

Western Miner

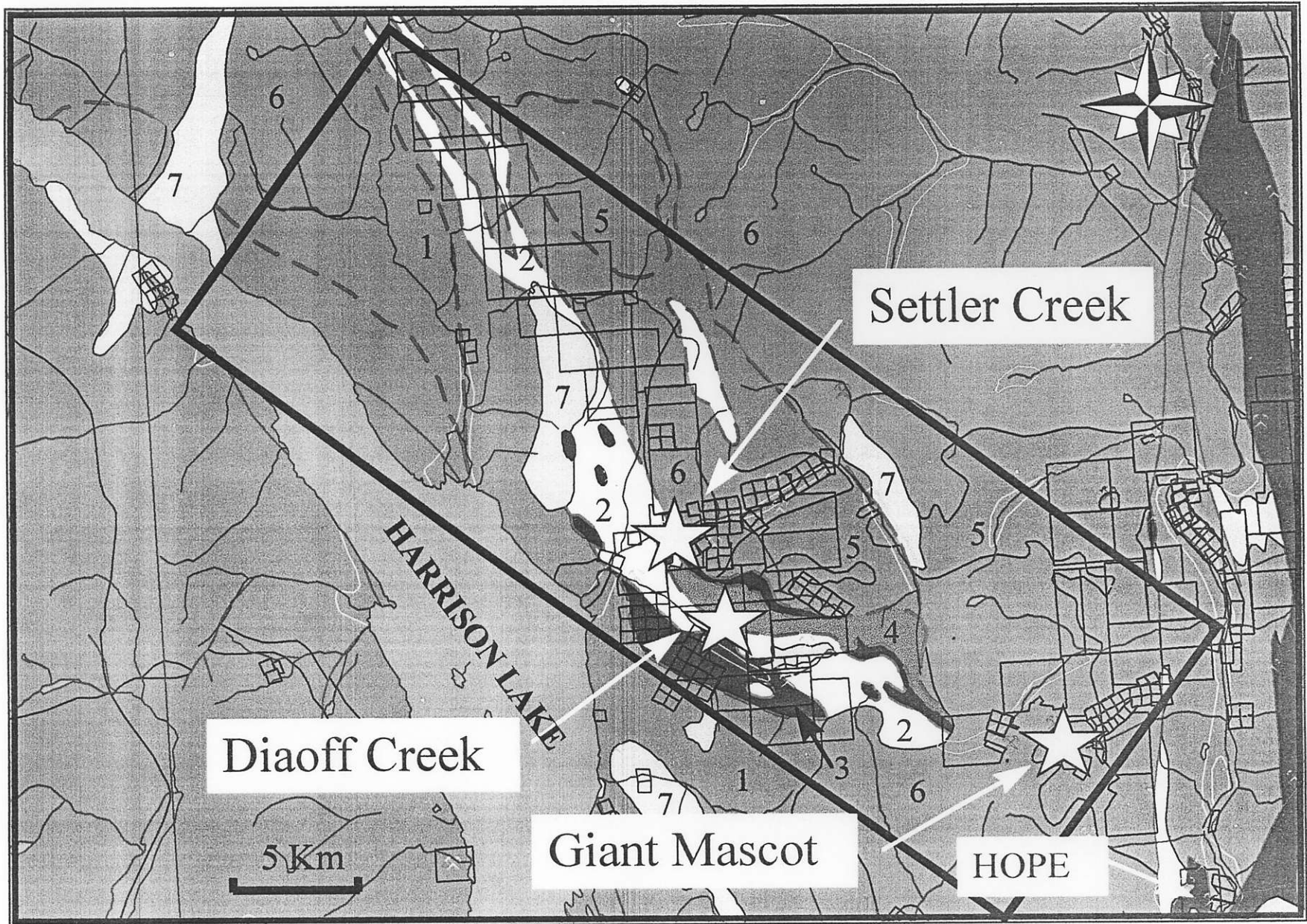
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GIANT MASCOT MINE

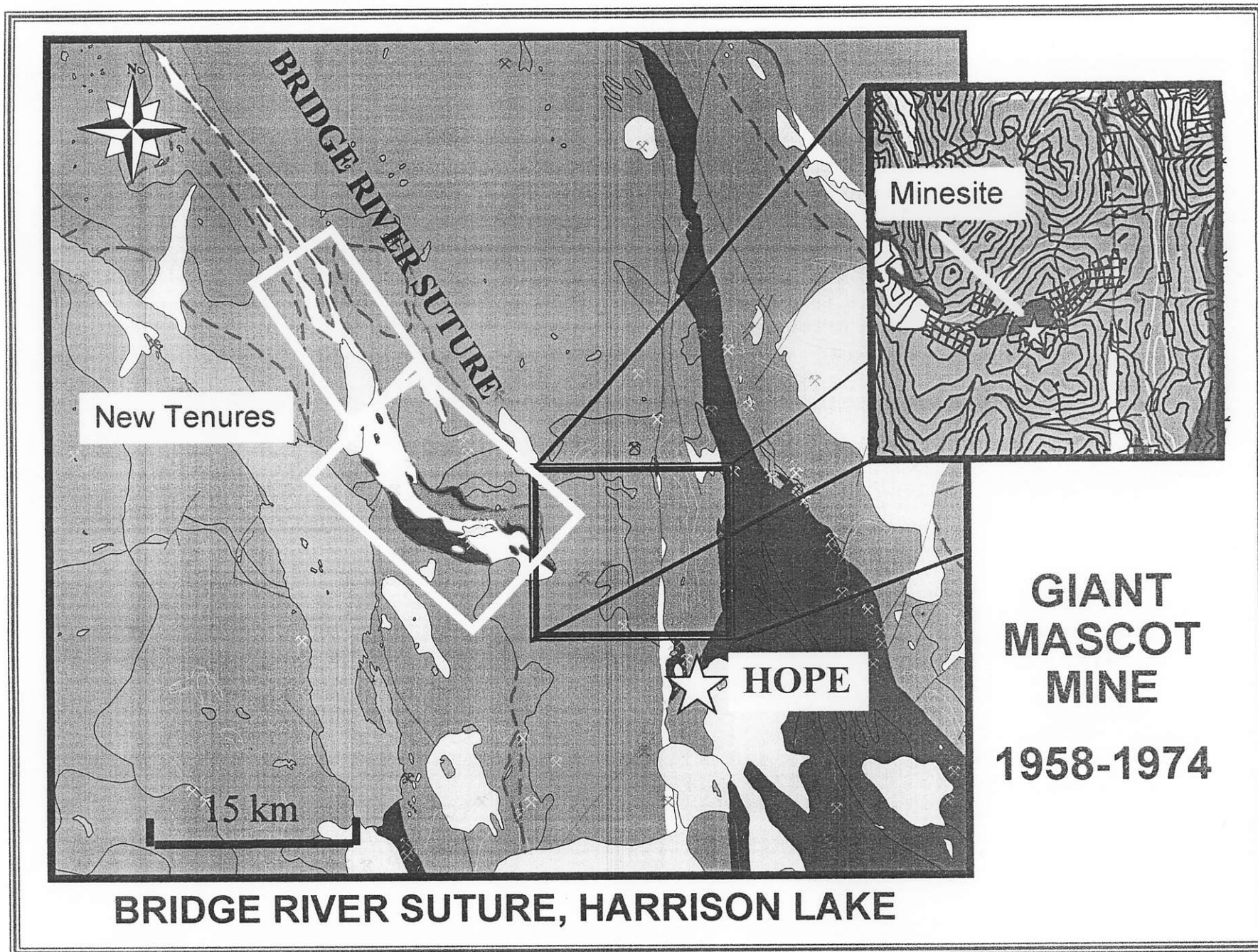
Giant Mascot is the only major past-producing nickel mine in British Columbia.

Deposits of this type contain platinum and palladium and are an important exploration target!

Robert Pinsent,
Geological Survey Branch



COGBURN CREEK PGE PROJECT: 2001



COGBURN CREEK PGE PROJECT

SIMPLIFIED LEGEND

- 1 MSL: Cret-Tert: Stollicum Schist; greenschist facies volcanic and sedimentary rocks.
- 2 PMCS: Pal-Mez: Cogburn Schist; chert, pelite, amphibolite, u/m rock similar to Hozameen/Bridge River Group.
- 3 Pmu: Ultramafic Rocks.
- 4 PPY: Prot-Pal: Yellow Aster Complex; metadiorite, metagabbro.
- 5 MS: Cret-Tert: Settler Schist; high-grade schist-gneiss.
- 6 Mkgd: Mid-Cret: Foliated quartz-diorite (Spuzzum Batholith etc.).
- 7 Etgd & Omgd: Early Tert: & Olig/Mioc: granodiorite to quartz diorite (Chilliwack Batholith etc.)

The MapPlace: Bellefontaine and Alldrick; Open File 1994-17.

MINE FACTS AND FIGURES

- ★ The Pacific Nickel property was located in 1923. The mine was developed throughout the 1930s and 1950s. *Giant Mascot Mines Ltd.* employed approximately 185 people and produced 4 200 000 tonnes grading 0.77% Ni, 0.34% Cu, between 1958 and 1974.
- ★ The mill processed 1270 tonnes ore per day and produced nickel-copper concentrate containing 26 573 090 kilograms of nickel, 13 212 770 kilograms of copper and an *unknown amount of precious and platinum group metals.*
- ★ The Brunswick #2 stope collapsed in November, 1968 and the mill burnt down in August, 1970.
- ★ *Homestake Canada Inc.* acquired the property in the early 1990s. It is currently reclaiming the site.

GEOLOGY

- ★ The deposits at Giant Mascot are at the west end of a small (2x3 km) plug of ultramafic rock that is partially surrounded by a syn-orogenic diorite batholith (Spuzzum Pluton). Contact relations are uncertain but the intrusions are probably related.
- ★ The plug is largely composed of pyroxenite and hornblende pyroxenite; however there is an appreciable amount of dunite and peridotite near the west end. The lithologies are both gradational and cross-cutting.
- ★ The plug plunges to the northeast. It contains “high-grade” metasediment inclusions and probably post-dates peak deformation and metamorphism along the Bridge River Suture, a major mid-Cretaceous crustal structure.
- ★ The rocks are relatively undeformed, but they are faulted.

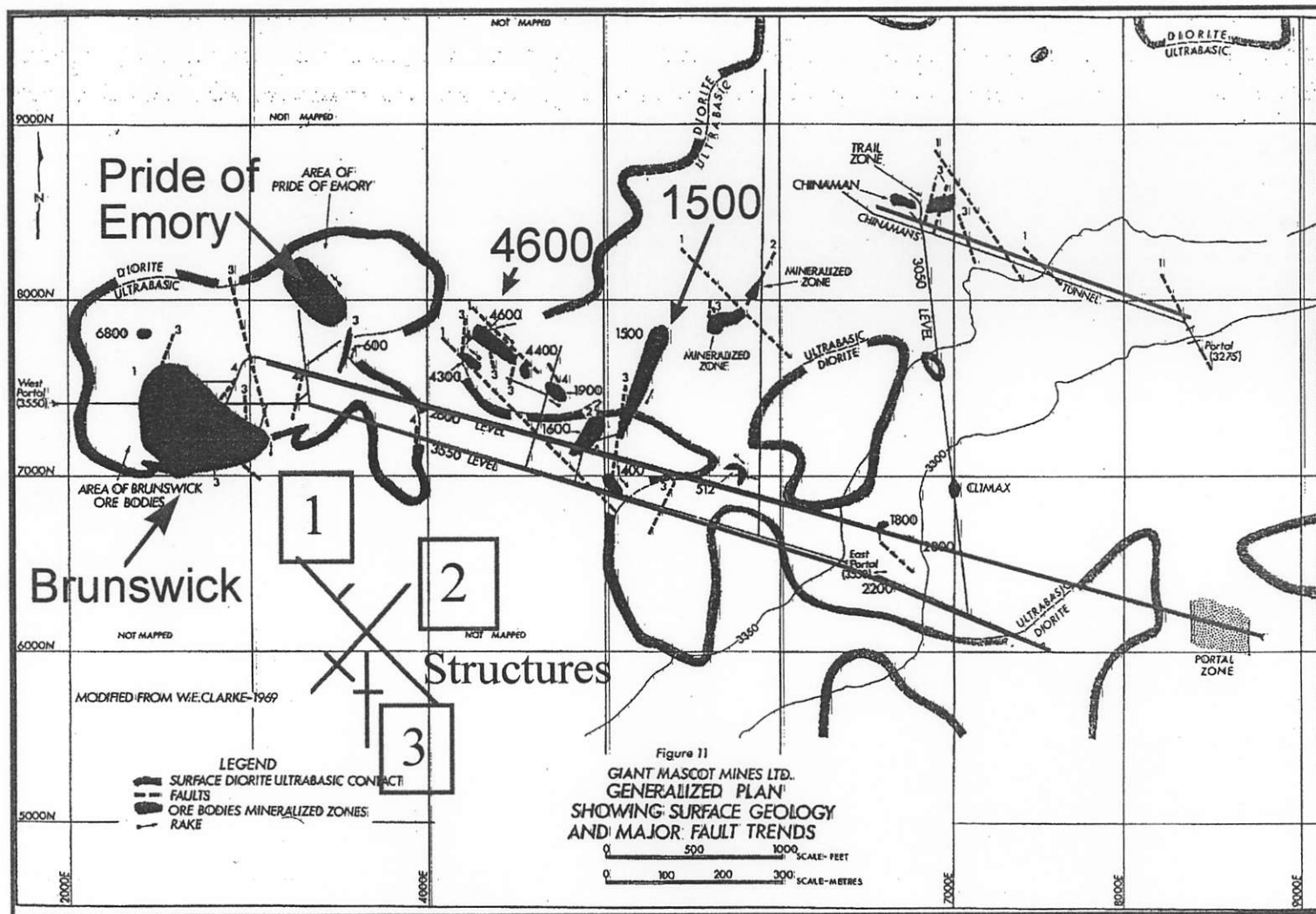
ORE DEPOSITS

- ★ The ore came from 26 pipe-shaped or tabular bodies; however, 66% of production was from only five deposits (*Pride of Emory, Brunswick #2, #5, 4600 and 1500*).
- ★ **Zoned deposits** (*Brunswick #5, 4600*) are commonly pipe-shaped. They contain disseminated sulphide and display gradational tenor. The mineralized cores of pipes are usually relatively rich in olivine and the margins are relatively poor.
- ★ **Unzoned deposits** (*Pride of Emory, Brunswick #2, 1500*) contain semi-massive sulphide which is full of crystals of olivine and pyroxene. These deposits have sharp contacts and are commonly fault or contact controlled.

STRUCTURAL CONTROLS

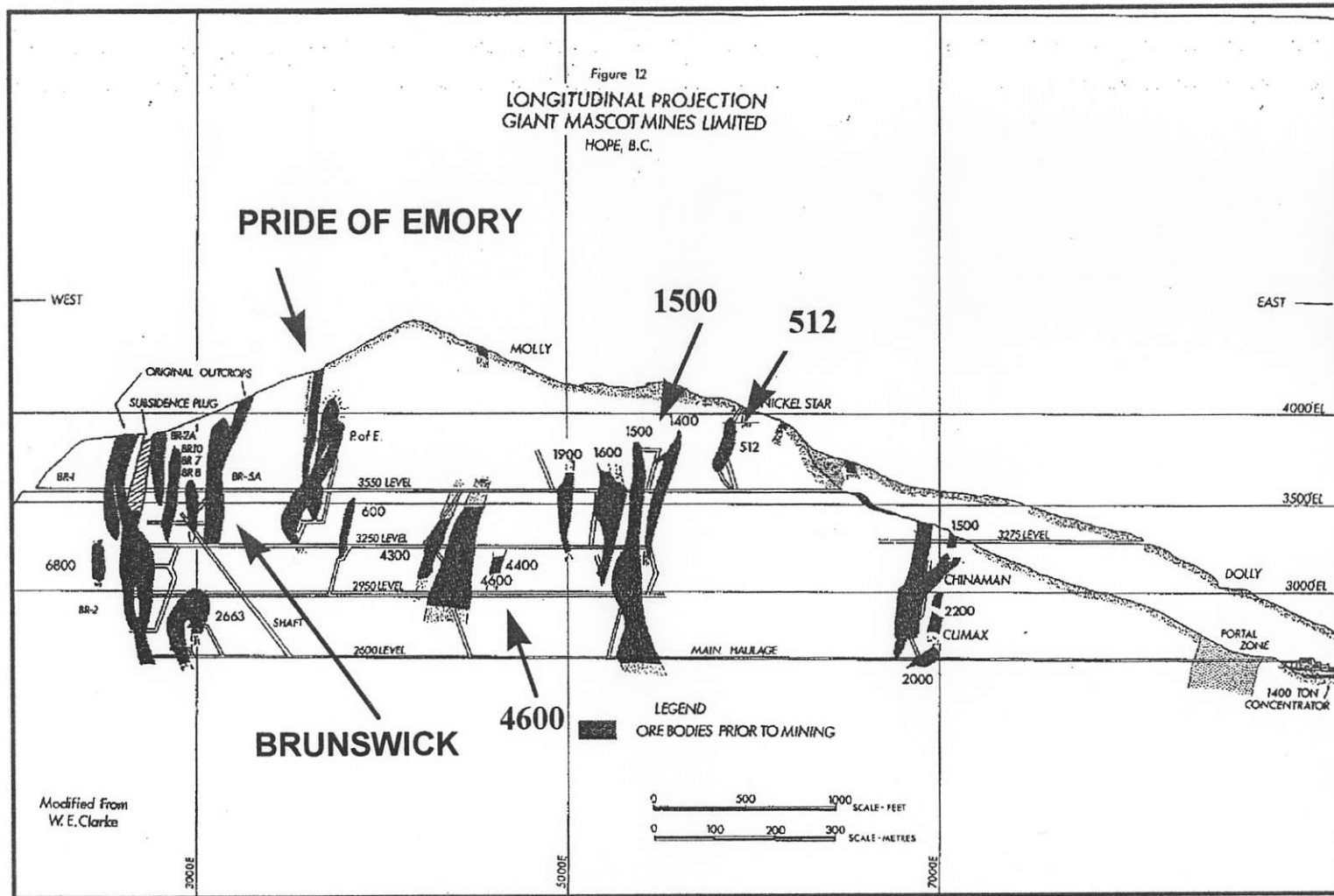
- ★ The oreshoots at Giant Mascot are irregular in outline and <100 metres in diameter. Most plunge steeply to the N & NE.
- ★ According to Clarke (1969), they may be controlled by intersecting fault sets:
 - 1) NW strike NE dip (compressional fault system). *These dam or cut-off zones in the Brunswick, Pride of Emory areas.*
 - 2) NNE strike SE to NW dip (creek controlling structures). *These control tabular bodies: e.g. 600, 1600, 512.*
 - 3) N strike W to E dip (Fraser River system). *Provide locally control massive sulphide blocks.*
- ★ Zoned deposits may have formed post peak compression and unzoned deposits may have formed sometime later through mobilization of sulphide into areas of weakness.

GIANT MASCOT DEPOSIT



**W. E. CLARKE;
WESTERN MINER, VOL 42, No. 6, 1969**

GIANT MASCOT DEPOSIT



P.A. Christopher and J.W. Robinson;
Geology Exploration and Mining, 1974

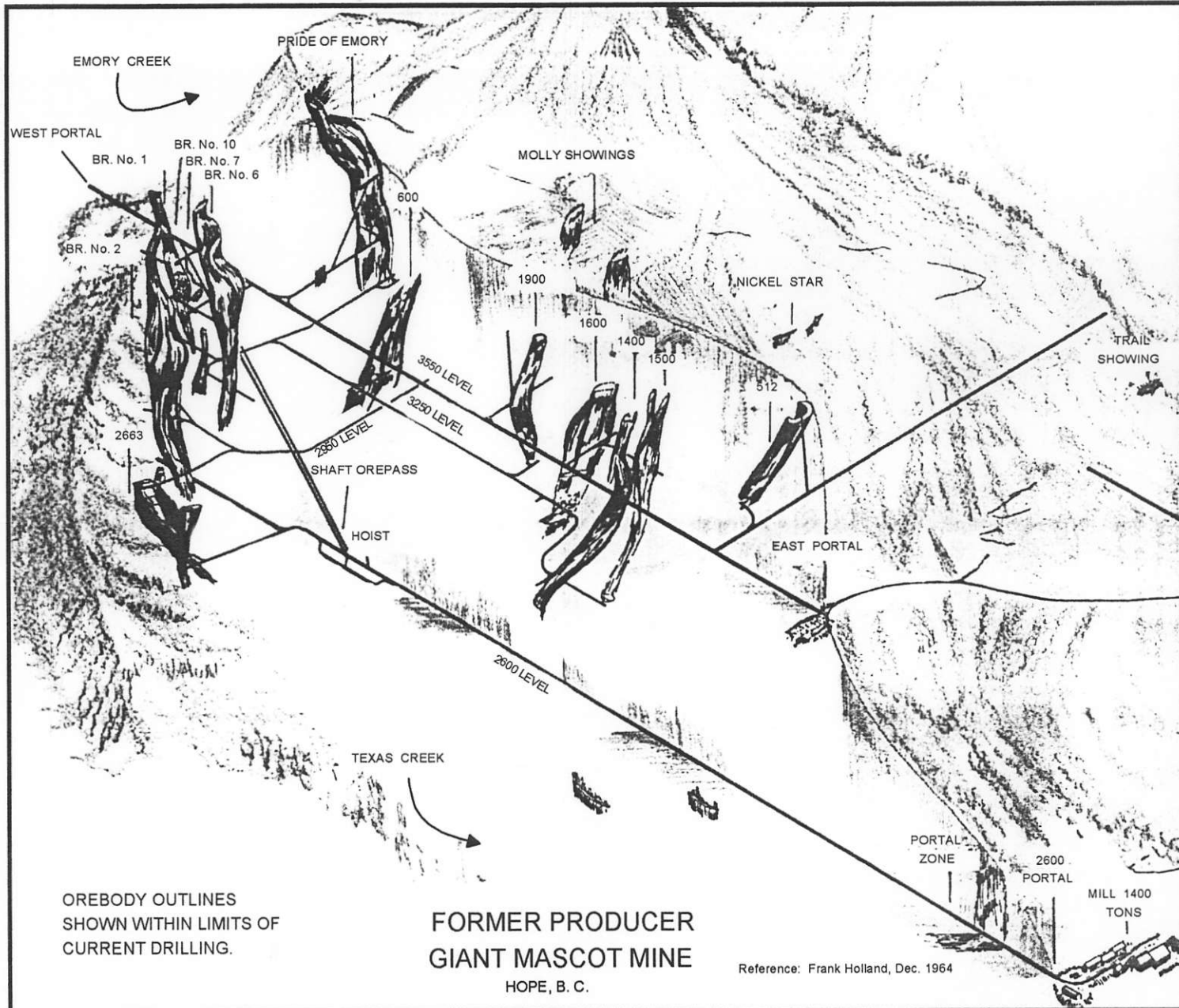


Figure from Laurie Stephenson (2001)

SULPHIDE MINERALOGY

- ★ The sulphide is magmatic in origin. Sulphide droplets crystallized to form composite "*pyrrhotite*" crystals that exsolved *chalcopyrite*, *pentlandite* and *pyrite* on cooling. The latter are commonly found with *pyrrhotite* and are frequently found as flame structures in it.
- ★ The droplets crystallized to form (1) coarse, isolated blebs; (2) interstitial net-textures and (3) semi-massive sulphide assemblages containing abundant inclusions of fresh olivine and pyroxene.
- ★ The mine shipped nickel-copper concentrate to Japan. These were the only metals of interest at the time and there is no indication that the company was ever paid for by-product platinum and/or palladium.
- ★ Sulphide occurs in ultramafic rock as far north as Cogburn Creek.

GIANT MASCOT MINE ZONED AND UNZONED ORE PIPES A. Aho (1956)

ZONED

Sulphide in
enstatite -
peridotite

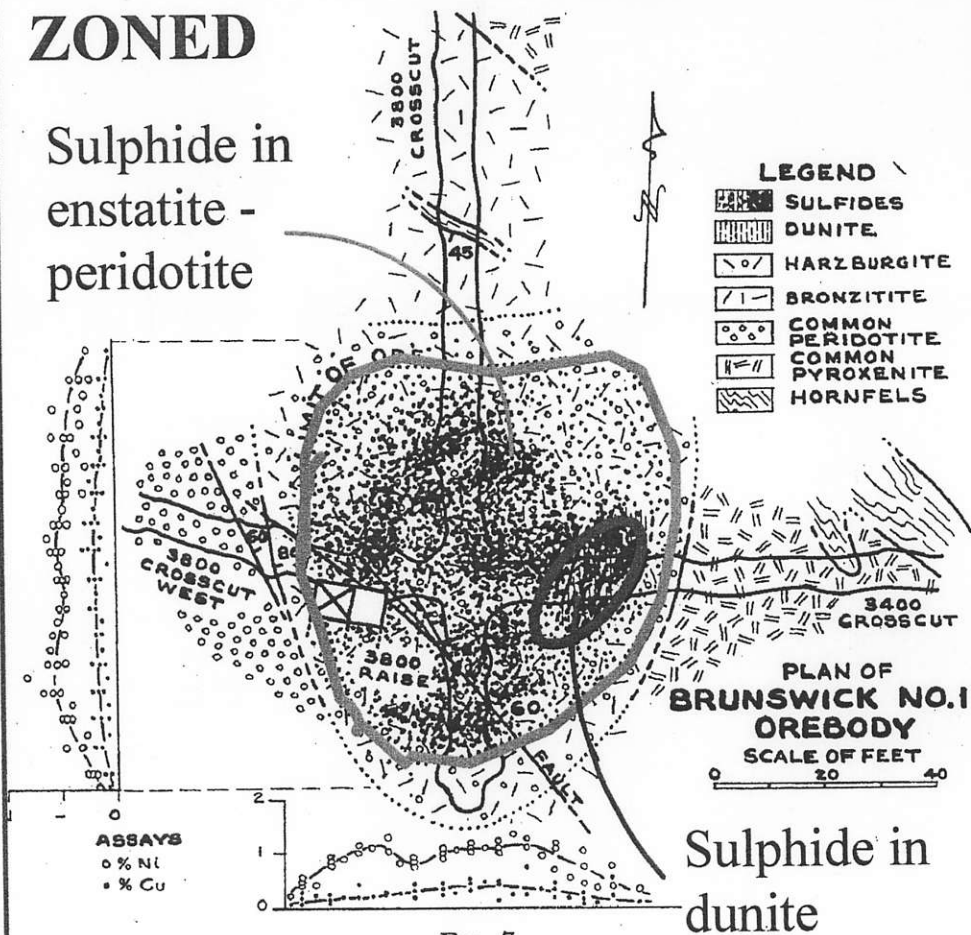


FIG. 7.

UN-ZONED

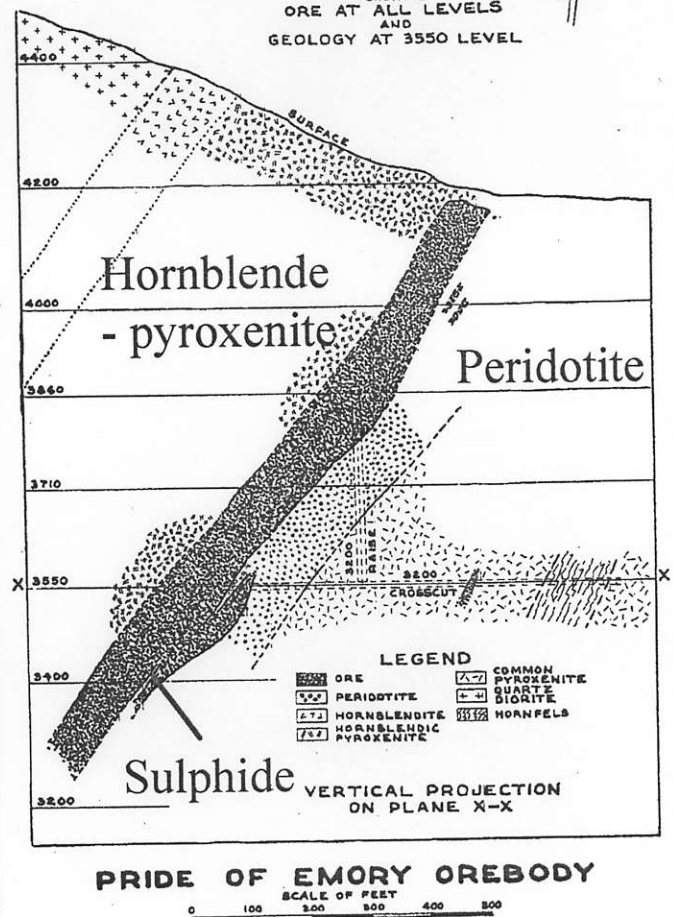
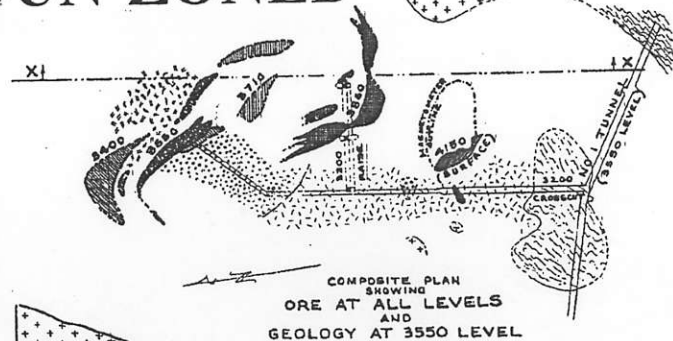
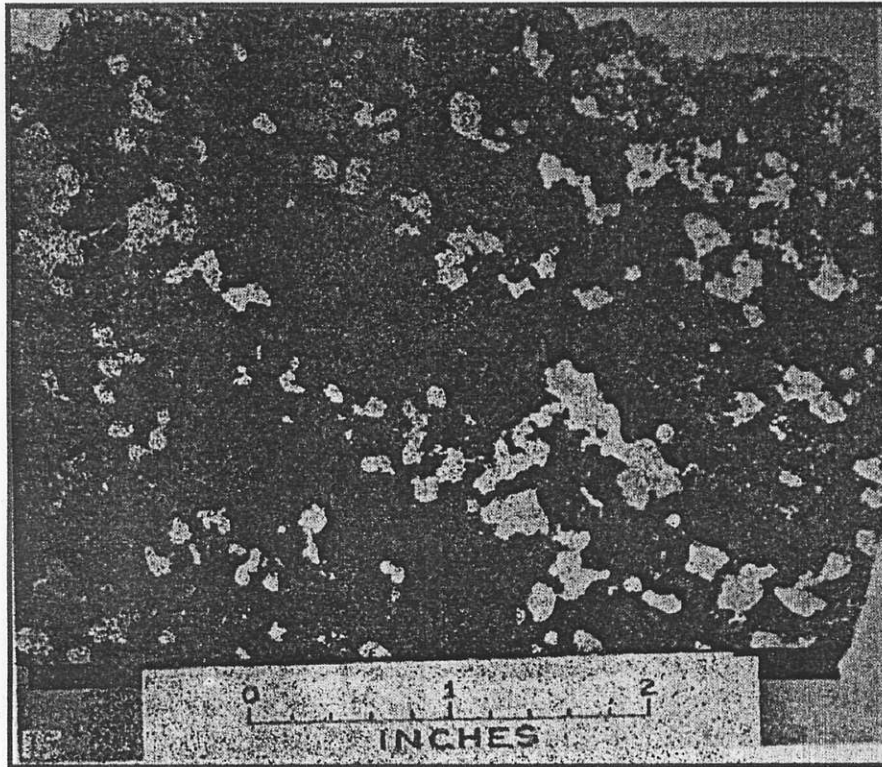


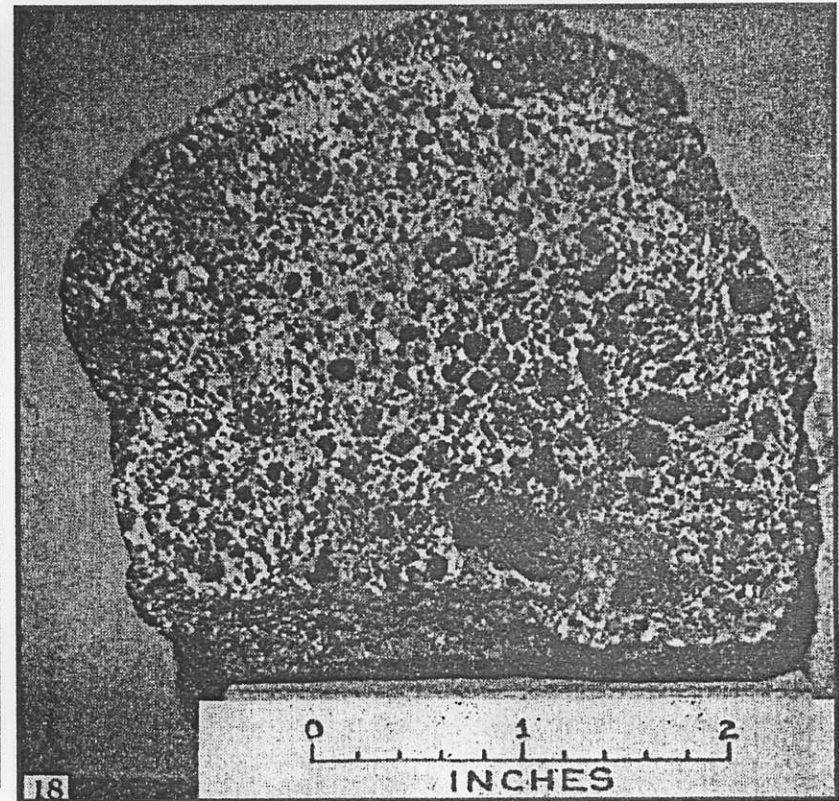
FIG. 11.

GIANT MASCOT ORE TYPES

ZONED-1900



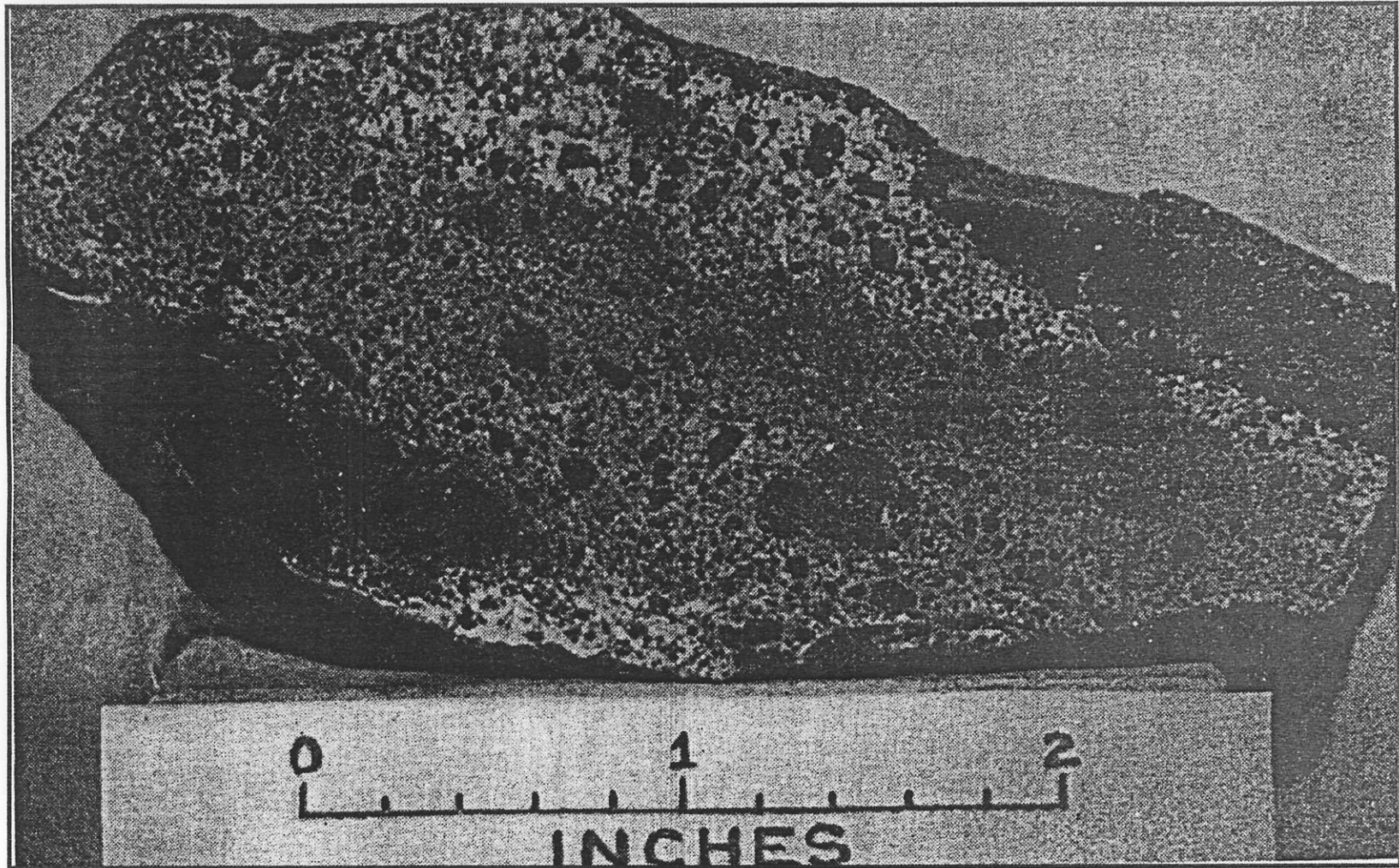
UNZONED-2600 LEVEL



A. Aho: Economic Geology, Volume 51, p444-481 (1956)

GIANT MASCOT ORE TYPES

UNZONED; VEIN: 512 CROSSCUT



A. Aho: Economic Geology, Volume 51, p444-481 (1956)

PLATINUM GROUP MINERALS

- ★ No platinum group minerals have, so far, been reported; however, the ore is known to contain a small amount of platinum, palladium and gold.
- ★ A 22.7 tonne “bulk sample” collected from the Pride of Emory (1600 zone) in 1936 contained 2.74 g/t Pt and Pd and 0.68 g/t Au [Horwood; GSC Mem 190].
- ★ Three surface samples collected by Mascot Gold Mines Ltd., in 1986, contained 1.17, 1.61 and 1.61 g/t Pt respectively. A “high-grade” sample, from the 1500 zone, contained 7.24% Ni, 17.1% Cu, 2.85 g/t Pt, 4.94 g/t Pd and 0.93 g/t Au [Tindall; AR #16553].
- ★ MEM collected a few samples from the dumps in 2000 but obtained only ppb level numbers. PGEs are present, but they do not appear to be evenly distributed.

EXPLORATION

- ★ The “Nickel Syndicate”, controlled by Giant Mascot Mines Ltd., flew an airborne magnetometer survey and explored the Bridge River Suture in the early 1970s. It found two main areas of disseminated sulphide mineralization.
- ★ It identified a large area of, possibly open-pittable, altered pyroxenite grading 0.22% Ni in the Diaoff Creek area. [GCNL September 1st, 1971]. The site is currently held by Gerry Carlson and John Chapman.
- ★ It identified similar mineralization on Settler Creek. The site was staked by David Haughton, a prospector working on the Ministry’s Prospector Assistance Program, in 1999.
- ★ The remaining ultramafic bodies in the area were staked in the Spring of 2000, as interest in PGE elements started to grow.

CONCLUSIONS

- ★ The ultramafic cumulate and entrained sulphide intruded up zones of structural weakness along the Bridge River Suture sometime after peak metamorphism. Intrusion occurred as a series of pulses.
- ★ **Zoned** (*disseminated*) deposits formed where mineralized peridotite was injected into incompletely crystallized (wet) pyroxenite. **Unzoned** (*semi-massive*) deposits formed where sulphide segregated into fault-controlled fractures shortly after emplacement.
- ★ Other ultramafics rocks along the suture are sulphide-bearing. In addition to the above: They should be explored for disseminated and semi-massive sulphide bands in primary, undisturbed, layered peridotite. *The Giant Mascot sulphides had to come from somewhere!*