PRELIMINARY PROSPECTING, GEOLOGICAL AND GEOCHEMICAL REPORT

MACK CLAIM GROUP
MACK 1 CLAIM

SKEENA MINING DIVISION
NTS 104B 8W, 1W,
LATITUDE 56° 18'
LONGITUDE 130° 19'

OWNER: E. J. Horne
OPERATOR: Terracon Geotechnique Ltd./Bayaura Mines Ltd.
AUTHORS: E. J. Horne, P.Geol.
R. H. Dean
DATE SUBMITTED: December 13, 1990

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1.0 INTRODUCTION

1.1 Summary

This prospecting, geological and geochemical report is submitted to the Department of Energy, Mines, and Petroleum Resources of British Columbia for application of assessment work credit for work preformed on the Mack Group and Mack 1 mineral claims.

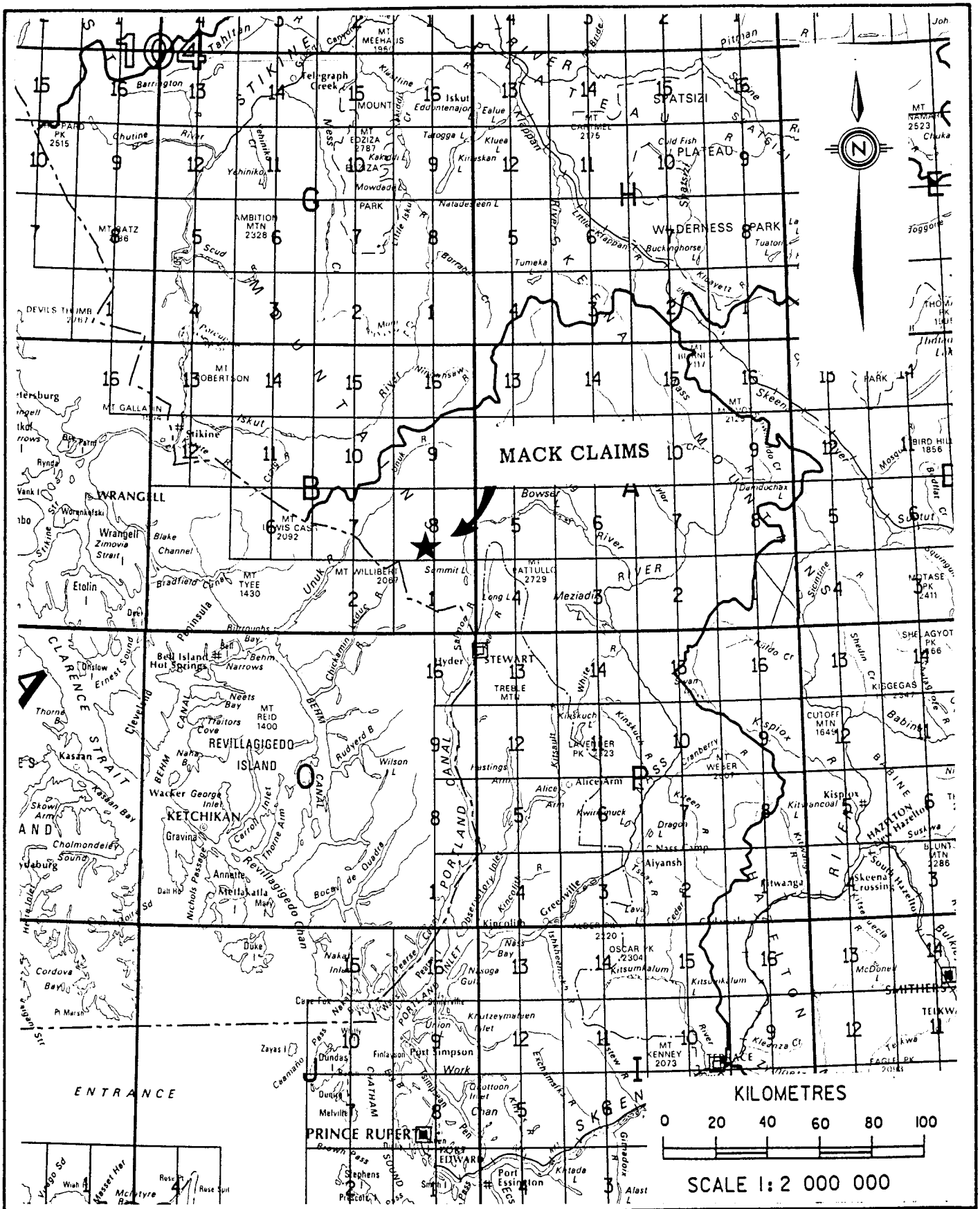
Work on the above mentioned claims was done by E. Horne and R. Dean (authors) from August 23 to September 5, 1990, and by T. Heinricks on September 13 and 14, 1990. The work consisted of general geological reconnaissance mapping and prospecting, rock and silt geochemical sampling and minor petrographic thin section work, to establish background data and to confirm an exploration potential for the property. This is a first anniversary report for these mineral claims (108 units).

The field program and subsequent rock geochemical analysis has established low grade gold and silver mineralization occurring in outcropping, narrow quartz veins. Higher grade precious metal values have been detected in float rock of a likely near source origin. The existence of shear structures, proximity of intrusives and favourable volcanic host rock of the Hazelton Group indicate the property has very good exploration potential for which further work is recommended.

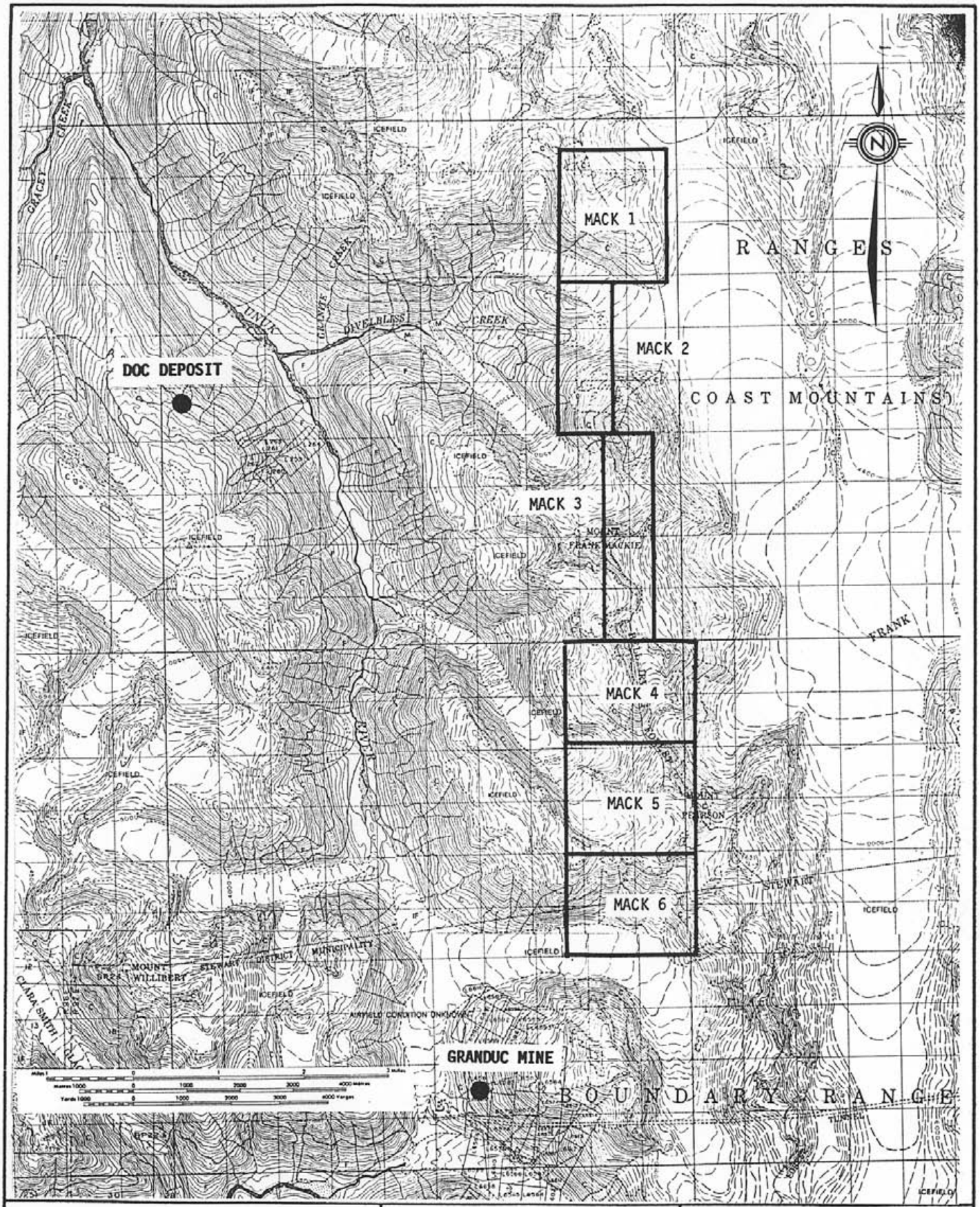
1.2 Location and Access

The Mack Claim Group is located in Northwestern British Columbia, approximately 45 kilometres north - northwest of Stewart, British Columbia (Figures 1 and 2). The property lies mostly on NTS sheet 104B/8W, east of the South Unuk River, and along the western margin of the Frank Mackie icefield (Figure 3). The southern margin of

PRELIMINARY PROSPECTING GEOLOGICAL AND GEOCHEMICAL REPORT	**Mack Claim Group NTS 104 B/8**	**Location Map (Province of BC)**
		Figure 1



PRELIMINARY PROSPECTING GEOLOGICAL AND GEOCHEMICAL REPORT	**Mack Claim Group NTS 104 B/8**	**Regional Location Map**
	Scale 1:2,000,000	**Figure 2**



PRELIMINARY PROSPECTING GEOLOGICAL AND GEOCHEMICAL REPORT	**Mack Claim Group NTS 104 B/8**	**Claim Location Map**
	Scale 1:100,000	**Figure 3**

the Mack 6 claim, the southern most claim in the Group, straddles the boundary between NTS sheets 104B/8W and 104B/1W. Mount Frank Mackie, a prominent landmark approximating the geographical centre of the property, is located at 56° 18' north latitude and 130° 19' west longitude.

Access to the property at present time is by helicopter from Stewart, BC. Seasonal road access to the Tide Lake (Summit Lake) airstrip, located 20 kilometres to the southeast of the property, can be utilized to stage multiple flights to the property for mobilization purposes. The Frank Mackie Icefield is an established north south air route. It provides readily navigable air access to the Unuk River Valley via Devilbliss Creek. This route was in use at the time of work, by parties accessing Consolidated Magna Ventures Ltd./Silver Princess Resources Inc.'s Doc Property, located immediately west of the Mack Group. A semi-permanent exploration/development base camp, established by Magna, is located 8 kilometres west of the Mack 2 claim (see Figure 3). The property's southern boundary lies within 3 kilometres of the Granduc Mine site. The Granduc-Tide Lake Tunnel, however, is not accessible at this time.

1.3 Physiography and Topography

The Mack Claim Group straddles the western edge of the extensive Frank Mackie Icefield. This area is marked by three prominent mountain peaks (Mount George Pearson, Mount Frank Mackie, Mount Brightwell), and northwesterly trending, receding glaciers (Sawyer, Cabin and Devilbliss Glaciers) emanating from the icefield. As such, an estimated 50 to 60 percent of the property is covered in glacier ice.

The remainder of the property is marked by moderate to very steep mountain slope, cirques, irregular icefield outcrop pendants, and variably sized, moraine filled U valleys. Elevation within the property ranges from 1200 metres (3937 feet) at locations in Mack 1, 2, and 6, to approximately 2600 metres (8530 feet) at Mount Frank Mackie (Mack 3). This combination of physiographic features create a rugged terrain. Gradients over much of the exposed slopes are acute. Broad areas of Mack 2 however, possess moderate slopes and were successfully prospected and mapped. Likewise, glacier and

high valley margins/talus slopes can be traversed in several areas of the property, with due attention to crevassed ice.

Drainage on the property is largely restricted to intermittent creeks which tend to intersect glacial stream flow beneath or at the edge of the glaciers. This feature creates hazardous travel conditions along ice margins. In addition to the glaciers mentioned above, an unnamed icefield between Mack 6 and Granduc Mountain intercepts much of that claim's drainage. All waters drain into the South Unuk River, either directly from the unnamed or Sawyer glacier (Mack 4,5, and 6 claims), or indirectly from the Cabin and Devilbliss Glacier via Devilbliss Creek (Mack 1,2, and 3 claims).

The headwaters of Devilbliss Creek originate in part at the upper margin of a broad U valley that intersects the Mack 2 west claim line. The snout of the glacier at this location appears to be receding rapidly from the position indicated on the current NTS sheet. No significant standing water exists on the Claim Group.

Most of the non ice-covered ground is outcrop, felsenmeer, moraine or talus. There is little vegetation. Soils are patchy and poorly developed where present. Occasionally mosses, lichen and rare patches of devils club and alders are found at the property's lowest elevations. No timber is present.

The climate is characterized by moderate to heavy snowfall and low winter temperatures. Permanent snow exists on all three aforementioned peaks. Summer precipitation is frequent, as is fog and cloud cover. Rainfall and poor visibility restricted much of the present work, due to slippery footings on traverse and non VFR flight conditions.

1.4 Property Ownership

The Mack claims comprise one hundred and eight (108) units as follows:

Claim	Record Number	Date of Record	Number of Units
Mack 1	8209	Nov.21, 1989	20
Mack 2	8210	Nov.21, 1989	12
Mack 3	8211	Nov.21, 1989	16
Mack 4	8212	Nov.21, 1989	20
Mack 5	8213	Nov.21, 1989	20
Mack 6	8214	Nov.21, 1989	20*

The Mack 6 claim is reduced approximately one unit by the overstaking of claims AJAX 3 and 4.

The claims were staked by T. Heinricks in the name of E. J. Horne (FMC 281905 - 1990) on November 21, 1989. The Mack 2, 3, 4, 5, and 6 claims were subsequently grouped into the Mack Group in October, 1990. The Mack claims appear on Mineral Title Reference Map 104B/8W. Xerox copies of portions of this map indicating the relative position of the claims are included in Appendix A.

Mineral agreements are currently in the process of being finalized with Terracon Geotechnique Ltd. and Bayaura Mines Ltd.

1.5 History of Property

Previous assessment work in the immediate vicinity of the Mack claims appears restricted to the discovery and investigation of two nearby mineral occurrences, located west of the current claim group boundary. The Grace copper occurrence, first

referenced in Assessment Report No 484 (1963), is located approximately 500 metres west of Mack 6 as indicated in Figure 13 of Grove, 1986 (occurrence No. 43). The Up or Bliss copper, gold, lead occurrence (Minfile 104B, No. 87) is located about 1500 metres west of the northwest corner of Mack 4. The Up claims were first reported on in 1971 (Report 3344), and again in 1976 (Report 6047). The Grace and Bliss occurrences appear to be situated on current claims Ajax 3 and Pearson 1, respectively.

Two other nearby Minfile listed occurrences are located on open file Map 1989-10 (Alldrick et al., 1989). The Mal copper occurrence (Minfile 104B, No. 218) is located about 1400m west of Mack 3 whereas the DC lead occurrence (Minfile 104B, No. 134) is situated approximately 200 metres west of Mack 2. All the above showings are plotted on Figure 4.

The first detailed regional mapping of the Unuk River area was conducted in 1959 and 1960 by G. W. H. Norman of Granduc Mines. This work is incorporated in the 1:250,000 scale compilation presented in Grove, 1986 (Bulletin 63), and follows by several years the actual discovery of the nearby Granduc deposit (1951) and Doc deposit (1947). Due to the property's extremely rugged terrain, it is doubtful that Norman's work included many traverses or stops on the Mack Group proper.

The claim group straddles the southern edge of the current 1:50,000 scale Unuk Map Sheet (open file Map 1989-10). This portion of the sheet was compiled from 1988 field mapping conducted by J. M. Britton et al. (1989). The Mack 2 claim was visited during the course of this work, as indicated by the position of geologic stations on the western flank of Mount Brightwell.

1.6 Summary of Work Done and Procedure Used

Field work conducted during the period August 23 to September 5, 1990 and on September 13 and 14, 1990 consisted of the following:

- visual helicopter air survey of the claim block to identify gossan zones, structural features and, to locate prospective landing sites, fly clamp locations and areas amenable to ground mapping techniques.

- identification of areas requiring mountaineering skills and equipment to perform geological mapping and sampling.

- identify and locate previous known mineral occurences.

- prospecting for gossan zones, quartz veins and sulphide mineralization on traversable areas of the Mack 2 claim (approximately 40% of 12 units = 120 hectares). Traverse routes are indicated on Figure 4.

- prospecting for sulphide mineralization and quartz in rock fall and moraine along the base of slope/glacier edge on the Mack 6 claim (approximately 10% of 20 units = 50 hectares). The talus prospected represents an estimated 80 percent of the outcrop existing on the Mack 6 claim, little of which is accessible by foot travel or can be safely visited by helicopter. The traverse route is indicated on Figure 4.

- geochemical (survey) sampling of the Mack 2 and Mack 6 claims, including a total of 43 rock chip samples and 9 stream sediment silt samples.

- 1:5000 scale reconnaissance geological mapping of the Mack 2 claim (same area as indicated above)

- subsequent petrographic review of 2 mineralized rock samples from the Mack 2 claim.

The initial helicopter reconnaissance of the property indicated that the Mack 3,4, and 5 claims could not be safely ground traversed. These claims consist largely of isolated mountain peaks and ridges with frequent ice falls. The Mack 1 claim was aerially assessed by low level flight. The traversable portion of this claim was viewed to consist largely of unaltered (unfavourable) granites. This was confirmed by two set downs. Based on this reconnaissance, the Mack 2 claim was selected as the prime exploration area and a camp was established.

Helicopter day set outs planned for the Mack 1 and Mack 6 claims during the period August 28 to September 3, 1990, were not completed due to inclement weather. The Stewart based charter operator could not access the camp at this time (see Stewart weather office report, Appendix A). Two 1 day set outs were completed on the Mack 6 claim on September 13 and 14, 1990.

Rock geochemical sampling was done whenever rusty/gossaniferous zones, sulphide mineralization, strong silicification, veining or sericitization was encountered. Silt sampling was completed on the major drainage basins of the Mack 2 and 6 claims for the purpose of establishing background values and targeting precious metal source areas. All samples were analyzed for gold, silver, copper, lead, and zinc by fire preconcentrate and AA finish method. Several samples were re-analyzed by fire assay method. All geochemical analyses was completed by Eco-Tech Laboratories Ltd. of Kamloops, BC. A summary of geochemical laboratory methods accompanies the analyses located in Appendix B.

Silt samples were collected by troweling stream bed material onto a fly screen covered standard size gold pan. The material was then washed until sufficient minus 1.0mm material accumulated on the pan bottom. This material was then transferred by garden trowel into a standard kraft soil sample bag and labelled.

Polished thin sections were prepared by the University of Calgary and examined and photographed at that facility.

2.0 DETAILED TECHNICAL DATA AND INTERPRETATION

2.1 Regional Geology

The Mack Group of Claims in the Stewart area of British Columbia occur along the eastern edge of the Coast Crystalline Complex and near the western boundary of the Bowser Basin. Rocks in the area belong to the Mesozoic Hazelton and Stuhini Groups, and have been intruded by stocks of both Mesozoic and Cenozoic age.

Regional mapping by Alldrick et al. (1989) indicates the oldest supracrustal rocks in the area consist of an Upper Triassic volcano sedimentary sequence (Stuhini Group). These rocks trend north - northwest to north - northeast, as do overlying Hazelton Group rocks, in a broad arcuate succession paralleling the South Unuk River and Unuk River respectively. At the base of the Hazelton is the Upper Triassic to Lower Jurassic marine (submergent) and non-marine (emergent) volcano clastic Unuk River Formation. This formation consists of primarily andesitic flows, breccias and volcanic conglomerate with locally thick crystal and lithic tuff, chert, limestone, and fine grained wackes and siltstone. The Unuk River Formation is unconformably overlain by Lower Jurassic and Middle Jurassic rocks of the Betty Creek and Salmon River Formation, respectively. The Betty Creek Formation is made up of cyclic trough filling submarine pillow and massive lavas, broken pillow breccias, pyroclastics and fine grained, bedded turbidites. The Salmon River Formation is represented by a late post volcanic episode of banded, predominantly dark coloured siltstone, greywacke with intercalated calcarenites. The Betty Creek and Salmon River Formations are separated by a thinly occurring Lower Jurassic felsic volcanic sequence known as the Mount Dilworth Formation. It consists of light weathering pyroclastic rocks which are locally mineralized with sulphides (ie. gossanous).

Mapping by Alldrick et al. (1989) indicates the northern part of the Mack Group of

claims to be underlain principally by the Betty Creek Formation, as opposed to Grove (1986) who considered most of the area to be underlain by Unuk Formation rocks, based on earlier mapping.

There are various intrusives in the area. The granodiorites of the Coast Plutonic complex largely engulf the Mesozoic volcanic terrain to the west. In the area of the property smaller intrusive plugs range from quartz monzonite to quartz diorite. The locally extensive Lee Brant Stock, covering most of the Mack 1 claim, is an offshoot of coast plutonism as indicated by an age date of 52.4 $\pm$ 1.8 Ma (Alldrick et al., 1989). Older stocks of gneissic, hornblende biotite diorite and granodiorite gneiss, located on the Mack 6 claim, and in the vicinity of Granduc Mountain, and to the west of the property between Gracey Creek and the South Unuk River, appear to be the oldest rocks in the area. These intrusives belong to the pre volcanic Central Gneiss Complex and where exposed in contact with Hazelton Group rocks (as at Mack 6), show apparent fault relationships. Alldrick et al.(1989) has grouped several of these Triassic plutons into the Bucke Glacier Stock. Other smaller synvolcanic intrusions and post tectonic Tertiary dyke swarms occur in the map sheet area, but do not appear present on the Mack claims.

Structurally, double plunging stratigraphic strike parallel synclinal folds of Stuhini and Hazelton Group supracrustals dominate the structural setting of the area. These folds are locally disrupted by small east overthrusts on strikes parallel to the major fold axis. Cross axis steep wrench faults with local overturned bedding occur also. Tectonic movement in the pre or early Middle Jurassic appears to have produced several regionally extensive cataclasite zones (Grove, 1986). The northwest trending, South Unuk cataclasite zone, consisting of a mylonite - phyllonite sequence of strongly brecciated and fragmental, re-crystallized material, essentially parallels structure in the sedimentary and volcanic rocks along the South Unuk River. The zone averages a kilometre in width and includes the Granduc volcanogenic massive sulphide deposit. This zone trends beneath the Sawyer Glacier along the western boundary of the Mack Group. Alldrick et al.(1989) identifies this zone as the Unuk-Harrymel Fault Zone on open file Map 1989-10.

2.2 Property Geology

Reconnaissance mapping on the Mack 2 claim indicates the Lower Jurassic volcanics to be predominantly fine to very fine grained, massive to weakly bedded flows of andesitic composition. These rocks are generally grey to grey green in color, but locally have a purplish hue that may be indicative of a more basaltic composition. Occasionally when viewed in cliff forming locations and at heaved outcrop masses, they exhibit tabular to slab-like jointing. Columnar jointing, while not common, was viewed in two outcrop locations on the northwest flank of Mount Brightwell. Volcanics are hard and dense except where altered in contact with granite, and locally where a chloritic phase is developed.

Pillow features are uncommon in the areas mapped. In a few instances the flows are indistinctly pillowed in a tightly packed fashion with hairline margins, but without vesicles or significant selvages. These may correlate to Betty Creek Formation pillowed strata mapped by Alldrick et al. (1989) near the summit of Mount Brightwell.

Pyrite is an ubiquitous constituent in the volcanics, with trace to very minor fine disseminations occurring throughout. Disseminated pyrrhotite is locally prevalent as well. Mineralized quart veins, a prime exploration target in the volcanics, were located in several outcrops. These are further discussed in Sections 2.3 and 2.4.2.

The trend of the volcanics is best ascertained where in contact with conformable, northwest trending, steeply dipping interflow sediments. These sediments consist of dark (graphitic) cm-scale laminated siltstone and lithic tuff. They are planar bedded and in placers rythmically sequenced. A very felsic, cm-scale banded chert was located in outcrop along a ridge line near the centre of the claim. This rock type is common in rock fall and moraine, and likely more widely distributed than mapping indicates.

The northwesterly trend of the volcanic sequence has allowed the creation of natural rock chutes along the south ridge line of the central U Valley (camp valley). Here the valley cuts the volcanics in a perpendicular fashion. Some of these chutes may be

stratigraphic strike parallel faults, although most are filled with rock fall and no fault traces are visible. A large scale overturned fold viewed on the south face of the camp valley (see Figure 5) was the only major fold feature located in the area mapped. The axis of the fold appear to trend AZ 335 plunging 30 degrees North. This feature could not be picked up above the valley wall.

Volcanics on the north side of the camp valley are intensely altered in contact with the Lee Brant stock and its offshoots. There are three phases to the intrusive in the contact area; a porphyritic phase consisting of hornblende and feldspar phenocrysts ranging up to 1 cm in size but averaging much less; an aplitic phase with rare biotite grains in a leucocratic, fine grained groundmass; and a granitic phase with less amphibole than the porphyritic phase and more biotite than the aplitic phase. The aplitic phase mostly occurs in thin sill-like apophyses intruded into the volcanics. These have sharp contacts and have altered adjacent volcanics into yellow to burgundy gossanous masses. Several of these locally offset sills can be viewed on the north wall of the camp valley. Thicker sills and dikes tend to be more porphyritic with gradational contacts and amphibolitic margins. These have created correspondingly wider, more intensely altered, wall rock gossans. The main body of the intrusive is principally granitic tending towards a biotite quartz monzonite in composition.

The contact metamorphic effects of these intrusives have created a skarn-like assemblage of minerals consisting of quartz - epidote - actinolite - chlorite - pyrite -pyrrhotite $\pm$ garnet $\pm$ magnetite. Commonly occurring vuggy quartz in rock fall is presumed to represent weathered out calcite as well.

A 150 metre wide, volcanic hosted shear zone, located adjacent to the main intrusive body and extending out, beneath the icefield (see Figure 5), may also be contact related. It consists of sericite chlorite schist with accessory quartz, pyrite and pyrrhotite. The quartz occurs in thin, millimetre to centimetre veinlets, parallel to schistoscity, which in turn appears to parallel vertical (original) bedding. The zone is highly oxidized into a prominent yellow - orange - brown - purple gossan.

A differing style of shearing exists in a small 50 metre wide, polished outcrop located at the edge of receding ice south of the camp site. The rock here consists of a very fine grained diorite. It could be a synvolcanic plug, or perhaps recrystallized volcanic country rock. The outcrop is cut by several discrete, near vertical shears trending west to northwest. They are generally planar and filled with up to 20 cm of pyrite, epidote and fault gouge. Locally, the pyrite consists of massive clots of euhedral grains with accessory pyrrhotite. On occasion the shears thicken to include ribbon quartz and chert bands up to 0.5 m wide.

Prospecting on the Mack 6 claim consisted largely of collecting rock fall and talus slope samples representative of unaccessible outcrop. As such the location of contacts as depicted in Grove (1986) can not be improved upon and have been incorporated into Figure 4. Rock samples as described in Appendix A, consisted primarily of lithic and crystalline tuff, volcanic breccia, quartz breccia, epiclastics, chert, and altered equivalents. A prospecting report indicates that sampling Areas A, B, and C (as depicted on Figure 4) are highly gossaniferous. Area A samples are principally crystalline tuff with strong epidote alteration - samples are highly fractured and generally weather yellow-brown. Area B samples are principally tuffaceous as well, but appear to possess a more varied assemblage of alteration minerals including hornblende, biotite and chlorite. Samples show a mix of alteration colours on weathered surfaces. Area C hosts a variety of rock types including tuff, chert, breccia, siltstone, and conglomerate. These rock types are consistent with Unuk River Formation strata suggesting that the contact with the Betty Creek Formation lies somewhere beneath the Mack 3 or Mack 4 claim. The middle member of the Unuk River Formation is exposed at Mount George Pearson (Mack 5) according to Grove (1986).

2.3 Economic Geology

The Mack claim group is situated in close proximity to the Doc Deposit to the west and the Granduc orebody to the immediate south. The Doc Deposit consists of minor sulphides and, gold and silver values in quartz veins in a shear zone. The Granduc Deposit is a concordant volcanogenic massive sulphide copper deposit with minor gold

and silver, occurring in several overlapping, tabular lenses. Both are hosted in the Unuk River Formation. The Sulphurets camp, located approximately 10 kilometres to the north of Mack 1, appears to host gold and silver mineralization in a epithermal vein setting that is structurally controlled and commonly associated with volcanic rocks.

To the writers' knowledge, no mineralization has been previously documented on the ground now covered by the Mack claims. The current program has been successful in establishing several gold and silver values along the western boundary of Mack 2. Values of 1.63, 2.26 and 3.21 grams per tonne (g/t) gold have been obtained from narrow quartz veins in outcropping and frost heaved volcanics upslope from the DC lead occurrence. Silver and copper values range widely in these samples to a maximum of 100 g/T Ag and .88% Cu respectively. Zinc values are sporadically elevated with one sample returning .45% Zn in apparent association with higher silver and copper values.

The veins exist as simple, quartz fracture fills up to 10 cm wide with minor pyrite (up to 4 percent) in mm-scale stringers and/or clots. Galena is present in isolated blebs or associated with the pyrite. A minor amount of malachite stain accompanied the vein material at location. The veins occur as isolated, discrete structures without significant wall rock alteration or silicification. None the less, the precious and base metal values obtained suggest the potential for greater mineralized widths under the right structural and deformation setting. The veins are interpreted to occupy tension gashes peripheral to a major shear system. Of the three deposit types in the area of the Mack claims, the mineralization most closely resembles that of the Doc Property. The mineralogy is indicative of a mesothermal lode gold setting.

Significant gold and silver values were obtained also from two float samples located in close proximity to the Mack 2/Divel 2 claim boundary, along the toe of the south face of the camp valley. The samples assayed 3.54 and 14.3 g/t gold and are from angular, quartz boulders with upwards to 10 percent combined pyrite and galena concentrated along fractures. Each contain significant silver in the 900 g/t range. Sample RG90-23, representing the higher gold value, also contain appreciable copper (990 ppm) and zinc (.58%). These samples are located in slope talus, a short distance up slope of a conspicuous, ridge shaped lateral moraine containing more rounded boulder material.

The mineralized boulders measured 15 and 20 cm. Approximately one kilogram of material was sampled from each. Sulphides were selectively sampled, although each contained appreciable quartz gangue as well.

The float samples are located a short distance up valley of a gossan zone situated on the face of the valley's north wall (see Figure 4). The gossan is centred on a vertical aplite dyke or possibly quartz vein (estimated at 6m wide). Although this gossan is an interesting feature of the valley's geology, it is more likely these boulders originate from the upslope valley face. It is also possible that the material cascaded off the northern slopes of Mt. Brightwell and was drawn by gravity a short distance downslope along or, on top of the previous ice position. The fold structure noted in Section 2.2 becomes an interesting target in the case of a direct rock fall origin.

The higher silver values associated with these float samples have a closer affinity to epithermal mineralization in terms of their very high silver to gold ratio.

2.4 Geochemical Results

2.4.1 Silt Geochemical Results

A total of nine stream sediment samples were collected from major drainage pathways on the Mack 2 and 6 claims. The samples were screened in the field to an approximatley particle size of 1.0 mm or less, and further screened in the laboratory to minus 80 mesh. All samples were analyzed for gold, silver, copper, lead and zinc by atomic absorption (AA) method. Gold analyses include a fire assay preconcentration procedure prior to AA finish. Laboratory reports are presented in Appendix B.

Seven of the samples (SS90-1 through SS90-7) were collected from braided drainage flowing from beneath the glacier located at the head of the camp valley on the Mack 2 claim. Sample locations and geochemical results are plotted on Figure 5. Gold values in these samples range from <5 ppb (detection limit) to 35 ppb. Silver values range from 0.1 ppm to 0.6 ppm. These values are considered to be background concentrations. Copper values (28 to 56 ppm), lead values (25-47 ppm), and zinc values

(41-76 ppm) also are considered to represent background concentrations. The narrow range of these precious and base metal values produce well defined average abundancies that can be used in the interpretation of future results.

Two silt samples were collected from south flowing drainage on the Mack 6 claim. Sample B-4 was taken from stream sediments located on the west margin of Map Area B. Precious and base metal values for sample B-4 fall within ranges stated above, and are not considered anomalous. Sample C-5 taken at the ice margin/base of slope of Map Area C returned a gold value and silver value of 10 ppb and 0.1 ppm respectively. These are background concentrations as well. Copper (81 ppm), lead (74 ppm) and zinc (164 ppm) values however, are slightly elevated from the averages of the other 8 samples; C-5 sample copper and lead are approximately twice the average and zinc is three times the average. These are considered weakly anomalous values, but not too significant economically considering the claim's proximity to the Granduc orebody and the lack of a corresponding elevated gold value.

Mack 6 silt sample locations and results are plotted on Figure 4.

2.4.2 Rock Geochemical Results

A total of 43 rock samples were collected during the field program. These include 23 samples from the Mack 2 claim and 20 samples from the Mack 6 claim. The samples obtained were generally grab samples of outcrop or float with weights in the order of one kilogram. Laboratory procedures involved crushing the entire sample, riffling to pulp size and pulverizing to approximately - 140 mesh. All samples were analyzed for gold, silver, copper, lead, and zinc utilizing the same trace level geochemical techniques as completed on the silt samples. Additionally, ore grade type fire assays were preformed on gold geochemical results greater than 1000 ppb, silver values greater than 30 ppm, and copper, lead, and zinc values greater than 1000 ppm. Gold fire assays were completed on a ½ assay ton sample weight basis. Precious metal fire assay values are stated in grams/tonne. Equivalent ounce/ton values are included in laboratory reports as well (Appendix B).

The sample location and geochemical results of the Mack 2 claim samples are plotted on Figure 5. Mack 6 claim sample results are shown on Figure 4. Field descriptions of all rock samples are listed in Appendix C.

The range of variability of Mack 2 sample results is high due to several anomalous values. Significant results are as follows:

Sample Number	Gold (ppb)	Silver (ppm)	Copper (ppm)	Lead (ppm)	Zinc (ppm)
RG90- 1	100	1.6	**.16%**	30	94
RG90- 3	135	3.7	**.24%**	42	294
RG90-12	**1.63 g/t**	8.9	187	17	49
RG90-13	**2.26 g/t**	**100.0 g/t**	380	686	380
RG90-14	**3.21 g/t**	23.2	41	7	50
RG90-17	135	**33.2 g/t**	689	**.88%**	**.45%**
RG90-21	**3.54**	**964.0 g/t**	9	**3.32%**	4
RG90-23	**14.34 g/t**	**884.0 g/t**	990	**8.08%**	**.58%**
RG90-24	215	27.5	17	**.24%**	956

Sample RG90-23 was screened and the metallics assayed as part of the re-assay procedure.

Samples RG90-1 and RG90-3, containing .16% and .24% copper respectively, consist of massive pyrite fragments located in moraine and talus along the north camp valley margin. Limited outcrop sampling of the sulphidized volcanics and sericite schist located above and up valley of these samples has not detected elevated values of either copper or gold. This suggests these samples originate elsewhere.

Samples RG90-12,13,14, and 17 were taken from near source float (frost heave or spoil) or outcropping, narrow quartz vein material upslope of the DC lead occurrence. The

best value of 3.21 g/t gold (RG90-14) came from a 5 cm near vertical vein that was chipped out of a 4 metres high, west looking outcrop face. RG90-13, located about 80 metres southwest of RG90-14, consisted of quartz vein fragments to 10 cm wide recovered from a huge, heaved outcrop. The attitude of the vein here can still be surmised and essentially parallels the former at an azimuth of 310 degrees.

Samples RG90-12 and 17 are from (presumed) near in-situ material, north of the outcropping veins. Galena appears to be an important indicator, and perhaps is associated to precious metal values in these veins. Silver values are erratic as indicated above. Copper values are anomalous. Malachite and possibly chalcopyrite were observed at the RG90-17 sample site. RG90-17 was the only sample to return appreciable zinc (.45% Zn) in the form of sphalerite. The small number of samples from this area preclude the establishment of definitive metallic associations. The data suggests a polymetallic environment. Further sampling programs should continue to include multi-element analysis.

Samples RG90-21,23, and 24 were collected from displaced material with a likely on property source. RG90-23 is particularly significant given the economic gold and silver values obtained with appreciable zinc (.58% Zn). The metallic calculation for this sample indicated that 37% of the gold is contained in the + 140 mesh size. These samples demonstrate that greater mineralized widths to those observed in outcrop are likely present on the property.

Mack 6 claim rock sample geochemical results, as plotted on Figure 4, are for the most part negative. Results are presented in Appendix C and are identified as A, B, and C series samples, corresponding to Mack 6 designated outcrop areas A, B, and C.

All gold values except B-3 are considered background values and range from <5 ppb to 35 ppb Au. The B-3 sample, consisting of a siliceous tuff recovered from angular moraine, returned a weakly anomalous gold value of 130 ppb Au. The only other possibly significant result came from sample C-6 in which elevated base metal values of 272 ppm copper, 900 ppm lead and .12% zinc were obtained. This sample of rock fall chert had disseminated pyrite and blebs of galena. Other slightly elevated values of

zinc in C8, C9, and C12 (120 to 233 ppm Zn) may be threshold anomalies, as may be copper in the B-5 sample (155 ppm Cu).

Mack 6 rock geochemical results do not rule out the potential of mineralized vein structures on the claim due to the immense volume of rock fall and talus from which samples were selected. The results do however, diminish the potential for a bulk tonnage massive sulphide or alkaline porphyry, disseminated copper type deposit on the claim.

2.5 Petrographic Description Results

Hand specimens of several mineralized samples sent for geochemical analysis were collected when considered appropriate. Based on the assay results, thin section of samples RG90-23 and RG90-17 were prepared under contract by the University of Calgary. Representative photographs of these samples are included in Appendix D. The selection of material endeavoured to identify the habit and interelationship of sulphides in gangue quartz.

An examination of hand and thin section specimens, and thin section photographs is briefly described as follows:

RG90-23 (Plates 1 through 6)

The specimen shows euhedral and anhedral pyrite, galena, sphalerite and silver sulphosalts, possibly argentite and electrum. Sulphide minerals replace early quartz, which exhibits crushed and fractured habit with incipient ribbon structure. Early quartz is strained and fractured (undulatory extinction). Galena exhibts penetration twinning (1,1,1) with diagonal striations on cleavage faces. The galena shows diagnostic triangular pits, cubic cleavage and some curved cleavage. Paragenetic sequence of mineralization is quartz, pyrite, galena, sphalerite, tetrahedrite, and sulphosalts. The evidence for replacement include: islands of quartz in quartz; islands of galena in pyrite; larger pyrite grains exhibiting convex surfaces into quartz; galena exhibiting

convex surface and entrants into euhedral pyrite; crushing and fracturing are filled with galena and some late quartz. The last is indicated by euhedral quartz in pyrite and quartz fracture filling in galena.

Metacrysts of pyrite exhibit obvious relation to fractures concordant to vein structure (banding). Later sphalerite also often exhibits incipient banding and fracture filling prependicular to banding. Vein fracturing at a late stage of mineralization is evident as galena and sphalerite mineralization occupies fracturing cutting across pyrite grains and fracturing along the vein, host rock contact area.

RG90-17 (Plates 7,8,9)

The hand specimen is a 5.5 cm wide vein composed of 95% coarse, euhedral, drussy quartz, 4% pyrite, 0.7% galena, 0.2% sphalerite and 0.1% malachite. The mineralization is confined to open fractures in drussy fractures in the centre of the vein and along the contact areas.

Several attempts to prepare a thin section through the larger blebs of mineralization ended in broken specimens due to the open vugs and fractured nature of the rock. The one prepared exhibits isolated euhedral pyrite and pyrite along fracture filling in coarse vuggy, limonite stained quartz.

3.0 CONCLUSIONS AND RECOMMENDATIONS

3.1 Conclusions

The Mack Group of claims are located approximately 45 kilometres north-northwest of Stewart, British Columbia, in prospective Hazelton Group strata, near the eastern edge of the Coast Plutonic Complex. The property occurs in an area of very rugged, mountainous and glacial terrain, along the western edge of the Frank Mackie icefield. The terrain and common inclement weather hamper conventional prospecting and mapping, as does the very short field season. Not withstanding these operational

problems, past exploration efforts in the region have resulted in the discovery of several mineral deposits, including the nearby Granduc and Doc Deposit, and Sulphurets Camp deposits located 10 kilometres to the north.

Reconnaisance prospecting, geological mapping and geochemical sampling conducted during the 1990 exploration program has resulted in the discovery of gold, silver, copper, and zinc mineralization along the western boundary of the Mack 2 claim. To the writer's knowledge mineral showings, and in particular precious metal occurences, have not been previously documented in the area underlain by the Mack Group of claims. Limited rock sampling has returned values in the order of 1 to 3 grams/tonne gold and upwards to 100 grams/tonne silver.

Mapping indicates the mineralization is confined to narrow quartz veins in relatively unaltered andesitic volcanics. These veins could emanate from unexposed or undetected shear zones that are an excellent exploration target in the area. An extensively sheared (contact related?) sericite schist located immediately northeast of the camp valley, although unmineralized, essentially parallels the mineralized vein trend and demonstrates the possible occurrence of other favourable structures.

Economic gold and silver values of 14.34 g/t Au and 964.0 g/t Ag have been recovered from float samples, also located near the Mack 2 claim boundary. The location of these mineralized samples, relative to the claim line, is approximate. Given the orientation of the U valley and northwestern slopes above the valley's south face, a property source is indicated. The petrographically noted mineral replacement and deformation characteristics of these samples is supportive to the possible existence of a larger mineralized shear system on the Mack 2 claim. The high value of silver in these samples does not preclude a genetic association with the outcropping veins; mineral zoning patterns are typical of many reactivated hydrothermal systems.

Galena is a constituent of both the mineralized vein and float samples, and is therefore probably associated with gold and silver mineralization.

Preliminary prospecting and geochemical sampling on the Mack 6 claim was

unsuccessful in locating significant precious metal mineralization.

Large areas of the property remain unexplored at even a reconnaissance scale. Only a limited amount of this area can be effectively prospected and mapped without daily helicopter shuttle support. Safety awareness and mountaineering skills are important requirements for effective exploration on the property.

The discovery of significant mineralization on the claims during the limited and weather hampered 1990 exploration program, is encouraging. The property shows excellent potential to host an economic gold or polymetallic deposit.

3.2 Recommendations

Further work is required on the Mack claims to establish the property's potential. It is recommended that follow-up work on the Mack 2 claim be completed, and that the other claims be prospected, geologically mapped and sampled during the next field season. Proposed work is as follows:

1. Further mapping and sampling in the gold and silver discovery area of the Mack 2 claim. An attempt to trace the mineralized veins up slope and map in detail potential controlling structure is required. Sporadically distributed soils can be sampled, with due attention to any recessive linear trends encountered. A capacity to blast select outcrop and thinly covered soil (if geochemical anomalous) is desirable.

2. Prospecting and contour mapping on other claims where possible. Prospective areas include: the high icefield margin on the Mack 6 claim, the high southern slope of Mount Brightwell on the Mack 3 claim, and the icefield margin area of the Mack 1 claim.

3. Helicopter supported prospecting and mapping of nunataks and cirques on the Mack 3, 4, and 5 claims. Several are gossanous. Potentially important features

include the (unmapped) contact of Unuk River and Betty Creek Formations and the projected extension of the cataclasite zone beneath the Mack 5 and 6 claim areas.

4. Pre-field photo interpretive study. Depending on the quality and vintage, air photographs can usually be enlarged to 1:10 000 scale and sometimes to 1:5000 scale with reasonable clarity.

4.0 ITEMIZED COST STATEMENT, TITLE PAGE AND STATEMENT OF WORK

4.1 Itemized Cost Statement

4.1.1 Wages

The number of days, rates per day, specific dates and total wages paid were as follows:

Personnel	Title	Dates worked Inclusive	No. of Days	Daily Rate	Cost
E. Horne	Geologist	Aug.23 - Sept.5	14	$300.00	$4200.00
R. Dean	Geologist	Aug.23 - Sept.5	14	$200.00	$2800.00
T. Heinricks	Prospector	Sept.13- Sept.14	2	$250.00	$ 500.00
					$7500.00

4.1.2 Food, Accommodation, and Supplies

Actual Camp Grocery and meals/accommodation enroute to property August 23 to September 5 (2 men for a total of 28 mandays)	$ 678.94
Camp/Geological supplies including propane, sample bags, signal flares, misc. consumables	$ 374.73
	$1053.67

4.1.3 Transportation

Ground Transport (mobilization/demobilization) within British Columbia - August 23, 24, and September 6, 7 (2 men)	$ 644.80
206 Helicopter charter charges - August 25, September 3, September 13, and September 14	$2296.04
Greyhound Shipping charges	$ 66.05
	$3006.89

4.1.4 Laboratory Analysis

-43 rock samples analyzed for Au, Ag, Cu, Pb, Zn geochem. @ $14.00 per sample	$602.00
- 9 silt samples analyzed for Au, Ag, Cu, Pb, Zn geochem. @ $11.25 per sample	$101.25
- 4 follow-up Au assay @ $7.25 per sample	$ 29.00
- 4 follow-up Ag assay @ $7.25 per sample	$ 29.00
- 2 follow-up Cu assay @ $5.50 per sample	$ 11.00
- 4 follow-up Pb assay @ $5.50 per sample	$ 22.00
- 3 follow-up Zn assay @ $5.50 per sample	$ 16.50
Preparation of thin sections; 2 @ $30.00 each	$ 60.00
Microscope Rental	$ 45.00
	$915.75

4.1.5 Report Preparation

R. Dean - Geologist; 5 days @ $200.00/day	$1000.00
Drafting maps and figures; 30 hours @ $20.00/hour	$ 600.00
Word processing, printing, xerox and reproduction of base maps	$ 400.00
	$2000.00

TOTAL $14 476.31

Province of British Columbia

Ministry of Energy, Mines and Petroleum Resources

ASSESSMENT REPORT TITLE PAGE AND SUMMARY

TYPE OF REPORT/SURVEY(S)	TOTAL COST
PROSPECTING, GEOLOGICAL & GEOCHEMICAL	14, 476.31

AUTHOR(S) E. Horne
R. Dean

SIGNATURE(S)

DATE STATEMENT OF EXPLORATION AND DEVELOPMENT FILED YEAR OF WORK 1990

PROPERTY NAME(S) Mack 2 (8210), Mack 3 (8211), Mack 4 (8212), Mack 5 (8213), Mack 6 (8214)
MACK GROUP, Mack 1 (8209)

COMMODITIES PRESENT Gold, Silver

B.C. MINERAL INVENTORY NUMBER(S), IF KNOWN Close to Minfile 104 B No. 134 (DC)

MINING DIVISION Skeena NTS 104B/8, B/1

LATITUDE 56° 18' LONGITUDE 130° 19'

NAMES and NUMBERS of all mineral tenures in good standing (when work was done) that form the property [Examples: TAX 1-4, FIRE 2 (12 units); PHOENIX (Lot 1706); Mineral Lease M 123; Mining or Certified Mining Lease ML 12 (claims involved)]:

Mack 1 (20 units), Mack 2 (12 units), Mack 3 (16 units), Mack 4 (20 units), Mack 5 (20 units), Mack 6 (20 units)

OWNER(S)

(1) E. Horne (2)

MAILING ADDRESS

608E, 920-9th Ave. SW
Calgary, Alberta T2P 2T9

OPERATOR(S) (that is, Company paying for the work)

(1) Terracon Geotechnique Ltd.
Bayaura Mines Ltd. (2)

MAILING ADDRESS

c/o 608E, 920-9th Avenue SW
Calgary, Alberta T2P 2T9

SUMMARY GEOLOGY (lithology, age, structure, alteration, mineralization, size, and attitude):

Lower and Middle Jurassic Unuk River Formation and Betty Creek Formation volcanics, pyroclastics and interflow sediments with potential zones of schist, semi-schist and cataclasites with precious metal mineralization; auriferous pyritic quartz veins with galena

REFERENCES TO PREVIOUS WORK British Columbia Ministry of Energy Mines and Petroleum Resources Bulletin 63; close to Assessment Report Nos. 484, 3344, 6047.

(over)

TYPE OF WORK IN THIS REPORT	EXTENT OF WORK (IN METRIC UNITS)	ON WHICH CLAIMS	COST APPORTIONED
GEOLOGICAL (scale, area)			
Ground	120 hectares	Mack 2	
Photo			
GEOPHYSICAL (line-kilometres)			
Ground			
Magnetic			Mack1 $2,000.00
Electromagnetic			Mack2 2,400.00
Induced Polarization			Mack3 1,600.00
Radiometric			Mack4 2,000.00
Seismic			Mack5 2,000.00
Other	Nil		Mack6 4,000.00
Airborne			
GEOCHEMICAL (number of samples analysed for ....)			
Soil			
Silt	Nine (9)	Mack 2 (seven), Mack 6 (two)	
Rock	Forty-Three (43)	Mack 2 (twenty three), Mack 6 (twenty)	
Other			
DRILLING (total metres; number of holes, size)			
Core			
Non-core	Nil		
RELATED TECHNICAL			
Sampling/assaying			
Petrographic	Two (2) sections	Mack 2	
Mineralogic			
Metallurgic			
PROSPECTING (scale, area)	170 hectares	Mack 2 (120 hectares), Mack 6 (50 hectares)	
PREPARATORY/PHYSICAL			
Legal surveys (scale, area)			
Topographic (scale, area)			
Photogrammetric (scale, area)			
Line/grid (kilometres)			
Road, local access (kilometres)			
Trench (metres)			
Underground (metres)	Nil	Note; Please credit PAC with excess amount = $476.31	
		TOTAL COST	$14,000.00

FOR MINISTRY USE ONLY	NAME OF PAC ACCOUNT	DEBIT	CREDIT	REMARKS:
Value work done (from report)				
Value of work approved				
Value claimed (from statement)				
Value credited to PAC account				
Value debited to PAC account				
Accepted ..... Date	Rept. No.			Information Class

Province of British Columbia
Ministry of Energy, Mines and Petroleum Resources
MINERAL RESOURCES DIVISION — TITLES BRANCH

DOCUMENT No. 608 AM
OFFICE USE ONLY

PAID
GOVERNMENT AGENT
10:29 A.M.
OCT 29 1990
AM #700 —
PRINCE RUPERT
TRANS. # 1000020/30
RECORDING STAMP

Mineral Tenure Act
Sections 25, 26 & 27

STATEMENT OF WORK — CASH PAYMENT

Indicate type of title Mineral (Mineral or Placer)

Mining Division Skeena

I, Emmett J. Horne (Name)
608E, 920-9th Ave. SW (Address)
Calgary, Alberta
Home (403) 262-7128
Bus. (403) 266-1150 (Telephone) T2P 2T9 (Postal Code)

Valid subsisting FMC No. 281905

FMC Code HORNEJ

Agent for Self (Name(s))
(Address)
(Telephone) (Postal Code)

Valid subsisting FMC No.

FMC Code

STATE THAT: **(NOTE: If only paying cash in lieu, turn to reverse and complete columns G to J and Q to T.)**

1. I have done, or caused to be done, work on the Mack 1, Mack 2, Mack 3, Mack 4, Mack 5 and Mack 6 Claim(s)

Record No(s). 8209, 8210, 8211, 8212, 8213, 8214

Work was done from August 23, 1990, to September 5, 1990 and September 13, 14, 1990;

and was done in compliance with Section 50 of the Mineral Tenure Act and

Section 19(3) of the Regulation YES [✓] NO [ ]

I hereby request that the claims listed in Column G on this Statement of Work be Grouped and I confirm that all claims listed are contiguous YES [✓] NO [ ] BUT EXCLUDING MACK 1

FEE — $10.00

TYPE OF WORK

PHYSICAL: Work such as trenches, open cuts, adits, pits, shafts, reclamation, and construction of roads and trails. Details as required under section 13 of the Regulations, including the map and cost statement, must be given on this statement.

PROSPECTING: Details as required under section 9 of the Regulations must be submitted in a technical report. Prospecting work can only be claimed once by the same owner of the ground, and only during the first three years of ownership.

GEOLOGICAL, GEOPHYSICAL, GEOCHEMICAL, DRILLING: Details must be submitted in a technical report conforming to sections 5 through 8 (as appropriate) of the Regulations.

PORTABLE ASSESSMENT CREDIT (PAC) WITHDRAWAL: A maximum of 30% of the approved value of geological, geophysical, geochemical and/or drilling work on this statement may be withdrawn from the owner's or operator's PAC account and added to the work value on this statement.

TYPE OF WORK (Specify Physical (include details), Prospecting, Geological, etc.)	VALUE OF WORK Physical	*Prospecting	*Geological etc.	
Prospecting, Geological, Geochemical			14,476.31	
TOTALS	A +	B +	C 14,476.31	D 14,476.31
PAC WITHDRAWAL — Maximum 30% of Value in Box C Only			E →	E
from account(s) of Not applicable			TOTAL	F 14,476.31

* Who was the operator (provided the financing)? Name E.J. Horne
Address as above
Phone: as above

Transfer amount in Box F to reverse side of form and complete as required.

F [14,476.31] I WISH TO APPLY $ 14,000.00 OF THE TOTAL VALUE FROM BOX F AS FOLLOWS:

Columns G through P inclusive MUST BE COMPLETED before work credits can be granted to claims. Columns G through J and Q through T inclusive MUST BE COMPLETED before a cash payment or rental payment can be credited. Columns not applicable need not be completed.

Cash Payment

CLAIM IDENTIFICATION

G	H	I	J
CLAIM NAME (one claim/lease per line)	RECORD No.	No. OF UNITS*	CURRENT EXPIRY DATE
Mack 1	8207	20	Nov. 21/90
Mack 2	8216	12	Nov. 21/90
Mack 3	8211	16	Nov. 21/90
Mack 4	8212	20	Nov. 21/90
Mack 5	8213	20	Nov. 21/90
Mack 6	8217	20	Nov. 21/90
ANNUAL WORK APPROVAL NUMBER SMI 90-0100785-830			

Mack 1/6 only
NOTICE TO GROUP No. 305 RECORDED Oct 19/90

APPLICATION OF WORK CREDIT

K	L	M	N	O	P
WORK TO BE APPLIED					
VALUE	YEARS	Recording Fees	PRIOR EXCESS CREDIT BEING USED	NEW EXPIRY DATE	EXCESS CREDIT REMAINING
2000.00	ONE	100.00	NONE	Nov. 21/91	NONE
2400.00	TWO	120.00	4	Nov. 21/92	4
1600.00	ONE	80.00	4	Nov. 21/91	4
2000.00	ONE	100.00	4	Nov. 21/91	4
2000.00	ONE	100.00	4	Nov. 21/91	4
4000.00	TWO	200.00	4	Nov. 21/92	4
14,000.00 TOTAL OF K		700.00 TOTAL OF M			

*2 POST, FRACTION, REV. CROWN GRANT AND PLACER CLAIM ARE 1 UNIT EACH

CASH IN LIEU OF WORK OR LEASE RENTAL

Q	R	S	T
C/L	RECORDING FEE	LEASE RENTAL	NEW EXPIRY DATE
TOTAL OF Q	TOTAL OF R	TOTAL OF S	

Value of work to be credited to portable assessment credit (PAC) account(s).
[May only be credited from the approved value of Box C not applied to claims.]

Name of owner/operator	Name	Amount
	1. Emmett J. Horne	476.31
	2.	
	3.	

I, the undersigned Free Miner, hereby acknowledge and understand that it is an offence to knowingly make a false statement or provide false information under the Mineral Tenure Act. I further acknowledge and understand that if the statements made, or information given, in this Statement of Work — Cash Payment are found to be false and the exploration and development has not been performed, as alleged in this Statement of Work — Cash Payment, then the work reported on this statement will be cancelled and the subject mineral claim(s) may as a result, forfeit to and vest back to the Province.

Signature of Applicant

5.0 STATEMENT OF QUALIFICATIONS

5.1 Professional Certification (R. Dean)

I, Robert H. Dean, of 608E, 920 - 9th Avenue S.W., Calgary, Alberta do hereby declare:

1. That I am a graduate of Carleton University having obtained an Honours B.Sc. Degree in 1978.

2. That I have worked continuously in the Canadian Mining Industry since graduation, as a Geologist, for various companies including Eldorado Nuclear Ltd., Syncrude Canada Ltd., Alsands Energy Ltd., Aurun Mines Ltd., Esso Resources Canada Ltd., Pamour Inc., Giant Yellowknife Mines Ltd., and Pamorex Minerals Inc.

3. That I am presently employed by Terracon Geotechnique Ltd., Calgary, Alberta, and have been for a period of 10 months; I was previously employed by Terracon during the period of 1984 to 1986.

4. That I am a member of the Canadian Institute of Mining and Metallurgy, and a fellow of the Geological Association of Canada (F5317).

5. That I personally worked on the Mack Claim Group during the period of August 23 to September 5, 1990, and co-authored the preceding report entitled 'Preliminary Prospecting, Geological and Geochemical Report, Mack Claim Group.'

6. That I am a salaried employee of Terracon Geotechnique Ltd., and that I do not hold any direct interest in the property.

Robert H. Dean

GEOLOGICAL ASSOCIATION OF CANADA
ROBERT H. DEAN
FELLOW

December 12, 1990
Date

5.2 Professional Certification (E. Horne)

I am a practicing geologist resident at 608, 920 - 9th Avenue S.W., Calgary, Alberta, T2P 2T9, and a principal of Terracon Geotechnique Ltd.

I graduated with a B.A. (Honours Equivalent) in geology from the University of Saskatchewan, Saskatoon in 1967. I also completed one post graduate year in 1970. I have practiced my profession continuously for over twenty (20) years.

I am a member of the Canadian Institue of Mining and Metallurgy and the Association of Professional Engineers, Geologists and Geophysicists of Alberta as a Professional Geologist.

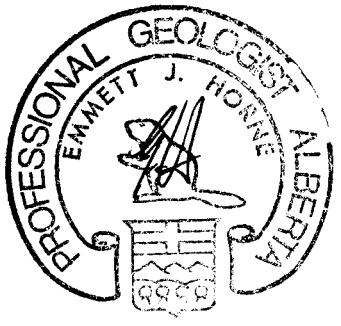
This report is based on my understanding of the property as a result of field work performed on them by R. Dean and myself during the 1990 Field Season. The field work consisted of 14 days, 10 of which were spent on the subject claims. Mack 1 to Mack 6 claims are held by E. Horne (Owner) and are to be transfered to Terracon at a future date. A mineral agreement with Bayuara Mines Ltd., for a portion of the claims, is in the process of review and revision.

I have shares in both of the above mentioned companies.

To the best of my knowledge the acquisition of all the data and the expenditures claimed for the performance of work as presented in this report is correct.

E. Horne — Dec. 12th 1990

Emmett J. Horne, P.Geol. — Date



6.0 REFERENCES

Alldrick, D. J., Britton, J. M., Webster, I. C. L. and Russel, C. W. P. (1989): Geology and Mineral Deposits of the Unuk Map Area (104B/7E, 8W, 9W, 10E); BC Ministry EMPR, Open File 1989-10.

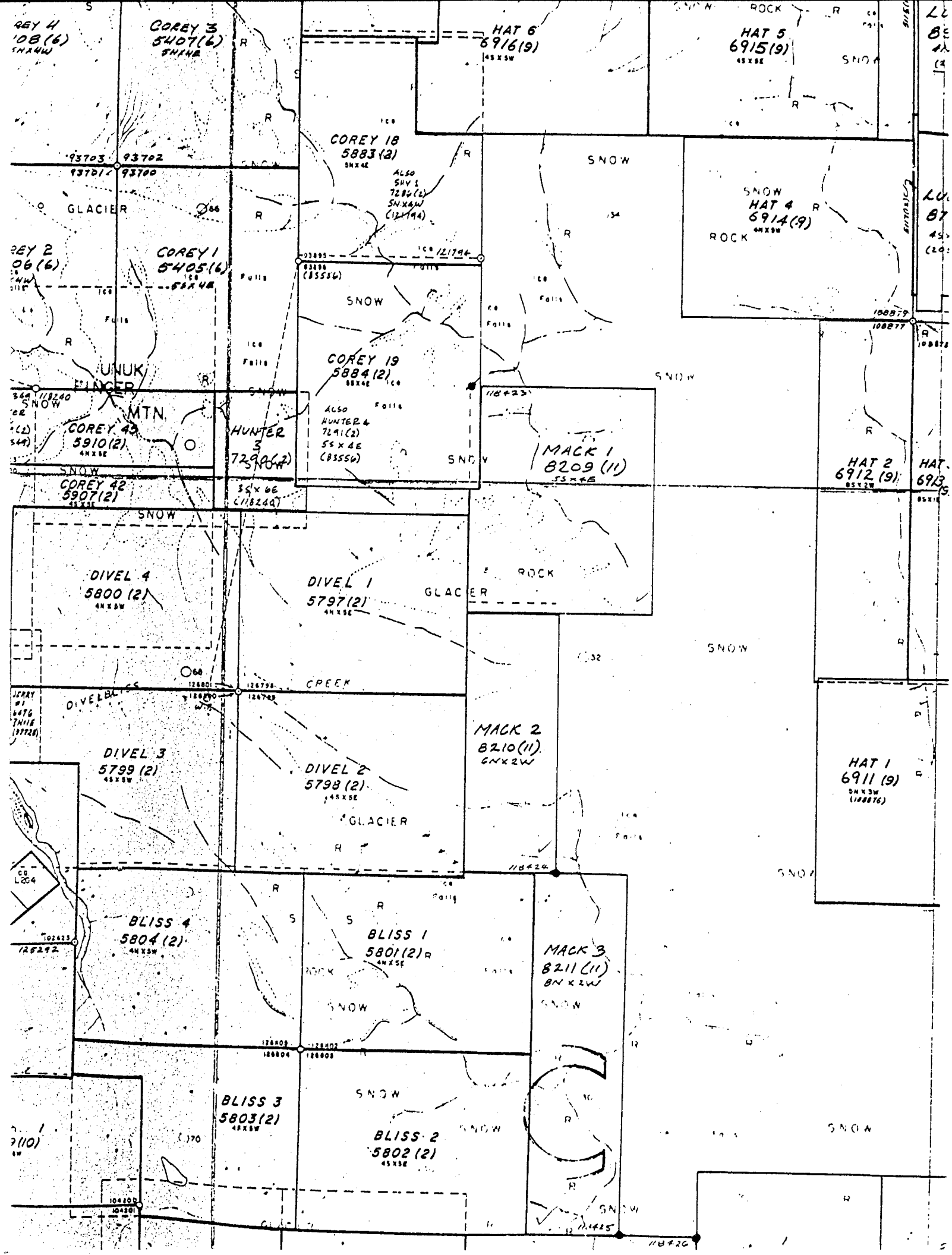
Britton, J. M., Webster, I. C. L. and Alldrick, D. J. (1989): Unuk Map Area (104B/7E, 8W, 9W, 10E); BC Ministry EMPR, Geological Fieldwork 1988, Paper 1989-1 pages 241-250.

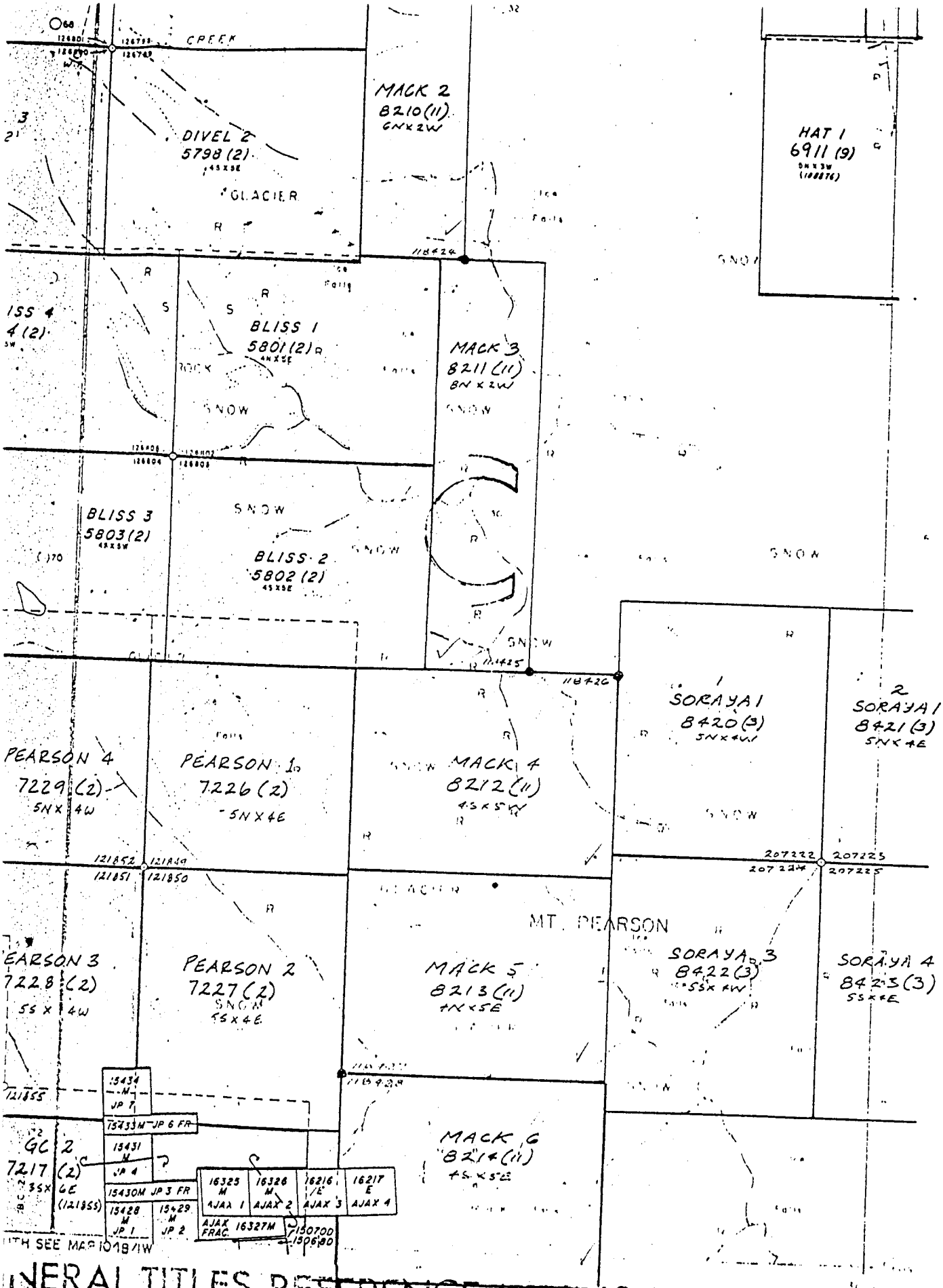
Alldrick, D. J. and Britton, J. M. (1988): Geology and Mineral Deposits of the Sulphurets Area (104A/5, 12, 104B/8, 9); BC Ministry EMPR, Open File 1988-4.

Grove, E. W. (1986): Geology and Mineral Deposits of the Unuk River - Salmon River - Anyox Area; BC Ministry of EMPR, Bulletin 63, 152p.

APPENDIX A

Mineral Title Reference Maps
Weather Report


COREY 4
108(6)
SN X 4W
COREY 3
5907(6)
5N X 8E
HAT 6
6916(9)
45 X 5W
HAT 5
6915(9)
45 X 5E
ROCK
SNOW
93703
93702
93701
93700
GLACIER
COREY 18
5883(2)
5N X 4E
ALSO
SHV 1
7286(2)
5N X 4W
(121794)
COREY 2
06(6)
COREY 1
5905(6)
5S X 4E
Falls
ICE
SNOW
HAT 4
6914(9)
4N X 5W
ROCK
108879
108877
UNUK
FINGER
MTN.
118240
COREY 19
5884(2)
5S X 4E
ALSO
HUNTER 4
7291(2)
5S X 4E
(83556)
118423
COREY 43
5910(2)
4N X 5E
HUNTER
3
7290(2)
3S X 6E
(118240)
MACK 1
8209(11)
5S X 4E
HAT 2
6912(9)
8S X 2W
HAT
6913
COREY 42
5907(2)
4S X 5E
DIVEL 4
5800(2)
4N X 5W
DIVEL 1
5797(2)
4N X 5E
ROCK
GLACIER
SNOW
126801
126798
CREEK
DIVEL
MACK 2
8210(11)
6N X 2W
DIVEL 3
5799(2)
4S X 5W
DIVEL 2
5798(2)
4S X 5E
HAT 1
6911(9)
5N X 3W
(108876)
CG
L204
118424
BLISS 4
5804(2)
4N X 5W
102623
125292
BLISS 1
5801(2)
4N X 5E
MACK 3
8211(11)
8N X 2W
126803
126804
126802
126805
BLISS 3
5803(2)
4S X 5W
BLISS 2
5802(2)
4S X 5E
104202
104201
118425
118426



LEGAL CORNER POST IS BASED ON THE LOCATOR'S SKETCH. FOR FURTHER INFORMATION, APPLY TO THE OFFICE OF THE MINING DIVISION CONCERNED.

DATE OF MICROFILM: 80.06.14

MINERAL TITLES REFERENCE MAP 104B/8W

DEPARTMENT OF MINES AND PETROLEUM RESOURCES VICTORIA, B.C.

This map is prepared as a guide only to the location of mineral claims that have not been surveyed. Where the topographic position of a legal corner post has been verified it is indicated with the symbol, ⊗. Additional information with respect to the claims may be obtained at the Mining Division concerned.

REQUESTED SEPT. 03 '1990 1720 HRS (PDT)

AUG 04 '90

WEATHER SUMMARY

PERIOD COVERED: AUGUST 29 TO SEPTEMBER 03 1990

CERTIFIED EXTRACTS FROM WEATHER LOG AT STEWART AIRPORT WEATHER STATION

August 29 - rain and fog until 0800 PDT
low ceilings (1200') with rain until 1400 PDT
ceilings 1200 - 6100' 1500 - 1700 PDT
winds light/variable all day

August 30 - low cloud with light to moderate rain all day
visibilities at times reduced to 11/2 miles in fog
ceilings 4000 - 6000' all day
periods of lower ceilings to 1400 - 1500'

August 31 - fog and low ceilings 2500 - 3500' with rain until noon
afternoon ceilings 6000 - 8000' with ocnl rain showers
cumulonimbus clouds vicinity (thunderstorms)

September 01 - fog, low ceilings 'til 0930 PDT
low visibilities due fog and rain
visibilities 1/2 - 12 'til 1000 PDT
afternoon ceilings to 7000'
cumulonimbus related rain showers, heavy at times

September 02 - ceilings 5300 - 7000'
rain until noon
winds to 10 knots

September 03 - ceilings 6000 to 7000' all day
few afternoon sunny periods

The above is certified correct as an abstract of the daily log from the records of Environment Canada at Stewart Airport, B.C.

STEWART WEATHER SERVICES
P.O. BOX 548
STEWART, B.C.

B.R. Stenhouse, Contractor,
Northern Meteorological Services
Stewart Airport Weather Station
Transport Canada-Environment Canada

APPENDIX B

Geochemical Laboratory Reports

ECO-TECH LABORATORIES LTD.
ASSAYING - ENVIRONMENTAL TESTING
10041 East Trans Canada Hwy., Kamloops, B.C. V2C 2J3 (604) 573-5700 Fax 573-4557

GEOCHEMICAL LABORATORY METHODS

SAMPLE PREPARATION (STANDARD)

1. Soil or Sediment: Samples are dried and then sieved through 80 mesh nylon sieves.

2. Rock, Core: Samples dried (if necessary), crushed, riffled to pulp size and pulverized to approximately -140 mesh.

3. Heavy Mineral Separation:
Samples are screened to -20 mesh, washed and separated in Tetrabromothane. (SG 2.96)

METHODS OF ANALYSIS

All methods have either certified or in-house standards carried through entire procedure to ensure validity of results.

1. Multi-Element Cd, Cr, Co, Cu, Fe (acid soluble), Pb, Mn, Ni, Ag, Zn, Mo

Digestion	Finish
Hot aqua-regia	Atomic Absorption, background correction applied where appropriate

A) Multi-Element ICP

Digestion	Finish
Hot aqua-regia	ICP

2. Antimony

Digestion	Finish
Hot aqua regia	Hydride generation - A.A.S.

3. Arsenic

Digestion	Finish
Hot aqua regia	Hydride generation - A.A.S.

4. Barium

Digestion	Finish
Lithium Metaborate Fusion	I.C.P.

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13. Tin

Digestion	Finish
Ammonium Iodide Fusion	Hydride generation - A.A.S.

14. Tungsten

Digestion	Finish
Potassium Bisulphate Fusion	Colorimetric or I.C.P.

15. Gold

Digestion	Finish
Fire Assay Preconcentration followed by Aqua Regia	Atomic Absorption

16. Platinum, Palladium, Rhodium

Digestion	Finish
Fire Assay Preconcentration followed by Aqua Regia	Graphite Furnace - A.A.S.

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SEPTEMBER 12, 1990

CERTIFICATE OF ANALYSIS ETK 90-533

MR. EMMETT HORNE, P.Geol.
TERRACON GEOTECHNIQUE LTD.
SUITE 800, 633 - 6TH AVE. SW.
CALGARY, ALBERTA
T2P 2Y5

SAMPLE IDENTIFICATION: 7 STREAM SEDIMENT samples received SEPTEMBER 4, 1990
PROJECT: 90111

ET#	Description	AU (ppb)	AG (ppm)	CU (ppm)	PB (ppm)	ZN (ppm)
533 - 1	S S 90 - 1	5	.5	51	47	63
533 - 2	S S 90 - 2	<5	.5	56	46	76
533 - 3	S S 90 - 3	<5	.2	31	28	53
533 - 4	S S 90 - 4	15	.3	28	29	56
533 - 5	S S 90 - 5	35	.1	24	25	50
533 - 6	S S 90 - 6	25	.6	42	45	43
533 - 7	S S 90 - 7	20	.3	42	29	41

C.C.: R. DEAN

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SEPTEMBER 27, 1990

CERTIFICATE OF ANALYSIS ETS 90-9123

MR. EMMETT HORNE, P.Geol.
TERRACON GEOTECHNIQUE LTD.
SUITE 800, 633 - 6TH AVE. SW.
CALGARY, ALBERTA
T2P 2Y5

SAMPLE IDENTIFICATION: 2 SOIL samples received SEPTEMBER 17, 1990

ET#	Description	AU (ppb)	AG (ppm)	CU (ppm)	PB (ppm)	ZN (ppm)
9123 - 1	B - 4	10	.1	39	17	59
9123 - 2	C - 1	10	.2	81	74	164

NOTE - SAMPLE C-1
IS SAMPLE C-5 IN
REPORT TEXT AND MAPS
RD.

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SEPTEMBER 13, 1990

CERTIFICATE OF ANALYSIS ETS 90-9086

MR. EMMETT HORNE, P.GEOL.
TERRACON GEOTECHNIQUE LTD.
SUITE 800, 633 - 6TH AVE. SW.
CALGARY, ALBERTA
T2P 2Y5

PROJECT: 90111
SAMPLE IDENTIFICATION: 23 ROCK sample received SEPTEMBER 4, 1990

ET#	Description	AU (ppb)	AG (ppm)	CU (ppm)	PB (ppm)	ZN (ppm)
9086 - 1	RG90 1	100	1.6	>1000	30	94
9086 - 2	RG90 2	180	.0	136	33	44
9086 - 3	RG90 3	135	3.7	>1000	42	294
9086 - 4	RG90 4	5	.3	83	36	150
9086 - 5	RG90 5	15	.1	86	11	46
9086 - 6	RG90 6	<5	<.1	40	5	110
9086 - 7	RG90 7	<5	.4	96	8	24
9086 - 8	RG90 8	15	.3	71	5	59
9086 - 9	RG90 9	<5	.1	60	9	88
9086 - 10	RG90 11	5	<.1	7	4	13
9086 - 11	RG90 12	>1000	8.9	187	179	49
9086 - 12	RG90 13	>1000	>30.0	380	686	380
9086 - 13	RG90 14	>1000	23.2	41	7	50
9086 - 14	RG90 15	40	1.3	11	58	28
9086 - 15	RG90 16	5	<.1	38	15	44
9086 - 16	RG90 17	135	>30.0	689	>1000	>1000
9086 - 17	RG90 18	<5	.1	3	20	20
9086 - 18	RG90 19	5	<.1	70	24	21
9086 - 19	RG90 20	15	.5	94	83	167
9086 - 20	RG90 21	>1000	>30.0	9	>1000	4
9086 - 21	RG90 22	25	3.1	3	110	89
9086 - 22	RG90 23	>1000	>30.0	990	>1000	>1000
9086 - 23	RG90 24	215	27.5	17	>1000	956

NOTE: < = LESS THAN
> = GREATER THAN

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SEPTEMBER 17, 1990

CERTIFICATE OF ANALYSIS ETS 90-9086

MR. EMMETT HORNE, P.GEOL
TERRACON GEOTECHNIQUE LTD.
SUITE 800, 633 - 6TH AVE. SW.
CALGARY, ALBERTA
T2P 2Y5

PROJECT: 90111
SAMPLE IDENTIFICATION: 23 ROCK samples received SEPTEMBER 4, 1990

ET#	Description	AU (g/t)	AU (oz/t)	AG (g/t)	AG (oz/t)	CU (%)	PB (%)	ZN (%)
9086 - 1	RG90 1					.16		
9086 - 3	RG90 3					.24		
9086 -11	RG90 12	1.63	.048					
9086 -12	RG90 13	2.26	.066	100.0	2.92			
9086 -13	RG90 14	3.21	.094					
9086 -16	RG90 17			33.2	.97		.88	.45
9086 -20	RG90 21	3.54	.103	964.0	28.11		3.32	
9086 -22	RG90 23	14.34 *	.418	884.0	25.78		8.08	.58
9086 -23	RG90 24						.24	

NOTE: * = SAMPLE SCREENED & METALLICS ASSAYED

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METALLIC CALCULATION

SAMPLE NUMBER	-140 VALUE	+140 VALUE	CALCULATED VALUE
9086-22	16.15	9.386912	14.33698

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SEPTEMBER 25, 1990

CERTIFICATE OF ANALYSIS ETS 90-9122

MR. EMMETT HORNE, P.Geol.
TERRACON GEOTECHNIQUE LTD.
SUITE 800, 633 - 6TH AVE. SW.
CALGARY, ALBERTA
T2P 2Y5

SAMPLE IDENTIFICATION: 20 ROCK samples received SEPTEMBER 17, 1990

ET#	Description	AU (ppb)	AG (ppm)	CU (ppm)	PB (ppm)	ZN (ppm)
9122 - 1	A 1	5	.8	51	8	55
9122 - 2	A 2	5	.4	33	7	53
9122 - 3	A 3	5	.1	35	8	60
9122 - 4	A 4	<5	.1	6	66	18
9122 - 5	A 5	<5	.1	12	18	29
9122 - 6	B 1	<5	.1	45	4	54
9122 - 7	B 2	<5	.1	52	5	70
9122 - 8	B 3	130	.5	39	25	78
9122 - 9	B 5	10	.1	155	6	90
9122 -10	C 1	5	<.1	46	10	61
9122 -11	C 2	35	.4	75	31	102
9122 -12	C 3	15	<.1	37	8	59
9122 -13	C 4	10	<.1	5	8	24
9122 -14	C 6	5	.7	272	900	>1000
9122 -15	C 7	5	.1	47	8	56
9122 -16	C 8	10	<.1	59	25	233
9122 -17	C 9	10	<.1	85	14	124
9122 -18	C 10	15	<.1	7	7	44
9122 -19	C 11	5	.2	42	10	12
9122 -20	C 12	5	.1	74	24	120

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SEPTEMBER 25, 1990

CERTIFICATE OF ANALYSIS ETS 90-9122

MR. EMMETT HORNE, P.Geol.
TERRACON GEOTECHNIQUE LTD.
SUITE 800, 633 - 6TH AVE. SW.
CALGARY, ALBERTA
T2P 2Y5

SAMPLE IDENTIFICATION: 20 ROCK samples received SEPTEMBER 17, 1990

ET#	Description	ZN (%)
9122 -14	C 6	.12

ECO-TECH LABORATORIES LTD.
JUTTA JEALOUSE
B.C. Certified Assayer

SC90/TERRACON

APPENDIX C

Sample Descriptions

APPENDIX C
SAMPLE DESCRIPTIONS

Sample No.	Description	Claim Location	Laboratory Analysis									
			Au		Ag		Cu		Pb		Zn	
			ppb	gm/t	ppm	gm/t	ppm	%	ppm	%	ppm	%
RG90-1	massive pyrite float in lateral moraine	Mack 2	100		1.6		>1000	0.16	30		94	
RG90-2	quartz-pyrite epidote fragments in moraine	Mack 2	180		0		136		33		44	
RG90-3	quartz-pyrite float in slope talus	Mack 2	135		3.7		>1000	0.24	42		294	
RG90-4	andesite with 2-5% fine grained disseminated pyrite in slope talus	Mack 2	5		0.3		83		36		150	
RG90-5	quartz sericite with 5% massive anhedral (bleb) pyrite and pyrrhotite, rock fall sample	Mack 2	15		0.1		86		11		46	
RG90-6	weathered sericite schist outcrop with abundant sulphide (yellow--purple gossan)	Mack 2	<5		<0.1		40		5		110	
RG90-7	quartz sericite schist outcrop with medium grained bleb pyrite to 5% (surgary quartz)	Mack 2 -adjacent to granite porphyry dyke	<5		0.4		96		8		24	

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SAMPLE DESCRIPTIONS

Sample No.	Description	Claim Location	Laboratory Analysis									
			Au		Ag		Cu		Pb		Zn	
			ppb	gm/t	ppm	gm/t	ppm	%	ppm	%	ppm	%
RG90-8	quartz sericite shist, abundant sulphides, burgundy – yellow weathering gossan outcrop trending AZ120/90°	Mack 2	15		0.3		71		5		59	
RG90-9	quartz sericite schist as above, ~75m ESE of RG90-8, altered volcanic	Mack 2	<5		0.1		60		9		88	
RG90-11	5cm wide quartz vein in frost heave; vein is discordant to silicified host volcanic, pyrite to 4% in mm scale veinlets and as fine grained euhedral and bleb disseminations	Mack 2	5		<0.1		7		4		13	
RG90-12	near source float (frost heave?), quartz vein rubble with near massive 2 cm pyrite stringer, ~20m south of RG90-11	Mack 2	>1000	1.63	8.9		187		179		49	
RG90-13	10cm quartz vein in volcanic frost heave; honey coloured quartz with 0.5 – 1.0 % galena and 1 – 2% euhedral pyrite clots.	Mack 2/Devil 2 Boundary	>1000	2.26	>30.0	100.0	380		686		380	
RG90-14	5cm wide quartz vein in outcrop with 2 – 4% pyrite +/– galena, coarse grained blebs; vein trends AZ130/80° S	Mack 2	>1000	3.21	23.2		41		7		50	

APPENDIX C
SAMPLE DESCRIPTIONS

Sample No.	Description	Claim Location	Laboratory Analysis									
			Au		Ag		Cu		Pb		Zn	
			ppb	gm/t	ppm	gm/t	ppm	%	ppm	%	ppm	%
RG90-15	vuggy/weathered quartz vein with anhedral masses of pyrite, in rock fall from ridge located 30m upslope; location is ~30m-AZ058 from RG90-14	Mack 2	40		1.3		11		58		28	
RG90-16	rusty volcanic in outcrop knoll in boulder field; minor, irregular 1-2mm quartz veinlets with 2% medium grained pyrite blebs; sample contains both vein and slightly siliceous host rock material	Mack 2	5		<0.1		38		15		44	
RG90-17	rusty quartz vein material in spoil from RG90-16 outcrop; 0.5-1% galena and 2% pyrite clots, malachite staining and possible spalerite	Mack 2	135		>30.0	33.2	689		>1000	0.88	>1000	0.45
RG90-18	pyritic epidote in small irregular outcrop shears in very hard, very fine grained diorite (recrystalized volcanic?); epidote stringers to 5 cm width; located at edge of glacier's receding margin	Mack 2	<5		0.1		3		20		20	

APPENDIX C
SAMPLE DESCRIPTIONS

Sample No.	Description	Claim Location	Laboratory Analysis									
			Au		Ag		Cu		Pb		Zn	
			ppb	gm/t	ppm	gm/t	ppm	%	ppm	%	ppm	%
RG90-19	quartz-epidote-pyrite outcrop shear to 20cm width, silicified volcanic wall rocks; shear contains cherty bands locally; ~10m WSW of RG90-18	Mack 2	5		<0.1		70		24		21	
RG90-20	20 to 30 cm wide outcrop shear gouge with massive pyrite-pyrrhotite clots; shear trends AZ110/90°	Mack 2	15		0.5		94		83		167	
RG90-21	15cm quartz boulder with 5% pyrite and 2-4% galena, possible minor amounts of sulphosalts, locally vuggy; sulphides are concentrated along fractures; sample from rock fall near edge of lateral moraine	Mack 2/Divel 2 Boundary	>1000	3.54	>30.0	964.0	9		>1000	3.32	4	
RG90-22	limy breccia moraine float with pyrite filled hairline fractures; rock is friable and weathers to a yellow-orange color	Mack 2/Divel 2 Boundary	25		3.1		3		110		89	
RG90-23	small angular quartz boulder in slope talus with est. 10% pyrite-galena disseminated throughout, locally concentrated in massive bands of fine grained pyrite-galena to 2cm	Mack 2/Divel 2 Boundary	>1000	14.34	>30.0	884.0	990		>1000	8.08	>1000	0.58

APPENDIX C
SAMPLE DESCRIPTIONS

Sample No.	Description	Claim Location	Laboratory Analysis									
			Au		Ag		Cu		Pb		Zn	
			ppb	gm/t	ppm	gm/t	ppm	%	ppm	%	ppm	%
RG90-24	weathered quartz carbonate vein fragments in float with abundant fine grained pyrite to 20%; weathers weathers light yellow-brown, probably pyritic sericite schist host	Mack 2	215		27.5		17		>1000	0.24	956	
A1	Crystalline tuff, weathered rusty brown, unweathered blue grey, minor white quartz veinlets occasional epidote bleb (~3mm diam.), minor ankerite, minor pyrite along thin fractures - highly weathered slope talus	Mack 6	5		0.8		51		8		55	
A2	Crystalline tuff in rock fall, feldspathic strong epidote alteration, very siliceous thin feldspathic stringer, common along small fractures, weathered surface rusty brown	Mack 6	5		0.4		33		7		53	
A3	Blue grey crypto cyrstalline tuff, ~5% disseminated pyrite & fine granular pyrite stringers 2-6mm thick, weathered area highly oxidized with possible some ankerite, localized small blocky fractures, slope talus	Mack 6	5		0.1		35		8		60	

APPENDIX C
SAMPLE DESCRIPTIONS

Sample No.	Description	Claim Location	Laboratory Analysis									
			Au		Ag		Cu		Pb		Zn	
			ppb	gm/t	ppm	gm/t	ppm	%	ppm	%	ppm	%
A4	Volcanic breccia, angular white feldspar fragments in a brown oxidized clastic matrix ~20% matrix. Minor localized epidote alteration in matrix, rock fall sample	Mack 6	<5		0.1		6		66		18	
A5	white sugary quartz, calcitic and epidotic alteration, minor chlorite, minor pyrite crystals, moraine float	Mack 6	<5		0.1		12		18		29	
B1	grey tuff, frequent vesicles siliceous, fractures/joints calcareous, minor disseminated pyrite, sample from large angular boulder in moraine	Mack 6	<5		0.1		45		4		54	
B2	Blue grey tuff, very fine grained, 5% disseminated pyrite, minor disseminated biotite weathered surface greenish buff, chalky with minor localized iron oxide stain, sample of angular moraine/rock fall?	Mack 6	<5		0.1		52		5		70	
B3	Blue grey fine grained tuff, siliceous, some epidote alteration, ~10% hornblende, ~5% disseminate pyrite, trace chalcopyrite, weathered surface yellow to rusty coloured, sample from large blocks of angular moraine	Mack 6	130		0.5		39		25		78	

APPENDIX C
SAMPLE DESCRIPTIONS

Sample No.	Description	Claim Location	Laboratory Analysis									
			Au		Ag		Cu		Pb		Zn	
			ppb	gm/t	ppm	gm/t	ppm	%	ppm	%	ppm	%
B5	Dark grey very fine grained tuff, calcitic, siliceous, ~10% amphibole, highly weathered, rusty brown, irredescent & purple. (ie. chalcopyrite), slope talus	Mack 6	10		0.1		155		6		90	
C1	grey green crystalline tuff, chloritic, finely disseminated pyrite, possibly minor arsenopyrite, minor hornblende; weathered surface lightly iron stained, slope talus	Mack 6	5		<0.1		46		10		61	
C2	dark grey siltstone, planar bedded, very fine grained, jointing @ ~60° to bedding, weathered surface olive green with some iron stain and metallic yellow & purple irredescent stain, slope talus	Mack 6	35		0.4		75		31		102	
C3	light grey green crystalline tuff, calcite stringers common, host rock silceous, fine grain disseminated hornblende, discrete small pyrite grains, weathered surface medium chalky green with areas of iron staining, slope talus	Mack 6	15		<0.1		37		8		59	

APPENDIX C
SAMPLE DESCRIPTIONS

Sample No.	Description	Claim Location	Laboratory Analysis									
			Au		Ag		Cu		Pb		Zn	
			ppb	gm/t	ppm	gm/t	ppm	%	ppm	%	ppm	%
C4	white quartz breccia with medium grey green tuff clasts 2–10 cm, tuff is shistose & weathered with iron staining – possible quartz vein contact, slope talus	Mack 6	10		<0.1		5		8		24	
C6	Rusty brown chert, massive disseminated pyrite grains & occasional pockets of galena, weathered surface chalky buff to orange, occaisonal zones of medium grain quartz, rock fall sample	Mack 6	5		0.7		272		900		>1000	.12
C7	grey volcanoclastic cyrstalline tuff disseminated pyrite, massive, numerous vesicles, weathered surface chalky orange to irredescent purple & maroon with minor yellow & green areas, rock fall sample	Mack 6	5		0.1		47		8		56	
C8	blue grey chert with patchy epidote alteration weathered surface orange to rusty brown, chalky, zones of disseminated pyrite, occasional amphibole grains, rock fall sample	Mack 6	10		<0.1		59		25		233	

APPENDIX C
SAMPLE DESCRIPTIONS

Sample No.	Description	Claim Location	Laboratory Analysis									
			Au		Ag		Cu		Pb		Zn	
			ppb	gm/t	ppm	gm/t	ppm	%	ppm	%	ppm	%
C9	green grey volcanoclastic conglomerate with white quartz clasts (<1cm), matrix semi-schistose, generally massive appearance, weathered surface, dark brown, chalky, rock fall sample	Mack 6	10		<0.1		85		14		124	
C10	dark blue grey lithic tuff, medium grained, massive texture, finely disseminated pyrite, siliceous, weathered surface greenish to rust brown, talus sample		15		<0.1		7		7		44	
C11	yellow calcareous arenite, soft, chalky, vesicular, fresh surface buff color, weathered surface is bright yellow to rust color, talus sample	Mack 6	5		0.2		42		10		12	
C12	grey to dark grey chert, highly fractured, disseminated pyrite grains, trace chalcopyrite vesicular weathered surface medium brown, chalky, talus sample	Ajax 4	5		0.1		74		24		120	

APPENDIX D

Photographs of Thin Sections

Plates 1 - 6 Sample RG90-23
Plates 7 - 9 Sample RG90-17

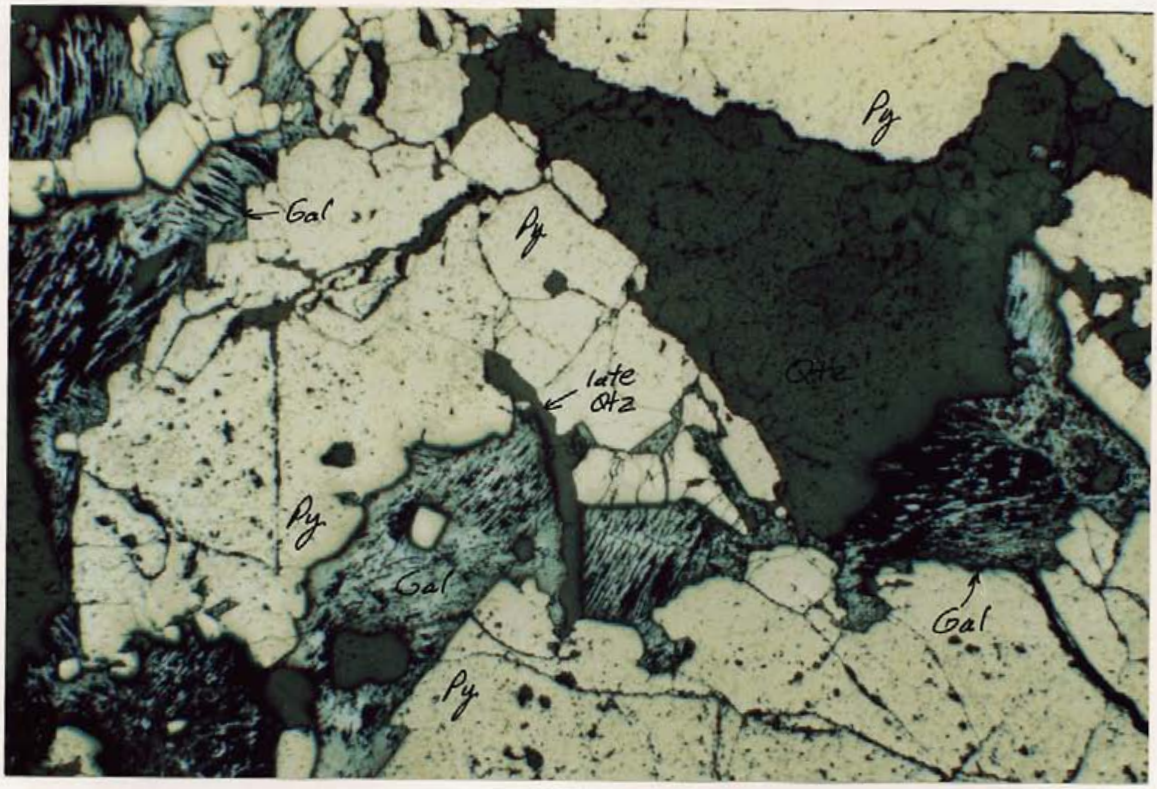


PLATE 1: RG90-23 Reflected Light, Magnification x 6.4

Photograph shows paragenetic sequence of quartz (Qtz), pyrite (Py), galena (Gal) and late quartz (ribbon structure in centre field of view). Note convex surfaces of pyrite into quartz and galena into pyrite.

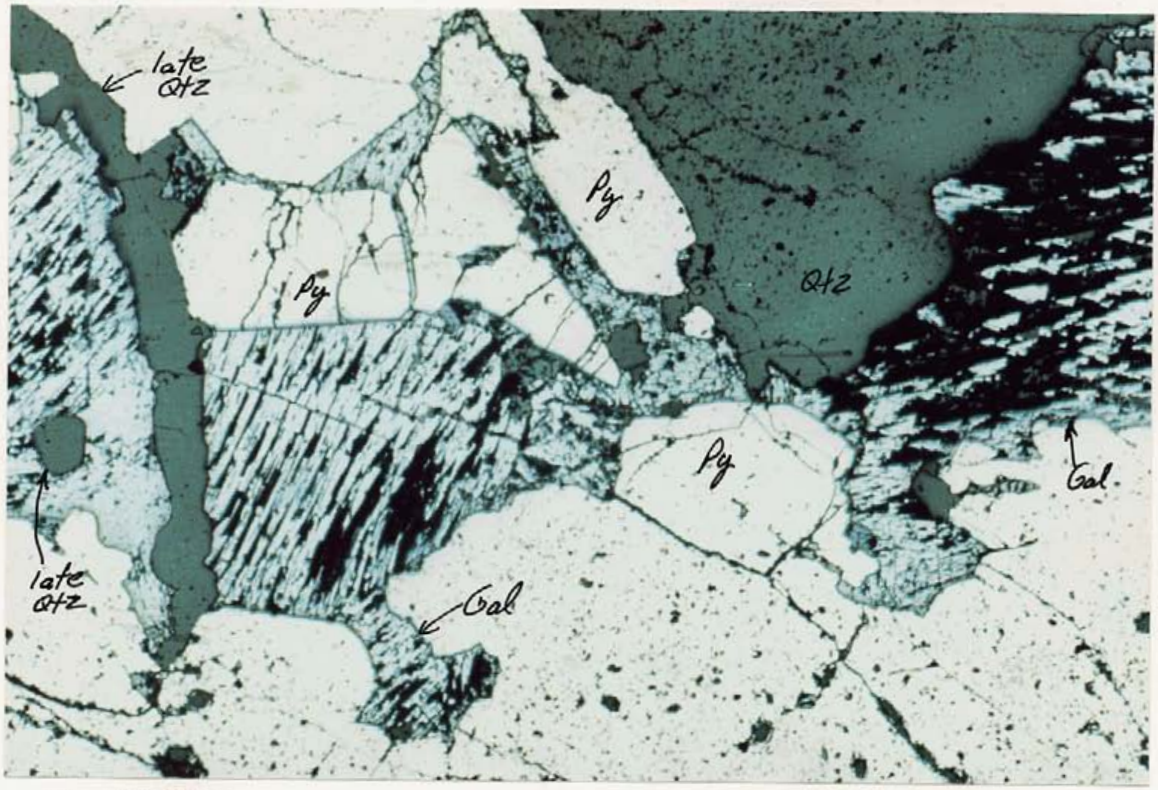


PLATE 2: RG90-23 Reflected Light, Magnification x 12.8

Close up of Plate 1 showing diagnostic cleavage and triangular pits in galena, and detail of fracture and entrant structures.

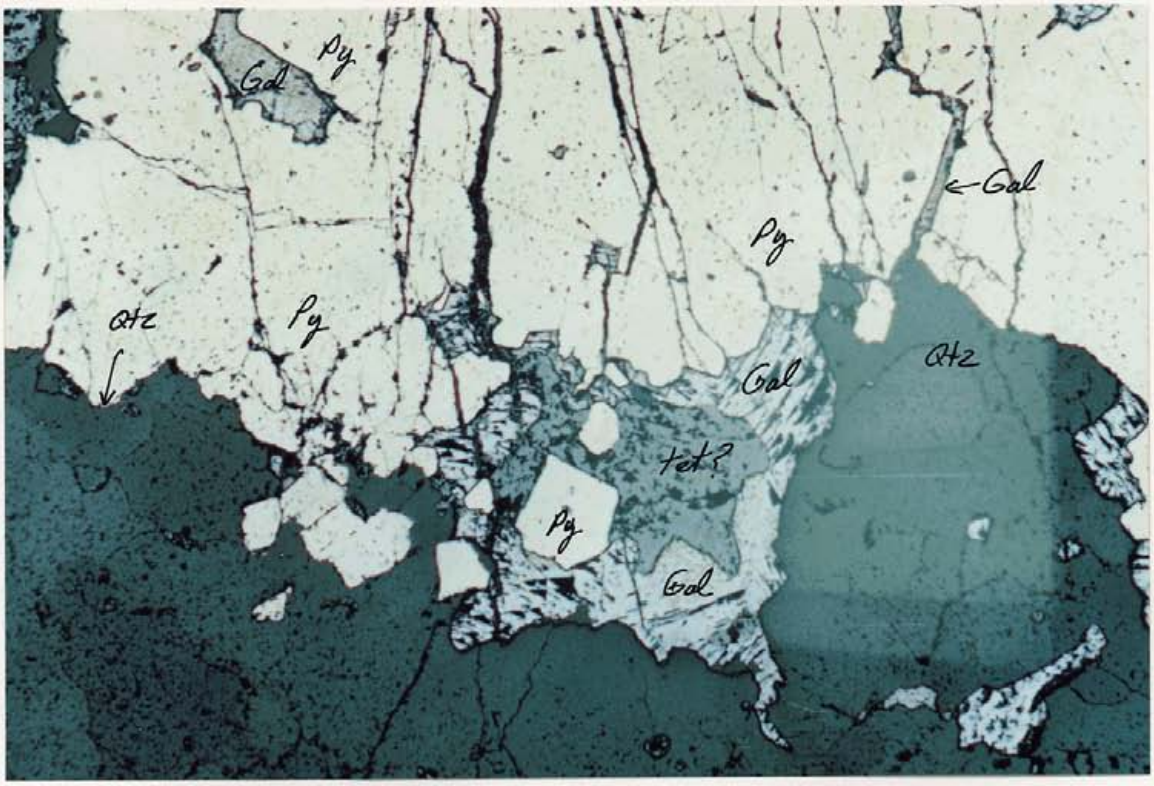


PLATE 3: RG90-23 Reflected Light, Magnification x 12.8

Photograph shows metacryst of pyrite, and galena and sphalerite mineralization occupying parallel fracturing across large pyrite grain, Possible tetrahedrite (tet) in centre field of view.

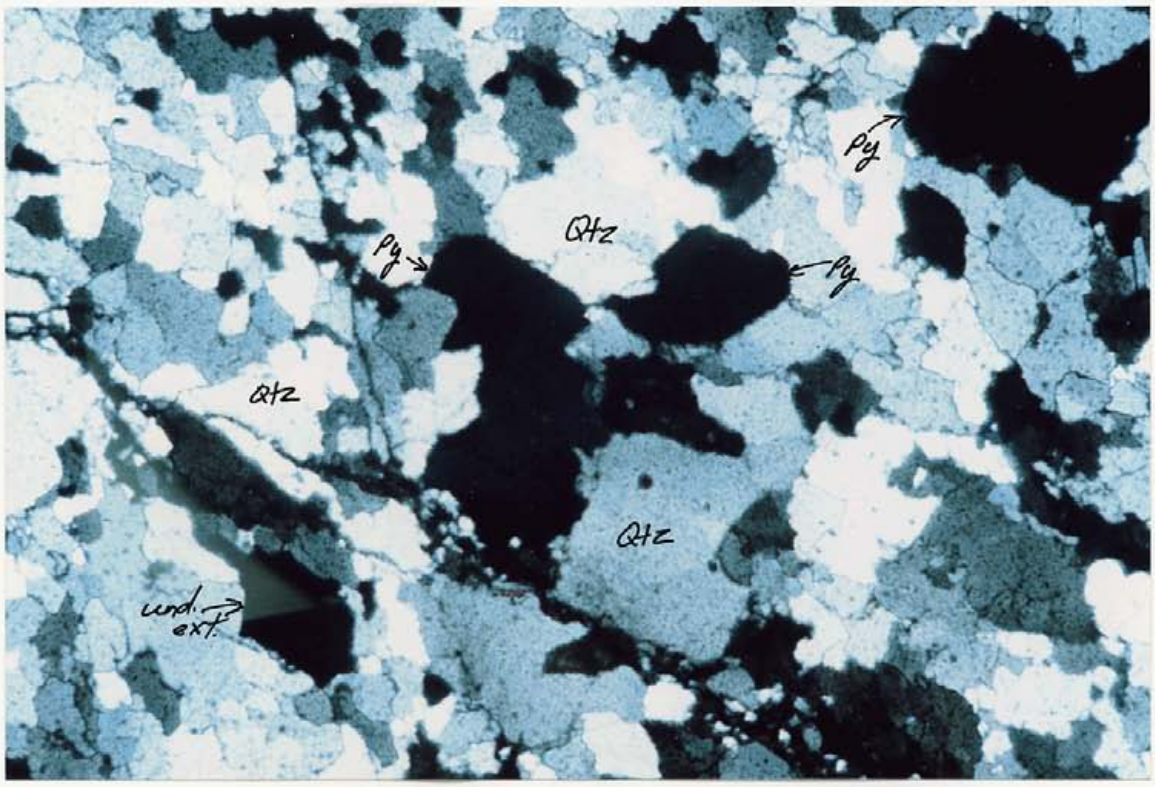


PLATE 4: RG90-23 X-nicols, Magnification x 6.4

Photograph shows fractured and strained habit of quartz with characteristic undulatory extinction.

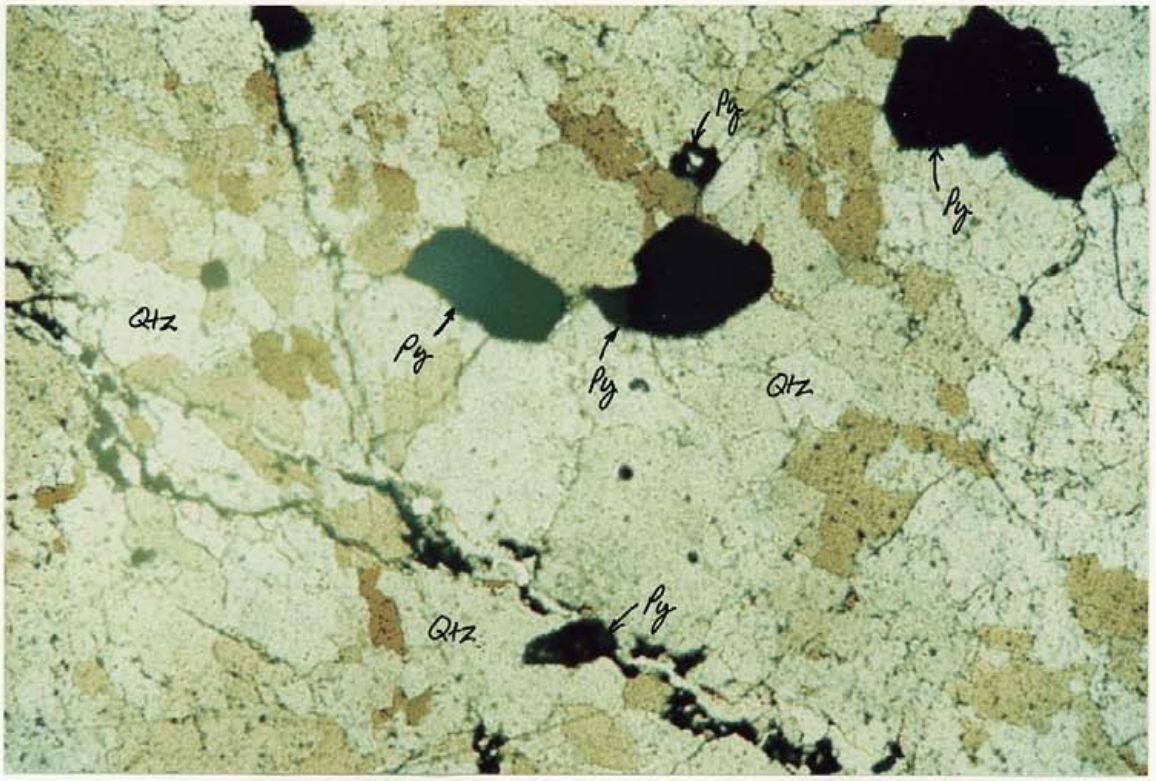


PLATE 5: RG90-23 Transmitted light, Magnification x 6.4

Same field of view as Plate 4 with subhedral pyrite grains under extinction (black). Note pyrite in feeder fractures. Quartz is crushed and weakly stained.

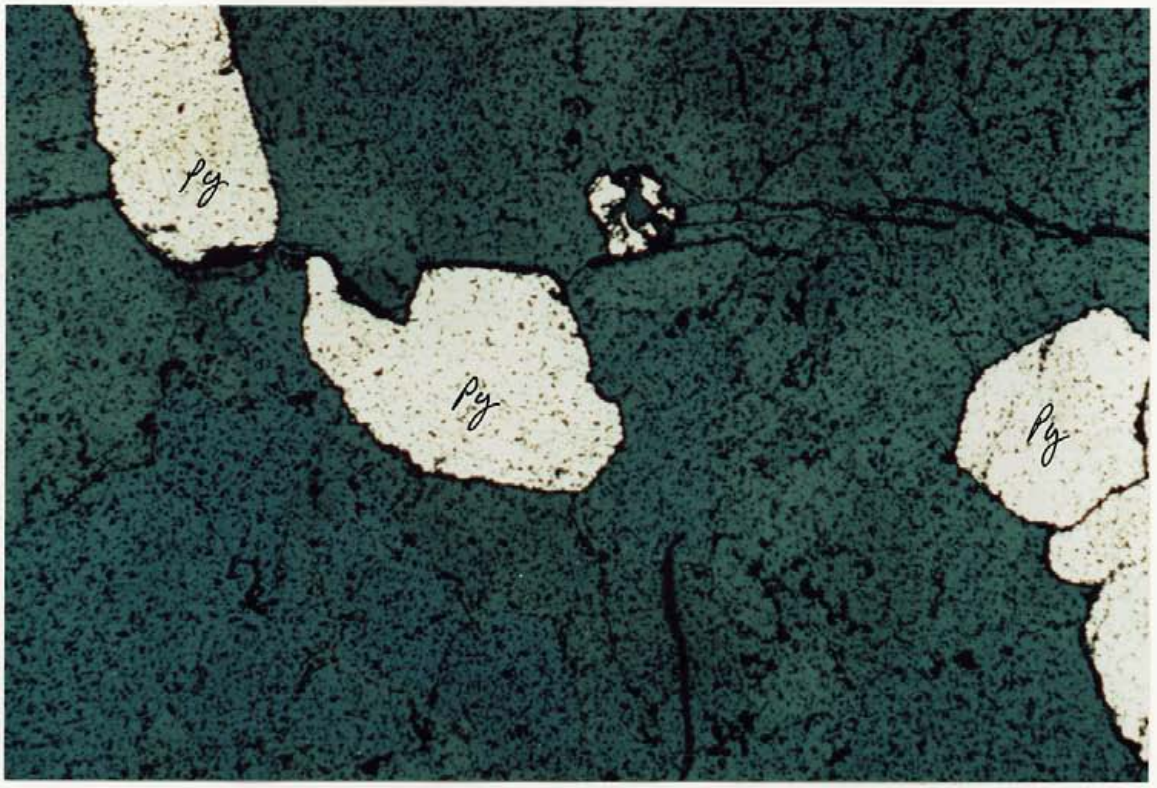


PLATE 6: RG90-23 Reflected Light, Magnification x 12.8

Close up of pyrite grains in Plate 5 (slightly rotated). Note small quartz island in small pyrite grain.

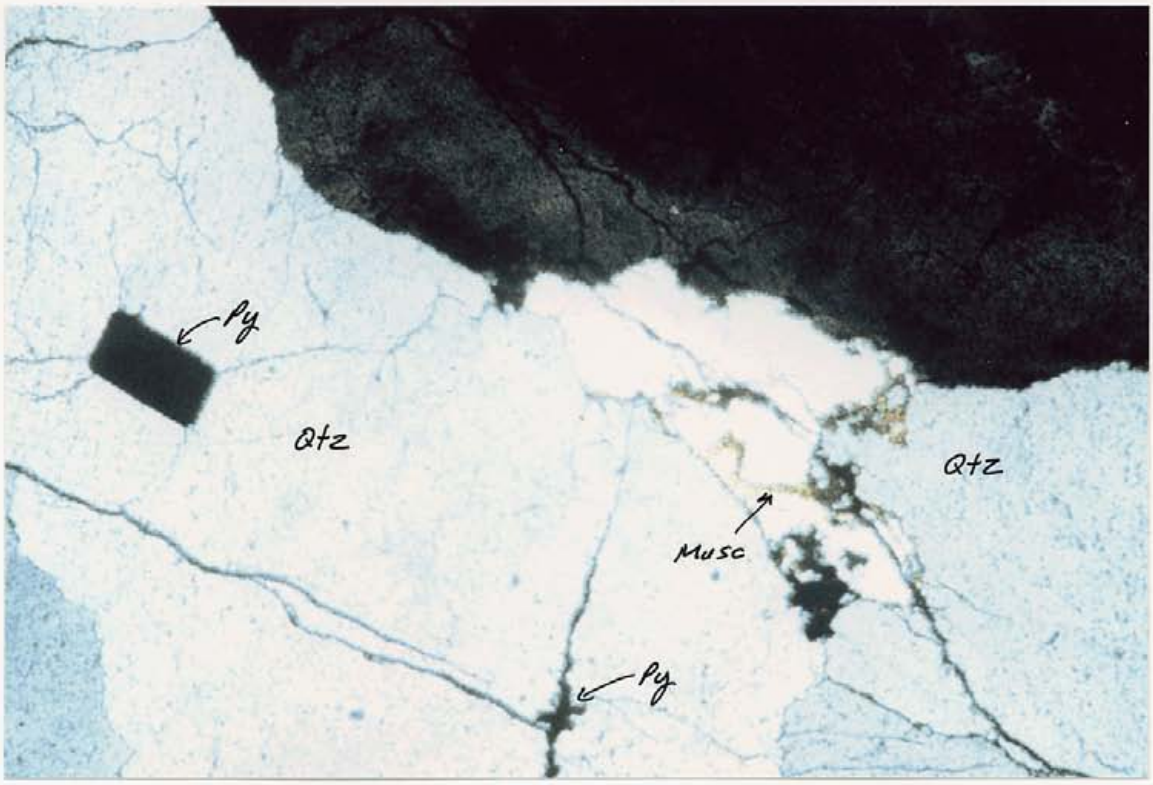


PLATE 7: RG90-17 X-nicols, Magnification x 6.4

Photograph shows euhedral pyrite grain and pyrite concentrated at fracture intersection Muscovite (Musc.).

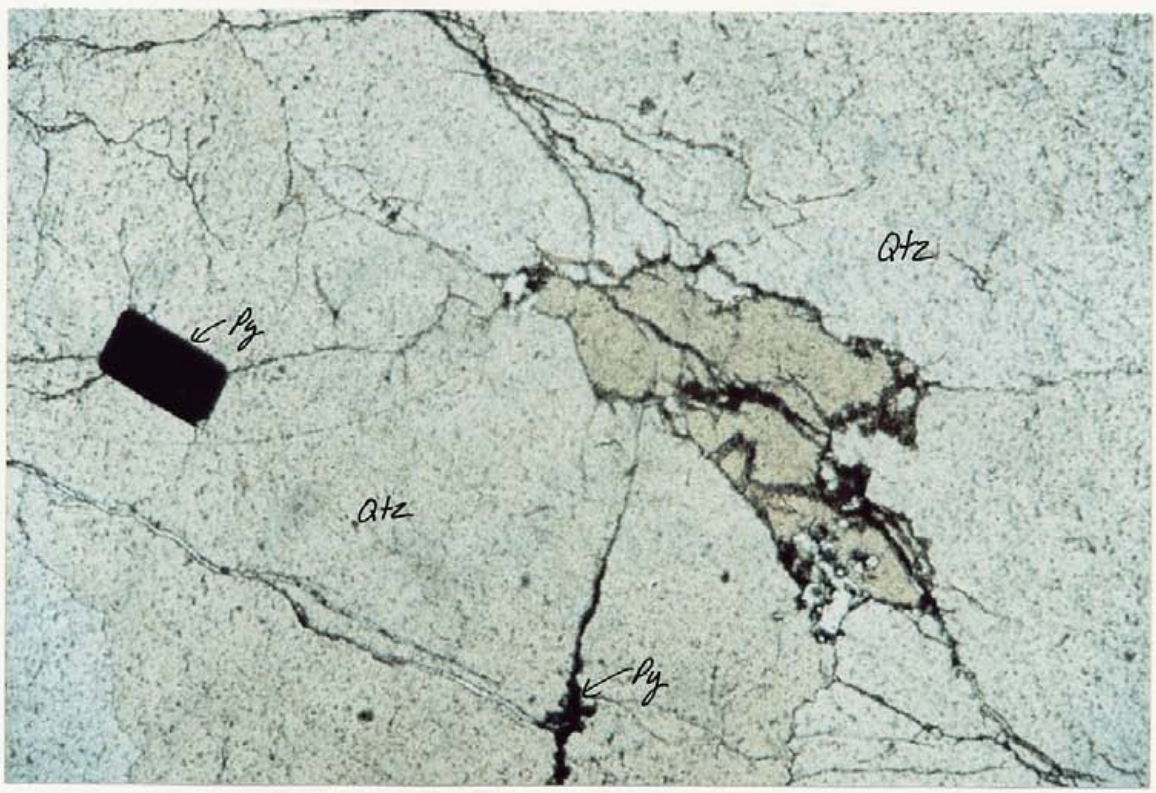


PLATE 8: RG90-17 Transmitted Light, Magnification x 6.4

Same field of view as Plate 7. Note branching hairline fracture network.

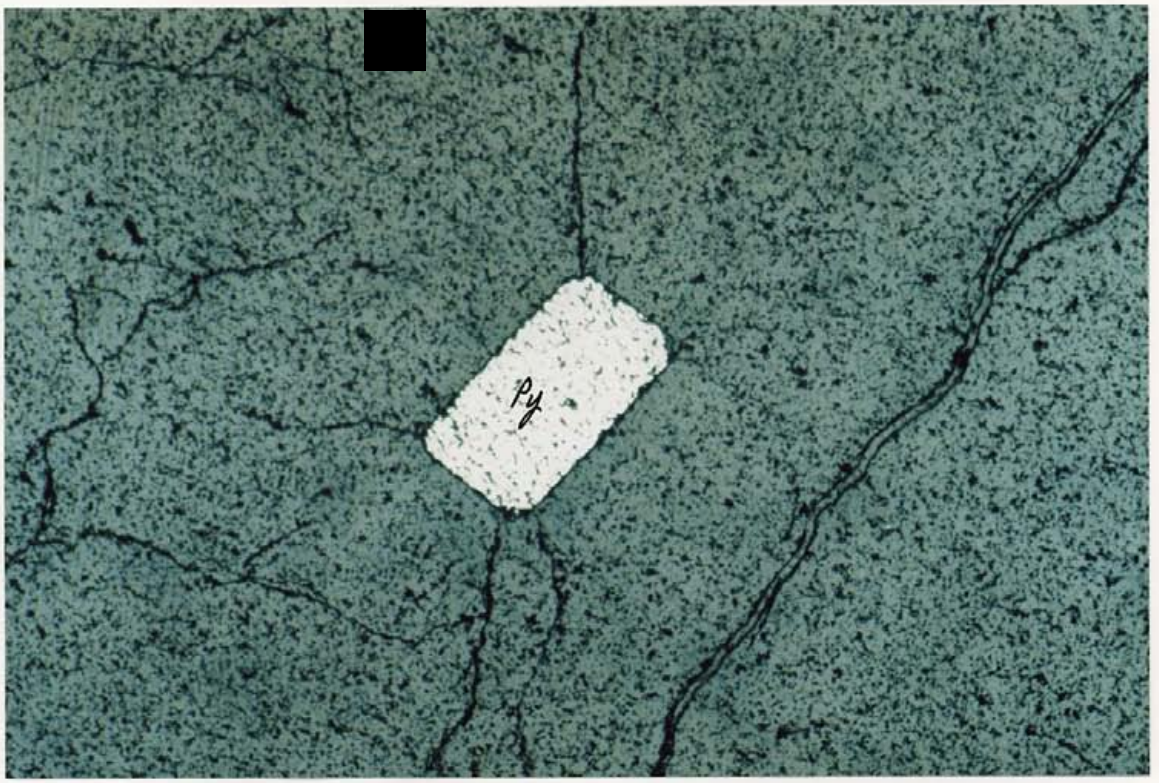
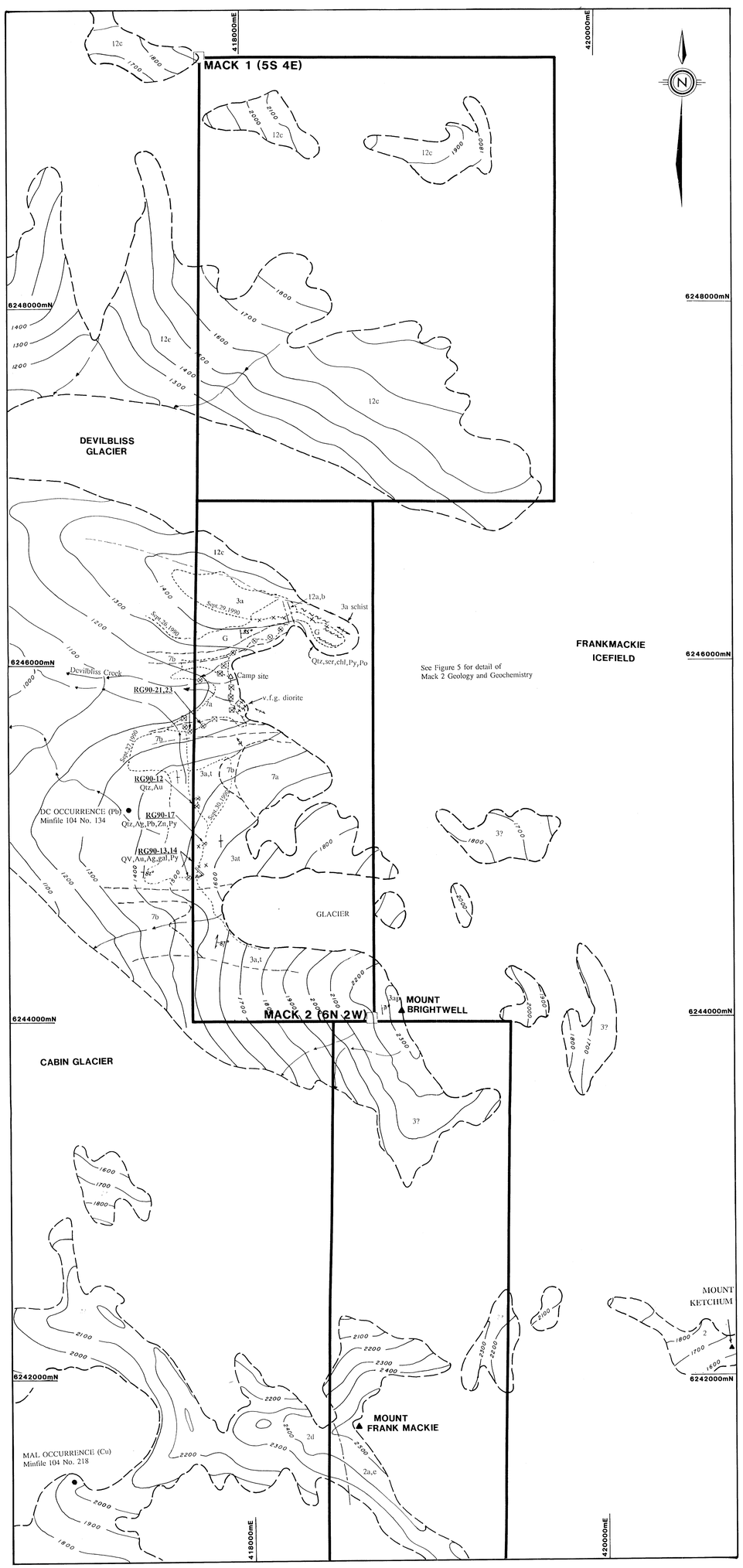
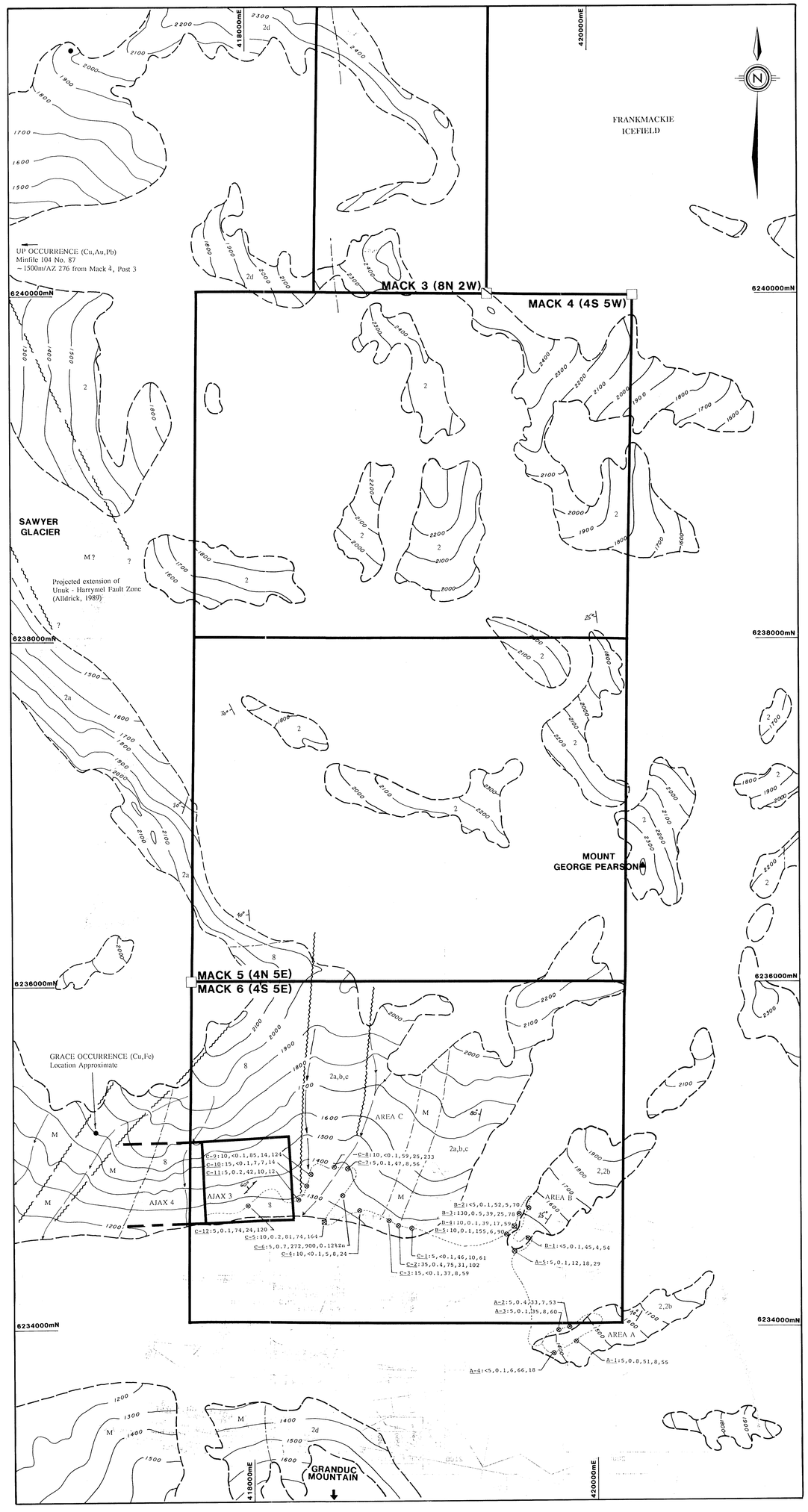


PLATE 9: RG90-17 Reflected Light, Magnification x 12.8

Close up of pyrite grain in Plate 8 (rotated 90°)



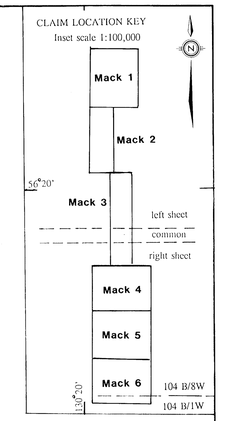


LEGEND

ABBREVIATIONS

Au	-	gold
Ag	-	silver
Cu	-	copper
Pb	-	lead
Zn	-	zinc
Cpy	-	chalcopyrite
Chl	-	chlorite
Epd	-	epidote
gal	-	galena
G	-	gossan
Gar	-	garnet
Mag	-	magnetite
Po	-	pyrrhotite
Py	-	pyrite
Qtz	-	quartz
QV	-	quartz vein
Ser	-	sericite
Sph	-	sphalerite

CLAIM LOCATION KEY
Inset scale 1:100,000



GEOLOGICAL LEGEND
(adapted from Alldrick et. al., 1989)

SEDIMENTARY AND VOLCANIC ROCKS

UNIT 7 Recent Unconsolidated sediments
- 7a moraine
- 7b talus, rock fall, colluvium

UNIT 3 Lower Jurassic Betty Creek Formation
- 3a massive to poorly bedded andesite
- 3p andesitic pillow lavas
- 3t siltstone, shale, argillite

UNIT 2 Upper Triassiac to Lower Jurassic Unuk River Formation
- 2a conglomerate, siltstone, sandstone, breccia
- 2b crystal and lithic tuff
- 2c chert
- 2d pillow lava
- 2e volcanic flows

INTRUSIVE ROCKS

UNIT 12 Coast Plutonic Complex
- 12a aplite, minor biotite
- 12b K-feldspar hornblende porphyry
- 12c hornblende-biotite quartz monzonite

UNIT 8 Bucke Glacier Stock
- gneissic to foliated hornblende-biotite quartz diorite (equivalent to unit 5 of Grove, 1986)

METAMORPHIC ROCKS

M - phyllite, schist (unit 2b of Grove, 1986)

GEOCHEMICAL SAMPLE SITES

- ⊠ silt (stream sediment)
- × outcrop
- ⊗ rock fall, talus, moraine
- 40,3,11,58,28 assays: Au(ppb), Ag(ppm), Cu(ppm), Pb(ppm), Zn(ppm) (unless otherwise stated)

TOPOGRAPHY AND CLAIM FEATURES

- Icefield, glacier margin
- Creek, direction of flow
- 1400 Contours in metres (ASL)
- Legal Corner Post (LCP) and claim line
- Date Traverse route

GEOLOGICAL FEATURES

- Outcrop
- Shear zone or minor fault
- Major fault (defined, assumed)
- 80° Strike and Dip (bedding)
- 80° Strike and Dip (foliation)
- 80° Quartz vein(QV) trend and dip
- Fold Axis and Plunge Direction
- Geological Contact

NOTES

1. Claim-posts and boundary lines established by topographic map
2. Base Map produced by photographic enlargement of NTS 104 B/8; contours converted to metric; UTM Grid; geology in part after Alldrick et. al. (1989) and Grove (1986)

Scale

0 100 200 300 400 600 800

1:10000

20,676

GEOLOGICAL BRANCH
ASSESSMENT REPORT

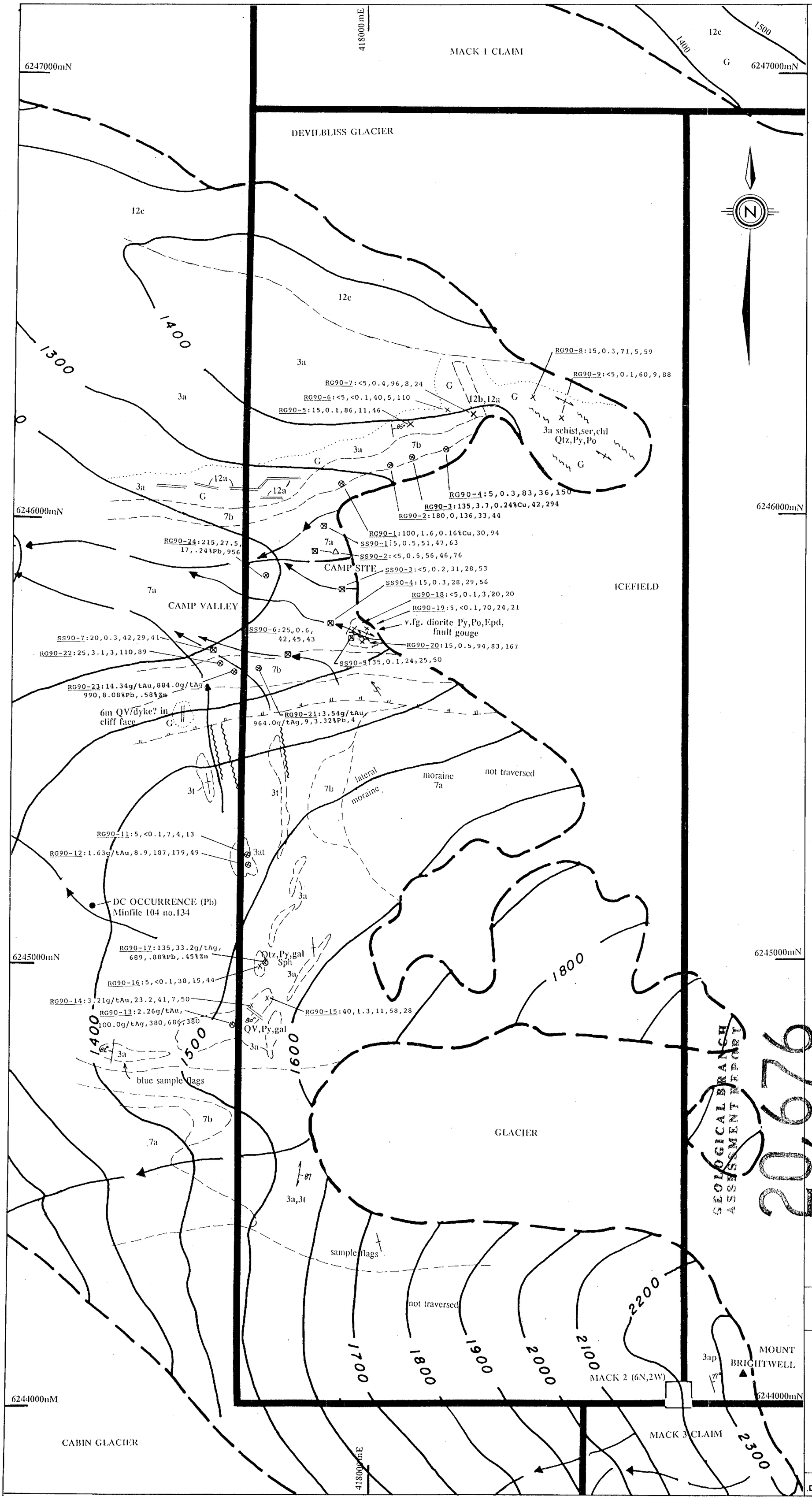
MACK PROPERTY

(NTS 104 B/8W)

MACK GROUP / MACK 1 CLAIM

PROPERTY COMPILATION AND SAMPLE LOCATION SITES

Date: November, 1990 | Figure 4



GEOLOGICAL LEGEND
(adapted from Alldrick et. al., 1989)

SEDIMENTARY AND VOLCANIC ROCKS

UNIT 7 Recent Unconsolidated sediments
- 7a moraine
- 7b talus, rock fall, colluvium

UNIT 3 Lower Jurassic Betty Creek Formation
- 3a massive to poorly bedded andesite
- 3p andesitic pillow lavas
- 3t siltstone, shale, argillite

UNIT 2 Upper Triassiac to Lower Jurassic Unuk River Formation
- 2a conglomerate, siltstone, sandstone, breccia
- 2b crystal and lithic tuff
- 2c chert
- 2d pillow lava
- 2e volcanic flows

INTRUSIVE ROCKS

UNIT 12 Coast Plutonic Complex
- 12a aplite, minor biotite
- 12b K-feldspar hornblende porphyry
- 12c hornblende-biotite quartz monzonite

ABBREVIATIONS

Py	pyrite	Ser	sericite
Po	pyrrhotite	Epd	epidote
M	magnetite	Gar	garnet
Pb	lead	Chl	chlorite
gal	galena	Qtz	quartz
Cpy	chalcopyrite		

GEOCHEMICAL SAMPLE SITES

- ⊠ silt (stream sediment)
- × outcrop
- ⊗ rock fall, talus, moraine
- 40,3,11,58,28 assays: Au(ppb), Ag(ppm), Cu(ppm), Pb(ppm), Zn(ppm) (unless otherwise stated)

TOPOGRAPHY AND CLAIM FEATURES

- Icefield, glacier margin
- Creek, direction of flow
- 1400 Contours in metres (ASL)
- Legal Corner Post (LCP) and claim line
- Crest of cliff

GEOLOGICAL FEATURES

- Outcrop
- Shear zone or minor fault
- Major fault (defined, assumed)
- Strike and Dip (bedding)
- Strike and Dip (foliation)
- Quartz vein(QV) trend and dip
- Gossan (G) outline
- Fold Axis and Plunge Direction

NOTES

1. Claim-posts and boundary lines established by topographic map
2. Base Map produced by photographic enlargement of NTS 104B/8W; contours converted to metric; UTM Grid; geology in part after Alldrick et. al. (1989)

Scale
0 50 100 200 300m
1:5000

MACK PROPERTY
(NTS 104 B/8W)

MACK 2 CLAIM

RECONNAISSANCE GEOLOGICAL MAPPING AND SAMPLE LOCATION SITES

Date: November, 1990 | Figure 5