Exploration Progress Report

for

MENIKA MINING LTD.

on the

RELIANCE PROPERTY

Lillooet M.D.

N.T.S. 92J/15W

July 15, 1985 Vancouver, B.C. L. Sookochoff, P.Eng. Consulting Geologist

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**Exploration Progress Report** 

on the

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PART A

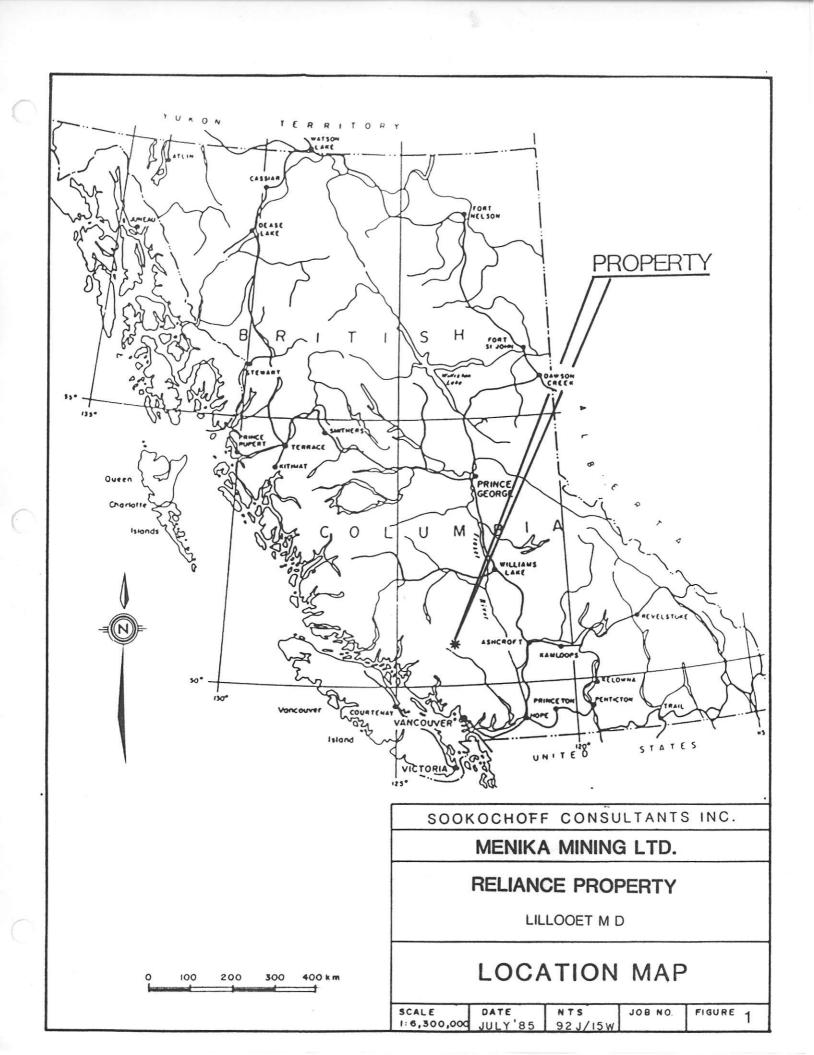
## **SUMMARY**

The Menika-Reliance property is located in the historic Bralorne gold camp where the most productive mine of the Western Cordillera -the Bralorne- is located. The Bralorne-Pioneer mine processed some eight million tons with a recoverable grade of 0.522 oz Au/ton.

The Reliance property is 13 km north of the Bralorne which is presently being re-explored and is enveloped by other former producers and/or developed mineral zones which are also under exploration.

The property is also adjacent to the south side of Carpenter Lake and is underlain by meta volcanics and sedimentary rocks of the Bridge River (Fergusson) Group within which peripheral properties have developed mineral zones or produced to some extent.

At the Congress which is presently being explored by Levon Resources some 3500 tons of material was processed in 1937. Considerable bodies of material with antimony-gold mineralization were established over a vertical range of 600 feet. Gold values were increasing with depth at the expense of the antimony content. Gold Values are located within the greenstone with varying degrees of sulfides and some cinnibar.



At the <u>Minto Mine</u> also on the north side of Carpenter Lake development consisted of workings to a depth of 800 feet and for a length of 1000 feet.

At the Menika-Reliance Property former exploration included the exploration of at least three mineralized zones by four adits and other workings over a range of 1500 feet. These adits explored gold vertical bearing quartz-stibnite zones assaying up to ".58 oz inches". across eight Geochemical surveys a 1200 foot antimony anomaly 1200 feet east of delineated the workings designated as the Ferguson-Reliance zone and located along north-south structures along the central portion of the property.

The 1971 geochemical program also delineated a 3200 foot anomaly over the eastern portion of the Senator workings and adjacent to the Imperial and Senator Road Zones where present exploration is centered. An arsenic anomaly envelops the antimony anomaly extends to the northern limits of the property and includes the Bona zone.

On the western portion of the property former work included the exploration of a gold-stibnite zone by the Senator workings from which samples returned upto .16 oz Au/ton across 4.5 feet.

1985 Menika Mining constructed a road to the Senator additional roads to investigate the trend of area with the mineralized zone. An 100 meter (328 foot) zone of shearing, alteration and mineralization was intersected the Imperial Road at an elevation of 2775 feet. A series o f predominat fractures trending at 025° to 035° associated limonite which may be up to two inches and gold bearing. Quartz veins up to five inches wide and trending northerly or southeasterly are commonly stibnite bearing also with associated gold values.

I. Brovic, P.Eng. reported the Imperial Vein zone as 5.5 m wide and containing average values of 0.467 oz/ton Au. In addition a one meter sample was reported to return 2.501 oz/ton Au.

The writer sampled 100 meters of the <u>Imperial zone</u>. A shear zone adjacent to the north of a central silicified zone returned .08 oz Au/ton across 12 meters with an inclusive 0.7 meter zone of quartz-stibnite assaying .185 oz Au/ton.

The central silicified portion of the zone returned anamalous gold values with a limonitic zone assaying up to .397 oz Au/ton.

A one meter wide quartz-stibnite-limonite zone along the southern periphery of the siliceous zone returned .195 oz Au/ton.

To the south of the central zone a 0.6 meter limonitic zone with yellow stibnite alteration returned .622 oz Au/ton.

On the lower Senator road zone 104 feet (32 meters) below the Imperial zone samples taken from zones bearing quartz-stibnite trending mainly at 030° and less often at 130° assayed up to .482 oz Au/ton.

On the roads above the main Imperial zone the zone is less altered. A 1.5 meter sample across a siliceous zone returned .054 oz Au/ton. Cinnabar and travertine occur in this area.

A newly discovered zone - The Bona Zone - some 200 meters northeast of the Senator workings returned an assay of 2.11 oz Au/ton from grabs across a six meter width.

Ιt is concluded that recent and former exploration has a gold-silver epithermal system. disclosed evidence of The stock work of antimony-gold veins, the pervasive quartz, the cinnibar and silicification. vuggy travertine and heavy iron oxides characterize the higher portions of an epithermal system. At this level of the system and confirmed by the sample results, bulk tonnages grade mineralization could be delineated with lower excellent potential for developing continous high grade section over minimum mining widths. The sampling program also indicated that with the high and low grade zones present for delineating substantial potential i s of economic mineralization grades at this level. model and property also indicate the potential location of increasing gold values to depth. Furthermore for exploration are indicated favorable zones the more the present workings where arsenic antimony adjacent to geochem anomalies suggest an extensive mineralized zone paralleling the northerly trending Senator Imperial structure.

the widespread known and indicated gold bearing With an area of 1000 by 1000 meters and a vertical over range o f some 500 meters, an exploration program is initially conduct testing the warranted to o f zones with additional surface Senator-Imperial and Bona locate other potential areas of economic exploration to mineralization.



# **RECOMMENDATIONS**

It is recommended that initially a 2500 foot (750 meter) drill program estimated to cost \$57,000 be initiated to initially test the Imperial zone at depth for increased mineralization.

The two stage program with a second stage of surface exploration and/or diamond drilling is estimated to cost \$237,000.

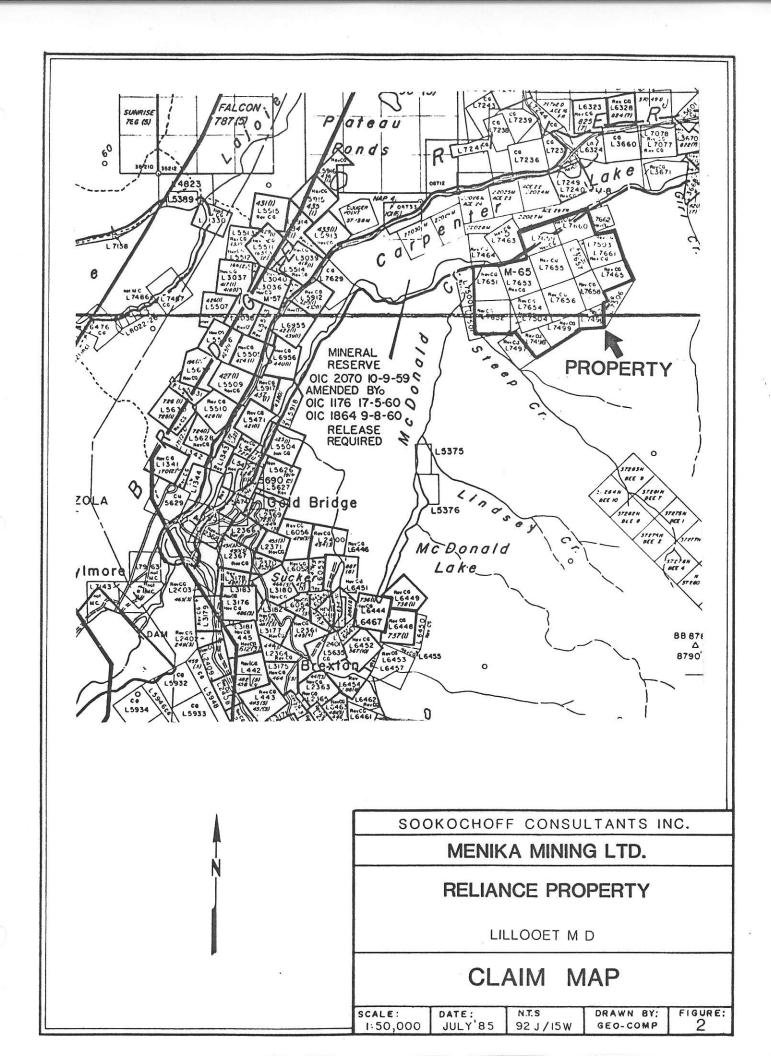
Respectively submitted,

AURENCE SOOKOCHOFT

Laire Retischkoon if, P. Eng.

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July 15, 1985 Vancouver, B.C.



Exploration Progress Report

on the

Reliance Property

for

Menika Mining Ltd.

Part B

# INTRODUCTION

At the request of C. Boitard of Menika Mining Ltd. the writer carried out a property examination of the company's Reliance Property.

The purpose of the examination was to sample the mineralized outcrops exposed by recent trenching, to evaluate the information and to recommend a continuing exploration and development program.

The information for this report is based on publications as cited under Selected References and from a sampling program carried out by the writer from June 26, 1985 to June 28, 1985.

# **PROPERTY**

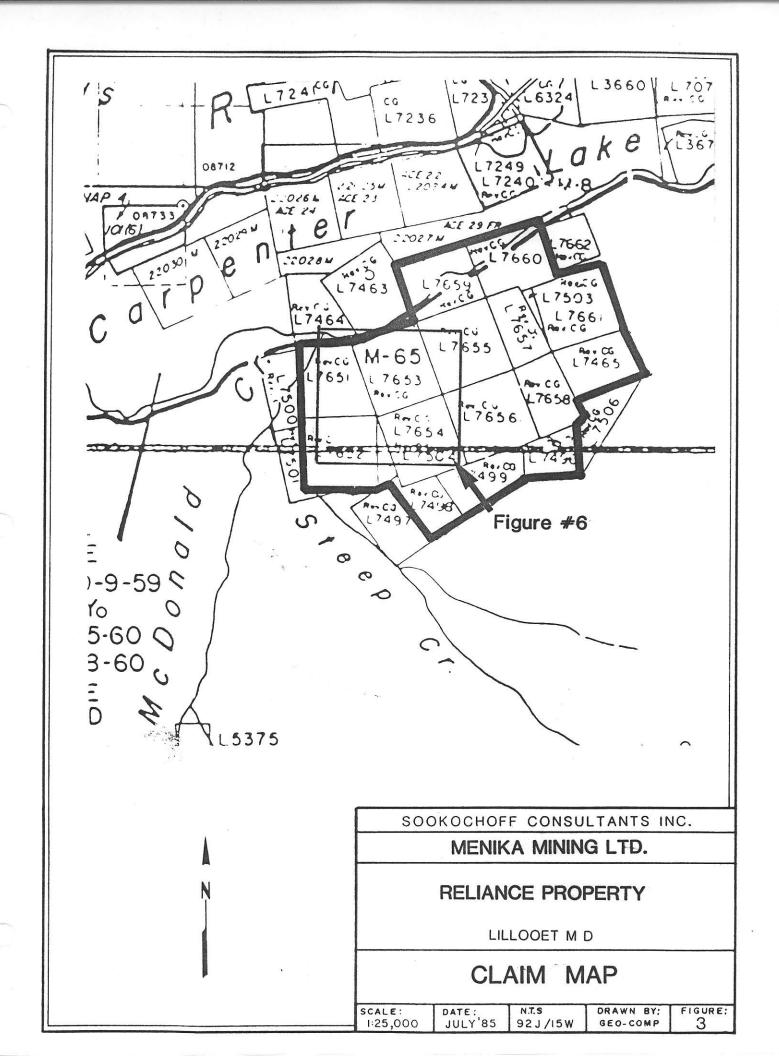
The property is composed of 19 reverted contiguous crown grants. Particulars are as follows:

Claim Name	Lot No.	Record No.	Expiry	Date	<u>e</u>
Omen 1-3	7659-7661	2158-2161	September	20,	1987
Omen 7	7465		"	"	"
Omen 8	7496				
Nemo 1-8	7651-7658	2144-2155	<b>11</b>	<b>91</b>	Ħ
Eros 2	7498		n	Ħ	n
Omen fraction	7502		**	11	***
Nemo fraction	7503		77	11	n
Thin fraction	7504		Ħ	11	11
Nova fraction	7505		Ħ	Ħ	Ħ
Eros fraction	7506		91	n	<b>11</b>

The claims are wholly owned by Menika Mining Ltd. of Vancouver.

Any legal aspects pertaining to the claim group is beyond the scope of this report.





# LOCATION AND ACCESS

The property is located south of and adjacent to Carpenter Lake, adjacent to the east of McDonald Creek and eight km east of Gold Bridge. Gold Bridge is 60 km north of Pemberton and 165 km north of Vancouver.

From Vancouver, Gold Bridge may be reached northward via Squamish, Pemberton and the Hurley River road in the summer or eastward to Lytton - on the Trans Canada Highway (342 km) northward to Lillooet (64 km) and westward to Gold Bridge (80 km).

Access to the property from Gold Bridge is eight km eastward on a secondary gravel logging road. A newly constructed road branching off to the south provides access to the main showings on the property.

# TOPOGRAPHY

The property extends southward from the shores of Carpenter Lake at an elevation of 2145 feet. Moderate forest covered slopes extend southward to an elevation of 4700 feet. Two northerly flowing creeks one in the west and one centrally exhibit moderately incised slopes from the paralleling ridges.

## WATER AND POWER

Sufficient water for all phases of the exploration program could be available from McDonald Creek or many other smaller water courses on the property.

Diesel electric power would be required in the initial stages of exploration.

## REGIONAL HISTORY

The history of the Bralorne gold camp - the most productive gold camp in the Canadian Cordillera - stems from the discovery of placer gold in the Bridge River area in 1863 and auriferous gold bearing veins in 1897. Although many gold showings were located, the occurrences that were explored and developed into major gold producers were the Bralorne and Pioneer veins.

The Pioneer Mine was operated on a small scale to 1917 with the main production commencing in 1928.

Bralorne Mine, one mile northwest of the Pioneer the Αt 13 km south of the Reliance property full production 100 tons per day increasing to 600 started 1932 at The Bralorne emanated from the tons per day in 1960. consolidation o f the Bradien and Lane Mines in 1932. 1959 the Bralorne and Pioneer Mines were consolidated and operated to the closure of the Pioneer Mine in 1962 and the closure of the Bralorne in 1971.

Gold and silver production (Barr 1980) from the two mines was:

Pioneer Bralorne	Tons 2,476,693 5,474,238 7,950,931	Gold(oz) 1,333,083 2,821,036 4,154,119	Silver(oz) 244,648 705,862 950,512
Recovered Gr	ade oz/ton	0.522	0.012

The <u>Bralorne</u> is presently being re-explored and developed by Mascot Gold Mines.

Other properties in the immediate area with a production history include the <u>Congress</u>, which is under present exploration by Levon Resources and the Wayside under exploration by Amazon Resources where a current diamond drill program is underway in a massive sulfide zone. The purpose of the drilling program is to extend the present drill indicated reserves of 163,000 tons of zinc-coppergold mineralization.

Former exploration at the  $\frac{\text{Congress}}{600 \text{ feet}}$  included three adits over a vertical range of  $\frac{600 \text{ feet}}{600 \text{ feet}}$ . In 1937 some 3500 tons of mineralized material was processed at the Wayside mill. The tests were successful, however further production was not achieved.

G

At the Minto Mine on the north side of Carpenter Lake 400 meters north of the Menika-Reliance property development consisted of workings to a depth of 800 feet and for a length of 1000 feet. Between 1934 to 1937 the mill treated ore valued at over \$625,000.

At the Kelvin along the northeastern boundary of the Menika-Reliance property work carried out between the claim location in 1933 and 1934 to 1936 was composed of three adits and a considerable amount of surface work.

# PROPERTY HISTORY (RELIANCE)

Reliance was staked in 1910 as an antimony prospect. The By September 1915 four tons of ore assaying .5 oz Au/ton shipped with an additional tonnage shipped England during WW I. Work done since 1933 consisted of four five adits and several open cuts and trenches. The workings are over an elevation of 1500 feet from an an elevation of 3,650 feet to an adit uppermost adit at than 100 feet above river level at an elevation of 2.150 feet. The lower working was a crosscut adit to explore the downward extension of the upper mineralized shear zones.

The Fergusson adit is 325 feet below and 600 feet to the southeast of the uppermost adit. The adit extends for 105 feet.

The Turner adit is at an elevation of 2,725 feet and 1000 to 1500 feet northwest of the Fergusson adit. The adit runs southeast for 85 feet and northeasterly for 55 feet.

Exploration on the Reliance from 1942 to 1971 included work by Hills Lake Mining Company Ltd., Consolidated Mining and Smelting Company and Bralorne Mining Company.

In 1971 Tri Con Exploration Surveys Ltd. carried out geochemical surveys and rock chip sampling on the Reliance Property. The surveys (Anselmo et al 1971) resulted in the location of three interesting antimony anomaly trends which contain values greater than the geochem values over the known mineral showings.

In 1984 Interex Resource Inc. carried out localized geochemical and EM surveys of the Reliance property for Menika Mining Ltd. The results indicated posititve gold geochemistry co-incident with an arsenic/VLF anomaly that was originally revealed in the 1971 Tri-Con survey (TVI Mining Ltd).

# REGIONAL GEOLOGY

rocks of The oldest the map areas are those of the (Fergusson Group) which regionally Permian Bridge River a 45 km belt fault trends northwesterly as bounded generally on the northeast and southwest by the Upper Triassic Pioneer Formation. At the southwest limit is the Bralorne Pioneer Mines which are associated with a o f northwesterly trending regional compressed system fault systems including the major Cadwallader Fault.

The faults bound, in addition to the Fergusson Group, lenticular trinds of the Upper Triassic Noel Formation, the Hurley Formation and ultramafic rocks. Local exposures of these Upper Triassic and mafic rock are also evident within the Fergusson Group.

Also within the band of Fergusson rocks are located plugs, stocks, and plutons of intrusives. The Bralorne intrusives of dioritic to gabbroic rocks and soda granite relate to the mineralized zones at the Bralorne Mine and the Wayside.

The Fergusson Group is comprised of an alternating of sedimentary and volcanic rocks. series consist of largely, thinly bedded, sedimintary often much chert, with argillaceous partings contorted, between the chert ribbons. Locally, argillaceous beds predominate. Pods and beds of crystalline limestone are not uncommon, and in places are several feet thick.

The volcanic rocks are chiefly fine grained massive to schistose, altered, andesitic to basaltic lavas, commonly green (greenstones) but reddish in places. They are commonly amygdular and rarely show pillow structures.

## REGIONAL MINERAL OCCURRANCES

mineral occurences which occur in the Fergusson Group the immediate area of the Reliance include the Minto, Golden. Congress, the Congress Mine and the Αt gold considerable bodies of ore carrying as well as antimony were established. The indications were that as gold values were increasing at the depth was attained, expense of the antimony content.

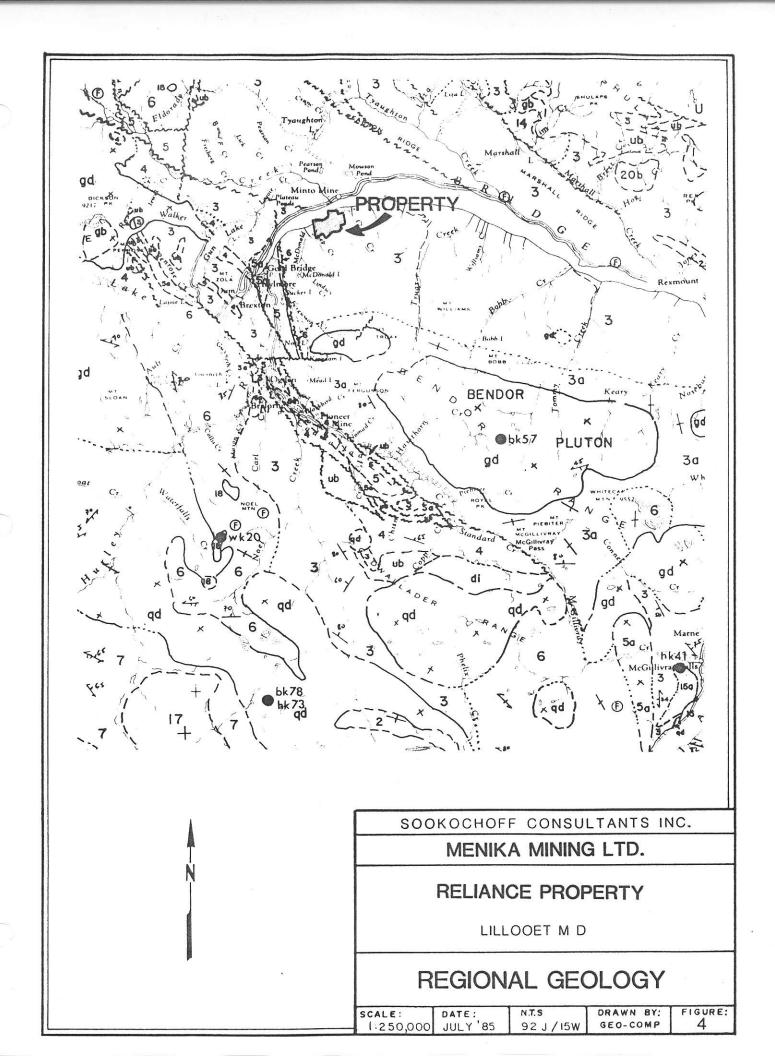
A principal mineralized shear is developed over a vertical range of more than 600 feet and strikes across sedimentary and volcanic members of the Fergusson Group.

Stibnite and assocciated milky quartz occur irregularly along the shear and on either side especially in the greenstone. The wall rocks are altered for up to 15 feet dense, light buff, ankerite carbonate consisting of a impregnated with varying degrees of finely disseminated arsenopyrite and a little sphalerite. Some pyrite, cinnibar reported along minute fractures in the is and as impregnations between the fractures. altered rock Gold values are found principally in the mineralized greenstone rather than in the stibnite bearing veins along the shear.

At the Golden, in addition to sedimentary and volcanic rocks of the Fergussan Group, a belt of carbonatized serpentine rock, up to several hundred feet wide is also present. Dykes and small bosses of feldspar porphyrite, like those on the adjoining Minto and Congress properties intrude the previous units.

The principal mineral is stibnite occuring in coarsely crystalline masses associated with minor preportions of disseminated pyrite and arsenopyrite. Gold values are reported to be associated with the pyrite and arsenopyrite and not the stibnite.

The wide belt of altered rocks indicates strong evidence of the action of thermal, probably vein bearing solutions (Cairnes 1943)



### MAP SYMBOLS

Geological boundary (defined, approximate, assumed)

Bedding (horizontal, inclined, vertical)

Foliation, schistosity (inclined, vertical, dip unknown, absent)

Fault (defined, approximate, assumed)

Fossil locality 

Fossil locality

## Radiometric ages

◆ Age in millions of years System: k=potassium-argon, u=uranium-lead

Minerals: b=biotite, h=hornblende, m=muscovite,

w=whole rock, z=zircon

Laboratory: (u)=U.B.C. All others are G.S.C.

♦ Whole-rock K-Ar age determination (age given in years) for Garibaldi Group rocks. Data from N.L. Green (Ph.D. thesis in preparation) and Anderson (1975)

# GEOLOGY BY

J.A. Roddick and G.J. Woodsworth (1970, 1974), W.W. Hutchison (1970), and from earlier reports (see references)

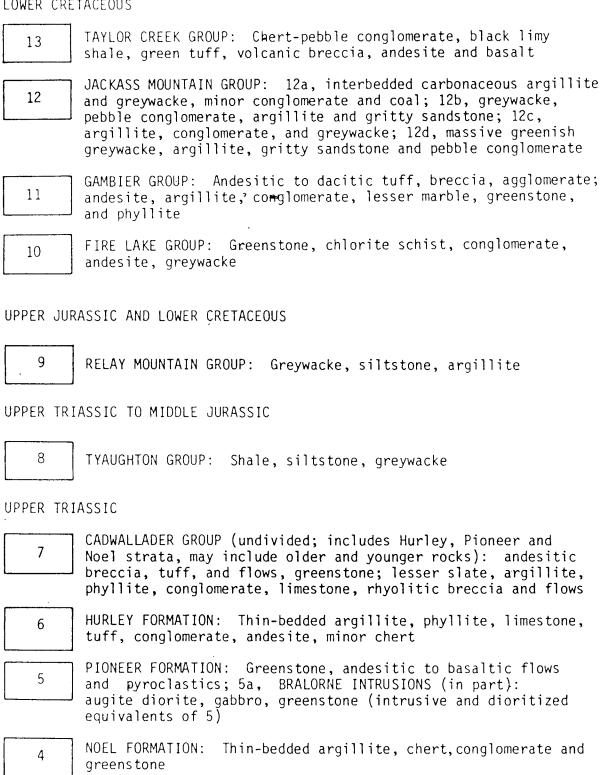
## ADDITIONAL DATA FROM

J.A. Jeletzky (Camelsfoot Range), H.W. Tipper (Gun Creek), and N.L. Green (Cheakamus River area).

COMPILED BY

G.J. Woodsworth (1977)

1	OHED	CDCT	ACEOUS
	UWFR	1 14 1 1	$A \vdash \Box \Box \vdash A$



# PLUTONIC ROCKS (mostly of unknown age)

qm	Quartz monzonite			
gd	Granodiorite			
qd	Quartz diorite			
di	Diorite; dioritic complexes containing diorite, quartz diorite, amphibolite, greenstone, and dyke swarms			
gb	Gabbro			
TRIASSIC	AND JURASSIC AND OLDER(?)			
ub	Ultramafic rocks: Serpentine, harzburgite, perioditite, diorite			
3	BRIDGE RIVER (FERGUSSON) GROUP: Greenstone, basalt, chert, argillite, phyllite; minor limestone, serpentine, and serpentinized perdotite; 3a, more metamorphosed equivalents of 3, mainly biotite schist			
PALEOZOIC(?)				
2	Metasedimentary rocks, mainly micaceous quartzite, biotite- hornblende schist; minor garnet and staurolite schist; 2a, horn- blende-biotite-garnet schist, amphibolite, quartz diorite, garnet-cordierite gneiss, and migmatite			
1	Granitoid gneiss, migmatite complexes, amphibolite, quartz diorite, and schist			

## PROPERTY GEOLOGY

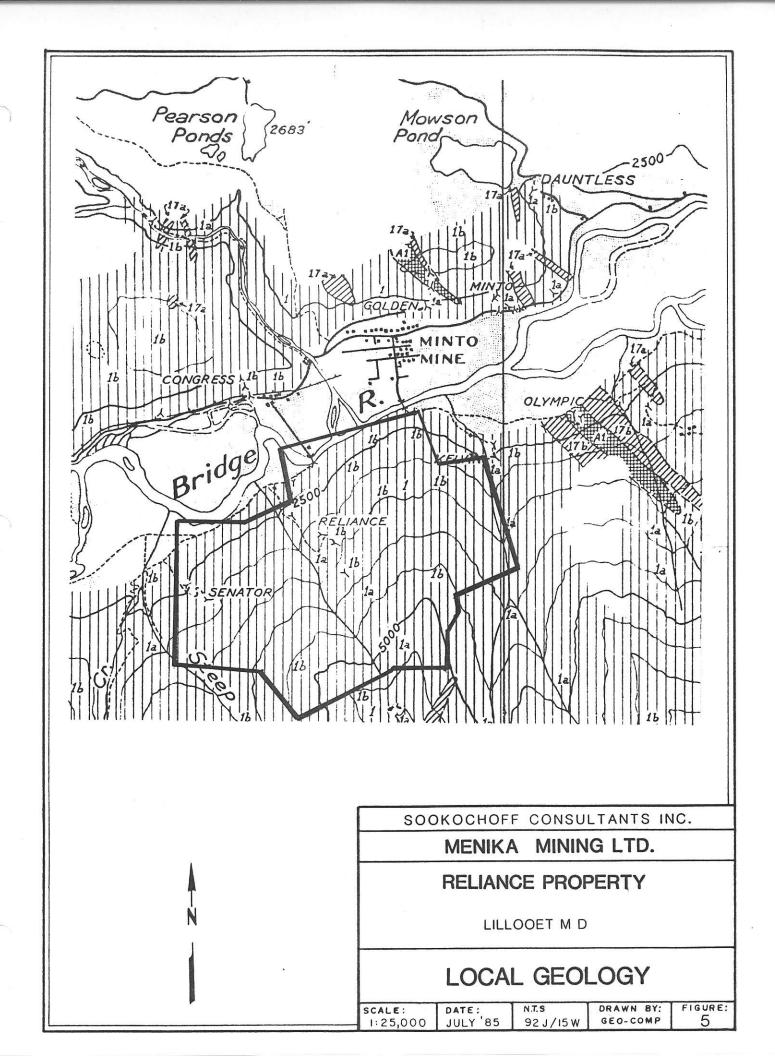
The Menika-Reliance property is underlain by the Fergusson Group of rocks with known altered felsic intrusives and serpentine 500 meters east and Bralorne intrusives (soda granite) and the Hurley Group of sediments with minor intercalated volcanics 2000 meters to the west (Wayside).

The geology of the property is described by Cairnes (1943) as follows.

The property is underlain chiefly by massive greenstones with one north-striking belt of ribbon cherts, about 300 feet wide, crosses about midway of the workings and reaches the river about a few hundred feet east of the portal of the lowest or River adit. Another and smaller body of cherts has a short distance west of the pertal.

The workings are on three well defined mineralized shear in the greenstone. The zones each carry one or veins of nearly solid, fine to coarsely crystallipe associated with more or less quartz and calcite stibnite Two sets of shear zones may be recognized, one gangue. southeast with steep dips to the southwest and striking other trending east- northeast, with steep dips to northwest. Most of the exploratory work has been done on the east-northeast set. The following described workings- Upper, Fergusson and Turner are located in the Central portion of the property, on the Nemo 7, and Omen claims along a north-south structure mineral paralleling Camp Creek.

In the Reliance Adit (3650 feet) the adit is driven southeast along a shear several feet wide in purplish volcanic rocks. Except for some calcite little vein material could be seen, but an open cut above the adit displays several stringers of stibnite up to one or two inches wide.



#### TERTIARY

# POST-EOCENE



Mainly dark green vericular to massive pliving basalt, minor intercalated fulls

#### CRETACEOUS OR TERTIARY



SHEBA GNOUP 18 shale, arkose conglemerate, 19, varicoloured, commonly porphyritic, lavas, agglomerates, and tulls, abundant related undifferentiated, porphyritic intrusions



Minor intrusions: 17a, feldspar porphyries, 17b, altered felsitic intrusions; 17c, hornblende diorite and hornblende porphyrite; 17d, pink, brown-speckled, feldspar-biotite porphyry, 17e, pink, biotite syenite or quartz syenite porphyry. Probably not all of the same age



15, light grey, coarse-grained, massive, biotitehornblende granodiorite 16, massive, medium- to coarse-grained, pink biotite granite



Medium-grained, massive to foliated, hornblende-biotite quartz diorite and granodiorite; minor diorite and gabbro



Massive, coarse- to medium-grained, anorthositic gabbro and gabbro; 13a, medium-grained gabbro breccia

#### **CRETACEOUS**



LECKIE GROUP: varicoloured pyroclastic rocks intercalated with grey, greenish-grey, and mauve lava flows, in part porphyritic; minor dark grey shale and conglomerate

COAST RANGE INTRUSIONS

## JURASSIC AND CRETACEOUS

#### UPPER JURASSIC AND LOWER CRETACEOUS



ELDORADO GROUP: 11a, Upper Jurassic: mainly massive to thinly-bedded, dark argillaceous and tulfaceous beds. in part dense and flinty; 11b, Lower Cretaceous: grey and green sandstone, shale, conglomerate, and tulfaceous beds; 11c, Lower Cretaceous (?): mainly massive, dark green tulfs. breccias, and tulfaceous sedimentary rocks

#### JURASSIC

#### MIDDLE OR UPPER JURASSIC



TAYLOR GROUP: conglomerate; sandstone, shale; minor volcanic rocks; 10a, mainly coarse to fine conglomerate, grit. sandstone, shale, argillite; minor, green volcanic rocks; 10b, chert-pebble conglomerate, micaceous arkosic sandstone, shale; argillaceous and tuffaceous beds

#### LOWER AND MIDDLE JURASSIC



- 8. Lower Jurassic: dark argillite and shale; minor sandstone, limestone, and pebble conglomerate
- 9, Middle Jurassic: dark grey argillite; minor grey and green arenaceous beds

#### TRIASSIC AND (?) JURASSIC

UPPER TRIASSIC (mainly or entirely)



TYAUGHTON GROUP: interbedded grey, green, and reddish sandstone, shale, pebble conglomerate, and limestone; thick beds of grey limestone

# TRIASSIC



HURLEY GROUP: thin-bedded, commonly limy, grey to black, argillaceous and tuffaceous strata; conglomerate, limestone, minor intercalated volcanic rocks; 6a. chiefly grey to black, fine-grained to flinty argillaceous and siliceous beds (may be equivalent in age to 2 and 3)



- 4, PIONEER FORMATION: mainly green, massive fine-grained to porphyritic andesitic lavas and pyroclastic rocks
- 5. greenstone and greenstone-diorite; undifferentiated lava, agglomerate, and tulf



- 2. NOEL FORMATION: banded and massive, grey to greenish grey, argillaceous, siliceous, and tuffaceous beds; minor intercalated volcanic rocks
- 3, chiefly metamorphosed beds, probably mainly equivalent to 2

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PALAEOZOIC	PERMIAN	(?) FERGUSSON GROUP: undifferentiated sedimentary and volcanic rocks; 1a, chiefly interbedded chert and argiflite; some limestone 1b, andesitic to basaltic lavas and related pyroclastic rocks (greenstones); some limestone; includes bodies of carbonatized and serpentine-like rocks of doubtful and perhaps different origin
	A1 LA2	A1, serpentine and partly serpentinized peridotite, carbonatized alteration products A2, Sumner gabbro: olivine gabbro Bralorne intrusions: augite diorite and gabbro, soda granite (albite feldspar)
	Beddin Fossil Fault Prospe Mining Adit Geolog	y drift covered area  og (horizontal, inclined, vertical)  locality  ct  property  MINTO  A  gy by C. E. Cairnes, 1937, and C. H. Crickmay, 1939, cal compilation by C. E. Cairnes
	Road, r	rell travelled

Contour interval 500 feet.

(3325 feet) is along Fergusson Adit northeast mineralized shear four feet wide to a zone fault fissure which offsets the first shear mineralized feet to the northeast. Beyond this offset the drift feet to the face. the main shear about 25 follows Between the portal and the fault the shear carries a vein up to six inches wide with some quartz. stibnite Beyond the fault the stibnite voin is three to four wide and runs off into the foot wall a few feet the face of the adit, where however, other small from of stibnite are seen. Above the adit the shear stringers been investigated by a long trench from which a has of hand sorted stibnite is reported to have been extracted in 1917 (Carnes 1943).

Anselmo et al describes the Fergusson adit and the Reliance adit (Appendix I) as located in andesitic rock in a southeast trend from the Turner adit and also reflects the same structural features.

Cairnes (1943) describes the <u>Turner Adit</u> (Elev 2725 feet and 1000 to 1500 feet northwest of the Fergusson adit) as situated in

"green purple volcanic rocks for 85 feet to a and mineralized shear zone several feet wide striking east-northeast and dipping steeply northwest. driven northeasterly for 55 feet and contains stibnite in altered and pyritized veinlets o f In the opposite direction the shear was greenstone. followed for only a few feet to a fault striking southeasterly and dipping 50 degrees off, the shear zone contained a vein of Where cut stibnite several inches wide. Its probable across continuation the fault appears 6 feet to the Such a displacement is similar to that of the fault in the Fergusson adit.

The River crosscut adit (elevation 2150 feet) is 250 feet long and in greenstone. It was started to explore the downward extensions of the mineralized shear zones (Cairnes 1943).

On the western portion of the Reliance Property are the some 1100 meters due west of Senator Workings, the Fergusson Adit. A map of the Senator workings was incorporated in the report by Anselmo et.al (1971) and included herein as neference. The workings consist of trending easterly to northeasterly with the four adits 60 feet. longest being some Current exploration is located in this area.

The workings appear to explore northerly and east-northeasterly trending stibnite veins up to four and one half inches wide and extending over a strike length of 600 feet.

# PROPERTY MINERALIZATION

Within the eastern portion of the property in the area of the Reliance-Ferguson-Turner adit, stibnite and/or with associated quartz veins occurs along the east-northeast and northwest structures.

Anselmo et.al (1971) in the maps accompanying this report and included in the writers report indicate the following selected assay results.

Location	Description	Sb As	ssay Au/oz/ton
	<u> </u>	<u> </u>	110,00,000
Turner adit	Channel sample across		
Plate 4	shear in cut (2") Stibnite		
Samp#CS-1	in qtz. 4"-6" oxidized and sheared	13.7%	.19
0 " 00 0		10000	•
Samp# CS-2	Across 12" from east end in adit. Stibnite		
D 0	in 2-3" qtz vein	1.32%	.016
R 2	Green andesite next to shear	67 ppr	n
Farmana adit		• •	
Fergusson adit			
Samp CS-6		1.62%	.20
Samp CS-3	Across 12" of fault material	5.48%	.078
Samp R-1	Rock sample from 10'		
	either side of shear	72ppm	(5ppm As)
Reliance Adit			
(Plate 6) Samp CS-1	Agrees 10% about of		
Samp CS-1	Across 10" shear at portal	1.2%	.25
Samp CS-2	Across intersection of		
	two shears at portal (8")	20%	.58

% As %Sb Au oz/ton limonite zone fr<sup>7</sup> q<sup>2</sup> \_\_\_.010, .091/2 limonitic stockwork fr<sup>7</sup> Sb<sup>a</sup> -, .03, .133/2 m .24, 15, 092/2 m √ qtz stockwork fr<sup>8</sup> Sb<sup>a</sup> cal .040, .95, .185/2m \_\_ , .02 , .482 / lm sil'd zone \_\_\_\_\_, .02, .005/0.3 **LEGEND** L = limonite gyp = gypsum fr 7 = fracture degree Sb = quartz vein with antimony SOOKOCHOFF CONSULTANTS INC. q = quartz veinlets MENIKA MINING LTD. **RELIANCE PROPERTY** LILLOOET M D SENATOR ROAD ZONE **GEOLOGY & SAMPLING** 

July '85 92J/15W Scale 1:300

Fig. 7

Information on the <u>Senator Workings</u> (western zone) is taken from previous <u>exploration work</u>. Some of the more significant results were as follows:

Anselmo et al (1971-Plate 7) indicates that east-north east and northerly shear zones within a siliceous tuff may contain stibnite which can be associated with quartz and/or calcite veins. Assays from the main workings include 15% Sb and .16 oz Au/ton accross 4.5 feet within a shear zone. A sample of wall rock with minor pyrite returned 400 ppm Sb.

CM & S reported sampling (1943) returning .39 oz Au/ton and .095 oz Au/ton across three feet of mostly gouge material.

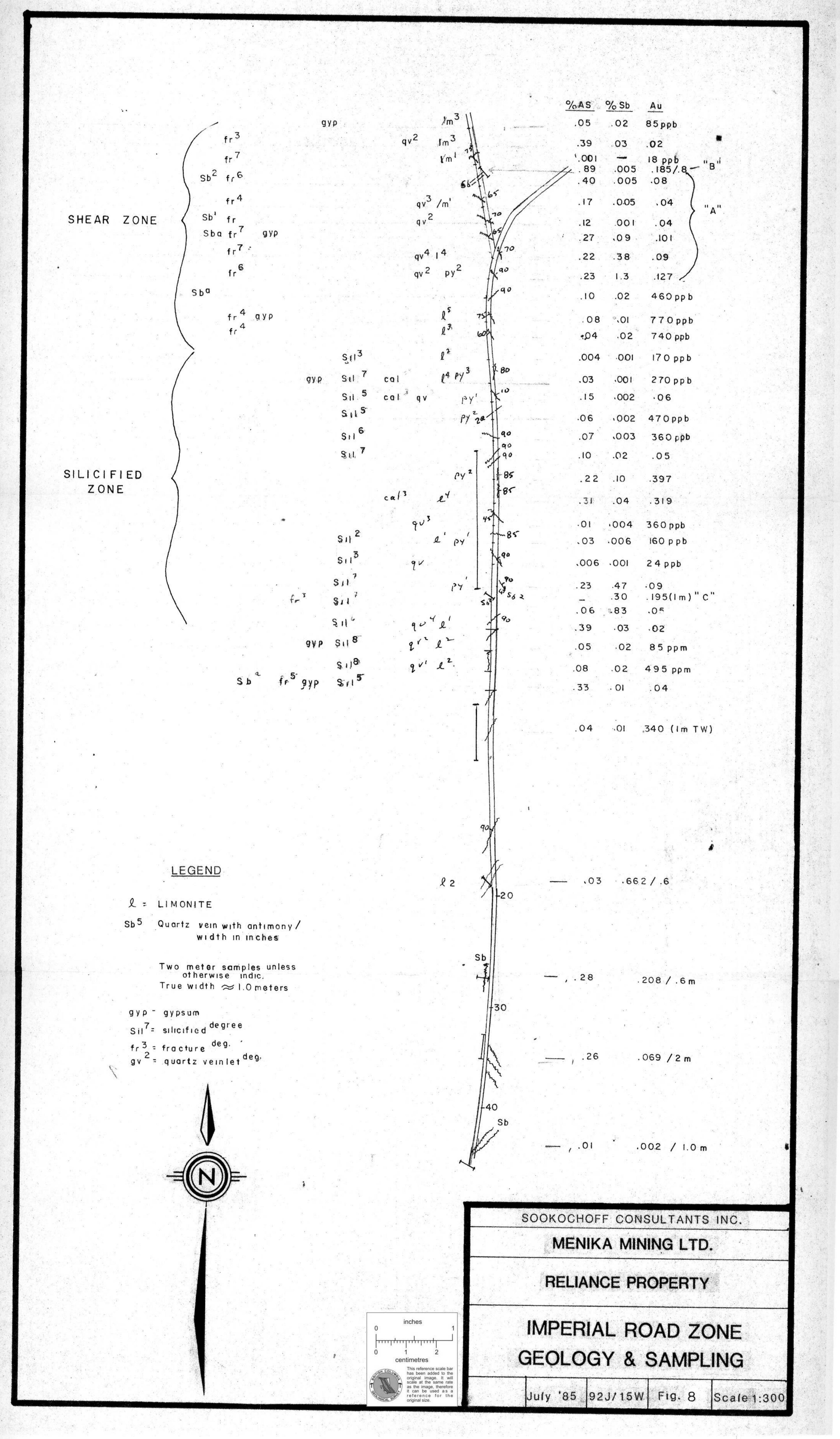
The geological and sampling map (Anselmo et al 1971) indicates a number of anomalous geochem Sb, As, Cu, Zn samples along the road for 1000 meters from the northwest projection of the Senator workings easterly to the River adit of the Fergusson-Turner zone.

The geochemical survey also delineated an anomalous antimony zone trending east westerly of north for 1000 meters (3300 feet) and over the eastern portion of the Senator workings.

An arsenic anomaly envelopes the antimony anomaly and extends the length of the property. Samples from a working 350 feet northwest of the main workings returned .01 Sb., and .11 oz Au/ton across six inches of a shear or vein with minor pyrite.

Reported samples taken by  $\frac{CM}{Au/ton}$  from the same working included 8.4% Sb and 0.14 oz  $\frac{Au/ton}{Au/ton}$  of gouge and stibnite over a two foot square area. A three foot sample of mostly gouge returned .141 oz. Au/ton.

Borovic (1985) from sampling the mineralized zones reports that the Imperial Vein zone is 5.5 m wide and contains average values of 0.467 oz/ton Au, 0.26 ez/ton Ag and 7.56% Sb. The Senator Vein is reported as 4.5 m wide with average values of 0.156 oz/ton Au, 0.25 oz/ton Ag and 7.8% Sb.



A sampling program was completed by the writer over exposed zones along the road cuts that could reflect potentially economic gold bearing mineralization.

The Imperial road zone consists of an exposed 100 meter long fractured variably altered zone hosted by andesitic tuffaceous greenstones.

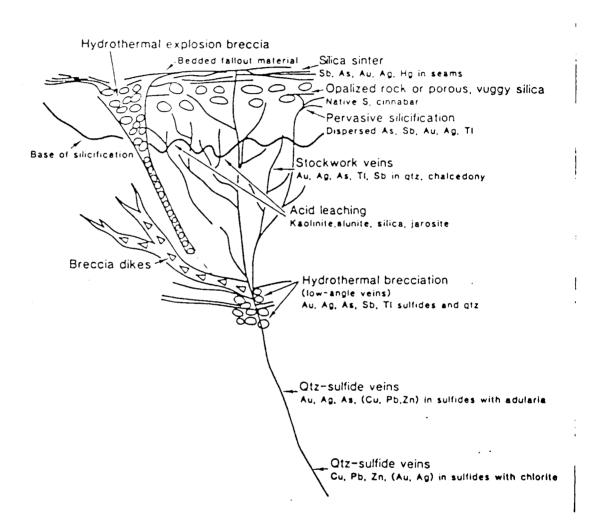
The northern portion of the zone is moderately to intensely fractured with a predominant northwesterly structural trend. Alteration consists of varying degrees of dolomitization. Limonite is prevalent on major fractures and may occur in variable degrees with the andesite. Occasional quartz veins with stibnite trend at 35°.

Sampling has indicated a 12 meter zone of .08 oz/ton Au with an included zone of quartz with stibnite assaying oz/ton Au across 0.3 meters (1.0 foot). Southerly .185 the shear zone trends to a peripheral silicified zone 40 wide (true width 15 meters). meters approx. Silicification may be pervasive or local with intervals complete replacement (bleaching). Moderate to heavy limonite occurs predominantly restricted to the major fracture trend at 25° to 35°. Occasional quartz veins of to five inches wide (12.5 cm) commonly contain massive up stibnite. A one meter (true width) zone of two quartz-stibnite veins (1-5cm, 1-12.5cm) returned an assay of .195 oz Au/ton. Associated with the quartz veins is a highly limonitic zone. A second quartz-stibnite vein near the same location trends at 155°.

A two meter sample along the silicified zone returned up to .397 oz Au/ton however this sample and an adjacent sample of .319 oz Au/ton was along a limonitic fracture face and could not be considered representative. The length of the silicified zone however returned anomalous values of gold mineralization with the higher values related to either quartz-stibnite veins or limonitic zones.

A thin section analysis of samples from the central silicified zone is appended.

Figure 3. Schematic cross-section of the hot-springs deposition model showing the spatial relationships of alteration and trace-element geochemistry, and some of the more important structural features of this deposit type.



After: Buchanan, L.J. 1980

The southern portion of the Imperial zone trends to a low to moderate generally unsilicified zone with a predominant structural trend at 030°. An occasional stibnite zone occurs with values up to .208 oz Au/ton across .6 meters.

A two meter sample from a fracture zone near the southern most sampled portion returned .069 oz Au/ton.

Forty meters to the southwest of the sampled zone is a contact between the greenstones and thinly bedded cherty sediments.

The <u>Senator Road zone</u> 32 meters (105 feet) lower in elevation than the Imperial Road zone was sampled over an 80 meter interval.

The zone is of a well fractured greenstone containing dolomitic, limonitic and local silica alteration. Intermittent sampling disclosed up to four quartz-stibnite zones. The zones trend dominantly at 025 to 035° and less often at 130°. Limonitic zones are commonly associated with the quartz as well as occuring moderately to heavily in the more significant fracture trends.

Qtz-stibnite-limonite zones assayed up to .482 oz Au/ton across one meter (true width).

A stockwork fracture zone with limonite returned .133 oz Au across two meters (one meter true width).

A two meter quartz stockwork zone returned .185 oz Au/ton (one meter true width).

Imperial #3 Road and Imperial #4 Road zones 80 meters (265 feet) vertically above the main Imperial Road displays less altered area. The andesites а maroonish red hematite stained and with moderate limonite. Moderate to light dolomitization, light and occasional pyrite, and epidote are apparent. Barren quartz veinlets with local silicification occur. The quartz may be vuggy. Very local patches of cinnibar on fracture planes occur near the end of the road.

A 1.5 meter sample across a siliceous zone bearing limonite returned .054 oz au/ton.



# Bona Road Zone

A shear zone at an elevation of 2640 feet, approximately 100 feet (30 meters) wide with heavy limonite, occasional bleaching (silicification) and moderate calcite veining. A six meter wide random grab sample across the zone returned .96% As., .005 %.Sb and 2.11 oz Au/ton.

# RECOMMENDED EXPLORATION AND DEVELOPMENT PROGRAM

It is recommended that a diamond drilling program be carried out on the property to test the Imperial Road zone (mineralization to depth).

Initially, two-four hundred foot holes should be collared on the Imperial road and drilled southeasterly to crosscut the predominant structural trend and associated mineral zones. Two diamond drill holes would then be spotted from the Senator Road zone to test the zone at a lower elevation.

Additional exploration should be carried out on the Bona Zone to locate extensions of this zone bearing significant gold values.

# ESTIMATED COST OF RECOMMENDED PROGRAM

# STAGE I

750 meters @ \$100	\$75,000
Allowance for additional exploration on the Bona Road zone	5,000
Engineering and Supervision	7,000
STAGE I COST	87,000

# STAGE II

Allowance for follow up diamond drilling and for surface exploration of property.	\$ <u>150,000</u>
Two stage estimated cost	\$237,000

The second stage of the exploration program would only be initiated on the completion of and favorable results of the first stages.

Respectively submitted

VAURENCE SOOKOCHOFF

BRITISH

Laurence Sookoodooff, P.Eng.

Consulting Goologist

July 15, 1985 Vancouver, B.C.

S

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- Roddick, J.A. et.al., Pemberton (East Half) Map Area, British Columbia, G.S.C. Paper 73-17, 1973.

### CERTIFICATE AND CONSENT

I, Laurence Sookochoff, of the City of Vancouver, in the Province of British Columbia, do hereby certify:

That I am a Consulting Geologist and principal of Sookochoff Consultants Inc. with offices at 311-409 Granville Street, Vancouver, B.C., V6C 1T2.

I further certify that:

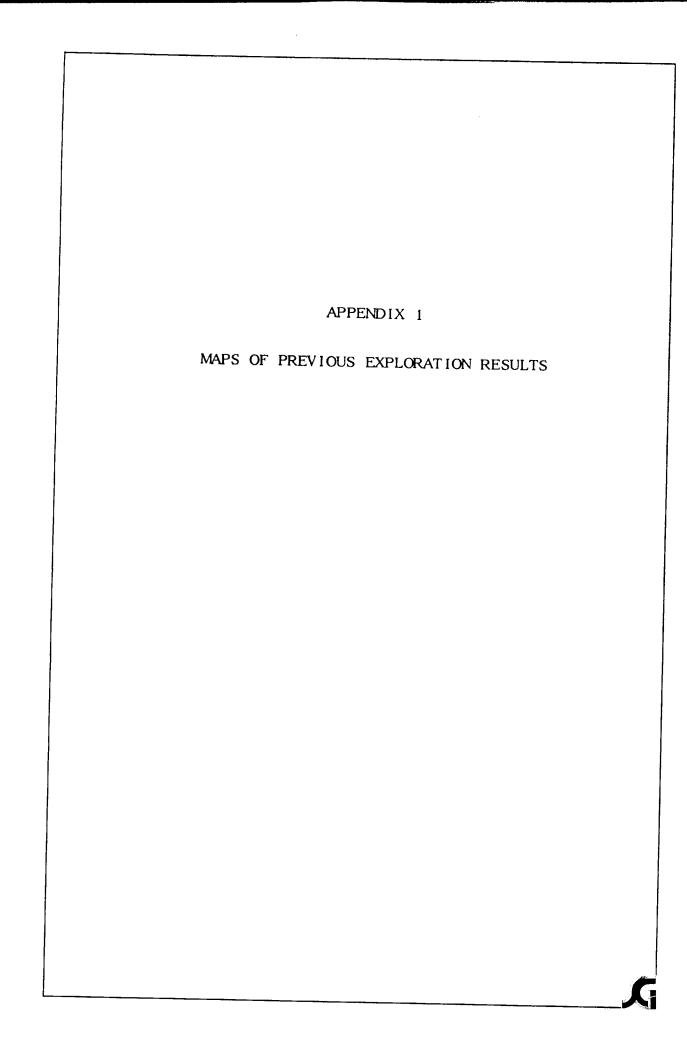
- 1. I am a graduate of the University of British Columbia (1966) and hold a B.Sc. degree in Geology
- 2. I have been practising my profession for the past nineteen years.
- 3. I am registered with the Association of Professional Engineers of British Columbia.
- 4. The information for this report was obtained from sources as cited under bibliography and from a property examination carried out on June 26-28, 1985.
- 5. I have no direct, indirect or contingent interest in the property described herein. I own 2057 shares of MENIKA MINING LTD.

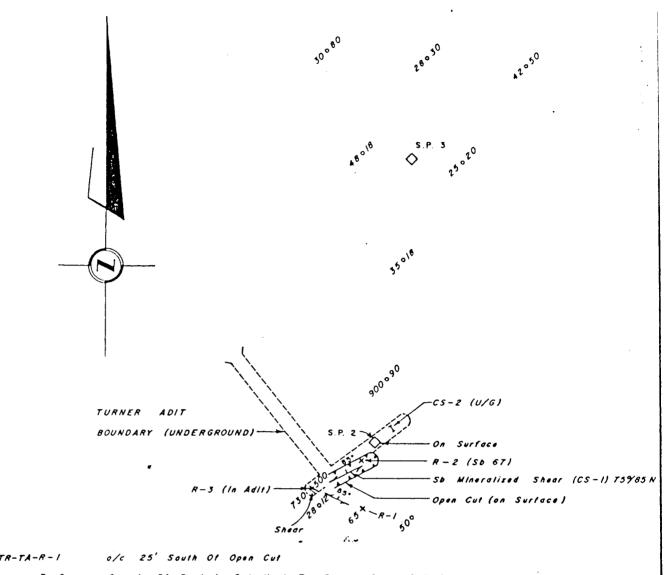
6. This report may be utilized by MENIKA MINIS LTD. for financial purposes.

Laurence Sookernonf, P. Eng. Consulting Googlegist.

SODKOC

July 15, 1985 Vancouver, B.C.





Sample Of Rock In Cut Next To Shear - Green Andesite

C S - / Channel Sample Across Shear In Cul (2') - Stibnite in Quartz 4"-6" Oxidized &

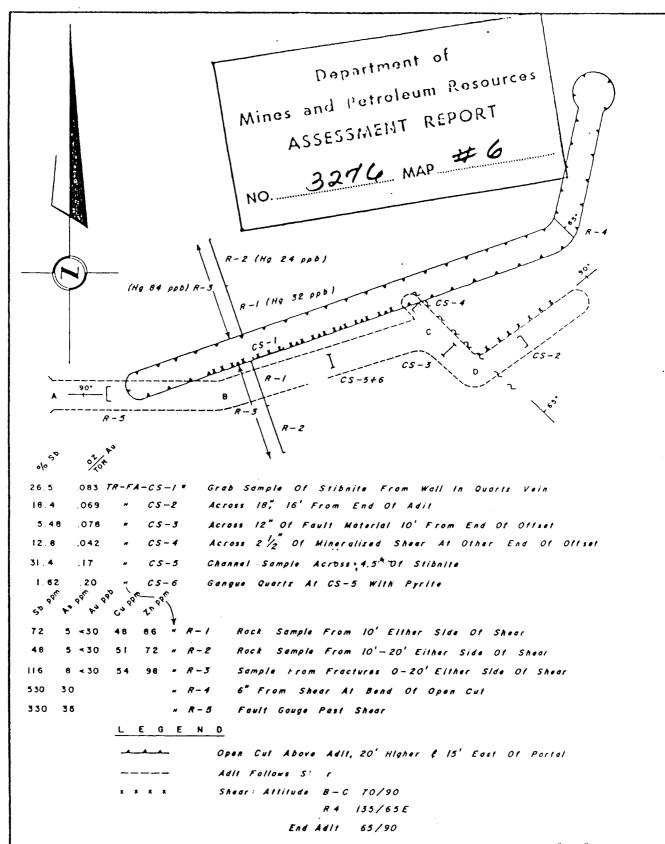
Shoored (.19 T Au, 13.7% Sb)

Across 12" 4 15' From East End Of Crosscut In Adlt. Stibnite In 2"-3" Quartz C5-2 Voin ( 0.016 T Au, 1.32% Sb)

### SAMPLE DATA TURNER ADIT & OPEN CUT

T. V.I. MINING L.TD. OMEN, NEMO & EROS CLAIMS SCALE: I" + 50 FEET APPROX.





Shear Mineralized From Portal With Stibnite Across 2"-18" Fault Officets Shear 130/75N

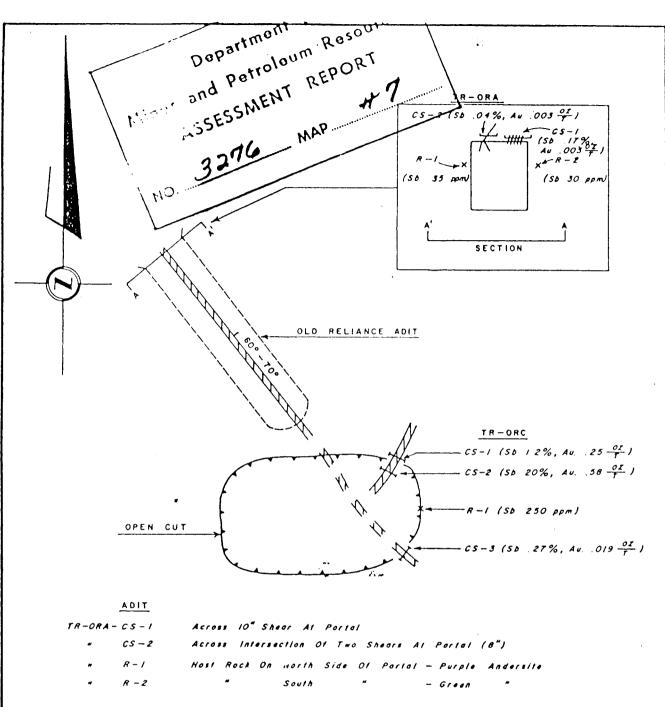
### FERGUSSON ADIT & OPEN CUT

T. V. I. MINING LTD.

OMEN, NEMO & EROS CLAIMS

SCALE: 1" • 20 FEET APPROX.

EXPLORATION SURVEYS LTD.



### OPEN CUT

TR-ORC-C5-1 12" Oxidized Shear Of Stibnite in Quartz

" CS-2 3" Lower Than CS-1 In Same Shear - 6"X2"X1" Channel Sample

" CS-3 4" Shear - Same In Adit

R-1 Between CS-1 & CS-3, Allered, Oxidized Andesile

" R-2 Average Sample OI Outcrop Around Adil & Open Cut  $\simeq 60'$  (Sb 60 ppm)

" R-2-R Quartz W/ Stibnite & Oxidez From Shear At TR-ORC-CS-2 (Sb > 4000 ppm)

## GEOLOGY & SAMPLE DATA RELIANCE WORKINGS

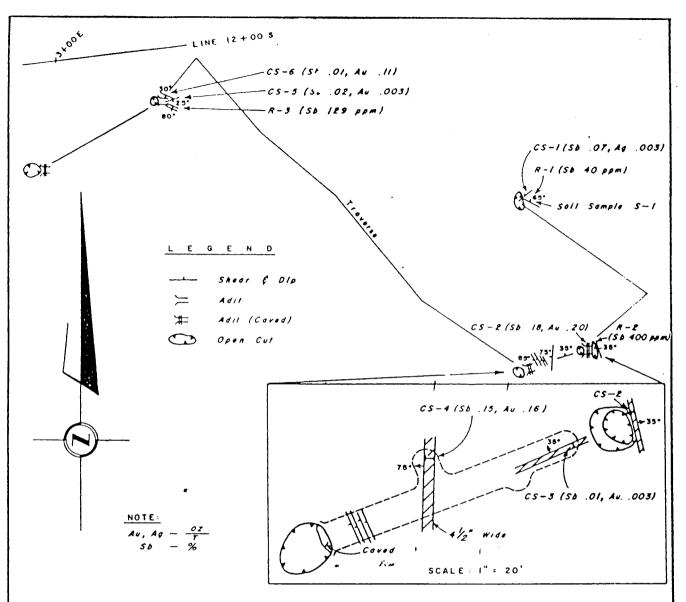
T. V. I. MINING LTD.

OMEN, NEMO & EROS CLAIMS

SCALE: " . 10 FEET APPROX



PLATE: 6 File: C 12



#### CHIP SAMPLES

TR-S-CS-1 2" Oxidized Gouge Of Shear (50/90) In Small Open Cut

CS-2 6" Oxidized Kaolinitic Gouge

" CS-3 6" Shear At End Of Adit

\* C5-4 4.5' Shear At End Of Crosscut In Adit - Gouge W/ Calcile Stringers

" CS-5 Shear At End Of 15' Long Adil. Sample 12" Across

" CS-6 Shear Or Veln W/ Minor Pyrite. Sample 6" Across

### ROCK GEOCHEM SAMPLES

\* R-I Sample Of Wall Rock At CS-I - Siliceous Tuff With Minor Pyrite

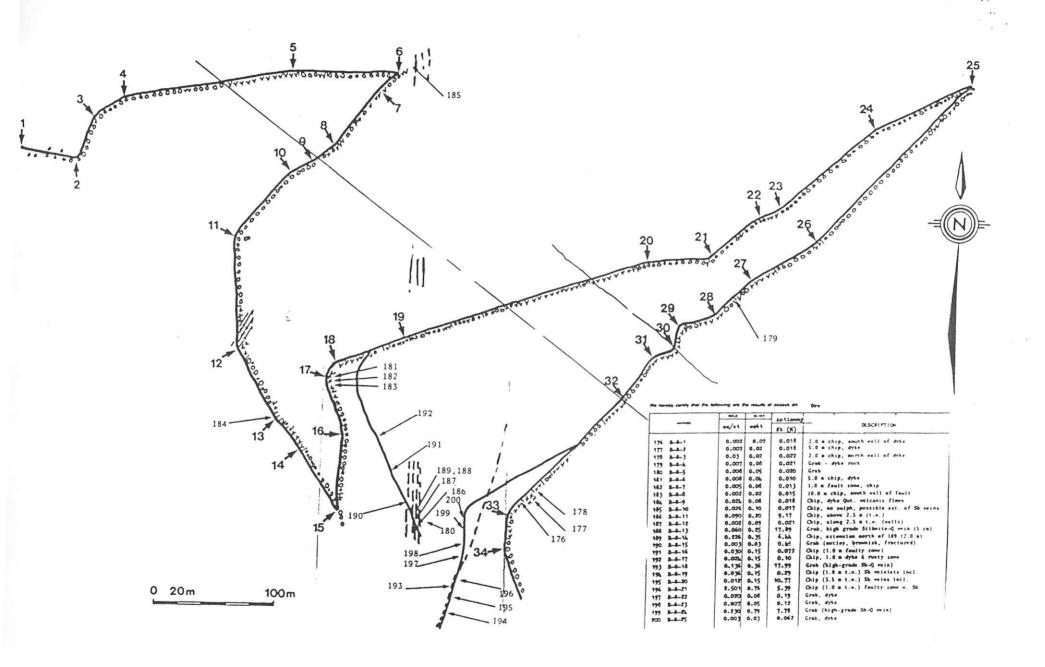
~ R-2 " " CS-2 " "

" R-3 " " CS-5 " Hand Specimen

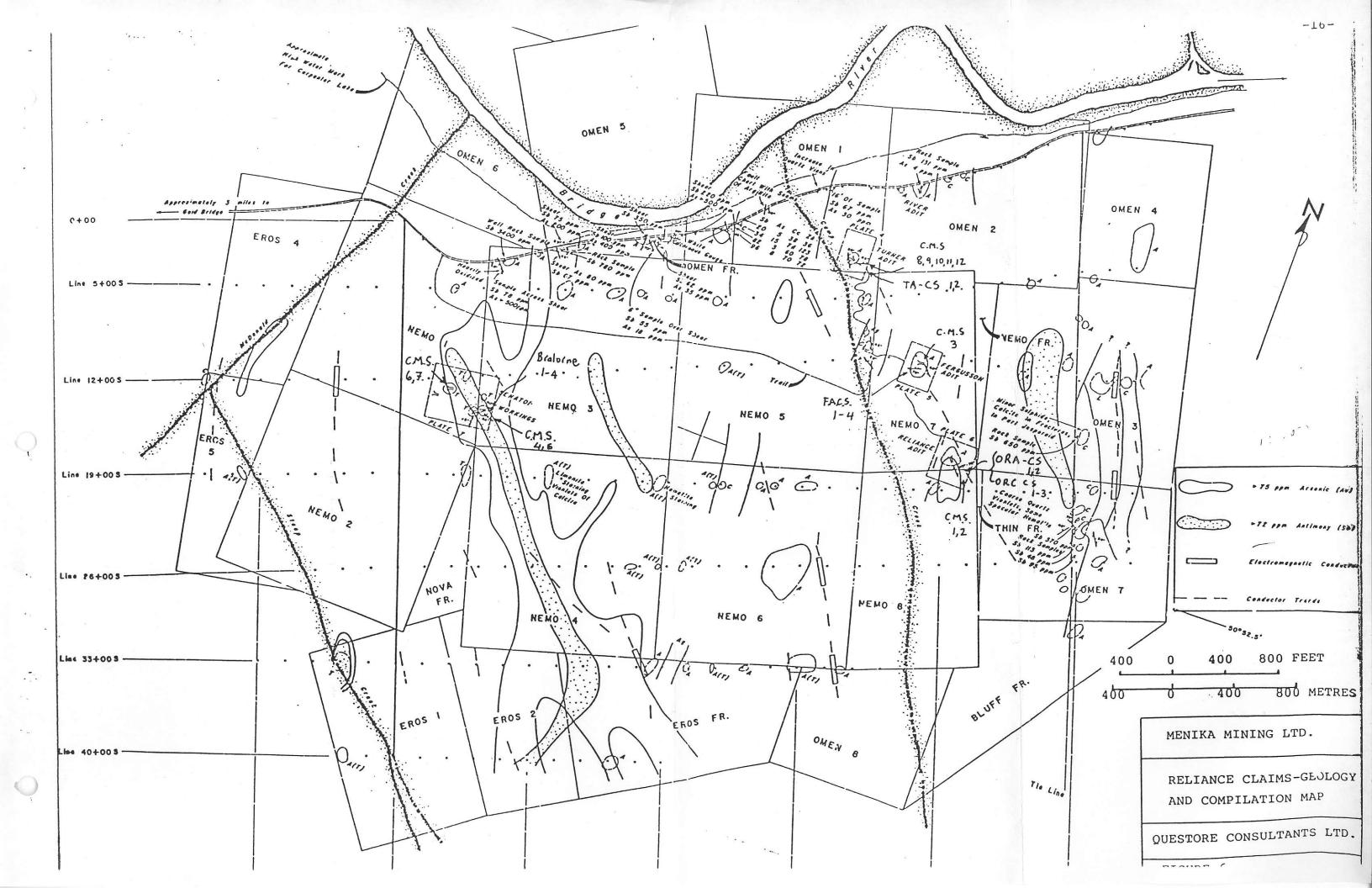
## LOCATION, SAMPLE DATA & GEOLOGY SENATOR WORKINGS

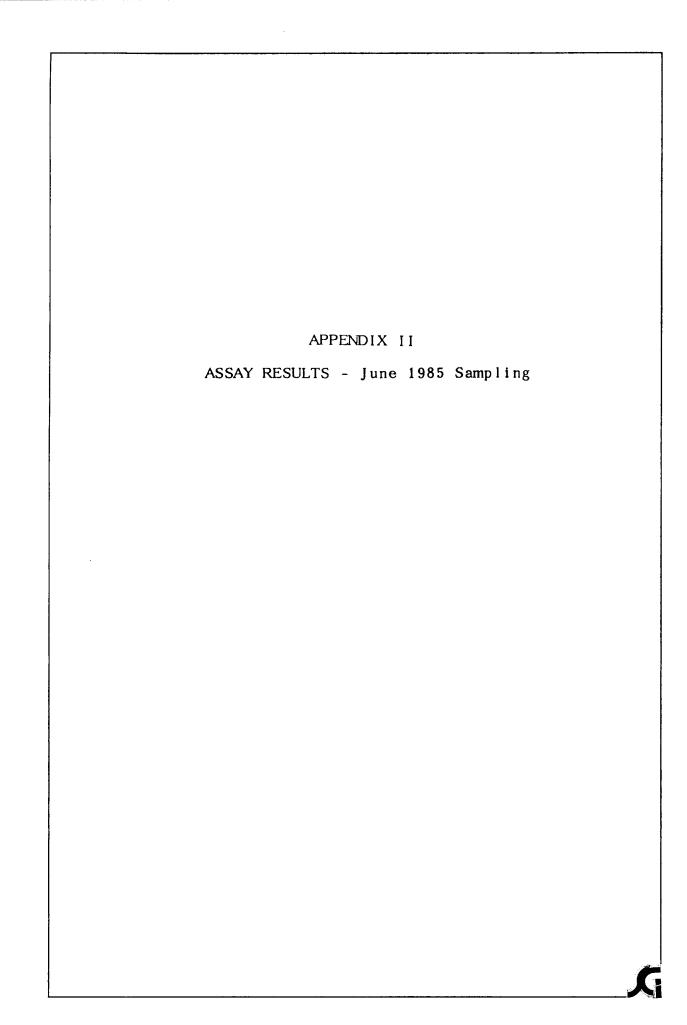
T.V.I. MINING LTD.
OMEN, NEMO & EROS CLAIMS
SCALE: " 100 FEET APPROX





Map by I. Borovic-May 1985





A E ANALYTICAL LABORATORIES LTD.

852 E.HASTINGS ST.VANCOUVER B.C. V6A 1R6
PHONE 253-3158 TELEX 04-53124

DATE RECEIVED: JULY 3 1985

DATE REPORT MAILED:

July 9/85

### ASSAY CERTIFICATE

1.00 GRAM SAMPLE IS DIGESTED WITH 50ML OF 3-1-2 OF HCL-HN03-H2O AT 95 DEG. C FOR ONE HOUR. AND IS DILUTED TO 100ML WITH WATER. DETECTION FOR BASE METAL IS .01%.

SAMPLE TYPE: ROOK CHIPS AUX 10 GRAM REGULAR ASSAY

ASSAYER: V. Saundry DEAN TOYE OR TOM SAUNDRY. CERTIFIED B.C. ASSAYER

SOOKOCHOFF CONSULTANTS FROJECT - MENIKA FILE # 85-1200A FAGE 1

SAMPLE#	Ag	Au	Sb
	OZ/T	OZ/T	74
42365E	.30	.192	4.580
42366E	. 67	. 458	.020
42367E	.05	.102	.040
42368E	. 28	.195	.300
42370E	.13	.662	.030
42371E	. 15	.208	.280
42372E	.05	.069	.260
42373E	.03	.002	.010
42374E	.03	.133	.030
42377E	.05	. 482	.020
42378E	.01	.005	.020
42379E	.05	.124	.010
42380E	.03	.091	.010
42381E	.09	.193	.090
42382E	.12	.068	4.700

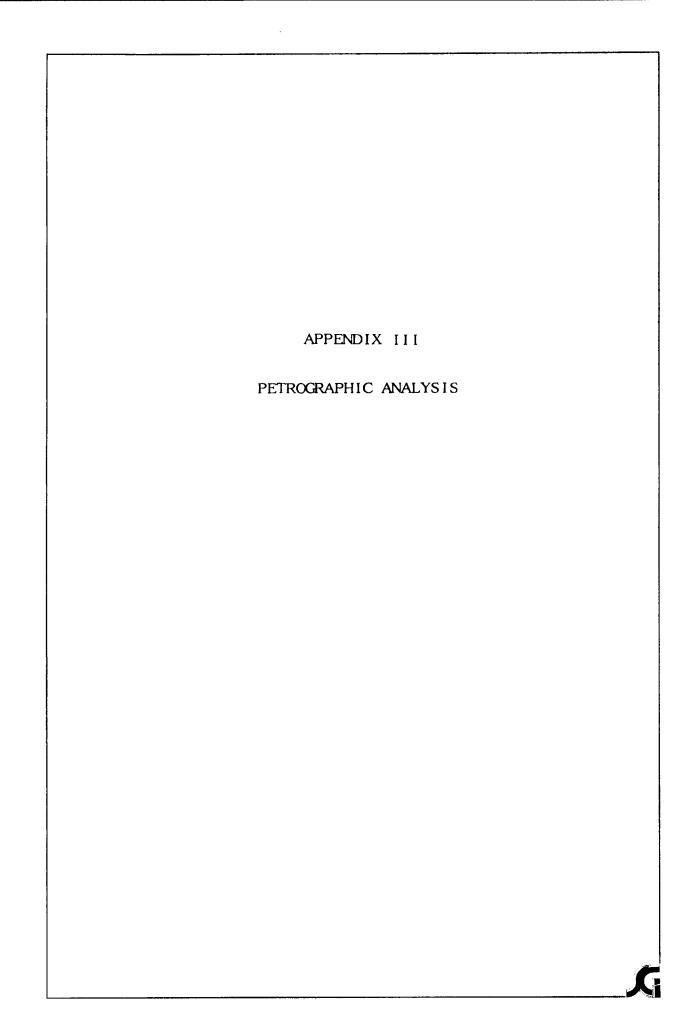
#### GEOCHEMICAL ICP ANALYSIS

.500 GRAM SAMPLE IS DIGESTED WITH 3ML 3-1-2 HCL-HNO3-H2O AT 95 DEG. C FOR ONE HOUR AND IS DILUTED TO 10 ML WITH WATER. THIS LEACH IS PARTIAL FOR MN.FE.CA.P.CR.MG.BA.TI.B.AL.NA.K.N.SI.ZR.CE.SN.Y.NB AND TA. AU DETECTION LIMIT BY ICP IS 3 FPM. - SAMPLE TYPE: ROCK CHIPS AU\* ANALYSIS BY AA FROM 10 GRAM SAMPLE.

DATE RECEIVED: JULY 3 1985 DATE REPORT MAILED: July 9/PS' ASSAYER. James July 3 1985 DATE RECEIVED: JULY 3 1985 DATE REPORT MAILED: July 9/PS' ASSAYER.

RECEIVED:	JULY	3 198	35 D	ATE	REFO	DRT	MAI	LED:	0	Jaly	ر ۹ با	Ps'	AS	SSAY	ER.	Ag	Jonne	y.	DEAN	1 TC	YE C	OR T	OM 9	SAUN	DRY.	CE	RTIF	IED	B.(	D. A	SSAYER
							SC	lok <b>o</b> l		F CC		LTAN	ITS	PRO	JEC	T -	MEN	IKA	F	ILE	# 8	512	200							FAGE	E 1
SAMPLE#	Mo PPM	Cu PPM	Pb PPM	In PPM	Ag PPM	Ni PPM	Co PPM	Mn PPM	Fe 1	As PPM	U PPM	Au PPM	Th PPM	Sr PPM	Cd PPM	Sb PPM	Bi PPM	V PPM	Ca	P Z	La PPM	Cr PPM	Hg Z	Ba PPM	Ti	B PPM	Al	Na I	K	N PPM	Au# PPB
3020 3021 3022 3023 3024	1 1 1 1 2	64 87 62 70 60	22 51 46 19	145 205 125 160 126	2.0 1.6 1.4 1.0 .5	99 117 104 125 110		1754 1806 1634	7.62 7.81 7.46 8.29 7.96	340B	5 5 5 5	ND ND ND	5 4 3 4 4	75 53 22 32 53	1 2 1 1	65 72 4 11 42	2 2 2 2 2	25 20 43 48 44	1.22 1.32 .90 2.94 .83	.14 .16 .12 .11	11 11 8 8	32 29 47 66 62	.32 .24 .18 .25	171 80 113 105 89	.01 .01 .01 .01	16 18 17 25 37	.42 .45 .56 .63	.01 .01 .01 .01	.15 .17 .15 .18	1	5700 1870 1300 320 270
3025 3026 3027 3028 3029	1 2 2 1 3	63 234 191 156 226	8 17 17 14 27	74 75 83 81 110	2.5 4.1 1.6 .8 2.2	56 41 44 36 48	21 46 32 22 29	1223 998 980		3297 820 501	5 5 5 5 5	70 ND ND ND ND	2 4 5 5 5	32 47 33 39 34	1 1 1 1	51 108 166 170 346	2 3 4 2 4	24 101 84 91 102	.68 2.18 2.49 3.88 2.96	.12 .16 .23 .18	14 9 9 11 4	29 17 23 26 23	.14 .25 .55 .91	168 63 53 49 45	.01 .01 .01 .01	27 17 22 17 18	.49 .52 .72 .74	.01 .04 .04 .07	.13 .11 .16 .15	1838 2 4 4 2	73000 1340 495 85 715
3030 3031 3032 3033 3034	2 2 ! 2 2	98 71 60 57 47	16 17 34 11	133 109 82 113 104	.9 1.3 3.2 1.4 1.0	108 90 52 94 84	38 27 18 30 23	1228	7.83 6.49 5.38 6.22 5.22	8956 1720	5 5 5 5 5	ND 2 4 ND ND	4 2 1 4 3	44 79 93 129 132	1 1 1 1	5 50 47 54 107	2 2 2 2 2	78 47 18 49 57	2.59 5.77 6.59 6.12 6.29	.10 .10 .08 .09	11 2 3 4 3	28 55	.35 1.68 2.35 1.65 1.97	197 111 145 302 56	.01 .01 .01 .01	26 20 16 26 24	.85 .61 .35 .59	.03 .02 .01 .02	.17 .16 .13 .14	1355 41	18 2950 6400 1450 1400
3035 3036 3037 3038 3039	2 3 4 3 2	63 64 72 107 160	13 10 17 17 22	138 137 186 109 100	1.5 1.4 2.1 .6 1.1	93 92 74 49 29	29 21	1384 1205 1659 1798 1304	6.39 6.05 5.21 9.26 9.72	2167 2280	5 5 5 5	ND ND ND ND	2 2 3 6 6	131 115 113 41 60		973 3835 12853 176 105	2 2 2 2 5	38 39 31 72 47	3.49 3.73 3.81 .48 1.69	.12 .11 .11 .23	2 5 8 13 10	49 46 37 30 11	1.22 .74 .90 .21	78 151 46 421 189	.01 .01 .01 .01	24 27 27 19 18	.55 .59 .46 .67	.01 .01 .02 .02	.15 .15 .14 .17		3500 3200 4400 460 770
3040 3041 3042 3043 3044	3 5 5 2 2	124 73 113 62 58	19 18 16 11	111 117 96 86 82	.5 .2 .6 1.1	26 34 33 37 40	25	1321 1837 1722 1631 1401	11.17 10.86 6.12	450 40 318 1555 647	5 5 5 5	ND ND ND ND	5 7 5 3 4	88 61 75 83 89	1 1 1 1	209 18 14 17 24	2 2 2 2 2	37 56 41 56 72	1.13 1.41 3.65 7.35 7.44	.30 .35 .21 .11	16 14 4 2 2		.37 .52 .83 1.40 1.04	235 81 90 56 301	.01 .02 .01 .01	29 28 28 20 19	.74 .93 .82 .51	.03 .05 .03 .03	.21 .27 .26 .15		740 170 270 2200 470
3045 3046 3047 3048 3049	1 3 2 2 2	49 84 60 73 48	15 16 28 14 14	103 150 71 100 118	.7 1.8 6.1 5.7	47 39 36 67 41	27 20 31	1692 1639 1521 1864 2124	6.39 4.88 6.94	738 964 2218 3131 152	5 5 5 5 5	ND 10 10 ND	2 4 4 4	58 63 45 37 50	1 2 1 1	29 160 1034 410 39	2 2 2 2 2	74 48 79	6.72 8.37 4.35 3.10 5.02	.11 .10 .08 .11	3 2 8 3 7	28 24 18 41 36	.91 1.14 .23 .41	69 109 564 108 92	.01 .01 .01 .01	17 18 18 20 18	.90 .60 .53 .90	.04 .03 .03 .04	.13 .14 .15 .19	1 1 1	360 1740 13700 11700 360
3050 3027A 3028A 3029A 3039A	2 1 3 4 2	104 44 156 596 128	15 8 14 59 15	116 50 89 487 97	.5 .7 .5 5.8	79 13 33 20 19	45 6 27 33 18	2215 3409 1186 607 1071	2.55 8.93 15.06	348 159 85 35948 162	5 5 5 5 5	ND ND ND 10 ND	4 1 5 4 7	26 28 38 49 36	1 1 1 4	61 257 109 856 16	2 2 2 6 2	103 18 137 19 38	2.07 5.46 3.14 .95 2.24	.13 .02 .15 .03	8 3 5 2 11	38 5 23 3 7	.37 1.58 .96 .23	142 25 36 21 38	.01 .01 .01 .01	19 7 15 2 17	.98 .13 .58 .11	.04 .03 .04 .01	.21 .03 .08 .03	1 4 16 1	160 90 13 10500 75
3041A STD C/AU 0.5	3 21	<b>93</b> 59	12 39	113 135	.2 6.9	24 66	25 27	1587 1164		39 37	5 16	ND 7	5 38	73 47	1 17	9 16	2 20	44 59	1.90	.43 .15	6 40	5 59	. 45 . 88	59 186	.01		1.06	.05	.34	112	34 480

SAMPLES	Mo PPM	Cu PPM	Pb PPM	Zn PPM	Ag PPM	N1 PPM	Co PPM	nK HPP	Fe 1	As PPM	U PP <b>M</b>	Au PPM	Th PPM	Sr PPM	Cd PPM	Sb PPM	Bi PPM	V PPH	Ca	P	La PPM	Cr PPM	Mg	Ba PPM	Ti Z	B PPM	Al Z	Na I	K	W PPH	Au≠ PPB
3043A	2	69	10	81	3.3	36	27	1374	7.20	3983	5	3	2	94	1	29	2	29	6.07	.12	2	7	1.33	77	.01	19	.42	.02	.17	1	2300
3047A	1	95	16	73	17.8	47	29	1748	6.94	8909	5	47	4	27	1	827	3	37	.77	.11	2	20	.18	120	.01	16	.50	.02	.17		45700
4367A	1	104	14	82	1.0	28	22	1033	8.94	2446	5	2	ó	87	1	198	3	19	1.36	.14	2	4	.42	46	.01	25	.53	.03	.26		1700
RD2 34	2	63	12	71	.9	84	23	897	5.70	47	5	ND	6	49	1	6	5	155	4.42	.12	2	121	3.55	17	.41	19	2.90	.08	.03	1	215
RD2 4+07	1	40	7	96	.3	120	29	1112	7.15	25	5	ND	4	27	1	4	2	76		.19	4	53	.40	112	.01	22	.94	.06	.18	i	39
																						50	8.15								
RD2 4+11	2	25	12	108	. 5	119	26	1305	7.19	24	5	ND	4	69	1	4	3	96	5.57	.23	2	131	1.72	122	.05	18	2.54	.19	.22	1	37
RD2 37+12	1	35	7	85	. 6	110	27	945	5.89	24	5	ND	3	48	1	54	2		4.40	.09	2	86	1.15	220	.01	19	.84	.06	.11	,	16
42359E	2	118	13	93	.5	61	37	1988	7.68	63	5	ND	4	32	1	12	2		3.96	.15	2	25	.32	7B	.01	17	.69	.04	.19	1	24
42360E	2	135	11	106	4.2	57	40	1466	7.05	2329	5	2	2	60	1	4725	2		2.12	.12	2	8	.40	83	.01	22	.49	.01	.20	1	3200
42361E	2	156	6	848	4.2	39	22		6.38		5	2	1	47	9	8316	2		2.57	.09	2	6	.51	53	.01	14	.37	.01	.17	1	1750
					10.5			1000000				•	(*)	33.5		0010	•	00	1.07		-		. 31	33	.01	1.5	. 37	.01	.17	1	1750
42362E	2	177	46	205	2.5	80	43	1321	8.17	3830	5	3	4	28	3	349	5	52	1.01	.17	2	38	.46	69	.01	10	.74	.01	. 21	7	2500
42363E	2	94	6	107	.5	41	31	1296	8.84	234	5	ND	3	28	1	106	3		2.22	.18	2	28	.47	53	.01	15	.61	.03	.15	1	65
42364E	1	117	В	105	. 9	50	26	1266		533	7	ND	7	38	1	166	2		4.14	.13	2	54	1.06	45	.01	14	.65	.05	.16	•	125
42369E	1	96	14	198	. 9	73	25	1239		417	7	ND	4	72	2	102	2	90	4.71	.10	2	74	.57	78	.01	18	1.40	.21	.13	1	340
42375E	1	75	7	29	1.7	32	10	345	4.46		5	4	5	50	1	1536	É	20	.96	.07	5	77	. 28	70	.01	23	.49	.01	.13		
20.00	8			• 1		~~		010	1.10	1400	3	1	J	30		1220	J	20	. 70	.07	J	3	. 20	/ V	.01	23	. 77	.01	. 10	1	3200
42376E	1	93	2	81	3.7	27	19	1242	5.96	3936	5	7	3	109	1	9555	2	7.4	6.13	.11	2	15	1.46	51	.01	23	.59	.02	.16	1	6450
42383E	1	46	3	113	. 3	12	10	278	4.13	54	5	ND	1	45	- 1	435	2	50		.18	2	13	.79	80	.05		2.92	.28	.43	,	66
STD C/AU 0.5	21	62	41	135	7.2	69	29	1157	3.97	39	15	9	41	49	18	17	21	61	.48	.15	39	59	.88	180	.07	40	1.72	.07	.13	12	490





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Report for: Laurence Sookochoff,

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July 8, 1985

Samples: MR-27, MR-46, MR-64,

Summary:

MR-27, MR-46 and MR-64 are andesitic volcanic rocks consisting mainly of a mass of small plagioclase laths. MR-64 is porphyritic with plagioclase phenocrysts. Quite intense pervasive carbonate alteration has occured in all of them and the carbonate also occurs in a system of thin veinlets. It is associated with hematite. The carbonate appears to be dolomite (perhaps Fe-bearing, ankerite) since it does not react with dilute HCl. The plagioclase is largely untwinned and is speckled with fine carbonate (and sericite) so that composition cannot be determined optically.

A. L. Littlejohn, M.Sc.

### MR-27: ALTERED (DOLOMITE) ANDESITE.

This sample is a fine grained volcanic rock consisting mainly of a mass of thin plagioclase laths. A widely spaced system of thin dolomite veinlets cuts through the rock and the carbonate also occurs pervasively in specks and small patches. It is associated with hematite. Minerals are:

plagioclase 76% dolomite 12 opaque (hematite) 12 sericite minor quartz trace chlorite trace

Plagioclase forms a mass of thin laths 0.2 to 0.5mm in length. In places these have a crude flow orientation with some of the very thin laths being slightly curved. There are also small shapeless grains sandwiched between the laths and a few subhedral grains 0.5 to 1.0mm in size.

Dolomite forms subrounded grains about 0.1mm in size occuring in a widely spaced subparallel system of veinlets about 0.3mm in width. There is a diffuse zone about 1mm wide around these in which very fine cloudy dolomite has replaced the plagioclase. This also occurs disseminated throughout the rock, commonly occuring between the plagioclase laths. patches up to 2mm in size occur.

The cloudiness of the carbonate is due to extremely fine inclusions of opaque material (hematite), which is also disseminated amongst the plagioclase. Much of the hematite forms ragged grains 0.1 to 0.5mm in size which occur in the core of the cloudy, diffuse patches and along stringers of fine dolomite.

The pervasive dolomitisation is associated with incipient alteration of the plagioclase to sericite. The broader, larger grains are usually quite highly sericitic and small patches of sericite sometimes occur between the fine laths, usually close to a carbonate patch. Small amounts of fine quartz and irregularly shaped patches, less than 0.2mm in size, of fine colourless chlorite flakes also occur around the carbonate patches.

### MR-46: ALTERED (DOLOMITE) ANDESITE.

This sample is a fine grained volcanic rock originally consisting of a mass of fine plagioclase laths. There is a criss-crossing system of fine carbonate veinlets cutting through the rock and pervasive alteration has also occured. The dolomite is associated with hematite. Minerals are:

plagioclase 70% dolomite 25 opaque (hematite) 5 quartz minor

Plagioclase forms a mass of unoriented thin laths 0.1 to 0.4mm in length along with fine shapeless interstitial plagioclase. The plagioclase is speckled with extremely fine hematite and carbonate.

Dolomite forms subrounded grains less than 0.1mm in size which occur in a fairly closely spaced criss-crossing system of veinlets 0.05 to 0.5mm in width. Small quartz grains are sometimes intergrown with the dolomite. This carbonate is clear but surrounding the veinlets there is a narrow diffuse zone of very fine cloudy dolomite. The cloudiness is due to the presence of extremely fine hematite intergrown with the dolomite. Rounded patches of cloudy or clear dolomite occur throughout the rock, as well as disseminated fine carbonate. These are 0.2 to 0.8mm in size.

As well as the extremely fine hematite disseminated throughout, it also forms ragged grains up to 0.1mm in size occuring in small clusters and aggregates within or around the dolomite patches. Sometimes there are small quartz grains intergrown with the hematite and dolomite.

### MR-64: ALTERED (DOLOMITE) PORPHYRITIC ANDESITE.

This sample is a porphyritic volcanic (subvolcanic?) rock of andesitic composition which is cut by a system of subparallel carbonate veinlets occuring along an indistinct shear. This is associated with pervasive carbonate alteration. Hematite is associated with the dolomite. Minerals are:

plagioclase phenocrysts	17%
plagioclase groundmass	45
dolomite	<b>3</b> 0
opaque (hematite)	5
sericite	3
quartz	minor
chlorite	minor

Plagioclase phenocrysts are rounded to subhedral and vary in size from 1 to 2mm; aggregates occur in places and a few smaller ones also occur. The groundmass consists of subhedral to euhedral laths 0.2 to 0.5mm in length along with subrounded grains 0.1 to 0.3mm in size. Incipient sericitisation has occured in both the phenocrysts and the groundmass and patches of massive sericite occur in the phenocrysts.

Dolomitic carbonate occurs in a closely spaced subparallel system of veinlets about 0.2mm wide occuring along a weak shear. Very fine cloudy dolomite has diffused outwards from this system and forms an interconnected patchwork superimposed upon the plagioclase groundmass and phenocrysts. Patches are usually less than 0.5mm in size. The cloudiness is due to the presence of very fine hematite which is intergrown with the carbonate.

Ragged hematite grains up to 0.2mm in size occur within and around the carbonate patches and extremely fine hematite speckles the plagioclase. Small patches of almost colourless chlorite are sometimes intimately intergrown with the carbonate. Where clusters of hematite grains occur there is sometimes small quartz grains intergrown with the hematite and the dolomite. These clusters sometimes appear to have replaced plagioclase grains pseudomorphically.

