commodity
1	Moore And Johns	Cu
2	Balboa, Pumphouse Creek, Balboa Uranium Mines	Th,U
3	Alcourt Mines	U
4	Dumont	Cu
5	Mousseau Lake	Zn
6		Fe,Cu
7	Camp Ten Lake	Cu
8	Benson Lake Magnetite	Mt
9	Trill Deep	Ni,Cu

NTS Sheet 41-I/11

Ref. #	Name	Commodity
1		Py
2		Ni,Cu
3		Sid
4		Zn,Cu
5		Zn,Cu
6	Sudbury Elbow	Cu,Pb,Zn,Ag,Au
7	Canada Radium, Pacemaker Mines And Oils	As
8	Simmons	Pb,Cu
9		Zn
10		Cu
11		Zn,Pb,Cu
12	A & M Peperite	
13	Hardy pit	Ni,Cu
14		Py
15	Boundary mine	Ni,Cu
16		Cu,Ni,Pb
17	Morley	Zn,Pb,Cu
18	Onaping mine	Ni,Cu
19	TT Showing	Zn
20	Levack mine	Ni,Cu
21	North Trench	Zn
22	Dowling	Ni,Cu,PGE
23	Onaping Depth	Ni,Cu
24		Pb,Zn,Cu
25	Craig mine	Ni,Cu
26	LW Showing	Zn,Cu,As
27		Zn,Cu,Pb
28	Anthraxolite 1	C
29	McCreedy West mine	Ni,Cu,PGE
30		Zn,Cu
31	Fecunis mine	Ni,Cu
32		Cu
33	Vermilion-Whitewater	Zn,Pb,Cu,Au,Ag
34		Zn,Cu
35	North Mine	Ni,Cu
36	Cow Lake	Zn,Cu
37	McNunes	Zn,Cu,Pb
38	McCreedy East mine	Ni,Cu,PGE
39	Strathcona mine	Ni,Cu,PGE
40	Fraser mine	Ni,Cu,PGE
41	Onex Shaft	Ni,Cu
42		Zn,Cu,Pb
43	Coleman mine	Ni,Cu,PGE
44	Gordon Lake Road Peperite	
45	Sturdy Mines Ltd.	Zn,Pb,Cu
46		Cu,Zn,Pb
47		Zn,Cu
48	Longvack mine	Ni,Cu
49	Lower Coleman	Ni,Cu
50	Barnet	Cu,Ni,PGE
51		Zn
52		Zn,Cu
53		Pb,Ag,Cu
54	Big Levack	Ni,Cu
55	Fraser-Morgan	Ni,Cu
56		Zn
57		Cu, Zn
58	Sudbury Midzone	Cu,Pb,Zn
59		Au
60	Rudy's Lake	Cu,Fe
61		Ni,Cu
62	Anthraxolite 2	C
63		Zn,Cu
64	River shaft	Zn,Pb,Cu,Au,Ag
65	Ryan	Zn,Cu,Pb
66	Errington No. 1 mine	Zn,Pb,Cu,Ag
67	Hamilton F	Cu
68		Zn,Cu,Pb,Au
69	Northwest Balfour	Pb,Zn
70		Q
71	Vermilion River, Lot 8, Con V	Cu,Pb,Zn
72	Errington No. 2 mine	Zn,Pb,Cu,Ag
73	Balfour, Lot 7, Conc VI	Cu,Pb,Zn,Au
74	Limerick	Cu,Zn
75		Q
76		Zn,Cu,Pb
77	Irwin	Zn,Pb,Cu,Au,Ag
78	Tournigy	Zn,Cu
79		Zn,Cu
80	North-East Balfour	Cu,Pb,Zn
81	Errington #3	Zn,Pb,Cu,Au,Ag
82	Moore Lake	Pb,Zn
83	WD 248	Ni,Cu
84	WD 233 property	Ni,Cu
85	Whitewater Lake	Cu
86	Bowell	Ni,Cu
87		Cu
88		Zn
89	Rand Creek, Foy Offset	Ni,Cu
90		Zn,Cu
91	WD 236	Ni,Cu
92	WD 212 property	Ni,Cu
93	WD 152	Ni,Cu
94	Nickel Lake	Ni,Cu
95	WD 237 property	Ni,Cu
96	WD 150	Ni,Cu
97	WD 155	Ni,Cu
98		Zn,Cu
99		Zn,Cu
100		Zn,Cu
101	WD 229	Ni,Cu
102	Prue, Proulx, Nelson Lake	Zn,Cu
103		Cu,Zn
104	WD 209	Ni,Cu
105	Lady Violet Mine	Ni,Cu
106	Folsey	Cu,Pb,Zn
107		Cu,Zn
108	Elsie	Ni,Cu
109	Murray mine	Ni,Cu
110	Discovery Site	Ni,Cu
111	McKim mine	Ni,Cu
112	North Range shaft	Ni,Cu
113		Ni,Cu
114		Ni,Cu
115		Zn,Cu
116		Zn
117		Ni,Cu
118	Lot 8, Con Ii, Blezard Township	Ni,Cu
119		Zn,Pb,Cu
120	Junior Frood	Ni,Cu
121	Cameron Mine (Misnomer)	Ni
122	Blezard-Val Caron	Cu,Pb,Zn
123	Little Stobie mine	Ni,Cu,PGE
124	Frood mine	Ni,Cu,PGE
125		Zn,Cu,Pb

NTS Sheet 41-I/10

Ref. #	Name	Commodity
1	Mt Nickel mine	Ni,Cu
2	Stobie mine	Ni,Cu,PGE
3	Lindsley mine	Ni,Cu,PGE
4		Cu, Zn
5	Blezard mine	Ni,Cu
6	Papineau	Au,Ag,Cu,Pb
7	Microwave Showing	Ni,Cu
8	Lasalle	Cu,Ni,Ag,Au
9		Py
10	Hanmer, Sudbury Basin Mines	Cu,Pb,Zn
11	Jenkins, H. (Placer), Vermilion Valley	Au
12	Sheppard, Shepherd, Davis	Ni,Cu
13	Sheppard property	Ni,Cu
14	Sir Mortimer Davis, Track-Davis	Ni,Cu,PGE
15	Kenn Holdings And Mining	Cu,Ni
16	Neelon Township NW	Ni
17	West Bay	Ni,Cu
18	Onwatin Placer, Capreol Township Placer No. 1	Au
19	Malbeuf And Martin	Ni,Cu
20		Py
21		Zn
22	Kirkwood FW showing	Cu,Ni,PGE
23	Segway	Cu,Ni,PGE
24	Kirkwood mine	Ni,Cu
25	Leclerk	Ni,Cu
26		Ni,Cu
27		Q
28	McConnell Offset	Ni,Cu
29	Executive Neelon	Cu,Ag
30	Waddell Lake, Cleveland Copper Corp.	Ni,Cu
31	Garson mine	Ni,Cu,PGE
32		Cu
33		Zn,Cu,Pb
34	West Bay Roadside	Cu,Ni
35		Q,Pd,Pt
36		Zn,Pb
37		Ni,Cu
38	Amy Lake Showing #1	Cu,Ni,PGE
39	Amy Lake Showing #2	Cu,Ni,PGE
40	Capre property	Ni,Cu
41		Ni,Cu
42	Victor Main/Deep	Ni,Cu,PGE
43	Nickel Rim Depth	Ni,Cu,PGE
44	Victor mine	Ni,Cu
45	Nickel Rim mine	Ni,Cu,PGE
46	Falconbridge mine	Ni,Cu,PGE
47	Nickel Rim South	Ni,Cu,PGE
48	Falconbridge East mine	Ni,Cu
49		U
50	MacLennan mine	Ni,Cu,PGE
51	Cryderman property	Ni,Cu
52	Massey Bay	U
53		U
54		Ni,Cu
55	Norduna mine	Ni,Cu
56	Pershland	Ni,Cu
57	Copper Prince Resources Inc.	Cu,Au
58	Chevrette, E.	U
59		Cu,Zn,Ni,Au,Ag
60	Skead mine	Au
61		ky
62		Cu,Zn,Ni,Au,Ag
63	Falcon, Beckley	Au
64	Hodden Grey	Cu
65	Wanapitei	Au
66	Sheppard Gold Mine (Misnomer)	Au
67	Mackenzie	Au,Cu,Ni
68	Manchester	Ni,Cu
69	Bonanza mine	Au,q
70	Maclennan Township	Au
71	Folsey	Ni,Cu
72	Midway Energy and Mines	Cu,Fe,S
73	Street Occurrence 4	Cu
74	Street Occurrence #1	Cu,Fe,S
75	Street Occurrence #2	Au,Cu
76	Prosco Mines Limited	Cu,U
77	West Side Outlet Bay	Ni,Cu
78	Street Occurrence #6	Cu,Fe,S
79		Au
80	Moose Rapids	Ni,Cu
81	Potvin	Fe,S
82	Scadding	Au
83		Au
84		Au,Cu
85	Boulanger-Potvin	Au,Cu,Fe,S
86	Gordon	Au
87	Red Rock mine	Au
88	Mid-Continental	Au
89	Glade	Au,Cu,Ni,Ag,Co
90		Au

NTS Sheet 41-I/5

Ref. #	Name	Commodity
1	Kordal # 2	Ni,Cu,Co
2	Kordal Main Zone	Ni,Cu,Co,Pd
3	Kordal # 3	Ni,Cu,Co
4	Pond, Gaele Pond West	Ni,Cu
5	Kordal #4 Zone	Ni,Cu,Co
6	Trill Offset	Ni,Cu, PGE
7	Lot 12, Con 4, Tamminen, T, Pond Showing No.2, Drury Township	Cu
8	Lot 11, Con 3, Drury Township	Cu
9	Agnew Lake mine	U,Cu,Th
10		Ni,Cu
11	Lot 10, Con 2, Drury Township	Cu
12	Ministic Creek, Lot 10, Con 4, Drury Township	Ni,Cu
13	Trillabelle	Ni,Cu
14		U
15	Ryanor, Alanen And Maki	Cu
16	Lot 8, Con 3, Drury Township	Ni,Cu
17	Sultana	Ni,Cu
18	Robb Farm, Se 1/4, S1/2 Lot 7, Con 1, Drury Tp	Ni,Cu
19	Garrison Harbour, Dwyer	U,Cu

NTS Sheet 41-I/6

Ref. #	Name	Commodity
1	Alanen And Maki	U,Cu,Th
2	Dwyer	Au,Ag
3	Lot 6, Con 4 Cu, Drury Township	Cu
4	Lot 5, Con 2, Drury Township	Cu
5	Lot 6, Con 3, Drury Township	Ni,Cu
6	Sudbury Lode Mines	Cu,Au,Pb,Zn
7	Grimsell, Paramaque	Ni,Cu
8	Lot 5, Con 3, Grimsell 2, Paramaque 2, Drury Tp	Ni,Cu
9	Lot 4, Con 4 North, Drury Township	Ni,Cu
10	Lot 4, Con 4 South, Drury Township	Ni,Cu
11		Ni,S
12	Chicago mine	Ni,Cu
13	Worthington Mines Prospect	Ni,Cu
14	Loughrim & Dwyer Prospect	Ni,Cu
15	Totten	Ni,Cu,PGE
16		Ni,S
17		Ni,Cu
18	Worthington mine	Ni,Cu
19	Tamminen	Ni,Cu
20		Ni,Cu
21		Ni,S
22		Ni,S
23	Boundary	Ni,Cu
24	Howland Pit	Ni,Cu
25	AER	Ni,Cu
26		Ni,Cu
27	Pilspanen, V	Ni
28	Kidd Copper	Ni,Cu,PGE
29		Ni,S
30		Ni,Cu
31	Lot 11, Con 2, Denison Township	Cu
32		Ni,S
33	McIntyre mine/Gersdorffite	Ni,Cu
34		Ni,S
35		Ni,Cu
36		Ni,Cu
37		Ni,Cu
38	Victoria mine	Ni,Cu,PGE
39	Ethel Lake	Cu
40		Ni,Cu
41	Lots 6,7,8, Con 3, Denison Township	Cu
42	Vermilion mine	Ni,Cu,PGE
43		Ni,Cu
44	Crean Hill mine	Ni,Cu
45	Lots 3&4, Con 4, Denison Township	Cu
46	Lots 3&4, Con 5, Denison Township	Cu
47		Ni,Cu
48	Lockerby Mine	Ni,Cu,PGE
49	Ellen pit	Ni,Cu
50	Ranger, Henry	Au,Cu,Pb
51	Vermilion River	Mo
52	McVittie- Graham	Ni,Cu,PGE
53	Lot 12, Con 3, Graham Township, Copper-Lot 12	Cu
54	Simpson	Au,Ag,Cu,PGE
55	Lots 9,10,11, Con 4, Graham Township	Cu
56	Lot 9, Con 3, Graham Township	Cu
57	Lot 8, Con 4, Graham Township	Cu
58	Lot 7,8, Con 3, Graham Township	Ni,Cu
59	Lots 6,7,8, Con 3, Graham Township	Cu
60	Nemag Lake Cobalt	Co
61	Russell Property, Lot 6 Con 3	Cu,Co
62	Lot 6, Con 3, Graham Township	Pb,As,Co,Cu
63	Lots 5,6 Con 3, Graham Township	Ni,Cu
64		Ni,Cu
65	Gertrude mine	Ni,Cu
66	Century mine	Ni,Co,Cu
67		Ni,Cu
68	Lots 1,2,3 Con 4, Graham Township	Cu
69	Lot 2, Con 4, Graham Township	Ni
70	Creighton mine	Ni,Cu,PGE
71	Waters Sulphide F	Cu
72	Waters Sulphide E	Cu
73	Waters Sulphide I	Cu
74	Waters Sulphide H	Cu
75	Waters Sulphide G	Cu
76	North Star mine	Ni,Cu
77	Waters Tp	Cu
78	J. Rauhala	Ni,Cu
79	Kettyle, C.J.	Au
80	Tam O'Shanter	Ni,Cu
81	Campbell, P.C.	Au,Ag,Pb
82	Babcock, J.	Ni,Cu
83	Mccormack, R.	Au,Ag
84	Fielding Property	W
85	Copper Cliff South mine	Ni,Cu
86	Copper Cliff No. 1 mine	Ni,Cu
87	Evans mine	Ni,Cu
88	Clarabelle pit	Ni,Cu
89	Copper Cliff mine	Ni,Cu
90	Copper Cliff North	Ni,Cu,PGE
91	Kelly Lake	Ni,Cu,PGE
92	Copper Cliff No. 2 mine	Ni,Cu
93	Mckim L Occurrence	Ni,Cu
94	Mckim M Occurrence	Ni,Cu
95	Mckim J Showing	Ni,Cu
96	Melto-Laasko	Cu,Ni,Ag
97	Ramsey Lake, Enn	Cu,Ni,Au

NTS Sheet 41-I/7

Ref. #	Name	Commodity
1	Mckim H Showing	Ni,Cu
2	Mckim I Showing	Ni
3	Kingsway Showing	Cu
4	Broder Township	Ni,Cu
5	Minnow Lake West Pit	Ni
6	Mccormick, Mccormicks Mine (Misnomer)	Ni,Cu
7	Arcadia South Showing	Ni,Cu
8	Arcadia, Amax Neelon, Arcadia Nickel Corp	Ni,Cu
9	Wanapitei Complex Neelon	Ni,Cu
10	Pershland South	Ni,Cu
11		Ni,Cu
12		ky
13		ky

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