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C.T. RECONNAISSANCE PROGRAM

GEOLOGY AND GEOCHEMISTRY OF THE C.T. MINERAL CLAIM GROUP

Clinton Mining Division
British Columbia

Latitude: 51°08'
Longitude: 124°15'

N.T.S.: 92 N/1E
92 N/1W

For: CANADA TUNGSTEN MINING CORPORATION LIMITED
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180 - # 594 - # 8295

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ABSTRACT

This report is a result of geological field work done during the 1980 field season in the Chilko Lake area (92 N/1E, 1W). The program involved reconnaissance geological mapping and geochemical sampling. Full helicopter support was necessary for mapping and sampling because of the inaccessible terrain.

The C.T. claim area is underlain by Coast Plutonic rocks of Upper Cretaceous-Lower Tertiary age, intruding Triassic and Cretaceous volcanic and sedimentary host rocks providing a favourable environment for mineralization. On the west side of the C.T. claim area Triassic limestone crops out and is skarnified with chalcopyrite, molybdenum and scheelite mineralization occurring erratically. The Lower Cretaceous-Tertiary stock, G-III, is differentiated and a poorly developed porphyry environment exists. Gossans mineralized with pyrite, pyrrhotite and very minor chalcopyrite and molybdenite occur in the contact areas. Rock samples were taken from gossan zones around intrusive contacts, from skarns within the C.T. claims and from veins in the porphyry system. No mineralization of economic significance was found.

Both normal and reverse faulting occur in the claim area but no major fold pattern was observed. Intrusive stocks cause an overprinting of contact metamorphism which reaches amphibolite facies near the contacts with greenschist facies visible farther from the intrusive contacts.

A technique of heavy mineral sampling and concentrating employed by C.F. Mineral Resources Ltd. was used during the field program and required one 16 pound -20 mesh sample per drainage system. The various concentrates that resulted were sent for multi-element analyses. Conventional silt samples were taken to compare sensitivity. The heavy mineral sampling method was found to be more sensitive. Significant results in Au, Ag, W from the heavy mineral silts indicated specific target areas where further investigation is required.

GEOLOGY AND GEOCHEMISTRY OF THE

C.T. MINERAL CLAIM GROUP

C.T. RECONNAISSANCE PROGRAM

1.0 INTRODUCTION

Canada Tungsten Mining Corporation Limited has 100% ownership of the C.T. claim group and engaged Bema Industries Ltd. to carry out a regional geological and geochemical reconnaissance program on them. The purpose of the program was to assess the mineral potential of the claims and to delimit mineralized areas of economic significance. The work consisted of geologic mapping, heavy mineral stream sampling, conventional silt sampling, prospecting, rock sampling and assaying.

1.1 LOCATION AND ACCESS

The Chilko Lake property is located 140 miles north of Vancouver on the southwest side of Chilko Lake and on the south shore of Franklyn Arm. The C.T. claims, which cover approximately 110 kms^2, center at 51°08' Latitude and 124°15' Longitude, N.T.S. 92N/1E and 1W. See Figures 1 and 2.

Access is difficult as there are no roads in or near the property. The C.T. claim area is directly accessible by float plane from Vancouver or Williams Lake, or by plane to Chilko Wilderness Lodge at the head of Chilko Lake, thence by helicopter to the property. Alternatively access can be attained by road from Williams Lake to the Chilko Lake Wilderness Lodge or to White Saddle on Bluff Lake where a helicopter can be chartered to the property.

1.2 PROPERTY

The C.T. claim group consists of 23 claims composed of 460 units. They were located and staked in August/September, 1979. The geological and geochemical program was carried out on the following claims. See Figure 2.

CLAIM NAME	RECORD NO.	EXPIRY DATE
C.T. 1	407	September 21, 1980
C.T. 2	495	September 21, 1980
C.T. 3 - C.T. 12	408-417 inclusive	September 21, 1980
C.T. 14 - C.T. 21	418-425 inclusive	September 21, 1980
C.T. 23 - C.T. 25	426-428 inclusive	September 21, 1980

1.3 HISTORY

Previous work, apart from exploration reports, includes the regional geological mapping of the area in 1924 by V. Dolmage and in more detail by H.W. Tipper in 1968. Tipper approaches this area from a stratigraphic viewpoint, whereas Dolmage provides a more general geologic account.

Assessment reports for this area give the only detailed geological information available. In July 1971, an airborne magnetometer survey was carried out over the eastern claims area[1] for Conshell Resources Ltd. In October 1971[2], a geological Assessment Report was released on the Norfa claims for Beaumont Resources Ltd.; and in October 1972[3] the Alta claims were staked just south of Franklyn Arm. During 1978, twenty-two diamond drill holes, totalling 705 meters, were drilled for Gordon Resources Ltd. on the Daisie claims[4], which were staked in 1962.

1.4 BIBLIOGRAPHY

Dolmage, V., 1925 — Chilko Lake and Vicinity, British Columbia. Geological Survey of Canada Summary Report, 1924, Pt. A., pp 59-75.

Ministry of Energy, Mines and Petroleum Resources

1. Assessment Report 3477
2. Assessment Report 3271
3. Assessment Report 3948
4. Assessment Report 7156

Tipper, H.W., 1968 — Mesozoic and Cenozoic Geology of the Northeast Part of Mount Waddington Map area (92 N), Coast District, British Columbia. Paper 68-33, Map 5 - 1968.

1.5 PRESENT WORK

A heavy mineral geochemical program was started April 28th to April 30th by a field party of two. In the period of May 22nd to July 8th a combined geological/geochemical program was carried out with a field crew of seven, including two geologists, two assistants, two field technicians and a cook. Geological mapping and heavy mineral sampling was done with continuous helicopter support. A set of 1:5,000 orthophotographic maps with 20 meter contour spacing was used to produce a 1:25,000 geologic map. See Figure 3. Heavy mineral, conventional silt geochemical and rock sample sites are also plotted on a geologic map scale 1:25,000.

1.6 PHYSIOGRAPHY

The claim area is one of high relief ranging from 3,900 feet at lake level to 10,630 feet at Mt. Good Hope. The area of the claims is dissected by north-south "U" shaped valleys occupied by glaciers. The climate is alpine but the claim area is generally sufficiently free of snow to allow mineral exploration during the period of June to September.

2.0 GENERAL GEOLOGY

The country rock in the claim area is intruded by three plutons of Cretaceous to Tertiary age; a hornblende granodiorite stock, a biotite granodiorite stock and the main Coast Plutonic complex. These intrude metavolcanics, limestones and metasediments of varied ages but are mainly Late Triassic to Mid-Cretaceous. Unaffected by these systems are Mid to Upper Cretaceous volcaniclastics, sediments and volcanics which crop out in the northeast part of the map area. See Figure 3.

The area is dissected by normal faults in the Deschamps Valley, producing a graben type structure, and by reverse faults near Bateman Point. Folding appears to be minor and is associated with faulting and intrusive contacts.

Metamorphism ranges from upper amphibolite facies close to intrusive contacts to middle greenschist facies with increasing distance from the intrusive contacts.

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TABLE OF FORMATIONS

Era	Period or Epoch	Formation	Lithology
Cenozoic			
Mesozoic	Lower Tertiary and/or Upper Cretaceous	G-Coast Plutonic Rocks and Satellite Stocks	hornblende biotite granodiorite, quartz diorite, quartz monzonite, dioritized andesite. Units I, II and III.
	intrusive contact		
	Upper Cretaceous	F	Andesite tuff and tuff-breccia
		fault contact	
		E	siltstone, sandstone, conglomerate and trachytic tuff
	fault contact		
	Lower to Middle Cretaceous	D	reddish to purplish andesite agglomerate and tuff
	not in contact		
	Lower Cretaceous	C	andesite and basaltic volcanics, tuff and breccia and quartz biotite schist
	fault contact or unconformity(?) (not visible)		
	Triassic	A	limestone, andesite, feldspar porphyry and breccia

NOTE: Adapted from H.W. Tipper, 1968 - Mesozoic and Cenozoic Geology of the Northeast Part of Mount Waddington. Paper 68-33. Map 5 - 1968.

2.1 LITHOLOGICAL UNITS

The claim area can be divided into seven major geological units. See Table of Formations.

Unit A - Triassic Sediments & Volcanics

The oldest unit is a fault bounded slab of Upper Triassic age which crops out to the west of the C.T. claim area in the Deschamps Valley. See Figure 3.

The unit is composed of interbedded metasediments, marble and metavolcanics. Bedding, where recognizable, follows the regional northwest-southeast trend and dips steeply northeasterly. Limestone has been metamorphosed to a sugary marble and is grey, massive and is extensively faulted showing steep fault scarps on the east slopes of Deschamps Valley. The marble is jointed and in places shows compositional banding by biotite flakes. Locally the marble is skarnified to a greenish calcsilicate and/or garnet skarn of water-rich amphibolite facies. Free quartz occurs abundantly only in and around the skarn areas. Skarn is developed in a regular sequence where marble is in contact with meta-andesites. The sequence, bracketing meta-andesites, is as follows: marble, siliceous skarn, meta-andesite, quartz garnet skarn, wollastonite skarn, marble. The skarn is also developed more on one side of the meta-andesite beds than the other and is irregular and thin.

Pockets of hornfelsed metasediments, which could be disrupted beds of siltstone and mudstone, occur within the recrystallized limestone. These metasediments are similar in appearance to the meta-andesites, and it is difficult to distinguish one from another. The hornfelses are very fine grained with coarse quartz grains interlocked with plagioclase. Fine grained sericite is developed throughout the matrix. Locally hornfelses are partially skarnified, or cut by epidote and garnet skarn veins which are mineralized by chalcopyrite.

Volcanic andesites, feldspar porphyries and breccias occur within the Triassic unit, and in places are interbedded with marble. The volcanics have been metamorphosed to lower amphibolite facies. The meta-andesites contain actinolite and other mafic minerals and are described as a mafic meta-volcanics. This rock is common in rocks of Triassic and Lower Cretaceous age throughout the C.T. claim area. A felsic meta-volcanic calcsilicate breccia also occurs, but is a result of alteration. Metamorphosed feldspar porphyries occur throughout the Triassic Volcanic Unit and contain feldspar phenocrysts (1 mm to 1 cm) within an aphanitic groundmass. Metamorphosed breccia occurs locally showing a weak preferred orientation of sheet silicates. It was not possible to determine whether the breccias were flow or fault breccias, however there seems to be a spatial relationship with the existing faults. Magnetite and pyrrhotite was seen in most of the above volcanics and gives these rocks a strong magnetic quality.

Basic amphibolite dykes of possible Tertiary age intrude marble fault scarps. These dykes trend southeast-northwest and extend up to 30 m in length. They are approximately 4.5 m wide and have knife edge contacts without chill margins or development of skarn. A large diabase dyke occurs in limestone on the scarp and extends 100 m into the valley below. It intrudes both marble and metavolcanic rocks and is approximately 0.5 to 2 m in width and is offset by faults in places. Like the Tertiary dykes it too is without chill margins.

The petrographical descriptions of skarn, metabreccia, mafic metavolcanic, felsic metavolcanic, metasediment and diabase dyke are in Appendix I.

Unit C - Lower Cretaceous Volcanics

Unit C is mainly composed of pyroclastic rocks and covers the majority of the claim area. Lower Cretaceous volcanics are observed in contact with older Triassic rocks in only one area within the claim block. This contact occurs high on the east slopes of the Deschamps Valley. The contact occurs between skarnified Triassic marble and massive Lower Cretaceous volcanics and is partially obscured by a talus slope. The contact is believed to be an erosional unconformity with no lateral continuity due to perpendicular faults down dropping the contact into the valley below.

The Lower Cretaceous Volcanic Unit is composed of andesites, dacites and basalts which are associated with tuffs and tuff breccias. On the west side of the claim block this unit is composed of well bedded tuffs, fine breccias and tuffaceous siltstones. These are separated from feldspar porphyries and breccias by a major northeast trending fault. Extensive shearing of the siltstone produced a fracture cleavage along this fault. The rocks above the fault zone are well bedded and follow the northwesterly regional trend and below the fault zone the rocks are massive and uniform. Within the fault zone the rocks show chloritic and epidote alteration and the feldspars of the porphyry volcanics are replaced by quartz. It is conceivable that this part of the volcanic sequence is of Triassic age, Unit A (labelled "Possibly A" in Figures 3 and 4).

Unit C covers most of the C.T. claims in the area of Glasgow Lakes, the slopes of Mt. Good Hope and the north slopes of Farrow Creek. Volcanic rocks are fine-grained and dark grey in colour and locally exhibit some preferred orientation of feldspars. The rocks are characterized by amphibole phenocrysts and a varied silica content. Tuffs tend to be laminated and tuff breccias have fragments up to 5 cm long. On the east slope of Glasgow Lakes Valley and on the north ridges of Farrow Creek Valley this unit is in contact with Upper Cretaceous Tertiary intrusions. Hornfelsing occurs near intrusive contacts and the rocks are chloritized and dioritized with all the original structures obliterated. Quartz biotite schists also occur near these contacts and indicate stress or movement after solidification. Hydrated zones or gossans are found scattered throughout this volcanic unit but are particularly prevalent adjacent to intrusive contacts.

Unit D - Lower to Middle Cretaceous

The Lower to Middle Cretaceous Unit was not studied in detail as it is outside the main C.T. claim area, however, the unit was traversed to try to determine its relationship to units within the claim group. Its age is not definitely known but is thrust over younger rocks to the west by a reverse fault. It crops out at Bateman Point, is easily identifiable because of its purple-maroon colouring, and is composed of fine, dark grey basalt interbedded with a mafic-rich feldspar porphyry.

Unit E - Upper Cretaceous

This Upper Cretaceous Unit crops out to the northeast of Mount Good Hope and just south of Franklyn Arm. See Figure 3. This sedimentary sequence is more than 2,000 feet thick, is generally well bedded and follows the northwesterly regional trend. These rocks are reverse faulted onto a younger volcaniclastic unit to the west. The sediments are composed of coarse quartz sandstone, with interbedded siltstone and shale.

Coarse-grained pebble conglomerates crop out in beds more than 20 m thick. The conglomerates have quartz-rich sandstone and cherty clasts from 1 mm to 2 cms in a fine-grained silty matrix. The conglomerates are banded and pyrrhotized locally and show slight metamorphism to chlorite grade. There are some late porphyry dykes and a gently folded trachytic tuff of undetermined origin which is more than 20 m thick.

Unit F - Upper Cretaceous

This Upper Cretaceous volcaniclastic unit is composed of bedded fine-grained siliceous tuffs and fine-grained andesites and flow breccias. The beds are greater than 10 m in width and follow the northwesterly regional trend. Plagioclase and quartz are the main components of the tuff. Dark grey breccias with fragment size, approximately 3 cm, in a fine-grained ground-mass form in thin zones between dacitic flows. In some andesite and dacite beds, alignment of amphibole phenocrysts was observed. Large green epidote eyes up to 3 cm in diameter are also present. No significant mineralization was found in this unit.

Intrusive Rocks

The Triassic rocks are affected by intrusions of two stocks of Upper Cretaceous/Tertiary age, G-II and G-III. The two intrusions are distinguishable by composition and are separated by normal faults. The Lower Cretaceous Volcanic Unit C rocks are intruded by all three Upper Cretaceous/Tertiary plutons, G-I, G-II and G-III. Middle to Upper Cretaceous rocks are not affected by the plutons.

Unit G-I - Coast Plutonic Rocks

The main Coast Plutonic intrusion on the south side of the claims is a coarse-grained, biotite-rich hornblende granodiorite and quartz monzonite. Angular inclusions of the meta-andesite host rock occur within the pluton. The intrusive contacts are sharp except to the north of the Southgate River where the contact is gradational and abundantly faulted. Because of problems of accessibility within the C.T. claim group, the nature of the contact was studied in detail around Burnt Island on the west shore of Chilko Lake.

Unit G-II - Hornblende Granodiorite

The Upper Cretaceous/Tertiary hornblende granodiorite crops out within the Daisie claims at the head of Franklyn Arm and trends in a westerly direction. This stock is probably a part of the Coast Plutonic Complex. It is approximately 2 kms long and 1 km wide. The intrusion is a composite of hornblende granodiorite and quartz monzonite units, and is believed to underlie the Triassic rocks of Deschamps Valley. Drilling done by Allen Engineering in 1978 on Daisie 3 and 4 would substantiate this, however the intrusion was not seen in direct contact with limestones in outcrop. Metavolcanic porphyries occur near the contact zone of the stock; but no carbonates were observed. The stock is compositionally banded by mafic-rich layers of biotite and by iron oxide. In places the hornblende has a weak preferred orientation, but this is not common. A petrographic description of hornblende granodiorite is included in Appendix I.

Emplacement of hornblende granodiorite caused metamorphism of the host Triassic rocks to garnet amphibolite facies and this is best seen in the skarnified trench areas of the Daisie claims. The contact is irregular and a hybrid zone of approximately 50 metres exists where volcanic rocks are highly altered and dioritized. The aureole affects rocks up to 1 km away and beyond this the rocks appear to be greenschist facies. The intrusion is cut on its westerly side, with no obvious offset, by northeast-southwest trending normal faults which down-drop the Triassic rocks of Deschamps Valley.

Unit G-III - Biotite Granodiorite

A Cretaceous/Early Tertiary biotite granodiorite stock, 1.7 kms long and 2.2 kms wide, intrudes Lower Cretaceous Volcanic, Unit C, in the center of the main claim block. This stock is probably part of the main Coast Plutonic complex which lies to the south and within the C.T. claim block benath Mt. Good Hope. Most of the geological and geochemical investigation reported here was carried out around intrusive contacts.

The contact between the differentiated stock and Lower Cretaceous rocks, (Unit C), is sharp in some areas and gradational in others. At gradational contacts hornfelsing and dioritization occur and the intruded rock is commonly mineralized by pyrite, pyrrhotite and much lesser chalcopyrite. At the west side of the C.T. claim block the contact comes within 500 metres of the Upper Traissic limestone unconformity(?). Because of the close proximity of this contact, extensive recrystallization of limestone has occurred. This intrusion may also be wholly or in part responsible for some skarn development and chalcopyrite, molybdenite and scheelite mineralization in recrystallized limestone in the scarp above Deschamps Valley.

To the east, in the center of the stock, the granodiorite is differentiated to quartz monzonite porphyry, is sheared and contains abundant black secondary biotite. Differentiated porphyry dykes occur in three prominent sets. A diatreme dyke trending 160° is also present in this locality and contains different sizes of rounded to subrounded volcanic(?) fragments in a porphyritic groundmass. Granitic dykes appear to predate the diatreme but it is intruded along its edges by a flow banded mafic dyke. A very acidic fine-grained magma, which is a late differentiate of the granodiorite, is also associated with the diatreme. Wide-spaced quartz-filled vuggy fractures occur in prominent sets of 56 cm, 12 cm and 6 cm spacings with an east-west trend and dipping moderately southerly and northerly. Some chalcopyrite and molybdenite was found in these veins but they are not sufficiently mineralized and close-spaced to be of economic significance. See Figure 3.

2.2 STRUCTURAL GEOLOGY

The rocks of the Chilko Lake area strike in a northwest-southeast direction and dip 40^{o}NE or steeper. The attitude of bedding can be clearly seen on the ridges just south of Franklyn Arm, especially on the east side of the C.T. claim block. In the center and on the west side of the claim area the intrusive stock obliterates or disturbs this trend. Faulting on the slopes of the Deschamps Valley, where few bedding relationships were recognized, is also believed to have disturbed the regional trend.

Faulting:

Major faulting has affected the rocks of the C.T. claims in two areas. Firstly, in the Triassic limestone volcanics of the Deschamps Valley and secondly, in the Lower to Upper Cretaceous sediments and volcaniclastics cropping out to the northeast of the claim group. Triassic rocks crop out within the Deschamps Valley where a normal step-fault system exists forming a graben structure. Because the bottom of the unit cannot be seen, the estimated fault down-throw will be in excess of 600 m. Triassic limestones are visible on fault scarps on the hanging walls of the fault system. The faults trend northeasterly and are inclined to the northwest at approximately 60^{o}. Shearing related to faulting is evident throughout the rocks. Similar normal faulting is not evident elsewhere in the area. After faulting, glacial scouring formed a typical "U" shaped valley.

In the northeast part of the C.T. claim area north-northwesterly striking low angle reverse faults dipping greater than 30^{o} northeasterly are developed. These faults separate Lower Cretaceous volcanics (Unit C), Upper Cretaceous volcaniclastics (Unit F), Upper Cretaceous sediments (Unit E) and

and Lower Cretaceous volcanics (Unit D). These faults are clearly outlined by a dip slope on the ridges. See Figure 3. Because normal faulting is confined to older strata it would suggest that normal faulting and graben formation occurred in older rocks prior to overthrusting.

Folding:

Within the Triassic rocks of the Deschamps Valley, particularly in the limestones, minor folds are evident in sweat calcite veins. The folds are symmetrically overturned and have asymmetrical kinks in their limbs. The fold hinges plunge southwesterly indicating that there may be a major structure with similar orientation. However, no major fold pattern was recognized.

Unconformities:

Tipper, G.S.C. - 1968, Map 5 - 1968, indicates a fault relationship between Triassic sediments, volcanics and Lower Cretaceous volcanics on the east slope of the Deschamps Valley. A possible contact between these units exists beneath a talus slope but no major fault was observed. An alternate possibility is that there is a buried erosional unconformity which has no lateral continuity due to perpendicular faults down-dropping this unit into the Deschamps Valley.

Intrusive Structures:

Foliation in hornblende of the Upper Cretaceous/Tertiary hornblende granodiorite, Unit G-II, trends in a northwesterly direction. This stock is cut by a major normal fault just east of Nine Mile Creek. Unit G-III, biotite granodiorite, is not affected by any of the fault systems.

2.3 METAMORPHISM

There is little evidence of a regional metamorphic event in the claim block. Strong contact metamorphism and hydrothermal alteration occurs in intrusive contacts in both sedimentary and volcanic rocks. The major effect of metamorphism is obliteration of all primary structures. Near the contacts hornfelsing is extensive with development of secondary biotite pseudomorphs and replacement. See Appendix I for thin section and petrographical description.

Contact metamorphism reaches lower amphibolite facies in the sedimentary and volcanic units and in limestone horizons. Skarnification is associated with limestone horizons and was caused by hydrothermal solutions. Hydrothermal alteration, however, is not confined to skarn formation but is evident throughout the volcanic sequence by the presence of chlorite and epidote, and is strongly developed to the west of the C.T. claim block. With increasing distance from the contacts the overprinting of skarnification and hydrothermal alteration decreases. Middle to upper greenschist facies metamorphism is evident showing diagnostic actinolite, chlorite and epidote minerals.

2.4 ECONOMIC GEOLOGY

The metallic elements of economic interest are tungsten (WO_3), copper (Cu), molybdenum (MoS_2), gold (Au), silver (Ag). Tungsten (scheelite) occurs in minor amounts in skarnified limestone of Triassic age. A favourable chemical environment existed where limestone was in interaction with volcanic dykes forming interfaces permeable to hydrothermal solutions. In some areas of the Deschamps Valley molybdenite occurs within skarn in limestone fault blocks and MoS_2 approximates .08%. The molybdenite is fine grained and disseminated and forms in small discontinuous pockets. In some places within limestone mineralized skarns are associated with interbedded metamudstones. Bedding planes may have acted as channelways for mineralizing solutions. Malachite and minor chalcopyrite are commonly visible but are mainly confined to weathered surfaces. Some minor silver values were also obtained, 0.03 oz/ton and showed little continuity. Skarnification is scattered and not well developed and mineralization occurs irregularly within it. The control for mineralization in this area is the hornblende granodiorite intrusive (G-II) on the lower slopes of the Deschamps Valley and the biotite granodiorite (G-III) which intrudes the center of the claim area. These underlie the Triassic limestone and provide the energy source which initiates metasomatism by metal-bearing hydrothermal fluids.

To the east and above the Deschamps Valley some mineralization occurs within a differentiated Cretaceous stock (G-III) where a porphyry system is poorly developed and mineralization is weak. Chalcopyrite and molybdenite occur in narrow, (0.25 to 1 cm thick) wide-spaced, quartz-filled fracture systems.

Gossans are developed along Cretaceous(?)-Tertiary intrusive contacts in younger metavolcanics and metasediments. Pyrrhotite and pyrite mineralization with minor chalcopyrite and molybdenite are present. The gossans were sampled but no significant mineralization was found. See Section 3.0 SAMPLING.

H.W. Tipper, 1968 G.S.C., considers faulting the main control of mineralization. Faults would provide a plumbing mechanism and provide permeability and brecciation which increases surface area. However, a significant relationship between faulting and mineralization was not recognized in this area.

3.0 SAMPLING

Three methods of sampling were carried out by the field crew during the regional reconnaissance program.

1. Heavy mineral sampling using a new technique developed by C.F. Mineral Resources Ltd., Kelowna.

2. Conventional silt sampling for comparison with the heavy mineral samples.

3. Whole rock samples of gossan zones lying along intrusive contacts.

The principle behind the heavy mineral method is that one sample of approximately 15 pounds of -20 mesh material from the lower end of a drainage system will contain some heavy minerals from within the watershed. Sample sites have to be carefully selected. The samples are processed by screening, magnetic and heavy liquid separation in order to concentrate the heavy minerals. The concentrates were sent for multi-element analyses in order to localize possible target areas. See Appendix II.

Mr. D. Kelly, assisted by Dr. K. Northcote, started this program on April 28th to April 30th and took 19 heavy mineral samples. Eight (8) samples were collected on additional sites during the main program in May and June.

The heavy mineral concentration procedure carried out by C.F. Mineral Resources in Kelowna is as follows:

HEAVY MINERAL PROCEDURE

Method:

1) Specific Gravity Concentrated

2) 1500 ml - Heavy liquid 2.9 specific gravity
   - Heavy liquid 3.3 specific gravity

3) Concentrates are magnetically separated

   HM | HP | HN

   HN → HpN, HNN

INDEX

400 L - Very light clay-size particles

IP - Intermediate specific gravity para (weakly) magnetic

IN - Intermediate specific gravity non-magnetic

HM - Heavy magnetic

HP - Heavy paramagnetic (weakly magnetic)

HN - Heavy nonmagnetic
- HpN - Heavy weakly nonmagnetic
- HNN - Heavy very nonmagnetic

The prefix "0" before a number means that part of the sample concentrate has been analysed, i.e. 020. The number itself indicates its size fraction, i.e. 020 is -20 + 35 mesh size particles, 035 is -35 + 60 mesh size particles, 060 is -60 + 150 mesh size particles, -150 is -150 mesh size particles.

Six of the samples, C.T. 1,2,3,5,14 and 18 were concentrated using the full screening process at C.F. Mineral Resources in Kelowna. After concentration, these samples were dispatched to various laboratories for analyses. They were analysed for the following elements: tungsten (WO_3), tin (Sn), molybdenum (Mo), copper (Cu), lead (Pb), zinc (Zn), gold (Au), silver (Ag), and the pathfinder elements, arsenic (As), antimony (Sb), niobium (Nb), cerium (Ce), chromium (Cr) and fluorine (F).

Sample fractions, i.e. 060 HNN, which were found to give the most significant results were used for the remaining 21 reconnaissance samples. This cut down the number of fractions for each sample that required analysis from 17 to 12.

RESULTS

Orientation Samples

C.T. 1 was taken from the main creek in the Deschamps Valley, a drainage basin 3.5 km long and 1 km wide. The sample site is located 1 km up Deschamps Creek and the sample was taken at a boulder bar below a waterfall. The sample weighed 28 pounds. The sample site is within the skarnified region, see Figure 4, and gave a significant value of 44 ppm Mo.

C.T. 2 was also taken within Deschamps Valley, 1.25 km up a creek which enters Deschamps Creek from the east. The site was a natural hollow containing volcanic material. The sample weighed 20 pounds and is concentrate assayed 2,680 ppm scheelite (W). The C.T. 2 sample site is also located within the skarnified area. See Figure 4.

C.T. 5 was taken from a small creek draining Glasgow Lakes. The sample site is just upstream from the shore of Franklyn Arm. The site was a pebble and cobble bar and there was some difficulty in obtaining a fine fraction. The stream was fast flowing. The sample weighed 20 pounds. The concentrate assayed 060 HNN 6,100 ppb gold, 060 HNN 4,600 ppm tungsten (W), and 0150 HP 3,854 ppm silver.

Significant Reconnaissance Samples

C.T. 11 was taken from a small creek under a rock slide south of Glasgow Glacier in Farrow Creek Valley. It was difficult to get fines because the stream was small and fast flowing. The sample weighed 20 pounds. The significant result for 060 HNN was 97,000 ppb gold.

C.T. 15 was taken 50 feet off the beach from an unmapped stream, located on the west shore of Chilko Lake, 4 kilometers to the north of Burnt Island. It is a small creek containing a lot of organic litter material. This was a good site due to the steep gradient. The sample weighed 15.5 pounds. The significant results for 060 HNN was 21,000 ppb gold from the concentrate. Both reconnaissance sites, C.T. 11 and C.T. 15, occur within the Lower Cretaceous volcanic unit, Unit C.

C.T. 107 and 108 were taken from small creeks east of Deschamps Creek within the Deschamps Valley near the skarnified limestone scarps. These samples give significant results for 060 HNN greater than 2,000 ppm scheelite (W). The rocks around the above sample sites have been investigated and mineralization was observed in the Deschamps Valley. However, it was noted that this mineralization was not of economic significance. See Lithological Units section and Economic Geology section.

The rocks have also been investigated in other areas of the C.T. claim block, but sources of mineralization were not found. It is believed that glaciation may have deposited mineralized glacial debris in these valleys.

The most useful fraction throughout the heavy mineral study is the 060 HNN nonmagnetic fraction. Further investigation of heavy mineral anomalies is warranted.

Conventional Silt Samples (See Appendix III)

Conventional silt samples were taken in specific areas where heavy mineral silts were showing highs. The samples were collected and -80 mesh fractions were analysed for copper (Cu), molybdenum (Mo), tungsten (W), silver (Ag) and gold (Au) at Bondar-Clegg and Company Ltd. by standard geochemical analytical procedures. In Glasgow Creek Glasgow 1-8 silt samples were found not to be significant, where gold was less than 5 ppb and silver 0.2 ppm.

Conventional silt samples 107A and 108A showed 4 ppm tungsten and 9 ppm tungsten respectively. The molybdenum and copper were not significant. Other conventional silts taken at Nine Mile Creek were also found not to carry significant metals. These results indicate that the heavy mineral sample technique has a much higher sensitivity than the conventional silt method.

Whole Rock Sampling

A consultant from Blever Lockwood Mountain Consultants was contracted from the period of June 5th to June 17th to take whole rock samples from the gossan zones in the claim area. This was due to the inaccessible nature of the terrain. Chip samples were taken along a 5 m line on each zone to assess if any economic minerals existed. See Appendix IV, Figure 4.

Forty-two bags of samples with the prefix L were taken. The samples showed no significant results. One sample indicated 0.10% WO_3, however, sampling procedure was not controlled. The samples were analysed for molybdenum (MoS_2 %), tungsten (WO_3 %), copper (Cu %), gold (Au oz/ton), silver (Ag oz/ton). See Appendix IV.

The gossan zones, as indicated by geological reconnaissance and sampling, appear not to be sites of significant mineral potential.

4.0 CONCLUSIONS

(1) The areas of primary interest for exploration on the C.T. claims are:

a) Skarn zones containing scheelite, chalcopyrite and molybdenite mineralization associated with recrystallized limestones in Triassic rocks on the east side of the Deschamps Valley.

b) Gossan zones at contacts between Upper Cretaceous-Tertiary intrusions and Lower Cretaceous sedimentary and volcanic rocks. Pyrite, pyrrhotite and minor chalcopyrite and molybdenite were observed and sampled but were not found to be of economic interest.

c) A poorly developed porphyry environment occurs in a differentiated granodiorite stock extending westerly from Glasgow Lakes. Two prominent sets of fractures are filled by vuggy quartz veins. The veins contain some chalcopyrite and lesser molybdenite. Brecciation and fracturing was not sufficiently intense to produce sufficiently close spaced stockwork to be of economic significance.

(2) The heavy mineral sampling technique proved more sensitive than conventional silt sampling methods. Analytical results of heavy mineral concentrates indicated five areas of interest.

a) Glasgow Creek area
b) Farrow Creek Valley, south of Pluvius Peak
c) Nine Mile Creek
d) The west shore of Chilko Lake, north of Burnt Island
e) Deschamps Valley.

5.0 RECOMMENDATIONS

Areas of known mineralization on the C.T. claims sampled during the course of this study require no further investigation. However, streams showing anomalous heavy mineral concentrations should be further investigated by a combination of closer spaced heavy mineral sampling and visual prospecting.

Report by: David A Kelly

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Geologist

Approved by: K E Northcote

K.E. Northcote, Ph.D., P.Eng.
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DAK/pcl

APPENDIX I

PETROGRAPHICAL RESULTS

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Sample J-11 General

This rock is a greenish calc-silicate skarn which is very similar to sample J-1 8+00W 1+50N. The minerals are as follows:

epidote (+clinozoisite)	50-60%	(partly altered to chlorite)
calcite	~ 10-20%	
quartz	~ 20-30%	
opaques (magnetite)	~ 1-2%	
sphene	~ 1%	

Sphene and epidote/clinozoisite are subhedral to euhedral and are surrounded by other annedral quartz, calcite, and magnetite, in addition to other crystals of epidote. Sphene is fractured and somewhat altered; epidote/clinozoisite is found both as clear prismatic crystals and as apparently older,corroded crystals penetrated in places by chlorite alteration.

Quartz and calcite are present both as clear, annhedral crystals and as fibrous intergrowths of one another. These fibrous intergrowths appear to be spataily related to chlorite, and as such, may predate the formation of the euhedral minerals.

Magnetite clearly forms as interstitial grains amidst epidote blades; all are anhedral.

The overall texture is coarsely crystalline with grain sizes of 0.3-1.0mm for epidote, 0.1-0.4mm for quartz, and 0.2-1.0 mm for calcite. The rock is unfoliated.

The rock is typical of skarn mineralogy in the amphibolite facies of metamorphism with an H_2O rich fliud present.

Section # 3 + 50 W   Quartz Monzonite
3 + 00 N

Mode

Quartz	32%
Plagioclase	25%
K-spar	25%
Biotite	15%
Opaques	3%
Zircon	Minor

This rock is a fine grained (less than 1 mm) quartz monaonite. There appears to be some recrystallized quartz but there is no allignment of minerals . Alteration of minerals is limited to some sericitic plagioclase and very little chloritized biotite. The planar features in the hand specimen are mafic rich layers not seen in thin section- they are mainly biotite and iron oxides. I don't think this rock is a meta-sediment.

Quartz occurs as equigranular rounded grains of less than 1 mm and also as smaller rounded, clear grains that are likely recrystallized.

The plagioclase occurs as subhedral crystals slightly larger than the quartz crystals. An content is approximately 20% (relief = 1.54).

K-spar occurs like quartz and with a few grains showing tartan twinning (microcline).

Biotite occurs in subhedral to eugedral grains in a range of sizes to less than 1 mm. Some appears to be secondary but this is not clear. Biotite is associated with a black opaque which is probably magnetite. Radiation haloes are present in some of the grains indicating probably zircons containing a radioactive element (U,Sr). Little alteration but some chlorite is present.

Sp.# J-9 7+25 W 2+25 N Metamorphosed Breccia

Clinozoisite	25 %
Plagioclase	~15 %
Actinolite	~5 %
Sericite	30 %
Chlorite	15 %
Quartz	~5 %
Opaques	4 %

This rock has a weak direction of preferred orientation due to some of the sheet-silicates. Generally the rock is quite fine-grained with larger crystals of epidote and actinolite. The size range is from less than .1 mm. to 2 mm.

Epidote (Clinozoisite), is in aggregates of up to 2 mm. in size. It seems to be an alteration product of the plagioclase thus giving rise to the prsence of hydrothermal alteration in the rock. It is slightly pleochroic from very pale green to colourless. The crystals have a very irregular form.

Plagioclase is medium-grained from 1-2 mm. in size. The crystals have an irregular form, and are full of many inclusions. The inclusions are chlorite and opaques with sericite crystallizing around the borders. The variety of plagioclase present is Albite with an anorthite content of 0-2%.

Actinolite is present as moderatly large crystals up to 3 mm. in size. It exhibits a yellow-green, pale green to medium green pleochroism. The borders are inundated with quite a bit of chloritization.

Sericite and chlorite are not only alteration products but they also make up most of the grounndmass. They are present as small lath-shaped crystals less than 1 mm. in size, and they are randomly oriented throughout the matrix.

Quartz is present in minor amounts as small (less than 1 mm.) crystals, mostly associated with the epidote. There could also be some minor K-Feldspar associated around the quartz but a good interference figure was unobtainable.

The opaque minerals are small grains of magnetite and ilmenite with a red alteration of ilmenite which is an Fe- and Ti-oxide mixture.

This rock was originally a breccia which has now been slightly metamorphosed to the middle greenschist facies.

Sp.# J-8 8+00 W 3+75 N — Mafic Metavolcanic

Actinolite	30 %
Plagioclase	25 %
Sericite	15 %
Chlorite	15 %
K-Feldspar	~5 %
Biotite	5 %
Opaques	~5 %
Apatite	trace

This rock has a fine grained groundmass less than .5 mm. with larger porphroblasts from 1-3 mm. in size. There is a slight preferred orientation of the sheet-silicates but not a definite schistocity.

Actinolite shows a weak colourless, pale green to light blue-green pleochroism. It is present in large tabular crystals with numerous opaque and K-Feldspar inclusions. Biotite and chlorite seem to be the alteration products of the amphibole. The crystal form is both tabular and lath-shaped, and is 1-3 mm. in size.

Plagioclase is in a highly altered crystalline form and is 1-3 mm. in size. Some crystals are very highly seritized while others are quite fresh looking. On the whole the plagioclase is retrograde. From the anorthite content determination it was discovered that there are two plagioclases present. One is albite (An 5), the other is labradorite (An 55). The labradorite is likely a remnant mineral of the original volcanic parent while the albite is a result of the recent metamorphism. There is an opaque dusting and seritization of the plagioclase.

K-Feldspar is associated with the actinolite. It also has inclusions of actinolite within the crystal. The feldspar appears in crystals from 1-3 mm. in size. Quite a bit of seritization is seen around the borders of the crystals.

The opaques present are grey crystals of Magnetite/Ilmenite and yellow crystals of Pyrite, which was identified from the hand specimen and reflected light. There is a red alteration of Ilmenite present, which looks much like rutile. It is an Fe- and Ti- oxide mixture.

Biotite, chlorite and sercite occur not only as alteration products, but also as members of the matrix minerals.

This rock, which is a Mafic Metavolcanic, is a member of the Upper Greenschist, Lower Amphibolite facies.

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Sample 8+00W 1+00N J-7 : felsic metavolcanic (?)

This rock, termed a felsic metavolcanic, has been strongly altered and is now a calc-silicate rock composed of epidote, diopside, calcite and probably fine-grained quartz and feldspar. The proportions are:

epidote (including clinozoisite)	about 40%
diopside	20-30%
calcite	about 15%
plagioclase and/or quartz	10-15%
garnet	5% or less

The general texture of the rock, which suggests its 'metavolcanic' origin, consists of fragments of very fine grained rock within a more coarsely crstalline matrix. The matrix is composed of epidote, calcite, garnet and diopside and has poorly defined veins with diffuse boundaries.These fragments, which may or may not have been transported prior to their alteration, vary in size up to about 1 cm. Within the fragments, the grain size is generally less than 0.1mm and consists of diopside, epidote, and an abundant gray mineral clouded with inclusions. It is not poosible to make a positive identification of the ray mineral, but it is likely plagioclase and/or quartz.

The texture is non-foliated, and some of the crystals are subhedral to euhedral.

Calcite is commonly poikilitic enclosing crystals of diopside, epidote, etc.

Garnets are weakly birefringent, typical of altered calc-silicate rocks, and they are nearly euhedral within grains of calcite. They show sector zoning which is found in spessartine-grossularite garnets.

Although the brecciated appearance suggests the possible affiliation with metavolcanic rocks, there is little direct evidence in the thin

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Sample 8+00W 1+00N J-7 continued.

section to suggest a volcanic origin. Presently the rock is a calc-silicate 'breccia', probably more related to a skarn, at least in terms of its mineralogy. The rock has been clearly altered, whatever it origin.

The mineralogy is typical of amphibolite facies metamorphism, and the alteration of the rock during metamorphism was accompanied by the presence of an H_2O-rich fluid phase. The mineralogy is essentially identical to sample J-1 8+00W 1+50N.

Sp.# J-6 8+75 W 2+00 S Silicious Metasediment

Chlorite	30 %
Plagioclase	30 %
Kaolinite	20 %
Sericite	10 %
Quartz	~ 5 %
Clinozoisite	~ 5 %
Opaques	5 %

The rock is a very fine-grained specimen, with a weak schistosity developed through the preferred orientation of some of the sheet siicates.

Chlorite shows a pleochroism of colourless to pale green. It forms in lath-shaped crystals less than 1-2 mm. in size.

Plagioclase is present in twinned crystals up to 2 mm. in size. It exhibits a very irregular crystal outline and shows a highly altered outline and interior. Sericite and kaolinite are the alteration products. The plagioclase has a refractive index less than the balsm and an anorthite content of 1-2%, therefore the composition is that of Albite, which is to be expected in this kind of low grade assemblage.

Kaolinite has a light yellow-brown pleochroism and is closely associated with the colourless sericite. Both are present as tabular and lath-shaped crystals, less than 1 mm. in size.

Quartz is present in small irregular crystals less than 1 mm. in size and is associated in plagioclase areas.

Clinozoisite is present in lath-shaped crystals up to 1 mm. in size. Individual crystals and aggregates are present. The epidote seems to be crystallizing at the expense of the plagioclase which gives support to the idea that the rock has gone through some hydrothermal alteration.

The opaques are of two varieties, one is a deep grey to black oxide probably magnetite/ilmenite and the other is a yellow-grey sulphide. All exhibit an irregular crystal form.

The rock is one of low grade and could loosely be descibed as a schist. It is a member of the greenschist facies.

Section # 8 + 25 W
1 + 25 N

Diabase

Mode

Plagioclase	65%
Biotite	17%
K-spar	3%
Opaques	5%
Muscovite	3%
Apatite	3%
Unknown	4%

This rock is a fine grained dike rock of basaltic composition and rich in iron. There is a diabasic texture due to the plagioclase.

The plagioclase occurs in subhedral crystals of less than 1 mm length. Anorthite content is about 20% (based on relief of about 1.55). Plagioclase is altering to sericite and possibly kaolinite.

The biotite is clear to yellow green pleochroic indicating iron rich annite. The grains are approximately 1 mm long and are interlocking with plagioclase. There is an unknown mineral associated with the biotite - high relief (higher than biotite), red to blue birefringence and non-parallel extinction. The mineral appears to be altering to biotite.

The K-spar and muscovite are interstitial and are likely secondary. The opaques are mostly iron oxides (magnetite, hematite) and again show the high iron content of the rock.

Apatite occurs ubiquitously in acicular crystals less than a mm long - there is some doubt as to whether this is apatite.

Section # 6 + 00 W   Granodiorite
4 + 00 N

Mode

Plagioclase	60%
Kspar	15%
Biotite(Chlorite)	15%
Quartz	10%
Pyrite	Minor

This rock is a fine grained granodiorite - grain size approximately 1 mm. Alteration has taken place with chlorite, sericite and some kaolinite evident.

Plagioclase occurs as subhedral crystals of sizes to 1 mm in length. Some zoning is evident and composition appears to be An_{30-40} (extinction angle and relief). Pockets of sericite alteration and some kaolinite alteration are present.

K-spar and quartz occur interstitially rather than distinct crystals.

Biotite shows pale yellow to ruddy brown pleochroism and is primary. Chlorite alteration is present.

Pyrite is present in thick section and there is a trace of magnetite in thin section.

Section # 7 +00 W 5 + 50 N is a coarser grained granodiorite but has hornblende - possibly related?

Sp.#- J-3 7+00 W 5+50 N Granodiorite

Plagioclase	~ 30 %	Biotite	15 %
Hornblende	25 %		
Quartz	20 %		
Sericite	5 %		
Microcline	5 %		
Opaques	3 %		
Muscovite	trace		
Chlorite	trace		

The rock is a course grained rock with large phenocrysts (5-10 mm.), of hornblende. The rock is holocrystalline with a homogeneous distribution of the minerals.

Plagioclase forms euhedral to sub-hedral crystals up to 3 mm. in size. The anorthite content is 31%, giving it a composition of Andesine. The crystals are zoned, being more calcic-rich in the center of the crystal. The interior of the crystal is also altering out faster than the border. Most of the alteration for the Andesine is fine-grained aggregates of sericite.

Hornblende forms large phenocryts, up to 1 cm. in size. The phenocryts have a poikilitic texture, with plagioclase, biotite, and opaques as the enclosed grains within the phenocrysts. Biotite seems to be an alteration product of the hornblende. The hornblede crystals are very irregular in outline as they are being "eaten-away" by the biotite. Hornblende shows pleochroism from pale yellow-green to light green.

Quartz forms irregular grains up to 2 mm. in size. The crystals are situated interstitially between the plagioclase crystals.

Biotite forms tabular to lath shaped crystals 1-3 mm. in size. Biotite shows a light yellow-brown to medium reddish- brown pleochroism. It is an alteration product of the hornblende.

Microcline which exhibits good tartan-twinning is in irregular crystals up to 2 mm. in size. It is intermixed in the areas containing plagioclase and quartz.

Muscovite and chlorite are present in small lath-shaped crystals less than 1 mm. in size. They seem to be associated with hornblende as an alteration product.

The opaques are small irregular or tabular crystals less than 1 mm. in size. There appears to be dark grey magnetite crystals with steel grey ilmenite crystals. The ilmenite is being replaced by a reddish-brown rutile ~~and~~ which is pseudomorphed after the ilmenite.

The rock is a granodiorite which has undergone a slight alteration.

Sample J-2 10 + 00 W Porphyritic Quartz Latite
1 + 50 N

This rock is a porphyritic volcanic rock with the porphyritic crystals being quartz and feldspars. The feldspars are not easily visible in hand specium. The matrix is fine grained and crystalline and is composed of quartz, actinolite, fledspar, biotite and magnetite. The following proportions were measured.

	range	average
Phenocrysts	30-50%	
Quartz	25-35%	30%
Plagioclase	5-10%	5%
K-fledspar	20-30%	25%
Groundmass	50-70%	
Quartz	5-15%	10%
Plagioclase	0-8%	5%
Actinolite	13-18%	15%
Biotite	3-10%	5%
Magnetite (+ Hematite)	0-10%	5%

Plagioclase occurs both as phenocrysts (max. length 1½ mm) and as ground mass (mas. length 0.2 mm). All plagioclase is subhedral and is elongated parallel to albite twins (when present). Composition is An_{22} determined by Michel-Levy method (slight positive relief). Minor sericitic alteration is present.

Potassium feldspar occurs as phenocrysts up to 1½ mm. It is anhedral and highly corroded. Quartz is generally in contact with the corroded K-feldspar crystals. Moderate sericitic alteration is present.

Quartz ranges continously in size from ground mass (0.2mm) to large phenocrysts (max. size 3½ mm). Some phenocrysts

Sample J-2   10 + 00 W   Continued.
1 + 50 N

quartz phenocrysts have sharp well defined edges, however most are anhedral. The quartz in the ground mass is anhedral.

Biotite occurs as small anhedral flakes up to 0.2 mm in size. Brown in colour, no alteration present.

Actinolite occurs as fibrous euhedral crystals up to 1 mm in length. Aproximately 20% of the actinolite is subhedral. The actinolite is generally spacially associated with biotite.

Magnetite occurs as sharp euhedral crystals up to .5mm in size. Minor amounts of Hematite is present and is associated with the alteration of Magnetite.

In summary, a porphyritic volcanic rock, identified as a quartz latite on the basis of the plagioclase composition. There has been little alteration of the sample.

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Sample J-1 8+00W 1+50N : Skarn zone

This rock is a greenish calc-silicate rock composed of epidote-clinozoisite, calcite, quartz, diopside, and probably garnet in the following proportions:

epidote-clinozoisite	70-75%
calcite	15-20%
quartz	1-2%
diopside	5-10%
garnet	trace
sphene	trace

Epidote has high birefringence but is completely transitional, and sometimes zoned into clinozoisite with lower birefringence. This is common in rocks of this type. The crystals are poikilitic and enclose small grains of diopside. Grain size varies from 0.1-2mm. Epidote is generally subhedral.

Calcite occurs in grains up to 5 mm in size but more commonly is about 2mm in diameter. Calcite is in both veins and matrix. Veins make up a small percentage of this rock although they are conspicuous in thin section and hand specimen.

Quartz occurs in grains 1mm long and is both clouded with inclusions and clear. Poikilitic grains enclose diopside and epidote, and quartz is spatially associated with a few weakly birefringent garnets.

Diopside is found as very small (less than 0.1mm) grains scattered throughout the rock as inclusions in all other minerals.

The rock has formed under conditions of moderately high temperature (probably lower amphibolite facies) in the presence of an H_2O-rich

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Sample J-1 8+00W 1+50N, continued.

fluid. Simultaneous crystallization of calcite and epidote, and probably diopside is implied by the interpenetrating texture of the calcite and epidote. There is little evidence as to the nature of the original rock prior to its development of its present mineralogy. Garnet and epidote imply the presence of an H_2O-rich fliud phase.

In summary, a typical skarn or calc-silicate mineralogy and texture under amphibolite facies metamorphism.

APPENDIX II

HEAVY MINERAL RESULTS

BONDAR-CLEGG & COMPANY LTD.

130 PEMBERTON AVE., NORTH VANCOUVER, B.C. PHONE: 985-0681 TELEX: 04-352667

RECEIVED JUN 4/80 BY

Geochemical Lab Report

Extraction ____ Report No. 20 - 632

Method ____ From Bema Industries

Fraction Used ____ Date June 2, 1980

SAMPLE NO.	Total wt. of sample in grams	Sn ppm	Nb ppm		SAMPLE NO.	Total wt. of sample in grams	Sn ppm	Nb ppm	
CT 1 020 HN	5.62	45#	195#		CT 5 020 HN	9.35	18	24	
035 HM	83.10	<50	<50		035 HM	40.69	<50	<50	
HNN	6.27	100#	335#		HNN	0.60	IS	IS	
HP	31.64	< 5	34		HP	9.44	8	26	
HPN	10.00	8	22		HPN	10.76	< 5	19	
060 HM	236.88	<50	<50		060 HM	71.85	*	<50	
HNN	10.00	65	*		HNN	1.32	IS	IS	
HP	57.91	< 5	26		HP	14.34	< 5	30	
HPN	6.08	26#	87#		HPN	5.06	23#	56#	
400 L	4.98	36	9		400 L	10.18	27	8	
CT 2 020 HN	0.61	IS	IS		CT14 020 HN	1.86	IS	IS	
035 HM	3.56	*#	<50#		035 HM	12.45	8	11	
HNN	0.10	IS	IS		HNN	0.23	IS	IS	
HP	2.05	44#	< 5#		HP	4.93	20#	14#	
HPN	5.00	12	17		HPN	9.15	< 5	< 5	
060 HM	6.71	<50#	<50#		060 HM	45.23	<50	<50	
HNN	3.72	14#	54#		HNN	1.82	IS	IS	
HP	5.51	24#	14#		HP	20.92	< 5	25	
HPN	13.20	< 5	11		HPN	3.27	36#	<5#	
400 L	6.23	21	9		400 L	4.10	24	12	
CT 3 020 HN	7.80	50#	8#		CT18 020 HN	1.28	IS	IS	
035 HM	18.30	<50	*		035 HM	9.65	18	42	

035 HM	18.30	<50	*		[illegible]				
HNN	1.28	IS	IS		HNN	0.23	IS	IS	
HP	12.25	14	8		HP	12.39	15	27	
HPN	15.53	< 5	14		HPN	7.62	9	13	
060 HM	57.26	*	<50		060 HM	54.00	11	*	
HNN	13.09	25	<50		HNN	0.68	IS	IS	
HP	18.35	20	35		HP	1.85	IS	IS	
HPN	13.15	12	14		HPN	4.44	23#	20#	
400 L	6.11	< 5	10		400 L	1.33	IS	IS	

)denotes Insufficient Sample

* Interference noted
# Detected on a small sample
<50 denotes raised detection limit due to high Fe

c Mr. C. Fipke

BONDAR-CLEGG & COMPANY LTD.

130 PEMBERTON AVE., NORTH VANCOUVER, B.C. PHONE: 985-0681 TELEX: 04-352667

Geochemical Lab Report

JUN - 9 1980

Extraction

Method

Fraction Used

Report No. 20 - 643

From Bema Industries Ltd.

Date May 30, 19 80

SAMPLE NO.	F ppm	Nb ppm						REMARKS
CT 1 - 060 IN	970	22						
1 - 060 IP	-	< 5						
2 - 060 IN	130	13						
2 - 060 IP	-	8						
3 - 060 IN	230	10						
3 - 060 IP	-	5						
5 - 060 IN	520	10						
5 - 060 IP	-	7						
14 - 060 IN	150	11						
14 - 060 IP	-	7						
18 - 060 IN	370	8						
18 - 060 IP	-	7						

cc C.F. Minerals

BONDAR-CLEGG & COMPANY LTD.

130 PEMBERTON AVE., NORTH VANCOUVER, B.C. PHONE: 985-0681 TELEX: 04-352667

Geochemical Lab Report

AUG 19 1980

Extraction ____________ Report No. 20 - 1665 PROJECT; Kelly

Method ____________ From Bema Industries

Fraction Used ____________ Date August 15, 19 80

SAMPLE NO.	Cu ppm	Pb ppm	Zn ppm	Mo ppm	Ag ppm			REMARKS
CT - 101 - 60 HPN	495	9	45	9	0.2			
102	81	14	32	4	0.2			
103	234	22	40	14	0.2			
104	328	22	44	5	0.2			
105	156	10	23	13	0.2			
106	272	37	136	7	0.2			
107	100	6	23	7	0.2			
108	37	5	29	2	0.2			
								cc C. F. Minerals

BONDAR-CLEGG & COMPANY LTD.

130 PEMBERTON AVE., NORTH VANCOUVER, B.C. PHONE: 985-0681 TELEX: 04-352667

Geochemical Lab Report

Extraction ______ Report No. 20 - 1666 PROJECT: KELLY

Method ______ From Bema Industries

Fraction Used ______ Date August 15, 19 80

SAMPLE NO.	Cu ppm	Pb ppm	Zn ppm	Mo ppm	Ag ppm	W ppm	Au ppb	REMARKS
CT 101 - 60 HNN	102	12	52	9	0.5	1125	315	
102	69	39	625	4	1.5	>2000	2770	
103	84	26	56	14	0.7	>2000	1750	
104	244	37	156	5	0.3	1350	425	
105	69	19	47	13	0.6	810	310	
106	178	53	193	6	0.6	585	280	
107	49	19	32	7	0.2	>2000	345	
108	76	26	68	2	0.2	>2000	785	
								cc C. F. Minerals

BONDAR-CLEGG & COMPANY LTD.

130 PEMBERTON AVE., NORTH VANCOUVER, B.C. PHONE: 985-0681 TELEX: 04-352667

Geochemical Lab Report

Extraction

Method

Fraction Used

Report No. 20 - 828 PROJECT: CT - 400L

From Bema Industries

Date June 18, 19 80

SAMPLE NO.	Cu ppm	Mo ppm	W ppm					REMARKS
CT - 4 - 400L	126	4	4					
6	147	3	8					
7	149	3	8					
8	136	3	4					
9	103	2	3					
10	69	2	6					
12	380	18	11					
13	260	4	9					
16	186	5	6					
17	193	4	5					
19	260	7	9					

NAS

NUCLEAR ACTIVATION SERVICES

1280 MAIN STREET WEST HAMILTON ONTARIO CANADA
(416)522-5666 L8S 4K1

June 25, 1980.

Bema Industries Ltd.,
5780 - 203rd Street,
LANGLEY, B.C.,
V3A 1W3.

JUL 3 1980

Att: Dr. K. Northcote/D. Kelby

SAMPLE	Au(ppb)	As(ppm)	Sb(ppm)	W(ppm)
CT#1-020HN	30	190	5	55
035HM	X	11	1	XX
035HP	X	17	1	XX
035HPN	30	23	5	5
035HNN	X	55	3	66
060IP	X	3	1	XX
060IN	X	6	2	XX
060HM	X	4	1	XX
060HP	X	11	1	17
060HPN	X	50	6	17
060HNN	30	39	4	240
150IP	X	6	1	XX
150IN	20	7	1	XX
150HP	X	8	1	XX
150AHN	2200 } 700-800 ppb	83	5	130
150BHN	220	66	5	110
400L	30	11	1	XX
CT#2-020HN	30	22	8	17
035HM	20	22	2	17
035HP	X	39	6	9
035HPN	X	33	8	17
035HNN	X	28	5	2680
060IP	X	17	2	11
060IN	X	8	3	5
060HM	20	17	2	8
060HP	X	28	4	17
060HPN	130	22	9	17
060AHNN	1800	22	6	280
060BHNN	850	17	7	290
150IP	20	17	X	6
150IN	20	11	2	5
150HP	20	17	5	11
150HN	50	11	5	290

cont'd 2

NAS

SAMPLE	Au(ppb)	As(ppm)	Sb(ppm)	W(ppm)
CT#2-400L	X	55	3	17
CT#3-020HN	X	22	3	94
035HM	X	11	2	6
035HP	X	28	3	17
035HPN	X	22	4	2
035HNN	20	220	3	720
060IP	X	3	0.9	3
060IN	X	4	1	4
060HM	X	5	X	3
060HP	X	22	2	17
060HPN	X	22	2	5
060AHNN	60	39	0.5	83
060BHNN	X	35	0.7	80
150IP	80	3	0.8	1
150IN	20	2	0.8	1
150HP	20	11	2	5
150HN	220	35	0.5	39
400L	X	6	2	8
CT#5-020HN	50	12	4	48
035HM	20	5	1	3
035HP	X	19	5	11
035HPN	X	16	5	7
035HNN	60	6	6	3400
060IP	X	8	2	5
060IN	X	7	2	8
060HM	X	5	7	7
060HP	X	18	5	13
060HPN	X	13	6	12
060HNN	6100	23	4	4600
150IP	X	10	1	7
150IN	X	8	1	8
150HP	20	15	4	10
150HN	150	42	3	540
400L	30	21	1	16
CT#14-020HN	X	19	8	28
035HM	20	14	4	5
035HD	20	45	9	7
035HPN	X	24	9	4
035HNN	X	14	8	450
060IP	X	17	3	5
060IN	X	5	6	2
060HM	X	8	1	3
060HP	20	38	8	6

cont'd 3

NAS

SAMPLE	Au(ppb)	As(ppm)	Sb(ppm)	W(ppm)
CT#14-060HPN	30	25	9	7
060HNN	X	7	5	330
150IP	X	20	3	4
150IN	20	6	2	6
150HP	X	30	6	7
150AHN	330	15	4	150
150BHN	190	13	4	140
400L	X	8	1	1
CT#18-020HN	X	7	6	5
035HM	X	8	2	6
035HP	X	17	4	15
035HPN	X	9	5	6
035HNN	40	84	6	27
060IP	X	4	2	2
060IN	60	6	2	2
060HM	X	7	2	5
060HP	150	15	5	XX
060HPN	X	13	5	4
060HNN	X	56	4	610
150IP	X	3	1	9
150IN	X	4	2	3
150HP	X	15	4	7
150HN	240	79	3	370
CT#18-400L	X	6	0.8	5

Detection limits based on 1 gr sample =
20-50 ppb Au
1 - 5 PPM As
0.5 - 2 PPM Sb.
1-5 PPM W

cc: C. FIPKE

CERTIFIED [signature]

NAS

NUCLEAR ACTIVATION SERVICES

1280 MAIN STREET WEST HAMILTON ONTARIO CANADA
(416) 522-5666 L8S 4K1

July 11, 1980

18 1980

Bema Industries Ltd.,
5780 - 203rd St.,
LANGLEY, B.C.
V3A 1W3.

ATTENTION: DR. KEN NORTHCOTE/DAVID KELBY

SAMPLE	Au(PPb)	As(PPM)	Sb(PPM)	W(PPM)
CT4-060 HPN	XX	XX	1	15
CT4-060 HNN	40	6	1	20
CT6-060 HPN	X	66	11	16
CT6-060 HNN	3400	22	8	1100
CT7-060 HPN	X	24	5	6
CT7-060 HNN	X	170	9	150
CT8-060 HPN	X	15	2	X
CT8-060 HNN	X	130	10	62
CT9-060 HPN	X	77	5	6
CT9-060 HNN	X	230	13	190
CT10-060 HPN	X	11	3	8
CT10-060 HNN	X	88	5	730
CT11-060 HPN	30	14	3	7
CT11-060 HNN	97000	22	X	1100
CT12-060 HPM	X	11	6	7
CT12-060 HNN	20	24	8	180
CT13-060 HPN	X	67	20	37
CT13-060 HNN	X	130	6	270
CT15-060 HPN	X	27	8	4
CT15-060 HNN	21000	430	13	580
CT16-060 HPN	20	220	29	26
CT16-060 HNN	X	880	20	1700
CT17-060 HPN	80	270	28	8
CT17-060 HNN	X	190	28	440
CT19-060 HPN	40	640	7	990
CT19-060 HNN	50	60	4	8

NOTE: Detection limits for 2 gram samples

Au 20 ppb.
As 1 ppm
Sb 1 ppm Sb
W T ppm W

CERTIFIED ____________

X-RAY ASSAY LABORATORIES 17-AUG-30 REPORT 7955 REF. FILE 3854-G4 PAGE 1

SAMPLE	CR PPM	CU PPM	ZN PPM	MO PPM	AG PPM	PB PPM
CT#1-150AHM	9.5	140	36.0	7.0	1.5	34.0
CT#1-035HM	140	31.0	210	2.5	1.0	28.0
CT#1-060HM	68.0	25.0	39.0	1.0	0.5	9.5
CT#1-020HN	1300	55.0	190	10.0	7.5	200
CT#1-035HNN	400	31.0	370	13.0	18.0	160
CT#1-060HNN	410	67.0	78.0	8.0	2.5	83.0
CT#1-035HP	110	21.0	170	1.5	1.5	30.0
CT#1-060HP	72.0	20.0	29.0	1.0	0.5	19.0
CT#1-150HP	10.0	34.0	14.0	0.5	<0.5	4.5
CT#1-035HPN	610	69.0	72.0	4.0	2.0	69.0
CT#1-060HPN	860	160	160	8.5	4.5	81.0
CT#1-060IN	12.0	9.5	7.5	2.0	0.5	0.5
CT#1-150IN	13.0	54.0	26.0	1.5	0.5	2.0
CT#1-060IP	86.0	34.0	44.0	1.0	0.5	4.0
CT#1-150IP	26.0	45.0	56.0	1.5	0.5	5.5
CT#1-400L	54.0	260	130	7.5	2.0	60.0
CT#2-60AHNN	720	55.0	110	6.5	2.5	69.0
CT#2-060BHMN	670	52.0	110	6.5	2.5	66.0
CT#1-150BHN	14.0	150	29.0	8.0	1.5	38.0
CT#2-035HM	440	41.0	130	8.0	6.0	110
CT#2-060HM	360	39.0	120	8.0	6.0	92.0
CT#2-020HN	8.0	20.0	17.0	1.0	<0.5	8.5
CT#2-035HNN	23.0	15.0	21.0	<0.5	16.0	3.0
CT#2-035HP	16.0	19.0	19.0	2.5	0.5	8.5
CT#2-060HP	370	32.0	98.0	10.0	4.0	77.0
CT#2-035HPN	1000	46.0	130	11.0	2.5	80.0
CT#2-060HPN	430	19.0	90.0	7.5	1.5	43.0
CT#2-060IN	560	30.0	24.0	4.5	0.5	5.0
CT#2-060IP	75.0	110	91.0	5.0	0.5	7.5
CT#2-150IP	23.0	26.0	43.0	5.0	<0.5	3.0
CT#5-400L	65.0	190	140	14.0	1.5	33.0
CT#14-020HN	7.0	13.0	6.5	1.5	<0.5	2.5
CT#5-150HN	11.0	120	60.0	26.0	0.5	80.0
CT#14-035HNN	12.0	14.0	8.0	4.5	0.5	5.5
CT#5-060HNN	7.5	33.0	47.0	50.0	16.0	140
CT#14-035HM	190	72.0	53.0	7.5	2.5	19.0
CT#14-060HM	96.0	65.0	34.0	5.5	1.5	11.0
CT#14-035HP	440	120	44.0	14.0	3.0	25.0
CT#5-150HP	13.0	28.0	33.0	2.0	3854	28.0
CT#14-035HPN	230	52.0	27.0	6.0	2.0	12.0
CT#5-060HPN	600	78.0	47.0	9.0	3.0	28.0
CT#-060IN	460	35.0	4.0	3.0	<0.5	<0.5
CT#5-150IN	16.0	48.0	44.0	6.0	0.5	8.0
CT#14-060IP	73.0	94.0	30.0	8.5	0.5	7.5
CT#5-150IP	22.0	42.0	59.0	4.0	0.5	7.0
CT#3-400L	120	110	90.0	12.0	1.0	24.0
CT#-060BHNN	12.0	29.0	35.0	6.5	<0.5	4.0
CT#5-020HN	509	59.0	60.0	9.0	2.0	21.0
CT#3-150HN	5.5	290	65.0	56.0	3.0	54.0
CT#5-035HNN	3.5	14.0	55.0	28.0	0.5	64.0
CT#5-035HM	100	35.0	38.0	5.0	1.5	13.0
CT#5-060HM	89.0	51.0	32.0	4.0	1.5	13.0
CT#5-035HP	360	46.0	56.0	6.0	2.5	24.0
CT#5-060HP	160	43.0	42.0	6.0	2.5	16.0
CT#3-150HP	7.0	200	41.0	35.0	1.5	21.0

SAMPLE	CR PPM	CU PPM	ZN PPM	MO PPM	AG PPM	PB PPM
CT#5-035HPN	290	51.0	45.0	6.5	2.0	17.0
CT#5-060IN	9.0	15.0	25.0	4.0	0.5	2.5
CT#5-150IN	6.0	19.0	24.0	3.0	0.5	1.5
CT#5-060IP	76.0	26.0	38.0	3.0	1.0	5.5
CT#3-150IP	14.0	38.0	41.0	8.5	0.5	2.0
CT#2-400L	49.0	180	110	34.0	2.0	50.0
CT#3-060AHNN	320	220	62.0	43.0	3.5	49.0
CT#3-020HN	500	40.0	95.0	9.0	2.5	110
CT#2-150HN	6.0	46.0	28.0	4.0	0.5	8.0
CT#3-035HNN	5.5	340	74.0	29.0	3.5	54.0
CT#3-035HM	180	76.0	87.0	7.5	2.0	32.0
CT#3-060HM	38.0	62.0	23.0	4.5	1.0	10.0
CT#3-035HP	190	68.0	66.0	9.0	2.5	48.0
CT#3-060HP	210	180	38.0	17.0	2.0	23.0
CT#2-150HP	8.5	15.0	22.0	2.5	<0.5	32.0
CT#3-035HPN	200	80.0	68.0	6.0	1.5	29.0
CT#3-060HPN	200	250	79.0	52.0	1.0	49.0
CT#3-060IN	6.0	14.0	16.0	3.5	<0.5	3.5
CT#3-150IN	14.0	41.0	51.0	7.0	<0.5	6.0
CT#3-060IP	110	28.0	48.0	6.5	0.5	10.0
CT#14-400L	37.0	350	38.0	11.0	<0.5	26.0
CT#14-150AHN	6.0	90.0	25.0	20.0	<0.5	9.5
CT#14-150BHN	6.0	110	21.0	19.0	<0.5	9.5
CT#18-035HM	290	83.0	130	9.5	2.5	46.0
CT#18-020HN	4.0	110	11.0	2.5	<0.5	5.0
CT#18-035HNN	NSS	420	16.0	9.0	2.0	19.0
CT#14-060HNN	6.5	27.0	9.5	22.0	<0.5	8.5
CT#18-035HP	270	73.0	74.0	10.0	2.5	33.0
CT#14-060HP	6.0	31.0	31.0	25.0	0.5	9.0
CT#14-150HP	11.0	79.0	24.0	7.5	<0.5	11.0
CT#18-035HPN	430	94.0	45.0	8.0	0.5	23.0
CT#14-060HPN	450	150	44.0	14.0	2.0	33.0
CT#14-150IN	8.0	65.0	19.0	6.0	<0.5	8.5
CT#18-060IP	61.0	38.0	46.0	4.5	<0.5	9.5
CT#14-150IP	15.0	29.0	34.0	2.5	<0.5	6.0
CT#18-400L	110	460	180	11.0	<0.5	36.0
CT#18-060HM	NSS	47.0	39.0	6.5	<0.5	16.0
CT#18-150HN	5.0	300	93.0	12.0	<0.5	24.0
CT#18-060HNN	NSS	280	200	8.5	1.5	58.0
CT#18-060HP	87.0	35.0	155	7.3	<0.5	67.0
CT#18-150HP	3.5	42.0	19.0	1.0	<0.5	4.0
CT#18-060HPN	640	220	60.0	9.5	2.5	26.0
CT#18-060IN	6.0	26.0	14.0	6.0	<0.5	7.0
CT#18-150IN	4.5	19.0	12.0	3.5	<0.5	2.0
CT#18-150IP	8.5	110	30.0	10.0	<0.5	11.0

NSS - NOT SUFFICIENT SAMPLE

X-RAY ASSAY LABORATORIES 25-AUG-80 REPORT 8030 RE.. FILE 4116-87 PAGE 1

SAMPLE	CR PPM	CU PPM	ZN PPM	MO PPM	AG PPM	PB PPM
CT4-060 HPN	19.0	30.0	16.0	<0.5	0.5	12.0
CT4-060 HNN	5.0	18.0	11.0	1.0	0.5	23.0
CT6-060 HPN	13.0	67.0	28.0	<0.5	1.0	24.0
CT6-060 HNN	8.5	20.0	15.0	3.5	2.0	16.0
CT7-060 HPN	10.0	95.0	15.0	<0.5	0.5	11.0
CT7-060 HNN	8.0	38.0	9.5	190	1.5	19.0
CT8-060 HPN	6.0	9.5	7.0	<0.5	<0.5	11.0
CT8-060 HNN	8.0	75.0	230	80.0	3.0	400
CT9-060 HPN	10.0	120	26.0	<0.5	1.5	35.0
CT9-060 HNN	11.0	260	170	43.0	3.5	260
CT10-060 HPN	11.0	62.0	16.0	<0.5	1.0	15.0
CT10-060 HNN	4.5	40.0	140	<0.5	3.0	470
CT11-060 HPN	6.5	47.0	16.0	<0.5	<0.5	10.0
CT11-060 HNN	7.5	100	32.0	<0.5	2.5	43.0
CT12-060 HPN	6.0	44.0	29.0	<0.5	0.5	8.0
CT12-060 HNN	4.5	1100	110	48.0	1.0	200
CT13-060 HPN	9.0	69.0	35.0	<0.5	1.0	11.0
CT13-060 HNN	4.0	120	130	11.0	6.0	44.0
CT15-060 HPN	9.0	11.0	18.0	<0.5	0.5	11.0
CT15-060 HNN	9.5	33.0	47.0	<0.5	3.0	22.0
CT16-060 HPN	15.0	2700	300	16.0	6.0	63.0
CT16-060 HNN	15.0	430	120	8.5	2.5	220
CT17-060 HPN	25.0	81.0	130	2.5	4.0	500
CT17-060 HNN	3.5	10.0	10.0	<0.5	1.0	61.0
CT19-060 HPN	4.0	220	100	36.0	2.5	51.0
CT19-060 HNN	9.0	380	29.0	7.0	1.0	16.0

? 2 8 1980

SKYLINE LABS, INC.
SPECIALISTS IN EXPLORATION GEOCHEMISTRY
12090 WEST 50TH PLACE • WHEAT RIDGE, COLORADO 80033 • TEL.: (303) 424-7718

REPORT OF ANALYSIS

JOB NO. MYW 003
JUNE 11, 1980

Buna Industries
Attn: Dr. Ken E. Northcote
5780-203rd Street
Langley, British Columbia
Canada V3A 1W3

Analysis of 17 Pulp Samples

ITEM	SAMPLE NUMBER	Mo (ppm)
1	CT 01-060 HNN	44.
2	CT 02-060 HNN	8.
3	CT 03-060 HNN	24.
4	CT 05-060 HNN	110.
5	CT 14-060 HNN	16.
6	CT 01-060 HPN	16.
7	CT 02-060 HPN	4.
8	CT 03-060 HPN	36.
9	CT 05-060 HPN	8.
10	CT 14-060 HPN	8.
11	CT 18-060 HPN	4.
12	CT 01-060 IP	4.
13	CT 02-060 IP	8.
14	CT 03-060 IP	4.
15	CT 05-060 IP	4.
16	CT 14-060 IP	16.
17	CT 18-060 IP	4.

Gordon H. VanSickle
Manager

cc: Chuck Fipke

APPENDIX III

CONVENTIONAL SILT RESULTS

BONDAR-CLEGG & COMPANY LTD.

130 PEMBERTON AVE., NORTH VANCOUVER, B.C. PHONE: 985-0681 TELEX: 04-352667

Geochemical Lab Report

xtraction ______________________ Report No. 20 - 1244 PROJECT: 80-08 KELLY

ıethod ______________________ From Bem. Industries

raction Used ______________________ Date July 21, 19 80

SAMPLE NO.	Cu ppm	Mo ppm	W ppm		SAMPLE NO.	Cu ppm	Mo ppm	W ppm	
CT 101 A	36	< 1	4		GLASGOW # 2	122	13	33	
102	36	1	2		3	156	8	40	
103	30	3	6		4	102	69	43	
104	42	< 1	3		5	82	13	23	
105	33	7	4		6	69	10	12	
106	4	< 1	2		7	58	10	10	
107	23	1	4		8	62	6	11	
108 #1	199	10	9		GLSD	29	2	3	
108 #2	53	3	4		MDA	57	9	6	
109	73	3	9						
110	112	6	6						
111	66	2	4						
112	1260	3	6						
113	645	< 1	4						
114	605	3	4						
115	57	5	6						
117	100	10	8						
118	80	7	8						
119	85	12	7						
120	68	10	60						
121	60	6	5						
122	55	7	9						
123	277	5	6						

125	277	5	6						
126	42	4	5						
127	42	3	4						
128	46	2	6						
129	77	2	12						
130	51	1	4						
131	52	2	4						
GLASGOW #1	98	8	6						

BONDAR-CLEGG & COMPANY LTD.

130 PEMBERTON AVE., NORTH VANCOUVER, B.C. PHONE: 985-0681 TELEX 04-352667

Geochemical Lab Report

SEP 16 1980

Extraction

Method

Fraction Used

Report No. 20 - 1715 PROJECT: 80-08 KELLY

From Bema Industries

Date September 11 19 80

SAMPLE NO.	Ag ppm	Au ppb			SAMPLE NO.				
GLASGOW 1	0.2	< 5							
2	0.2	< 5							
3	0.2	5							
4	0.2	<25*							
5	0.2	5							
6	0.2	< 5							
7	0.2	< 5							
8	0.2	< 5							
GLS - D	0.2	< 5							

* Detected on a small sample

APPENDIX V

STATEMENT OF QUALIFICATIONS

STATEMENT OF QUALIFICATIONS

I, DAVID A. KELLY OF BEMA INDUSTRIES LTD. DO HEREBY CERTIFY THAT:

1. I am a graduate of the University of Dublin (Trinity College), Ireland, with a B.A.mod. Honours Geology, 1979.

2. Since graduating my experience includes a position as a laboratory technician processing geochemical samples and as a geologist with Cominco Europe Ltd.

3. I joined Bema Industries Ltd. in early 1980 as a geologist.

4. I am a registered member of the Irish Geological Association.

5. I personally examined the C.T. 1-23 claim group from April 28th, 1980 to July 4th, 1980 and am the author of the accompanying report.

Signed: D. A. Kelly.

D.A. Kelly, B.A.mod.
Geologist

Date: October 17, 1980

QUALIFICATIONS OF FIELD STAFF

Ken Hansen has had five years experience in mining exploration through employment with Stokes Exploration Management Company, Glen Whyte Geophysics Consultant and Dupont. He has been with Bema Industries Ltd. for 1½ years. His experience includes linecutting, soil and silt sampling, staking, camp construction, trenching and sampling. He has also worked as navigator and sample crew leader on G.S.C.-MEMPR regional geochemistry surveys.

Robert H. Rainbird has graduated with a B.Sc. Honours Geology from Carleton University in 1980. His experience since 1978 includes summer seasons with the Ontario Ministry of Natural Resources, Ontario Geological Survey and Gulf Canada. He joined Bema Industries Ltd. as a geologist in 1980.

APPENDIX IV

WHOLE ROCK RESULTS

Rossbacher Laboratory Ltd.
GEOCHEMICAL ANALYSTS & ASSAYERS

2225 S. SPRINGER AVE.,
BURNABY, B.C.
CANADA
TELEPHONE: 299-6910
AREA CODE: 604

JUL [illegible] 1980

ASSAY WORKSHEET

CLIENT : BEMA INDUSTRIES LTD
5780 203 RD STREET
LANGLEY, B.C. V3A 1W3

PROJECT : PO # 0880

Project: 80:08
CERTIFICATE: 80243-1
INVOICE NO. :
DATE RECEIVED:
DATE ANALYZED: JULY 2, 1980

No.	Sample	% Tot Mo as MoS2	% WO3	% Cu	oz/t Au	oz/t Ag	No.
01	L2 - 1	0.002	0.04	0.01	<0.001	0.01	01
02	2	0.001	0.06	<0.01	<0.001	0.02	02
03	3	0.001	0.05	<0.01	<0.001	0.01	03
04	4	0.001	0.06	<0.01			04
05	5	0.001	0.05	<0.01			05
06	L3 - 1	0.002	0.06	0.01			06
07	2	0.002	0.05	0.01	<0.001	0.02	07
08	L4 - 1	0.001	0.07	<0.01			08
09	2	0.001	0.10	<0.01			09
10	L5 - 1	0.001	0.02	0.01	0.001	0.02	10
11	2	0.004	0.01	0.01			11
12	L6 - 1	0.001	0.04	0.01	<0.001	0.01	12
13	2	0.001	0.04	0.01	<0.001	0.01	13
14	3	0.001	0.04	0.01			14
15	L7 - 1	0.003	0.06	0.02	0.004	0.02	15
16	2	0.008	0.02	0.02			16
17	3	0.006	0.04	0.05	<0.001	0.03	17
18	L8 - 1	0.001	0.04	0.01			18
19	2	0.001	0.06	0.01	<0.001	0.01	19
20	3	0.001	0.06	<0.01	<0.001	0.01	20
21	L9 - 1	0.001	0.04	0.01	<0.001	0.01	21
22	2	0.001	0.04	0.01			22
23	3	0.001	0.04	<0.01	<0.001	0.01	23
24	4	0.001	0.04	0.01			24
25	L10 - 1	0.001	0.04	0.01	<0.001	0.01	25
26	2	0.001	0.02	<0.01			26
27	3	0.001	0.06	0.01	<0.001	0.01	27
28	L11 - 1	0.001	0.04	0.01	<0.001	0.01	28
29	2	0.001	0.05	0.01			29
30	L12 - 1	0.001	0.10	<0.01			30
31	2	0.001	0.06	0.01	<0.001	0.02	31
32	L13 - 1	0.001	0.05	<0.01			32
33	2	0.001	0.01	<0.01	<0.001	0.02	33
34	3	0.001	0.03	<0.01			34
35	4	0.001	0.04	<0.01	<0.001	0.02	35
36	L14 - 1	0.001	0.01	<0.01			36
37	L15 - 1	0.001	0.02	0.01			37
38	L16 - 1	0.001	0.02	0.01	<0.001	0.01	38
39	2	0.001	0.02	<0.01	<0.001	0.02	39

Rossbacher Laboratory Ltd.

GEOCHEMICAL ANALYSTS & ASSAYERS

2225 S. SPRINGER AVE.,
BURNABY, B.C.
CANADA
TELEPHONE: 299-6910
AREA CODE: 604

ASSAY WORKSHEET

CLIENT : BEMA INDUSTRIES LTD
5780 203rd STREET
LANGLEY, B.C. V3A 1W3

PROJECT : PO # 0880

CERTIFICATE: 80243-2
INVOICE NO. :
DATE RECEIVED:
DATE ANALYZED: JULY 2, 1980

No.	Sample	TOT % Mo as MoS2	% WO3	% Cu	oz/t Au	oz/t Ag	No.
01	L17-2	0.001	0.04	0.01			01
02	L18-1	0.002	0.02	0.01			02
03							03
04							04
05							05
06							06
07							07
08							08
09							09
10							10
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35							35
36							36
37							37
38							38
39							39

APPENDIX VI

COST STATEMENT

STATEMENT OF QUALIFICATIONS

I, KENNETH E. NORTHCOTE OF BEMA INDUSTRIES LTD. DO HEREBY CERTIFY THAT:

1. I am a graduate of the University of British Columbia and hold the following degrees:

   B.A. Honours Geology, 1953

   M.Sc. Geology, 1961

   Ph.D. Geology, 1968

2. I am a member of the Association of Professional Engineers of the Province of British Columbia.

3. I have practised as a professional Geologist since 1953, gaining a wide variety of geological experience with petroleum companies, mining companies and Federal and Provincial governments.

4. I have no interest, direct or indirect, in the property or shares of Canada Tungsten Mining Corporation Limited, nor do I expect to receive any such interest.

5. I have supervised the 1980 summer field program on the C.T. claim group and approved the accompanying report for submittal for assessment purposes.

Signed: ______________________

K.E. Northcote, Ph.D., P.Eng.
Geological Supervisor

PROFESSIONAL ENGINEER — PROVINCE OF BRITISH COLUMBIA — K.E. NORTHCOTE

Date: October 17, 1980

STATEMENT OF EXPENDITURES

C.T. Mineral Claims
May 22 - July 8, 1980

PERSONNEL	Dates Worked	
K.E. Northcote, Ph.D. Geological Supervisor	April 28 - June 22, 11 days @ $375.00/day	$ 4,125.00
D.A. Kelly, B.Sc. Geologist	April 28 - April 30, 3 days @ $110.00/day	330.00
	May 1 - July 4, 25 days @ $175.00/day	4,375.00
K. Hansen Field Technician #1	May 21 - June 28, 9 days @ $150.00/day	1,350.00
R. Rainbird Senior Geological Assist.	May 22 - July 8, 29 days @ $110.00/day	3,190.00
P. Adams Geological Assist. #1	May 22 - July 8, 21 days @ $95.00/day	1,995.00
D. Powell Field Technician #2	May 21 - July 4, 9 days @ $110.00/day	990.00
S. Butler Geological Assist. #3	May 21 - July 8, 20 days @ $85.00/day	1,700.00
P. Newton Cook	May 22 - July 8, 31 days @ $95.00/day	2,945.00
		$21,000.00

CONSULTANTS		
Blever-Lockwood Mountain Consultants	June 5 - June 17, 13 days @ $165.00/day	$ 2,171.55
C.F. Mineral Resources Ltd. (C. Fipke, Geochemistry Specialist)	April 24 1 day @ $300.00	300.00
		$ 2,471.59

FOOD AND ACCOMMODATION

Meals	April 24 - July 4	$ 54.72
Groceries	May 21 - July 28, 8 men @ $10.11/day/man	1,597.38
Lodging	April 23 - June 22, 8 men @ $35.20/day	385.88
		$ 2,037.98

SUPPLIES

Camp supplies	May 22 - July 8, 8 man camp	$ 158.85
Geochemical supplies	May 22 - July 8,	430.49
Geological supplies Maps, equipment, etc.	May 22 - July 8,	350.97
		$ 940.31

TRANSPORTATION

Fixed Wing	April 28 - April 30, 500 miles @ $1.50/mile	$ 337.50
	April 28 - April 30, 420 miles @ $1.35/mile	264.15
	May 2, 380 miles @ $3.15/mile	538.65
	June 6, 240 miles @ $1.45/mile	156.60
	July 8, 765 miles @ $1.90/mile	654.07
		$ 1,950.97
4x4 Crew cab	May 22 - June 22 $925.00/month	$ 969.30
Maintenance/Operation	May 22 - June 22	201.05
		$ 1,170.35

Helicopter	April 29 - June 19 82.9 hours @ $350.00/hour (Plus fuel)	$14,346.90
	June 20 - July 4, 16.5 hours @ $325.00/hour (Plus fuel)	2,673.00
		$17,019.90

GEOLOGICAL

McElhanney Surveying & Engineering Ltd.	Pencil manuscript mapping	$17,725.00
	Orthophotomapping	14,094.00
		$31,819.00
Vancouver Petrographics	August 22 9 thin sections @ $5.00/ea	$ 43.00
	9 reject slices @ $.75/ea	6.75
	9 rock feldspar @ $.75/ea	6.75
	Petrographic report	261.00
		$ 319.50

ASSAY AND GEOCHEMICAL

Bondar-Clegg & Co.	8 silt samples for Cu, Pb, Zn, Mo, Ag @ $4.65	$ 41.20
	39 silt samples for Cu, Mo @ $2.40	93.60
	39 silt samples for WO_3 @ $3.75	146.25
	11 silt samples for Cu, Mo @ $2.40	26.40
	11 silt samples for WO_3 @ $3.75	41.25
	12 silt samples for Nb @ $3.50	42.00
	6 silt samples for F @ $3.75	22.50
	47 silt samples for Sn, Nb @ $6.25	347.05

X-Ray & Assay Labs	26 silt samples for Cr @ $3.00	$ 78.00
	26 silt samples for Cu, Zn, Mo, Ag, Pb @ $.50	91.00
	97 silt samples for Cr @ $.50	48.50
	100 silt samples for Cu, Zn, Mo, Ag, Pb @ $.50	350.00
Skyline Labs Inc.	17 silt samples for Mo @ $2.00	39.18
Rossbacher Labs. Ltd.	42 silt samples for Cu, Mo @ $9.50	399.00
	42 silt samples for WO_3 @ $8.00	336.00
	22 silt samples for Au/Ag @ $9.00	198.00
Nuclear Activation Services	26 silt samples for W, As, Sb, Au by INAA @ $6.50	169.00
	100 silt samples for Au, As, Sb, W by INAA @ $6.50	650.00
C.F. Mineral Resources	27 heavy mineral samples	
	- 6 orientation @ $125.00	750.00
	- 21 reconnaissance @ $43.00	903.00
		$ 4,825.68

FREIGHT

May 24 - July 2	$ 185.82

RENTALS

8 man camp 41 days @ $70.00/day; May 21 - June 30	$ 1,291.50
Survey equipment - 5½ weeks @ $250.00/week	618.75
Radio telephone - 5½ weeks @$50.00/week	123.75
	$ 2,034.00

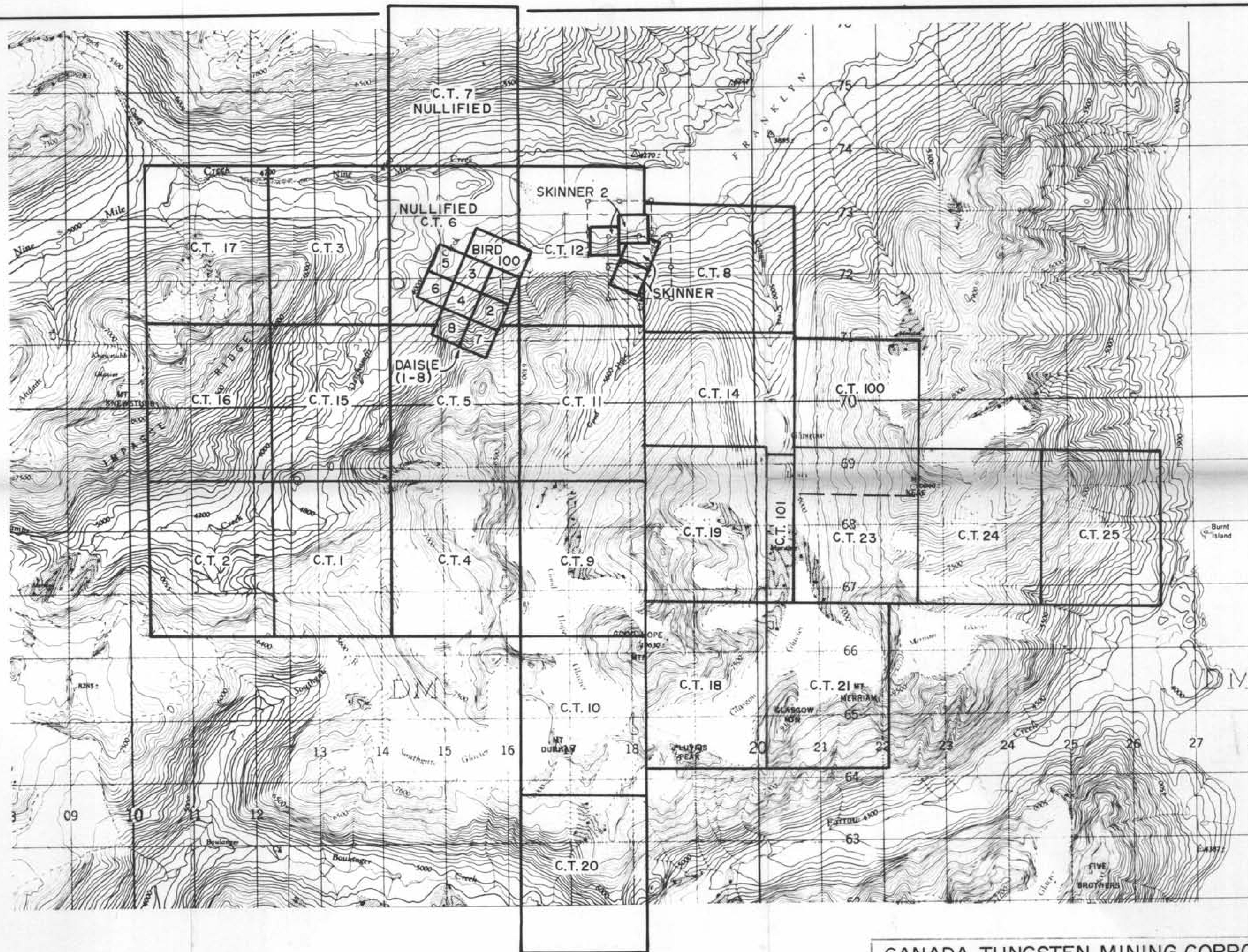
COMMUNICATIONS

Walkie Talkies - May	$	243.36
Telephone - April - July		185.56
	$	428.92

REPORT PREPARATION

Personnel time, drafting, etc.	$ 5,196.28

TOTAL STATEMENT OF EXPENDITURES	$91,400.30



NOTE- C.T. claim locations are in agreement with MEMPR claim maps 92 N/1E & 1W.

Scale 0 1000 2000 3000 4000 5000 Metres

CANADA TUNGSTEN MINING CORPORATION

CHILKO LAKE

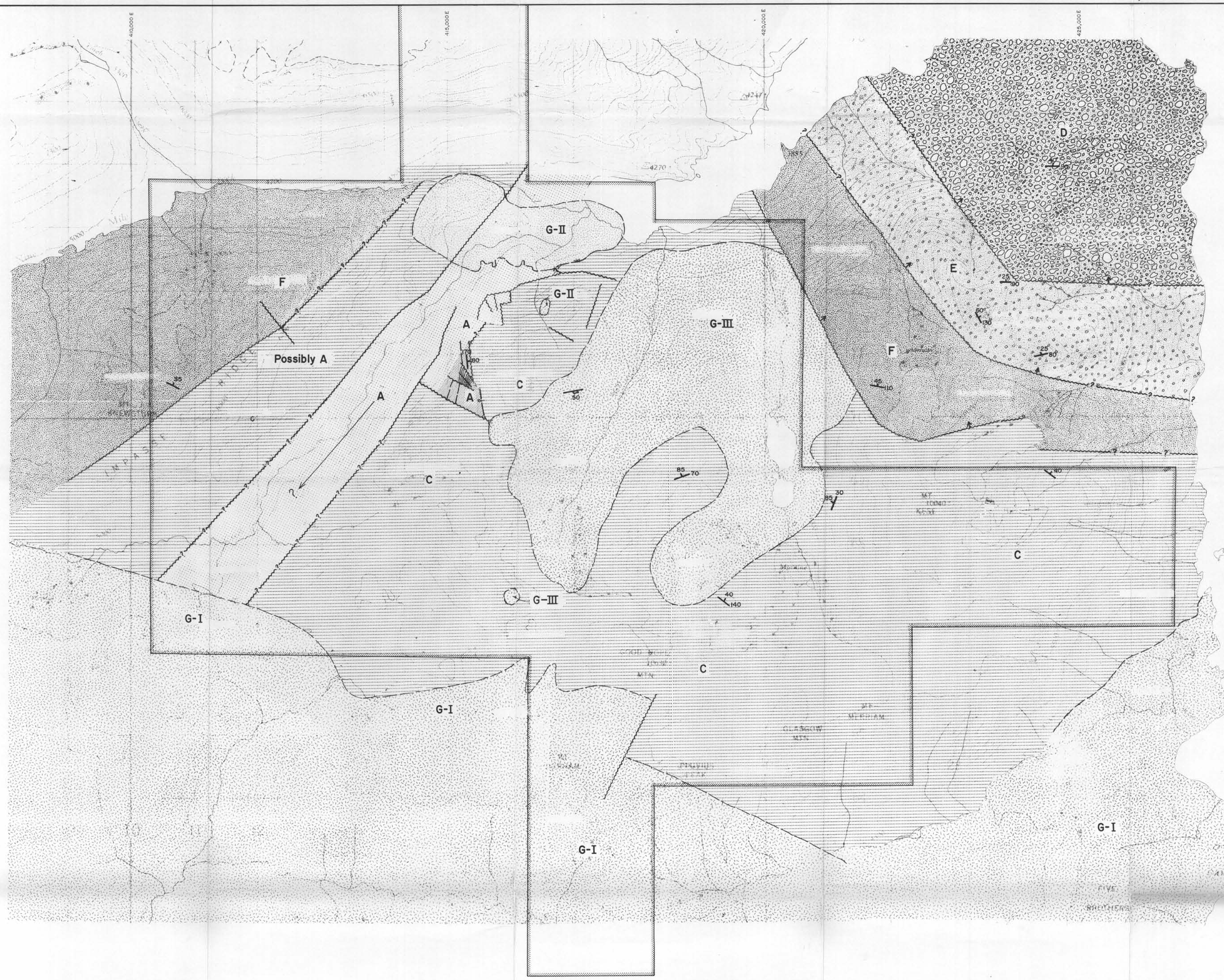
1980 GEOLOGICAL RECONNAISSANCE PROGRAMME

C.T. CLAIM MAP

DATE DECEMBER 1980	JOB NO 80-08	FIG NO 2
DRAWN BY shm		
REVISED BY	SCALE 1 : 50,000 METRES	

BEMA INDUSTRIES LTD.

CEN-TEC # 5069



LEGEND

UPPER CRETACEOUS

- F — Tuff, tuff breccia, andesite, volcaniclastics
- E — Siltstone, sandstone, conglomerate, minor trachyte

LOWER TO MIDDLE CRETACEOUS

- D — Reddish to purplish andesite and agglomerate

LOWER CRETACEOUS

- C — Andesitic and basaltic volcanics, tuff and breccia, hybridize plutonics at contacts

TRIASSIC

- A — Limestone and breccia, metavolcanic andesite, feldspar porphyry and breccia.

METAMORPHIC AND PLUTONIC ROCKS

CRETACEOUS AND/OR EARLY TERTIARY

- I G — Coast Plutonic Rocks
biotite granodiorite, quartz diorite, quartz monzonite
- II G — Hornblende granodiorite, quartz monzonite
minor trachyte
- III G — Hybrid Plutonic and Hornfelsic
dioritized andesite, biotite quartzite schist, altered granodiorite

SYMBOLS

- Fault (arrow indicates dip)
- Geological boundary
- 50 / 90 Bedding (with strike and dip)
- 50 Vein

Scale 0 500 1000 1500 2000 2500 Metres

MINERAL RESOURCES BRANCH
ASSESSMENT REPORT
8295

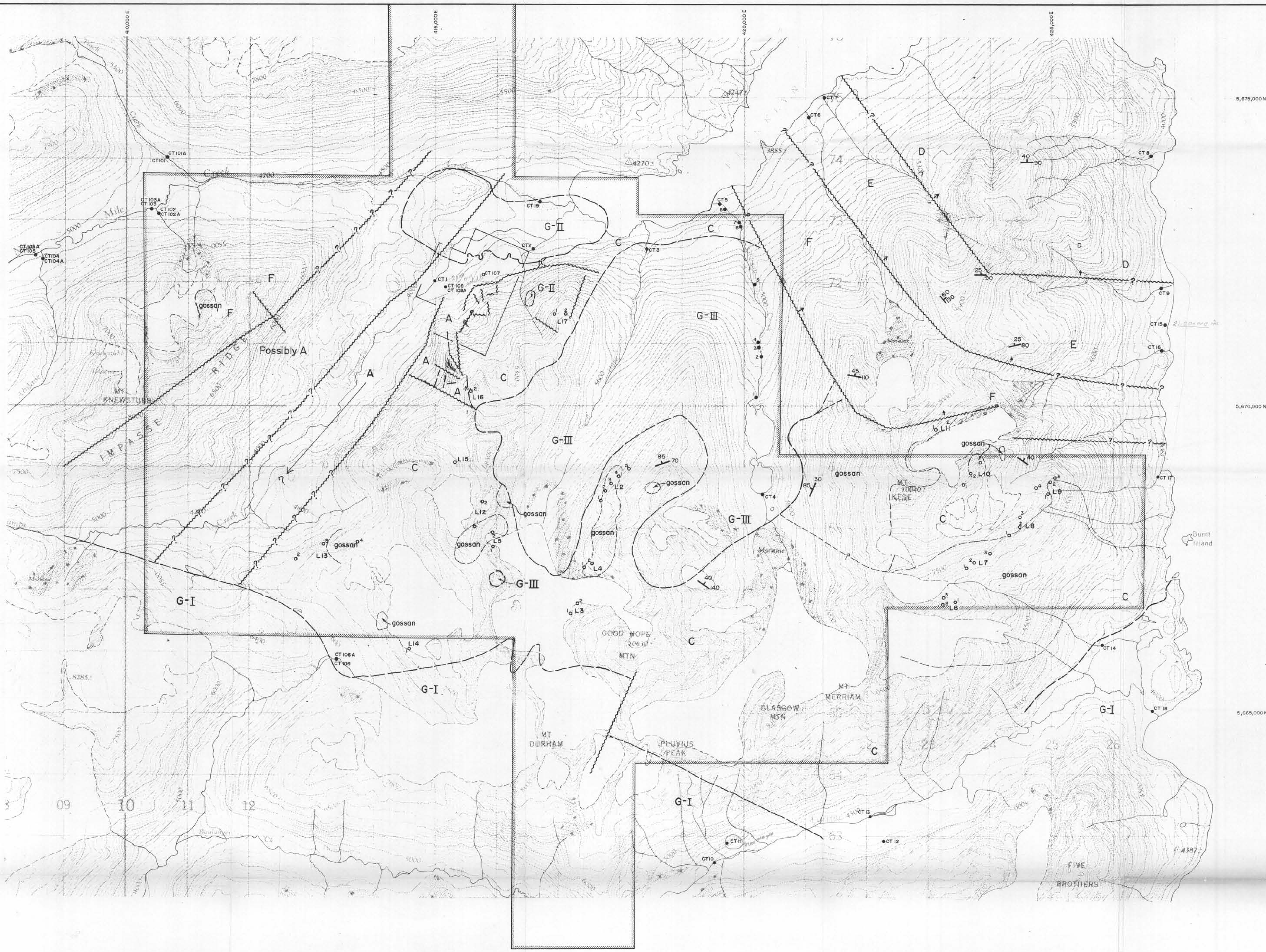
CANADA TUNGSTEN MINING CORPORATION
CHILKO LAKE
1980 GEOLOGICAL RECONNAISSANCE PROGRAMME

GEOLOGY

DATE: OCTOBER, 1980.	JOB NO 80-08	FIG. NO 3
DRAWN BY: shm		
REVISED BY	SCALE 1 : 25,000	METRES

BEMA INDUSTRIES LTD.

CEN-TEC 5069



SYMBOLS

	Fault (arrow indicates dip)
	Geological boundary
50 90	Bedding (with strike and dip)
L	Gossan
o	Rock sample sites
•	Silt sample sites

CANADA TUNGSTEN MINING CORPORATION
CHILKO LAKE
1980 GEOLOGICAL RECONNAISSANCE PROGRAMME

GEOLOGY & SAMPLE SITES

Scale 0 500 1000 1500 2000 2500 Metres

DATE OCTOBER, 1980	JOB NO. 80-08	FIG. NO. 4
DRAWN BY shm		
REVISED BY	SCALE 1 : 25,000	METRES

BEMA INDUSTRIES LTD.

CEN-TEC # 5069