

# PROPERTY FILE

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OMNI RESOURCES INC.

1978 WORK REPORT AND 1979 RECOMMENDATIONS

MOLY-TAKU CLAIMS AT MT. OGDEN

Atlin Mining Division, B.C.

By

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

January 15, 1979

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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 bedrock 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 1800 m x 1500 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.

Sampling has not progressed to the point of establishing ore reserves of any standard category; however, if continuity of mineralization can be proven and grade measured, a deposit on the order of 220,000,000 tonnes is visualized.

The recommended program for 1979 consists of:

- (1) adit driving -- 200-300 m
- (2) diamond drilling from surface and from the adit -- 3000-6000 m
- (3) bulk sampling of rock from adit
- (4) other studies -- geology, safety, weather and rock mechanics.

Work will be conducted with helicopter support from a camp located 6.5 km from the job site.

Costs of two programs have been estimated on a preliminary basis: a basic program at \$1,113,000 and an accelerated program at \$1,586,000. Any goal in the general range of \$1-million to \$2-million could be undertaken in a workmanlike manner; but there are factors precluding attempts to do less work or more work at this stage.

It is logical to assume at the present time that exploratory work on the Moly-Taku property will continue past the 1979 season. Objectives of the work recommended for 1979 are therefore:

- (1) accurately determine MoS<sub>2</sub> grade
- (2) acquire knowledge on extent and continuity of MoS<sub>2</sub>, particularly that near or above, say, 0.17 per cent MoS<sub>2</sub>
- (3) provide the basis for decision-making in respect of work in 1980 and beyond.

Although the property is extraordinarily difficult of access in the exploratory stages, its location 26 km (16 miles) from salt water implies that transportation (via road and tunnel access) for eventual development and production would have an acceptable cost.

Respectfully submitted  
NEVIN SADLIER-BROWN GOODBRAND LTD.

Andrew E. Nevin, Ph.D.,

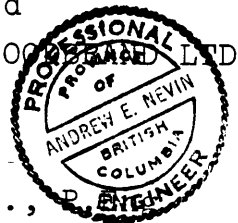




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OMNI RESOURCES INC.  
1978 WORK REPORT AND 1979 RECOMMENDATIONS  
MOLY-TAKU CLAIMS AT MT. OGDEN  
Atlin Mining Division, B.C.

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 Vancouver Stock Exchange and the Superintendent of Brokers' office as required to arrange for public financing for continued work on the Moly-Taku Mining Claims, Atlin Mining Division, British Columbia.

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, and discusses such concepts of future aspects of the project as long term access and mining methods.

There should be no misunderstanding concerning the cited tonnages of "mineralized" rock, nor the preliminary nature of the discussion of future courses of action toward production. At the present time, the Moly-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.

The report presents the concepts and design considerations for exploration in 1979. The program proposed is complex and several man-weeks of engineering time will be required to design and plan the program to the degree necessary for execution. We present the basic program in outline form, an alternate accelerated program for 1979, and cost estimates for both. It will be up to the Client to select the preferred program or a work target in the

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general range discussed.

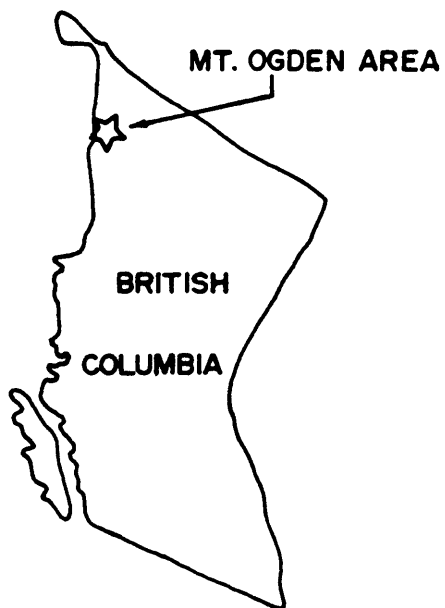
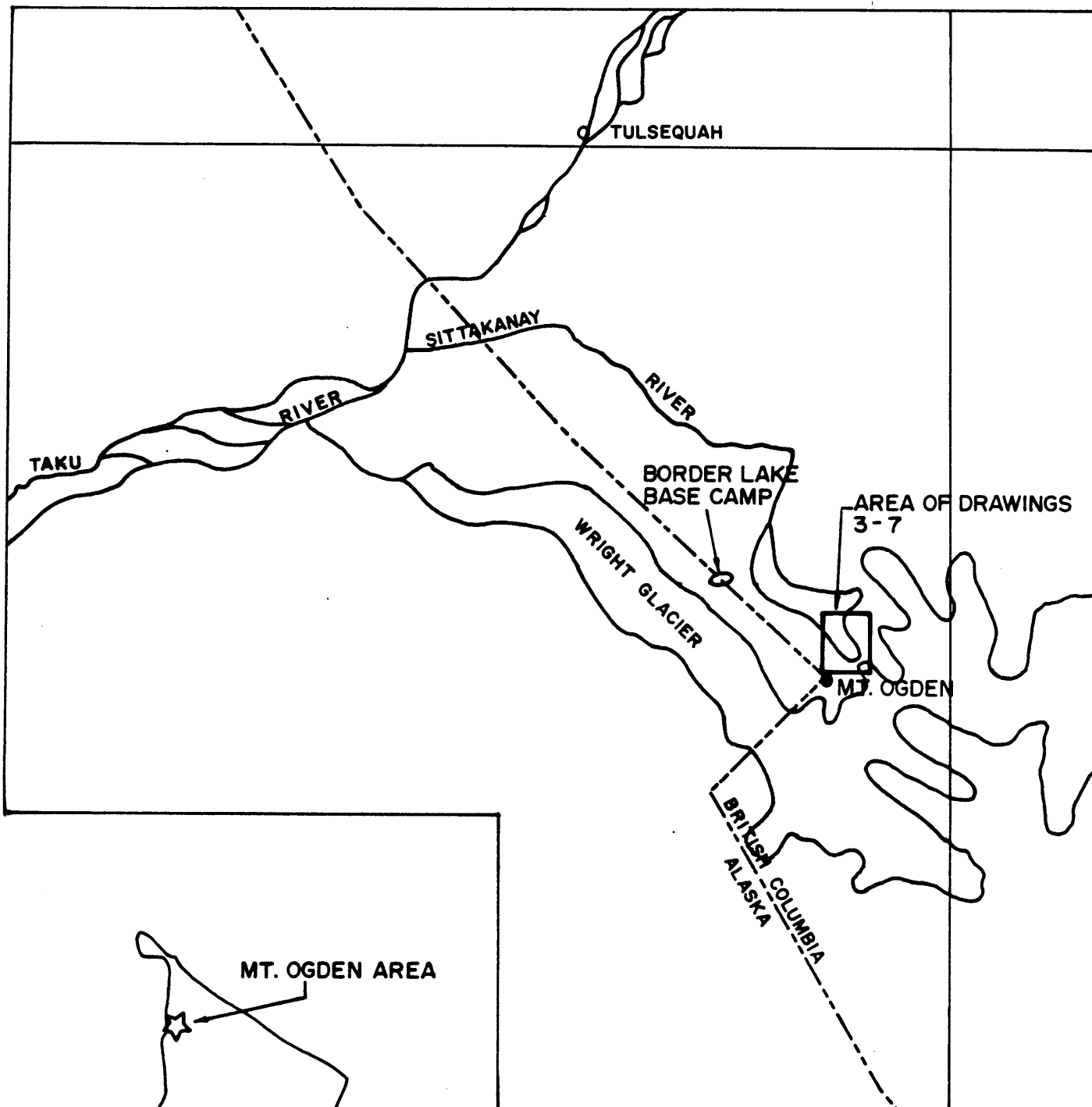
Nevin Sadlier-Brown Goodbrand Ltd. has accepted the assignment of managing the 1979 program. Upon completion of financing arrangements, and instructions from Omni Resources Inc. we will proceed with the appropriate subconsultants and contractors to design the program for 1979 in the necessary detail.

## 1.2 Location and Access

The property adjoins the border between British Columbia and the United States, immediately east of Juneau, Alaska (see Drawing 1). 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  $58^{\circ} 27'$  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 in the northwestern part of the claims, is suitable for landings and take-offs by a Beaver or a Cessna 185. Within the claim group a helicopter is a necessity during all times of the year except those when the glaciers have a heavy enough snowpack covering the crevasses to be suitable for surface transportation.

Revenue Canada, Customs and Excise require chartered aircraft from the United States to clear customs in Canada before landing elsewhere within Canadian jurisdiction. This means that air charterers from Whitehorse or Atlin must be used, or charters from Juneau must clear at Atlin before landing on the property. If proper procedures are followed, heavy supplies may be barged into the Taku River and cleared by Canada Customs for transport to the job site.



OMNI RESOURCES INC.  
 MT. OGDEN PROPERTY  
 LOCATION MAP

DATE: JAN. 1, 1979  
 DRAWING: 1



### 1.3 Terrain

One of the important factors in the exploration and eventual mining, if warranted, of the Moly-Taku property is the terrain and local geography. 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 2111 m (6926 feet) and Border Lake is approximately 843 m (2766 feet). The glacier which lies on the north slope of Mt. Ogden feeds into a small river which flows north into the Sittakanay River, at elevation 200 m, which in turn flows into the Taku River at an elevation 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 based on Mr. Bleuer's report.

### 1.4 Work Completed

#### 1.4.1 Examination

In 1977 Nevin Sadlier-Brown Goodbrand Ltd. examined the Moly-Taku claims on behalf of another 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 work program 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 insure 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 Elliot, M.Sc., 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

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future access and safety on the project.

#### 1.4.5 Buffer Zones

Mr. T.L. Sadlier-Brown staked forty-eight mining claims in the state of Alaska, contiguous with the Moly-Taku claims in British Columbia. These occupy the re-entrant corner in the international boundary and provide a small buffer zone should subsequent work establish that commercial mineralization extends westward toward the United States. These claims are held in trust for Omni Resources Inc. and a Quit Claim Deed assigning them to Omni is being processed.

Mr. Frank Onucki, working under instructions from Omni, staked several claims additional to the original group and located to the south, east, north and particularly, to the northwest between the original group and the Taku River.

#### 1.4.6 Maps and Model

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. Topographics Ltd. prepared a model of the mineralized area at 1:5,000.

#### 1.4.7 Pre-Exploration Feasibility Study

At the request of the Client, Kilborn Engineering (B.C.) Ltd. performed a study of capital and operating costs at various assumed millhead grades, production rates, and other input factors. (The Kilborn report is simply noted



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here, but is not otherwise cited in this report).

### 1.5 Property Status

This report is concerned with the Border 1, Moly 1 through Moly 4 and Taku 1 and 2 claims. The Claim Map is shown in Drawing 2, and includes several other recently staked claims.

The subject claims were staked by Mr. Frank Onucki, 602 Dunsmuir Street, Vancouver, according to the schedule in Table 1.

Table 1. - Description of Claims

<u>Name</u>	<u>Record No.</u>	<u>Units Claimed</u>	<u>Expiry Date</u>
Moly 1	201(3)	1	March 9, 1979
Moly 2	202(3)	4	same
Moly 3	203(3)	18	same
Moly 4	204(3)	18	same
Taku 1	205(3)	18	same
Taku 2	206(3)	18	same
Border 1	485(8)	16	August 14, 1979

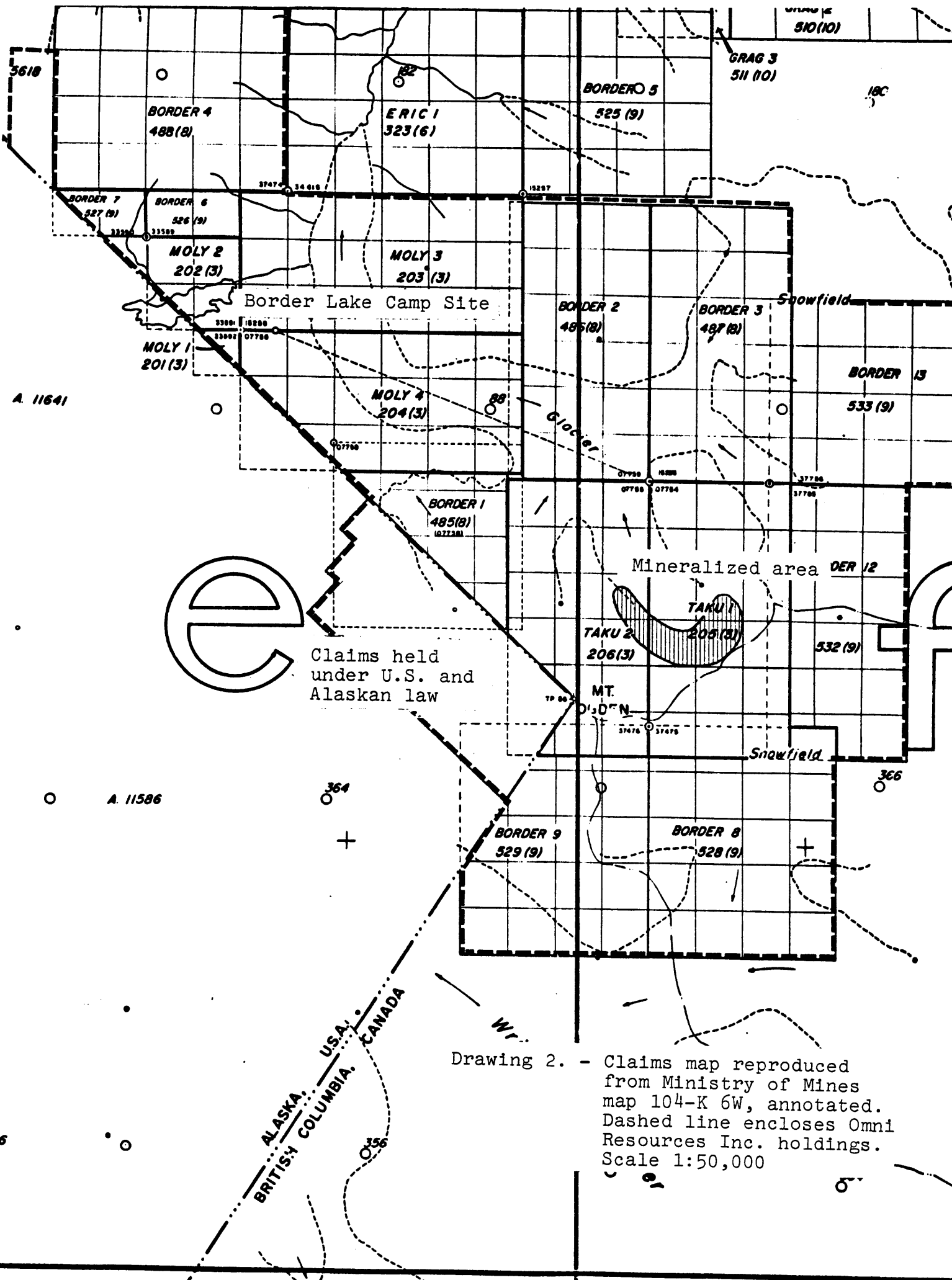
Of the 93 units claimed above, the net holdings are about 75 or so because of overlaps mainly with the U.S. border.

The claims were staked from one Legal Corner Post, and in the case of the Taku's these posts were witnessed, without the complete installation of the corner and boundary marker posts. An examination of the posts and an appreciation of the circumstances suggests that the claims were staked in an acceptable manner in compliance with the Mineral Act. Recording and subsequent assessment work have been accepted by the Mining Recorder.

Forms "G" in the Mining Recorder's office indicate that the subject claims are held by Mr. Onucki. We understand that Omni Resources Inc. has rights to explore conveyed by an option agreement with Mr. Onucki.

TABLE 2. - Estimated Range of Costs by Work Component

	<u>Basic Program</u>		<u>Accelerated Program</u>
1. Mobilization - Barge to Taku River	\$ 35,000		\$ 35,000
- Helicopter heavy gear	55,000		60,000
Demobilization - Barge	35,000		35,000
- Helicopter heavy gear	40,000		45,000
Mob - demob all personnel	15,000		18,000
	<u>\$ 180,000</u>		<u>\$ 193,000</u>
2. Camp construction, supplies, equipment	75,000		80,000
Cook, bullcooks, swamper	27,000		36,000
	<u>\$ 102,000</u>		<u>\$ 116,000</u>
3. Adit - contractor's charges	175,000	1000'	300,000
fuel	7,000		10,000
daily transport	28,000		37,000
	<u>\$ 210,000</u>		<u>\$ 347,000</u>
4. Drilling - site preparation	6,000	2-3 surface sites	8,000
contractor's charges	250,000	20,000'	450,000
daily transport	25,000		50,000
sample handling	10,000		18,000
	<u>291,000</u>		<u>526,000</u>
5. Bulk sample handling	<u>\$ 50,000</u>		<u>\$ 70,000</u>
6. Technical work			
Logging and underground mapping	10,000		12,000
Surface geology, incl. helicopter	40,000		40,000
Airphotos, safety, weather station, surveying	25,000		25,000
	<u>\$ 75,000</u>		<u>\$ 77,000</u>
7. Other costs			
Pre-mob design and administration	20,000		25,000
On-site management and staff	35,000		40,000
Communications equip. and costs	5,000		5,000
Expeditors charges	8,000		8,000
Helicopter costs not included above	30,000		35,000
Fixed wing charters, Camp-outside	15,000		20,000
Trucking, freight, other travel	15,000		20,000
Assays	12,000		24,000
Analysis of data, reporting	25,000		30,000
Engineering and management fees	40,000		50,000
	<u>\$ 205,000</u>		<u>\$ 257,000</u>
TOTALS	<u>\$1,113,000</u>		<u>\$1,586,000</u>



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

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The U.S. claims, named A1-17, B1-16, and C1-15, cover a total of about 4 hectares (equivalent to about 16 units in B.C.) The recording was accepted by the State Recorder at Juneau, and the Federal Bureau of Land Management. Assessment work in the amount of U.S. \$100 per claim is due on September 1, 1979; and on that date in subsequent years. The claims appear to us to lie outside controversial "D-2" lands. We regard them as a buffer-zone of minor importance.

Other Canadian claims held by Mr. Onucki, in trust for Omni, have not been prospected, and at this time we consider them to be similar buffer zones, and outside the scope of this report.

## 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 Moly-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. Subsequently, according to a report by the late Dr. Chris Riley, two prospectors, Kol Lovang and George White entered the area and staked the first claims. These were subsequently optioned to the Wenner Gren Co., which prospected the area.

In 1961 Max Martin restaked the ground and sold it to one Richard White, who in turn optioned it to Totem Minerals Ltd. An assessment report by Roderick C. Macrae, who was an employee of Julian Mines Ltd. at that time, presented a geological sketch map made during that year. The property was held by other companies in the middle 1960's; however, there are no public records as to the activity and we believe that little work was done.

Mt. Ogden Mines Ltd. was incorporated in 1967 and acquired the property. During 1967 they established a camp on Border Lake and skidded a small diamond drill up the glacier to a location as shown in Drawing 3. The drill setup was chosen as a compromise between minor bedrock moly mineralization and the few accessible locations at that time. The drill broke down after drilling 50 feet and was stored at the site, where it still sets. Dr. Riley's report states that 40 feet carried sub-ore values in moly.

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At the same time Mt. Ogden engaged one C.B. Selmsler to conduct an airborne EM survey which he did by a rather unusual method and duly reported this in B.C. Ministry of Mines Assessment Report #1627. This report does not contribute substantially to an understanding of the geology or geophysics of the claim area.

Iskut Silver Mines Ltd. held the ground by staking in 1976, which claims lapsed in early 1977 without the owner having worked on them.

In February, 1977 Mr. Onucki staked the claims on his own behalf.

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.

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

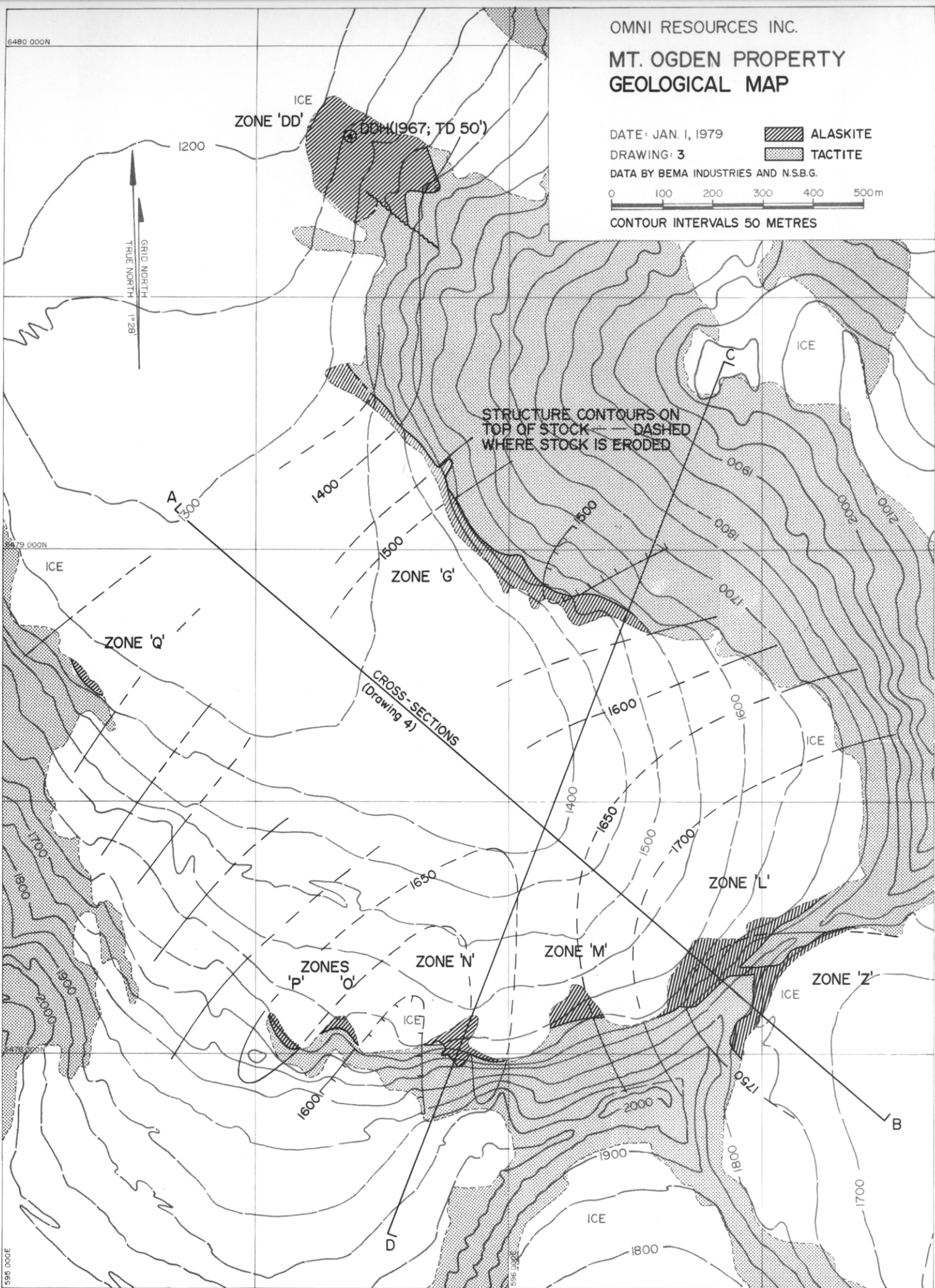
0 100 200 300 400 500m

CONTOUR INTERVALS 50 METRES

6480 000N

6579 000N

695 000E



OMNI RESOURCES INC.

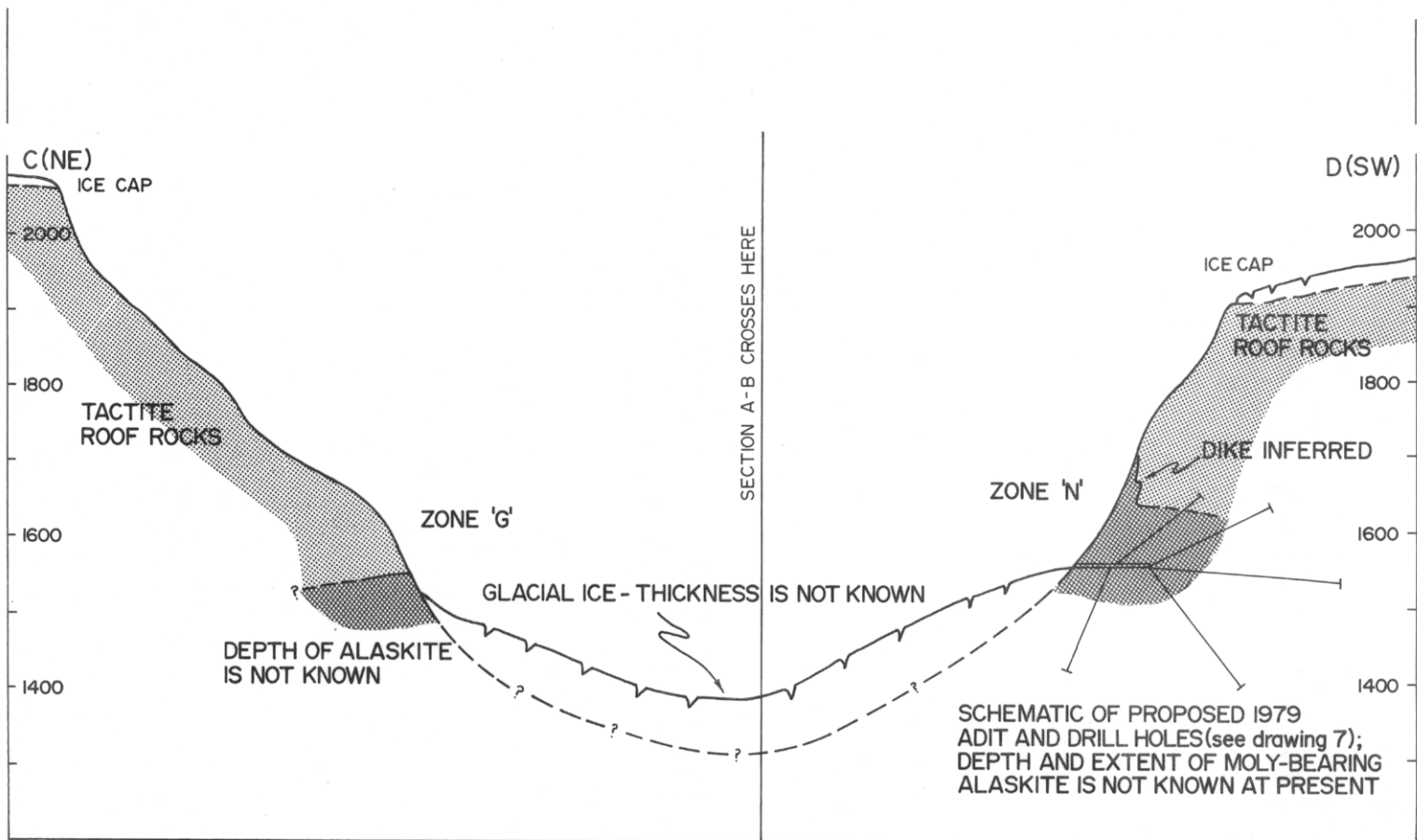
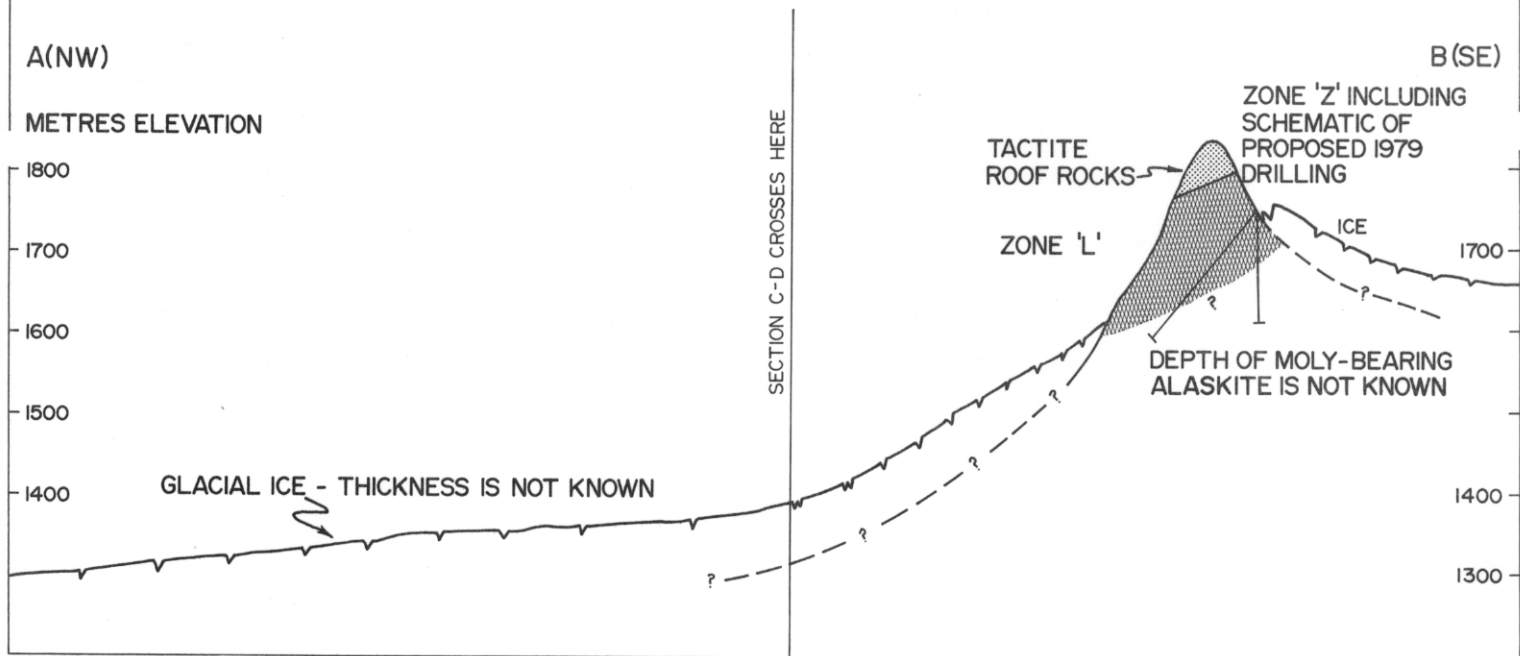
# MT. OGDEN PROPERTY CROSS SECTIONS

DATE: JAN. 1, 1979

DRAWING: 4



VERTICAL AND HORIZONTAL SCALE  
NO VERTICAL EXAGGERATION





## 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 which 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 1800 metres (north-south) and 1500 metres (east-west).

The exposures are the upper parts of a stock, intruded into the overlying tectites; 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 especially 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 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.

### 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.

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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<sub>3</sub>). Likewise spot checks for gold, silver, uranium, lead and zinc showed no significant values.

#### 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

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low fluid circulation, and deposition and concentration of volatiles -- mainly MoS<sub>2</sub> -- 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 low in lead, zinc, gold, silver and tungsten (assays not given in this report). 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 ice-fall 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:

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).

6480 000N

OMNI RESOURCES INC.

# MT. OGDEN PROPERTY SAMPLE MAP (1978)

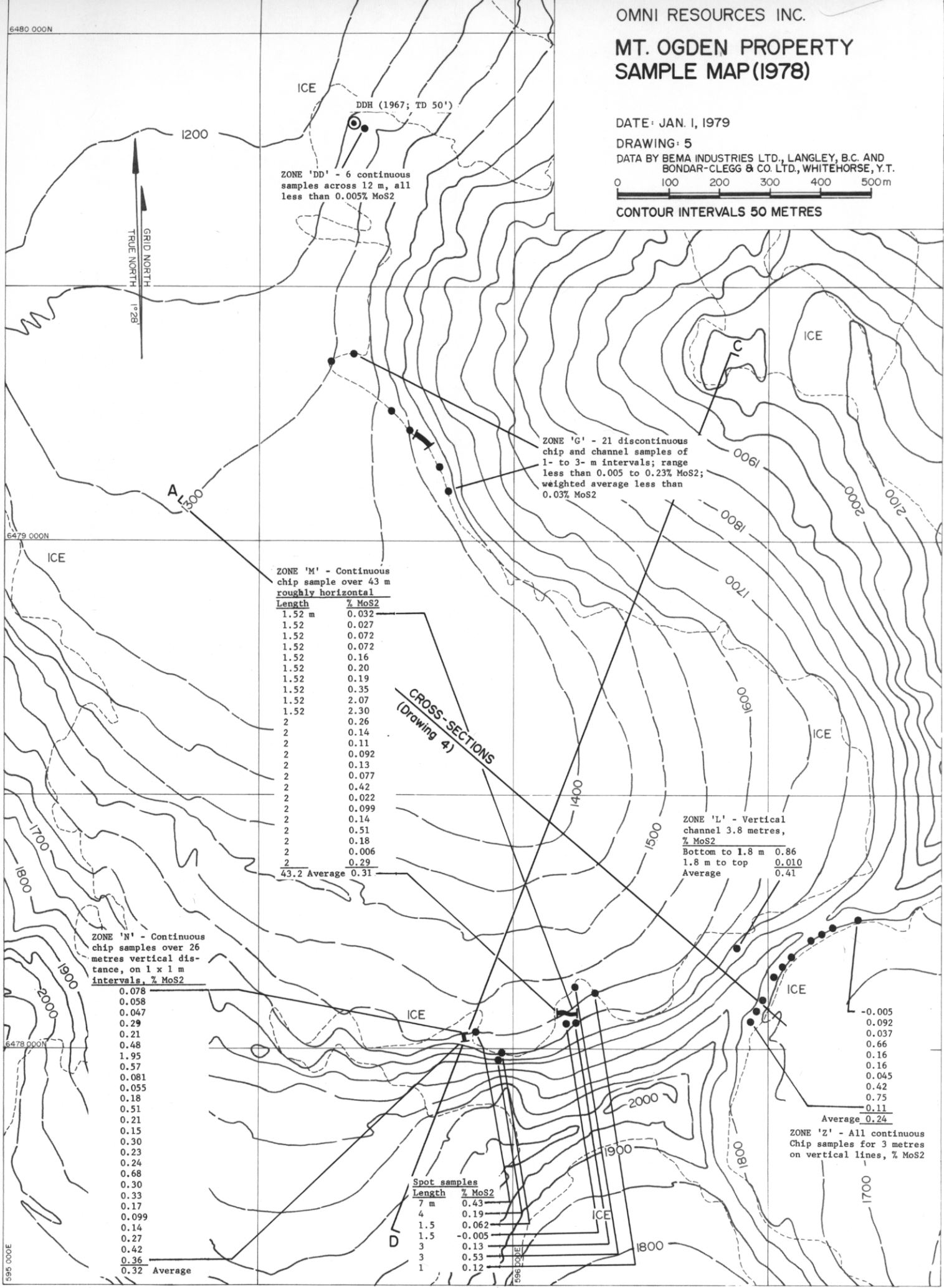
DATE: JAN. 1, 1979

DRAWING: 5

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



CONTOUR INTERVALS 50 METRES



ICE  
DDH (1967; TD 50')

ZONE 'DD' - 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 0.23% MoS<sub>2</sub>; weighted average less than 0.03% MoS<sub>2</sub>

ZONE 'M' - Continuous chip sample over 43 m roughly horizontal

Length	% MoS <sub>2</sub>
1.52 m	0.032
1.52	0.027
1.52	0.072
1.52	0.072
1.52	0.16
1.52	0.20
1.52	0.19
1.52	0.35
1.52	2.07
1.52	2.30
2	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	

CROSS-SECTIONS  
(Drawing 4)

ZONE 'L' - Vertical channel 3.8 metres, % MoS<sub>2</sub>  
Bottom to 1.8 m 0.86  
1.8 m to top 0.010  
Average 0.41

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

0.078
0.058
0.047
0.29
0.21
0.48
1.95
0.57
0.081
0.055
0.18
0.51
0.21
0.15
0.30
0.23
0.24
0.68
0.30
0.33
0.17
0.099
0.14
0.27
0.42
0.36
0.32 Average

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
0.037
0.66
0.16
0.16
0.045
0.42
0.75
-0.11
Average 0.24

ZONE 'Z' - All continuous Chip samples for 3 metres on vertical lines, % MoS<sub>2</sub>

6479 000N

6478 000N

595 000E

596 200E

- 16 -

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 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



- 17 -

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.

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

- 18 -

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 m (E-W) x 300 m (N-S) x 300 m (depth)

x 2.7 T/m<sup>3</sup> (assumed density) = 220,000,000 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 and 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.

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:

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.

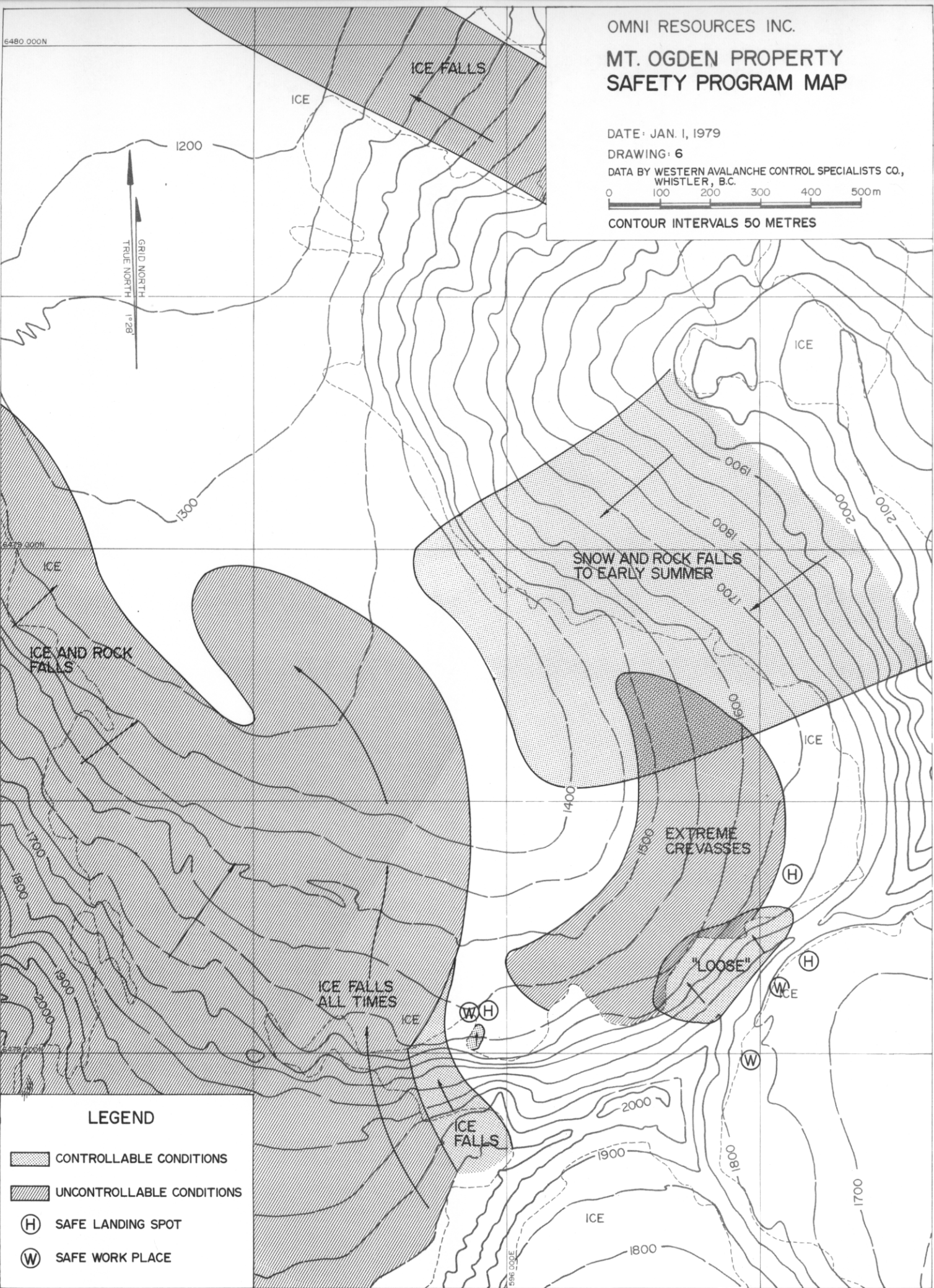


CONTOUR INTERVALS 50 METRES





6480 000N

6379 300N

6278 600N



## LEGEND

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

- 20 -

- (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

6480 000N

OMNI RESOURCES INC.

# MT. OGDEN PROPERTY PRELIMINARY 1979 PLAN

DATE: JAN. 1, 1979

DRAWING: 7  
(SUBJECT TO REVISION)



CONTOUR INTERVALS 50 METRES

ICE

1200

GRID NORTH  
TRUE NORTH  
1°28'

1300

6479 000N

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°)

SURFACE MAPPING  
AND SAMPLING

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

6478 000N

595 000E

598 000E

- 22 -

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.

#### 5.2.1 Adit

A service pad and ramp is proposed to be located on a flat, non-crevassed slab of ice at the base of the 'N' buttress. The drive will be started at a point selected by the engineers and contractor.

Preliminary plans call for at least 200 feet (60 m) of drift, and 200 feet of cross-cut in each direction (east and west), all of 7-foot by 8-foot size (2.1 x 2.4 m).

Drilling would be done with jack legs, and small diesel scoot cretes are being considered for tramping.

Within the first hundred feet of the drive, a service and safety station would be put inside the portal, an emergency escape raise would be installed to the satisfaction of the B.C. Mines Inspector, and a diamond drilling station installed and manned.

Estimated time required to complete 600 feet of adit is 65 days from the time equipment arrives at the portal site. Work force is estimated at seven men, excluding project management and geologist.

#### 5.2.2 Drilling

Clearly drill sites are at a premium and will be utilized to fan holes in several directions. The total amount of drilling to be



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conducted remains to be determined, but will probably range from 10,000 to 20,000 feet (3,000 - 6,000 m). Exact hole locations, azimuths and elevations likewise remain to be determined; initial holes will be planned in the design stages, and adjusted by advance field management. Subsequent holes will be dependent upon results from early work.

At present, plans are to drill several holes from one set-up at Zone 'Z', and perhaps one or more vertical holes through the glacier from sites north of the portal, depending upon the level of effort chosen for 1979 work.

Site preparation considerations in addition to the usual considerations for surface drilling will be: (1) stability of underlying ice, (2) insulation of ice from drill platform, (3) timber sheds if needed, (4) initial and continuing water supply.

Underground drilling will be done from stations near the portal, and from each end of the cross-cut. This work could be extended into the fall if early results warrant and the Client chooses to proceed at a high level of effort.

The number of drills employed will range from 2 to 4. The first two will be diamond drills, and a percussion drill is under consideration for the third or fourth, depending in part upon experience and accuracy of sampling with the diamond drills.

Sample accuracy of diamond drill cores is expected to be a problem. It is generally a problem with moly deposits, and the very "coarse" texture -- the thick and widely spaced moly veins -- of the Mt. Ogden property is expected to exacerbate grinding in the core tube and consequent downgrading of moly values. Proposed measures to cope with loss of values are: (1) proper attention

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to the drilling contractor's selection of core barrels, (2) switching from BQ to NQ if needed, (3) sludge splitting, sampling and correlation, (4) drill hole orientations oblique rather than perpendicular to expected vein attitudes, (5) correlation of diamond drill results with bulk samples from the adit or with percussion drill results (this means "twinning" some sample locations with different methods), and (6) seeking advice from interested moly producers as regards grade control and statistical procedures.

Personnel requirements for running 2-4 drills round-the-clock are estimated at 10 to 16 people, including all drilling contractor's personnel and one or two sample handlers, but not project management, geologists or surveyor.

#### 5.2.3 Bulk Sampling

It is proposed to split the muck from the drilling adit and obtain bulk samples for accurate assay data. Results will provide a control for 1979 and future work. The procedure for splitting and handling has not been designed yet; it might be conducted underground in the muck-tram-dump cycle, or on a pad on the ice surface.

No ultimate metallurgical problems would be anticipated since the moly is extremely coarse, however some testing will be undertaken.

Equipment requirements will include an extra small loader, a coarse ore bin, a small crusher, and a large riffle splitter; and additional personnel would be two people.

#### 5.2.4 Geologic Work and Other Surveys

In addition to logging core and mapping the heading, geologists, accompanied by mountaineers, will endeavor to map the deposit and overlying tactite in detail appropriate to guiding

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further work. Other technical tasks unrelated to sampling to be undertaken will be :

- (1) Surveying drill hole locations, underground headings and such control points as necessary.
- (2) Taking new air photos for purposes of ice shrinkage data, avalanche control data, and geologic mapping.
- (3) Preliminary rock mechanics survey underground to collect data in consideration of a block-caving mine.
- (4) Installation and operation of a weather station (none exists in the region) for future use.
- (5) Assessment work on U.S. claims.

#### 5.2.5 Support and Transport

Border Lake will be the principal camp location. Housing will be in tents with plywood floors, and one or two permanent frame buildings will be built. At the peak of activity the personnel housed at Border Lake will consist of:

Tunnellers	7
Drillers	10 - 16
Bulk samplers	2
Geologists	2
Mountaineers (including site safety-man)	2
Cooks, bull cooks, swampers	3 - 4
Helicopter crew	2
Management and staff (including first-aid man)	2 - 3
Provision for visitors: specialist engineers, consultants, charter pilots, Client's personnel, government officers	0 - 6
TOTAL	<u>30-44</u>

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Transport and supply aspects of the project can be broken down into the components:

- (1) Heavy equipment, bulky supplies, and fuel from Vancouver or Prince Rupert to a depot on the Taku River -- probably by barge.
- (2) Lifting of that material to Border Lake camp (by helicopter or Beaver) and to project sites (by large helicopter).
- (3) Daily transport of crews and light supplies to project sites; removal of samples -- by light turbine helicopter.
- (4) Ongoing transport of personnel and supplies to and from camp -- by fixed wing charters from Atlin, truck or aircraft between Atlin and Whitehorse, CP Air between Whitehorse and Vancouver.
- (5) Demobilization of heavy equipment -- reverse of items (1) and (2).
- (6) Hospital or emergency transport -- by air or boat to Juneau, Alaska; or by air to Atlin or Whitehorse.

Shift transport back and forth will be interrupted from time to time by poor visibility, and an allowance for this will be built into progress schedules. Provisions for extended stays will be made at all work sites. Otherwise, daylight hours will be adequate to operate on a 24-hour basis with all shifts transported by helicopter.

Communications within the project will be handled with portable VHF radios, and to external points with HF SSB radios. Project agents or expeditors will be located in Atlin, Juneau, Whitehorse and Vancouver.

### 5.2 .6 Organization

Field management of the project will be under the direction of a senior engineer from Nevin Sadlier-Brown Goodbrand Ltd. Staff and support personnel (assistant manager and secretary), geologists, mountaineers, sample handlers, cooks and swampers will be supplied by Bema Industries Ltd. or Nevin Sadlier-Brown Goodbrand Ltd. from their full-time staff or as employees hired for the project.

Key contractors are the tunnel driving contractor and one or two drilling contractors; possibly one integrated mining contracting firm will perform both functions.

Other specialists or contractors to be employed for all or part of the project are:

- (1) Helicopter contractor(s)
- (2) Fixed wing charter operator(s)
- (3) Barging and trucking contractors
- (4) Mining engineer, on ground support and caving analysis
- (5) Materials handling engineer, on crushing and splitting bulk samples
- (6) Surveyor
- (7) Airphoto and photogrammetric mapping contractor
- (8) Assayer(s)
- (9) Computer service contractor
- (10) Meteorological consultant

Contracts will be awarded on consultation with the Client on the basis of past experience with the firm, ability to perform, and estimated cost to the Client.

The Client and project managers expect to maintain liaison with several other parties in

the planning and execution stages, including:

- (1) B.C. Ministry of Mines
  - (a) Mines Inspector
  - (b) Geological Division
- (2) Canada Customs
- (3) a number of representatives of major mining companies.

#### 5.2.7 Timetable

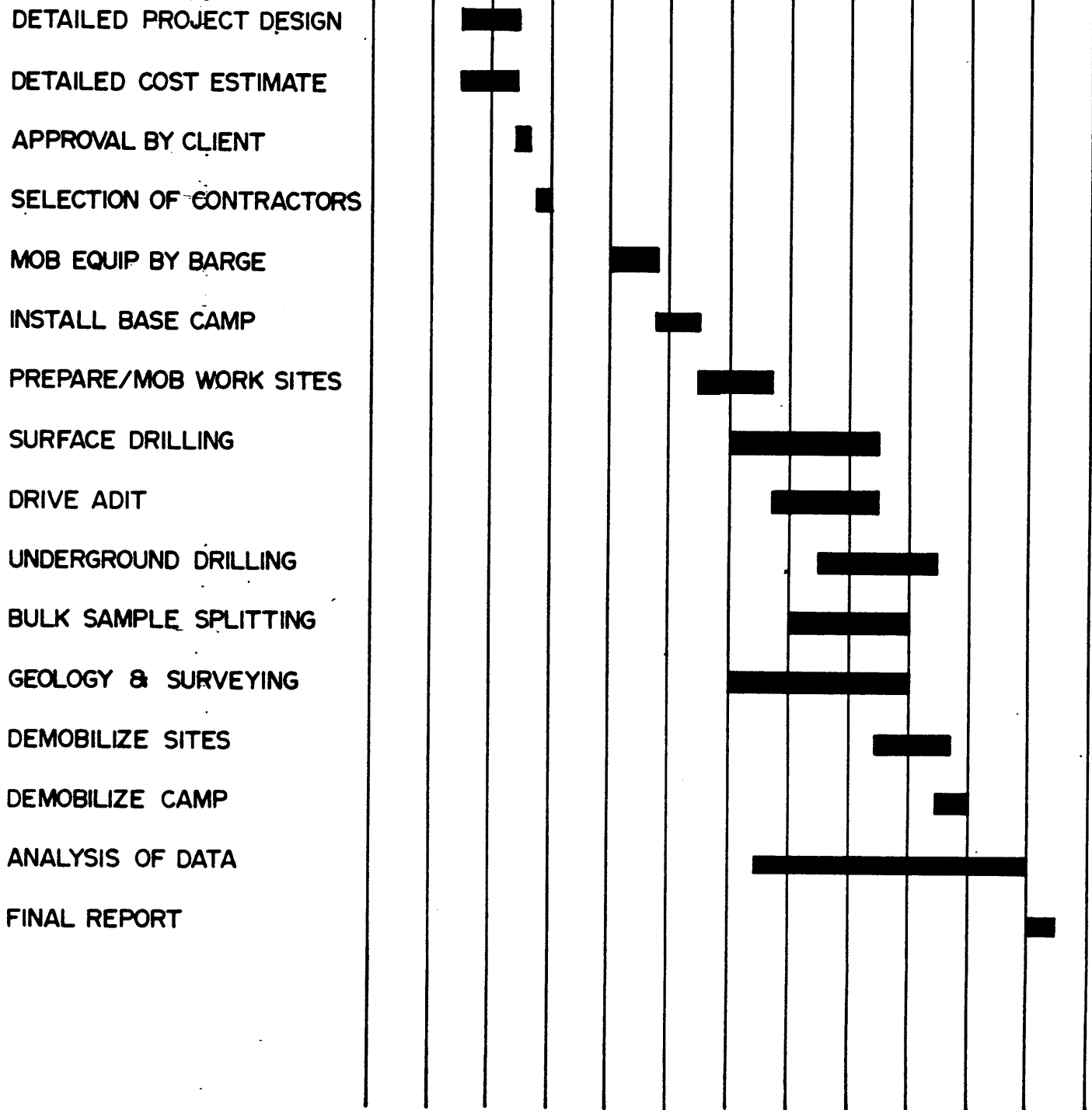
Only a short season is available for efficient surface work at Mt. Ogden, and various lead times are required for the project. A summary of the timetable is shown in Drawing 8. Key dead lines are:

- (1) February 15 - for Client approval to design the program, estimate quantities and weights, select tunnelling and drilling contractors, estimate costs, arrange for permits.
  - (2) March 15 - to firm up orders, mobilize heavy and bulky supplies and fuels to barge loading point, assign or hire most personnel, make early reconnaissance visit to work and camp sites.
  - (3) May 20 - for camp construction and site preparation crews to begin work, barge to arrive in Taku River.
  - (4) July 1 - to begin drilling and tunnelling.
- 
- 
-

1979

**ITEM**

MONTH J F M A M J J A S O N D



**DRAWING 8 - TIMETABLE FOR PROPOSED  
1979 WORK PROGRAM**

As noted in Drawing 8, surface work can continue to about mid-September, and would be terminated either by design, or by anticipation of an increasing number of lost days due to bad flying visibility. Underground drilling, it is expected, could continue until about October 15 if desired, and demobilization will take place in stages from September 15 - October 30.

The Client may choose to begin with the basic program, and scale up to the accelerated program provided the project managers have preliminary advice and that the decision is made by July 15.

### 5.3 Levels of Effort

Based on current evidence it is likely that exploration and development work on the Mt. Ogden property will proceed for several seasons. The question of the appropriate amount of work for 1979 is governed by factors other than the desire to reach a "go" or "no go" decision at the end of the season. The minimum level is set by the high cost of mobilization and access; and the maximum level by avoiding wasteful spending in attempting too much too fast.

The suggested basic program calls for 10,000 feet of drilling and 600 feet of drifting; and the accelerated program calls for 20,000 feet of drilling and 1,000 feet of drifting. These suggestions are open-ended, in that a program designed for 7,500 feet of drilling, or one for 30,000 feet of drilling, or one in-between, could be carried out in a workmanlike manner.

The open-ended nature of early stage mineral exploration also allows the management to terminate the season's program short of the arbitrary "footage" goal if a budget overrun is anticipated, owing to unexpected events, and still be quite



satisfied with the information obtained by the program.

#### 5.4 Estimated Costs

Preliminary estimates of costs for the two programs presented are shown in Table 1, and summarized:

Basic:	10,000' drilling, 600' drifting	\$1,113,000
Accelerated:	20,000' drilling, 1000' drifting	1,586,000

Individual components are shown in the table, and most have a built-in factor for unexpected events or other contingencies.

As per the discussion in the previous section, a level of effort could be selected by the Client anywhere in the range \$1-million to \$2-million.

### 6.0 ON-GOING WORK

#### 6.1 Exploration

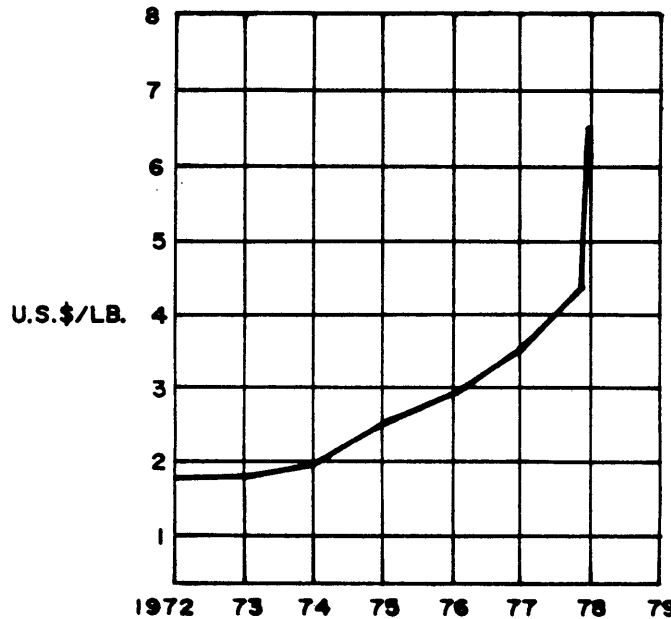
Results from 1979 will determine the course and speed of continued exploration. If results remain favourable exploration drilling and tunnelling will probably continue in 1980 and 1981, and eventually transform into closely spaced development drilling.

#### 6.2 Development

At this stage it appears clear that the only suitable means of access for production purposes would be a long haulage tunnel under the prospective deposit, and the only suitable mining method would be block caving. If these are held feasible, the location of the deposit 16 miles (26 km) from tide water would suggest a better competitive position than the extraordinarily difficult exploration access appears to imply.

6.3 Marketing

Metal market data indicate current strong demands for molybdenum, as reflected in the price history (Drawing 9). Indications are that the

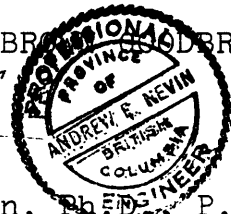


Drawing 9. - Price history of molybdenum in concentrate (sources Merrill Lynch Metals Week, Northern Miner)

demand will continue to be strong and the price firm (Butterfield and Ganshorn). Moly has been subject to the ups and downs of the steel industry in the past. In the foreseeable future its demand will be enhanced by unique alloying applications in the energy-conscious economy, including use for weight reduction in vehicles and use in pipeline steels for strength and low temperature performance.

Respectfully submitted,  
NEVIN SADLIER-BROWN GOODBRAND LTD.

Andrew E. Nevin, P.Eng.



January 15, 1979

APPENDIX 'A' - CERTIFICATE

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 have examined the Moly-Taku claims, directed recent work, and reviewed the data thereon personally.
4. I hold no direct or indirect beneficial interest in the above property nor in the securities of Omni Resources Inc. Another partner in Nevin Sadlier-Brown Goodbrand Ltd. staked certain adjoining claims, in the United States, in trust for Omni Resources Inc., which are in process of being conveyed directly to that company.

Andrew E. Nevin, P. E. Eng.



January 15, 1979

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