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REPORT ON GIANT MASCOT MINE  
New Westminster Mining Division  
with an appraisal of present situation  
and future outlook.  
By E.W. Grove, Ph.D., P.Eng., and  
A.R.C. James, P.Eng.

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REPORT

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GIANT MASCOT MINE

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With an Appraisal of the Present  
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April 23, 1974.

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OBJECT OF REPORT.

The object of this report is to examine the situation at the Giant Mascot mine and to make recommendations whether technical or financial assistance from the government might be justifiable and might have a beneficial effect in prolonging the productive life of the existing mine or in finding further ore reserves in the immediate area.

RECOMMENDATIONS

1. Because of the imminent closure of the Giant Mascot nickel mine it is of considerable importance that the large accumulation of data at this unique deposit be consolidated for both historical record and for geological study. The closure of the mine will obviously affect both mine employees and the suppliers at Hope and Vancouver. In order to stimulate continued work at the mine a significant geological study of the stock, the ore and its environment should be undertaken.

2. With regard to a comprehensive, overall geological study it is quite necessary to act as soon as possible while the mine facilities and access is in top condition. The presence of mine personnel is another very significant reason for acting quickly.

3. The study of this deposit which represents the only known major nickel deposit in British Columbia is of considerable importance in searching for additional nickel mineralization. Many ultramafic bodies are known in British Columbia but there is at present little if any way of discriminating between potential ore hosts and barren rock.

It is possible at the present time for the Geological Division of the British Columbia Department of Mines and Petroleum Resources to undertake such a geological study. A recently hired geologist with the required qualifications is presently available and could commence the study during the summer of 1974. The study should be considered as a continuing three to five year program which would initially outline the mine geology, followed by a study of the local geology and the areal pitting. At the conclusion of the detailed mine and local study which would necessarily incorporate geochemical and geophysical components possible geological controls and targets could be outlined. These would be tested by drilling and possibly by mine development.

SUMMARY

On the basis of a request from Mr. L.P. Starck, President, Giant Mascot Mines Limited, to Mr. J.E. McMynn, Deputy Minister, British Columbia Department of Mines and Petroleum Resources, the writers visited the mine and reviewed the data made available. Only the Giant Mascot nickel mine has been considered in this report rather than the other various extensive holdings of the company.

It has been indicated by the operators of the mine that at the present mining rates the ore reserves would be depleted before the end of 1974. In response to this condition the writers have recommended that certain services comprising mainly a geological study with geo-

chemical and geophysical components be initiated at the earliest time.

The apparent lack of a detailed overall study of the Giant Mascot stock and a working ore control theory has placed the ore reserve situation at the mine in jeopardy. The geological study recommended will not prolong the immediate active life of the mine but should lead to positive exploration targets in the mine area and to a working approach regarding nickel exploration for parts of British Columbia.

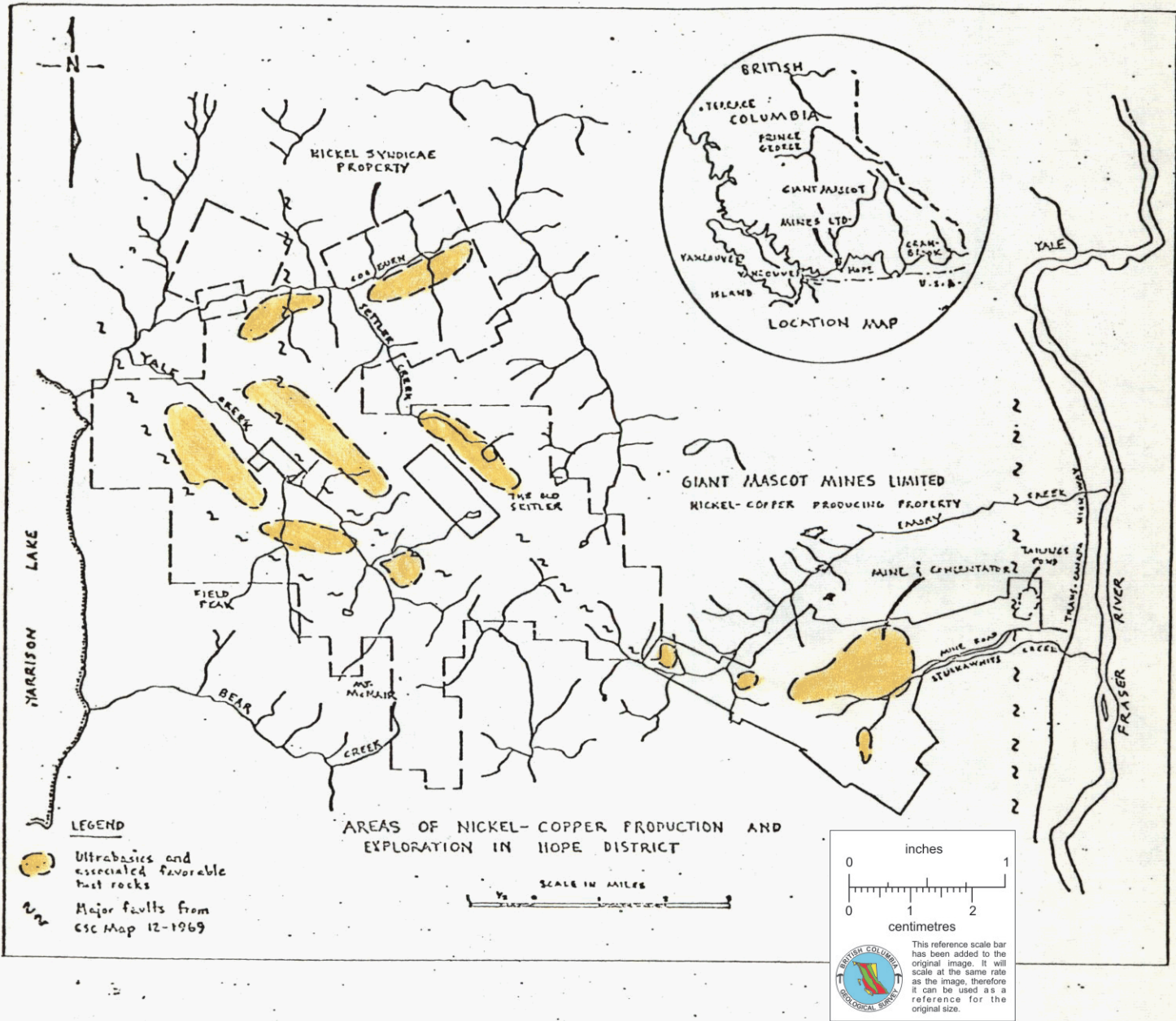


Figure 1. Areas of Nickel-Copper Production and Exploration in Hope District



## THE PROPERTY

### Location and Access.

The mine is situated at the head of Stulkawhits (Texas) Creek, which flows eastward into the Fraser River about 6 miles north of Hope. From a point on the Trans Canada Highway 10 miles north of Hope a good gravel road 5.1 miles long gives access to the mill and surface buildings at the 2600 adit portal. The mine workings are situated between 1500 feet and 4500 feet elevation beneath Emory Mountain and Zofka Ridge.

### Property holdings.

The property comprises 92 Crown-granted claims, 56 claims held by location, and two mineral leases. Surface rights are held on 719 acres. Details of the company's holdings on the Giant Mascot property are included as an appendix to this report.

## THE COMPANY

Giant Mascot Mines Limited is a Canadian mining company which, since 1959, has been primarily engaged in the mining and concentration of nickel-copper ore from the Giant Mascot mine. The company was originally incorporated under the laws of the Province of British Columbia on June 7, 1950 to operate a lead-zinc mine at Spillimacheen in the East Kootenay area of British Columbia. The company presently has an authorized capital of 15,000,000 no par value shares of which 8,693,728 shares are issued. The company owns or controls three subsidiary companies. These are: Giant Explorations Ltd. (28.87% equity interest and effective control), G.M. Explorations Limited (wholly-owned) and Mascot Mines and Petroleums Limited (wholly-owned). The company owns 1,585,622 shares in Panarctic Oils Ltd. (4.51% interest). Through its subsidiaries it has also carried out exploration on several mining properties in British Columbia. The company also, through its subsidiary Mascot Mines and Petroleums has a 10% beneficial interest and a 1.99% working interest in an oil production unit in the Pembina oilfield in Alberta.

For the past three years the company's commitments under the various Panarctic expansion agreements have been of the order of \$1.1 million per annum. In 1973 the company experienced an operating loss and an attendant reduction in its working capital. It obtained a capital bank loan in anticipation of planned financing. The company now proposes to raise \$3,675,000 by way of a rights offering. This offering will be guaranteed by Cemp Investments Ltd. as to \$2 million plus the shortfall of monies from the public and the funds required to finance the Panarctic Fifth Expansion Agreement remaining outstanding after 1974.

The present directors of the company are: L.P. Starck, J.L. Gibson, K.G. Bream, N. Gesser, R.B. Carleton. We are informed that Cemp Investments Ltd. and the Bronfman family between them have a 55 to 60 per cent interest in the company.

#### HISTORY

The initial discovery on the Giant Mascot property was made in 1923 when Carl Zofka, a trapper, discovered the outcrop of the Pride of Emory orebody on Emory Mountain. In 1927 the B.C. Nickel Company was formed and explored the prospect by surface trenching and diamond drilling. This work resulted in the discovery of the Brunswick orebodies. In 1933 B.C. Nickel Mines Limited was organized by the Sloan, Smith, and Spencer Syndicate as a successor company to B.C. Nickel Company Limited. From 1933 to 1937 development was carried out on the 3550 and 3275 (Chinaman) levels, and over 800,000 tons of ore reserves were established. Small shipments were made, mainly for test purposes, during this period.

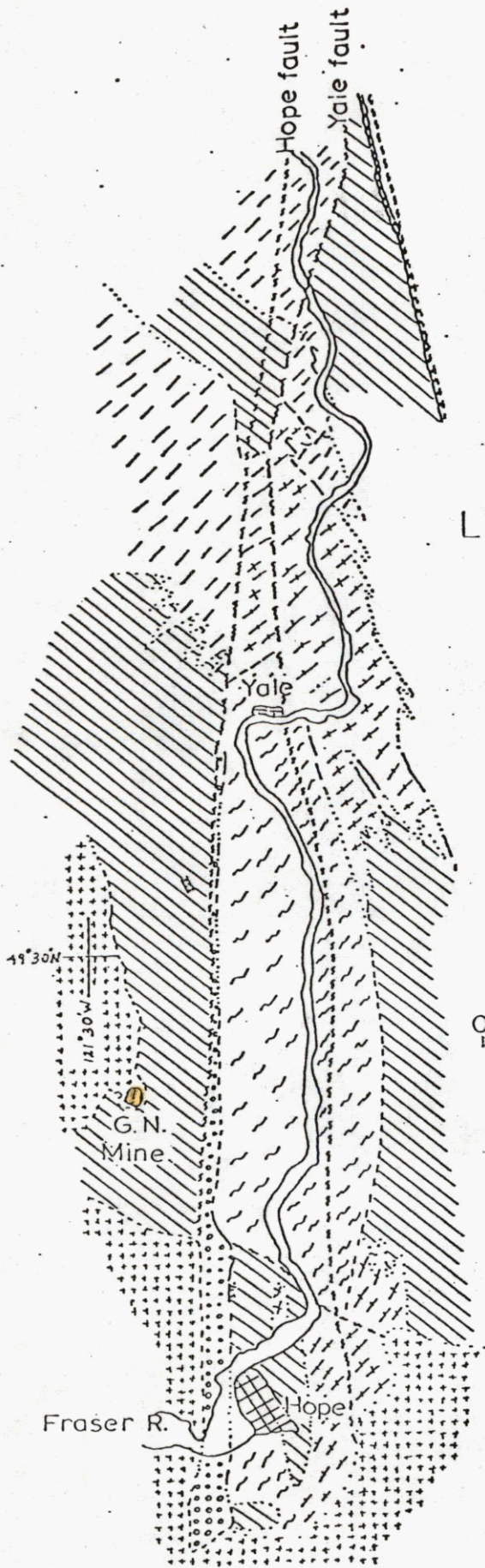
In 1938 Pacific Nickel Mines Limited acquired the assets of B.C. Nickel Mines Limited, but at this time no favourable outlet for the nickel concentrates could be found. Subsequently Newmont Mining Corporation became interested in the property and in 1952 Western Nickel Mines Limited was formed as an operating company by Pacific Nickel and Newmont. Further underground development was carried out including the driving of the 2600 adit level which is the present main haulage level. Up to 1954, approximately 23,000 feet of drifting

and raising and 157,000 feet of diamond drilling was completed on the 2600, 3275, and 3550 levels. By January 1958 when production was commenced, an internal inclined shaft was driven to connect the 2600 and 3550 levels, and intermediate levels were established at the 2950 and 3250 foot levels.









In 1957 Western Nickel negotiated a contract for the sale of nickel in Europe and undertook to bring the mine into production at the rate of 750 tons a day under the management of Granby Mining and Smelting Company. Production was commenced in January 1958, but was discontinued in July of the same year as a result of changes in marketing considerations. A total of 131,133 tons of ore was treated during this period.

In 1959 Giant Mascot acquired an interest in the mine. An operating company Giant Nickel Mines Limited was formed in which Giant Mascot acquired a 51% interest, while Pacific Nickel held the remainder. The mine re-opened in July 1959 and has continued in production to the present time. Early in 1961 Giant Mascot purchased Pacific Nickel's interest and acquired all the assets of Giant Nickel. A fire on August 2, 1970 destroyed all major plant and surface facilities, with the exception of the machine shop, sub-stations, bunkhouse, and cookery. Reconstruction was completed and production resumed in May 1971.

From July 1959 to September 30, 1973, total production was 4,391,704 tons of ore, containing 53,528,581 lbs. of nickel and 26,454,197 lbs. of copper. Twenty six separate orebodies of varying size and grade have so far been mined.



### LEGEND

-  Chilliwack batholithic rocks
-  Conglomerate
-  Custer gneiss
-  Yale intrusions
-  Hozameen group
-  Ultramafic rocks
-  Spuzzum intrusions
-  Fault

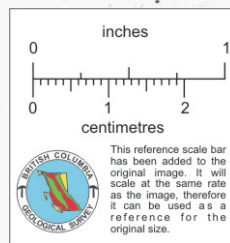
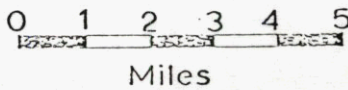


Fig. 2. A geologic map of the area northwest of Hope, B.C. (after McTaggart and Thompson, 1937).

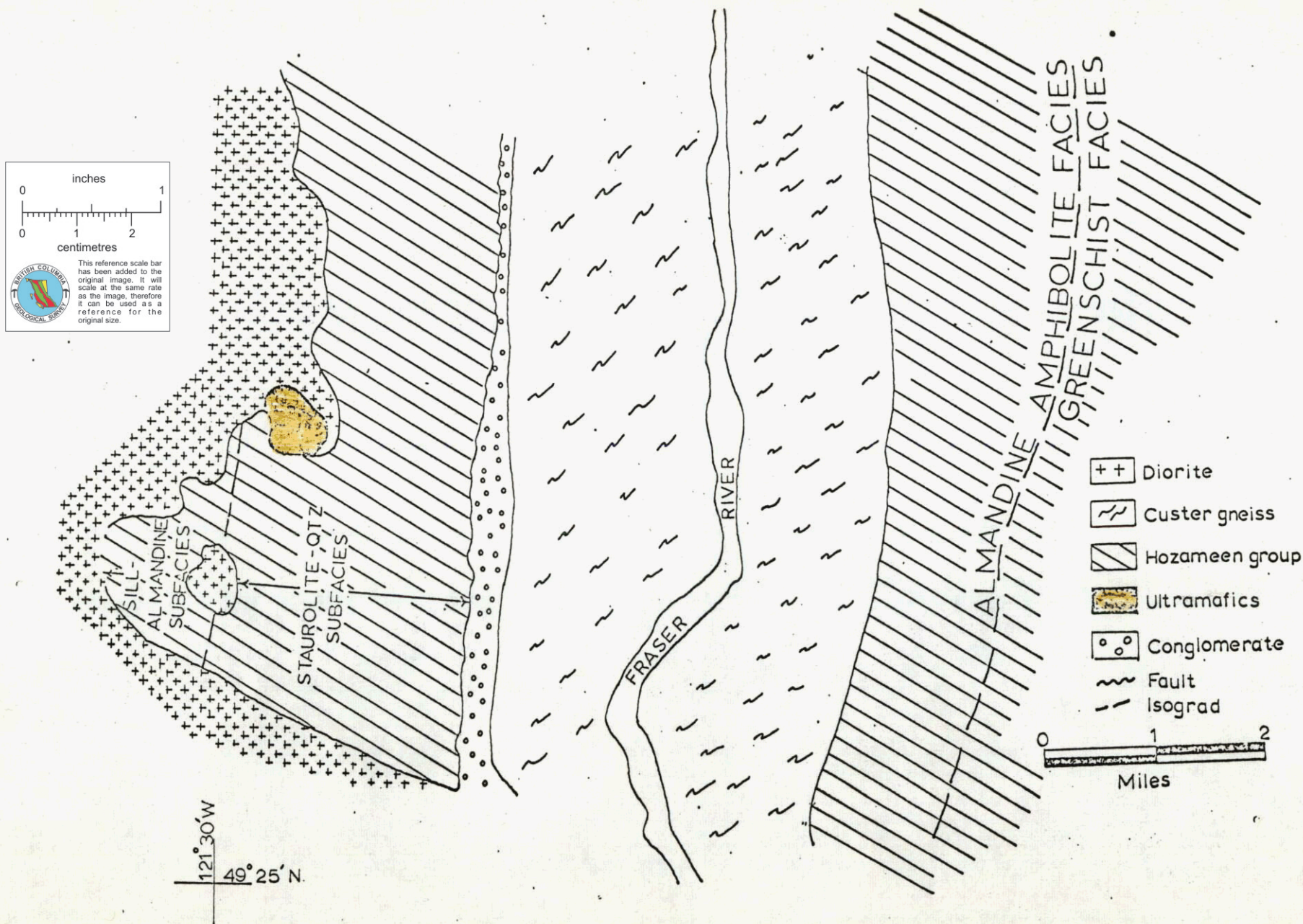


Fig. 3. Geologic map of the area containing the mine and to its east also showing the distribution of metamorphic isograds (after Read, 1960).

## GENERAL GEOLOGY

The Giant Mascot Mines Limited property lies within a 15 mile wide block of Late Paleozoic metamorphic rocks, and intrusive rocks of Mesozoic age. The block lies between the Coast Plutonic Complex of British Columbia, and the Chelan batholith of Washington State. The margins of this block are faulted, in part, against less metamorphosed volcanic and sedimentary rocks of Jurassic and Lower Cretaceous age.

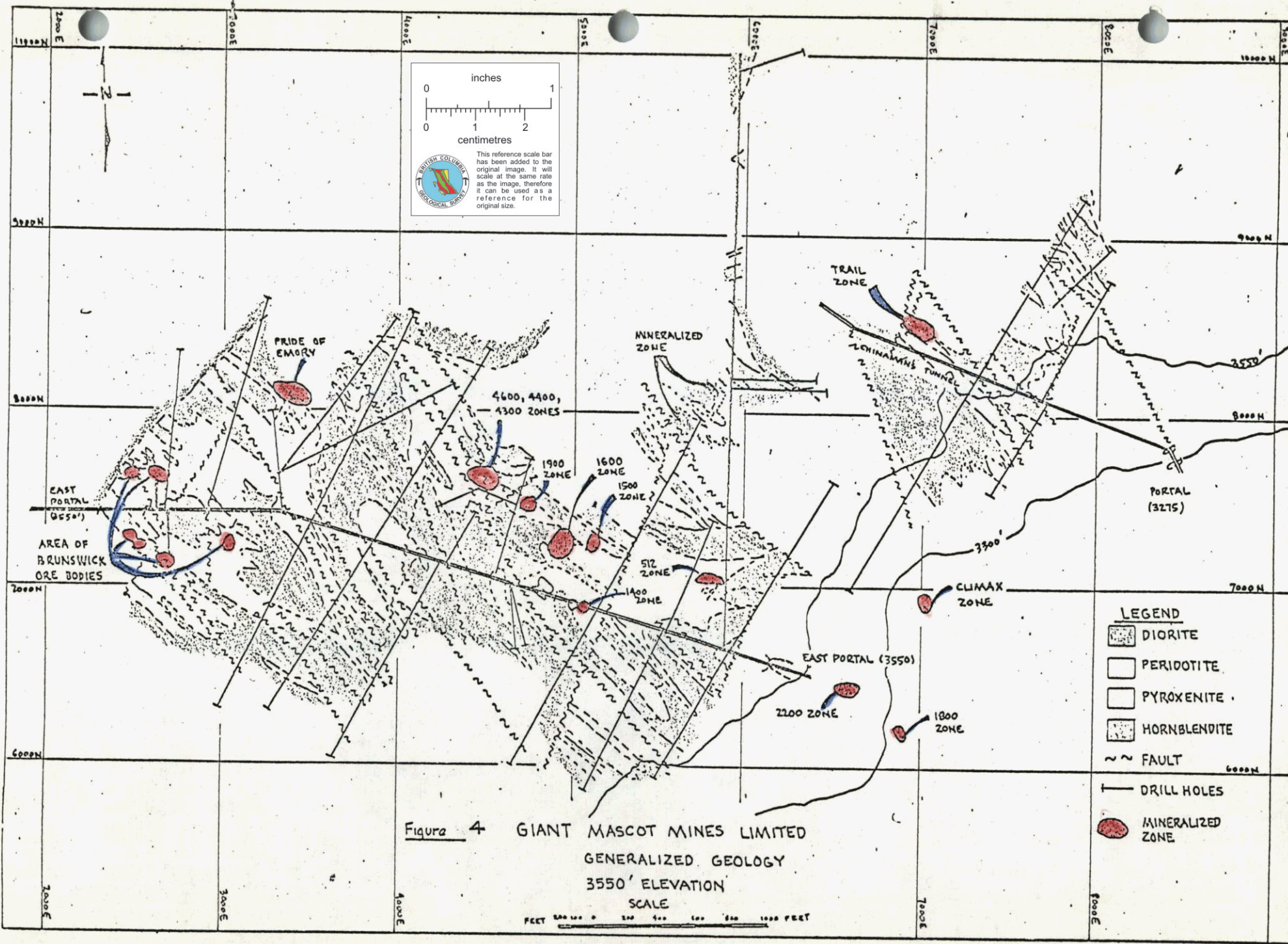
Regionally, the Fraser River which lies east of the property is generally considered to represent a major northerly fault zone, with which faults in the vicinity of the Giant Mascot mine have been associated. In terms of regional metamorphism, the Giant Mascot property lies within the sillimanite-almandine sub-facies (Fig. 3).

## LOCAL GEOLOGY

The ore bodies and other sulphide mineralization at the Giant Mascot property occur within an irregularly shaped crudely elliptical ultramafic pluton approximately one and one half miles in diameter. This stock is generally bounded by diorite on the north and metamorphosed country rocks on the south (Fig. 2). The Giant Mascot stock appears to have been intruded prior to the extensive dioritic Chilliwack batholith (85 m.y.) and has been dated by K-Ar methods at about 120 m.y. Three other smaller ultramafic bodies have been identified within a few thousand feet of the main mass and exploration work in the area has revealed a northwesterly zone of ultramafic plutons extending towards Harrison Lake.

Details regarding the geology of the Giant Mascot ultramafic stock have been gathered by the company from a large number of studies of the surface exposures (about 5% outcrop), extensive underground workings (2600 level el. to surface), exploration diamond drill core, and from developed ore zones. Most of this detailed geological information has been derived from the southwestern third of the stock (Fig. 4).

A composite of the mine studies suggests that the greatest part of the ultramafic body consists mainly of pyroxenite-peridotite, in which zones of norite, and occasionally hornblendite occur as



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BRITISH COLUMBIA  
GEOLOGICAL SURVEY

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- LEGEND**
- DIORITE
  - PERIDOTITE
  - PYROXENITE
  - HORNBLENDITE
  - FAULT
  - DRILL HOLES
  - MINERALIZED ZONE

Figure 4 GIANT MASCOT MINES LIMITED  
GENERALIZED GEOLOGY  
3550' ELEVATION  
SCALE

FEET 0 200 400 600 800 1000 FEET

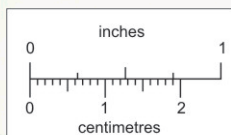
linear to irregular patches. Hornblendite dykes or dyke-like masses which transect certain ore shoots appear to be the youngest units within the ultramafic complex and have been dated (K-Ar) at  $95 \pm 4$  m.y.

In recent years abundant detailed structural data has been gathered by the mine geologists from diamond drill core and surface exposures. Small scale faulting and pervasive shearing (reported as crumbly zones) appear to be significant geological features in the ultramafic pluton. Four general fault systems commonly associated with ore shoots have been recognized: N 45-50°W/50-75°NW; N 15° - N 30°E/steep; N 10°W-10°E/55°E-55°W; and N 30°W-N 30°E/20° - 30° E or W. Fractures appear to be an important feature, particularly in mineralized zones, and distinctive tectonic breccia has also been recognized in several mineralized areas. Northwesterly trending fault zones recognized in the mine area have been traced as regional faults from southeast of Hope, through to Cogburn Creek where other ultramafic bodies are known ore bodies.

As a result of surface prospecting, underground development, and diamond core drilling, 26 ore bodies have been outlined and mined within the westerly part of the Giant Mascot stock above 2600 level elevation (Figs. 5, 6, and 7). These ore bodies occur as steeply-plunging, irregular, pipe-like bodies that pinch and swell along the plunge. Individually the ore bodies vary considerably in their dimensions, character, and mineralogical composition. The horizontal dimensions of an individual ore body ranged from 50 to a maximum 350 by 200 feet, and vertically varied from 200 to 1,200 feet. In tonnage these ore shoots varied from 50,000 to 1,000,000 tons. Three types of ore body have been described: (1) zoned; (2) massive; and (3) vein-like.

The zoned ore bodies, generally localized within the more olivine-rich portions of steeply plunging ultramafic hosts, appear to have had either a circular or almost elliptical cross-section. In these, the sulphide mineralization was confined to the core or concentric shells, paralleling the long axis. The Brunswick Nos. 1, 5, 6, and 7, and '1900' orebodies are examples of this type. In these masses the core consisted of dunite or peridotite which graded outwards into harzburgite or olivine peridotite and into orthopyroxenite. The massive ore bodies appear to have been irregular in outline and occurred mainly as lenses between, or along, lithologic units within the complex. These bodies





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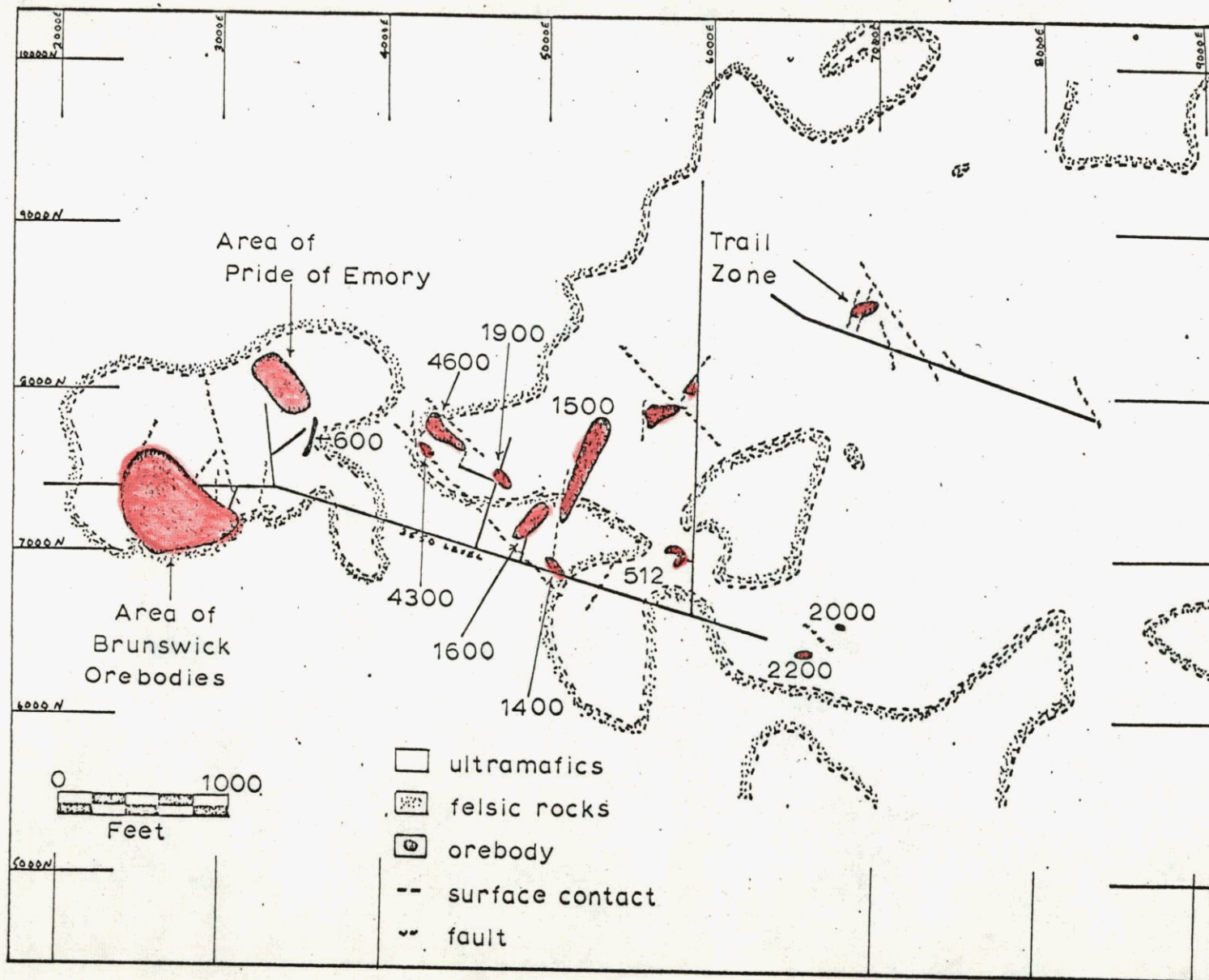


Fig. 5. Simplified plan view of the mine (after Clarke, 1969).

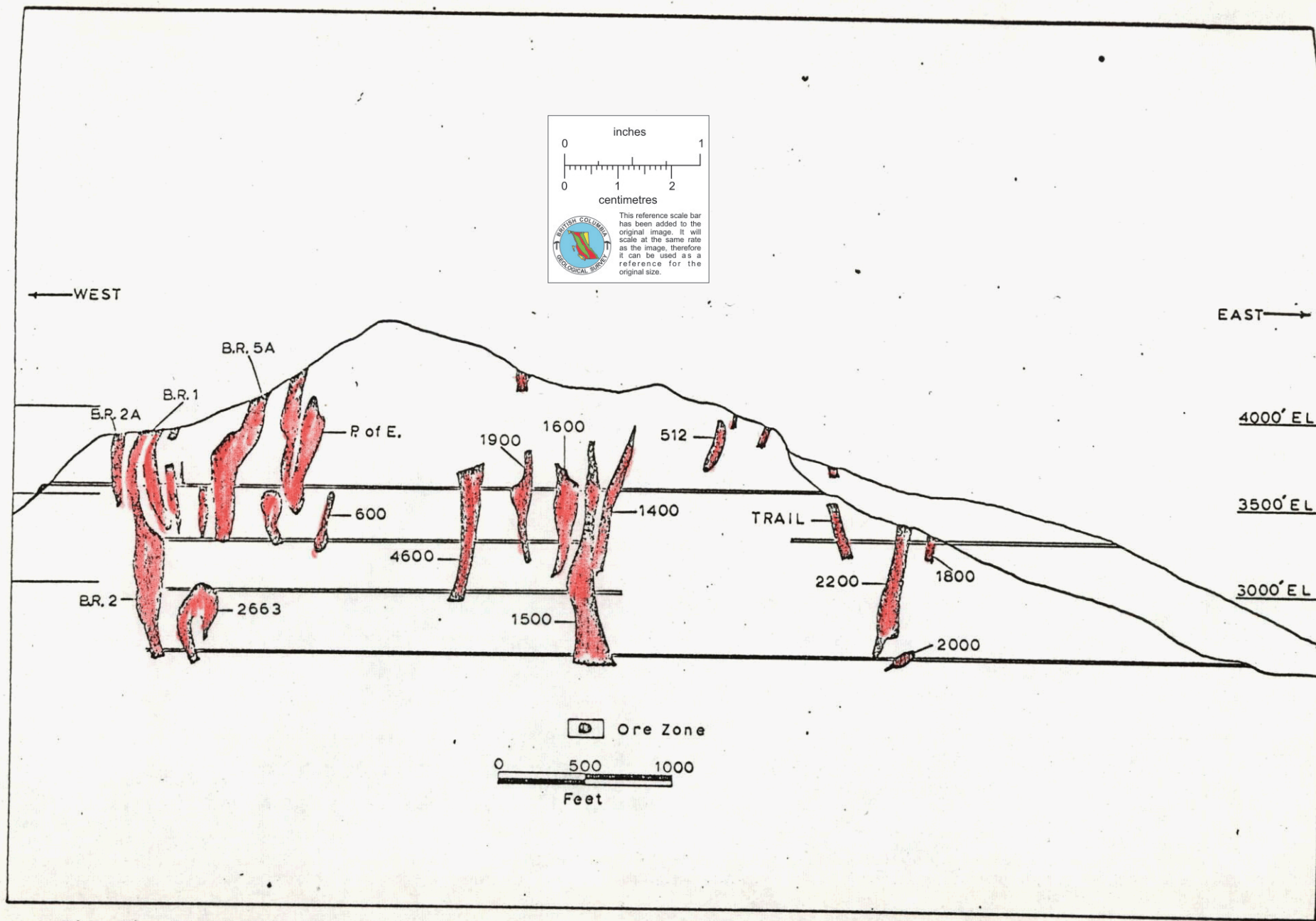
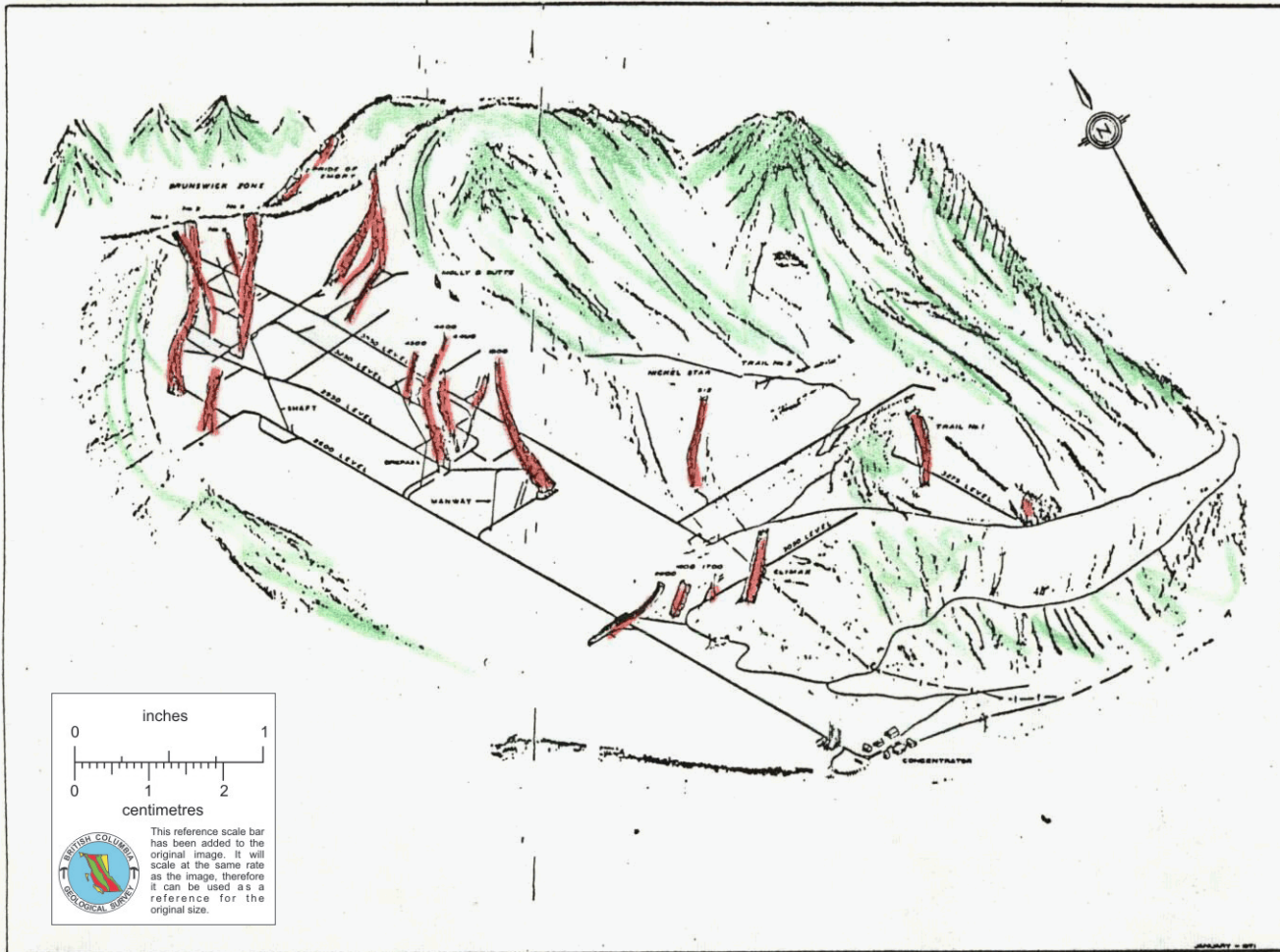


Fig. 6. Simplified cross-section through the mine showing the distribution of orebodies.



GIANT MASCOT MINE  
HOPE, B. C.

Figure 7

generally exhibited sharp ore/host contacts, but occasionally graded into disseminated sulphide ore. The Pride of Emory, and Brunswick Nos. 6 and 8 orebodies were examples of massive ore. The vein-like class of mineralization occurs within or near the major ore bodies as well as within the adjacent wall rocks.

In terms of spatial relationships the ore bodies were mainly clustered within the narrow, westerly portion of the Giant Mascot stock. This clustering in the Brunswick, Pride of Emory 4600-1400, 2200-Climax, and Chinaman ore zones is illustrated in the plan and longitudinal section (Figs. 5 and 6). Recently, the detailed mineralogy of the Climax and 4600 ore bodies has been studied as thesis subjects.

#### ORE MINERALOGY

The bulk of the ore in the Giant Mascot stock includes the assemblage pyrrhotite, pentlandite, chalcopyrite, pyrite and magnetite. Violarite has been recognized mainly in disseminated ore. The preceding assemblage roughly indicates the decreasing abundance of the sulphide minerals which comprise up to 60% of the ore body. The bulk of the nickel contained in the ore is carried by the pentlandite which comprises 45 to 55% of the sulphide material.

#### ALTERATION

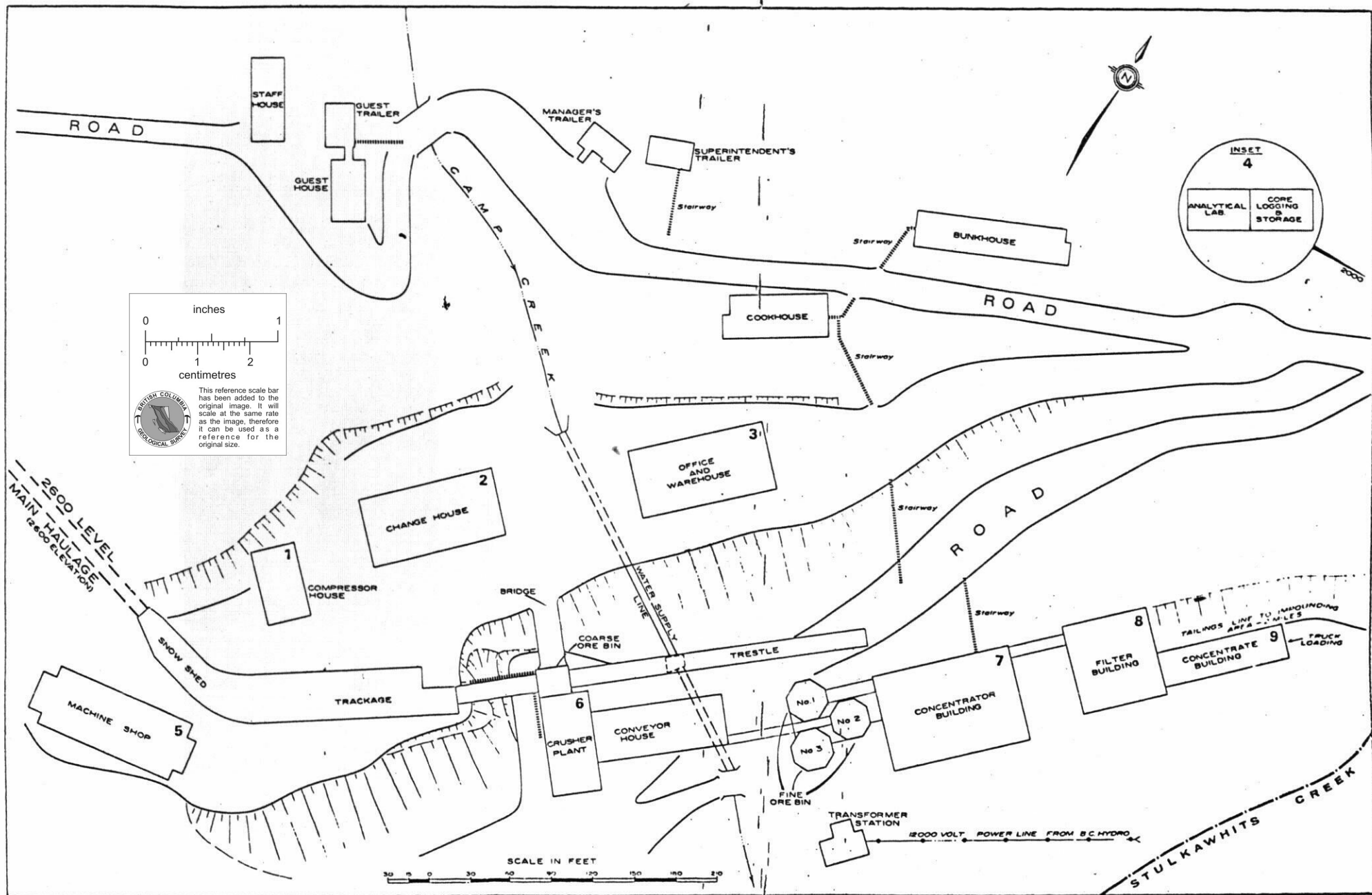
Four types of alteration have been observed within the ultramafic stock: (1) crumbly alteration; (2) talc-amphibole alteration; (3) uralitization, and (4) hornblendization. Crumbly alteration which has generally developed in dunite or peridotite and hornblendization is commonly associated with the ore bodies particularly where norite, pyroxenite and, or peridotite are found in contact. Apart from the sporadic hornblendization these various types of alteration appear to be widespread, favor structural localization and may or may not outline ore.

#### ORE CONTROLS

In spite of a great deal of detailed geological study by a large number of very competent people it does not appear that the ore controls at the Giant Mascot nickel property are completely understood.

Long experience by the operators has given rise to an empirical set of conditions which together can generally be related to ore. These include the proximity of norite, pyroxenite, and diorite, arcuate contacts, the presence of crumbly alteration, and the intersection of the three principal steep sets of faulting or shearing, probably with localized brecciation.

Mineralogical studies suggest that whether the ore resulted from either hydrothermal or magmatic processes, or not, there appears to be a recognizable decrease in the iron content of pentlandite approaching ore grade mineralization. Another such study has suggested that by measuring the Fe:Ni ratio of olivine, one could accurately predict the corresponding Fe:Ni ratio of associated sulphide. This of course reflects genesis and is affected adversely by alteration.



GIANT MASCOT MINES LIMITED  
Plant Site Layout, Hope, B.C.

FIGURE 8

Concentrator and surface facilities looking west.

PRODUCTION AND MINING METHODS

The mine is situated in an ultrabasic complex which is the host rock for a considerable number of separate orebodies. The mine has been developed by four adits at 2600, 3050, 3275, and 3550 elevations. The main haulage level is the 2600 level which extends 7,700 feet into the mountain. An internal 50-degree shaft connects the 2600 and 3550 levels and provides access to the 2950, 3250, and 3450 intermediate levels. The 3050 and 3275 adit levels are internally connected by manways from the 2600 level to the 3050 level and thence to the 3275 adit level.

The orebodies are generally pipe-like in form and vertical or near vertical in attitude. Vertical continuity ranges up to 1,200 feet. Typically the vertical range includes a relatively narrow length, followed by a swelling, and eventually terminating in one or more "fingers" of ore. Cross-sectional areas are not large, an average might be 8,000 square feet (100 feet in diameter).

Because of the variations in size and shape of the orebodies, the mining plan for each is developed individually. The ground is reasonably competent and is suited to longhole open stoping provided the stopes are not kept open for long periods. When an ore zone has been indicated it is the usual practice to drive a raise in or as close as possible to the apparent footwall of the mineralization. A series of horizontal rings of diamond drill-holes are drilled at 50-foot vertical intervals to obtain the information required to plot cross-sections of the zone and thereby establish the pattern for longhole drilling and blasting. Raises for longhole drilling are then driven in or adjacent to the ore, the number of such raises depending on the configuration of the orebody. It is found desirable to restrict the length of the longholes to no more than 70 feet.

The boundaries between ore and waste may be gradual or distinct, consequently the stopes are usually mined to an assay cutoff. The horizontal longhole rings are spaced at three foot vertical intervals, resulting in average ratio of 1.5 to 2 tons of ore blasted per foot of longhole drilling, and a powder factor of 0.5 lbs. per ton.

The broken ore is drawn off from the stopes either through mucking machine draw-points located on the level under the orebody,

or through scraper drifts into an ore pass-chute system. From the main level the ore is hauled out to surface in 100 cubic foot Granby cars by a 15-ton electric trolley locomotive.

The mill and concentrator was put into production in May 1971, having been built to replace the previous plant which was destroyed by fire. The present facility is capable of a production rate of 2,000 tons a day, but at the time of our visit was only treating 1,200 tons a day. It includes primary and secondary crushing and grinding circuits, and flotation, filtration, and dewatering facilities. Differential nickel concentrates grading approximately 12% nickel and 2.0% copper and copper concentrates grading approximately 28% copper and 0.5% nickel are produced.

The tailings from the plant are pumped into a pipeline and flow under pressure and by gravity down to a settling area some two miles east of the mill and 800 feet below it. The tailings are impounded behind massive earth dams.

Electric power is supplied to the mine from B.C. Hydro via a five-mile 12,000 volt line owned by the company to transformer stations at the plant site. Compressed air is generated by three electrically-driven Bellis & Morcom compressors on surface with a total capacity of 4,750 cubic feet per minute of air.

When the mine was in full production a total of 200 persons was employed. At the time of our visit this had been reduced to 151 persons, including 126 hourly-paid employees and 25 staff. We were told that a number of the better miners had left on hearing rumours of closure.



Sales Contracts, Revenue, and Costs.

Up to February 28, 1973 the company had a contract with the Sumitomo Group for the sale of bulk nickel-copper concentrates. On the expiry of this contract, Sumitomo elected not to renew it in the face of a current over-supply of nickel to the Group from other sources.

Commencing March 1st 1973 the company concluded a five year contract with Sherritt Gordon Mines Limited for the sale of up to 2,000 tons of nickel concentrate per month. A two-year agreement was also negotiated with the Sumitomo Group for the sale of up to 500 tons per month of copper concentrate. Copies of both these contract agreements are included as appendices to this report.

The management indicated that the present contracts are less favourable than the previous one with Sumitomo. Whereas under the previous contract the concentrate could be placed on a ship for \$7.00 per dry ton, the present transportation cost to the Sherritt Gordon Smelter and Refinery near Edmonton is \$14.30 per dry ton plus \$9.00 per ton in transportation and handling costs to the railway. The method of payment by Sherritt Gordon for the nickel is complex and comprises "78% of the Standard Portion plus 50% of the Merchant Portion if any of the Sherritt Average Price". In practice at present, so we were told, this amounts to \$1.14 per lb. for nickel. Another unfavourable feature of the present contracts is that Sumitomo only pays for the copper in the copper concentrate and not for contained nickel (which amounts to up to 2% in the concentrate). In the former single contract all the nickel and the copper in the concentrate was paid for.

The company experienced more than a decade of successful and profitable years in operating the Giant Mascot mine. In 1969 a gross profit of \$3.37 per ton of ore mined and production expense of \$7.58 per ton was reported in the company's Annual Report. In the five months preceding February 1974, there was an operating loss of 0.10 cents per ton, and production expenses had increased to \$13.85 per ton. That this is due in large part to declining reserves, necessitating the mining of lower grade material is indicated by the following table:-

Year	1973	1972	1971	1970	1969
Tons of ore mined	387,593	386,205	157,175	301,693	316,749
Grades of ore:					
Average % nickel	0.58	0.68	0.74	0.83	0.72
Average % copper	0.27	0.38	0.40	0.43	0.34
Concentrates:					
Tons produced	13,908	20,427	9,217	20,595	17,527
Pounds of contained Nickel	2,611,301	3,964,543	1,861,492	4,037,291	3,496,000
Pounds of contained Copper	1,786,599	2,686,608	1,155,859	2,277,994	1,930,339

The following figures contain details of mining costs over the past five months ending February 28, 1974:-

Dry tons milled 120,331.

		<u>Per ton</u>
<u>Mineral Production:</u>		
Estimated value of concentrates	\$1,832,146	15.22
Less U.S. exchange	<u>46,773</u>	<u>.39</u>
	1,785,373	14.83
Marketing expense	130,330	1.08
Net smelter returns	1,655,043	13.75
<u>Production Expenses:</u>		
Mine Administration	113,509	0.94
Mining	627,629	5.22
Concentrating	309,681	2.57
Mine Exploration and Development	<u>234,851</u>	<u>1.95</u>
Cost of Production	1,285,670	10.68
Depreciation	241,000	2.00
Amortization of deferred development	<u>141,000</u>	<u>1.17</u>
	1,667,670	13.85
Operating loss	12,627	0.10

Other Expenses:

Investigation of other properties	\$ 6,679	0.06
Interest expenses (net)	91,300	0.76
General administration	116,433	0.97
Financing expense	<u>5,828</u>	<u>0.04</u>
	220,240	1.83
Loss before provision for taxes	232,867	1.93
Provision for Deferred income and mining taxes	93,000	0.77
Net loss for period	\$ 139,867	\$ 1.16

Ore Reserves

When the company commenced operations at the mine in 1959 reserves were estimated at about 400,000 tons. Since that time approximately ten times that amount has been developed and mined. So in spite of the relatively small lateral extent of the orebodies and the absence of any obvious common factors controlling ore deposition the company has been quite successful in its exploration efforts until the last few years. Some twenty six orebodies have been brought into production. These bodies vary considerably in overall dimensions, attitude, host rock, and character of mineralization. Horizontal dimensions range from 50 feet to 350 feet by 200 feet. In vertical extent they vary from 200 to 1,200 feet, and in total tonnage from 50,000 to 1,000,000 tons. The orebodies are usually pipe-like in form and vertical or near vertical in attitude. A reference to the attached sectional representation of the mine will indicate the broad spatial relationship of these orebodies.

As mentioned previously, exploration in the past few years has been less successful. The last significant mineralized zone to be discovered was the 6800 on the east side of the mine, and this proved to be fragmented and was not considered economic in view of the extensive development necessary. Mineable reserves are now down to 200,000 tons. There are no indications that another orebody will be discovered, and even if this occurred, there would be insufficient time to develop it before the present reserves were mined out. The grade of the present reserves have evidently been calculated to average cut-off grade, that is about 0.60% nickel and 0.30% copper. These reserves are contained in the Climax and

Chinaman stopes and a limited amount from the 4600 stope. At the present time the company estimates a closure by September at the latest.

It seems clear then that government financial aid would be of no help whatever in prolonging the present stage of production at the Giant Mascot mine.

The prospects for ultimately discovering more ore reserves on the company's property would seem to be by no means unfavourable. The ultrabasic outcrop is believed to extend over some 5,000 acres. The immediate area of the mine occupies about one third of this area in the southwesterly portion. Attention was first directed to it by the discovery of the outcrop of the Pride of Emory orebody. However, many of the orebodies discovered later have no surface expression or only minor indications. Preliminary exploration in the remaining two-thirds of the ultrabasic outcrop has shown some promising indications in the form of mineral occurrences and geophysical and geochemical anomalies.

Another suitable field for further exploration is the immediate mine area below the present main haulage level at 2600 level. Four of these have been tested for downward continuity, and of these three have given indications of downward continuity. At the present time a long diamond drill hole is being put down below 2600 level to provide information about rock types.

Assuming that an objective of government policy is the encouragement of a viable mining industry in the Hope area, some technical assistance may be justified in aiding the company in their exploration programme on the Giant Mascot property and adjacent areas. The suggested nature of this assistance is discussed elsewhere in this report.

EXPLORATION

Since the Pride of Emory ore body was found by surface prospecting in 1923 most exploration techniques have been utilized to some extent on the Giant Mascot property. These have included the classical geological mapping methods of surface, underground and drill core, geophysical methods extant and modern, and recent soil geochemistry programs. Recent geophysical and geochemical studies have outlined a number of anomalous areas which have been or will be tested by diamond drilling.

Most of this impressive body of work has been concentrated along the western part of the ultramafic pluton at the surface and above the 2600 level elevation within a limited target area. Diamond core drilling on progress at the mine will attempt to partly outline the stock below 2600 level, and delimit the diorite contact on the north.

CONCLUSIONS

The peculiar shape and orientation of the Giant Mascot ore bodies, the apparent lack of specific geological controls and targets as well as the generally difficult local conditions have all combined to present a formidable hindrance to ore search in this area. Although 26 ore bodies have been found and mined in only a small part of this stock the lack of a consistent geological concept, as well as a consistent overall coverage of the stock almost completely precludes forecasting ore possibilities and probabilities.

It is conceivable that simple close-spaced pattern drilling from the present underground workings could provide both geological information and possibly ore but this would be both difficult and expensive. Detailed geological, geophysical and geochemical studies of the less known parts of the stock would also provide information and possible exploration targets. But it is unlikely that any or all of this work could provide sufficient ore to prevent the expected closure of the mine towards the end of 1974.

The location and extent of the present underground development headings render it almost impossible to test or explore much of the unknown stock. One or more exploration headings would be of considerable importance in this respect. The cost of course would be considerable.

APPENDIX A. DETAILS OF PROPERTY HOLDINGS  
OF GIANT MASCOT MINES LIMITED  
IN GIANT MASCOT MINE AREA.



SUMMARY OF MINERAL CLAIM HOLDINGS

GIANT MASCOT MINES LIMITED

<u>Mineral Holdings</u>	<u>Crown Grant</u>		<u>By Location</u>		<u>Leases</u>		<u>Totals</u>
	<u>No.</u>	<u>Acreage</u>	<u>No.</u>	<u>Acreage</u>	<u>No.</u>	<u>Acreage</u>	<u>Acreage</u>
Giant Nickel Mine	92	2794.84	56	1871.10	2	168.48	4834.42

Crown Grants from which production has been obtained	<u>Former</u>		<u>Current</u>		<u>Total</u>	
	<u>No.</u>	<u>Acreage</u>	<u>No.</u>	<u>Acreage</u>	<u>No.</u>	<u>Acreage</u>
*9		200.09	6	116.75	14	316.84

\* Old Crow L 862 is included in both categories therefore total is 14

NOTE: Acreages used for unsurveyed claims are 38.15 acres per full size claim and 19.20 acres per fractional claim, which are the averages of acreages of these types of surveyed claims held on all of the above properties. The term "surveyed" as referred to throughout this report denotes a claim on which location posts have been surveyed and claim areas calculated by a British Columbia Land Surveyor.

SUMMARY OF PRODUCTION FROM CROWN GRANTED MINERAL CLAIMSCurrent Production

L 1403	St. Julien Fr.	2.76 Ac.
L 1402	Nickel Core Fr.	28.66 Ac.
L 1401	Fairview	44.53 Ac.
L 1397	A-Zone	24.42 Ac.
*L 862	Old Crow	14.19 Ac.
L 861	Last Chance Fr.	2.19 Ac.

Acreage of Crown Granted Mineral Claims  
Yielding Current Production

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116.75

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Former Production

L 1390	Apex M.C.	20.73 Ac.
L 811	Bluebird	25.15 Ac.
L 812	Nickel Star	6.44 Ac.
L 801	Progress	23.05 Ac.
*L862	Old Crow	14.19 Ac.
L 800	Molly	18.49 Ac.
L 793	Pride of Emory #1	38.57 Ac.
L 1416	Pride Fr.	1.82 Ac.
L 794	Pride of Emory #2	51.65 Ac.

Acreage of Crown Granted Mineral Claims  
Yielding Former Production

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200.09

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Total Acreage of Crown Granted  
Mineral Claims from which Production  
has been obtained

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316.84

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GIANT NICKEL MINE MINERAL CLAIMS

1. SURVEYED CLAIMS - CROWN GRANTS

<u>Claim Name</u>	<u>Lot No.</u>	<u>Acres</u>
Heather No. 1	814	36.68
Hilltop No. 1	818	35.24
Hilltop No. 2	819	35.19
Hilltop No. 3	820	39.96
Hilltop No. 4	821	37.21
Hilltop No. 5	822	38.88
Hilltop No. 6	823	40.92
Hilltop No. 8	825	49.73
Choate No. 1	832	6.50
Choate No. 2	833	37.10
Choate No. 3	834	27.15
Queen Charlotte	1244	51.65
Grand Forks	1245	51.65
Northern Star	1246	15.08
Summit No. 6	1381	47.63
Sun No. 1	1384	51.02
Sun No. 2	1385	50.12
Sun No. 3	1386	47.80
Summit No. 3	1389	38.04
Slide Fraction	1429	48.32
Raven Fraction	1431	31.12
Pride of Emory No. 1	793	38.57
Pride of Emory No. 2	794	51.65
Pride of Emory No. 3	795	50.69
Pride of Emory No. 5	796	46.87
Pride of Emory No. 6	797	51.65
Polly	798	34.30
Betty	799	37.50
Molly	800	18.49
Progress	801	23.05
Ted Fraction	802	3.16
Choate View	807	11.78
Choate View No. 2	808	29.43
Ruby	810	17.99
Blue Bird	811	25.15
Nickel Star	812	6.44
Copper King	813	9.19
Heather No. 2	815	37.67
Heather No. 3	816	48.17
Heather No. 4	817	40.66
Hilltop No. 7	824	44.12



	<u>Lot No.</u>	<u>Acres</u>
Leonardo	826	9.73
Reed Rose	827	26.16
Eagel	828	25.41
Good Hope	829	26.37
Elk Fraction	831	0.94
Choate No. 5	836	37.43
Antler	856	18.93
Bluebird Extension	857	13.99
Last Chance Fraction	861	2.19
Old Crow	862	14.19
South Fork	923	51.65
Canion	924	51.65
Donna Fraction	925	27.72
Asta Fraction	926	38.87
Province	1247	47.77
Mite Fraction	1248	1.81
Vik Fraction	1374	5.33
Summit No. 4	1379	51.65
Summit No. 5	1380	51.65
Summit No. 7	1382	42.56
Star of Emory No. 5	1383	33.69
Summit No. 1	1387	51.44
Summit No. 2	1388	50.58
Apex	1390	20.73
Pride of Texas	1391	18.21
Cougar Fraction	1392	6.93
Black Bear Fraction	1393	0.98
Ida	1395	25.07
Climax	1396	18.48
Azone	1397	24.42
Pioneer	1398	37.93
Dolly	1399	46.18
Black Night	1400	42.83
Fairview	1401	44.53
Nickel Core Fraction	1402	29.06
St. Julian Fraction	1403	2.76
Dome No. 2	1404	8.45
Baer Fraction	1406	0.51
Dome No. 1	1407	22.27
Star of Emory No. 3	1414	44.92
Star Fraction	1415	4.48
Pride Fraction	1416	1.82
Star of Emory No. 4	1417	40.44
Last Strike	1419	44.04



	<u>Lot No.</u>	<u>Acres</u>
Pride of Emory No. 4	1422	36.63
Star of Emory No. 1	1423	19.87
Star of Emory No. 2	1424	9.37
Max Fraction	1425	12.14
Eagle Fraction	1426	20.58
Choate No. 7	1427	48.09
Falls Fraction	1430	37.89
		<hr/>
Total		2794.84

SUMMARY

73 full sized claims for	2518.23 acres
19 fractions for	<u>276.61 acres.</u>
92 Crown-granted Mineral claims =	<u>2794.84 acres</u>

2. MINERAL LEASES

Mineral Lease M-33, Lot 366

	<u>Record No.</u>	<u>Acres</u>	
Venus Fraction	24764	1.98	
Jupiter Fraction	11361	51.65	
Mercury No. 1 Fraction	11360	34.30	
Mercury No. 2 Fraction	24765	0.10	
Mercury No. 3 Fraction	24766	0.01	
Mercury	11364	47.77	
			<hr/>
			135.81

Mineral Lease M-32, Lot 365

Greg Fraction	11819	32.67	
			<hr/>
			32.67

<b>TOTAL ACRES - SURVEYED MINERAL LEASES</b>		<u><u>168.48</u></u>
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### 3. UNSURVEYED MINERAL CLAIMS

	<u>Record No.</u>
Burn Fraction	13822
Burn	13819
Deerfly Fraction	11363
Mascot Fraction	11859
Hemlock	13821
Multi Nickel No. 1	13416
Pentax No. 1 Fraction	21467
Pentax No. 2 Fraction	21468
Pentax No. 3	21469
Pentax No. 4 Fraction	21470
Pentax No. 5	21471
Pentax No. 6	21472
Pentax No. 7	21473
Pentax No. 8	21474
Pentax No. 9	21475
Pentax No. 10	21476
Pete Fraction	12691
Rany No. 1	11846
Rany No. 2	11847
Rum No. 2 Fraction	11362
Spar	13823
Spar Fraction	13824
Sidehill	13820
Slide Alder No. 1	13414
Slide Alder No. 2	13415
Sunray No. 1 Fraction	11862
Sunray No. 2	11863
Sunray No. 3	11864
Sunray No. 4	11865
Tarfu No. 1	11851
Tarfu No. 2	11852
Tarfu No. 3	11853
Tarfu No. 4	11854
Tarfu No. 5	11855
Tarfu No. 6	11856
Tarfu No. 7	11857
Tarfu No. 8	11858
TD No. 7	11333
TD No. 8	11334
TD No. 9	11335
TD No. 10	11336
TD No. 11	16295
TD No. 12	16296
TD No. 13	16297



	<u>Record No.</u>
TD No. 14	16298.
TD No. 15 Fraction	23414
TD No. 16 Fraction	23457
TD No. 17 Fraction	26137
TD No. 18	26138
TD No. 19	26139
TD No. 20	26140
TD No. 21	26141
Wendy No. 1 Fraction	11836
Wendy No. 2	11837
Wendy No. 3	11838
Wendy No. 4	11839

SUMMARY

42 full sized claims

14 fractions

56 Unsurveyed mineral claims = 1871.10

4. SURFACE RIGHTS - CROWN GRANTS

<u>Certificate of Title No.</u>	<u>District Lot No.</u>	<u>Name of Claim</u>	<u>Approx. Acreage</u>
281054F	793	Pride of Emory No. 1	38.57
281056F	794	Pride of Emory No. 2	51.65
281057F	800	Molly	18.49
267762F	811	Blue Bird	25.15
281055F	812	Nickel Star	6.44
254898F	827	Reed Rose	26.16
267763F	828	Eagel	25.41
267764F	857	Blue Bird Extension	13.99
281058F	861	Last Chance Fraction	2.19
281053F	1415	Star Fraction	4.48
281052F	1416	Pride Fraction	1.82
281051F	1248	Mite Fraction	1.81
281050F	1374	Vik Fraction	5.33
267758F	1390	Apex	20.73
267759F	1391	Pride of Texas	18.21
254899F	1392	Cougar Fraction	6.93
267760F	1393	Black Bear Fraction	0.98
267761F	1419	Last Strike	44.04
297606F	1396	Climax	18.48
297607F	801	Progress	23.05
297608F	1397	Azone	24.42
297609F	1426	Eagle Fraction	20.58
297610F	862	Old Crow	14.19
297611F	810	Ruby	17.99
297612F	1423	Star of Emory No. 1	19.87
D 4023F	795	Pride of Emory No. 3	50.69
D 4022F	798	Polly	34.30
D 4021F	807	Choate View	11.78
D 4020F	808	Choate View No. 2	29.43
D 4485F	826	Leonardo	9.73
D 4483F	829	Good Hope	26.37
D 4488F	856	Antler	18.93
D 4486F	1395	Ida	25.07
D 4487F	1402	Nickel Core Fraction	29.06
D 4484F	1403	St. Julian Fraction	2.76
D 4480F	1404	Dome No. 2	8.45
D 4478F	1407	Dome No. 1	22.27

TOTAL ACREAGE OF SURFACE RIGHTS - 719.80

APPENDIX B. PRESENT CONTRACTS RELATING  
TO GIANT MASCOT MINE PRODUCTION

CONTRACT made as of the 1st day of November, 1972.

BETWEEN:

GIANT MASCOT MINES LIMITED,  
P.O. Box 10010, Pacific Centre,  
700 West Georgia Street,  
Vancouver 1, British Columbia,

(hereinafter called "Giant"),

OF THE FIRST PART,

AND:

SHERRITT GORDON MINES LIMITED,  
P.O. Box 28,  
Commerce Court West,  
Toronto, Ontario,

(hereinafter called "Sherritt"),

OF THE SECOND PART,

WITNESSETH THAT:

Giant will sell and Sherritt will purchase nickel concentrate produced by Giant from its Choate mine and concentrator at or in the general area of Hope, B.C., delivered to the Refinery of Sherritt at Fort Saskatchewan, Alberta (hereinafter called "the Refinery"), all in accordance with the terms and for the considerations hereinafter set forth.

1. QUANTITY OF CONCENTRATE

Giant shall ship and deliver to the Refinery, regularly as produced, all the nickel concentrate produced from its Choate mine in each calendar month, during the period from March 1, 1973 to February 28, 1978, subject to the provisions of paragraph 7 hereof. Giant estimates that it will produce about 1,700 tons dry weight of nickel concentrate per calendar month hereunder subject to availability of ore reserves at its above mine. Sherritt shall not be obligated to receive at the Refinery and purchase more than

24 CARDS



2,000 tons of dry weight of nickel concentrate in any one calendar month unless and to the extent that Sherritt has given its prior approval. No shipments of nickel concentrate shall be made by Giant hereunder after February, 1978. The term "ton" as used herein shall mean 2,000 pounds.

2. QUALITY OF CONCENTRATE

2.1 The nickel concentrate shall be a nickel-copper sulphide flotation concentrate and shall not contain by dry weight, .

nickel less than 10.5%;  
copper more than 2.0%;  
acid soluble calcium more than 0.30%;  
arsenic more than 0.1%;  
chloride more than 100 ppm.

2.2 Nickel concentrate shall be sufficiently dry to prevent freezing; otherwise the cost of thawing any carload of nickel concentrate containing more than 4% moisture shall be for the account of Giant.

2.3 The nickel concentrate shall not contain flotation reagents or other additives that result in frothing or other process problems at the Refinery.

3. DELIVERIES AND TITLE

Nickel concentrate shall be shipped to the Refinery in wooden bottom, gondola cars; freight collect, but for the account of Giant. Title to the nickel concentrate shall pass from Giant to Sherritt on arrival at the Refinery's siding of the rail car containing the nickel concentrate.

4. WEIGHING, SAMPLING, MOISTURE DETERMINATION AND ASSAYING

4.1 Weighing, sampling and moisture determination of each carload of nickel concentrate shall be carried out by Sherritt promptly after

the arrival of the carload at the Refinery. Giant may have its official representative attend at the weighing and sampling. The weights and moisture determination so obtained shall govern.

4.2 Five carloads of nickel concentrate, as successively sampled, shall comprise a "lot" and a lot of nickel concentrate shall be deemed to have been delivered on the date the last carload in a lot was sampled.

4.3 Each lot sample shall be divided into three portions. One portion shall be forwarded to Giant promptly after sampling together with a receiving report stating the dates of arrival of each carload, dates of sampling, and the gross and net weights of each carload. One portion shall be retained by Sherritt and one portion of the sample shall be sealed for umpire. Within ten days following date of sampling of each lot, Sherritt shall send its analysis via air mail to Giant. Giant may dispute the analysis of Sherritt by giving notice thereof in writing to Sherritt within 30 days following the date of sampling, enclosing its own analysis and requesting Sherritt to obtain an umpire's analysis. Such request shall not be made by Giant unless there is a difference in analyses in excess of 0.25% in the case of nickel or 0.20% in the case of copper. Failing the giving of such notice, the analysis of Sherritt shall govern. In the event of such notice having been given by Giant, Sherritt shall send the sealed umpire sample to Loring Laboratories, Calgary, Alberta, or such other umpire as the parties agree to. If the umpire's analysis coincides with the analysis of either party, such analysis shall govern. Otherwise the average of the umpire and

and closest analysis shall be used for final settlement. The party whose analysis is further from that of the umpire shall pay for the umpire's analysis.

5. ACCOUNTABLE METALS

5.1 The term "accountable nickel" wherever used in this Contract means with respect to each lot of nickel concentrate the total nickel contained therein, as determined pursuant to paragraph 4 hereof, delivered by Giant and accepted by Sherritt for refining, less agreed losses in refining at the rate of 22 pounds of nickel per dry ton of nickel concentrate.

5.2 The term "accountable copper" wherever used in this Contract with respect to each lot of nickel concentrate means 90% of the total copper contained therein when such lot contains 1% or more copper and 80% of the total copper contained therein when such lot contains less than 1% copper, as determined pursuant to paragraph 4 hereof, delivered by Giant and accepted by Sherritt hereunder.

*See Para 2.1  
Max. Copper Content  
2%*

6. PURCHASE PRICE

6.1 The purchase price payable by Sherritt for nickel concentrate sold to Sherritt by Giant hereunder shall be as follows:

A. ACCOUNTABLE NICKEL

Sherritt shall pay Giant per pound of accountable nickel 78% of the Standard Portion plus 50% of the Merchant Portion if any of the Sherritt Average Price. Accountable nickel in nickel concentrate delivered to Sherritt shall be accounted and paid for

on the basis of the Sherritt Average Price for the second calendar month following the calendar month of delivery (which second calendar month is hereafter referred to as "the accounting month").

The "Sherritt Average Price" shall be the average net back price per pound in U.S. funds receivable by Sherritt for Sherritt standard nickel briquettes shipped to purchasers during the accounting month.

"Net back" means the gross sales price basis F.O.B. Fort Saskatchewan, Alberta, less Sherritt's direct selling costs including transportation, insurance, sales commissions, taxes, duties and other charges and expenses.

The "Standard Portion" is:

- (a) the whole of the Sherritt Average Price to the extent that the same is equal to or less than the Reference Price, or
- (b) that portion of the Sherritt Average Price which does not exceed the Reference Price.

The "Reference Price" is:

- (a) the average Official Price for the accounting month (averaged on a time basis); plus
- (b) 20 cents U.S. funds.

The "Official Price" is the price per pound in United States Funds (currently \$1.53) set by The International Nickel Company of Canada, Limited for electrolytic nickel cathodes, F.O.B. Port Colborne, Canada.

The "Merchant Portion" is the Sherritt Average Price less the Standard Portion.

**B: ACCOUNTABLE COPPER**

Sherritt shall pay Giant in Canadian funds for accountable copper at the average net price per pound of copper sold from copper precipitate produced at the Fort Saskatchewan refinery realized by Sherritt F.O.B. Fort Saskatchewan in the fourth calendar month following the calendar month in which the relevant concentrate was delivered, less 3 cents Canadian Funds per pound of copper, such price less such deduction being hereinafter referred to as "the Net Copper Price".

6.2 PAYMENT - Payment for accountable nickel shall be made in U.S . funds when the Sherritt Average Price is determined but not later than the 15th of the third calendar month following the calendar month of delivery of nickel concentrate at the Refinery at Fort Saskatchewan, Alberta. Payment for accountable copper shall be made in Canadian funds when the Net Copper Price is determined during the fifth calendar month following the calendar month in which the relevant nickel concentrate was delivered but not later than the last day of such fifth calendar month.

**7. FORCE MAJEURE**

In case any cause beyond the reasonable control of either party hereto interferes with the performance of any obligations under this Contract, other

than an obligation to pay, the party affected, by notice to the other with particulars, may, during the continuance of such interference, be excused from the performance of any of its obligations to the extent that such performance is prevented by such interference, provided that the party so affected shall give notice to the other forthwith after such cause has ceased to subsist.

8. NOTICES

All notices shall be given by telegraph or telex confirmed by registered mail of even date. Notices to Giant shall be directed to:

Giant Mascot Mines Limited  
P.O. Box 10010, Pacific Centre  
700 West GEorgia Street  
Vancouver 1, B.C.

and notices to Sherritt shall be directed to:

Sherritt Gordon Mines Limited  
P.O. Box 28  
Commerce Court West  
Toronto, Ontario.

9. SUCCESSORS AND ASSIGNS

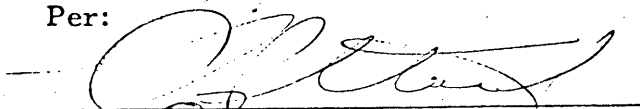
This Contract shall not be assignable by either party but shall be binding upon and enure to the benefit of the successors of the respective parties hereto.

IN WITNESS WHEREOF the parties hereto have caused these presents to be signed by their duly authorized officers and their

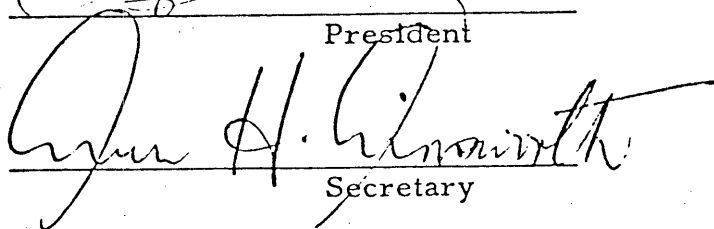
corporate seals to be hereunto affixed as of the day and year first  
above written.

GIANT MASCOT MINES LIMITED

Per:



President



Secretary

SHERRITT GORDON MINES LIMITED

Per:



PRESIDENT



SECRETARY

THIS MEMORANDUM OF AGREEMENT made the 14th day of November,  
1972,

BETWEEN:

GIANT MASCOT MINES LIMITED,  
of Suite 2410, The Toronto-Dominion  
Bank Tower, Pacific Centre, 700 West  
Georgia Street, Vancouver 1,  
British Columbia, as the Seller,

AND:

SUMITOMO SHOJI CANADA LTD.,  
on behalf of SUMITOMO SHOJI KAISHA, LTD.,  
of 2-2, Hitosubashi 1 - Chome, Chiyoda-ku,  
Tokyo, Japan, as the Buyer.

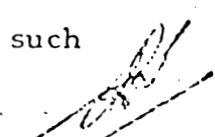
This memorandum of agreement confirms that the Buyer has agreed to purchase copper concentrate produced by the Seller at the Giant Nickel Mine near Choate, British Columbia (hereinafter called 'copper concentrate'), from and after March 1, 1973, on the following terms and conditions:

1. Term of Contract:

(a) The contract shall be for a period of two years commencing on March 1, 1973, and ending on February 28, 1975.

(b) In the event that the Seller proposes to produce copper concentrate continuously after March 1, 1975, the Seller shall give notice to the Buyer to that effect at least six months prior to February 28, 1975, whereupon the parties shall enter into negotiations for the renewal of the contract for such period after March 1, 1975 and upon such terms and conditions as may then be agreed between them.

If during the period from the giving of such notice by the Seller to the Buyer until either agreement is reached between the Buyer and Seller for the renewal of the contract or until January 29, 1975, whichever first occurs, the Seller receives from a third party a bona fide offer for the purchase of copper concentrate to be produced after March 1, 1975, which the Seller is prepared to accept, the Seller shall give notice to the Buyer of the terms and conditions of such offer forthwith after such

  
J. U.



offer is received and the Buyer shall have the right, for a period of thirty days after receiving notice of such third party offer and before the Seller enters into any contract with such third party, to make an offer to the Seller for the purchase of the copper concentrate after March 1, 1975, on terms which the Buyer considers will be of equivalent benefit to the Seller for a comparable period of time, but the Seller shall not be bound to accept any such offer by the Buyer. If no such offer is made by the Buyer within such period, or, if made, is not accepted by the Seller, the Seller shall be under no obligation to carry on further negotiations with the Buyer or to give notice to the Buyer of any further third party offer which the Seller may receive thereafter, unless the Seller, in its discretion, elects to do so,

2. Quantity:

All the copper concentrate produced up to 6,000 short wet tons per annum.

3. Quality of Copper Concentrate:

Copper: approximately 27% with a minimum of 22% guaranteed

Nickel: approximately 1% to 2%

Gold: approximately 0.6 grams per metric ton

Silver: approximately 17 grams per metric ton

4. Shipping:

Copper concentrate shall be delivered by the Seller and will be purchased by the Buyer F.O.B. Vancouver, loaded, stowed and trimmed, for shipment to Sumitomo Metal Mining Co. Ltd., as the consignee. Upon any shipment of copper concentrate being loaded, stowed and trimmed, title thereto shall pass to the Buyer and such shipment shall thereafter be at the Buyer's risk. The Buyer will arrange for shipments by ocean vessel three times during each contract year in accordance with a schedule to be mutually agreed by the parties in advance, provided, however, that each such shipment shall consist of not less than 1,700 short wet tons of copper concentrate.

5. "Applicable Price":

The "Applicable Price" shall mean the London Metal Exchange

wirebar settlement price, the U.S. dollar equivalent of which is published in "Metals Week" as the weekly average and monthly average "M.W.c.i.f. Europe" price.

6. Quotational Period:

(a) The "Provisional Quotational Period" shall mean the two calendar weeks prior to the calendar week of shipment;

(b) The "Final Quotational Period" shall mean the calendar month following the calendar month in which a shipment arrived in Japan. For the purposes of this contract, a shipment will be deemed to have arrived in Japan on the date which the master of the vessel carrying the shipment reports to the Port authorities as the vessel's arrival date at the port of discharge.

7. "Provisional Price":

The "Provisional Price" shall mean the arithmetic mean of the weekly average of the Applicable Price for each calendar week during the Provisional-Quotational Period.

8. "Final Price":

The "Final Price" shall mean the average monthly Applicable Price for the Final Quotational Period.

9. Payable Copper:

"Payable Copper" shall mean the copper contained in the copper concentrate less one unit of copper per dry metric ton thereof.

10. Refining and Treatment Charges:

The Buyer shall be entitled to deduct the following charges from the payment for "Payable Copper":

Standard Refining Charge: 15.1 Japanese yen per pound of Payable Copper

Additional Refining Charge: 10% of the amount, if any, by which the

Provisional Price or the Final Price, as the case may be, exceeds

U.S. \$0.55

Treatment Charge: 13,590 Japanese yen per dry metric ton of copper concentrate.

11. Conversion Rate:

The equivalent in U.S. dollars of the Standard Refining Charge and the Treatment Charge shall be determined on the basis of the average for the business days during the Provisional Quotational Period or the Final Quotational Period, as the case may be, of the daily arithmetic mean (rounded to the nearest one one-hundredth of a yen) of the telegraphic transfer buying rate and the telegraphic transfer selling rate for U.S. dollars as quoted by The Bank of Tokyo Limited, Tokyo, Japan, for each such business day. The terms "business day" and "business days" shall mean a day or days on which the Bank of Tokyo is open for business and engages or offers to engage in transactions in U.S. dollars. In the formal contract between the parties a provision will be incorporated relating to the manner in which the conversion rate would be determined in the event of the suspension of trading in U.S. dollars by the Bank of Tokyo during a Provisional Quotational Period or a Final Quotational Period.

12. Payment:

(a) Payment shall be made by the Buyer to the Seller in U.S. dollars for the Payable Copper in each shipment of copper concentrate, as follows:

(i) A provisional payment of 90% of the provisional invoice based on the Provisional Price, less the Standard Refining Charge and the Treatment Charge and, if applicable, the Additional Refining Charge, all as determined for the Provisional Quotational Period, shall be made on or before thirty days after the arrival of the shipment.

(ii) Payment of the final invoice based on the outturn weights and final assays for the shipment and the Final Price, less the Standard Refining Charge and the Treatment Charge and, if applicable, the Additional Refining Charge, all as determined for the Final Quotational Period, shall be made on submission of the final invoice. In the final invoice for the entire shipment, the Buyer shall be credited with the amount of the provisional payment.

(b) No payment shall be made for gold, silver or nickel contained in the copper concentrate.

13. Loading:

(a) Cargo shall be loaded by conveyors, and stowed and trimmed by the Seller at its risk and account.

(b) The costs of stevedoring shall be for the account of the Seller.

(c) Overtime at loading port shall be for the account of the ordering party; but if ordered by port controllers or their representatives, the Seller shall pay all extra expenses incurred, excluding overtime of vessel's personnel.

14. Final Weight, Sampling and Determination of Moisture:

Final weighing, sampling and the determination of moisture shall be made in the customary manner. These operations shall be carried out at the Sumitomo works, free of expense to the Seller; and the Seller shall have the right to be represented at the Seller's expense. Save in the event of the partial or total loss of a shipment of concentrate in transit, such dry weight (sometimes referred to herein as 'the outturn weight') shall be binding as final. Of the samples taken, one shall be sent to the Seller, or its agent named in a notice to the Buyer; one to the Buyer; and the third to Ledoux & Co., 359 Alfred Avenue, Teaneck, N.J., U.S.A., for eventual umpire assay.

15. Final Assay:

Assays shall be made of the dried samples and exchanged between the Seller and the Buyer in Japan. The mean of the exchanged assays shall govern settlement. Should results show a discrepancy larger than 0.3% in respect of copper, then Ledoux & Co., N.J., U.S.A., shall be appointed as umpire analyst.

Settlement shall be made at the mean of the umpire assay and the nearer party's assay provided that the umpire assay lies between the two parties' assays. If the umpire assay falls outside those of the two parties, settlement shall be made at the middle one of the three assays. The cost

of umpire analysis shall be for the account of the party whose result is further from that of the umpire. Should the umpire's result be the exact mean between those of the Seller and the Buyer, the cost of umpire shall be divided equally. The assay at which final settlement is made, whether as a result of the exchange of assays between the Buyer and Seller or as a result of umpire analysis, is the assay sometimes referred to in this memorandum as 'the final assay'.

16. Arbitration:

All disputes, controversies, or differences which may arise between the parties, out of or in relation to or in connection with this contract, or the breach thereof, shall be settled by arbitration in the Province of British Columbia, in accordance with the laws of the Province of British Columbia. The award shall be final and binding upon both parties.

17. Other Conditions to be Negotiated:

This memorandum of agreement shall constitute a binding contract between the parties hereto when signed by them to the extent of the provisions herein contained. It is intended, however, that the terms of this memorandum of agreement shall be incorporated in a formal contract between the parties hereto as soon as possible, and that such formal contract shall also contain clauses relating to the following matters which have yet to be negotiated between the parties hereto:

(a) Provisions as to vessel arrangement, including notice as to the estimated time of arrival of a vessel and conditions relating to the payment of "dead freight";

(b) Provisions as to the loading condition for purposes of demurrage;

(c) Provisions as to the documents to be delivered upon the completion of loading;

(d) Provisions as to insurance and as to the total or partial loss of concentrates in transit and, in the event of any such loss, the method for determining outturn weights and final assays;

(e) Provisions as to force majeure and the consequences thereof;

(f) A provisions as to the law of the contract (it being presently contemplated by the parties, subject to final negotiation, that the contract shall be governed by and construed in accordance with the law of the Province of British Columbia).

18. Notice:

A notice to the parties hereto, unless otherwise mutually agreed, shall be in writing and shall be given either by registered airmail letter or by prepaid telegram addressed, as the case may be, as follows:

- (a) Sumitomo Shoji Canada Ltd.,  
Suite 1116, Standard Building,  
510 West Hastings Street,  
Vancouver 2, B.C.
- (b) Sumitomo Shoji Kaisha Ltd.,  
New Sumitomo Building,  
2-2 Hitosubashi 1 - Chome,  
Chiyoda-ku,  
Tokyo, Japan.
- (c) Giant Mascot Mines Limited,  
Suite 2410, The Toronto-Dominion Bank Tower,  
700 West Georgia Street,  
Vancouver 1, British Columbia.

or such other address as one of the parties hereto may hereafter designate by notice in writing to the other.

Where a notice is sent by airmail registered post, it shall be deemed to have been served on the party to whom it was addressed on the fifth day after the day of the posting of the letter, and where a notice is sent by telegram, it shall be deemed to have been served on the day after the day of the dispatch of the telegram.

19. Successors and Assigns:

This memorandum shall enure to the benefit of and be binding upon the parties and their respective successors and assigns.

Executed on behalf of the parties hereto as of the day and

year first above written.

SELLER:

GIANT MASCOT MINES LIMITED )

per: [Signature] )

President and Managing Director

BUYER:

SUMITOMO SHOJI CANADA LTD. )

on behalf of )

SUMITOMO SHOJI KAISHA, LTD. )

per: [Signature] )

Executive Vice Pres.

SECTIONAL REPRESENTATION OF  
THE UNDERGROUND WORKINGS AND  
ORE BODIES OF THE GIANT MASCOT MINE