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Title: 1978 GEOLOGY AND SAMPLING REPORT  
ON MT. OGDEN MOLYBDENUM PROPERTY

Claims: Taku 1 205(3)  
Taku 2 205(3)

Mining Division: Atlin

NTS Location: 104-K 6W

Latitude: 58° 26' N  
Longitude: 133° 22' W

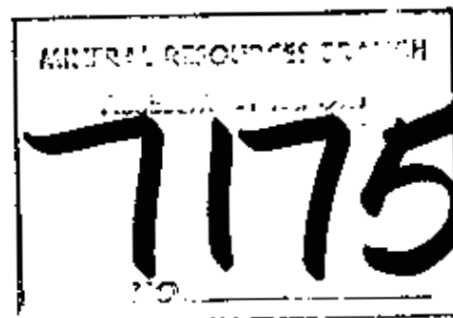
Owner: Frank Onucki

Operator: Omni Resources Inc.

Consultants: Nevin Sadlier-Brown Goodbrand Ltd.  
Bema Industries Ltd.

Author: Andrew E. Nevin, P.Eng.

Date Submitted: March 13, 1979



CONSULTING GEOLOGISTS

MINERALS • AGGREGATES • GEOTHERMAL RESOURCES • ENVIRONMENT

SUMMARY

In 1978 preliminary sampling and mapping of rugged cliffs on the northeast flank of Mt. Ogden, Atlin Mining Division, discovered a highly significant molybdenum deposit. Of 96 bed-rock samples, the better average values of trenches or continuous chips are:

|          |   |                        |                        |
|----------|---|------------------------|------------------------|
| Zone 'M' | : | 24 samples across 43 m | 0.31% MoS <sub>2</sub> |
| Zone 'N' | : | 26 samples across 26 m | 0.32% MoS <sub>2</sub> |
| Zone 'Z' | : | 10 samples along 300 m | 0.24% MoS <sub>2</sub> |

The mineralization represented by these samples is present in an alaskitic granite stock, the very top of which is exposed discontinuously in an area of 1 800 m x 1 500 m (6000 x 5000 feet). Although not all of the alaskite is well mineralized, there are suggestions of continuity of well-mineralized rock in the subcrop. There are, in addition, clearly "open" boundaries, particularly to the west, south, southeast, and with depth.

Sampling has not progressed to the point of establishing ore reserves of any standard category; however, if acceptable grades and continuity of mineralization are established by drilling, and if mineralization is extended in one of the several open directions, it is not difficult to visualize a deposit in excess of 220 000 000 tonnes.

We have recommended a 1979 program to our Client, Omni Resources Inc., to consist of driving an adit, drilling from underground stations, bulk sampling the muck, and conducting such other studies as geology, safety, meteorology, and rock mechanics.

It is probable that work on the property will continue beyond 1979, and transportation and access studies may be undertaken.

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OMNI RESOURCES INC.  
1978 GEOLOGY AND SAMPLING REPORT ON  
MT. OGDEN MOLYBDENUM PROPERTY  
Atlin Mining Division, B.C.

1.0 INTRODUCTION

1.1 Terms of Reference and Scope of Report

This report is prepared at the request of Omni Resources Inc. for submittal to the Ministry of Energy, Mines and Petroleum Resources as required under Mineral Act Regulations to apply assessment work.

In particular, the report describes field work and laboratory study performed during the 1978 field season. The report also reviews such previously acquired information as is necessary to provide the context for the 1978 work.

There should be no misunderstanding concerning the cited tonnages of "mineralized" rock. At the present time, the Taku claims are in the early stages of exploration. Sampling has not progressed to the point where the property can be considered to have ore reserves of any category by any of the standard definitions.

1.2 Location and Access

The property adjoins the border between British Columbia and the United States, immediately east of Juneau, Alaska (see Drawings 1, 1A and 1B). The claims are 25 km (15 miles) south of the now abandoned Polaris-Taku Mine, 60 km (40 miles) east of Juneau, 130 km (80 miles) south of Atlin, B.C., and 270 km (170 miles) south of Whitehorse, Yukon. They are located on NTS Map sheet 104 K/6W, and centred on latitude  $58^{\circ} 26'$  and longitude  $133^{\circ} 22'$ . Access is via aircraft, on foot, or on snowmobile during the winter.

Border Lake, which lies across the Canadian-U.S. border, northwest of the claims, is suitable for landings and take-offs by a Beaver or Otter. Within the claim group a helicopter is a necessity throughout the year except when the glaciers have enough snow covering the crevasses to be suitable for surface transportation.

### 1.3 Terrain

One of the important factors in the exploration and eventual mining, if warranted, of the Moly-Taku property is the terrain.

The claims lie in the high and jagged mountains of the Coast Range immediately south of the Taku River. Mt. Ogden has an elevation of 2 111 m (6926 feet) and Border Lake is approximately 843 m (2766 feet). The glacier lying on the north slope of Mt. Ogden feeds into a small river flowing north into the Sittakanay River, at elevation 200 m, which in turn flows into the Taku River near sea level.

Immediately south and west of the claims, mainly on the American side of the border, is the large Wright Glacier which also flows northwest into the Taku River. Border Lake lies in a narrow pass between the two glaciers, and with its immediate surroundings has a sub-boreal rain forest vegetation.

Elsewhere the claims lie on steep or vertical rock slopes and glaciers. No area within the claims is conducive to casual travel by foot or vehicle. Aspects of safe travel are discussed in Section 4.0 on Mr. Bleuer's report.

### 1.4 Work Completed

#### 1.4.1 Examination

In 1977 Nevin Sadler-Brown Goodbrand Ltd. examined the Moly-Taku claims on behalf of another

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client. Subsequently Omni Resources Inc. optioned the claims from the prospector and retained us to prepare the initial qualifying report which was dated July 17, 1978 and appears in the prospectus of the Company.

The field work proposed in that report was carried out by Nevin Sadlier-Brown Goodbrand Ltd. and Bema Industries Limited in the period August 29 through September 29, 1978.

Mr. M.J. Beley and Mr. R.J. Barclay led a team of eight workers who used a helicopter and mountain climbing gear to collect ninety-six samples from six alaskite outcrop areas. The team made the appropriate reconnaissance maps.

#### 1.4.2 Sampling

Ninety-six bedrock samples were taken and submitted for assay to Bondar-Clegg and Co. Ltd. in Whitehorse and analyzed in Vancouver for MoS<sub>2</sub>.

Most samples were carefully cut chips or channels on the order of one metre in length, commonly in a continuous succession across the principle structure of the molybdenite veins. The circumstances of this examination were unusual in several respects. The crew at times were secured by climbing ropes on near-vertical faces; the proportionate cost of the transportation and logistical support required to conduct the sampling was high; and the opportunities for repeat visits were limited. Thus the crew took abnormal pains to ensure that the samples were representative of the larger rock mass.

#### 1.4.3 Petrography and Geology

Other chores were conducted after the initial sampling and examination. Mr. Terry Elliott, M.Sc.,

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a Bema Industries geologist, made a second quick examination of the property, collected several specimens, and subjected them to petrographic examination or had them analyzed for trace elements. He also produced an hypothesis on origin of the deposit.

#### 1.4.4 Safety

Mr. Herb Bleuer, of Western Avalanche Control Specialists Company, Whistler, British Columbia, was one of the climbing specialists on the field crew. Subsequent to the field work, he provided a report on hazards from snowfall, rockfall, crevasses, and otherwise commented on future access and safety on the project.

#### 1.4.5 Maps

In the absence of acceptable published topographic maps, Integrated Resource Photography Ltd., Vancouver, prepared contour maps at 1:5,000 and 1:20,000 from existing air photos. These provided the base for Drawings 2B, 3 - 7 of this report, and have been submitted to the Ministry as assessment work on other claims (see Appendices).

### 1.5 Property

This report is concerned with the Taku 1 and 2 claims, record numbers 205(3) and 206(3). The Claim Map is shown in Drawing 2.

The subject claims were staked by Mr. Frank Onucki, 602 Dunsmuir Street, Vancouver, and are under option to Omni Resources Inc.

Drawing 2B, the 1:10,000 scale base map for Drawings 3 - 7, shows the location of the Legal Corner Post (witnessed) and claim lines relative to the mapped and sampled area. The method for plotting the LCP on the map was to scale it off from the Claims map,



consistent with field inspection of the Witness Post.

## 1.6 Previous Exploration History

### 1.6.1 Regional

The Taku River area was the site of a gold discovery in 1875 and was used as access to the Klondike during the last few years of the 19th century. The Tulsequah Chief property was discovered in 1923 and the properties later known as the Polaris-Taku and the Big Bull in 1929, along with several other mineral showings.

The Polaris-Taku operated from 1937 through 1951, producing 8 million dollars in gold from 700,000 tons of ore. The Big Bull and Tulsequah Chief produced from 1951 through 1957, milling about 1 million tons of ore which yielded 94,000 ounces of gold, 3½ million ounces of silver and several thousand tons of copper, lead, zinc and cadmium.

These base and precious metal deposits occurred in Stuhini volcanic rocks as replacements and stringers associated with silica, carbonate, and albite alteration.

As well as the massive sulfides, the region is known for the scattered occurrence of acid intrusive stocks. These intrude the older rocks and some have the characteristics of molybdenum or copper porphyries. The region attracted considerable effort on the part of major exploration companies during the 1960's and early 1970's. None of the known porphyry prospects has been put into production as yet.

### 1.6.2 Taku Claims

Molybdenite, sphalerite and large-scale pyritization were first noted in the claim area by a Geological Survey of Canada field party under the leadership of Dr. J.G. Souther in the period 1958-1960.

This news was made public by a press release.

As noted in a previous assessment work report (Nevin, 1978), several individuals and companies held claims in the area and made ineffectual attempts to explore them, until 1977 when the area was staked by Mr. Onucki.

Prior to the examination in 1978 very little was actually known about the grade and extent of moly mineralization. The earliest explorers knew that the terminal moraine and one medial moraine of the north-moving glacier carried many tens of tons of angular fragments of alaskite containing moly mineralization. Much of this appeared to approach "ore" grades. At the time of the earlier work, the surface of the glacier, particularly near the head wall on the cirque, was 25 to 50 metres higher in elevation than it is at present. Earlier workers were limited to a slim glimpse of the uppermost stringers of alaskite cropping out in the head wall, which are now known to be thin apophyses of the massive underlying exposures sampled in 1978.

## 2.0 GEOLOGY AND MINERALIZATION

### 2.1 General Geology

The principal country rock is a Permo-Triassic metamorphic sequence. This is intruded by a Cretaceous-Tertiary granitic stock exposed in nine locations (Drawings 3 and 4).

The Permo-Triassic sequence consists of high-rank metamorphics, a diabase sill, and a thin-to thick-bedded sequence of shales and carbonates. In the mineralized area there are only two basic varieties of high-rank metamorphics: a fine-grained dull grey-green, diopside-epidote-garnet unit, sometimes containing fine-grained disseminated pyrite, pyrrhotite, magnetite, or traces of sphalerite; and a white calc-silicate rock containing calcite, dolomite, and wollastonite or tremolite. Both types tend to be exceedingly hard rock, and are referred to descriptively as "tactites" in this report.

These rocks strike northwest and dip deeply to the northeast. In detail however, bedding planes are tightly folded and contorted.

There are two intrusives into this pile. One is a series of thin, widely-spaced, light-coloured dikes which follow an orthogonal pattern and are of little economic concern. The mineralized intrusive is a stock of light-coloured alaskite. (Upon completion of microscope work, "alaskite" is the rock name preferred over "quartz monzonite porphyry" used in the previous report. Alaskite is a granite or quartz monzonite lacking in dark minerals). The significance of the alaskite is that virtually all of the moly found and sampled to date occurs in this rock, and derives from the igneous system which emplaced it.

## 2.2 Intrusive

### 2.2.1 Configuration

The alaskite crops out in nine distinct exposures in the steep headwall and sidewalls of an active cirque, as shown in Drawings 3 and 4. (The exposures are designated with letters DD, G, L, M, N, O, P, Q and Z on Drawings 3 and 5). Total distance spanned by these discontinuous exposures is about 1 800 metres (north-south) and 1 500 metres (east-west).

The exposures are the upper parts of a stock, intruded into the overlying tuffites; and they are visible only because the glacial ice has carved a wide, deep cut through the upper surface of the stock. The cut is still occupied by glacial ice, and the exposures are overlain and concealed by ice on their downhill sides (see Drawing 4).

In some exposures (DD, N, Z) dikes or irregular apophyses extend upward into the overlying roof rocks, above a rather crisp, gently dipping

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upper surface. The other alaskite exposures exhibit only the crisp upper contact, with or without small offsetting faults (say, 20 metres of throw) or 10-metre inclusions of roof rock.

Some continuity of the upper surface of the alaskite stock can be inferred (Drawing 3) and it has such broad regularity that it can be seen to dip gently northwest and incorporate some local doming features. The significance of this (e.g. its control of moly mineralization, or its implications as to the other boundaries of the intrusive mass) is not known at present. Presumably, the stock extends some distance in the subcrop to the south, west, northeast, and with depth. Whether or not the intrusive underlies the glacier (see Drawing 4) is not known, although clearly it was once continuous across the cirque area, between, say Zone 'G' and Zone 'N'.

#### 2.2.2 Texture and Composition

The alaskite is fine- to medium-grained (average 1 mm), equigranular with only a slight "porphyritic" aspect under the hand lens. In places microlitic cavities lined with tiny quartz crystals are present. Dark minerals are nearly absent.

Composition of unaltered specimens is generally about 40 per cent quartz, 50 per cent K-feldspar (mainly perthite), about 5-8 per cent plagioclase (An5-10), and very small amounts of biotite, chlorite and opaques. Micrographic intergrowths are not uncommon in thin section. (Thin section reports by Mr. Terry Elliott are given in Appendix C).

### 2.2.3 Fracturing

Not enough data are available yet to properly describe fracture patterns. Moly-bearing veins and fractures are described in the following sections. In most outcrops non-mineralized fractures occur in parallel sets with fracture spacings ranging from 15 cm to 75 cm. Two to four fracture sets may be present, and may or may not be at right angles to one another.

## 2.3 Description of Mineralization and Alteration

### 2.3.1 Modes of Moly Occurrence

Molybdenite ( $\text{MoS}_2$ ) is present in the alaskite in several modes, in order of importance: (1) coarse platy crystals present in widely-spaced veins of sub-horizontal to moderate dips; (2) in networks of thin veinlets of any attitude, which have light-coloured alteration envelopes, (3) moly "paint" on fractures, (4) rosettes of coarse or medium grains often associated with quartz and vuggy open spaces, and (5) as fine interstitial grains.

Some of the sub-horizontal veins are spectacular accumulations, up to 10 cm in thickness and traceable for 30 m across an exposure; and may occur in a system with a spacing of several metres between individual veins.

Specific observations on the various zones are made in Section 3.0 concurrent with descriptions of sampling procedures.

Moly mineralization is generally confined to the alaskite with the exceptions of a few dikes or fractures passing into overlying tactites.

### 2.3.2 Alteration and Trace Elements

Alteration, as observed to date, is local and associated with moly-bearing veins, as selvages of 2-10 cm along the vein walls, or in

"low-grade" zones of quartz-pyrite veinlets or disseminations. Quartz and sericite are the main products in vein selvages, and are accompanied by fluorite (as much as a few per cent) chloritized biotite, and minor pyrite or occasionally sphalerite.

Tin and tungsten are not present in any significant amounts (either as potential recoverable products or as "guide" elements) according to the results of re-running several high-moly samples for these metals. An exception to this is one thin veinlet in Zone 'DD' which produced a small sample assaying 2.45 per cent  $WO_3$ . Likewise spot checks for gold, silver, uranium, lead and zinc showed no significant values (Appendix D).

#### 2.4 Hypothetical Origin of Deposit

As a preliminary "model" for the origin of the moly deposit, current evidence suggests intrusion of the alaskitic granite stock in late Cretaceous or early Tertiary time, perhaps satellitic to a large quartz monzonite batholith 3 km to the east. Cooling took place under conditions of relatively low fluid circulation, and deposition and concentration of volatiles -- mainly  $MoS_2$  -- took place in fractures within the upper parts of the stock. There is no evidence to date to support multiple intrusions or vast hydrothermal alteration caps.

At the present stage this hypothesis implies nothing favourable or unfavourable regarding the commercial potential of the Mt. Ogden property, but simply provides a framework for additional testing.

#### 2.5 Other Mineralization

Certain units within the metasedimentary country rock are host to large stratiform gossans scattered throughout the claim area and beyond. Where inspected in place, or in moraine material, finely disseminated pyrite is the principal metallic constituent of these rocks, and they generally assay nil or very

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low in lead, zinc, gold, silver and tungsten (Appendix D). In a few instances irregular clots of black sphalerite are dominant in pieces of float, and these report several per cent zinc. The main zinc-bearing area appears to lie in the icefall area above Zone 'O'.

At present we regard all of this mineralization as unrelated to the moly-bearing stock and of low commercial interest, but worth investigating in the course of normal geologic mapping.

### 3.0 SAMPLING

#### 3.1 General Procedure

Where solid footing could be attained mineralized areas were sampled with a plugger -- drilling and blasting a trench to a depth of as much as a metre -- and chipping continuous samples of the fresh rock exposed, about 2 kg per metre length.

Solid footing was hard to find on most exposures and most samples were made up of systematically collected chips taken by individuals roped together, or roped to a rock face.

Where moly occurs mainly in subhorizontal veins one procedure was to traverse horizontally across the face on the most accessible path, and periodically (say, every 25 m) cut a series of chips along a vertical line 3 m in length.

Another procedure consisted of taking chips representative of 1 x 1 m area of the face, in some instances along a continuous strip 1 m wide.

#### 3.2 Specific Areas

Following are notes on specific areas designated in Drawings 3, 4, and 5 and describing all of the 96 samples collected from alaskite in place:

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Zone 'DD'. Moly mineralization is sparse and occurs as very fine blue-gray specks in rare, thin quartz veins. A 12-m trench was drilled, shot and sampled, and results were all less than 0.005 per cent MoS<sub>2</sub>.

Zone 'G'. Moly occurs in the same mode as in Zone 'DD'. Quartz veins are 1-2 cm thick. Local concentrations are found adjacent vertical fracture zones. Horizontal 3 m chip samples were taken at intervals and a 9.5-metre trench shot at one point. Results were submarginal (Drawing 5).

Zone 'Z'. A set of subhorizontal fractures was observed close-up in the outcrop near the top of the ice (see Drawings 3, 4 and 5). Moly is as much as 3 cm thick in fractures spaced about one metre apart, and moly paint coats thin vertical fractures. Vertical chip samples 3 m long were collected at intervals as possible along 300 m horizontally. Results of 10 samples averaged 0.24 per cent MoS<sub>2</sub>. Reconnaissance of the upper face by helicopter indicates that the entire face is similarly mineralized.

Zone 'L'. This zone is on the opposite (north) side of the knife edge ridge from Zone 'Z' and has a similar appearance. Two samples, not considered particularly representative, are reported on Drawing 5. Fractures in Zone 'L' have created a hazardous zone of "loose" (perhaps owing in part to being a north-facing slope where freezing and thawing persists all summer) and the slope is not routinely accessible.

Zone 'M'. A thin overhang of ice (not shown on the maps) overlies the upper part of Zone 'M'. The rock is less fractured and more competent than 'Z' or 'L'. Moly is as thick as 3 cm in veins dipping 20-30° south (or about parallel with the upper surface of the stock). Moly coats thin vertical fractures and 1-2 cm quartz veins. A



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trench 43 m long was drilled, shot and sampled so as to cross-cut moly veins at a high angle. Each of 24 samples weighed about 5 kg. The weighted average is 0.31 per cent MoS<sub>2</sub>. Other chip samples, results consistent with coarsely distributed strong mineralization, are presented in Drawing 5.

Zone 'N'. Zone 'N' forms a large buttress on the south wall of the cirque. The upper contact of the alaskite is roughly planar and gently south-dipping on both flanks of the buttress; but a large apophyse and dike system juts upward about 100 m into the tectite in the centre. Twenty-six chip samples, each about 5 kg, were cut in a continuous 1 m x 26 m strip down the upper face, and returned 0.32 per cent MoS<sub>2</sub>. Mineralization is similar to that in Zone 'M'.

Zones 'O', 'P', 'Q'. These zones are in the paths of uncontrollable ice falls and cannot be approached on the surface. Inspection from the helicopter suggests significant mineralization is present.

### 3.3 Tonnage Estimates (Current and Projected)

The volume of intrusive contained between the 'Z' and 'L' faces is about 6 million tonnes (it may be doubled if the intrusive extends downward well below the 1750 m contour on the 'Z' side). Although sample crews took care to accurately represent the rock, there are clearly not enough samples to assign a grade to this 6 million tonnes. (A "tonne" is 1000 kg or 1.1 tons).

Zones 'M' and 'N' might be considered as "blocks" of, say, a few million tonnes each, exposed on only one side. Sampling has not been sufficient to extrapolate the average grades of the chips, 0.31 and 0.32 per cent MoS<sub>2</sub>, respectively, to the entire "block". Thus, none of these tonnages can be considered "ore reserves" at present.

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The potential tonnage of mineralized alaskite (of a grade as yet unknown) will derive from extensions of the observed zones. These are: (1) extensions at depth and into the cirque wall to the south, between Zones 'L', 'M' and 'N' (the area proposed for testing in 1979); (2) extensions to the west of Zone 'N' and continuous through Zones 'O', 'P', and 'Q'; (3) extensions under the ice, north of zones 'L' through 'Q', or southeast of Zone 'Z'.

If testing should confirm only a few of these avenues for continuity of the alaskite and continuity of mineralization, and if it should establish an acceptable average grade of MoS<sub>2</sub>, it is not difficult to visualize proving of an ore body of the following general dimensions:

$$900 \text{ m (E-W)} \times 300 \text{ m (N-S)} \times 300 \text{ m (depth)}$$

$$\times 2.7 \text{ T/m}^3 \text{ (assumed density)} = 220,000,000 \text{ tonnes}$$

or, in English units:

$$\frac{3000' \times 1000' \times 1000'}{12 \text{ cf/t (assumed factor)}} = 250,000,000 \text{ tons}$$

#### 4.0 SAFETY

The steep rock, ice faces and the glacial ice at lower elevations subject work in the mineralized area to several constraints. Hazards are snow avalanches, ice falls, rock falls, and crevasses. Drawing 6 indicates the extent of hazard exposure during summer months.

The entire glacial basin is exposed to snow avalanches all winter until April, with the possible exception of Zone 'Z'. South-facing slopes (above 'G') would shed their snow first and should be safe by the end of May. North slopes ('L' through 'Q') could produce avalanches as late as the end of June.

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Uncontrollable ice falls occur in the summer months across Zones 'O' through 'Q'. A large serac (a free-standing ice tower, separated from the edge of a glacier by a crevasse) overhangs the gully between Zones 'N' and 'O'. From its appearance in old air photos, it appears unchanged for the past 30 years; however, it may have to be inspected or dislodged before work starts at Zone 'N'. A small ice wall immediately east of Zone 'N' may similarly need control measures.

Rock falls can be anticipated from the fractured alaskite in place at Zone 'L', labelled "loose" in Drawing 6. Elsewhere, individual rocks or small slides clatter down slopes frequently.

Transverse crevasses prohibit use of the glacier as a transportation route. The area indicated is a zone of highly developed, wide crevasses in a stagnant, shrinking zone of ice. Some crevasses have been eroded and enlarged by running melt water.

It is our opinion that exploration work can be conducted in this environment by observing the following:

- (1) study all potentially dangerous features
  - (2) avoid unsafe areas
  - (3) use instrumentation or control procedures where necessary
  - (4) conduct as much drilling as possible from underground stations, or under timbered sheds
  - (5) maintain an on-site education and safety program.
- 
- 
-

## 5.0 PRELIMINARY 1979 PROGRAM

### 5.1 Objectives

The program proposed for 1979 has the following objectives:

- (1) more accurately determine grade of MoS<sub>2</sub>
- (2) acquire some knowledge on the extent and continuity of MoS<sub>2</sub> mineralization, particularly that grading near or above 0.17 per cent MoS<sub>2</sub>, by means of long drill holes
- (3) provide the basis for continued work in 1980 and beyond, and decision-making in respect of such work.

### 5.2 Concept

A schematic map of the 1979 program is shown in Drawing 7 (see also Drawing 4 Cross Sections).

The Zone 'N' buttress is chosen as the portal for an exploratory adit on the basis of (1) central location, (2) safety from slides, and (3) presence of better MoS<sub>2</sub> grades.

The reasons for an adit are: (1) to provide a safe work place for diamond drilling, (2) to gain access by drifting and drilling to Zones 'O' and 'P' to the west and northwest, (3) to provide bulk samples for accurate measurement of grade, and (4) to set the stage for deeper exploratory penetration into the mineralized zone in 1980.

Drill holes will be fanned out from underground stations in several directions and at several up- and down-angles (as shown in Drawings 4 and 7). Surface drilling would be undertaken from a station at Zone 'Z', and holes fanned out downward and to the north, northwest and west. Zone 'Z' is one of the few localities where safe working

conditions can be attained and helicopter landings and take-offs can be made. The zone also is well mineralized.

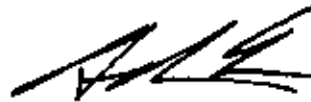
Helicopters will be used for transporting each shift to and from work.

5.3 Execution

Design of the program is in advanced stages, but is beyond the scope of this report.

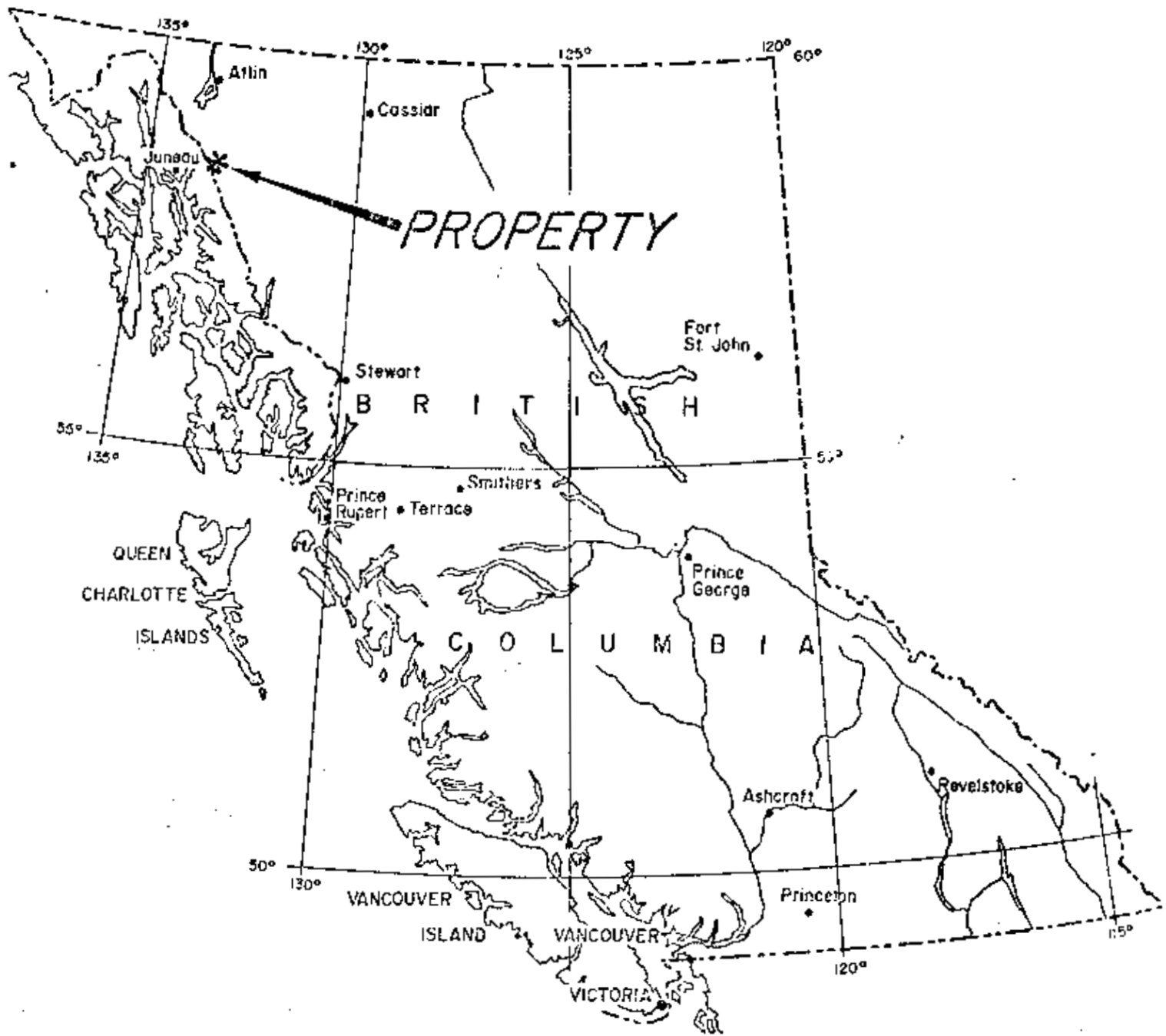
Respectfully submitted

NEVIN SADLER-BROWN GOODBRAND LTD.



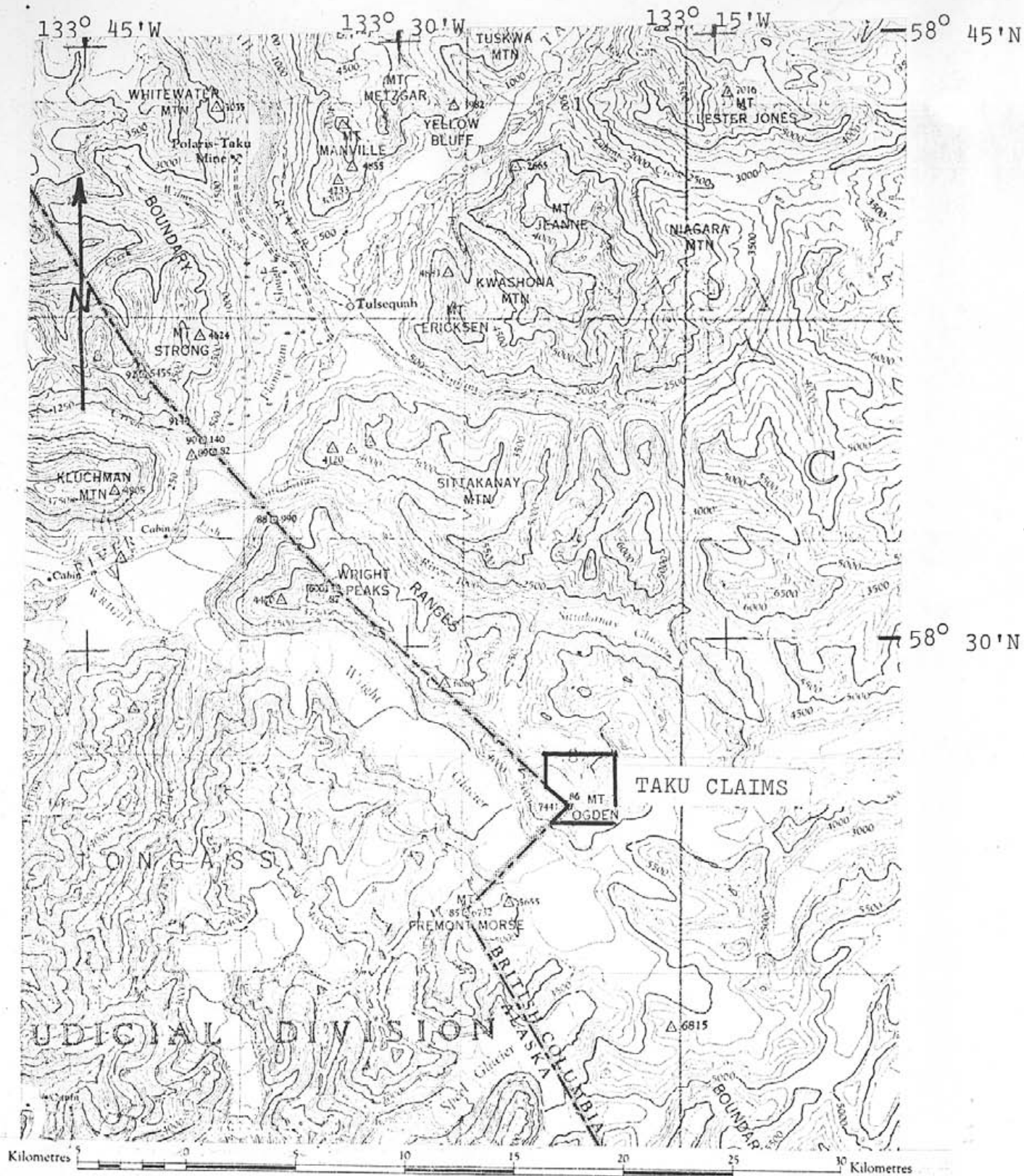
Andrew E. Nevin, P.



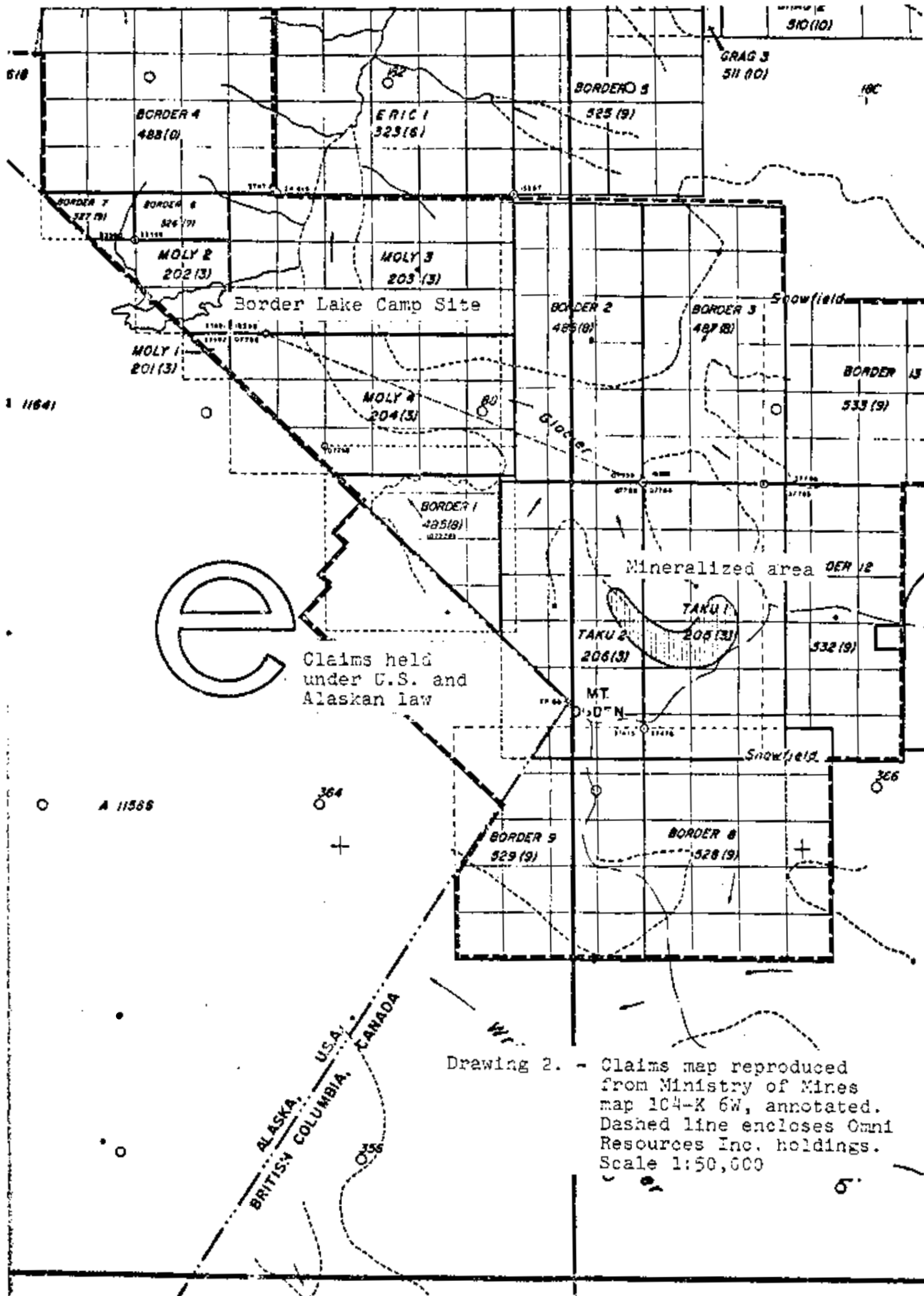


Drawing 1. - Location Map

Taku Claims, Atlin Mining Division



Drawing 1B. - Location Map at 1:250,000, reproduced from G.S.C. Map 104K



e

Claims held  
under U.S. and  
Alaskan law

Drawing 2. - Claims map reproduced  
from Ministry of Mines  
map 104-K 6W, annotated.  
Dashed line encloses Omni  
Resources Inc. holdings.  
Scale 1:50,000



OMNI RESOURCES INC.  
MT. OGDEN PROPERTY  
LOCATION OF CLAIMS

DATE: JAN. 1, 1978  
DRAWING: 28



TRUE LOCATION OF LSP

TAKU 2

ICE

TAKU 1

1200

1300

ICE

1400

1500

1600

1700

1800

1900

2000

2100

2200

2300

2400

2500

2600

2700

2800

2900

3000

ICE

ICE

ICE

ICE

ICE

5440 0004

5430 0004

5420 0004

5410 0004

GRID NORTH  
TRUE NORTH

78

78

78

78

78

78

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78


OMNI RESOURCES INC.  
**MT. OGDEN PROPERTY  
 GEOLOGICAL MAP**

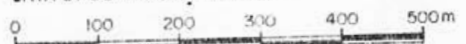
DATE: JAN 1, 1979

DRAWING: 3

DATA BY BEMA INDUSTRIES AND N.S.B.G.

 ALASKITE

 TACTITE



CONTOUR INTERVALS 50 METRES



6480 000N

GRID NORTH  
 TRUE NORTH  
 1°28'

ICE  
 ZONE 'DD'  
 (1967; TD 50')

STRUCTURE CONTOURS ON  
 TOP OF STOCK — DASHED  
 WHERE STOCK IS ERODED

A

1400

ZONE 'G'

1500

1600

1700

1800

1900

2000

ICE

ZONE 'Q'

CROSS-SECTIONS  
 (Drawing 4)

1600

1700

1800

1900

2000

2100

2200

2300

2400

2500

2600

2700

2800

2900

3000

3100

3200

3300

3400

3500

3600

3700

3800

3900

4000

4100

4200

4300

4400

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10000

10100

10200

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10900

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15900

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27600

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27800

27900

28000

28100

28200

2



OMNI RESOURCES INC.

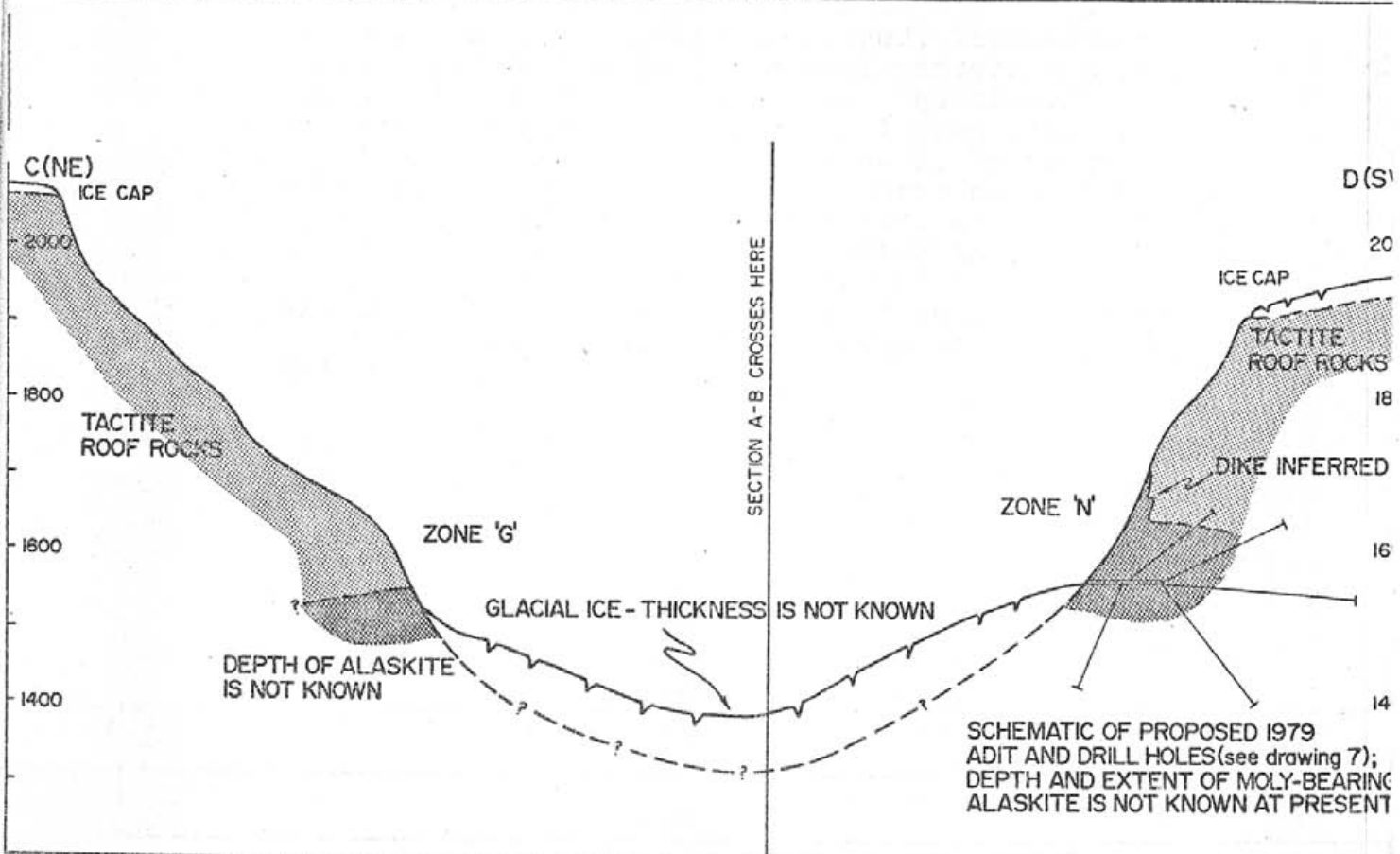
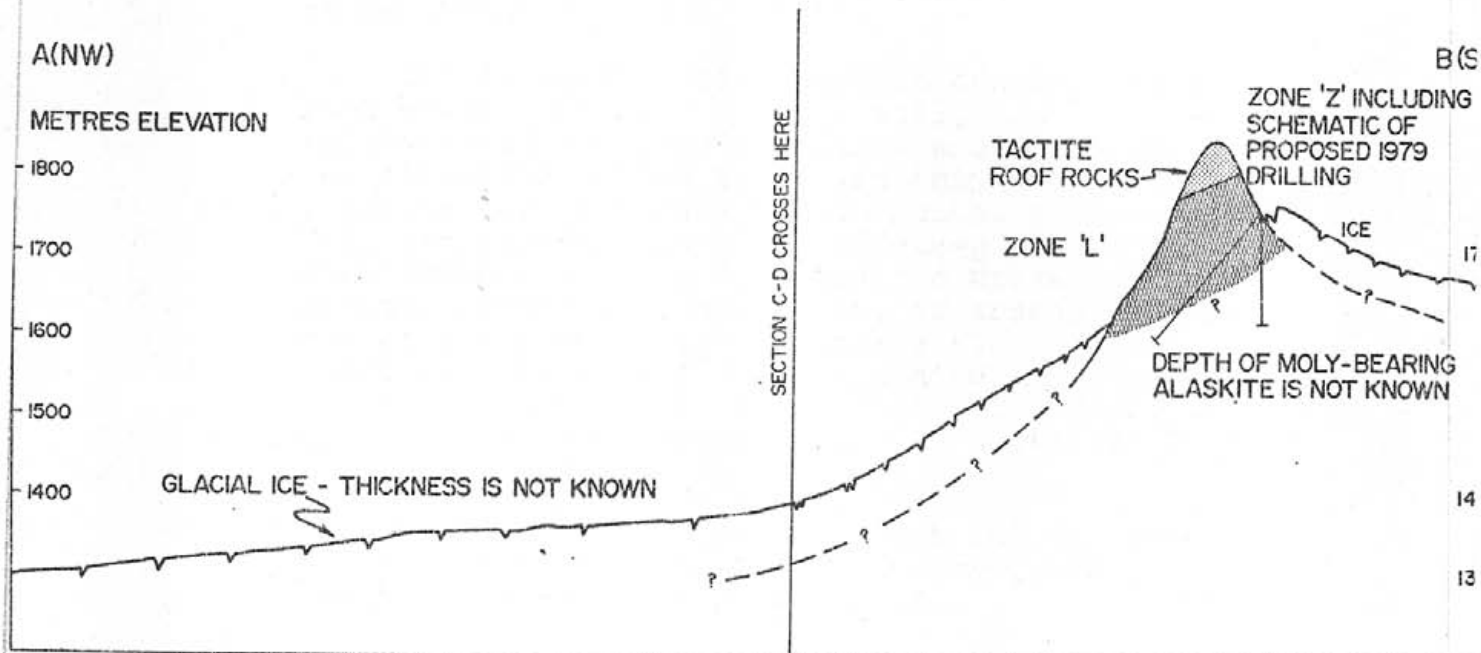
MT. OGDEN PROPERTY  
CROSS SECTIONS

DATE: JAN. 1, 1979

DRAWING: 4



VERTICAL AND HORIZONTAL SCALE  
NO VERTICAL EXAGGERATION



MT. OGDEN PROPERTY  
SAMPLE MAP (1978)

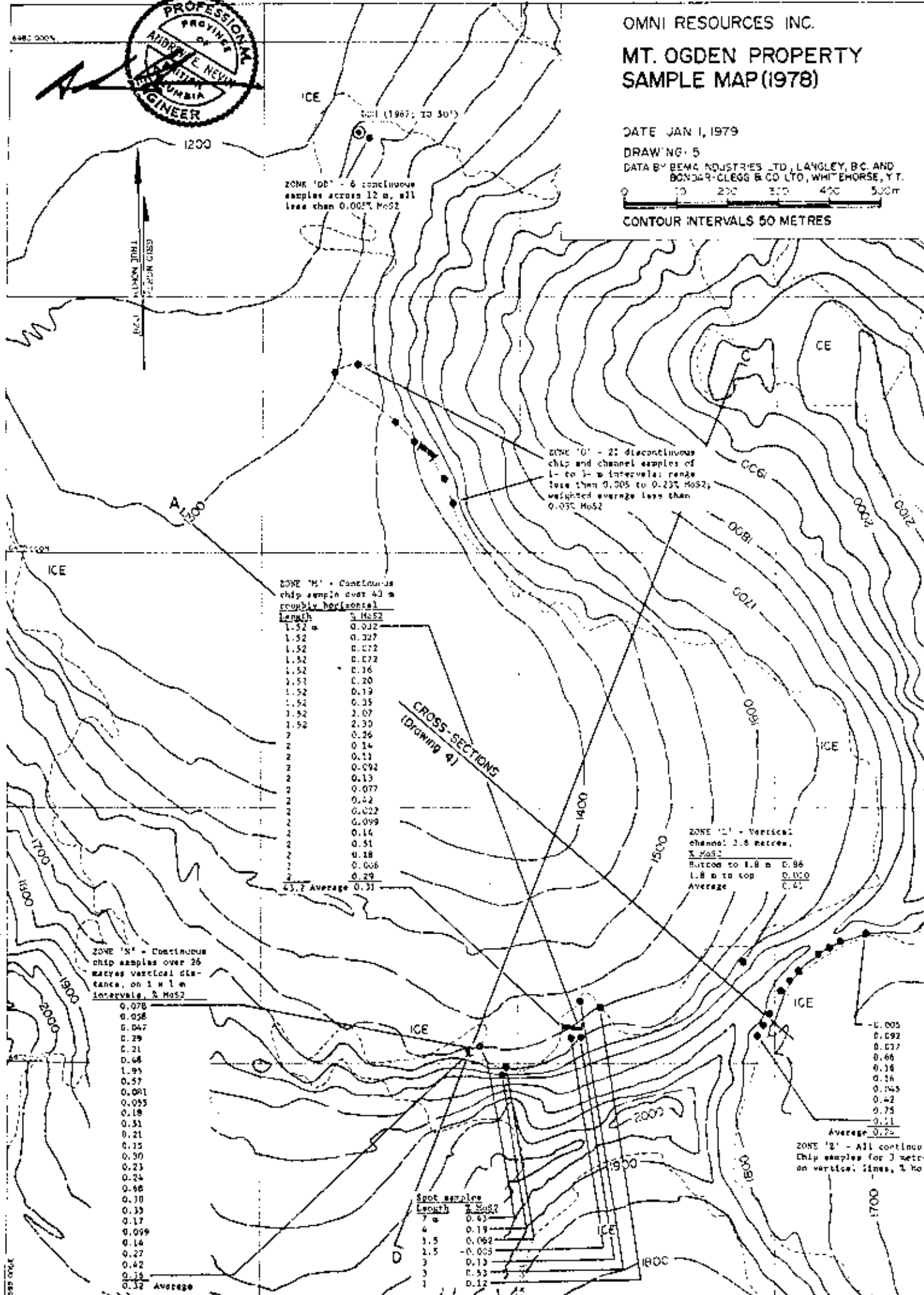
DATE JAN 1, 1979

DRAWING 5

DATA BY BEMA INDUSTRIES LTD, LANGLEY, B.C. AND  
BONDAR-CLEGG & CO LTD, WHITEHORSE, Y.T.

0 100 200 300 400 500m

CONTOUR INTERVALS 50 METRES



ZONE 'DB' - 6 continuous  
samples across 12 m, all  
less than 0.005% MoS<sub>2</sub>

ZONE 'G' - 21 discontinuous  
chip and channel samples of  
1- to 3- m intervals; range  
less than 0.005 to 0.25% MoS<sub>2</sub>;  
weighted average less than  
0.05% MoS<sub>2</sub>

ZONE 'M' - Continuous  
chip sample over 40 m  
roughly horizontal

| Length            | % MoS <sub>2</sub> |
|-------------------|--------------------|
| 1.52              | 0.012              |
| 1.52              | 0.027              |
| 1.52              | 0.072              |
| 1.52              | 0.072              |
| 1.52              | 0.16               |
| 1.52              | 0.20               |
| 1.52              | 0.12               |
| 1.52              | 0.35               |
| 1.52              | 2.07               |
| 1.52              | 2.30               |
| 7                 | 0.26               |
| 2                 | 0.14               |
| 2                 | 0.11               |
| 2                 | 0.092              |
| 2                 | 0.13               |
| 2                 | 0.077              |
| 2                 | 0.42               |
| 2                 | 0.022              |
| 2                 | 0.099              |
| 2                 | 0.14               |
| 2                 | 0.51               |
| 2                 | 0.18               |
| 2                 | 0.006              |
| 2                 | 0.29               |
| 43.2 Average 0.31 |                    |

ZONE 'L' - Vertical  
channel 1.8 metres.  
% MoS<sub>2</sub>  
Bottom to 1.8 m 0.96  
1.8 m to top 0.100  
Average 0.01

ZONE 'N' - Continuous  
chip samples over 26  
metres vertical dis-  
tance, on 1 m 1 m  
intervals, % MoS<sub>2</sub>

|              |
|--------------|
| 0.078        |
| 0.058        |
| 0.047        |
| 0.29         |
| 0.21         |
| 0.68         |
| 1.95         |
| 0.57         |
| 0.091        |
| 0.055        |
| 0.18         |
| 0.31         |
| 0.21         |
| 0.15         |
| 0.50         |
| 0.23         |
| 0.24         |
| 0.66         |
| 0.10         |
| 0.33         |
| 0.17         |
| 0.099        |
| 0.14         |
| 0.27         |
| 0.42         |
| 0.14         |
| 0.12         |
| Average 0.32 |

CROSS-SECTIONS  
(Drawing 4)

Spot samples

| Length | % MoS <sub>2</sub> |
|--------|--------------------|
| 7 m    | 0.43               |
| 4      | 0.19               |
| 1.5    | 0.062              |
| 1.5    | 0.005              |
| 3      | 0.13               |
| 3      | 0.53               |
| 1      | 0.12               |

|              |
|--------------|
| 0.005        |
| 0.092        |
| 0.077        |
| 0.68         |
| 0.16         |
| 0.16         |
| 0.145        |
| 0.42         |
| 0.75         |
| 0.11         |
| Average 0.20 |

ZONE '2' - All continu  
chip samples for 3 metr-  
on vertical lines, 1 m

6480 000N

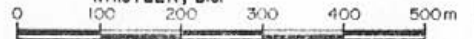
OMNI RESOURCES INC.

# MT. OGDEN PROPERTY SAFETY PROGRAM MAP

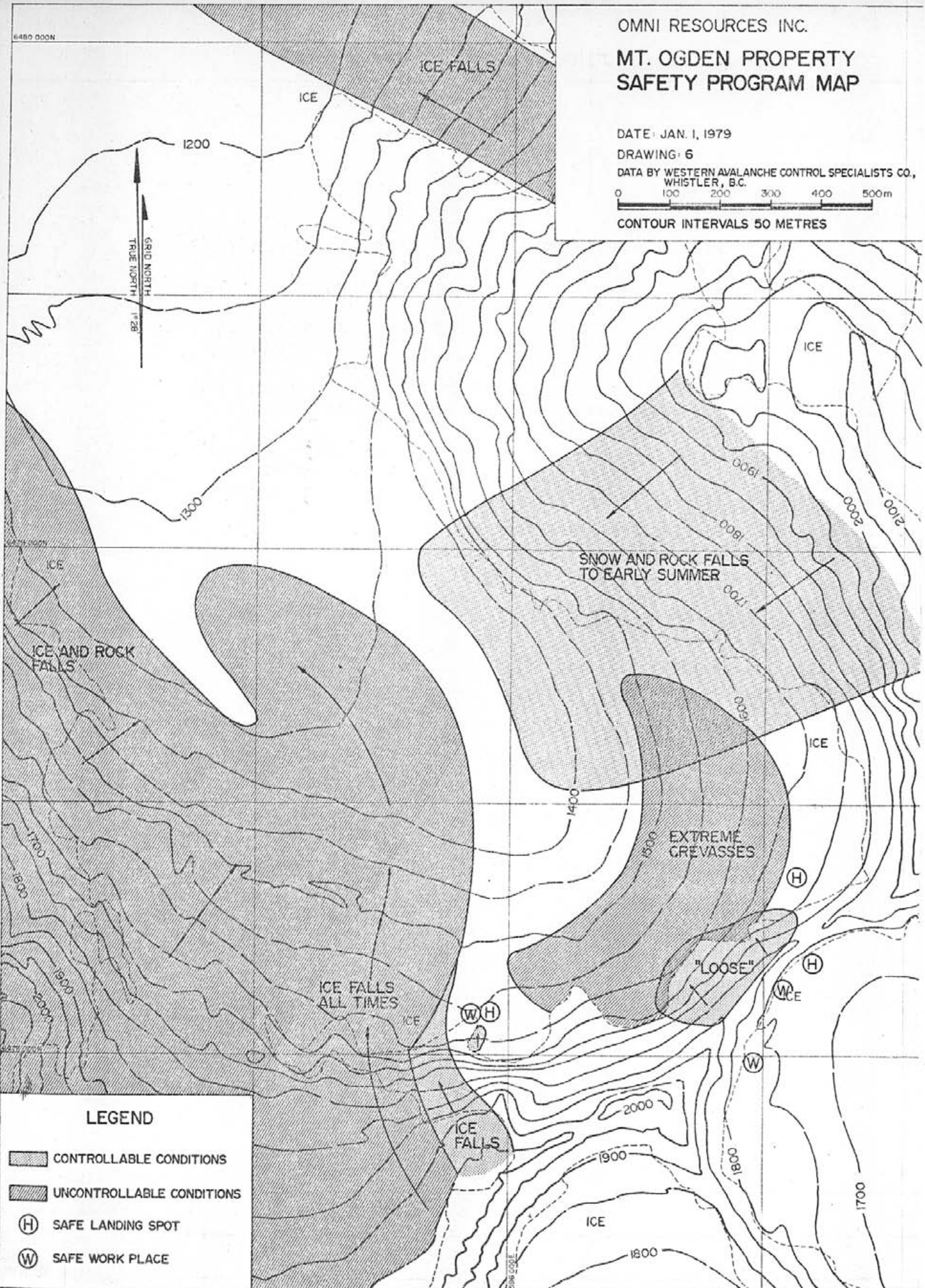
DATE: JAN. 1, 1979

DRAWING: 6





DATA BY WESTERN AVALANCHE CONTROL SPECIALISTS CO.,  
WHISTLER, B.C.



CONTOUR INTERVALS 50 METRES



## LEGEND

-  CONTROLLABLE CONDITIONS
-  UNCONTROLLABLE CONDITIONS
-  SAFE LANDING SPOT
-  SAFE WORK PLACE

OMNI RESOURCES INC.

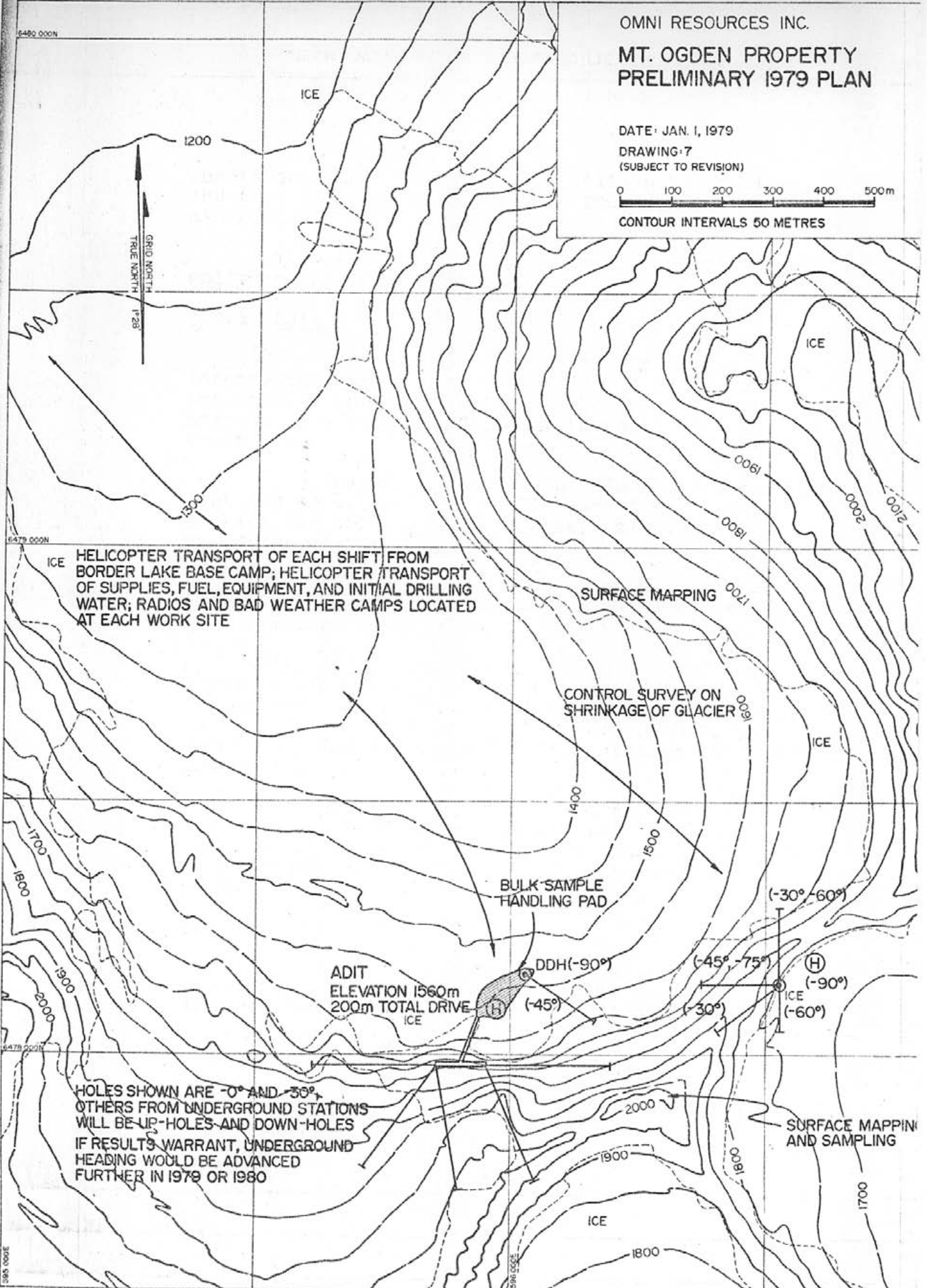
# MT. OGDEN PROPERTY PRELIMINARY 1979 PLAN

DATE: JAN. 1, 1979

DRAWING: 7  
(SUBJECT TO REVISION)



CONTOUR INTERVALS 50 METRES



HELICOPTER TRANSPORT OF EACH SHIFT FROM BORDER LAKE BASE CAMP; HELICOPTER TRANSPORT OF SUPPLIES, FUEL, EQUIPMENT, AND INITIAL DRILLING WATER; RADIOS AND BAD WEATHER CAMPS LOCATED AT EACH WORK SITE

SURFACE MAPPING

CONTROL SURVEY ON SHRINKAGE OF GLACIER

BULK SAMPLE HANDLING PAD

ADIT  
ELEVATION 1560m  
200m TOTAL DRIVE  
ICE

DDH(-90°)

(-45°)

(-30° -60°)

(-45° -75°)

(-30°)

(H)

(-90°)

(-60°)

HOLES SHOWN ARE -0° AND -30°. OTHERS FROM UNDERGROUND STATIONS WILL BE UP-HOLES AND DOWN-HOLES IF RESULTS WARRANT, UNDERGROUND HEADING WOULD BE ADVANCED FURTHER IN 1979 OR 1980

SURFACE MAPPING AND SAMPLING

APPENDIX A  
ITEMIZED COST STATEMENT

I Fees for Field Crew - Aug 29 - Sept. 29/79

| <u>NAME</u>    | <u>TITLE</u> | <u>DAYS</u> | <u>RATE</u> | <u>TOTAL</u>       |
|----------------|--------------|-------------|-------------|--------------------|
| M.J. Beley     | Geologist    | 19.5        | \$275       | \$5,362.50         |
| R. Barclay     | Supervisor   | 23.0        | 275         | 6,325.00           |
| A. Dupras      | Pluggerman   | 15.0        | 260         | 3,900.00           |
| M. Sanseverino | Sampler      | 22.0        | 240         | 5,280.00           |
| D. Bury        | Expeditor    | .4          | 240         | 96.00              |
| N. Marcy       | "            | .75         | 240         | 180.00             |
| H. Bleuer      | Mountaineer  | 24.0        | 264         | 6,336.00           |
| D. Lockwood    | "            | 27.0        | 264         | 7,128.00           |
| T. Elliot      | Geologist    | 3.0         | 300         | 900.00             |
|                |              |             |             | <u>\$35,507.50</u> |

II Fees for Planning, Data Analysis, Reporting - Aug 8 - Dec 29/79

| <u>NAME</u>    | <u>TITLE</u> | <u>DAYS</u> | <u>RATE</u> | <u>TOTAL</u>       |
|----------------|--------------|-------------|-------------|--------------------|
| A.E. Nevin     | P.Eng.       | 9.0         | 450         | 4,050.00           |
| M.J. Beley     | Geologist    | 4.5         | 150         | 675.00             |
| T. Elliot      | "            | 22.0        | 150         | 3,300.00           |
| R. Barclay     | Supervisor   | 13.25       | 150         | 1,987.50           |
| M. Sanseverino | Draughtsman  | 13.5        | 120         | 1,620.00           |
|                |              |             |             | <u>\$11,632.50</u> |

III Travel to- and from- PropertyIncluding Supplies and Sample Transport

|                      |                 |                    |
|----------------------|-----------------|--------------------|
| CP Air               | 130.00          |                    |
| "                    | 130.00          |                    |
| "                    | 252.00          |                    |
| Yukon Freight Lines  | 42.40           |                    |
| " " "                | 322.30          |                    |
| Bow Mac Truck Rental | 105.70          |                    |
| Greyhound Lines      | 45.40           |                    |
| Stirling Expediting  | 200.00          |                    |
| Taku Air Transport   | 4,397.50        |                    |
| Top Priority Travel  | 504.00          |                    |
| CP Air Cargo         | 241.05          |                    |
| CP Air               | 252.00          |                    |
| Bow Mac Truck        | 157.02          |                    |
| " " "                | 583.00          |                    |
| " " "                | 263.16          |                    |
| Taku Air Transport   | <u>3,349.50</u> | <u>\$10,975.03</u> |

IV Travel Within Property - AllMinimum Charges plus fuel for Hughes 500C - Aug 29 - Sept 29/79

|                      |                    |                  |
|----------------------|--------------------|------------------|
| TransNorth Turbo Air | 4,154.40           |                  |
| " " " "              | 7,119.00           |                  |
| " " " "              | 1,281.98           |                  |
|                      | <u>\$12,555.38</u> | <u>12,555.38</u> |

V Disbursements

|                               |                         |               |                   |
|-------------------------------|-------------------------|---------------|-------------------|
| Explosives:                   | Yukon Explosives        | 749.57        |                   |
|                               | Continental Explosives  | <u>74.56</u>  | 824.13            |
| Groceries & Expend. Supplies: | Atlin Trading Post      | 452.76        |                   |
|                               | " " "                   | 710.00        |                   |
|                               | Northern Metallic       | 71.16         |                   |
|                               | " "                     | 39.45         |                   |
|                               | Flagging tape           | 30.00         |                   |
|                               | Topofil thread          | 36.00         |                   |
|                               | Batteries               | 28.08         |                   |
|                               | Deakin Equipment        | 45.56         |                   |
|                               | " "                     | 16.49         |                   |
|                               | " "                     | 41.35         |                   |
|                               | Canadian Propane        | <u>89.30</u>  | 1,560.15          |
| Assays:                       | Bondar-Clegg            | 576.00        |                   |
|                               | " "                     | 60.50         |                   |
|                               | " "                     | 114.00        |                   |
|                               | " "                     | 9.00          |                   |
|                               | " "                     | <u>270.50</u> | 1,030.00          |
| Thin Sections:                | Vancouver Petrographics |               | <u>34.50</u>      |
|                               |                         |               | <u>\$3,448.78</u> |



VI Equipment Rented to Project by Contractors

|                                                                                                           |           |
|-----------------------------------------------------------------------------------------------------------|-----------|
| 2 Atlas Copco Cobra's<br>including steel & Grinder \$ \$30.00 each<br>\$30.00/day x 2 cobra's x 20 days = | \$1,200   |
| 1 powersaw @ \$4.00/day x 20 days                                                                         | 80        |
| Survey Equipment and small tools @ \$10/day<br>\$10.00/day x 20 days =                                    | 200       |
| Camp, complete, \$6.25/man/day x 156 man days                                                             | 975       |
| Radiotelephones - 2 SBX-11's with antenna<br>\$100/month each, min. rate                                  | 200       |
| Walkie Talkies - 4 units @ \$1.00/day each x 20 days                                                      | 80        |
|                                                                                                           | 2,735.00  |
| TOTAL                                                                                                     | 76,854.19 |

Certified as Correct




Andrew E. Nevin, P.Eng.

March 13, 1979

Notes to Itemized Cost Statement

1. The principal route to- and from- the property is via CP Air from Vancouver to Whitehorse, Yukon Territory, and hence via rental truck or chartered aircraft to Atlin, and hence via aircraft to the claims. Five return fares Vancouver - Whitehorse are included in the statement; all truck rental and charter costs are included. No costs of hotel, incidental travel expenses or meals en route are included, as most were incurred in the Yukon.
  2. Mountaineering and certain camp equipment are considered capital costs and are not included.
  3. The cost of the safety study is not included.
- 
- 
-

APPENDIX B  
QUALIFICATIONS OF THE WRITER

I, Andrew E. Nevin, hereby certify that:

1. My residence address is 926 Montroyal Blvd., North Vancouver, B.C., my office address is 5th floor - 134 Abbott Street, Vancouver, B.C. V6B 2K4; and that I am a Geologist by occupation.
2. I hold a B.Sc. in Geophysics from St. Lawrence University, an M.A. in Geology from University of California, Berkeley, and a Ph.D. in Geology from University of Idaho. I have been practicing my profession since 1961, and I am a member of the Association of Professional Engineers (Geological) of the Province of British Columbia, and a Registered Professional Geologist in the State of Idaho.
3. I directed the work described in the attached report.

  
Andrew E. Nevin, Ph.D., P.Eng.

March 13/79

APPENDIX C

Thin Section Reports by Mr. Terry Elliott

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M-1

Location: M area at Station M-1

Rock Name: Granite

Estimated Mineral Percentages

|                  |     |
|------------------|-----|
| Quartz           | 45  |
| K-feldspar       | 45  |
| Plagioclase (An) | 10  |
| Chlorite         | 0.2 |
| Opagues          | 0.2 |

Description

Sample M-1 consists of fine grained (0.5 mm) granite cut by a coarse grained 7 mm quartz-molybdenite vein. The inner 1-1½ mm of the vein is very fine (0.1 mm) granular quartz-molybdenite. Adjacent to the vein there is a 1 to 3 mm rim of silicification.

Approximately 80% of the rock is anhedral interlocking grains of quartz, perthitic K-feldspar, and plagioclase. The remaining 20% of the rock is 1 mm patches of myrmekitic and micrographic feldspar-growths intergrowths. Many of the intergrowths have nucleated around 0.25 to 0.50 mm K-feldspar or plagioclase grains. Mafic minerals are lightly scattered throughout; chlorite occurs as tiny needles and small irregular flakes.

N-2

Location: N area at Station N-2

Rock Name: Granite

Estimated Mineral Percentages

|             |     |
|-------------|-----|
| Quartz      | 50  |
| K-feldspar  | 40  |
| Plagioclase | 10  |
| Chlorite    | 0.5 |
| Opagues     | 0.5 |
| Biotite     | 0.1 |
| Sphene      | 0.1 |

### Description

This sample of granite is similar to sample N-1 except that it is finer grained; i.e. most grains are 0.2 to 0.3 mm across with local clusters of grains up to 0.75 mm across. Texturally, the granite is a mixture of irregular grains of quartz, K-feldspar and plagioclase with minor (0.5% or less) chlorite, opaques, biotite and sphene. Local areas have a micrographic texture.

There are 2 anomalous 3 X 1 mm areas in the section. These consist of tiny quartz grains oriented "micrographically" and "myrmekitically" in a "sea" of K-feldspar.

Biotite and chlorite are often intergrown. There are some areas of "shratty" biotite overgrown by chlorite. Chlorite overgrowths are also found on-opaque (magnetite?) grains.

At one end of the section is a 2 mm quartz-molybdenite veinlet. Adjacent to the veinlet the granite is partly silicified for up to 2 mm.

### N-1

Location: N area at Station N-1

Rock Name: Granite

Estimated Mineral Percentages (not point counted)

|             |      |
|-------------|------|
| Quartz      | 45   |
| K-feldspar  | 45   |
| Plagioclase | 10   |
| Biotite     | 0.5  |
| Chlorite    | 0.25 |
| Fluorite    | 0.25 |
| Opagues     | 0.25 |

### Description

This inequigranular granite consists of a mass of anhedral interlocking (locally micrographic texture) grains of quartz and feldspars with minor "shratty" biotite, chlorite, tiny opaque grains and a few large fluorite grains. The grain size averages 0.75 mm but varies from 0.25 to 1.5 mm with 15% of the rock characterized by large quartz and K-feldspar grains. Along one edge is a 2 - 10 mm quartz vein whose center contains disseminated MoS<sub>2</sub>. The silica has replaced the granite as there are remnants of grains of plagioclase in the vein.

ICE

Location: Ice Fall area between N and P areas

Rock Name: Vuggy Granite

Estimated Mineral Percentages

|                  |     |
|------------------|-----|
| Quartz           | 45  |
| K-feldspar       | 45  |
| Plagioclase (An) | 10  |
| Opagues          | 0.5 |
| Chlorite         | 0.5 |

Description

This slide is a slightly inequigranular fine grained (0.2 - 0.5 mm) granite with 2 major mineral-filled vugs. Texturally, the rock consists of irregular anhedral grains of quartz, K-feldspar, and plagioclase with minor opaques and chlorite, some of the plagioclase is strained (undulatory extinction).

The larger mineral-filled vug is approximately 2 cm by 1 cm. The margins are lined with 2 mm quartz and lesser amounts of K-Feldspar crystals and the center is filled with a random-carbonate (?). This cavity also contains some black and brown amorphous (?) material; i.e. "grunge".

The second vug is 1 cm by 3 mm. It is filled with 1 - 2 mm anhedral quartz and K-feldspar grains with approximately 2% chlorite plus carbonate (?).

P

Location: P area west of sample N-1

Rock Name: Micrographic Granite

Estimated Mineral Percentages

|             |     |
|-------------|-----|
| Quartz      | 45  |
| K-feldspar  | 45  |
| Plagioclase | 10  |
| Chlorite    | 1   |
| Opagues     | 0.5 |
| Biotite     | 0.2 |

## Description

This section consists of 2 distinct textures of micrographic granite in sharp contact with each other. The most conspicuous texture is formed by medium grained (1 - 2 mm) micrographic granite which is 75% micrographic intergrowths of K-feldspar and quartz, 10% anhedral quartz grains, 10% perthitic K-feldspar grains, 5% sometimes broken plagioclase grains, and 1 - 2% irregular chlorite needles containing tiny opaque specks. Locally, fresh biotite needles are present.

The other 1/2 to 2/3 of the slide is similar except that there are no "large" grains; this area is almost entirely a fine grained micrographic intergrowth of quartz and K-feldspar. Tiny (0.2 - 0.3 mm) grains of plagioclase make up the remainder of the rock; there is very little mafic mineral content. A 1 cm by 2 mm area of 1 - 2 mm quartz, perthitic K-feldspar and fluorite is in this area.

## Z Area Samples

### (a) 0-25

Location: Approximately 40 meters west of Bema Industries Ltd. zero point for sampling at east end of Z area.

Rock Name: Altered Granite

### Estimated Mineral Percentages

|          |     |
|----------|-----|
| Quartz   | 40  |
| Sericite | 55  |
| Fluorite | 2-3 |
| Chlorite | 1   |
| Opagues  | 1   |

### Description

Altered medium gray sample of 1 mm remnant quartz grains in a matrix very fine grained sericite and minor fluorite, chlorite and opaques. Central to the altered selvage is a tiny fluorite veinlet with chlorite rimming the fluorite grains. Some opaques are also in the veinlet as well as minor sphalerite (?). Immediately surrounding the veinlet is a 4 mm wide inner zone of sericite.



(b) 0-27

Location: Approximately 75 meters west of Bema Industries Ltd. zero point for sampling at east end of Z area.

Rock Name: Granite

Estimated Mineral Percentages (not point counted)

|                   |     |
|-------------------|-----|
| Quartz            | 40  |
| K-feldspar        | 45  |
| Plagioclase (An6) | 13  |
| Chlorite          | 2   |
| Opagues           | 0.5 |

Description

Fine grained (1 mm grains), equigranular granite cut by a 1 mm wide quartz-fluorite (5%) veinlet and a 5 mm wide dark gray quartz-sericite-chlorite (5%) selvaged fracture. The 1 mm veinlet contains a minor amount of a pleochroic green to yellowish brown phyllositicate (?chlorite group).

(c) 0-26

Location: Same as 0.27 above

Rock Name: Granite with phyllic alteration selvage

Estimated Mineral Percentages

|                   |     |
|-------------------|-----|
| Quartz            | 40  |
| K-feldspar        | 45  |
| Plagioclase (An7) | 14  |
| Biotite (?)       | 1   |
| Opagues           | 0.5 |

Description

The 1 cm wide unaltered portion of the slide is equigranular, fine grained ( $\frac{1}{4}$  to  $\frac{1}{2}$  mm grains), aplitic granite which contains a few grains of disseminated fluorite. The remainder of the slide is a  $\frac{1}{2}$  to 1 mm wide quartz-pyrite-fluorite veinlet with a 3 cm wide zoned alteration selvage. The inner 1 - 1 $\frac{1}{2}$  mm on either side of the veinlet is mainly folty sericite, which grades outwardly to remnant quartz grains in a very fine grained quartz-sericite matrix.

0-26 Continued

Rimming fluorite in the veinlet, there is an orangish mineral which appears to be well cleaved. This is possibly sphalerite.

(d) 0-29

Location: Between 125 and 350 meters west of Bema Industries Ltd. zero point for sampling at east end of Z area.

Rock Name: Granite

Estimated Mineral Percentages

|              |       |
|--------------|-------|
| Quartz       | 45    |
| K-feldspar   | 50-55 |
| Plagioclase  | 2-5   |
| Chlorite (?) | 0.5   |

Description

Fine grained (1 mm grains) equigranular granite having a mixed aplitic (65%) and micrographic (35%) texture. The latter consists of 2 mm patches of quartz and K-feldspar micrographic intergrowths.

K-feldspar grains are black (in thin section) with abundant oriented fluid inclusions.

Diamond Drill Area Samples

(a) 0-20

Location: Lower area near diamond drill

Rock Name: Granite

Estimated Mineral Percentages

|                    |     |
|--------------------|-----|
| Quartz             | 40  |
| K-feldspar         | 40  |
| Plagioclase (an12) | 20  |
| Biotite            | 1   |
| Opagues            | 0.5 |

0-20 Continued

Description

Fine grained granite with both aplitic (60%) and micrographic textures (40%). Anhedral grains vary from 0.1 to 2 mm with an average grain size of 0.5 to 0.75 mm. Locally, there are some 2 mm clusters of sericite. Plagioclase cores are altered to very fine grained hydrous (?) minerals and the K-feldspar is perthite with approximately 10 - 15% exsolved plagioclase.

(b) 0-12

Location: Upper area approximately 75 meters vertically above the old diamond drill.

Rock Name: Granite

Estimated Mineral Percentages

|                    |     |
|--------------------|-----|
| Quartz             | 40  |
| K-feldspar         | 50  |
| Plagioclase (An12) | 9   |
| Biotite            | 1   |
| Opagues            | 0.5 |

Description

Fresh fine grained (1 mm grains) granite with mixed aplitic (40%) and myrmekitic/micrographic (60%) textures. K-feldspar grains are perthitic and some larger plagioclase grains are normally zoned. The biotite is "shratty" and is locally 100% altered to chlorite. There are a few 2 mm quartz eyes in the section.

(c) 0-9

Location: Approximately 200 meters east of the old diamond drill.

Rock Name: Granite

Estimated Mineral Percentages

|                   |     |
|-------------------|-----|
| Quartz            | 40  |
| K-feldspar        | 50  |
| Plagioclase (An6) | 9   |
| Biotite           | 1   |
| Opagues           | 0.5 |

0-9 continued

Description

Relatively fresh, fine to medium grained (up to 2 - 3 mm grains) granite with local areas of micrographic texture. The rock is composed of quartz, perthitic K-feldspar with 25% exsolved plagioclase, unzoned plagioclase with some altered cores and some sparse "dusting" of sericite, and partly altered biotite. Biotite alteration consists of chlorite and an opaque mineral (magnetite (?)) along cleavage planes and on borders.

East Wall Sample (G Zone)

Location: Unspecified; typical East Wall sample

Rock Name: Granite

Estimated Mineral Percentages

|                    |       |
|--------------------|-------|
| Quartz             | 40    |
| K-feldspar         | 45-50 |
| Plagioclase (An10) | 10-15 |
| Biotite            | 0.5   |
| Opagues            | 0.5   |
| Chlorite           | Minor |

Description

Fairly fresh fine grained (1 mm grains) granite with a mixed aplitic (50%) and micrographic (50%) texture. The section contains two relatively large (2 mm) grains of fluorite. The rock consists of quartz, cloudy fluid inclusion - rich K-feldspar, unzoned and locally broken, sometimes subhedral plagioclase, and "shratty" fresh biotite which may locally be altered to a brown phyllosilicate and an opaque mineral.

## L Area Samples

### Post Mineral Dyke

Location: L area (same dyke examined across the col in Z area)

Rock Name: Banded Rhyolite Dyke

### Estimated Mineral Percentages

|             |                                                     |
|-------------|-----------------------------------------------------|
| Quartz      | 45                                                  |
| K-feldspar  | 45 (guess based on visual estimate of stained slab) |
| Plagioclase | ? (too fine grained for identification)             |
| Chlorite    | 0.25                                                |
| Carbonate   | 0.25                                                |
| Opagues     | 0.25                                                |
| Pyrite      | 0.1 (one 1 mm crystal)                              |

### Description

This slide consists of  $\frac{1}{2}$  to 5 mm flow bands from a 3 to 4 meter wide rhyolitic dyke. Banding has resulted from the physical and chemical (?) separation of minerals into gray quartz-rich layers and white K-feldspar-rich layers.

In detail, very fine grained (0.1 mm) quartz and feldspar grains within these bands form  $\frac{1}{2}$  -  $1\frac{1}{2}$  mm pellet-like masses which are rimmed by a thin skin of K-feldspar. Another type of pellet is 0.3 to 0.75 mm "shratty" grains of quartz containing 5 - 10% opagues which are rimmed by extremely fine grained quartz (?) and feldspar (?).

The largest band which varies from 3 to 5 mm in width and is medium to dark gray contains approximately 2% carbonate (siderite (?)) and 1% chlorite. These minerals rim K-feldspar-quartz pellets, quartz-rich pellets and strained grains.

## Metasediments Overlying Granite

Location: L Area

Rock Name: Recrystallized Banded Argillite

### Description

This rock is mainly a black, very finely laminated, recrystallized argillite crosscut (45° to laminations) by a 0.5 - 1 mm thick veinlet (?) or fracture-coating of pure molybdenite. The very fine (0.5 mm) discontinuous laminations are formed mainly by concentrations of biotite alternating with concentrations of quartz. Approximately 5% of the rock throughout consists of scattered grains of quartz up to 0.5 mm across. These grains have been severely corroded. Approximately 15 - 20% of the rock is composed of larger (2 - 5 mm) discontinuous bands of sugary quartz and up to 30% very fine grained K-feldspar.

At this time it is not known whether the recrystallization was caused by a regional metamorphic event or by a thermal event caused by the intrusion of the Mt. Ogden granite.

## General Comments and Interpretations Re Omni Pluton Granites

On the basis of the above 15 thin sections collected from the margins of the Omni leucogranite pluton, some general interpretations can be offered:

- (1) The fine grained textures and anhedral mineral grains suggest rapid cooling at a high level in the earth's crust.
- (2) The abundance of the fluid inclusions in the K-feldspar of some samples, combined with the field observation that the rock is very massive (poorly fractured) indicates a low stress cooling environment in which water was trapped in the minerals.
- (3) The granite contains very low amounts of iron and magnesium as evidenced by the sparse amounts of biotite, chlorite and opaques.
- (4) The pluton may be fairly fluorine - rich as indicated by fluorite-bearing veinlets and disseminations. This is a common feature of molybdenite-bearing plutons.
- (5) Local sericite alteration along fractures suggests some mobility of a limited amount of water during the later stages of cooling of the pluton.

APPENDIX D

Rock Geochemistry - by Terry Elliott,  
M.J. Beley, and R.J. Barclay

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## Assays and Rock Geochemistry

### Assays

#### (1) Channel Samples

Tungsten and tin are often associated with molybdenum in molybdenite ore deposits; hence, it was necessary to determine whether or not Mt. Ogden pluton molybdenite-bearing channel samples contain any significant amounts of tungsten and tin. Ten channel samples (see Trenching Report) previously found to contain significant values in molybdenite (0.14% MoS<sub>2</sub> to 2.30% MoS<sub>2</sub>) were assayed for tungsten and 4 of these were checked for their tin contents.

The attached Bondar-Clegg & Co. assay report No. 48-223, shows that no significant tungsten and tin values were found associated with MoS<sub>2</sub> in the 10 samples checked. These results are only preliminary and should be viewed as such; future molybdenite-bearing samples should be spot-checked for tungsten and tin as it is still possible that significant values may be found in some specific area of the mineralized zones.

#### (2) Moraine Float

Four samples of angular sphalerite and galena-bearing float from 2 moraines on the southwest side of the glacier which flows north from the sampled cirque headwall were assayed for gold, silver, lead, zinc and tungsten (See Bondar - Clegg & Co. Ltd. assay report No. A28-925. Rocks 0-1, 0-3 and 0-34 are skarn (?) samples collected from 2 separate moraines. Although the Pb-Zn assays are of possible interest, the Au-Ag assays are disappointingly low; that is, the precious metal values are much less than the lead and zinc values.

Sample 0-2, from moraine #2 is mainly massive crystalline pyrite. On the basis of the assay results, no further follow-up is warranted on finding the source of this material.

#### (3) Recommendations

(a) Further tungsten and tin "spot check" analyses should be done on channel, drill core, and adit rock samples to identify any values of possible economic significance.

(b) Source areas of the lead-zinc bearing skarn material should be located during the 1979 program of geological mapping. Since this skarn (?) material is not abundant in moraine #2 it may not in itself be of economic significance, but there still remains the possibility that it may be associated with some important metamorphosed stratiform lead-zinc mineralization.

#### 4.4 Rock Geochemistry

##### Significant Results

Thirty-seven assorted rock samples were analyzed for tungsten and many samples were analyzed for one or more of the following elements: Pb, Zn, Mo, Ag, Sn, U, and Au. These results are tabulated on the enclosed Bondar-Clegg & Co. Ltd. Geochemical Lab Report No. 28-1565. A general list of corresponding sample locations is also appended.

In general, tungsten values in Mt. Ogden Pluton granites are low except sample 0-17 which assayed 2.45%  $WO_3$  (See Bondar-Clegg & Co. Assay Report No. A28-953).

This sample contains abundant visible wolframite (?) or a related W-bearing mineral found in a vein in the diamond drill area of the property.

Sample 0-35, containing 1.27% Zn is banded metasedimentary float from the moraine derived from a large rusty zone west of the glacier flowing out of the cirque. This sample contains approximately 5 - 10% fine grained banded pyrrhotite and possibly pyrite (?).

#### 4.5 Recommendations

(a) Additional sampling for tungsten is warranted in the diamond drill area to follow-up the discovery of a small tungsten-bearing vein above the drill site.

(b) An examination of and sampling of the large rusty zone west of the glacier flowing north from the cirque should be carried out to assess the possibility of finding stratiform zinc mineralization.



**BONDAR-CLEGG & COMPANY LTD.**

DATE: October 13, 1978

19790 - 88 Avenue  
R R #4  
Langley, B.C. V3A 4P7

**CERTIFICATE OF ASSAY**

Samples submitted: October 10, 1978  
Results completed: October 13, 1978

I hereby certify that the following are the results of assays made by us upon the herein described ore samples.

| MARKED | GOLD              |                  | SILVER            | Pb      | Zn      | W       |         |         |         |  | TOTAL VALUE<br>PER TON<br>(2000 LBS.) |
|--------|-------------------|------------------|-------------------|---------|---------|---------|---------|---------|---------|--|---------------------------------------|
|        | Ounces<br>per Ton | Value<br>per Ton | Ounces<br>per Ton | Percent | Percent | Percent | Percent | Percent | Percent |  |                                       |
| 0 - 1  | <0.002            |                  | 0.36              | 1.74    | 1.36    | 0.01    |         |         |         |  |                                       |
| 2      | 0.030             |                  | 0.82              | 0.36    | 0.84    | 0.04    |         |         |         |  |                                       |
| 3      | 0.005             |                  | 1.18              | 4.65    | 6.20    | <0.01   |         |         |         |  |                                       |
| 34     | <0.002            |                  | 1.05              | 2.55    | 1.38    | <0.01   |         |         |         |  |                                       |

  
Registered Assayer, Province of British Columbia



# BONDAR-CLEGG & COMPANY LTD.

1500 PEMBERTON AVE., NORTH VANCOUVER, B.C. PHONE: 985-0681 TELEX: 04-54554

## Geochemical Lab Report

W; Basic Fusion  
 Pb, Zn, Mo, Ag; Hot Aque Regia U; Hot HNO<sub>3</sub>  
 Extraction Au; Fire Assay & Hot Aque Regia  
 W; Colorimetric U; Fluorimetric Sn; XRF  
 Method Au, Pb, Zn, Mo, Ag; Atomic Absorption

Report No. 28 - 1565  
 From Bene Industries Ltd.  
 Fraction Used \_\_\_\_\_ Date October 13, 1978

| SAMPLE NO. | Pb<br>ppm | Zn<br>ppm | Mo<br>ppm | Ag<br>ppm | Sn<br>ppm | U<br>ppm | W<br>ppm | Au<br>ppm | REMARKS |
|------------|-----------|-----------|-----------|-----------|-----------|----------|----------|-----------|---------|
| 0 - 4      | -         | -         | -         | -         | -         | -        | 3        | -         |         |
| 5          | -         | 161       | -         | 0.2       | -         | -        | 5        | -         |         |
| 6          | -         | 18        | -         | 0.2       | -         | -        | 3        | -         |         |
| 7          | -         | 121       | -         | 0.2       | -         | -        | 2        | -         |         |
| 8          | -         | 110       | -         | 0.2       | -         | -        | 2        | -         |         |
| 10         | -         | -         | -         | -         | -         | 8        | 11       | -         |         |
| 11         | -         | -         | -         | -         | -         | -        | 5        | -         |         |
| 13         | -         | -         | -         | -         | -         | -        | 10       | -         |         |
| 15         | -         | -         | -         | -         | -         | -        | 13       | -         |         |
| 16         | -         | -         | -         | -         | -         | -        | 2        | -         |         |
| 17         | -         | 12        | -         | -         | -         | -        | >2000    | -         |         |
| 18         | -         | -         | -         | -         | -         | -        | 350      | -         |         |
| 19         | -         | -         | -         | -         | -         | -        | 50       | -         |         |
| 21         | 13        | 50        | -         | 0.2       | -         | -        | 3        | < 5       |         |
| 22         | 9         | 40        | -         | 0.4       | -         | -        | 4        | < 5       |         |
| 23         | -         | -         | 7         | 0.2       | -         | -        | 5        | 5         |         |
| 24         | -         | -         | -         | -         | 21        | 3        | 13       | -         |         |
| 25         | -         | -         | -         | -         | 13        | 3        | 6        | -         |         |
| 26         | -         | -         | -         | -         | 16        | 6        | 9        | -         |         |



To: Dema Industries Ltd.

REPORT No A28 - 958

PAGE No. 1

**BONDAR-CLEGG & COMPANY LTD.**

DATE: October 20, 1978

19790 - 88 Avenue RR #4  
Langley, B.C. V3A 4P7

Samples submitted: October 17, 1978  
Results completed: October 20, 1978

**CERTIFICATE OF ASSAY**

I hereby certify that the following are the results of assays made by us upon the herein described **pulp** samples.

| MARKED | GOLD              |                  | SILVER            | WO <sub>3</sub> |         |         |         |         |         |  | TOTAL VALUE<br>PER TON<br>(2000 LBS.) |
|--------|-------------------|------------------|-------------------|-----------------|---------|---------|---------|---------|---------|--|---------------------------------------|
|        | Ounces<br>per Ton | Value<br>per Ton | Ounces<br>per Ton | Percent         | Percent | Percent | Percent | Percent | Percent |  |                                       |
| 0 - 17 |                   |                  |                   | 2.45            |         |         |         |         |         |  |                                       |

  
Registered Assayer, Province of British Columbia

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