MARGINAL NOTES

MINERAL PRODUCTION AND RESOURCES

The name and ownership of many mineral occurrences shown on this map are given on Map 2310, Ontario Mineral Map, 1974.

The map area contains occurrences and deposits of asbestos, beryl, cesium, copper, gold, iron, lead, lithium, molybdenum, nickel, silver, tantalum, tin, tungsten, and zinc.

During 1981, gold was mined by Northern Concentrators Limited at the Crooked Green Creek Property in Pither Township. In 1982, Consolidated Louanna Gold Mines Limited commenced production of gold concentrate at O'Sullivan Lake. The Pan Empire Joint Venture reactivated the former Northern Empire Mine, and commenced gold production in 1982. Initial mill feed was derived from the waste dump.

The first discovery of gold within the map area was the Dodds Occurrence on the Kawashkagama River at Howard Falls in 1915. Gold was discovered in the Beardmore area at the Northern Empire Mine in 1925, in the Geraldton area, gold in glacial float was first reported during World War I on Kenogamisis Lake, but the discovery of gold occurrences at Kenogamisis Lake and Magnet Lake was made later in 1931 and 1932, respectively. During 1934, gold was discovered in the Jellicoe area on the Sturgeon River.

Twenty-one mines (defined as having extracted 100 ounces of gold or more) produced precious metals at various times and intervals from 1934 to 1968. Totals of approximately 4 115 000 ounces of gold and 318 500 ounces of silver were produced during the above period.

The last 2 mines to cease production were the Macleod-Cockshutt Mine and the Leitch Mine. Production for each ended in 1968 and was 1 475 728 and 847 690 ounces of gold and 101 388 and 31 802 ounces of silver, respectively. Approximately 50 000 tons of waste dump material from the Leitch Mine were processed in 1980.

Copper, as well as gold and silver, was produced at the property of Tashota Nipigon Mines Limited near Onaman Lake with a yield of 360 539 pounds of copper.

During 1942 and 1943, 9600 pounds of high and low grade concentrates of WO_3 were processed by Little Long Lac Gold Mines Limited and 9600 pounds by Leitch Gold Mines Limited.

Base metal deposits containing zinc and lead with precious metals, and copper with precious metals, occur west and northwest of Onaman Lake. Copper-lead-zinc deposits with gold and silver in the Marshall Lake-Gridge Lake area have received continuous attention from exploitationists. Two copper-nickel deposits occur in the map area, at Juneau Lake and in Elmhirst Township.

Pegmatite deposits containing 1 or more of beryl, cesium, lithium, molybdenum, and tantalum occur mainly in the northwestern portion of the map area. Cassiterite is found in granitic dikes at Linklater Lake northwest of Windigo Bay, Lake Nipigon.

Iron deposits exist throughout the area: at Briarcliffe Lake and Two Mile Lake north of Nakina; in Sun Township south of Kowkash; at Ellerton Bay, Kenogamisis Lake at Geraldton; at North Lamaune Lake northwest of Auden; northeast of Summit Lake, north of Stewart Lake; and in Irwin Township, near Beardmore.

Gold exploration has retained the highest priority within the Wabigoon metavolcanic-metasedimentary belt, particularly between Lake Nipigon and Longlac.

ROCK SUCCESSION AND STRATIGRAPHY

The legend for the Early Precambrian is based on lithology. Metavolcanic and metasedimentary rocks are subdivided into 4 major map units (1 to 4) which have been observed to succeed each other in various order within any subarea. Hence no stratigraphic succession is intended by their numerical sequence in the legend. Similarly, intrusive ultramafic to felsic rocks are subdivided into 6 major map units (5 to 10) without regard to succession. The felsic intrusive rocks however, can be subdivided generally into pre- to syntectonic bodies and essentially unmetamorphosed late to posttectonic intrusions. The former tend to be tonalite to granodiorite in composition (e.g. most of the Onaman-Twin Lakes Batholithic Complex); the latter tend to be granodiorite to monzogranite in composition (e.g. the crescent-shaped Onaman Lake Pluton).

The northern ⅓ of the map area comprises the English River Subprovince, typified by epiclastic sediments that progressively grade northward to metasedimentary migmatite and more predominant granitoid rocks.

The Middle Precambrian suite overlies the Early Precambrian rocks with angular unconformity. This suite is dominantly represented by sheets of gabbro locally intruded into epiclastic sandstones and calcareous mudstones.

The main trends of diabase dikes in the map area are northwesterly in the northern ⅓ of the map area and northerly further south.

TERMINOLOGY FOR INTRUSIVE BODIES

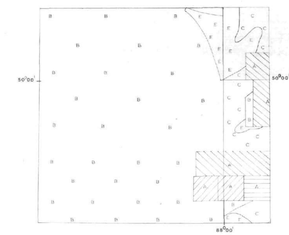
For the sake of uniformity of terminology the felsic to intermediate intrusions and groups of intrusive bodies are referred to in the following ways: "stock" is a body of plutonic rock that covers less than 100 km^2 (e.g. Deedy Lake Stock). "batholith" is a body of plutonic rock larger than a stock, which may or may not have been emplaced during a single intrusive episode; "pluton" refers to plutonic bodies of batholithic proportion that are known to have been emplaced during a single intrusive episode (e.g. Onaman Lake Pluton); "batholithic complex" is an agglomeration of batholiths, stocks, plutons, and relict supracrustal rocks that together constitute a whole (e.g. the Onaman-Twin Lakes Batholithic

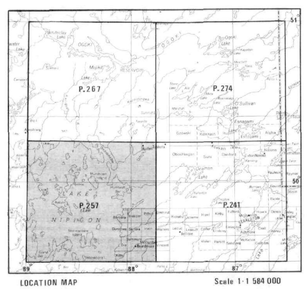
REFERENCE

Streckeisen, A.
1976: To Each Plutonic Rock its Proper Name; Earth-Science Review, Volume 12, p.1-33

GEOLOGICAL RELIABILITY DIAGRAM

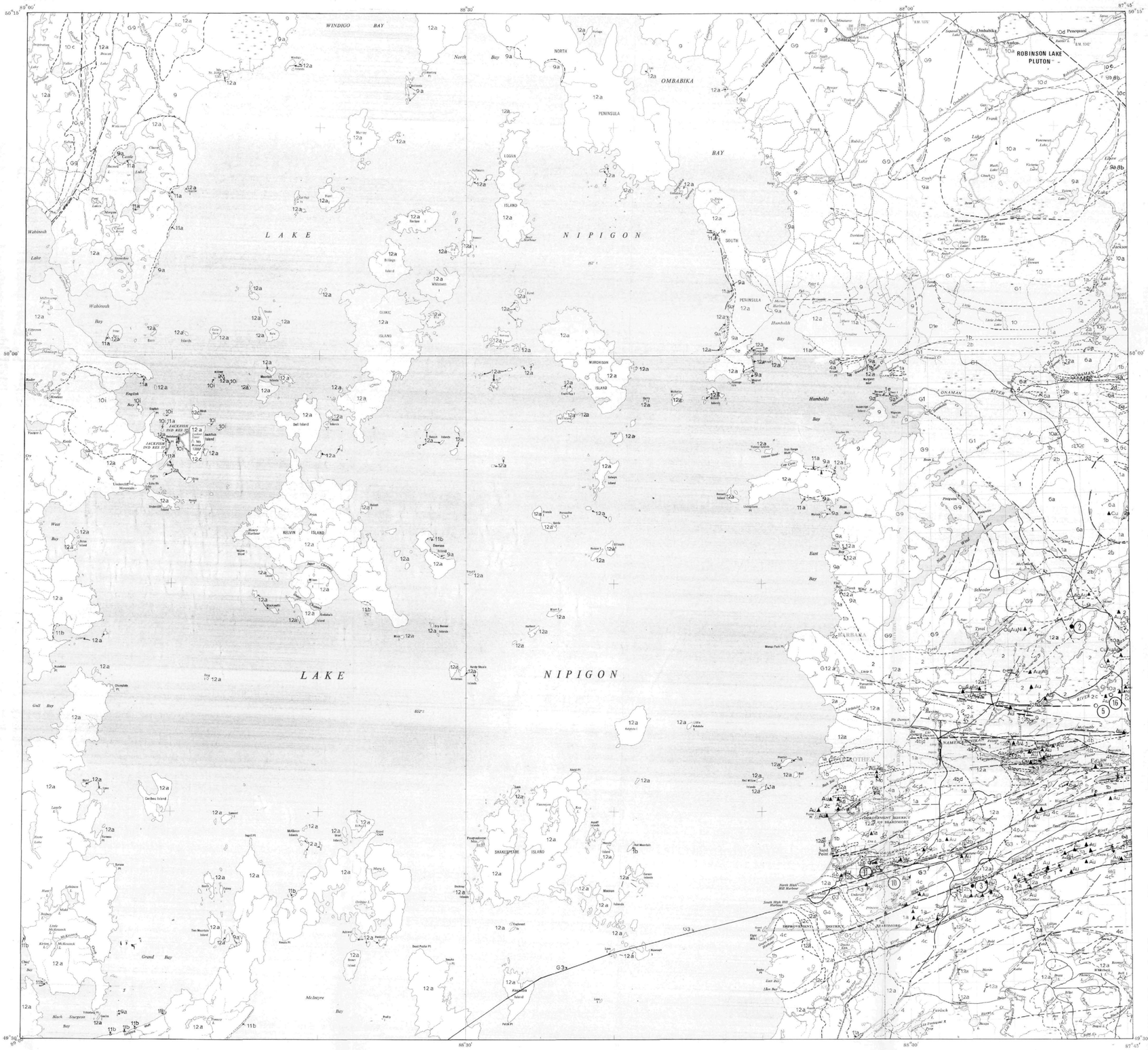
A	Detailed mapping by the Ontario Geological Survey only, scale 1:31 680 or 1 inch to ½ mile; some at 1:15 840 or 1 inch to ¼ mile, and 1:12 000 or 1 inch to 1000 feet
B	Semi-detailed mapping, scale 1:63 360 or 1 inch to 1 mile
C	Reconnaissance mapping, scale 1:126 720 or 1 inch to 2 miles
D	Reconnaissance mapping, scale 1:253 440 or 1 inch to 4 miles
E	No systematic mapping by government agencies





LOCATION MAP

Scale 1:1 584 000



LEGEND

PHANEROZOIC
CENOZOIC
QUATERNARY
PLEISTOCENE AND RECENT
Sand, gravel, clay

UNCONFORMITY

PRECAMBRIAN
MIDDLE TO LATE PRECAMBRIAN (PROTEROZOIC)[a]

MAFIC INTRUSIVE ROCKS[b]

12 — 12a Diabase dikes and sills
12b Porphyritic diabase dikes and sills
12c Ultramafic dikes and sills

INTRUSIVE CONTACT

SIBLEY GROUP

11 — 11 Undivided
11a Pass Lake Formation: Conglomerate, sandstone
11b Rossport Formation: Calcareous mudstone

UNCONFORMITY

EARLY PRECAMBRIAN (ARCHEAN)[c]
UNMETAMORPHOSED FELSIC TO INTERMEDIATE INTRUSIVE ROCKS[d]

10 — 10 Undivided
10a Massive to foliated equigranular biotite and hornblende-biotite tonalite to granodiorite
10b Massive to foliated equigranular hornblende and biotite-hornblende tonalite to granodiorite
10c Equigranular biotite and hornblende-biotite monzogranite to syenogranite
10d Equigranular hornblende and biotite-hornblende monzogranite to syenogranite
10e Porphyritic biotite monzogranite to granodiorite
10f Porphyritic hornblende monzogranite to granodiorite
10g Equigranular and porphyritic syenite, quartz syenite, monzonite, quartz monzonite, monzodiorite, quartz monzodiorite, diorite, quartz diorite.
10h Nepheline syenite and syenite
10i Quartz feldspar porphyritic to equigranular alkali feldspar granite

METAMORPHOSED FELSIC TO INTERMEDIATE INTRUSIVE ROCKS[d]

9 — 9 Undivided
9a Foliated to gneissic, biotite and hornblende-biotite diorite, tonalite to granodiorite
9b Foliated to gneissic, hornblende and biotite-hornblende diorite, tonalite to granodiorite
9c Foliated to massive biotite and hornblende diorite, tonalite to granodiorite
9d Foliated to massive biotite and hornblende monzogranite to granodiorite[e]
9e Quartz and/or feldspar porphyry

METAMORPHOSED MIGMATITIC ROCKS

8 — 8a Biotite-quartz-feldspar metasedimentary metatexite to granitic inhomogeneous diatexite, and metasedimentary with interlayered intrusive granitic rocks; (containing greater than 40% interlayered granitic rocks)[f]
8b Hornblende-quartz-feldspar gneiss (mafic metavolcanics with greater than 40% interlayered granitic rocks)

METAMORPHOSED FELSIC TO INTERMEDIATE SUBVOLCANIC INTRUSIVE ROCKS

7 — 7 Unsubdivided
7a Quartz and/or feldspar porphyry

INTRUSIVE CONTACT

METAMORPHOSED MAFIC TO INTERMEDIATE INTRUSIVE ROCKS[b]

6 — 6 Unsubdivided
6a Gabbro, norite
6b Anorthosite to anorthositic gabbro
6c Diorite, quartz diorite
6d Mafic dikes

INTRUSIVE CONTACT

METAMORPHOSED ULTRAMAFIC INTRUSIVE ROCKS[b]

5 — 5 Peridotite, pyroxenite, serpentinite

INTRUSIVE CONTACT

METAVOLCANICS AND METASEDIMENTS
METASEDIMENTS
Clastic Metasediments

4 — 4 Undivided
4a Conglomerate
4b Mudstone, siltstone, argillite, slate, and metamorphosed equivalents
4c Wacke and metamorphosed equivalents
4d Arenite and metamorphosed equivalents
4e Migmatized wacke, mudstone (containing 10-40% interlayered granitic rocks)

Chemical Metasediments

3 — 3 Undivided ironstone
3a Magnetite chert ironstone
3b Siderite ironstone
3c Carbonate ironstone
3d Chert

METAVOLCANICS
Felsic to Intermediate Metavolcanics

2 — 2 Undivided
2a Dacite to rhyolite flows
2b Fine pyroclastic rocks (tuff, lapilli tuff, lapillistone), some intermixed flows, dacite, to rhyolite
2c Coarse pyroclastic rocks (tuff breccia, pyroclastic breccia), some intermixed flows, dacite to rhyolite
2d Quartz feldspar porphyritic flows (some may be synvolcanic intrusive rocks)

Mafic and Intermediate Metavolcanics

1 — 1 Undivided
1a Basalt to Andesite flows, massive
1b Pillowed flows
1c Mafic hyaloclastic and pyroclastic rocks
1d Coarse grained flows or intrusions
1e Foliated to gneissic amphibolites
1f Migmatitic mafic volcanics (10-40% granitic rocks)

NOTES:

(a) Rocks are subdivided lithologically; order does not imply age relationships within or among the groups.

(b) All intrusive rocks are classified according to the recommendations of the IUGS Subcommission on the Systematics of Igneous Rocks (Streckeisen 1976).

(c) Units 1 to 10 are of Archean age except unit 10h (probably Proterozoic) and unit 10i (of known Proterozoic age).

(d) Granitic intrusive rocks are assigned to Unit 9 if their nature is unknown.

(e) Includes bodies of homogeneous granitic diatexite (>90% granitic rocks) in the Opiki River region.

(f) May include felsic and intermediate tuffaceous metatexite.

The letter "G" preceding a rock unit number, for example "G9", indicates interpretation from geophysical data in drift covered or unmapped areas.

The letter "D" preceding a rock number, for example "Dfc", indicates interpretation from diamond drill core.

The legend, properties, symbols, abbreviations, and marginal notes, apply to maps P.241(Rev), P.257(Rev), P.267(Rev), and P.274(Rev). All rock units may not appear on this map.

SYMBOLS

- Geological Boundary, position interpreted
- Fault
- Synclinal or synformal axis, with plunge
- Lineament
- Anticlinal or antiformal axis, with plunge
- Geophysically inferred dike

ABBREVIATIONS

Ag	Silver	Mo	Molybdenum
asb	Asbestos	Ni	Nickel
Au	Gold	Pb	Lead
be	Beryl	Sn	Tin
Cs	Cesium	Ta	Tantalum
Cu	Copper	W	Tungsten
Fe	Iron	Zn	Zinc
Li	Lithium		

PROPERTIES

PRODUCING MINES

1. Consolidated Louanna Gold Mines Ltd.	Au
2. Northern Concentrators Ltd.	Au
3. Pan Empire Joint Venture	Au, Ag

PAST PRODUCING MINES

4. Bankfield Consolidated Mines Ltd.	Au, Ag
5. Brenbar Mines Ltd.	Au
6. Consolidated Mosher Mines Ltd.	Au, Ag
7. Gulch Mines Ltd.	Au, Ag
8. Hard Rock Gold Mines Ltd.	Au, Ag
9. Jellicoe Mines (1939) Ltd.	Au, Ag
10. Leitch Gold Mines Ltd.	Au, Ag, W
11. Leitch Gold Mines Ltd. (Sand River)	Au, Ag
12. Little Long Lac Gold Mines Ltd.	Au, Ag, W
13. Macleod-Cockshutt Gold Mines Ltd.	Au, Ag
14. Magnet Consolidated Mines Ltd.	Au, Ag
15. Orphan Property (Dikdik)	Au, Ag
16. Sturgeon River Mines Ltd.	Au, Ag
17. Tashota Nipigon Mines Ltd.	Au, Cu, Ag
18. Theresa Gold Mines Ltd.	Au, Ag
19. Tombill Mines Ltd.	Au, Ag
20. Tombill Mines Ltd.	Au, Ag

SOURCES OF INFORMATION

Tashota-Geraldton Sheet, Thunder Bay and Cochrane Districts; Ontario Department of Mines, Map 2100; by E.G. Pye, F.R. Harris, K.G. Fenwick, and J. Baillie, 1966, scale 1:253 440 or 1 inch to 4 miles.

Lake Nipigon Sheet, Thunder Bay District, Ontario Department of Mines, Preliminary Geological Map P.257, by E.G. Pye and F.R. Harris, 1964, scale 1:126 720 or 1 inch to 2 miles.

Geology compiled from published and unpublished maps of the Ontario Geological Survey, Geological Survey of Canada, and unpublished maps of mining companies.

Base map from Maps 42E/NW, 42L/SW, 52H/NE, 52I/SE of the National Topographic Series, with additional information from Ontario Ministry of Natural Resources Road Network maps.

Magnetic declination approximately 1°20'W in 1984.

Metric Conversion Factor: 1 foot = 0.3048 m

CREDITS

Revised geological compilation by G.M. Stott: 1984
Mineral occurrences compilation by C.D. McConnell, G.M. Stott, and J.K. Mason.
Original compilation by E.G. Pye and F.R. Harris, 1964.

Every possible effort has been made to ensure the accuracy of the information presented on this map; however, the Ontario Ministry of Natural Resources does not assume any liability for errors that may occur. Users may wish to verify critical information; sources include both the references listed here, and information on file at the Resident or Regional Geologist's office and the Mining Recorder's office nearest the map area.

Issued 1984

Information from this publication may be quoted if credit is given. It is recommended that reference be made in the following form:

Stott, G.M.
1984: Lake Nipigon Sheet, Thunder Bay District; Ontario Geological Survey, Map P.257(Rev). Compilation Series-Preliminary Map, scale 1:126 720 or 1 inch to 2 miles. Compilation 1984.

Ministry of Natural Resources
Ontario

Hon. Alan W. Pope
Minister

John R. Sloan
Deputy Minister

ONTARIO GEOLOGICAL SURVEY
MAP P.257 (Revised)
COMPILATION SERIES-PRELIMINARY MAP

LAKE NIPIGON SHEET

THUNDER BAY DISTRICT

Scale 1:126 720

Miles 0 1 2 3 4 5 6 Miles
Metres 2500 0 5 10 Kilometres

NTS References: 42E, 42L, 52H, 52I
ODM-GSC Aeromagnetic Maps: 2120G-2122G, 2128G-2130G, 2135G-2137G
ODM Geological Compilation Map: 2102