Valentine Mountain
Project - Summary Report

APPENDICES

827202

— March 1988

APPENDIX I

APPENDIX I

LIST OF MINERAL CLAIMS

ORIGINAL BEAU PRE CLAIMS:

Name	Units	Record No.	Expiry Date
BLAZE 1	1	47	June 21/94
BLAZE 2	2	53	July 12/94
BLAZE 3	12	124	Oct. 03/94
BLAZE 4	3	370	May 26/93
BO #1	1	188	Sept. 14/89
BO #2	1	189	Sept. 18/89
BO #3	1	190	Sept. 18/89
BO #4	1	191	Sept. 18/89
BO #6	1	278	Sept. 17/93
PEG 1	1	77	Feb. 23/90
PEG 2	1	90	May 24/90
PEG 3	1	91	May 24/90
PEG 4	1	92	May 24/90
PEG 5	1	144	March 20/90
PEG 6	1	145	March 20/90
BPEX 1	20	461	Feb. 06/93
BPEX 2	18	462	Feb. 06/93
BPEX 3	1	463	Feb. 06/93
BPEX 4	3	492	March 06/93
BPEX 5	1	493	March 06/93
BPEX 6	1	494	March 06/93
BPEX 7	8	591	Oct. 05/94
BPEX 8	15	670	Sept. 21/90
BPEX 9	16	665	Sept. 16/94
BPEX 10	18	495	March 06/90
BPEX 11	8	507	April 02/93
BPEX 12	14	508	April 02/93
PC 1	8	817	April 07/93
PC 4	18	820	April 07/93
LUSTRE 1	2	747	Jan. 31/93
LUSTRE 2	18	742	Jan. 19/93
JORDAN GOLD 1	10	731	Dec. 24/89
JORDAN GOLD 2	14	732	Dec. 24/89
JORDAN GOLD 3	14	733	Dec. 24/89
JORDAN GOLD 5	18	737	Jan. 11/93

MINERAL CLAIMS ACQUIRED BY BEAU PRE:

Name	Units	Record No.	Expiry Date
FRS 9	18	1480	April 15/89
FRS 10	12	1470	March 19/90
FRS 11	14	1481	April 15/89
FRS 12	14	1482	April 15/89

MINERAL CLAIMS ACQUIRED BY VALENTINE:

FROM EXPEDITOR RESOURCE GROUP LIMITED:

Name	Units	Record No.	Expiry Date
VG 1	15	841	April 11/89
VG 2	20	842	April 11/89
VG 3	10	843	April 11/89
VAL	6	857	April 11/89

FROM ELMO K. JOHNSON:

Name	Units	Record No.	Expiry Date
LEECH 1	20	838	April 11/89
LEECH 2	16	839	April 11/89
LEECH 3	16	840	April 11/89
AU 2	1	1241	June 05/90
AU 3	1	1242	June 05/90
WEST 1	1	1238	June 05/90
WEST 2	1	1239	June 05/90
WEST 3	1	1240	June 05/90

BY STAKING:

Name	Units	Record No.	Expiry Date
HEART 4A	12	2038	Nov. 02/90
HEART 5A	15	2039	Nov. 02/90
HEART 6	20	1925	May 06/90
HEART 7	20	1926	May 06/89
HEART 8	20	1927	May 06/89
HEART 9	20	1928	May 06/89
HEART 10	20	1929	May 06/89
HEART 11	20	1930	May 06/89
WOLF 1	16	1917	May 06/90
WOLF 2	18	1918	May 06/90
WOLF 3	20	1919	May 06/90
WOLF 4	20	1920	May 06/90
WOLF 5	9	1921	May 06/90
WOLF 6	15	1922	May 06/90
WOLF 7	20	1923	May 06/90
WOLF 8	16	1924	May 06/90
DORAN 1	2	1980	July 07/93
DORAN 2 Fr	1	1981	July 09/93
DORAN 3	10	1990	July 27/90
DORAN 4	8	1992	Aug. 05/90
DORAN 5 Fr	1	2000	Aug. 26/93
DORAN 6	3	2033	Oct. 28/90
DORAN 7 Fr	1	2034	Oct. 28/90
DORAN 8 Fr	1	2035	Oct. 28/90

PLACER LEASES:

Lease No.
8149
8150
8151
8152
8161
8162
8163
8400
10844
10845

APPENDIX II

An Evaluation of the Valentine Mountain Gold Property

for

Valentine Mountain Gold Ltd.

by

Garratt Geoservices Ltd.

GARRATT GEOSERVICES

Victoria Mining Division
N.T.S. 92 B/12W, 92C/9E
Latitude 48° 32'N
Longitude 123° 54'W

G.L. Garratt, P.Geol., F.G.A.C.
November 14, 1986

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1. Introduction

The author was contracted by Valentine Mountain Gold Ltd. of Vancouver, B.C. to review an extensive data package on the Valentine Mountain Gold prospect, held by Beau Pre Explorations Ltd., of Victoria, B.C. The property, located near Sooke B.C., was visited by the author on October 30, 1986. Extensive literature and exploration data pertaining to the property were carefully reviewed and evaluated and included a recent (May 1986) review (including a recommended exploration program) by Dr. G.R. Peatfield of Minequest Exploration Associates Ltd. Vancouver, B.C. This report summarizes these data sets and reviews the exploration potential of the property, coneluding with a recommended work program.

The property is underlain by deformed and metamorphosed volcanic and sedimentary rocks of the Leech River complex, which comprises an allochthonous, fault-bound block that is unrelated to its surrounding terranes. The area has been intruded by granitic to dioritic sills and dykes which are believed to be synchronous with metamorphiam and deformation; these events are interpreted to have concluded around 39 to 41 Ma. Subsequent shearing, related to the east-west trending Leech River fault, further affected the terrain.

Quartz-vein systems, consisting of discrete veins and en-echelon masses are localized along fold and shear structures, and generally follow the east-west regional geologic trend. Gold-bearing veins within these systems have been explored since their discovery in 1976, and this work has included extensive trenching, sampling and some 1800 meters of diamond drilling. Gold occurs as fine particles to spectacular aggregate masses in quartz veins and, occasionally in wall rock to the veins. Determining an average grade has proven problematic due to the free occurrence of the gold, but a review of sampling data would suggest that grades of 0.2 to 0.5 ounces per ton, with local zones of 2 to 4 ounces per ton, across widths exceeding one meter, might be expected. The tonnage potential for the discovery zone is estimated at 500,000 to 900,000 tons.

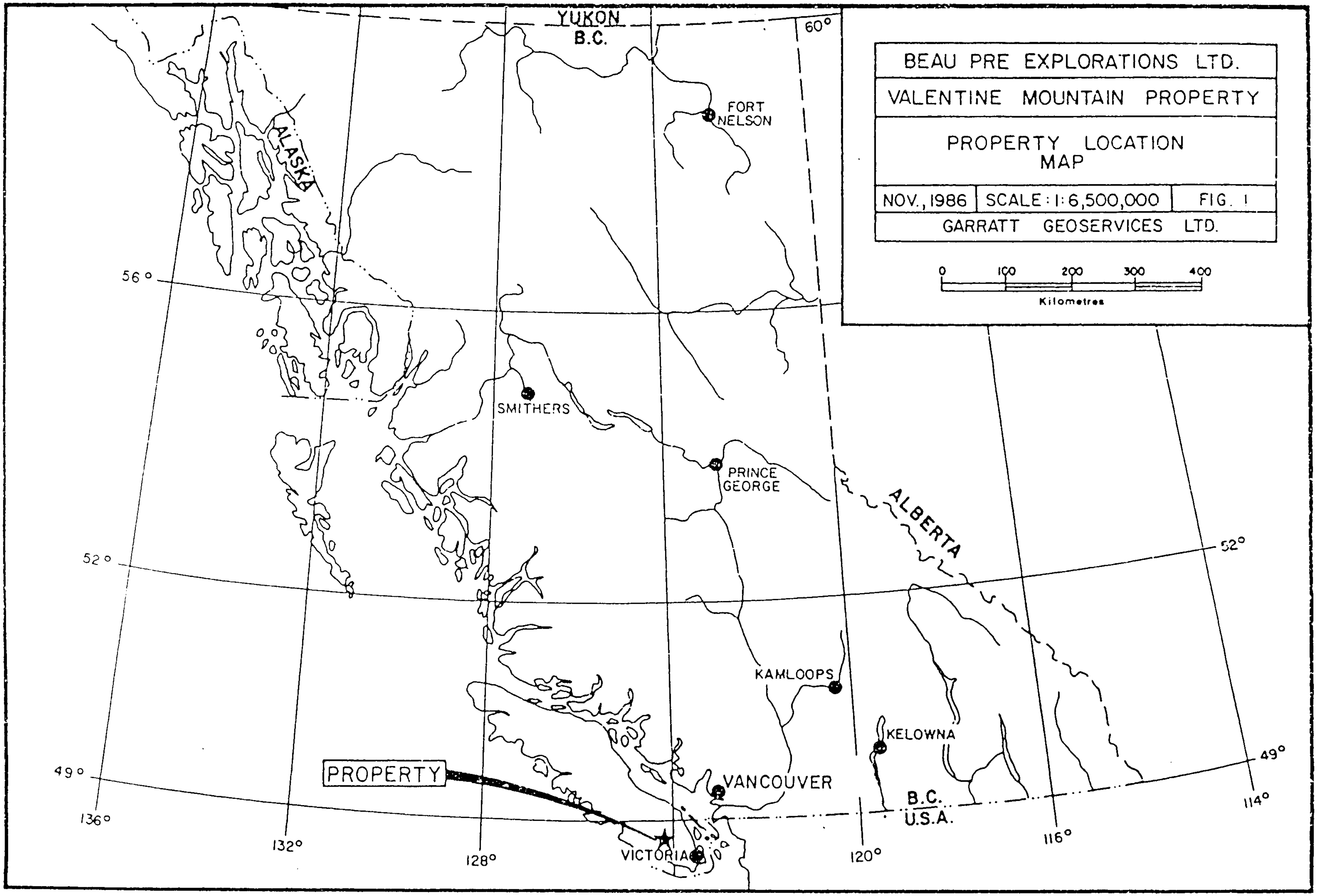
Reconnaissance exploration indicates that on strike systems occur and would enhance the tonnage potential dramatically; other anomalous areas have also been indicated and will require follow-up exploration. The mineralization appears to fit a quartz-vein shear zone classification that compares favourably with world class mines, though the limited amount of detailed work on the Valentine Mountain property precludes direct comparison to other deposits.

A two phase exploration program, designed to further test the discovery zone, its strike extensions and to advance reconnaissance exploration of this large property, is recommended. The Phase 1 program would require an expenditure of approximately $321,450.00. Phase 2 would entail delineation drilling, more detailed property exploration and preliminary bulk sample testing, and would be implemented on the basis of successful results in Phase 1.

2. Location, Access and Physiography

The property is located approximately 42 kilometers west of the City of Victoria and 19 kilometers north of the town of Sooke, on Vancouver Island, British Columbia. The Bear Creek and Diversion Reservoirs bound the property on the south, and Valentine Mountain lies on the central portion of the property which is in N.T.S. map sheets 92 B/12W and 92 C/9E at latitude 48° 32' N and longitude 123° 54' W. B. C. Highway 1A and Sooke Road lead from Victoria to Sooke, from which an all-weather gravel road accesses the property. Logging roads access most of the property though some may require the use of four-wheel drive vehicle. The main logging road access has weekday travel restrictions and permission from the logging operator is required for access to certain gated areas.

The property lies along the Insular Mountain Range, with local elevations ranging from 400 to 980 meters. The principal drainages are Walker Creek, Tripp Creek, Valentine Creek, Jordan River and West Leech River. All but the West Leech River flow to the south where the Jordan River continues southwesterly; the West Leech River drains southeasterly into the Leech River system. These drainages are fast flowing and susceptable to dramatic rises during the rainy season.


BEAU PRE EXPLORATIONS LTD.
VALENTINE MOUNTAIN PROPERTY
PROPERTY LOCATION MAP
NOV., 1986
SCALE: 1:6,500,000
FIG. 1
GARRATT GEOSERVICES LTD.
0
100
200
300
400
Kilometres
YUKON
B.C.
60°
56°
52°
49°
136°
132°
128°
120°
116°
114°
ALASKA
ALBERTA
FORT NELSON
SMITHERS
PRINCE GEORGE
KAMLOOPS
KELOWNA
VANCOUVER
VICTORIA
PROPERTY
B.C.
U.S.A.

Heavy conifer forest would typically cover the area but much of this has been clear-cut logged, leaving a predominant cover of second growth with some logging slash areas as yet unseeded or recently cut. The property is ammenable to year-round work, though a nine to ten month season is more reasonable due to moderate snowfall conditions.

3. Ownership

The Valentine property comprises thirty-five claims totalling two hundred and fifty-four units; additionally, ten placer leases are held on the Jordan River, Bear Creek and Valentine Creek (see Figure 2). These claims are as follows:

Claim Name	#	Units	Record Date	Group Name	Group Date	Expiry
BLAZE #1	47	1	21 Jun'76	BLAZE	12 May'83	1988
BLAZE #2	53	2	12 Jul'76	BLAZE	12 May'83	1988
PEG #1	77	1	22 Feb'77	PEG	12 May'83	1988
PEG #2	90	1	24 May'77	PEG	12 May'83	1988
PEG #3	91	1	24 May'77	PEG	12 May'83	1988
PEG #4	92	1	24 May'77	PEG	12 May'83	1988
BLAZE #3	124	12	3 Oct'77	BLAZE	12 May'83	1988
PEG #5	144	1	20 Mar'78	PEG	12 May'83	1988
PEG #6	145	1	20 Mar'78	PEG	12 May'83	1988
BO #1	188	1	14 Sep'78	BO	22 Aug'79	1988
BO #2	189	1	18 Sep'78	BO	22 Aug'79	1988
BO #3	190	1	18 Sep'78	BO	22 Aug'79	1988
BO #4	191	1	18 Sep'78	BO	22 Aug'79	1988
BO #6	278	1	17 Sep'79	Ungrouped		1988
BLAZE #4	370	3	26 May'80	BLAZE	12 May'83	1988
BPEX #1	461	20	6 Feb'81	BLAZE	12 May'83	1988
BPEX #2	462	18	6 Feb'81	BLAZE	12 May'83	1988
BPEX #3	463	1	6 Feb'81	BLAZE	12 May'83	1988
BPEX #4	492	3	6 Mar'81	BLAZE	12 May'83	1988
BPEX #5	493	1	6 Mar'81	BLAZE	12 May'83	1988
BPEX #6	494	1	6 Mar'81	BLAZE	12 May'83	1988
BPEX #10	495	18	6 Mar'81	PEG	12 May'83	1988
BPEX #11	507	3	2 Apr'81	BLAZE	12 May'83	1988
BPEX #12	508	14	2 Apr'81	PEG	12 May'83	1988
BPEX #7	591	8	5 Oct'81	BLAZE	12 May'83	1988
BPEX #9	665	16	16 Sep'82	BLAZE	12 May'83	1988
BPEX #8	670	15	21 Sep'82	PEG	12 May'83	1988
JORDAN GOLD 1	731	10	24 Dec'82	JORDAN GOLD 1	16 Mar'84	1986
JORDAN GOLD 2	732	14	24 Dec'82	JORDAN GOLD 1	16 Mar'84	1986
JORDAN GOLD 3	733	14	24 Dec'82	JORDAN GOLD 1	16 Mar'84	1986

Claim Name	#	Units	Record Date	Group Name	Group Date	Expiry
JORDAN GOLD 5	737	18	11 Jan'83	JORDAN GOLD 5	16 Mar'84	1987
LUSTER #2	742	18	19 Jan'83	JORDAN GOLD 5	16 Mar'84	1987
LUSTER #1	747	2	31 Jan'83	Ungrouped		1987
P.C. #4	820	18	7 Apr'83	Ungrouped		1987
P.C. #1	817	8	7 Apr'83	Ungrouped		1987

Originally staked and held by Beau Pre Explorations Ltd. of 1027 Pandora Street, Victoria, B. C., the claims are held under option by Valentine Mountain Gold Ltd.

4. Economic Considerations

The Valentine Mountain property lies close to a well developed infrastructure containing a large population base, an ample hydroelectric power supply and short distance to ocean shipping. The immediate area of the claims supports logging operations and is essentially non-populated, allowing a minimum impact on local land use. The Bear Creek and Diversion Reservoirs were originally constructed for power supply to the Victoria area but eventually this system was replaced and became a back-up utility; apparently maintenance of these reservoirs is not being undertken due, in part, to cutback measures implemented by B. C. Hydro. While ample water supply exists on the property, it is likely that the reservoirs could be used as well.

While part of the objective of present exploration is to discover a bulk tonnage gold deposit which would allow low-cost, probably open pit, mining, it is likely that an underground mining situation would be envisaged, causing minimal surface area disturbance. More than adequate useable land area is contained within the property to allow any form of mining operation with a minimum of environmental impact.

Detailed exploration covers a small portion of the property, and this work has outlined a zone of quartz-vein systems carrying free gold that has been traced in detail along a 350 meter strike. Prospecting, pitting and diamond drilling indicates that this zone shows the potential to exceed

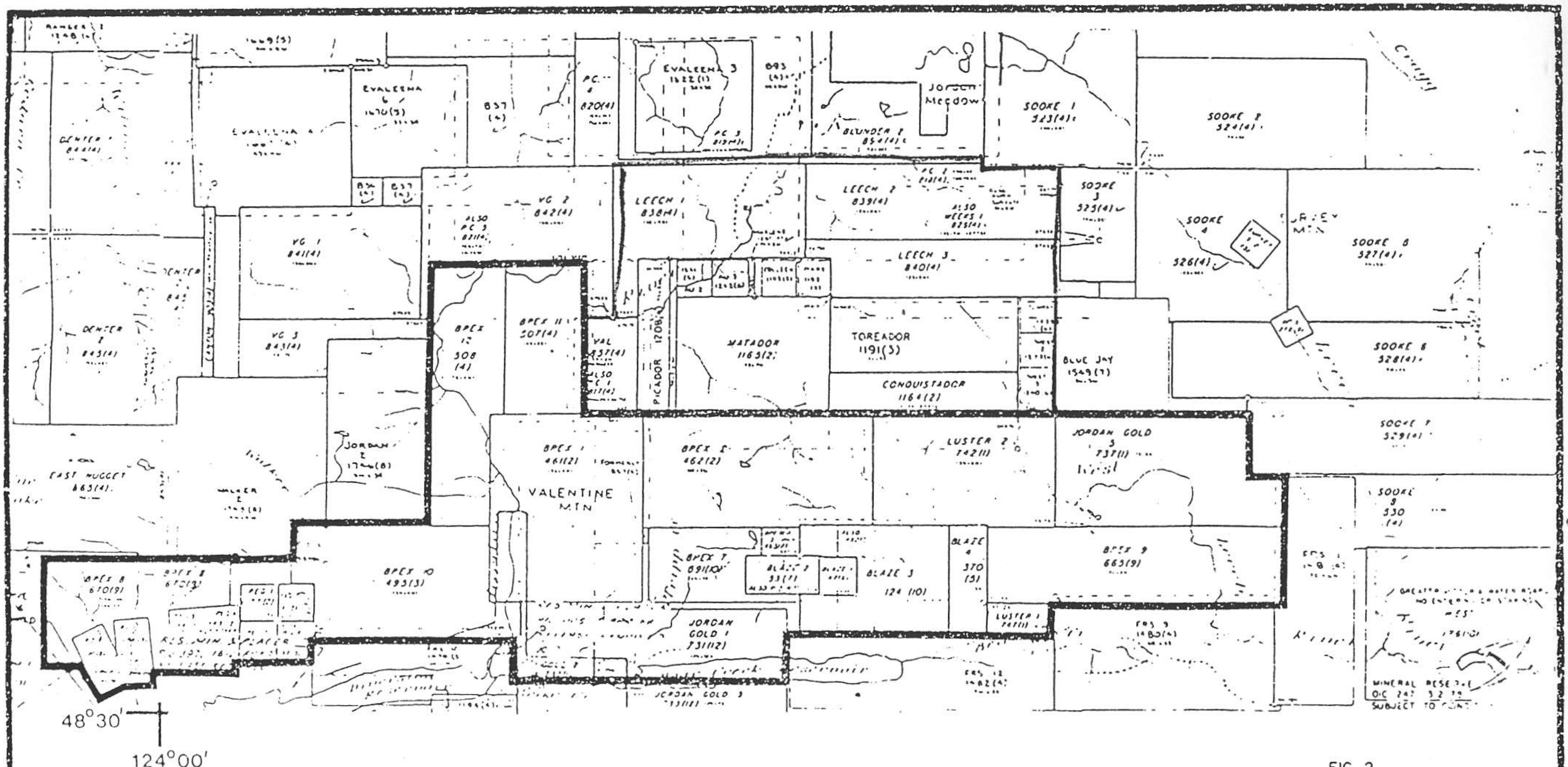


FIG. 2

BEAU PRE EXPLORATIONS LTD
VALENTINE MOUNTAIN PROPERTY
CLAIM LOCATION MAP
NTS 92B/12W, 92C/9E
NOV, 1986 VICTORIA M D
GARRATT GEOSERVICES LTD

GARRATT GEOSERVICES

Scale approx 1 67,923

0 500 1000 2000

Metres

a strike length of 3,000 meters. Extensive sampling in the discovery zone indicates that grades of 0.1 to several ounces per ton can be encountered across widths of at least one meter. Vein systems are developed within zones of up to 70 meters width. Difficulties in analytically obtaining an 'average' grade have been encountered, and are believed due to the free and 'pockety' nature of the gold. Sampling would suggest, however, that values in the range of 0.2 to 0.5 ounces per ton might be expected across widths amenable to underground mining, and that zones of considerably higher grade could be expected.

The Valentine Mountain property might well be classified as a vein and shear zone gold deposit, showing characteristics similar to deposits reported to occur in the Meguma Group, Nova Scotia, the Yellowknife Supergroup, N.W.T. the Ballarat-Bendigo Districts, Australia (Thorpe, 1984), and to the Kolar deposit, India (Narayanaswami, et al, 1966). Direct comparisons between deposits or to deposit models is never without debate, and the Valentine Mountain occurrence is far from being well defined. General characteristics however, may be useful in comparing to mined deposits such that exploration opportunities will not be overlooked, and that an indication of the size and grade potential may be considered. The Canadian examples are apparently small (Goldenville - 550,000 tonnes at 12g (0.35 opt.)Au), but world class large deposits are reported in Australia (Ballarat-Bendigo) and India (Kolar-40 million tonnes; 23 million ounces produced). The geologic environment at the Kolar deposits appears to be very similar to the Valentine property with quartz-gold vein systems localizing in shears within and adjacent volcanic originated amphibolites, enclosed in a series of gneisses, quartzites and "autoclastic conglomerate", and intruded by syntectonic granitic plutons and post-tectonic quartz-veins, dolerite, gabbro and pegmatite dykes. Similarly, the Kolar exhibits a tremendous strike length and vertical dimension to the deposits (5 miles, 10,000 feet respectively) (Narayanaswami, et al, 1966).

Given the early stage of exploration at the Valentine Mountain property, the ore controls and geology indicate a large tonnage deposit potential. This potential, considering the occurrence of gold-quartz systems along a 3,000 meter strike, could reach several millions of tons. The discovery zone has received the only detailed exploration on the property and while the grade of the occurrence is poorly defined, it is evident that a strong and persistent quartz-vein system underlies the area. The dimensions of this system have been roughly defined over an area of 350 meters by 70 meters and to a depth of 165 meters. The veins and vein networks within this zone pinch and swell from a few centimeters to a few meters characterizing their shear and fold structure localization, comparable to the Kolar where ore shoots or lodes are reported to average 5 to 6 feet in width, and up to 50 feet across in folded areas (Narayanaswami, et al, 1966). It is evident that several lodes likely occur within the discovery zone, of which the 36 and A systems have been tested. Considering these dimensions, a minimum target tonnage for the discovery zone can be inferred to range from 500,000 to 900,000 short tons, assuming the presence of two shoots and the following dimension parameters:

Lode width - 6 feet (1.82 m) depth (minimum) - 500 feet (152.4 m)
Strike length - 1000 feet (304.8 m) to 1500 feet (457.2 m)
Tonnage factor - 12 cu. ft./ton

These figures represent an extrapolation from limited data, and are given to show the potential of the discovery zone. The potential for the discovery of similar zones at depth, below the levels of present testing, and along strike is good, as indicated by the local and regional persistence of the quartz-vein systems, and multiplies this target tonnage to define an exploration potential for several millions of tons. The Valentine Mountain property, therefore, exhibits a strong potential for the discovery of an economically viable deposit.

5. History

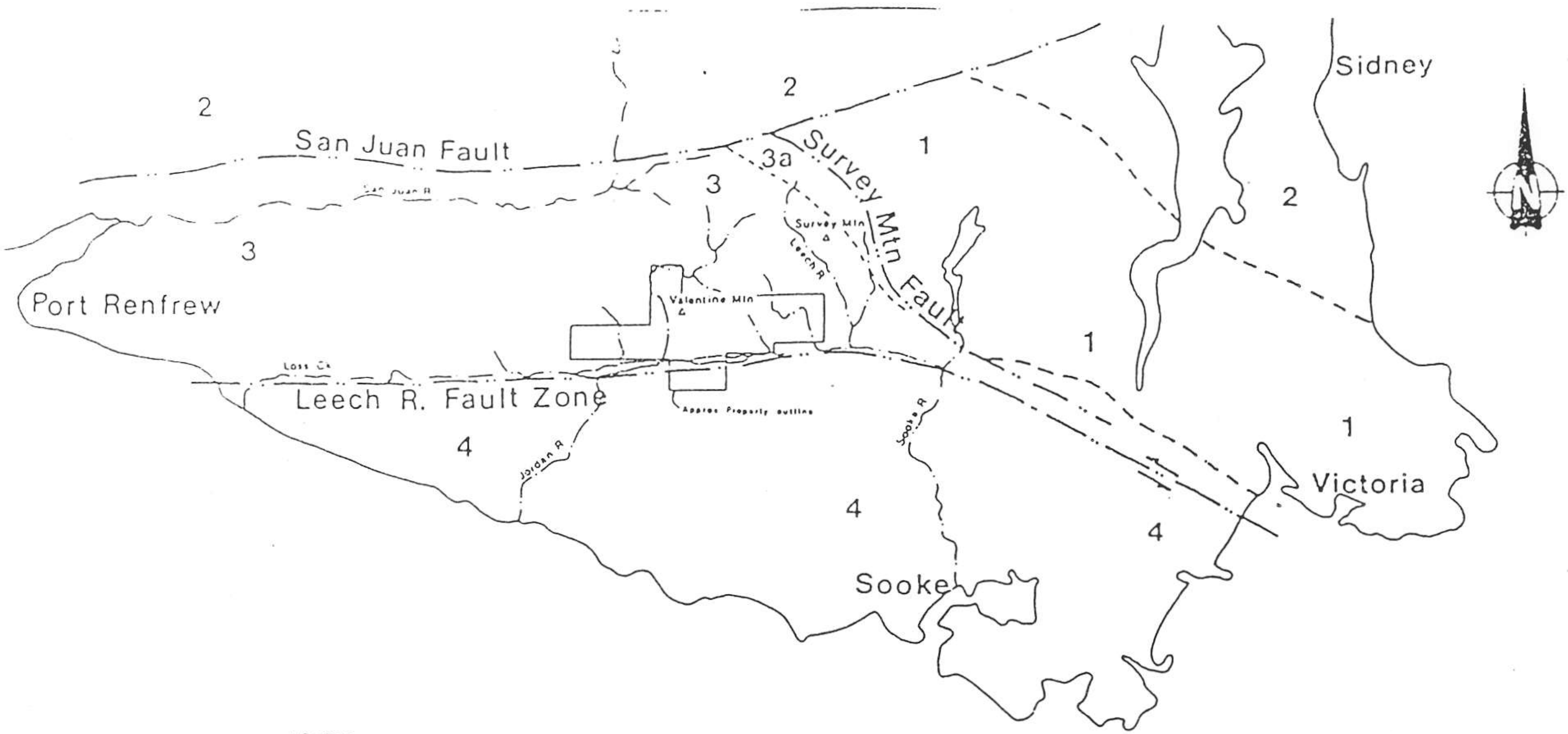
A small gold rush followed the discovery, in 1864, of placer gold on a fork of the Sooke River, some ten kilometers east of the property. Placer production has been estimated as being from $100,000.00 to $200,000.00 during the 1864 to 1866 rush.

In 1966 a Mr. Fred Zorelli, involved in logging operations on the east slope of Valentine Mountain, discovered free gold in a rock turned up by a tractor. Mr. Zorelli mentioned this discovery to Robert Beaupre and Alec Low, who were prospecting the area. These latter individuals subsequently discovered, by prospecting, gold mineralization of the "A vein", in 1976. In the period 1976 to 1980, Beau Pre Explorations undertook prospecting, trenching and rock sampling, including bulk sampling. During 1977 and 1978, L. H. Fairchild undertook a mapping program leading toward his M.Sc. thesis at the University of Washington, and a portion of his thesis area is covered by the property. In 1979 and 1980 limited grid-based soil sampling was carried out in the discovery area, as well as further trenching and sampling. Regional prospecting and silt sampling, followed by detailed prospecting and sampling were undertaken by Beau Pre Explorations Ltd. in 1981. In 1982 further trenching and sampling were undertaken, again by Beau Pre, primarily in the discovery area. During 1983 the property was geologically mapped at a scale of 1:7200 and thirteen diamond drill holes were completed in the discovery area, totalling approximately 1,828 meters (1294 m NQ; 534 m NQ). An airborne magnetometer and VLF-EM survey, totalling 370 line kilometers was conducted in 1984 over the entire property. In 1985, Falconbridge Limited optioned the property and carried out a program of trenching and sampling in the discovery area; this option was terminated following the acquisition and re-structuring of Falconbridge by Kidd Creek Mines Ltd., in early 1986.

Beau Pre Explorations are presently undertaking trenching on the 36 and adjacent veins and contracted Minequest Exploration Associates Ltd. of Vancouver to undertake a heavy mineral stream sediment sampling program; the results of these programs are pending. Dr. G. R. Peatfield, of Minequest, visited the property in May, 1986, and subsequently undertook a review of the available property data, which resulted in a summary report that has aided the author in compiling this present study.

6. Regional Geology

The Valentine Mountain property lies within the Leech River Complex, an east-west trading fault-bound block comprised of metamorphosed sedimentary and volcanic rocks (Fairchild and Cowan, 1982) (see Figure 3). The complex contrasts with rocks of adjacent terrains which consist of:



LEGEND

4 LOWER TO MIDDLE EOCENE METCHOSIN VOLCANICS; BASALT FLOWS, BRECCIAS AND PYROCLASTICS; RELATED SOOKE GABBRO; AND OVERLYING SOOKE FM. CLASTIC SEDIMENTARY ROCKS.

3 LEECH RIVER COMPLEX - METAMORPHOSED PELITIC ROCKS, SANDSTONE AND MINOR VOLCANIC ROCKS, CHERT AND CONGLOMERATE; PROBABLY LATE JURASSIC TO CRETACEOUS. 3A - VOLCANIC MEMBER.

2 PALEOZOIC TO JURASSIC STRATA (WRANGELLIA TERRANE?); INCLUDES PARTS OF SICKER, KARMUTSEN AND BONANZA GROUPS AND RELATED INTRUSIVE ROCKS

1 PALEOZOIC AND MESOZOIC IGNEOUS AND SEDIMENTARY ROCKS, MOSTLY METAMORPHOSED; INCLUDES PALEOZOIC WARK DIORITE AND COLQUITZ GNEISS, METAVOLCANIC ROCKS, AND JURASSIC ISLAND INTRUSIONS.

Scale approx 1 384,615

5 0 5 10 15

km

GARRATT GEOSERVICES

(After G.R. Peatfield, 1986)

BEAU PRE EXPLORATIONS, LTD.			
VALENTINE MOUNTAIN PROPERTY			
LOCATION MAP AND REGIONAL GEOLOGY			
Plan	Drawn GRP	May 86	FIG. 3
Data GPP	NTS 92B.C		
GARRATT GEOSERVICES LTD			

Paleozoic to Jurassic volcanic and plutonic rocks separated at the northern boundary of the complex by the San Juan fault; eastward, the Paleozoic Colquitz gneiss and Wark diorite occur along the Survey Mountain fault and; to the south the Leech River fault separates the early Eocene Metchosin Formation of volcanics and related intrusions as well as the Sooke Gabbros. The Leech River fault is considered by Fairchild and Cowan to be comprised of two to four subparallel, linear and steeply dipping faults that are interpreted to be left-lateral strike-slip faults which were active after metamorphism and deformation of the Leech River complex, and were involved in the placement of the complex as an allochthonous block with respect to the surrounding terranes.

The Leech River complex comprises metamorphosed pelites, sandstones and volcanics that have been metamorphosed to low-pressure greenschist to amphibolite facies (andalusite-staurolite-biotite) during two deformational stages. Deformation and metamorphism were accompanied by composite foliated to non-foliated sills and dykes of granitic to dioritic composition and related later pegmatites and quartz-tourmaline veins; the conclusion of these events has been dated at 39-41 Ma. The two deformational events resulted in "macroscopic east-plunging folds and related coaxial, mesoscopic linear structures, parasitic folds, and axial plane cleavages". (Fairchild and Cowan, 1982).

Retrograde metamorphism has been documented by Grove (1984), Wingert (1984) and Read (1986) and is postulated to overprint earlier metamorphic events. Grove (1984) suggests a relationship between this retrograde event and the Leech River shear-fault event. Gold mineralization, with accessory pyrite or arsenopyrite and associated quartz and quartz-calcite veining, appears to belong to the superimposed, later and lower grade, metamorphic event (Read, 1986). Peatfield (1986) suggests a possible "pre-folding decollement, as suggested by the apparent repetition of the amphibolite units on the nose the anticline" (east of Valentine Mountain).

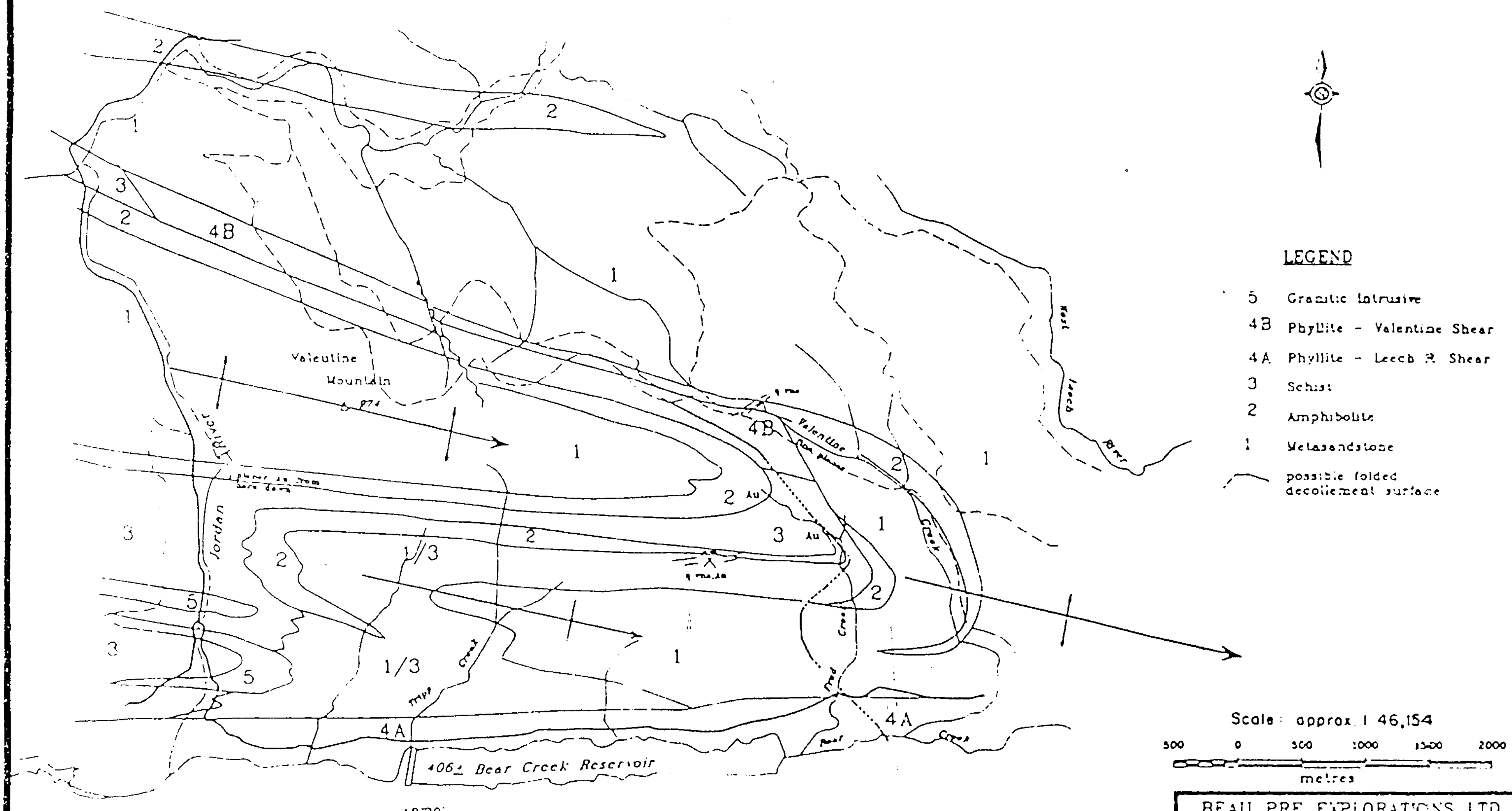
7. Property Geology

The geology decribed herein is a summary derived from the work and publications of: Fairchild (M.Sc. Thesis, 1979); Fairchild and Cowan (1982); Grove (1984) and; Wingert (B.Sc. Thesis 1984) (see Figure 4). It appears that while the property has been mapped well on a regional scale, detailed work is lacking. The property mapping was undertaking by Grove and Wingert at a scale of 1:7200, though an outcrop map has not been provided to determine the true resolution of this mapping. A review of field mapping notes indicates that the 1:7200 geology map has been summarized to some degree and while presenting a good overview of the underlying geology, does not incorporate sub-divisions of units, small dyke or shear zone locations, nor mineral occurrences. The dramatic local variations imposed by metamorphism was the probable reason for presenting the gross lithologic pattern, as opposed to a more confusing array of schist varieties. For the purpose of this report, however, the map and related reports provide a very good view of the geologic environment.

7.1 Lithologies

Mapping has divided the geologic section into three main lithologic types with a fourth member included as a structurally deformed and metamorphosed variety of other rock types (phyllites). These include: amphibolites, metasandstones, metapelites and phyllites.

7.1.1 Amphibolites: The amphibolite units are believed to be representative of two rock types: porphyritic basalt and intercalated crystal tuff with occasional flattened volcanic bombs. These primary features are relict in areas of low metamorphic grade and disappear in the predominantly higher grade areas where the amphibolites are characterized as fine grained schistose rock with compositional layers. Wingert (1984) describes the mineralogic composition of the amphibolites as ranging from "actinolite-chlorite rich to hornblende-biotite rich containing quartz, feldspar and accessory calcite, epidote, sphene, apatite, tourmaline and opaques . . . Boudinaged quartz-plagioclase-epidote lenses are another characteristic feature . . .". Fairchild (1979) suggested that "the high proportion of quartz



GARRATT GEOSERVICES

(After G.R. Peatfield, 1986)

BEAU PRE EXPLORATIONS LTD.			
VALENTINE MOUNTAIN PROPERTY			
PROPERTY GEOLOGY			
PLAN No. -	DRAWN BY GEO-COMP	DATE May '88	FIGURE 4
Originator GRP		NTS 92B/12W	
GARRATT GEOSERVICES LTD			

in amphibolite facies rocks and the abundance of magnetite in greenschist rocks suggests that metavolcanic rocks were probably dacitic to andesitic rather than basaltic."

The amphibolites show a relatively high competency and lateral continuity, rendering them very useful as markers. These units may be locally tourmalinized and have been observed to be altered to a dark banded hornblende-rhodonite variety. Magnetite and pyrite disseminations are reported as common occurrences.

7.1.2 Metasandstones: These units generally comprise massive, poorly bedded rocks that are easily mappable. Grove (1984) describes the metasandstone as follows: "These rocks are typically buff weathering with a weak to strong foliation defined by fine grained biotite. The recrystallized matrix comprises a fine to very fine grained mosaic of quartz and feldspar with accessory apatite, sphene and occasional muscovite and pyrite. Hornblende, actinolite, garnet, epidote and K-feldspar are irregularly present as incipient to fine grained disseminations in most of the dominantly biotitic gneisses. An unusual texture imported to the gneisses by close spaced biotite rich layers has been termed 'wood grain' sandstone because of the distinctive appearance . . . The thickest metasandstone section, called the Valentine sandstone by Fairchild (1979), is exposed along Jordan River where it forms most of the steep slopes and high ridges on Valentine Mountain. Although massive, discrete layers and lenses of metapelites, and occasional sedimentary breccia mark primary bedding . . . In composition these biotite gneisses or metasandstones are typically quartz-rich (20 - 30%) with low to moderate amounts of biotite and hornblende."

7.1.3 Metapelites and Phyllites: This classification comprises the schists and phyllites which have received the greatest attention in relation to the study of regional metamorphic grade. The phyllites have been described by Wigert (1984) as two types: low grade metamorphic, in the northern and eastern regions of Valentine Mountain, and; retrograde metamorphic, on the south side of Valentine Mountain along the Leech River fault. "The mineralogic composition of the phyllites ranges from biotite-sericite-quartz to biotite-sericite-chlorite-quartz with accessory epidote, apatite and graphite . . . In retrograde phyllites relict textures of amphibolite grade metamorphism are prominent." (Wingert, 1984). Grove (1984) argues that "much of the apparently lower grade chlorite-biotite-garnet schist is the result of progressive, and probably repeated, retrograde deformation.", and relates this development to ". . . extensive regional shearing related to the major east-west San Juan and Leech River shear zones and the conjugate southeasterly Floodwood Creek, Survey Mountain and Cragg Creek shears."

The schists are described by Wingert (1984) as ". . . characterized by graphite, range in colour from light to dark grey. They are thinly laminated and contain deformed ptygmatic quartz veinlets. The main foliation is outlined by quartz-biotite compositional layers and fine graphite streaks. Graphite also outlines an earlier foliation which is visible in helictic porphyryoblasts of staurolite and biotite. The minerals of these schists include biotite, garnet, staurolite, andalusite and quartz with accessory apatite, chlorite, sphene, muscovite, tourmaline and opaques. Opaque minerals include graphite, pyrite, arsenopyrite and pyrrhotite."

Grove (1984) and Fairchild and Cowan (1982) mention the occurrence of coarse, recrystallized quartz lenses and veins that are notably conformable. Fairchild and Cowan believe these have an origin as cherts and Grove notes their presence as dominantly within andalusite-garnet schists in the Valentine Mountain area.

7.2 Intrusives

Foliated and unfoliated granitic to dioritic intrusives occur dominantly as sills, paralleling foliation or fold structures, some being apparently folded. Non-foliated intrusives are less common and Fairchild and Cowan report a trondhjemite of this type in the Jordan River Canyon. Wingert noted that cross-cutting dykes tend to be fine grained diorites. The intrusions appear to cluster from the Jordan River westward and conform to the region of highest metamorphic grade. Fairchild and Cowan (1982) describe the dominant sill types as biotite and muscovite orthogneisses; Wingerts' field notes describe small mafic and gabbroic dykes which are otherwise unreported. Some sills display enclosed blocks of schist.

"Small pegmatite dykes and sills, typically 1m or less wide, are apparently related to the large composite sills. They generally fall into two major compositional categories: quartz-feldspar-green muscovite pegmatite or quartz-feldspar-tourmaline-(green muscovite) pegmatite." (Fairchild and Cowan, 1982). Wingert (1984) adds minor amounts of garnet and gahnite to the mineralogy and notes their prominence in the Walker Creek area.

Three quartz vein varieties appear to have been identified, including two deformed sets and one undeformed. These latter sets are reported to be the host for the gold mineralization and range from 1 to 50 centimeters in thickness though Read (1986) indicated a gold bearing deformed quartz vein in sample DDH6/676B. Gold bearing veins constitute the discovery showings, now exposed in exposed in the A, 36, 1 and 2 trenches as discrete single veins to en-echelon swarms, and have been noted as far west as the Jordan River area. Minor amounts of disseminated pyrite, chalcopyrite, and arsenopyrite and local blebs to seams of spectacular coarse free gold have been observed in these veins and associated fractures. Gold smears and slicken sides have been noted on vein walls or fracture surfaces. Quartz veins are a common occurrence along dyke boundaries and silification has been reported along many sandstone-amphibolite contacts (Wingert-field notes, 1983). Quartz-tourmaline veins are not uncommon and are prevelent in the pegmatite area, noted above.

7.3 Metamorphism

Extensive regional studies have been undertaken, through field mapping and hand specimen and thin section reports, on regional metamorphism, and the following is a summary taken from those works (Fairchild, 1979; Fairchild and Cowan, 1982; Grove 1982 and 1984; Wingert, 1984; Read, 1986). The metavolcanics show two metamorphic grades: greenschist, characterized by chlorite-epidote with actinolite, albite and magnetite; amphibolite, characterized by hornblende-epidote-quartz-plagioclase. Two metamorphic events are indicated by the metamorphic assemblages in the pelitic rocks. Isograds have been located to define four metamorphic grades, transgressing greenschist to amphibolite facies, and these, with their mineralogic affiliations are as follows:

chlorite zone - muscovite-chlorite (northeast of the map area)
biotite-chlorite zone: with muscovite-quartz
garnet-biotite-chlorite zone: with muscovite-quartz
andalusite-staurolite biotite: with sparse muscovite and moderate garnet

The andalusite-staurolite-biotite assemblage defines the highest grade of metamorphism and centres about the coincidence of the large volume of intrusive sills along the Leech River fault; metamorphic grade decreases north and northeasterly from this area. It has been concluded that the co-existence of staurolite and andelusite indicates a first phase andalusite-grade event followed by a second, retrograde, metamorphic event which produced staurolite and altered andalusite; these events aerially overlap and allow only one isograd to be defined. These two events are believed to be synchronous with two deformational events, and concluded prior to the end of the second deformation, as evidence by D_2 crenulations on retrograded alteration of andalusite.

Read (1986) studied polished thin sections of rocks from the bottom of drill hole 6 and defined a propylitic alteration characterized by chlorite-sericite (muscovite)-calcite-quartz-albite associated with deformed, gold (-chalcopyrite, pyrite, arsenopyrite) bearing, quartz-calcite veins, which is superimposed on the originally amphibolite facies host schist.

7.4 Structure

Fairchild and Cowan (1982) describe a two phase deformation, comprising isoclinal F_1 refolded by F_2 resulting in cylindrical folds which are generally asymmetric-open in the north and progressively symmetric-closed to the south. The axial trace is approximately east-west, plunging 25-30 degrees east and the dominant foliation is F_2 axial planar, and steeply north dipping. Wingert (1984) describes megascopic fold structure as: the Valentine antiform with its hinge at the peak of Valentine Mountain; the Valentine synform, south of Valentine Mountain and; the Walker Creek antiform, to the southwest. In the area of the Valentine property F_1 penetrative features are apparently rarely evident, having been transposed to the F_2 structures. Parasitic mesoscopic folds, boudins, crenulation cleavages and transposed fragmental ptymagtic quartz veins are features of the second deformation (Wingert, 1984).

Peatfield (1986) suggests a pre-folding decollement to explain the apparent repetition and loss of symmetry in the occurrence of amphibolites to the east of Valentine Mountain, in the nose of the plunging Valentine antiform (see Figure 4). Post-folding fault systems are poorly documented in the property area and only major regional faults have been discussed by previous workers. Wingert (1984) depicts two minor faults trending northeasterly and northwesterly; the latter, northeast of Valentine Mountain, shows an apparent strike-slip movement in excess of 300 meters. The Leech River fault bounds the Leech River complex along the southern border of the property. Fairchild and Cowan (1982) describe this fault as ". . . a zone of two to four mappable, sub-parallel faults separating sizeable terranes of unsheared rocks belonging to the Leech River complex". These faults are said to parallel or sub-parallel the adjacent rock foliations and occur as discrete displacement surfaces, showing little effect on adjacent rocks. Wingert (1984) adds that small related shears have been observed on the property and locally produced mild mylonitization and granulation, resulting in more friable rocks. The Leech River fault is interpreted as post-dating regional metamorphism (Fairchild and Cowan, 1982).

7.5 Mineralization

Reports of mineralization on the Valentine property almost exclusively deal with the occurrence of free gold and related minor sulphide occurrences. Most notably, the discovery area (crossed hammers - Figure 4) has been reviewed by several authors including: Lisle, 1980; Noel, 1980; Grove, 1982 and 1984; Falconbridge Ltd. - Chandler, 1985 and; Peatfield, 1986. Additionally, sampling reports by Beau Pre Explorations Ltd. and other interested exploration companies are available. The discovery area has been extensively trenched, exposed and sampled, primarily by Beau Pre Explorations Ltd. and Falconbridge Ltd. Beau Pre undertook diamond drilling in this region (13 holes, 1828 meters) in 1983, and limited soil sampling in 1979 and 1980 (99 samples).

Wingert (1984) and Grove (1984) suggested that undeformed quartz-veins following 60 and 80 degree fracture sets were the host to gold mineralization. Read (1986) has shown that quartz and quartz-calcite veins, associated with propylitic alteration, may be deformed and host gold.

The quartz-veins vary from massive-white to grey-glassy and combinations of these, and form thin 0.5 to 50 cm veins that may be continuous along tens of meters, to less continuous en-echelon stringer masses or discontinuous lenses. This character appears to apply to both the lateral and vertical axes. The veins are locally limonitic containing patches of abundant earthy iron oxide material or merely an amber coloured staining imparted by iron oxide. The veins may be vuggy but are generlly massive in character. Calcite is reported by Read (1986) to occur surrounding anhedral weakly strained quartz grains, or as veinlets, and locally show deformation textures; calcite has been observed on fracture surfaces. The quartz-veins may parallel or cross foliation.

Sulphides form a minor accessory to the gold-bearing quartz-veins and include in descending order of reported abundance, pyrite, arsenopyrite, marcasite, chalcopyrite, sphalerite, galena and ilmenite. Grove (1984) reports that arsenopyrite has locally been fractured and cut by fine gold. Gold occurs within the veins as tiny specks to irregular 'hackly' masses, and occasionally in wire form. Gold smears have been noted along slicken-sided fracture surfaces and as small specks in the wall rock, a few centimeters from vein material. Although no silver minerals have been noted, sample results indicate their presence.

Grove (1984) noted an apparently gold-vein associated alteration in drill core that comprises "extensive quartz, calcite and gypsum veining, spotty to vein-like K feldspar zoning, tourmalinization, epidotization and biotitization of hornblende and the attendant development of fine to coarse grained magnetite." This conforms in part with Read's propylitic alteration described from thin sections of the drill core.

It is suggested by Grove (1984) that the gold-bearing veins of the discovery area are "localized in both the hanging wall and footwall of the highly altered, 100 meter wide amphibolite band mapped as extending from the Jordan River east to Fred Creek, a distance of about 5,000 meters". The discovery of a gold-bearing quartz vein east of the Jordan River (station 10-84 Howey) indicates that the strike of the quartz-vein system may exceed at least 3,000 meters. Diamond drilling has indicated that gold-quartz veins occur at depths of at least 165 meters below surface.

Wingerts' field notes (1983) account several occurrences outside the discovery area of quartz veins or country rock with associated pyrite, marcasite or arsenopyrite, and returned ten samples carrying gold values ranging from 0.004 to 0.024 o.p.t.; these have not been followed up.

8. Geophysics

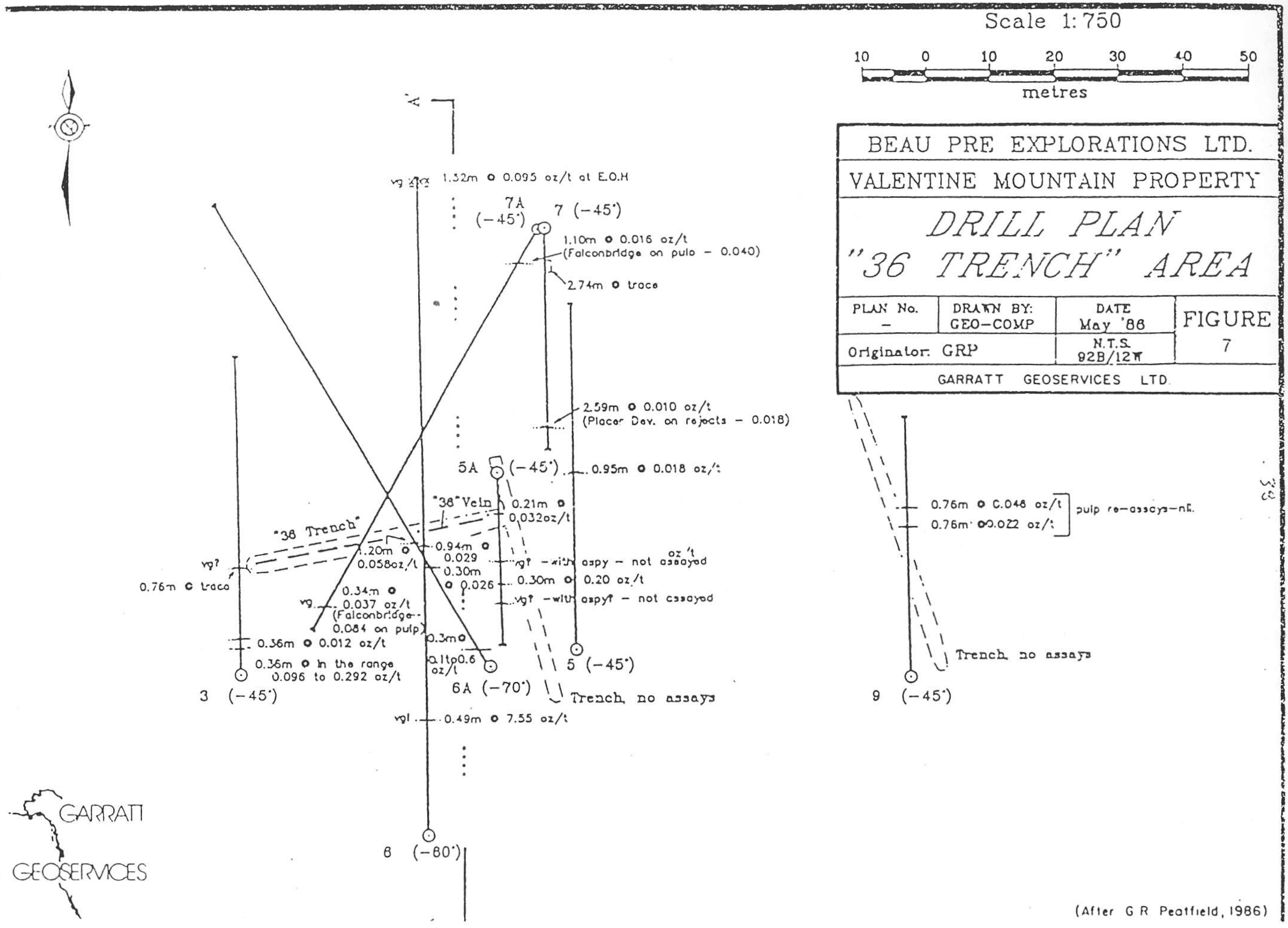
In 1984, Western Geophysical Aero Data Ltd. conducted a 2400 line-kilometer airborne magnetometer and VLF-EM survey over a large portion of the Leech River complex on behalf of several exploration clients. Approximately 370 line-kilometers were flown over the Valentine Mountain property and the results of this portion of the survey were submitted to Beau Pre Explorations Ltd. A magnetic low appears to outline the Leech River fault system and several small magnetic highs occur which are difficult to relate to the geological mapping, though some may reflect faulting. A series of small discontinuous magnetic highs and VLF-EM responses to the east and west of the Jordan River trend roughly parallel to underlying granitic dykes, though the anomalies extend beyond the mapped limits of these occurrences. A series of scattered, small northeast trending highs are tentatively interpreted by Pezzott and White (1984) as forming part of a subtly expressed regional fault system. There is no apparent indication of this from the geological map. Pezzott and White (1984) describe the VLF-EM as ". . . reflecting the suspected strike of the underlying geology, although some correlate with magnetically interpreted fault zones . . . Most of these responses are likely reflecting lithologic variations or contacts rather than discreet exploration targets."

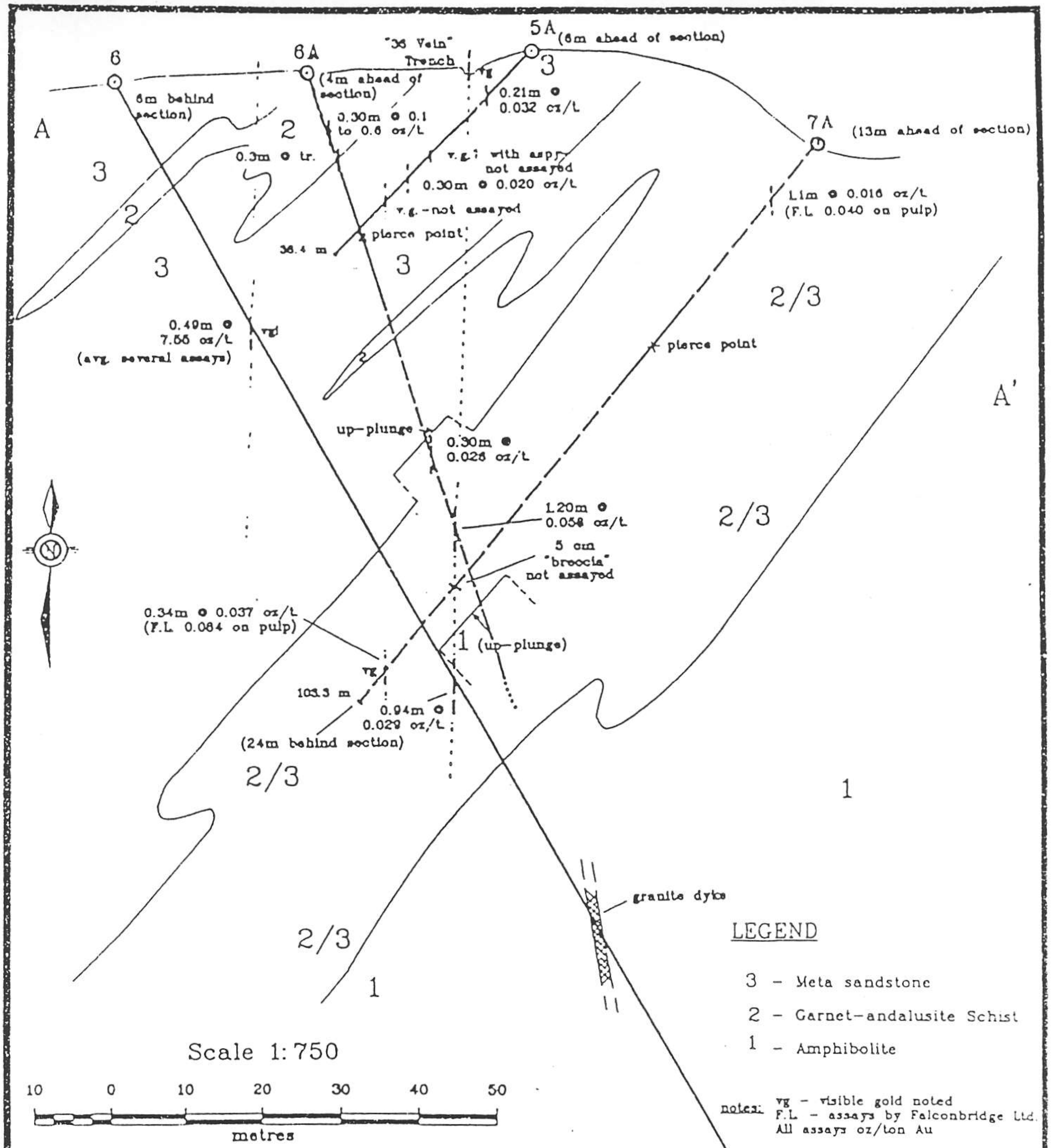
9. Geochemistry

Beau Pre undertook a silt sampling program on the property in 1979 and 1980. The results of this sampling are displayed in Figures 5 and 6 which are summary maps produced by Peatfield (1986). Most of the anomalous As and Au sites are not coincident though one sample west of the Jordan River and two samples near the headwaters of Valentine Creek are. Au anomalies occuring along the south-facing slope between Fred Creek and to the west of the Jordan River, may reflect mineralization of the discovery zone, along strike. Anomalies at the headwaters of Valentine Creek indicate undiscovered mineralization, though a quartz-vein swarm has been reported in the vicinity (see Figure 4). Au and As anomalies scatter in a line northwesterly from the headwaters of Valentine Creek and indicate possible undiscovered mineralization on the north facing slopes northeast of Valentine Mountain. The occurrence of shear zones in phyllitic rocks and amphibolite units through this trend form a positive exploration feature.

Heavy mineral stream sediment sampling, recently undertaken by Minequest Exploration Associates Ltd. on major drainages on the property, will likely enhance the present silt sampling display and will undoubtedly require follow-up sampling and prospecting to segragate anomalous conditions within sub-basins. The heavy mineral sampling technique is a proven geochemical tool that results in a greater resolution of anomalous conditions than traditional silt sampling techniques. The results of the Minequest work are not yet available.

Soil sampling was undertaken over a limited area covering a portion of the discovery zone in 1979 and 1980. Little information exists on the soil character of the area though clay horizons locally occur and Lisle (May, 1980) states that "Soil horizons are not particularly well developed in the grid area". Gold values in soil generally range from less than 5 to 40 ppb with two samples yielding 295 and 170 ppb, the latter lying directly over the A vein. Arsenic in soils ranges in value from 1 to 24 ppm and shows no direct association with gold values, though some higher gold values do show higher arsenic values. Generally the soil values are low and form single point anomalies, though if a low threshold anomalous value were taken, two and three point anomalies with Au values of 15 to 30 ppb exist.


Scale 1:750
10 0 10 20 30 40 50
metres
BEAU PRE EXPLORATIONS LTD.
VALENTINE MOUNTAIN PROPERTY
DRILL PLAN
"36 TRENCH" AREA
PLAN No. -
DRAWN BY: GEO-COMP
DATE May '86
FIGURE 7
Originator: GRP
N.T.S. 92B/12W
GARRATT GEOSERVICES LTD.
A'
1.32m @ 0.095 oz/t at E.O.H
7A (-45°)
7 (-45°)
1.10m @ 0.016 oz/t (Falconbridge on pulp - 0.040)
2.74m @ trace
2.59m @ 0.010 oz/t (Placer Dev. on rejects - 0.018)
5A (-45°)
0.95m @ 0.018 oz/t
"36" Vein
0.21m @ 0.032oz/t
"36 Trench"
1.20m @ 0.058oz/t
0.94m @ 0.029 oz/t
vg? - with aspy - not assayed
0.30m @ 0.026
0.30m @ 0.20 oz/t
vg? - with aspy? - not assayed
vg?
0.76m @ trace
vg
0.34m @ 0.037 oz/t (Falconbridge - 0.084 on pulp)
0.3m @ 0.1 to 0.6 oz/t
0.36m @ 0.012 oz/t
0.36m @ in the range 0.096 to 0.292 oz/t
3 (-45°)
6A (-70°)
5 (-45°)
Trench, no assays
vg! 0.49m @ 7.55 oz/t
6 (-60°)
0.76m @ 0.046 oz/t
0.76m @ 0.022 oz/t
pulp re-assays-nil
Trench, no assays
9 (-45°)
GARRATT GEOSERVICES
(After G R Peatfield, 1986)



BEAU PRE EXPLORATIONS LTD.			
VALENTINE MOUNTAIN PROPERTY			
DRILL SECTION "36 TRENCH" AREA			
PLAN No.	DRAWN BY: GEO-COMP	DATE May '86	FIGURE 8
Originator: GRP		N.T.S. 92B/12W	
GARRATT GEOSERVICES LTD.			

(After G R Peatfield, 1986)

These data are to be expected from the vein hosted "pockety" mineralization as gold dispersion from these veins would be expected to be a local phenomenon. All single point anomalies should, therefore, be followed up.

Beau Pre Explorations Ltd. recovered seven panned concentrates from bars on the Jordan River. Six of these were taken at fifty meter intervals northward from the bridge crossing the Jordan River at the 18.5 mile mark of the Jordan River Main road (near the granitic intrusives on Figure 4). These samples comprised concentrates of twelve pans each and returned assays ranging from 8.356 to 10.550 o.p.t. Au. The seventh sample (of six pans) was taken a further 0.5 miles up river and yielded 0.293 o.p.t. Au. This sampling confirms the presence of placer gold in the Jordan River and may confirm the importance of weak silt anomalies on tributaries to the Jordan.

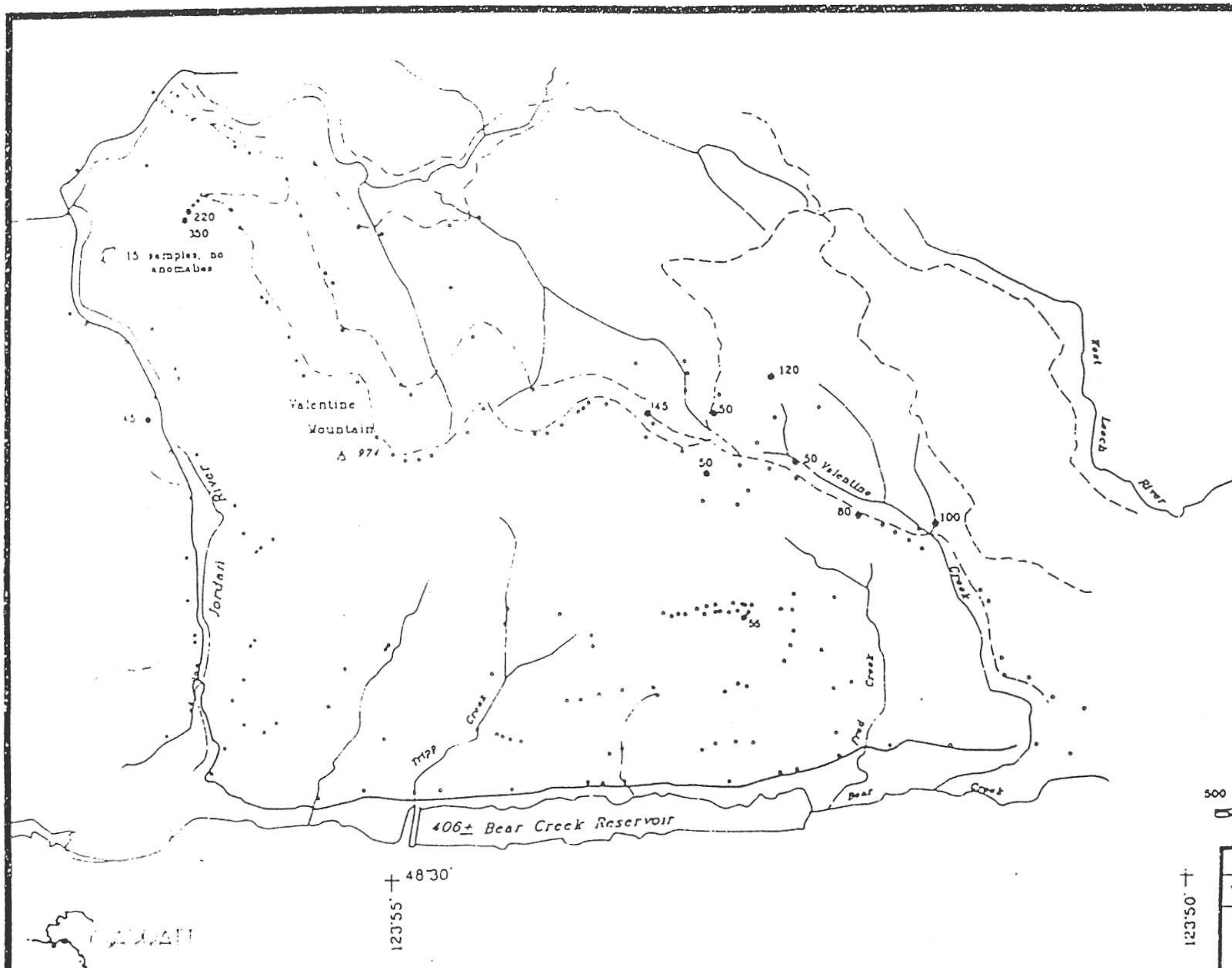
Reconnaissance rock chip sampling of quartz-veins was undertaken by Wingert while mapping in 1983. Eleven samples returned gold values from 0.004 to 0.015 ppb; considering the nature of the gold mineralization on the property and analytical problems, any indication of the presence of gold implies an anomalous condition and deserves follow-up. These samples should be considered, for exploration purposes, as being geochemically anomalous. Similarly, an exposure of sheared, gossanous and siliceous amphibolite carrying pyrite, arsenopyrite and quartz veinlets was sampled by a student in 1984. This outcrop lies near a westerly flowing tributary of the Jordan River that joins the river where the amphibolite can be seen to transect a sharp curve in the river, on Figure 4; two samples chipped across one meter each, returned values of 0.007 and 0.013 o.p.t. Au. This appears to lie north of an anomalcus stream silt which returned 30 ppb Au, and supports the anomalous condition of the area, though it is not known what the source of the silt anomaly may be.

10. Diamond Drilling Results

Thirteen diamond drill holes were completed in 1983, totalling approximately 1828 meters of NQ and BQ core. Eleven of these holes were placed in the discovery zone, between Trench 36 and A Trench, a strike distance of approximately 350 meters (see Figures 7 and 9). Drill hole FC-1 is located approximately 950 meters east of A Trench, in an area where narrow visible gold-bearig quartz stringers yielded assays greater than one ounce per ton gold. Hole 21 is located approximately 290 meters westerly from the 36 Trench.

Figure 8 (Peatfield, 1986) is a cross-section showing the projection of drill holes in the 36 Trench area. These holes were drilled to test the continuity, at depth and along strike, of the 36 and associated veins. It is apparent that gold bearing veins persist at depth, at least to 82 meters, in the case of the 36 vein, and to 165 meters, as shown by the intercept of visible gold at the bottom of hole 6. Drill logs indicate that quartz-veins parallel and cross foliation, though data concerning vein attitudes is often lacking and the interpolation of veins relative to surface exposures is somewhat speculative. It is apparent however, that a vein system exists below the 36 Trench area, to some depth. An intercept of 0.49 meters of 7.55 o.p.t. gold near the top of hole 6 (at 35.96 to 36.45 meters) indicates that high grade gold of the tenor observed in surface exposures occurs at depth, and idicates the presence of a vein not exposed on surface. The grade given for this intercept is an average of several analysis and sampling techniques which resulted in assays of 4.74 to 9.1 o.p.t. Au; the average result for silver was 0.5 o.p.t. This zone is described by Grove (1984) as "metasandstone and schist with 40% grey quartz as lenses parallel to foliation (45^{o}) with 5 flecks of visible Gold; marcasite and arsenopyrite."

A second significant intercept from the discovery zone drilling occurs at the bottom of hole 6 where 1.52 meters graded 0.094 o.p.t. Au and 0.04 o.p.t. Ag. This intercept at 204.83 to 206.35 meters was described by Grove as "altered amphibolite with extensive quartz-vein, quartz breccia and marcasite." Visible gold was noted in both the above intercepts and this was confirmed by Peatfield (1986). The intercept at the bottom of hole 6 was studied in polished thin-section, by Read (1986) and he described a propylitic alteration with irregular quartz and calcite lenses and veins that "obliterate the original amphibolite facies metamorphic assemblage". Hole 6 was not continued due to difficult drill conditions. This intercept indicates



Note.

results of 1981 program
Arsenic analyses (in ppm) on minus-80 mesh fraction of silt (o = < 40ppm)
Analyses by Bondar-Clegg and Co Ltd., by colourimetry

Scale: approx. 1:46,154

500 0 500 1000 1500 2000

metres

(After G R Peatfield, 1986)

GEOSERVICES

BEAU PRE EXPLORATIONS LTD.			
VALENTINE MOUNTAIN PROPERTY			
SILT SAMPLE RESULTS As			
PLAN No –	DRAWN BY GEO-COMP	DATE May '88	FIGURE 5
Originator: GRP		N.T.S. 92B/12W	
GARRATT GEOSERVICES LTD			

<u>Note</u>:

results of 1981 program
Gold analyses (in ppb) on minus-80 mesh fraction of silt (o = < 15ppb)
Analyses by Bondar-Clegg and Co. Ltd., by FA/AA

Scale approx. 1: 46,154

500 0 500 1000 1500 2000

metres

BEAU PRE EXPLORATIONS LTD.		
VALENTINE MOUNTAIN PROPERTY		
SILT SAMPLE RESULTS Au		
PLAN No. –	DRAWN BY. GEO-COMP	DATE May '88
Originator: GRP		N.T.S. 92B/12W
FIGURE 6		
GARRATT GEOSERVICES LTD		

GARRATT GEOSERVICES

(After G.R. Peatfield, 1986)

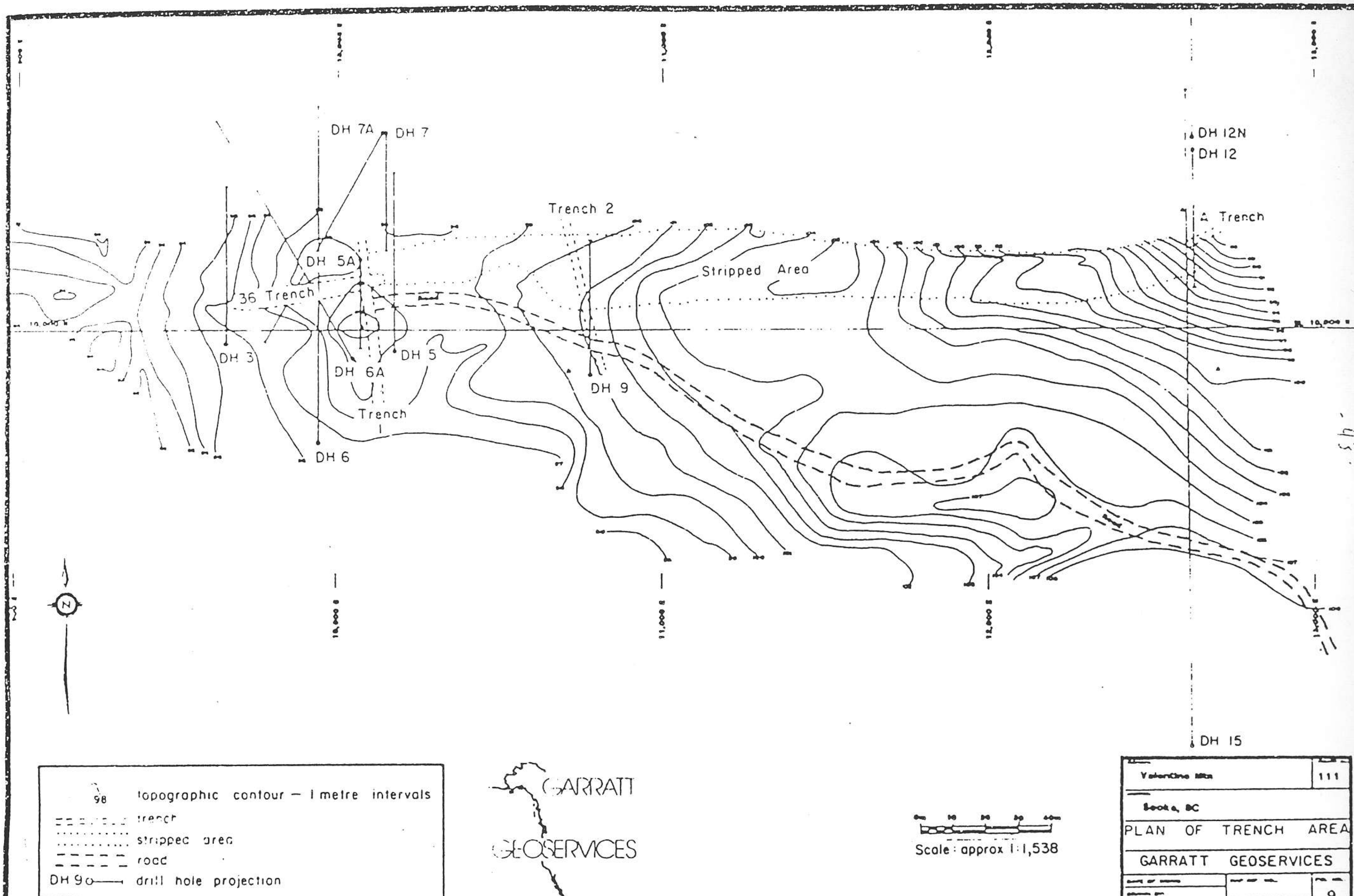
a significantly thick zone of mineralization that may be of different character than previously observed.

Peatfields cross-section (Figure 8) shows several other gold values of sub-economic grades (0.02-0.058 c.p.t.); two of these (holes 5A, 7A) carried visible gold and at least two visible gold occurrences appear not to have been sampled. These occurrences indicate the problem of obtaining reliable assay results where free gold occurs, as well as the problems that may be incurred by sampling too selectively. Further discussion of sampling and assaying difficulties including a review of selected results will be undertaken in section 12. The step-out holes, FC-1 and 21, encountered similar low-grade intercepts and visible gold occurrences, indicating the probable continuance of the discovery zone vein system along strike to the east and west, respectively.

11. Trenching Results

Beau Pre undertook the completion of two trenches, on the A and 36 veins, in the discovery area. Sampling by Beau Pre (including Low minerals) has been carried out sporadically between 1976 and 1986. A good portion of this sampling involved chip sampling along the strike of veins, to determine their grade and continuity, though some channel sampling and, significantly, bulk sampling have also been completed. Grove (1984) reports on sampling in the 36 Trench, these are assumed to represent continuous chip samples across the noted intervals:

Trench Location (from E end of Trench)	Position	Sample Width	Ag oz/T	Au oz/T
	Foot Wall	46 cm	0.07	0.410
2 meters	Vein	17 cm	3.85	34.950
	Hanging Wall	61 cm	0.16	0.852
	Foot Wall	36 cm	0.56	0.005
10 meters	Vein	3 cm	2.27	33.200
	Hanging Wall	37 cm	0.79	3.845
	Foot Wall	46 cm	0.10	0.142
20 meters	Vein	18 cm	0.03	0.003
	Hanging Wall	50 cm	0.02	0.090
	Foot Wall	48 cm	0.01	0.010
30 meters	Vein	13 cm	0.12	0.328
	Hanging Wall	37 cm	0.10	0.003



(After Falconbridge Ltd., 1986)

Of interest here are the high variability of values within both the vein and host rocks. It is apparent that while gold may be erratically dispersed in the veins, dispersion into the wall rocks may also occur sporadically. By length averaging these samples, an average grade of approximately 2.24 o.p.t. Au and 0.355 o.p.t. Ag across an average width of 1.03 meters is indicated. Length averages for the four chip sample sites are:

Trench Location	Width	o.p.t. Ag	o.p.t. Au
2 meters	1.24 m	0.63	5.36
10 meters	0.76 m	0.739	3.18
20 meters	1.14 m	0.05	0.097
30 meters	0.98 m	.058	0.049
(Length) Averaged	1.03 m	0.355	2.24

It is also apparent that with higher gold values, higher silver values will likely be encountered. Highly variable sample results from specimens displaying visible gold make the quantitative use of these averages as reliable grade estimates problematic. This will be discussed further in the following section, though it is important to note that the inclusion of spectacular free gold can significantly enhance the average grade and if sampling or lab preparation resulted in the non-inclusion of a representative proportion of this gold, the results may not reflect average grade and could be significantly less.

A number of grab or chip samples of vein or wallrock have been taken by Beau Pre and a host of exploration companies in the discovery area. While this sampling does not represent a consistent controlled approach, the results tend to confirm the above listed variability in that values range from 0.003 to 1.5 o.p.t. Au in both veins and adjacent wallrock, including both the main 36 and A veins, as well as a number of smaller veins in the vicinity (e.g. 2,3650, south veins).

Four separate bulk sample tests have been completed in the discovery area, principally by Beau Pre Explorations Ltd. The data pertaining to these is as follows:

No.	(Mo/Yr) Date	Treatment Facility	Dry Weight lbs. (kg)	Cu(%)	Pb(%)	Zn(%)	As(%)	Silica (%)	Ag (o.p.t.)	Au (o.p.t.)
1.	7/79	Asarco, Tacoma	775 (335.54)	0.11	--	0.01	0.08	84.8	0.21	0.27
2a.	3/84	Cominco, Trail	223 (101.15)	0.01	0.10	0.10	0.01	66.9	0.60	4.821
2b.	3/84	Cominco, Trail	296 (134.26)	0.01	0.10	0.10	0.01	89.4	1.25	18.447
2c.	7/84	Cominco, Trail	4159 (1886.52)	0.01	0.17	0.10	0.01	73.7	2.25	0.210
2d.	7/84	Cominco, Trail	3287 (3758.98)	0.05	1.10	0.40	0.01	84.5	18.60	0.348

No.	Date (Mo/Yr)	Treatment Facility	Treatment Method	Dry Weight lbs. (kg.)	Recovery-Au-Ag Ag	Au	Ag (o.p.t.)	Result	Au (o.p.t.)
3.	11/85	Bondar-Clegg	Tabling	42.087 (19,091)	458.5 mg	8746.53 mg	0.70		13.362
4.	8/86	Sando Ind.	Gravitation	300 (136.08)		24.494 g		head tails	5.557 0.311

Sample 1, shipped to the smelter in Tacoma, was obtained from the A vein and the South vein (50 feet south of A vein); this sample was predominantly quartz-vein material. Sample 2a and 2b are from the 36 Trench: 2a comprised the fines resultant from sluicing an estimated 5 tons of material mucked from the trench; 2b comprised grab samples of vein and wallrock taken along the length of the trench after blasting but prior to excavation. Samples 2c and 2d are from a small 3 foot (0.91m) trench excavated from the last 15 feet (4.57m) at the east end of the 36 trench: 2c comprised fine material shovelled from the trench bottom and; 2d comprised the bulk of material excavated from this trench. Samples 3 and 4 were derived from a 300 lb. (136.08 kg) sample that was obtained by mucking out the A trench; subsequently, 42.087 lbs (19.09kg) of this sample were sent to Bondar-Clegg for a tabling test and then the pulp, reject and gold-silver beads were re-combined with the original sample and shipped to Sando Industries in Victoria where they were run through a gravitational recovery process.

Samples 2c and 2d would appear to be the most representative type of sample taken for determining a grade estimation across a given wdith of vein and country rock. These samples are large and as such remove sampling bias from the result. Sample 2a, essentially a concentrated sample, indicates the need to include the finer material, created during trenching, in a sample, as it would appear that gold particles become liberated during the trenching process. Sample 2b may have been biased, considering the high value, toward vein material, but could be indicative of the expectation that individual bulk samples may contain gold pockets and return high grade values. Samples 3 and 4 may show a sampling bias in that spectacular free gold occurred in the A trench and may have concentrated in the trenchbed material that comprised this sample; again this indicates a need to include all material when bulk sampling freshly trenched zones. Sample 1 represents selective sampling and indicates that vein material is not homogenously mineralized with spectacular free gold, but should still yield significant value.

The bulk sampling outlined above is limited in scale and could be considered as an orientation sampling that indicates the viability of a bulk sampling program if carried out in a thorough manner. The average grades indicated by this sampling are somewhat speculative, considering the small data set and sampling procedures, but show that economic gold values, in excess of 0.2 - 0.3 o.p.t. Au) can be obtined across widths of at least one meter, and that high grade ores, possibly containing 4 to 5 o.p.t. Au, might occur locally. This result, when compared to the trench chip-sampling listed earlier, indicates that average grades, resultant from a combination of high grade pockets and low grade vein and wallrock material, may be of economic tenor.

In 1985, Falconbridge Ltd. carried out a program that resulted in the completion of Trenches 1 and 2, overburden stripping between the 36 and

A Trenches, and a comprehensive chip-panel and vein sampling program in the trenches. This work was undertaken with the objective of outlining areas for bulk sampling (Chandler, 1985). The Trenching Program involved: mucking and cleaning out 45 meters of the 36 trench; cutting Trench 1, immediately east of Trench 36 and Trench 2, 60 meters east of Trench 1, to 2 meters deep and 50 meters long, across the strike of the veins; cleaning and mucking 11 meters of A Trench; stripping and washing to bedrock a 250 meter by 30 meter area between Trenches 1 and A. "In most cases sampling procedure consisted of individual vein channels with separate narrow wallrock channels on both sides of veins. Panel-type chip samples of lateral or intervening hostrock supplemented the vein sampling." (Chandler, 1985) It has been reported that visible gold was segregated from vein samples before assay and Peatfield (1986) suggests that this might explain at least one case where a 10 cm by 1m sample of wallrock assayed much higher than the adjacent 6 cm by 1m of vein (6.58 vs. 2.13 g 1 tonne respectively). Sample results for Trenches 1 and 2 are not available, while the Trench 36 and A sample results are complete.

The results of the Falconbridge sampling were somewhat discouraging. Averaging of the results, by using the area (length times width) of the sample panel or chip zone, by Falconbridge gave the following results:

	Description	Length (m)	Width (m)	Au (g/tn)	Au (o.p.t.)
A Trench:	North vein	11.0	0.02	67.29	1.951
	North vein & wallrocks	11.0	0.16	9.18	0.266
	South vein	9.0	0.04	18.11	0.525
	South vein & wallrocks	9.0	0.20	4.71	0.136
	South vein & North splay	12.0	0.04	16.69	0.484
	S. vein & N. splay & wallrocks	12.0	0.20	4.10	0.118
	South vein & South splay	12.0	0.04	16.70	0.484
	S. vein & S. splay & wallrocks	12.0	0.17	4.34	0.125
36 Trench:	West 36 vein	15.0	0.05	0.16	0.004
	Middle 36 vein	7.0	0.06	5.30	0.153
	East 36 vein	12.7	0.08	0.30	0.008
	West 36 vein & wallrocks	15.0	0.15	0.27	0.007
	Middle 36 vein & wallrocks	7.0	0.16	2.72	0.078
	East 36 vein & wallrocks	12.7	0.17	0.26	0.007

High samples in the A Trench veins attained a peak of 629.96 g/tonne (18.268 o.p.t.) where the north vein averaged 67.29 g/tonne (1.951 o.p.t.) along 11 meters. Vein samples in the 36 Trench peaked at 19.6 g/tonne (0.568 o.p.t.). Samples identified as carrying visible gold returned assay values of 0.05 (0.001 o.p.t.) to 0.45 g/tonne (0.013 o.p.t.) though these were all panel samples in which severe dilution with non-mineralized host rock would explain the low assay values. With the exception of only one sample in A Trench, all the panel samples returned less than 1 g/tonne, the anomalous panel returned an assay of 3.10 g/tonne (0.089 o.p.t.) with a reassay of 6.90 g/tonne (0.200 o.p.t.), grading higher than adjacent vein and vein-wallrock. It would seem that the sampling method utilized may not have been adequate in recovering pockets of free gold, or, if spectacular gold samples were omitted from vein samples, then the results would seem appropriate. The A Trench vein and wallrocks could be estimated from this sampling to carry approximately 0.5 ounce/ton gold. The 36 Trench vein and wallrock sampling indicates that while visible gold was observed to occur, these occurrences were either not of sufficient size to affect the grade significantly, or were omitted from the sampling.

12. Sampling and Assaying

The above review of trench sampling displayed the variability of the occurrence of gold within quartz-veins and their adjacent wallrocks. It seems evident that bulk sampling may be the only method to adequately sample the mineralization for determining average grades. Re-assaying of pulps and rejects from drill core and trench chip samples, as well as various tests of preparation and analysis techniques have been undertaken in an effort to determine the reliability of assaying to adequately determine gold grades. Of particular interest is the coincidence, in many cases, of visible gold and low assay returns.

Fourteen samples were selected for review from re-assay data obtained primarily from Falconbridge drill core analyses. By assaying two to seven sub-samples it is evident that an average variation in results of approximately 1.8 can be expected (e.g. a range of 1g to 1.8g assays from one original sample). Of these samples, three were found to have been extensively treated and the relevant data are listed below: (rej = reject; all values g/t (o.p.t.)).

Sample No.	DDA	From (m)	To (m)	Int (m)	Pulp 1	Pulp 2	Pulp 3	rej.1	rej.2	rej.3	high low (value)
51309	6A	55.47	55.78	0.31	0.82 (0.024)	0.86 (0.025)		1.43 (.042)	1.1 (.032)	1.34 (.039)	1.74
13651	6A	9.14	9.45	0.31	3.82 (.111)	5.4 (.157)	6.08 (.177)	14.95 (.436)	20.7 (.604)	20.49 (.597)	5.36
13653	6A	13.10	13.41	0.31	1.18 (.034)	1.42 (.041)		1.65 (.048)	1.58 (.046)	5.94 (.173)	5.03

The variation in results is obvious; as much as a five fold increase in grade may be achieved by taking additional sub-samples. In the cases given here the reject sub-samples consistently assay higher than the pulps of the original sample, and the cause of this phenomenon may well be in the nuggeting character of the gold.

Similarly, Beau Pre Explorations Ltd. submitted a sample carrying visible gold from the A vein and requested that five splits be analyzed to determine the possible variation in the resultant values. The results are as follows: A-1.681 o.p.t. Au, 0.20 o.p.t. Ag; B-1.999 o.p.t. Au, 0.22 o.p.t. Ag; C-2.100 o.p.t. Au; 0.23 o.p.t. Ag; D-1.607 o.p.t. Au; 0.18 o.p.t. Ag; E-1.670 o.p.t. Au, 0.19 o.p.t. Ag, giving a factor of 1.3 between the high and low values and a variation of 0.493 o.p.t. More dramatically, nineteen drill intercepts within which visible gold was reported returned assays of less than 0.002 o.p.t. to 7.55 o.p.t. Au. The latter number relates to an intercept in hole 6 where reassaying returned values ranging from 4.795 to 9.1 o.p.t. The following results were achieved by reassaying visible gold intercepts:

D.H.	From (m)	To (m)	Interval (m)	Original assay (opt)	Reassay(s) (opt)	High/Low
3	5.34	5.79	0.35	0.096	0.106, 0.292, 0.170	3.04
6	35.96	36.45	0.49	7.55=avg.of	4.795 to 9.1	1.89
	88.54	89.48	0.94	0.029	0.01, 0.026	2.90
	204.82	206.34	1.52	0.095	0.021, 0.071	4.52
12A	50.29	52.12	1.82	0.06	0.043, 0.038	1.57
15	150.27	151.18	0.91	0.003	0.042	14.0
	154.53	154.96	0.43	0.003	0.098	32.66
6A	9.14	9.45	0.31	0.174	0.111 to 0.604	5.36
	9.45	9.75	0.30	0.018	0.001 to 0.011	18.0
	13.10	13.41	0.31	0.011	0.034 to 0.173	15.72
	55.47	55.78	0.31	0.026	0.039	1.5

The results of the above assays outline the problem of obtaining a reliable assay from drill core and, likely, other sample types. While some values dropped with reassay, others were brought from undetectable levels to economically significant values. It can be clearly observed that attempting to determine average grades by assaying techniques is a risky business. Bulk sampling, where the gold is recovered from the entire sample would seem the most reliable approach. Considering the high cost of running relatively small bulk samples through the smelter at Trail, combined with the free character of the gold, the Sando gravitational milling process utilizing a fine crushing, might prove the most cost effective method of determining the average grade from surfce exposure, though further testing would be required to verify this. In sub-surface tests, the use of reverse-circulation drilling might be utilized to obtain a large, homogenized sample interval; in this case at least two large sub-samples should be assayed or, a more comprehensive analytical method should be undertaken.

13. Discussion

The Valentine Mountain property is underlain by gold-bearing quartz-vein systems that appear to have localized along the flank of an upright antiform, adjacent and within an amphibolite unit. Geochemical and prospecting evidence, as well as diamond drilling (FC-1, 21) indicate that the discovery zone may continue along strike for a distance of 3,000 meters and up to 5,000 meters. Additional gold-bearing vein systems are similarly indicated to occur to the north, along the opposite limb of the Valentine antiform. The structural control for the emplacement of the gold-bearing vein systems appears to be dominated by shear zones and fold structures that apparently coincide with a schist-amphibolite contact area, suggesting structural location influenced by folding and related host-rock competency as well as subsequent shearing. The definition of a later post-tectonic-metamorphic propylitic alteration associated with gold-quartz (calcite) veining and, probably, shearing, attest to a late hydrothermal-tectonic event that post-dates granitic intrusion and metamorphism as defined by Fairchild and Cowan (1982), and may be related to the Leech River fault-shear event. This would suggest that the duration of intrusive-hydrothermal activity continued beyond the time defined by Fairchild and Cowan (1982), or that a second generation of plutonic activity occurred and may have been synchronous with Leech River faulting. The occurrence of non-foliated sills adjacent foliated varieties as well as the presence of granitics to gabbroic or mafic dykes and sills might support two intrusive-hydrothermal events. This would suggest that the gold-quartz event exposed on the property may be seated in buried plutonic bodies lying under the Valentine Mountain area. A small granitic dyke in hole 6 indicates this possibility. This would enhance the exploration potential of the Valentine antiform, and in particular, to the shear-phyllite zone on the northern limb, along which the occurrence of geochemically anomalous silt samples are already supportive.

The discovery of quartz masses accumulated in the nose of the Valentine antiform (R. Beaupre, personal communication, 1986), and on a smaller scale in the discovery zone, indicate the potential for the discovery of gold-bearing zones of greater dimension than have been tested to date (Saddle-reef type occurrence). Similarly, the relationship of the quartz systems to shear and fold structures adheres to the pinching and swelling character of the vein systems observed in the discovery zone and it can be expected that similar, and perhaps larger, dilation features will exist downward as well as along strike, enhancing the deposit potential to host significantly large lodes.

A weak assocation of the gold-quartz system with sulphides, including pyrite, arsenopyrite, chalcopyrite and galena, has been noted. The Kolar deposits (Narayanaswami, et al 1966) define both quartz and quartz-sulphide lodes in which the latter form an important ore-type containing approximately ten percent sulphides. This comparison to the Kolar deposits has already been given, and would seem to be of sufficient merit to offer this characteristic as another exploration possibility for the Valentine Mountain property. Several sulphide occurrences are known, and as exploration on the property develops, the use geophysical techniques might be considered for the exploration of these deposit types.

While the dimensional character of the quartz-vein systems has been reasonably established in the discovery zone, an attempt to determine average grades remains problematic. As discussed earlier, sampling indicates that grades of 0.2 to 0.5 ounces per ton could be expected, with zones carrying 2 to 4 ounces per ton occuring locally. These grades conform well with those in the Kolar deposits where the production of 23 million ounces from 40 million long tons of material indicates a grade of at least 0.5 o.p.t.; grades are reported as 0.35 to 0.5 o.p.t. (7-10 dwt) in quartz lodes and 0.25 to 0.3 o.p.t. (5-6 dwt) in sulphide lodes (Narayanaswami, et al, 1966). The author has concluded that careful bulk sampling may be the only method of accurately determining average gold values across mineable widths. For sub-surface exploration purposes this poses a problem that will be difficult to overcome, short of underground development. It is suggested that reverse circulation drilling, whereby an homogenized sample is obtained, may aid in sub-surface testing. This technique has been successfully and extensively utilized in testing large, low-grade deposits in the U.S. where the gold is somewhat erratically but finely dispersed throughout large rock volumes. Although the style of mineralization is different at Valentine Mountain, the concept of averaging the samples by this method should prove valid, though sample intervals should be kept short (0.5m suggested) and more than one sub-sample should be obtained and analyzed to improve the probability of determing average grade. Additionally, core-drilling should complement such a program in order to delineate and define the geometry and character of the vein systems, as well as for analytical comparisons.

The discovery zone offers an immediate exploration target showing significant gold values over short intervals. To delineate this zone and determine its grade, a program of core and reverse circulation drilling as well as bulk sampling should be undertaken. Drilling should be directed to testing the full width of the discovery zone system as well as to depth where, in hole 6, significant mineralization has ben encountered. A series of two-hole fenees should form an adequate first pass test of the zone, with hole angles of minus 45 degrees and approximate lengths of 100 meters per hole. These should be drilled from south to north to cut the stratigraphy and veins at a moderate angle and to avoid hole deflection that might occur by drilling closer to the angle of the foliation (i.e. if drilled north to south). Considering a 300 meter length of the discovery zone, a series of ten fences spaced at 30 meters would entail approximately 2000 meters of drilling and should be sufficient to gauge the tenor of the zone. An additional 1000 meters of drilling could be utilized to test extensions of the zone, at 100 meter intervals, 500 meters to the east and west, or could be diverted to other zones that may be discovered by a concurrent program of geologic mapping-prospecting and sampling.

Regional prospecting and sampling have indicated large areas of exploration potential. A program should be implemented to continue the delineation of these targets and should include geologic mapping-prospecting and further geochemical sampling (in part dependent upon the results of the Minequest heavy mineral stream sediment sampling). These areas include not only the strike extensions of the discovery zone, but also the north limb and nose regions of the Valentine antiform. A soil geochemical program along strike from the discovery zone appears warranted in that areas of overburden cover may be tested. This should be undertaken in stages, with a first stage designed to test the discovery zone strike on a reconnaissance level with line spacings of 100 meters and sample spacing of 10 meters, along 1 km lines; sample spacing and subsequent line spacing could be tightened as results are obtained, to form the second stage.

14. Conclusions and Recommendations

A review of the extensive data package available for the Valentine Mountain property has led to the following conclusions:

1. The geologic environment and style of mineralization suggest a quartz-vein shear zone classification for the mineral occurrence.

2. The 'discovery zone' comprises an area of approximately 350 meters by 70 meters, within which quartz-vein systems are prolific, forming en-echelon masses and discreet veins 1 to 50 cm wide which locally network to form vein zones a few meters in width; drilling indicates that the vein systems persist to a depth of at least 165 meters from surface.

3. Free gold occurs as fine particles to spectacular 'hackly' masses within quartz (calcite) veins which may also carry minor amounts of arsenopyrite, pyrite, chalcopyrite and galena.

4. The quartz systems appear to have been controlled in their emplacement by fold and shear structures.

5. The discovery zone likely forms a portion of a much larger, structurally controlled, system extending for 3 to 5 kilometers along strike.

6. Other quartz-vein systems with exploration potential are indicated, including the north limb and nose areas of the Valentine antiform.

7. Sampling in the discovery zone indicates that grades of 0.2 to 0.5 o.p.t. Au may be encountered across widths in excess of 1 meter, and that local zones may contain grades of 2 to 4 o.p.t. or better.

8. The tonnage potential of this style of deposit is considerable and a target potential of several million tons is not unreasonable.

9. Drill testing of the discovery zone and strike extensions is warranted to further test the continuity, geometry and mineralization of the quartz-vein system.

10. Limited previous reconnaissance exploration warrants follow-up geological mapping, prospecting and sampling.

A work program separated into two phases, with the second phase being contingent upon the results of the first phase, is recommended. The first phase is designed to delineate the tenor of the discovery zone by core and reverse circulation drilling and subsequently to test by drilling at a rconnaissance level, probable extensions of the zone. This first phase drilling will split into a 2000 meter interval for the discovery zone and a further 1000 meter interval for step-out drilling, to be divided approximately into 35 per cent core and 65 per cent reverse circulation methods. Concurrent with the drilling, a program of geologic mapping, prospecting and reconnaissance level geochemical sampling is recommended to determine the nature of the strike extension of the discovery zone and other indicated target areas. Relogging and further sampling of pre-existing core is also included in Phase 1.

Phase 2 program will entail delineation drilling in the discovery zone and such other zones as may have been outlined by phase one work. This program would total approximately 6000 meters of drilling to be divided between core and reverse circulation methods should these methods prove viable in Phase 1. The Phase 2 program is also designed to include preliminary bulk sample testing and to continue geologic and geochemical work, as warranted from Phase 1.

The estimated costs breakdowns for these programs follows, and utilizes contracted personnel rates and all inclusive contracted drilling and geochemical sampling rates.

Phase 1:

Geologist/Manager - $250.00/day x 60 days	$ 15,000.00
Senior geologist: 2 men x $250.00/day x 50 days	25,000.00
Geological assistant: $120.00/day x 50 days	6,000.00
Samplers: 2 men x 25 days x $90.00/man/day	4,500.00
Accommodation and Food: 260 man-days x $40.00/man/day	10,400.00
Vehicles: two 4 x 4 trucks: 60 days x $40.00/day x 2	4,800.00
Fuel, field equipment	5,000.00
Freight, shipping	1,000.00
Drilling: reverse-circulation - 2000 m x $35.00/m	70,000.00
core drilling - 1000 m x $70.00/m	70,000.00
Drillsite and read work	10,000.00
Assaying: 4000 samples x $12.00/sample	48,000.00
Geochemical sampling: 50 km x 365.00/ km (all inclusive)	18,250.00
Geochemical analysis: 5000 samples x $6.00/sample	30,000.00
Drafting, report preparation	3,500.00
	$321,450.00

Phase 2:

Geologist/Manager - $250.00/day x 60 days	$ 15,000.00
Senior geologist: $250.00/day x 60 days	15,000.00
Junior geologist: $180.00/day x 60 days	10,800.00
Assistant sampler: $120.00/day x 60 days	7,200.00
Accommodation and Food: 180 man-days x $40.00/man/day	7,200.00
Vehicles: two 4 x 4 trucks x $1,200.00/M/truck	4,800.00
Fuel, field equipment, freight, etc.	5,000.00
Drill site and road work	10,000.00
Drilling: reverse-circulation - 4000 m x $35.00/m	140,000.00
core drilling - 2000 m x $70.00/m	140,000.00
Analyses - 6000 samples x $12.00/sample	72,000.00
Bulk sampling	50,000.00
Geochemical sampling	50,000.00
Drafting, data compilation and report preparation	10,000.00
	$547,000.00

TOTALS	Phase 1	$321,450.00
	Phase 2	$547,000.00
TOTAL 1 & 2		$868,450.00

APPENDIX 15.1

STATEMENT OF QUALIFICATION

Statement of Qualification

I, Glen L. Garratt, residing at 2540 Skeena Drive, in the City of Kamloops, in the Province of British Columbia, do hereby state that:

1. I am a practicing geologist and have been since completing a B.Sc. in geology at the University of British Columbia, in 1972.

2. I am a Fellow of the Geological Association of Canada, and a member of the Association of Professional Geologists, Geophysicists and Engineers of Alberta.

3. This report is the result of a brief property visit and subsequent review of an extensive data package on the Valentine Mountain prospect supplied to the author by Beau Pre Explorations Ltd. The conclusions and recommendations embodied herein are my own and were derived from this data review.

5. The author allows the use of this report in its whole and unedited form, by Valentine Mountain Gold Ltd., in a Prospectus or Statement of Material Facts or as otherwise required by governmental or stock exchange agencies; written approval of the author must be obtained before release of any quotation or summary from this report.

November 12, 1986 G. L. Garratt, P. Geol, F.G.A.C.

APPENDIX 15.2

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APPENDIX III

Discovery Zone Trench Assays

ASSAY SUMMARY FOR "A" TRENCH (PANEL,VEIN & WALL ROCK) o.p.t. GOLD

SAMPLE	TAG #	CDN	SANDO	LAKEFIELD	CHEMEX
A-1	25651	-----	-----	0.415	-----
A-2	25652	-----	-----	0.419	-----
A-3	25653	-----	-----	0.052	-----
A-4	25654	-----	-----	0.133	-----
A-5	25655	-----	-----	0.962	-----
A-6	25656	-----	-----	0.244	-----
A-7	25657	-----	-----	0.030	-----
A-8	25658	-----	-----	0.048	-----
A-9	25659	-----	-----	0.052	-----
A-10	25660	-----	-----	0.185	-----
A-11	25661	-----	-----	0.196	-----
A-12	25662	-----	-----	0.038	-----
A-13	25663	-----	-----	0.032	-----
A-14	25664	-----	-----	0.105	-----
A-15	25665	-----	-----	0.451	-----
A-16	25666	-----	-----	0.007	-----
A-17	25667	-----	-----	0.046	-----
A-18	25668	-----	-----	0.219	-----
A-19	25669	-----	-----	0.004	-----
A-20	25670	-----	-----	0.112	-----
A-21	25671	-----	-----	18.374	-----
A-22	25672	-----	-----	0.021	-----
A-23	25673	-----	-----	0.049	-----
A-24	25674	-----	-----	0.015	-----
A-25	25675	-----	-----	0.080	-----
A-26	25676	-----	-----	5.905	-----
A-27	25677	-----	-----	0.162	-----
A-28	25678	-----	-----	0.049	-----
A-29	25679	-----	-----	0.026	-----
A-30	25680	-----	-----	0.062	-----
A-31	25681	-----	-----	0.014	-----
A-32	25682	-----	-----	2.184	-----
A-33	25683	-----	-----	0.192	-----
A-34	25684	-----	-----	0.020	-----
A-35	25685	-----	-----	0.003	-----
A-36	25686	0.001	0.037	-----	-----
A-37	25687	0.002	0.009	-----	-----
A-38	25688	-----	-----	0.012	-----
A-39	25689	-----	-----	0.006	-----
A-40	25690	0.001	0.027	-----	-----
A-41	25691	0.001	0.019	-----	-----
A-42	25692	0.001	0.024	-----	-----
A-43	25693	-----	-----	0.002	-----
A-44	25694	-----	-----	0.004	-----
A-45	25695	-----	-----	0.263	0.085
A-46	25696	0.009	0.066	-----	-----
A-47	25697	0.001	0.006	-----	-----
A-48	25698	-----	-----	0.003	-----
A-49	25699	-----	-----	0.011	-----
A-50	25700	-----	-----	0.004	-----
A-51	25701	0.001	0.035	-----	-----
A-52	25702	0.001	0.012	-----	-----

SAMPLE	TAG #	CDN	SANDO	LAKEFIELD	CHEMEX
A-53	25703	-----	-----	0.072	-----
A-54	25704	-----	-----	0.008	-----
A-55	25705	0.292	0.008	-----	-----
A-56	25706	0.004	0.007	-----	-----
A-57	25707	-----	-----	0.002	-----
A-58	25708	0.005	0.008	0.006	-----
A-59	25709	-----	-----	0.004	-----
A-60	25710	-----	-----	0.016	-----
A-61	25711	-----	-----	0.006	-----
A-62	25712	-----	-----	0.016	-----
A-63	25713	-----	-----	0.028	-----
A-64	25714	-----	-----	0.003	-----
A-65	25715	-----	-----	0.006	-----
A-66	25716	-----	-----	0.002	-----
A-67	25717	-----	-----	0.007	-----
A-68	25718	0.001	0.069	-----	<0.001
A-69	25719	0.002	0.008	-----	-----
A-70	25720	-----	-----	0.002	-----
A-71	25721	0.001	0.012	-----	-----
A-72	25722	-----	-----	0.050	-----
A-73	25723	0.010	0.046	-----	0.014
A-74	25724	-----	-----	0.055	-----
A-75	25725	-----	-----	0.207	-----
A-76	25726	-----	-----	0.015	-----
A-77	25727	-----	-----	0.008	-----
A-78	25728	0.009	0.008	-----	-----
A-79	25729	-----	-----	0.008	-----
A-80	25730	-----	-----	0.014	-----
A-81	25731	-----	-----	0.026	-----
A-82	25732	0.002	0.006	-----	-----
A-83	25733	-----	-----	0.004	-----
A-84	25734	0.015	0.010	-----	-----
A-85	25735	-----	-----	0.014	-----
A-86	25736	-----	-----	0.004	-----
A-87	25737	0.002	0.004	-----	-----
A-88	25738	-----	-----	0.004	-----
A-89	25739	-----	-----	0.019	-----
A-90	25740	-----	-----	0.026	-----
A-91	25741	-----	-----	0.006	-----
A-92	25742	0.001	0.004	-----	-----
A-93	25743	-----	-----	0.004	-----
A-94	25744	-----	-----	0.006	-----

ASSAY SUMMARY FOR "36" TRENCH (VEIN & WALL ROCK) o.p.t. GOLD

SAMPLE	TAG #	LAKEFIELD
B-1	25745	0.003
B-2	25746	0.025
B-3	25747	0.001
B-4	25748	0.003
B-5	25749	0.002
B-6	25750	0.007
B-7	25751	0.016
B-8	25752	0.001
B-9	25753	0.003
B-10	25754	0.000
B-11	25755	0.001
B-12	25756	0.002
B-13	25757	0.001
B-14	25758	0.001
B-15	25759	0.010
B-16	25760	0.003
B-17	25761	0.002
B-18	25762	0.002
B-19	25763	0.001
B-20	25764	0.001
B-21	25765	0.001
B-22	25766	0.002
B-23	25767	0.002
B-24	25768	0.001
B-25	25769	0.004
B-26	25770	0.002
B-27	25771	0.002
B-28	25772	0.010
B-29	25773	0.007
B-30	25774	0.002
B-31	25775	0.005
B-32	25801	0.002
B-33	25776	0.004
B-34	25777	0.003
B-35	25778	0.002
B-36	25779	0.180
B-37	25780	0.004
B-38	25781	0.002
B-39	25782	0.002
B-40	25783	0.001
B-41	25784	0.002
B-42	25785	0.001
B-43	25786	0.001
B-44	25787	0.001
B-45	25788	0.006
B-46	25789	0.571
B-47	25790	0.042
B-48	25791	0.121
B-49	25792	0.011
B-50	25793	0.134
B-51	25794	----
B-52	25795	0.011

SAMPLE	TAG #	LAKEFIELD
B-53	25796	0.002
B-54	25797	0.002
B-55	25798	0.001
B-56	25799	0.005
B-57	25800	0.001
B-58	25802	0.110
B-59	25803	0.015
B-60	25804	0.002
B-61	25805	0.489
B-62	25806	0.002
B-63	25807	0.007
B-64	25808	0.164
B-65	25809	0.066
B-66	25810	0.007
B-67	25811	0.003
B-68	25812	0.005
B-69	25813	0.002
B-70	25814	0.001
B-71	25815	0.005
B-72	25816	0.066
B-73	25817	0.005
B-74	25818	0.001
B-75	25819	0.003
B-76	25820	0.009
B-77	25821	0.001
B-78	25822	0.001
B-79	25823	0.001
B-80	25824	0.004
B-81	25825	0.003
B-82	25826	0.001
B-83	25827	0.000
B-84	25828	0.002
B-85	25829	0.001
B-86	25830	0.021
B-87	25831	0.002
B-88	25832	0.004
B-89	25833	0.001
B-90	25834	0.004
B-91	25835	0.003
B-92	25836	0.001
B-93	25837	0.003
B-94	25838	0.002
B-95	25839	0.001
B-96	25840	0.004
B-97	25841	0.001
B-98	25842	0.001
B-99	25843	0.001
B-100	25844	0.029
B-101	25845	0.001
B-102	25846	0.001
B-103	25847	0.023
B-104	25848	0.009
B-105	25849	0.002

ASSAY SUMMARY FOR #1 TRENCH WEST WALL (PANEL) o.p.t. GOLD

SAMPLE	TAG #	CDN	SANDO	LAKEFIELD	CHEMEX
C-1	25850	-----	0.007	-----	-----
C-2	25851	-----	-----	0.002	-----
C-3	25852	-----	0.024	-----	-----
C-4	25853	-----	0.037	-----	-----
C-5	25854	-----	-----	0.003	-----
C-6	25855	-----	0.008	-----	-----
C-7	25856	-----	-----	0.002	-----
C-8	25857	-----	0.015	-----	-----
C-9	25858	-----	-----	0.002	-----
C-10	25859	-----	0.016	-----	-----
C-11	25860	-----	-----	0.001	-----
C-12	25861	-----	0.024	-----	-----
C-13	25862	-----	0.008	-----	-----
C-14	25863	-----	-----	0.001	-----
C-15	25864	-----	0.020	-----	-----
C-16	25865	-----	-----	0.001	-----
C-17	25866	-----	-----	0.001	-----
C-18	25867	-----	0.015	-----	-----
C-19	25868	0.001	0.025	-----	-----
C-20	25869	-----	0.017	-----	-----
C-21	25870	-----	-----	0.003	-----
C-22	25871	-----	-----	0.002	-----
C-23	25872	<0.001	0.012	-----	-----
C-23B	25873	0.002	0.008	-----	-----
C-24	25874	<0.001	0.016	-----	-----
C-25	25875	<0.001	0.004	-----	-----
C-26	25876	0.002	0.008	-----	-----
C-27	25877	0.002	0.006	-----	-----
C-28	25878	0.002	0.058	-----	<0.001
C-29	25879	<0.001	0.011	-----	-----
C-30	25880	0.002	0.032	-----	-----
C-31	25881	0.002	0.008	-----	-----
C-32	25882	<0.001	0.006	-----	-----
C-33	25883	<0.001	0.010	-----	-----
C-34	25884	<0.001	0.005	-----	-----
C-35	25886	<0.001	0.004	-----	-----
C-36	25887	0.005	0.020	-----	-----
C-37	25888	<0.001	0.016	-----	-----
C-38	25889	<0.001	0.077	-----	-----
C-39	25890	<0.001	0.005	-----	-----
C-40	25891	<0.001	0.006	-----	-----
C-41	25892	0.015	0.008	-----	-----
C-42	25893	<0.001	0.006	-----	-----
C-43	25894	<0.001	0.104	-----	<0.001
C-44	25895	<0.001	0.084	-----	<0.001
C-45	25696	<0.001	0.110	-----	<0.001

ASSAY SUMMARY FOR #1 TRENCH EAST WALL (PANEL) o.p.t. G

SAMPLE	TAG #	CDN	SANDO	CHEMEX
D-1	25897	<0.001	0.002	-----
D-2	25898	<0.001	0.021	-----
D-3	25899	<0.001	0.003	-----
D-4	25900	0.002	0.004	-----
D-5	25901	0.001	0.004	-----
D-6	25902	<0.001	0.006	-----
D-7	25903	<0.001	0.099	<0.001
D-7A	25927	<0.001	0.104	<0.001
D-8	25904	<0.001	0.114	-----
D-9	25905	<0.001	0.126	-----
D-10	25906	<0.001	0.083	<0.001
D-11	25907	<0.001	0.086	<0.001
D-12	25908	<0.001	0.056	<0.001
D-13	25909	0.002	0.083	0.004
D-14	25910	1.365	0.733	0.838
D-15	25911	0.013	0.022	-----
D-16	25912	<0.001	0.002	-----
D-17	25913	0.011	0.004	-----
D-18	25914	<0.001	0.032	-----
D-19	25915	<0.001	0.004	-----
D-20	25916	<0.001	0.027	-----
D-21	25917	<0.001	0.002	-----
D-22	25918	<0.001	0.002	-----
D-23	25919	0.002	0.008	-----
D-24	25920	<0.001	0.024	-----
D-25	25921	<0.001	0.004	-----
D-25A	25928	0.003	0.024	-----
D-26	25922	<0.001	0.012	-----
D-27	25923	0.003	0.016	-----
D-28	25924	<0.001	0.012	-----
D-29	25925	<0.001	0.016	-----
D-30	25926	0.001	0.025	-----
D-31	25929	<0.001	0.005	-----
D-32	25931	<0.001	0.004	-----
D-33	-----	-----	0.002	-----
D-34	25934	<0.001	0.003	-----
D-35	25935	-----	0.006	-----
D-36	25936	-----	0.021	-----
D-37	25937	<0.001	0.004	-----
D-38	25938	<0.001	0.003	-----
D-39	25939	<0.001	<0.002	-----
D-40	25940	<0.001	<0.002	-----
D-41	25941	<0.001	0.004	-----
D-42	25942	0.002	0.007	-----
D-43	25943	<0.001	0.008	-----
D-44	25944	<0.001	0.005	-----
D-45	25945	<0.001	<0.002	-----
D-46	25946	<0.001	0.004	-----
D-47	25947	<0.001	0.008	-----

ASSAY SUMMARY FOR #2 TRENCH WEST WALL (PANEL) o.p.t. GOLD

SAMPLE	TAG #	CDN	SANDO	CHEMEX
E-1	25948	<0.001	<0.002	-----
E-1A	25949	0.002	0.004	-----
E-2	25950	<0.001	0.002	-----
E-3	25951	<0.001	0.008	-----
E-4	25952	<0.001	0.002	-----
E-5	25953	<0.001	0.016	-----
E-6	25954	<0.001	0.004	-----
E-7	25955	<0.001	0.002	-----
E-8	25956	0.003	<0.002	-----
E-9	25957	0.002	0.003	-----
E-10	25958	<0.001	0.010	-----
E-11	25959	0.002	0.006	-----
E-12	25960	<0.001	<0.002	-----
E-13	25961	-----	<0.002	-----
E-14	25962	<0.001	<0.002	-----
E-15	25963	0.004	0.012	-----
E-16	25964	0.003	0.002	-----
E-17	25965	0.003	0.022	-----
E-18	25966	0.005	<0.002	-----
E-19	25967	0.003	0.002	-----
E-20	25968	-----	0.002	-----
E-21	25969	0.003	0.003	-----
E-22	25970	0.002	0.002	-----
E-23	25971	<0.001	0.002	-----
E-24	25972	<0.001	<0.002	-----
E-25	25973	<0.001	0.002	-----
E-26	25974	<0.001	0.003	-----
E-27	25975	0.003	0.004	-----
E-28	25976	0.002	0.005	-----
E-29	25977	<0.001	0.006	-----
E-30	25978	0.001	0.008	-----
E-31	25979	0.001	0.002	-----
E-32	25980	0.001	0.010	-----
E-33	25981	0.001	0.002	-----
E-34	25982	0.002	0.044	0.001
E-35	25983	<0.001	0.008	-----
E-36	25984	<0.001	0.002	-----
E-37	25985	0.002	0.004	-----
E-38	25986	<0.001	0.004	-----
E-39	25987	0.001	0.002	-----
E-40	25988	0.001	0.002	-----
E-41	25989	<0.001	0.004	-----
E-42	25990	<0.001	<0.002	-----
E-43	25991	<0.001	<0.002	-----
E-44	25992	<0.001	<0.002	-----
E-45	25993	0.001	<0.002	-----
E-46	25994	0.001	0.003	-----
E-47	25995	<0.001	0.007	-----
E-48	25996	0.002	0.009	-----
E-49	25997	0.002	0.008	-----
E-50	25998	<0.001	0.006	-----

ASSAY SUMMARY FOR #2 TRENCH EAST WALL (PANEL) o.p.t. GOLD

SAMPLE	TAG #	CDN	SANDO
F-1	25999	0.058	0.008
F-2	26000	0.001	0.007
F-3	14451	<0.001	0.071
F-4	14452	0.003	0.059
F-5	14453	<0.001	0.039
F-6	14454	0.002	0.032
F-7	14455	0.006	0.007
F-8	14456	<0.001	0.024
F-9	14457	<0.001	0.016
F-10	14458	<0.001	0.018
F-11	14459	<0.001	0.028
F-12	14460	<0.001	0.036
F-13	14461	<0.001	0.021
F-14	14462	<0.001	0.073
F-15	14463	<0.001	0.008
F-16	14464	<0.001	0.010
F-17	14465	<0.001	0.020
F-18	14466	<0.001	0.032
F-19	14467	<0.001	0.008
F-20	14468	<0.001	0.010
F-21	14469	<0.001	0.021
F-22	14470	<0.001	0.006
F-23	14471	<0.001	0.021
F-24	14472	<0.001	0.004
F-25	14473	0.002	0.008
F-26	14474	0.003	0.010
F-27	14475	<0.001	0.012
F-28	14476	<0.001	0.006
F-29	14477	<0.001	0.010
F-30	14478	0.002	0.004
F-31	14479	<0.001	0.024
F-32	14480	0.002	0.008
F-33	14481	<0.001	0.008
F-34	14482	-----	0.006
F-35	14483	-----	0.125
F-36	14484	-----	0.004
F-37	14485	-----	0.016
F-38	14486	-----	0.170
F-39	14487	<0.001	0.004
F-40	14488	<0.001	0.006
F-41	14489	0.002	0.016
F-42	14490	<0.001	0.032

ASSAY SUMMARY FOR "36" TRENCH (PANEL) o.p.t. GOLD

SAMPLE	TAG #	CDN	SANDO
G-1	14491	0.002	0.004
G-2	14492	0.001	0.008
G-3	14493	0.001	0.028
G-4	14494	0.001	0.008
G-5	14495	0.004	0.024
G-6	14496	0.001	0.016
G-7	14497	0.001	0.008
G-8	14498	0.002	0.012
G-9	14499	0.001	0.012
G-10	14500	0.001	0.004
G-11	15101	0.001	0.008
G-12	15102	0.002	<0.002
G-13	15103	0.001	0.016
G-14	15104	0.001	0.009
G-15	15105	0.001	0.008
G-16	15106	0.001	0.008
G-17	15107	0.001	0.017
G-18	15108	0.001	0.012
G-19	15109	0.001	0.010
G-20	15110	0.001	0.023
G-21	15111	0.001	0.004
G-22	15112	0.001	0.042
G-23	15113	0.001	0.010
G-24	15114	0.001	0.017
G-25	15115	0.002	0.008
G-26	15116	0.001	0.021
G-27	15117	0.001	0.025
G-28	15118	0.001	0.008
G-29	15119	0.001	0.006
G-30	15120	0.002	0.021
G-31	15121	0.018	0.010
G-32	15122	0.006	0.012
G-33	15123	0.002	0.008
G-34	15124	0.001	0.006
G-35	15125	0.005	0.008
G-36	15127	0.002	0.010
G-37	15128	0.020	0.002
G-38	15129	0.004	0.004
G-39	15130	0.003	0.008
G-40	15131	0.002	0.006
G-41	15132	0.004	0.049
G-42	15133	0.005	0.004
G-43	15134	0.008	0.010
G-44	15135	<0.001	0.003
G-45	15136	0.002	0.006
G-46	15137	0.002	0.005
G-47	15138	0.003	0.002
G-48	15139	0.003	0.006
G-49	15140	0.002	0.014
G-50	15141	<0.001	0.008
G-51	15142	0.003	0.006
G-52	15143	<0.001	0.006

SAMPLE	TAG #	CDN	SANDO
G-53	15144	<0.001	0.008
G-54	15145	<0.001	<0.002
G-55	15146	<0.001	0.002
G-56	15147	0.002	0.004
G-57	15148	0.003	0.016
G-58	15149	0.002	0.006
G-59	15150	<0.001	0.008
G-60	15151	<0.001	0.002
G-61	15152	<0.001	0.006
G-62	15153	<0.001	0.004
G-63	15154	<0.001	0.006
G-64	15155	<0.001	0.004
G-65	15156	<0.001	0.010
G-66	15157	0.002	0.006
G-67	15158	0.002	0.012
G-68	15159	<0.001	0.004
G-69	15160	<0.001	0.008
G-70	15161	<0.001	0.006

APPENDIX IV

FALCONBRIDGE

Memorandum Expl. 743/85

Date: December 2, 1985

To: J.B. Gammon

Copies to: Beau Pre Explorations, PN111 Files

From: T.E. Chandler

Subject: Progress Report - PN111 Valentine Mt.

OPTION SUMMARY:

1) Work Commitment: $150,000.00 by December 31st.
2) 1985 Payments: $10,000.00 signing, $25,000.00 January 1, 1986.

EXPENDITURES TO DATE:

$162,291.68 (includes $10,000.00 signing payment)

SUMMARY OF FIELD WORK:

Due to access restrictions imposed by high fire hazards and forest closures, on-site field work did not commence until September 10, 1985. Prior to that date, work consisted of sampling untested core intervals from previous Beau Pre Explorations Limited (BPEX) drilling. Numerous reject and pulp samples were also re-assayed using screening techniques for particulate gold. For the most part the analytical results confirmed previously obtained values but failed to significantly enhance or decrease widths or grade of gold intersections. Due to the deemed nature of erratic gold distribution, further drill core sampling has been discontinued in favour of more extensive surface chip/channel and panel sampling on surface to delineate potential bulk sample sites.

The field programme begun in September has concentrated efforts in the "Discovery Zone" - site of previous trenching and coarse museum quality vein gold samples. The previous trenches were mucked out, thoroughly cleared and gridded to allow detailed mapping and sampling at 1:25 scale. A concurrent program was initiated to excavate two parallel cross-strike trenches: Trench 1 - immediately F of the old "36" trench, and Trench 2 - 60 metres east of Trench 1. These trenches were excavated approximately 2 metres deep to provide a cross-sectional view of the surface geology and quartz vein distribution. The surface distribution and continuity of quartz veins was investigated by stripping and washing to bedrock from Trench 1 east to the old "A" trench, approximately 250 metres strike length by 30 metres wide. Detailed mapping at 1:100 scale has been completed over 60 metres of this area as shown on Figure 1. The remainder of the stripped area will be mapped and sampled in the 1986 field season.

All of the trenches were carefully mapped and sampled at 1:25 scale. In most cases sampling procedure consisted of individual vein channels with separate narrow wall-rock channels on both sides of veins. Panel-type chip samples of lateral or intervening hostrock supplemented the vein sampling. A total of 459 samples were collected. Of these 179 samples of vein material and immediate wall-rock channels were forwarded to Lakefield Research Labs for total gold extraction.

Field work was terminated November 6th during a period of deteriorating weather conditions and prevailing budget restrictions. The camp and field equipment was demobilized to Vancouver by November 11, 1985. Work since then has focussed on data compilation, plan and trench section, drafting and report preparation.

RESULTS:

Only preliminary surface and trench plans are available. Analytical data from Lakefield is limited to 38 samples from the "A" trench. Most of these comprise vein samples with only 7 wall-rock samples received to date. The analytical values are tabulated on the attached certificate of analysis. Corresponding "A" series sample locations are provided on Figure 2, plan view of the "A" trench.

Until the remaining sample values are obtained, few conclusions can be drawn regarding bulk average grades in the zone. However, weighted averages of vein material can be calculated based on the sample weights provided on the assay certificate. In particular the vein samples have been subdivided into three groups. Group 1 consists of samples A-1, A-6, A-11 and A-14 representing a splay from the eastern end of the south vein. Group 2 are samples A-4, 9, 12, 13, 15, 16, 18, 19, 20, 25, 28, 29 and 30 from the south wall vein. Group 3 are the samples from the north wall vein: A-2, 5, 10, 17, 21, 22, 23, 24, 26, 27 and 31.

Sample Group	No. Samples	Total Wt.	Weighted Av. Grade	Range
1	4	15.37kg	9.72g/t	3.59 - 14.24g/t
2	13	108.09	2.47	0.15 - 15.46
3	11	39.61	38.34	0.49 - 629.96

It must be noted that the seven wall-rock samples range from 0.09 to 9.01 g/t. Their impact will be significant in determining bulk grades over mineable widths. A possible negative factor however is noted from the higher residue to carbon ratio for contained gold, implying poor extraction by cyanidation in wall-rocks. This is as yet uncertain due to the small number of samples tested.

RECOMMENDATIONS FOR FURTHER WORK:

The 1986 field work will complete the mapping and sampling programme in the "Discovery Area". Assessment of property potential outside the Discovery area will be undertaken by means of panned concentrate silt geochemistry, road traverse prospecting and quartz vein sampling. Areas of follow up will be tested by soil geochemistry and rock geochem sampling. Pending evaluation of outstanding assays a bulk sample site will be selected for more dependable in-situ grade determination. Work commitments to maintain the option total $350,000.00 in 1986. Option payments will add an additional $65,000.00.

TEC:mm
attach.

T.E. Chandler
Project Geologist

PRELIMINARY RESULTS
OF CHANNEL ~~PANEL~~ SAMPLING "A" TRENCH
FROM PLAN TAKEN BY.
FALCONBRIDGE 1985 PROGRAM

LOCATION OF SAMPLE	NO. OF. SAMPLES	TOTAL WEIGHT lbs.	GOLD WEIGHTED AV. GRADE OZ./TON	GOLD RANGE OZ./TON
Branches (1) from South Vein	4	33.88	0.312.	0.115 - 0.457
South Wall (2) Vein	13	238.29	0.079	0.004 - 0.497
North Wall (3) Vein	11	87.32	1.232	0.0150 - 20.253
Wall Rock (4)	7	-		0.002 - 0.289

METHOD: Total Gold Extraction - Cyanide/Carbon
by: Lakefield Research. (A Division of Falconbridge LTD)

LAKEFIELD RESEARCH
A DIVISION OF FALCONBRIDGE LIMITED
P.O. Box 430, 185 Concession St., Lakefield, Ontario, Can. K0L 2H0
Phone: (705) 652-3341 Telex No. 06 962842

CERTIFICATE OF ANALYSIS

FROM: Falconbridge Limited
6415 - 64th Street
DELTA, B.C.
V4K 4E2

Date: Nov. 22, 1985
Received:
Our Reference No.: LR 3059
Your Reference No.:
Invoice No.:

Samples submitted to us show results as follows:

	Sample Number	Carbon g	Residue g	Solution mLs	Carbon Au g/t	Residue Au g/t	Solution Au mg/L	% Au Dist. Carbon	% Au Dist. Residue	Calc Head Au g/t
A-1	25651	124.5	5426	9600	600	0.42	0.029	96.69	2.95	14.24
A-2	52	114.3	5443	10773	669	0.30	0.011	97.76	2.09	14.37
A-3	53	13.4	634.3	1010	82.5	0.04	0.022	97.58	2.24	1.79
A-4	54	32.9	1773	880	195	0.94	0.006	79.33	20.61	4.56
A-5	55	114.8	5679	9664	1595	0.53	0.12	97.77	1.61	32.98
A-6	56	116.1	5590	9859	401	0.03	0.012	99.39	0.36	8.38
-7	57	7.5	346.6	600	46.1	0.03	0.002	95.75	2.91	1.03
-8	58	15.6	751.2	1180	78.4	0.02	0.002	98.60	1.21	1.65
-9	59	32.3	1769	850	78.6	0.33	0.002	81.26	18.69	1.77
-10	25660	39.4	1968	840	300	0.32	0.008	94.89	5.06	6.33
-11	61	60.8	3081	4615	323	0.30	0.014	95.21	4.48	6.70
-12	62	42.9	2167	770	63.5	0.03	0.004	97.56	2.33	1.29
-13	63	46.1	2288	900	50	0.08	0.003	92.54	7.35	1.09
-14	64	25.4	1270	2540	156	0.45	0.012	86.81	12.52	3.59
-15	65	71.2	3742	7522	805	0.11	0.017	99.07	0.71	15.46
-16	66	43.4	2478	4778	8.7	0.08	0.002	64.50	33.87	0.24
-17	67	18.1	848.4	1320	73.1	0.02	0.002	98.54	1.26	1.58
-18	68	28.1	1621	3242	311	2.12	0.005	71.68	28.19	7.52
-19	69	67.2	3226	4881	5.96	0.02	0.001	85.23	13.73	0.15
-20	25670	155.9	7674	9021	186	0.04	0.008	98.71	1.04	3.83
-21	71	24.4	1214	960	29876	26.70	3.53	95.32	4.24	629.96
-22	72	96.1	4303	6196	32.1	0.01	0.002	98.24	1.37	0.73
-23	73	50.7	2550	3808	82.7	0.03	0.002	98.03	1.79	1.68
-24	74	81.2	4071	6313	23.7	0.03	0.002	93.46	5.93	0.51
-25	75	454.5	22085	37381	65.3	1.41	0.004	48.68	51.08	2.76
-26	76	42.9	2129	880	9834	4.15	0.34	97.88	2.05	202.45
-27	77	129.4	5617	9125	221	0.45	0.009	91.64	8.10	5.56
-28	78	420.9	27325	48968	98.4	0.13	0.011	91.01	7.81	1.67
-29	79	554.1	19743	36757	30.4	0.02	0.003	97.09	2.28	0.88
-30	25680	250.7	12200	23660	92.1	0.23	0.004	88.84	10.80	2.13

To: Mr. T. Chandler (2)

SIGNED K.W.S [signature]
MANAGER

K.W. Sarbutt, Chief Project Engineer

NOTE: Rejects will be discarded after 6 months.

LAKEFIELD RESEARCH
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Date: Nov. 22, 1985
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	Sample Number	Carbon g	Residue g	Solution mLs	Carbon Au g/t	Residue Au g/t	Solution Au mg/L	% Au Dist. Carbon	% Au Dist. Residue	Calc Head Au g/t
A-31	25681	120.1	5787	10643	22.1	0.03	0.003	92.81	6.07	0.49
A-33	83	118.1	5776	11732	179	2.91	0.003	55.66	44.25	6.58
-34	84	150.9	7591	10428	32.7	0.02	0.006	95.84	2.95	0.68
-35	85	121.3	6051	9127	3.30	0.02	0.001	75.46	22.82	0.09
-38	88	119.7	5549	8312	8.4	0.23	0.002	43.75	55.53	0.41
-39	89	231.2	11393	20522	9.9	0.02	0.0015	89.85	8.94	0.22
-44	25694	329.1	15912	33789	5.54	0.02	0.002	82.53	14.41	0.14
-45	25695	197.2	10171	20529	152	6.05	0.004	32.73	67.18	9.01

To: Mr. T. Chandler (2)

SIGNED K.W. S[illegible]
MANAGER
K.W. Sarbutt, Chief Project Engineer

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LAKEFIELD RESEARCH
A DIVISION OF FALCONBRIDGE LIMITED

PHONE (705) 652-3341
TELEX NO. 06962842

November 22, 1985

RECEIVED

1985

Mr. T. Chandler
Falconbridge Limited
6415 - 64th Street
DELTA, B.C.
V4K 4E2

Dear Mr. Chandler:

Re: Gold Content Determinations

We have enclosed an assay certificate with the results of the first batch of samples completed.

The procedure we have followed has been:

(1) Crush sample to minus 10 mesh.
(2) Ball mill grind sample to approximately 90 % passing 200 mesh.
(3) Transfer to mechanically agitated vessel and adjust pulp density to 35-40 % solids.
(4) Cyanide for minimum 48 hours with 1 gpL NaCN pH 11.
(5) Add 10-15 gpL activated carbon and agitate for further 4-8 hours.
(6) Take 1 litre pulp sample, screen out carbon, filter for residue and barren solution sample.
(7) From remainder of pulp screen out all carbon, dry and weigh.
(8) Assay residue, solution; and carbon for Au.
(9) Calculate Au content.

Yours sincerely,

LAKEFIELD RESEARCH

K.W. Sbutt

K.W. Sarbutt,
Chief Project Engineer

KWS/sem

Encl.

185 CONCESSION STREET, P.O. BOX 430 LAKEFIELD, ONTARIO, CANADA K0L 2H0

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V4K 4E2

Date: Jan. 10, 1986
Received:
Our Reference No.: 3059
Your Reference No.:
Invoice No.:

Samples submitted to us show results as follows:

Sample No.	Carbon g	Residue g	Solution mL	Carbon Au, g/t	Residue Au, g/t	Solution Au, mg/L	% Au Dist. Carbon	% Au Dist. Residue	Calc. Head Au, g/t
25698	291.9	14496	29673	4.22	0.01	0.002	85.77	10.09	0.10
25699	287.7	14495	26579	17.3	0.02	0.002	93.55	5.45	0.37
25700	258.6	13141	30331	7.14	0.01	0.001	91.95	6.54	0.15
25707	95.1	4362	11596	2.02	0.01	0.001	77.67	17.64	0.06
25709	26.2	1072	2285	4.75	0.01	0.002	89.06	7.67	0.13
25710	151.9	7218	12328	24.9	0.01	0.002	97.50	1.86	0.54
25711	103.9	4856	11486	9.04	0.01	0.001	93.99	4.86	0.21
25712	29.4	1286	2390	21.8	0.05	0.002	90.27	9.06	0.55
25713	110.6	5033	7529	39.4	0.08	0.002	91.25	8.43	0.95
25714	109.2	5039	9436	3.65	0.01	0.001	86.95	10.99	0.09
25715	110.4	5231	12664	9.6	0.01	0.001	94.22	4.65	0.22
25716	51.3	2366	4427	2.79	0.01	0.001	83.60	13.82	0.07
25717	135.5	6321	9910	10.1	0.01	0.001	94.93	4.38	0.23
25720	139.8	5959	11169	2.86	0.01	0.001	84.96	12.66	0.08
25722	36.4	1773	3043	80.2	0.06	0.002	96.29	3.51	1.71
25724	130.8	4394	9705	62.5	0.03	0.001	98.30	1.59	1.89
25725	158.5	6063	11831	263.	0.23	0.001	96.74	3.24	7.11
25726	63.8	2860	5524	21.2	0.02	0.002	95.20	4.03	0.50
25727	91.1	4079	13416	11.4	0.01	0.001	95.04	3.73	0.27
25729	74.9	3515	6017	12.1	0.01	0.001	95.66	3.71	0.27
25730	101.8	4476	10862	20.1	0.02	0.001	95.32	4.17	0.48
25731	300.1	15175	23443	43.9	0.02	0.003	97.24	2.24	0.89
25733	83.3	3978	6442	5.90	0.01	0.001	91.40	7.40	0.14
25735	81.5	4061	12048	23.1	0.02	0.001	95.28	4.11	0.49
25736	131.9	6661	12503	4.81	0.02	0.001	81.32	17.08	0.12
25738	196.1	8175	13892	4.55	0.01	0.001	90.32	8.28	0.12
25739	161.7	7737	15573	29.4	0.03	0.001	95.05	4.64	0.65
25740	185.1	7652	12533	36.1	0.02	0.002	97.40	2.23	0.90

To: T. Chandler (2)

SIGNED [signature]
MANAGER
R.S. Salter

NOTE: Rejects will be discarded after 6 months.

LAKEFIELD RESEARCH
A DIVISION OF FALCONBRIDGE LIMITED

P.O. Box 430, 185 Concession St., Lakefield, Ontario, Can. K0L 2H0
Phone: (705) 652-3341 Telex No. 06 962842

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6415 - 64th Street,
Delta, B.C. V4K 4E2

Date: Jan. 10, 1986
Received:
Our Reference No.: 3059
Your Reference No.:
Invoice No.:

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Sample No.	Carbon g	Residue g	Solution mL	Carbon Au, g/t	Residue Au, g/t	Solution Au, mg/L	% Au Dist. Carbon	% Au Dist. Residue	Calc. Head Au, g/t
25741	85.9	3752	7581	7.8	0.02	0.005	85.57	9.58	0.21
25743	146.6	7256	11908	3.66	0.05	0.002	58.12	39.30	0.13
25744	82.3	4085	8654	8.24	0.02	0.002	87.26	10.51	0.19
25745	126.2	6200	9585	5.25	0.01	0.001	90.25	8.45	0.12
25746	123.5	6074	9813	41.67	0.01	0.001	98.68	1.14	0.88
25750	171.8	8422	16792	11.2	0.02	0.002	90.50	7.92	0.25
25751	212.9	9250	16570	22.9	0.02	0.002	95.72	3.63	0.55
25752	99.7	4805	10702	1.26	0.01	0.001	68.13	26.06	0.04
25753	101.1	4660	9490	4.61	0.01	0.001	89.26	8.92	0.11
25754	286.3	14157	29938	0.78	0.01	0.001	56.56	35.86	0.03
25755	141.8	7019	14300	1.08	0.02	0.001	49.75	45.60	0.04
25756	144.9	6810	11079	1.92	0.04	0.001	49.53	48.50	0.08
25757	245.7	10826	19261	1.08	0.01	0.001	67.54	27.56	0.04
25758	144.4	7060	11910	1.78	0.02	0.001	62.67	34.43	0.06
25759	178.3	7187	15141	12.8	0.04	0.001	88.29	11.12	0.36
25760	172.5	7857	11745	4.12	0.02	0.002	79.73	17.63	0.11
25761	204.1	10376	15531	3.41	0.01	0.001	85.37	12.73	0.08
25762	175.8	8628	16594	3.01	0.01	0.001	83.72	13.65	0.07
25763	156.6	6971	12907	1.65	0.01	0.001	75.77	20.44	0.05
25764	177.6	9116	17802	1.68	0.01	0.001	73.25	22.38	0.04
25765	140.9	6379	11772	1.81	0.01	0.001	77.14	19.30	0.05
25766	143.2	7232	12261	2.76	0.01	0.001	82.37	15.07	0.07
25767	140.8	6702	11918	3.37	0.01	0.001	85.74	12.11	0.08
25768	176.4	8950	17959	1.96	0.01	0.001	76.29	19.75	0.05
25769	126.6	5594	9540	4.31	0.01	0.03	61.46	6.30	0.16
25772	159.1	8139	12507	10.8	0.14	0.002	59.61	39.53	0.35
25773	202.7	8759	13303	9.31	0.03	0.001	87.24	12.15	0.25
25774	186.2	9181	14189	2.39	0.01	0.013	61.70	12.73	0.08

To: T. Chandler (2)

SIGNED [signature] MANAGER

R.S. Salter

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25775	113.8	5323	8562	7.71	0.01	0.002	92.58	5.62	0.18
25776	110.3	4807	10855	6.06	0.01	0.001	91.90	6.61	0.15
25777	188.8	8700	14289	4.55	0.01	0.001	89.45	9.06	0.11
25778	103.1	4982	9969	4.36	0.01	0.001	88.26	9.78	0.10
25785	151.3	6572	12693	1.29	0.01	0.001	71.34	24.02	0.04
25786	121.6	12840	26872	3.47	0.01	0.001	73.10	22.24	0.04
25787	110.5	4521	10141	1.91	0.01	0.001	79.22	16.97	0.06
25788	86.1	3699	7125	7.9	0.04	0.001	81.43	17.71	0.23
25789	105.7	5201	9985	957.	0.10	0.028	99.22	0.51	19.60
25790	74.7	4599	11783	86.4	0.05	0.005	95.72	3.41	1.47
25791	118.4	5803	10811	200.	0.06	0.01	98.11	1.44	4.16
25792	46.7	3255	5075	27.1	0.02	0.002	94.39	4.86	0.41
25793	63.1	4751	8174	311.	0.42	0.037	89.52	9.10	4.61
25795	70.6	3501	6778	17.3	0.05	0.003	86.21	12.36	0.40
25796	49.7	4134	9566	4.26	0.01	0.003	75.14	14.67	0.07
25797	77.1	5162	13890	5.15	0.01	0.002	83.34	10.83	0.09
25798	65.5	3255	7930	1.21	0.01	0.001	66.19	27.19	0.04
25799	101.1	5000	11944	6.48	0.05	0.001	71.44	27.26	0.18
25800	58.4	2943	6770	1.92	0.01	0.001	75.59	19.84	0.05
25801	99.6	6028	12766	3.66	0.01	0.001	83.31	13.78	0.07
25802	50.4	2575	5150	171.	0.43	0.006	88.33	11.35	3.79
25803	44.2	2211	4422	10.	0.33	0.006	36.89	60.90	0.54
25804	89.1	4613	9806	3.59	0.01	0.001	85.12	12.27	0.08
25805	47.5	2412	4824	811.	0.79	0.016	95.11	4.70	16.79
25806	85.6	4120	11851	4.31	0.01	0.001	87.43	9.76	0.10
25807	97.1	4907	11390	12.9	0.01	0.001	95.40	3.74	0.27
25808	65.5	3092	5030	264.	0.02	0.01	99.36	0.36	5.63
25809	51.9	2732	5464	97.1	0.43	0.004	80.81	18.84	2.28

): T. Chandler (2)

SIGNED ______________ MANAGER
R.S. Salter

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25810	122.1	5860	11803	11.1	0.01	0.005	92.01	3.98	0.25
25811	131.3	6501	10970	5.05	0.01	0.001	89.72	8.80	0.11
25812	86.9	4170	8852	3.1	0.13	0.001	32.84	66.08	0.20
25813	111.5	5680	9634	3.21	0.01	0.001	84.34	13.39	0.07
25814	82.6	3978	7823	1.5	0.01	0.001	72.24	23.19	0.04
25815	110.2	5713	11079	8.61	0.01	0.002	92.29	5.56	0.18
25816	77.3	3172	6476	83.4	0.24	0.004	89.12	10.52	2.28
25817	126.8	4984	8791	7.45	0.01	0.001	94.16	4.97	0.20
25818	108.4	4761	10181	1.37	0.01	0.001	71.99	23.08	0.04
25819	123.7	4885	8737	4.76	0.01	0.001	91.09	7.56	0.13
25820	118.9	5423	8931	14.8	0.01	0.002	96.06	2.96	0.34
25821	102.2	5031	9638	2.61	0.01	0.001	81.65	15.40	0.06
25822	131.2	6185	10053	1.17	0.01	0.001	68.10	27.44	0.04
25823	106.5	4352	7774	1.08	0.01	0.001	69.16	26.17	0.04
25824	86.7	4067	10987	7.57	0.01	0.001	92.70	5.74	0.17
25825	60.5	3004	7270	5.39	0.01	0.001	89.73	8.27	0.12
25828	80.7	3704	7815	2.39	0.01	0.002	78.55	15.08	0.07
25829	173.7	7218	13925	0.96	0.01	0.001	65.95	28.55	0.04
25830	68.3	3701	5274	39.4	0.01	0.001	98.45	1.35	0.74
25831	71.8	3317	6635	3.27	0.01	0.001	85.50	12.08	0.08
25832	200.1	10413	19301	6.61	0.01	0.001	92.70	7.30	0.14
25834	125.9	5726	13262	6.15	0.01	0.001	91.65	6.78	0.15
25835	117.3	8312	13386	8.45	0.01	0.001	91.13	7.64	0.13
25836	60.5	4966	8549	3.05	0.01	0.001	76.02	20.46	0.05
25837	63.3	4579	10552	8.14	0.01	0.001	90.14	8.01	0.12

To: T. Chandler (2)

SIGNED [signature]
MANAGER
R.S. Salter

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FROM: Falconbridge Limited,
6415 - 64th Street,
Delta, B.C. V4K 4E2

Date: Jan. 10, 1986
Received:
Our Reference No.: 3059
Your Reference No.:
Invoice No.:

Samples submitted to us show results as follows:

Sample No.	Carbon g	Residue g	Solution mL	Carbon Au, g/t	Residue Au, g/t	Solution Au, mg/L	% Au Dist. Carbon	% Au Dist. Residue	Calc. Head g/t Au
25838	130.9	8984	16137	4.91	0.01	0.001	85.85	12.00	0.08
25839	62.5	5336	9943	3.88	0.01	0.001	79.30	17.45	0.06
25840	61.8	4676	10371	10.7	0.01	0.001	93.40	6.60	0.15
25703	446.7	21160	41043	113.	0.08	0.002	96.60	3.24	2.47 ✓
25704	380.8	18674	38014	12.1	0.02	0.001	91.80	7.44	0.27

To: T. Chandler (2)

SIGNED [signature]
MANAGER
R.S. Salter

NOTE: Rejects will be discarded after 6 months.

3059

LAKEFIELD RESEARCH
A DIVISION OF FALCONBRIDGE LIMITED

P.O. Box 430, 185 Concession St., Lakefield, Ontario, Can. K0L 2H0
Phone: (705) 652-3341 Telex No. 06 962842

CERTIFICATE OF ANALYSIS

FROM: Falconbridge Limited,
6415 - 64th Street,
DELTA, B.C. V4K 4E2

Date: Jan. 15, 1986
Received:
Our Reference No.: 3059
Your Reference No.:
Invoice No.: 21731

Samples submitted to us show results as follows:

Sample No.	Carbon g	Residue g	Solution mL	Carbon Au,g/t	Residue Au, g/t	Solution Au,mg/L	% Au Dist. Carbon	% Au Dist. Residue	Calc.Head Au,g/t
25841	80.9	6376	9526	1.86	0.01	0.001	67.25	28.49	0.04
25842	61.9	5111	10391	2.21	0.01	0.001	68.99	25.77	0.04
25843	92.9	5031	9364	2.16	0.01	0.001	77.08	19.32	0.05
25844	301.2	8563	15293	27.3	0.05	0.003	94.55	4.92	1.02
25845	167.7	3985	10177	0.99	0.02	0.001	64.88	31.14	0.06
25846	200.1	4783	11892	0.59	0.01	0.001	66.41	26.90	0.04
25847	286.2	14385	18175	1.86	0.73	0.026	4.63	91.27	0.80
25848	141.1	4297	10948	9.90	0.01	0.002	95.56	2.94	0.34
25849	84.4	4758	10676	2.45	0.05	0.001	45.41	52.24	0.10
25851	52.6	2581	5066	2.01	0.01	0.001	77.40	18.89	0.05
25854	134.3	8316	18828	5.35	0.01	0.001	87.57	10.14	0.10
25856	157.9	4499	8918	1.08	0.01	0.001	75.98	20.05	0.05
25858	121.9	7624	14242	2.23	0.01	0.001	75.03	21.04	0.05
25860	146.5	7905	12237	0.49	0.02	0.002	28.22	62.16	0.03
25863	157.6	8515	16317	0.40	0.01	0.001	38.32	51.76	0.02
25865	96.7	5149	11531	0.87	0.01	0.001	57.17	34.99	0.03
25866	95.1	5300	10641	0.78	0.01	0.001	53.82	38.46	0.03
25870	118.9	6653	12163	0.87	0.09	0.001	14.48	83.82	0.11
25871	185.7	9751	17911	1.75	0.01	0.001	73.79	22.14	0.05
25682	640.9	40400	51712	4693.	0.33	0.077	99.43	0.44	74.88
25693	201.7	9506	12980	3.08	0.01	0.001	85.19	13.03	0.08
25747	128.7	5991	11188	1.84	0.02	0.001	64.38	32.58	0.06
25748	173.3	8231	14202	5.38	0.01	0.001	90.62	8.00	0.12
25749	162.1	7614	12290	4.38	0.01	0.001	88.92	9.54	0.10
25770	79.8	4015	9787	3.49	0.01	0.003	80.03	11.54	0.09
25771	48.1	2370	4175	2.02	0.03	0.002	55.01	40.26	0.07
25779	164.8	8199	15817	203.	2.05	0.025	66.04	33.18	6.18

To: T. Chandler (2)

SIGNED K. W. Smith
MANAGER

R.S. Salter

NOTE: Rejects will be discarded after 6 months.

LAKEFIELD RESEARCH
A DIVISION OF FALCONBRIDGE LIMITED
P.O. Box 430, 185 Concession St., Lakefield, Ontario, Can. K0L 2H0
Phone: (705) 652-3341 Telex No. 06 962842

CERTIFICATE OF ANALYSIS

FROM: Falconbridge Limited,
6415 - 64th Street
Delta, B.C. V4K 4E2

Date: Jan. 15, 1986
Received:
Our Reference No.: 3059
Your Reference No.:
Invoice No.: 21731

Samples submitted to us show results as follows:

Sample No.	Carbon g	Residue g	Solution mL	Carbon Au,g/t	Residue Au,g/t	Solution Au,mg/L	% Au Dist. Carbon	% Au Dist. Residue	Calc.Head Au,g/t
25780	172.1	8520	16418	7.28	0.01	0.004	89.25	6.07	0.16
25781	80.1	4011	10969	3.65	0.01	0.003	80.02	10.98	0.09
25782	183.1	9271	16551	2.88	0.01	0.002	80.74	14.19	0.07
25783	185.5	8947	17270	2.33	0.01	0.002	77.71	16.09	0.06
25784	149.8	7034	13481	3.17	0.01	0.002	82.99	12.29	0.08
25826	63.2	3111	5972	2.61	0.01	0.001	81.65	15.40	0.06
25827	39.7	1960	3316	0.78	0.01	0.001	57.47	36.38	0.03
25833	56.9	2761	5157	2.12	0.01	0.001	78.64	18.00	0.06
25841	80.9	6376	9526	1.86	0.01	0.001	67.25	28.49	0.04
25842	61.9	5111	10391	2.21	0.01	0.001	68.99	25.77	0.04
25843	92.9	5031	9364	2.16	0.01	0.001	77.08	19.32	0.05
25844	301.2	8563	16293	27.3	0.05	0.003	94.55	4.92	1.02
25845	167.7	3985	10177	0.99	0.02	0.001	64.88	31.14	0.06
25846	200.1	4783	11892	0.59	0.01	0.001	66.41	26.90	0.04
25847	286.2	14385	18175	1.86	0.73	0.026	4.63	91.27	0.80
25848	141.1	4297	10948	9.90	0.01	0.002	95.56	2.94	0.34
25849	84.4	4758	10676	2.45	0.05	0.001	45.41	52.24	0.10
25851	52.6	2581	5066	2.01	0.01	0.001	77.40	18.89	0.05
25854	134.3	8316	18828	5.35	0.01	0.001	87.57	10.14	0.10
25856	157.9	4499	8918	1.08	0.01	0.001	75.98	20.05	0.05
25858	121.9	7624	14242	2.23	0.01	0.001	75.03	21.04	0.05
25860	146.5	7905	12237	0.49	0.02	0.002	28.22	62.16	0.03
25863	157.6	8515	16317	0.40	0.01	0.001	38.32	51.76	0.02
25865	96.7	5149	11531	0.87	0.01	0.001	57.17	34.99	0.03
25866	95.1	5300	10641	0.78	0.01	0.001	53.82	38.46	0.03
25870	118.9	6653	12163	0.87	0.09	0.001	14.48	83.82	0.11
25871	185.7	9751	17911	1.75	0.01	0.001	73.79	22.14	0.05

To: T. Chandler (2)

SIGNED K. W. S[illegible]
MANAGER

R.S. Salter

NOTE: Rejects will be discarded after 6 months.

PN 111 CHIP/PANEL SAMPLE RECORDS

TAG #	SMPL	FROM	TO(M)	AU OZ/T	LOCATION	TYPE	# BAGS
25651	A1	0	1	14.24	'A' TRENCH	QTZ VEIN	1
25652	A2	0	1	14.37	'A' TRENCH	QTZ VEIN	1
25653	A3	0	1	1.79	'A' TRENCH	QTZ VEIN	1
25654	A4	0	1	4.56	'A' TRENCH	QTZ VEIN	1
25655	A5	1	2	32.98	'A' TRENCH	QTZ VEIN	1
25656	A6	1	2	8.38	'A' TRENCH	QTZ VEIN	1
25657	A7	1	2	1.03	'A' TRENCH	QTZ VEIN	1
25658	A8	1	2	1.65	'A' TRENCH	QTZ VEIN	1
25659	A9	1	2	1.77	'A' TRENCH	QTZ VEIN	1
25660	A10	2	3	6.33	'A' TRENCH	QTZ VEIN	1
25661	A11	2	3	6.70	'A' TRENCH	QTZ VEIN	1
25662	A12	2	3	1.29	'A' TRENCH	QTZ VEIN	1
25663	A13	2	3	1.09	'A' TRENCH	QTZ VEIN	1
25664	A14	3	4	3.59	'A' TRENCH	QTZ VEIN	1
25665	A15	3	4	15.46	'A' TRENCH	QTZ VEIN	1
25666	A16	4	5	0.24	'A' TRENCH	QTZ VEIN	1
25667	A17	3	4	1.58	'A' TRENCH	QTZ VEIN	1
25668	A18	5	6	7.52	'A' TRENCH	QTZ VEIN	1
25669	A19	5.5	6.5	0.15	'A' TRENCH	QTZ VEIN	1
25670	A20	6	7	3.83	'A' TRENCH	QTZ VEIN	1
25671	A21	4	5	629.96	'A' TRENCH	QTZ VEIN	1
25672	A22	5	6	0.73	'A' TRENCH	QTZ VEIN	1
25673	A23	6	7	1.68	'A' TRENCH	QTZ VEIN	1
25674	A24	7	8	0.51	'A' TRENCH	QTZ VEIN	1
25675	A25	7	8	2.76	'A' TRENCH	QTZ VEIN	3
25676	A26	8	9	202.45	'A' TRENCH	QTZ VEIN	1
25677	A27	9	10	5.56	'A' TRENCH	QTZ VEIN	2
25678	A28	8	9	1.67	'A' TRENCH	QTZ VEIN	3
25679	A29	9	10	0.88	'A' TRENCH	QTZ VEIN	3
25680	A30	10	11	2.13	'A' TRENCH	QTZ VEIN	2
25681	A31	10	11	0.49	'A' TRENCH	QTZ VEIN	1
25682	A32	11	12	— 74.88	'A' TRENCH	QTZ VEIN	2
25683	A33	10	11	6.58	'A' TRENCH	VEIN WALL S	1
25684	A34	10	11	0.68	'A' TRENCH	VEIN WALL N	1
25685	A35	10	11	0.09	'A' TRENCH	VEIN WALL S	1
25686	A36	10	11	.059	'A' TRENCH	WALL RX PANEL	1
25687	A37	10	11	[illegible]	'A' TRENCH	WALL RX PANEL	1
25688	A38	9	10	0.41	'A' TRENCH	VEIN WALL S	1
25689	A39	9	10	0.22	'A' TRENCH	VEIN WALL N	2
25690	A40	9	10	[illegible]	'A' TRENCH	VEIN WALL S	2
25691	A41	9	10	[illegible]	'A' TRENCH	WALL RX PANEL	1
25692	A42	9	10	[illegible]	'A' TRENCH	WALL RX PANEL	1
25693	A43	8	9	0.08	'A' TRENCH	VEIN WALL S	1
25694	A44	8	9	0.14	'A' TRENCH	VEIN WALL N	2
25695	A45	8	9	9.01	'A' TRENCH	VEIN WALL S	2
VG — 25696	A46	8	9	.208	'A' TRENCH	WALL RX PANEL	1
25697	A47	8	9	[illegible]	'A' TRENCH	WALL RX PANEL	2
25698	A48	7	8	0.10	'A' TRENCH	VEIN WALL S	2
25699	A49	7	8	0.37	'A' TRENCH	VEIN WALL N	2
25700	A50	7	8	0.15	'A' TRENCH	VEIN WALL S	2

25701	A51	7	8	0.05g	'A' TRENCH	WALL RX PANEL	1
25702	A52	7	8	0.05g	'A' TRENCH	WALL RX PANEL	1
25703	A53	6	7	2.47	'A' TRENCH	VEIN WALL N	3
25704	A54	6	7	0.27	'A' TRENCH	VEIN WALL S	3
25705	A55	6	7	0.10g	'A' TRENCH	WALL RX PANEL	1 ← metallics 0.9g/t
25706	A56	6	7	[illegible]	'A' TRENCH	WALL RX PANEL	1
25707	A57	6	7	0.06g	'A' TRENCH	VEIN WALL S	1
25708	A58	5	6	0.20g	'A' TRENCH	WALL RX PANEL	1
25709	A59	5	6	0.13	'A' TRENCH	VEIN WALL S	1
25710	A60	5	6	0.54	'A' TRENCH	VEIN WALL N	1
25711	A61	6	7	0.21	'A' TRENCH	VEIN WALL N	1
25712	A62	5.5	6.5	0.55	'A' TRENCH	VEIN WALL	1
25713	A63	5	6	0.95	'A' TRENCH	VEIN WALL N	1
25714	A64	4	5	0.09	'A' TRENCH	VEIN WALL N	1
25715	A65	4	5	0.22	'A' TRENCH	VEIN WALL S	1
25716	A66	4	5	0.07	'A' TRENCH	VEIN WALL S	1
25717	A67	5	6	0.23	'A' TRENCH	VEIN WALL S	1
25718	A68	5	6	0.05g	'A' TRENCH	WALL RX PANEL	1
25719	A69	4	5	0.10g	'A' TRENCH	WALL RX PANEL	1
25720	A70	4	5	0.08	'A' TRENCH	VEIN WALL N	1
25721	A71	4	5	0.05g	'A' TRENCH	WALL RX PANEL	1
25722	A72	0	1	1.71	'A' TRENCH	VEIN WALL N	1
V.G. — 25723	A73	0	1	0.45g	'A' TRENCH	WALL RX PANEL	1
25724	A74	0	1	1.89	'A' TRENCH	VEIN WALL S	1
25725	A75	0	1	7.11	'A' TRENCH	VEIN WALL N	1
25726	A76	0	1	0.50	'A' TRENCH	VEIN WALL	1
25727	A77	0	1	0.27	'A' TRENCH	WALL RX PANEL	1
25728	A78	1	2	0.40g	'A' TRENCH	WALL RX PANEL	1
25729	A79	1	2	0.27	'A' TRENCH	VEIN WALL S	1
25730	A80	1	2	0.48	'A' TRENCH	VEIN WALL N	2
25731	A81	1	2	0.89	'A' TRENCH	VEIN WALL S	2
25732	A82	1	2	0.10g	'A' TRENCH	WALL RX PANEL	1
25733	A83	1	2	0.14	'A' TRENCH	VEIN WALL N	1
25734	A84	2	3	0.55g	'A' TRENCH	WALL RX PANEL	1
25735	A85	2	3	0.49	'A' TRENCH	VEIN WALL N	1
25736	A86	2	3	0.12	'A' TRENCH	VEIN WALL S	1
25737	A87	2	3	0.05g	'A' TRENCH	WALL RX PANEL	1
25738	A88	2	3	0.12	'A' TRENCH	VEIN WALL N	1
25739	A89	2	3	0.65	'A' TRENCH	VEIN WALL S	1
25740	A90	3	4	0.90	'A' TRENCH	VEIN WALL N	1
25741	A91	3	4	0.21	'A' TRENCH	VEIN WALL S	1
25742	A92	3	4	0.05g	'A' TRENCH	WALL RX PANEL	1
25743	A93	3	4	0.13	'A' TRENCH	VEIN WALL N	1
25744	A94	3	4	0.19	'A' TRENCH	VEIN WALL S	1

PN 111 CHIP/PANEL SAMPL E RECORDS

TAG #	SMPL	FROM	TO(M)	AU oz/t	LOCATION	TYPE	# BAGS
25745	B1	0	1	0.12	'36' TRENCH	QTZ VEIN	1
25746	B2	0	1	0.88	'36' TRENCH	VEIN WALL S	1
25747	B3	0	1	0.06	'36' TRENCH	VEIN WALL N	1
25748	B4	1	2	0.12	'36' TRENCH	QTZ VEIN	1
25749	B5	1	2	0.10	'36' TRENCH	VEIN WALL S	1
25750	B6	1	2	0.25	'36' TRENCH	VEIN WALL N	1
25751	B7	2	3	0.55	'36' TRENCH	QTZ VEIN	1
25752	B8	2	3	0.04	'36' TRENCH	VEIN WALL S	1
25753	B9	2	3	0.11	'36' TRENCH	VEIN WALL N	1
25754	B10	3	4	0.03	'36' TRENCH	QTZ VEIN	2
25755	B11	3	4	0.04	'36' TRENCH	VEIN WALL S	1
25756	B12	3	4	0.08	'36' TRENCH	VEIN WALL N	1
25757	B13	4	5	0.04	'36' TRENCH	QTZ VEIN	1
25758	B14	4	5	0.06	'36' TRENCH	VEIN WALL S	1
25759	B15	4	5	0.36	'36' TRENCH	VEIN WALL N	1
25760	B16	5	6	0.11	'36' TRENCH	QTZ VEIN	1
25761	B17	5	6	0.08	'36' TRENCH	VEIN WALL S	1
25762	B18	5	6	0.07	'36' TRENCH	VEIN WALL N	1
25763	B19	6	7	0.05	'36' TRENCH	QTZ VEIN	1
25764	B20	6	7	0.04	'36' TRENCH	VEIN WALL S	1
25765	B21	6	7	0.05	'36' TRENCH	VEIN WALL N	1
25766	B22	7	8	0.07	'36' TRENCH	QTZ VEIN	1
25767	B23	7	8	0.08	'36' TRENCH	VEIN WALL S	1
25768	B24	7	8	0.05	'36' TRENCH	VEIN WALL N	1
25769	B25	8	9	0.16	'36' TRENCH	QTZ VEIN	1
25770	B26	8	9	0.09	'36' TRENCH	VEIN WALL S	1
25771	B27	8	9	0.07	'36' TRENCH	VEIN WALL N	1
25772	B28	9	10	0.35	'36' TRENCH	QTZ VEIN	1
25773	B29	9	10	0.25	'36' TRENCH	VEIN WALL S	1
25774	B30	9	10	0.08	'36' TRENCH	VEIN WALL N	1
25775	B31	10	11	0.18	'36' TRENCH	QTZ VEIN	1
25776	B33	10	11	0.15	'36' TRENCH	VEIN WALL N	1
25777	B34	11	12	0.11	'36' TRENCH	QTZ VEIN	1
25778	B35	11	12	0.10	'36' TRENCH	VEIN WALL S	1
25779	B36	11	12	6.18	'36' TRENCH	VEIN WALL N	2
25780	B37	12	13	0.16	'36' TRENCH	QTZ VEIN	1
25781	B38	12	13	0.09	'36' TRENCH	VEIN WALL S	1
25782	B39	12	13	0.07	'36' TRENCH	VEIN WALL N	1
25783	B40	13	14	0.06	'36' TRENCH	QTZ VEIN	1
25784	B41	13	14	0.08	'36' TRENCH	VEIN WALL S	1
25785	B42	13	14	0.04	'36' TRENCH	VEIN WALL N	1
25786	B43	14	15	0.04	'36' TRENCH	QTZ VEIN	2
25787	B44	14	15	0.06	'36' TRENCH	VEIN WALL S	1
25788	B45	14	15	0.23	'36' TRENCH	VEIN WALL N	1
25789	B46	15	16	19.60	'36' TRENCH	QTZ VEIN	1
25790	B47	15	16	1.47	'36' TRENCH	VEIN WALL S	1
25791	B48	15	16	4.16	'36' TRENCH	VEIN WALL N	1
25792	B49	16	17	0.41	'36' TRENCH	QTZ VEIN	1
25793	B50	16	17	4.61	'36' TRENCH	VEIN WALL S	1
25794	B51	16	17		'36' TRENCH	VEIN WALL N	1

25795	B52	17	18	0.40	'36' TRENCH	QTZ VEIN	1	
25796	B53	17	18	0.07	'36' TRENCH	VEIN WALL S	1	
25797	B54	17	18	0.09	'36' TRENCH	VEIN WALL N	1	
25798	B55	18	19	0.04	'36' TRENCH	QTZ VEIN	1	
25799	B56	18	19	0.18	'36' TRENCH	VEIN WALL S	1	
25800	B57	18	19	0.05	'36' TRENCH	VEIN WALL N	1	
25801	B32	10	11	0.07	'36' TRENCH	VEIN WALL S	1	
25802	B58	19	20	3.79	'36' TRENCH	QTZ VEIN	1	
25803	B59	19	20	0.54	'36' TRENCH	VEIN WALL S	1	
25804	B60	19	20	0.08	'36' TRENCH	VEIN WALL N	1	
25805	B61	20	21	16.79	'36' TRENCH	QTZ VEIN	1	V.G.
25806	B62	20	21	0.10	'36' TRENCH	VEIN WALL S	1	
25807	B63	20	21	0.27	'36' TRENCH	VEIN WALL N	1	
25808	B64	21	22	5.63	'36' TRENCH	QTZ VEIN	1	
25809	B65	21	22	2.28	'36' TRENCH	VEIN WALL S	1	
25810	B66	21	22	0.25	'36' TRENCH	VEIN WALL N	1	
25811	B67	22	23	0.11	'36' TRENCH	QTZ VEIN	1	
25812	B68	22	23	0.20	'36' TRENCH	VEIN WALL S	1	
25813	B69	22	23	0.07	'36' TRENCH	VEIN WALL N	1	
25814	B70	23	24	0.04	'36' TRENCH	QTZ VEIN	1	
25815	B71	23	24	0.18	'36' TRENCH	VEIN WALL S	1	
25816	B72	23	24	2.28	'36' TRENCH	VEIN WALL N	1	
25817	B73	24	25	0.20	'36' TRENCH	QTZ VEIN	1	
25818	B74	24	25	0.04	'36' TRENCH	VEIN WALL S	1	
25819	B75	24	25	0.13	'36' TRENCH	VEIN WALL N	1	
25820	B76	25	26	0.34	'36' TRENCH	QTZ VEIN	1	
25821	B77	25	26	0.06	'36' TRENCH	VEIN WALL S	1	
25822	B78	25	26	0.04	'36' TRENCH	VEIN WALL N	1	
25823	B79	26	27	0.04	'36' TRENCH	QTZ VEIN	1	
25824	B80	26	27	0.17	'36' TRENCH	VEIN WALL S	1	
25825	B81	26	27	0.12	'36' TRENCH	VEIN WALL N	1	
25826	B82	27	28	0.06	'36' TRENCH	QTZ VEIN	1	
25827	B83	27	28	0.03	'36' TRENCH	VEIN WALL S	1	
25828	B84	27	28	0.07	'36' TRENCH	VEIN WALL N	1	
25829	B85	28	29	0.04	'36' TRENCH	QTZ VEIN	1	
25830	B86	28	29	0.74	'36' TRENCH	VEIN WALL S	1	
25831	B87	28	29	0.08	'36' TRENCH	VEIN WALL N	1	
25832	B88	29	30	0.14	'36' TRENCH	QTZ VEIN	1	
25833	B89	29	30	0.06	'36' TRENCH	VEIN WALL	1	
25834	B90	29	30	0.15	'36' TRENCH	VEIN WALL	1	
25835	B91	30	31	0.13	'36' TRENCH	QTZ VEIN	1	
25836	B92	30	31	0.05	'36' TRENCH	VEIN WALL S	1	
25837	B93	30	31	0.12	'36' TRENCH	VEIN WALL N	1	
25838	B94	31	32	0.08	'36' TRENCH	QTZ VEIN	1	
25839	B95	31	32	0.06	'36' TRENCH	VEIN WALL S	1	
25840	B96	31	32	0.15	'36' TRENCH	VEIN WALL N	1	
25841	B97	32	33	0.04	'36' TRENCH	QTZ VEIN	1	
25842	B98	32	33	0.04	'36' TRENCH	VEIN WALL S	1	
25843	B99	32	33	0.05	'36' TRENCH	VEIN WALL N	1	
25844	B100	33	34	1.02	'36' TRENCH	QTZ VEIN	1	
25845	B101	33	34	0.06	'36' TRENCH	VEIN WALL S	1	
25846	B102	33	34	0.04	'36' TRENCH	VEIN WALL N	1	
25847	B103	34	35	0.80	'36' TRENCH	QTZ VEIN	2	
25848	B104	34	35	0.34	'36' TRENCH	VEIN WALL S	1	

25849	B105	34	35	0.10	'36'	TRENCH	VEIN WALL N	1
14491	G1	0	1	0.10	'36'	TRENCH	PANEL N	1
14492	G2	0	1	0.05	'36'	TRENCH	PANEL S	1
14493	G3	1	2		'36'	TRENCH	PANEL N	1
14494	G4	1	2		'36'	TRENCH	PANEL S	1
V.G-14495	G5	2	3		'36'	TRENCH	PANEL N	1
14496	G6	2	3	0.10	'36'	TRENCH	PANEL S	1
14497	G7	3	4	0.10	'36'	TRENCH	PANEL N	1
14498	G8	3	4	0.05	'36'	TRENCH	PANEL S	1
14499	G9	4	5	0.05	'36'	TRENCH	PANEL N	1
14500	G10	4	5		'36'	TRENCH	PANEL S	1
15101	G11	5	6		'36'	TRENCH	PANEL N	1
15102	G12	5	6	0.10	'36'	TRENCH	PANEL S	1
15103	G13	6	7	0.05	'36'	TRENCH	PANEL N	1
15104	G14	6	7		'36'	TRENCH	PANEL S	1
15105	G15	7	8		'36'	TRENCH	PANEL N	1
15106	G16	7	8		'36'	TRENCH	PANEL S	1
15107	G17	8	9		'36'	TRENCH	PANEL N	1
15108	G18	8	9		'36'	TRENCH	PANEL S	1
15109	G19	9	10		'36'	TRENCH	PANEL N	1
15110	G20	9	10		'36'	TRENCH	PANEL S	1
15111	G21	10	11		'36'	TRENCH	PANEL N	1
15112	G22	10	11		'36'	TRENCH	PANEL S	1
15113	G23	11	12		'36'	TRENCH	PANEL N	1
V.G.—15114	G24	11	12		'36'	TRENCH	PANEL S	1
15115	G25	12	13		'36'	TRENCH	PANEL N	1
15116	G26	12	13		'36'	TRENCH	PANEL S	1
15117	G27	13	14		'36'	TRENCH	PANEL N	1
15118	G28	13	14		'36'	TRENCH	PANEL S	1
15119	G29	14	15		'36'	TRENCH	PANEL N	1
15120	G30	14	15		'36'	TRENCH	PANEL S	1
15121	G31	15	16		'36'	TRENCH	PANEL N	1
15122	G32	15	16		'36'	TRENCH	PANEL S	1
15123	G33	16	17		'36'	TRENCH	PANEL N	1
15124	G34	16	17	0.05	'36'	TRENCH	PANEL S	1
15125	G35	17	18	<0.05-0.40	'36'	TRENCH	PANEL N	1
15127	G36	17	18	<.05	'36'	TRENCH	PANEL S	1
15128	G37	18	19	<.05-0.70	'36'	TRENCH	PANEL N	1
15129	G38	18	19	<.05-0.40	'36'	TRENCH	PANEL S	1
15130	G39	19	20	<.05	'36'	TRENCH	PANEL N	1
15131	G40	19	20	<.05-0.10	'36'	TRENCH	PANEL S	1
15132	G41	20	21	<.05-0.80	'36'	TRENCH	PANEL N	1
15133	G42	20	21	<.05-[illegible]	'36'	TRENCH	PANEL S	1
15134	G43	21	22	<.05-[illegible]	'36'	TRENCH	PANEL N	1
15135	G44	21	22	<.05	'36'	TRENCH	PANEL S	1
15136	G45	22	23	<.05-0.10	'36'	TRENCH	PANEL N	1
15137	G46	22	23	<.05-0.10	'36'	TRENCH	PANEL S	1
15138	G47	23	24	<.05-0.10	'36'	TRENCH	PANEL N	1
15139	G48	23	24	<.05 (.14-+100)	'36'	TRENCH	PANEL S	1
15140	G49	24	25	<.05-0.20	'36'	TRENCH	PANEL N	1
15141	G50	24	25	<.05	'36'	TRENCH	PANEL S	1
15142	G51	25	26	<.05-0.20	'36'	TRENCH	PANEL N	1
15143	G52	25	26	<.05	'36'	TRENCH	PANEL S	1
15144	G53	26	27	<.05	'36'	TRENCH	PANEL N	1

15145	G54	26	27 - <.05	'36' TRENCH	PANEL S	1
15146	G55	27	28 - <.05	'36' TRENCH	PANEL N	1
15147	G56	27	28 - <.05 (.09 in +100)	'36' TRENCH	PANEL S	1
15148	G57	28	29 - <.05 - 0.20	'36' TRENCH	PANEL N	1
15149	G58	28	29 - <.05 - 0.10	'36' TRENCH	PANEL S	1
15150	G59	29	30 - <.05	'36' TRENCH	PANEL N	1
15151	G60	29	30 - <.05	'36' TRENCH	PANEL S	1
15152	G61	30	31 - <.05	'36' TRENCH	PANEL N	1
15153	G62	30	31 - <.05	'36' TRENCH	PANEL S	1
15154	G63	31	32 <.05	'36' TRENCH	PANEL N	1
15155	G64	31	32 - <.05	'36' TRENCH	PANEL S	1
15156	G65	32	33 - <.05	'36' TRENCH	PANEL N	1
15157	G66	32	33 <.05 - 0.10	'36' TRENCH	PANEL S	1
15158	G67	33	34 - <.05 - 0.10	'36' TRENCH	PANEL N	1
15159	G68	33	34 - <.05	'36' TRENCH	PANEL S	1
15160	G69	34	35 - <.05	'36' TRENCH	PANEL N	1
15161	G70	34	35 - <.05	'36' TRENCH	PANEL S	1

Expl. 061/86

Feb. 10 1986

J.B.Gammon

PN 111 files

T.E.Chandler

Progress Report -- PN 111 Trench sampling results.

All results have been received for the samples submitted to Lakefield Research in 1985. Two samples of vein wallrock, A40 and B51 were inadvertently omitted from the original shipment. These and the remaining chip and panel samples will be forwarded for analysis this month.

The assay results received to date have been compiled, appropriately grouped by contiguous sample location, and weighted by area to provide estimates of apparent grade. Area measurements were obtained directly from the detailed sample location plans. The weighting and composite grade calculations were expedited through use of the Lotus 123 spreadsheet program. Assays were taken at face value without "cutting" exceptionally high values. All of the data for both the "A" and "36" trenches are presented in the attached tables. For reference purposes copies of the sample location plans are also attached with colour coding of significant assay sites.

In general the results are disappointing. The "A" trench samples provided the most consistent elevated gold values with the "North Vein" carrying an average 67.29 grams per tonne over a length of 11.0 meters. Unfortunately this grade is restricted to the very narrow quartz vein which averages .02 meters in width. Inclusion of the immediate vein wallrock samples lowers the grade to 9.18 grams/tonne over a width of .16 meters. If one assumes a selective mining method with a minimum .90 meter mining width and an average of 1.0 g/t Au in the wallrocks the overall grade is further diluted to 2.45 grams/tonne. This represents the best case from the present sampling. Similar exercises on the "36" vein are less favourable.

The results of the forthcoming analyses on intervening and enclosing wallrock panels will allow a more complete assessment of the overall trench grades. Due to the presence of coarse particulate gold all vein and vein wall channels were previously assayed by total dissolution and cyanidation at Lakefield with extremely high analytical cost per sample (c. $165) A number of samples are currently being assayed by standard methods with the addition of screening for particulate gold. A subset of these samples will be forwarded to Lakefield for complete digestion. Comparison of the results should enable decision on the appropriate technique for subsequent samples.

The trench sampling program has confirmed the presence of gold within the quartz veins. However, at this time the indicated grade is insufficient to offset the extremely narrow vein widths. Further sampling in this area will have to consider blasting representative vein material on strike for a large bulk sample. Hopefully this will uncover pockets of higher grade similar to that originally found by Beau Pre at the "36" trench. To allow the veins to be economic these pockets will have to exist in sufficient concentrations and richness to overcome the expected high dilution. As an example if we take the "North Vein" of the "A" trench as representative and a likely "pocket" of high grade gold to mass 5 troy ounces then the necessary distribution can be calculated for any reqired grade. If a grade of 0.5 oz./ton is required over a minimum 0.9 meter mining width for ore then we must have an average of one such "pocket" for every 10.59 tonnes. This represents one pocket every 4.36 meters of strike length per vertical meter of vein using an S.G. of 2.7. Richer lodes could be more distantly spaced. Our present dilemma involves balancing our exploration funds against the costs of thoroughly bulk sampling the vein system for these elusive high grade pockets. Lakefield charges for bulk cyanidation are $7500 per ton. At this rate bulk sampling 20 meters strike length of vein to a depth of 1 meter and a width of .9 meter involves processing 48.6 tonnes for a cost of $364,500 exclusive of transport and collection expenses.

From the above it is clear that we will need to sample the veins from a geostatistical approach with more widely spaced and smaller samples to approach a "representative" bulk sample. This can commence during the completion of the surface mapping programme in the area of stripping between the "36" and "A" trenches. We will also be running a concurrent reconnaissance program to locate any other prospective targets outside the "Discovery" area.

FALCONBRIDGE

Memorandum Expl. 062/86

Date: Feb 10, 1986

To: J.B. Gammon

Copies to: Beau Pre Expl. Ltd., PN 111 files

From: T.E. Chandler

Subject: Progress Report -- PN 111 Trench sampling results.

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"A" TRENCH -- WEIGHTED ASSAY/COMPOSITE GRADE TABLE

SMPL #	AU G/T	AREA (M²)	WTD AU	LOCATION
A31	0.49	0.0206	0.0101 }	
A27	5.56	0.0200	0.1112 }	
A26	202.45	0.0168	3.4012 }	
A24	0.51	0.0159	0.0081 }	
A23	1.68	0.0212	0.0356 }	
A22	0.73	0.0204	0.0149 }-------	NORTH VEIN
A21	629.96	0.0150	9.4494 }	AVG GRADE 67.29 G/T AU
A17	1.58	0.0158	0.0249 }	
A10	6.33	0.0200	0.1266 }	
A5	32.98	0.0200	0.6596 }	
A2	14.37	0.0255	0.3664 }	
TOTALS		0.2112	14.2080	

SMPL #	AU G/T	AREA (M²)	WTD AU	LOCATION
A35	0.09	0.1200	0.0108 }	
A38	0.41	0.1050	0.0431 }	
A45	9.01	0.1020	0.9190 }	
A50	0.15	0.1040	0.0156 }	
A57	0.06	0.0840	0.0050 }	
A60	0.54	0.0700	0.0378 }	
A59	0.13	0.0650	0.0085 }	
A61	0.21	0.0680	0.0143 }	
A66	0.07	0.0520	0.0036 }-------	NORTH VEIN WALLROCKS
A70	0.08	0.0816	0.0065 }	AVG GRADE 1.19 G/T AU
A91	0.21	0.0500	0.0105 }	
A93	0.13	0.1300	0.0169 }	
A86	0.12	0.0600	0.0072 }	
A88	0.12	0.1200	0.0144 }	
A79	0.27	0.0700	0.0189 }	
A83	0.14	0.1000	0.0140 }	
A74	1.89	0.0800	0.1512 }	
A75	7.11	0.0750	0.5333 }	
TOTALS		1.5366	1.8306	

SMPL #	AU G/T	AREA (M²)	WTD AU	LOCATION
A32	74.88	0.0850	6.3648 }	
A30	2.13	0.0600	0.1278 }	
A29	0.88	0.0500	0.0440 }	
A28	1.67	0.0550	0.0919 }	
A25	2.76	0.0400	0.1104 }-------	SOUTH VEIN
A20	3.83	0.0309	0.1183 }	AVG GRADE 18.11 G/T AU
A19	0.15	0.0224	0.0034 }	
A18	7.52	0.0150	0.1128 }	
A16	0.24	0.0250	0.0060 }	
A15	15.46	0.0150	0.2319 }	
TOTALS		0.3983	7.2113	

A14	3.59	0.0080	0.0287 }	
A11	6.70	0.0124	0.0831 }-------	N. SPLAY (SOUTH VEIN)
A6	8.38	0.0300	0.2514 }	AVG GRADE 10.12 G/T AU
A1	14.24	0.0357	0.5084 }	
TOTALS		0.0861	0.8716	

A13	1.09	0.0070	0.0076 }	
A12	1.29	0.0070	0.0090 }-------	S. SPLAY (SOUTH VEIN)
A9	1.77	0.0102	0.0181 }	AVG GRADE 2.66 G/T AU
A4	4.56	0.0156	0.0711 }	
TOTALS		0.0398	0.1059	

A33	6.58	0.1200	0.7896 }	
A34	0.68	0.0800	0.0544 }	
A39	0.22	0.0600	0.0132 }	
A40		0.1000	0.0000 }	
A43	0.08	0.0800	0.0064 }	
A44	0.14	0.0600	0.0084 }	
A48	0.10	0.0900	0.0090 }	
A49	0.37	0.0600	0.0222 }-------	SOUTH VEIN WALLROCKS
A53	2.47	0.0700	0.1729 }	AVG GRADE 0.99 G/T AU
A54	0.27	0.0650	0.0176 }	
A62	0.55	0.0360	0.0198 }	
A63	0.95	0.0850	0.0808 }	
A64	0.09	0.1000	0.0090 }	
A65	0.22	0.1000	0.0220 }	
A67	0.23	0.0650	0.0150 }	
A90	0.90	0.1700	0.1530 }	
A94	0.19	0.0900	0.0171 }	
TOTALS		1.4310	1.4103	

A85	0.49	0.1300	0.0637 }	
A80	0.48	0.1000	0.0480 }-------	N. SPLAY (S. VEIN) WALLROCKS
A72	1.71	0.1030	0.1761 }	AVG GRADE 0.75 G/T AU
A76	0.50	0.1590	0.0795 }	
TOTALS		0.4920	0.3673	

A89	0.65	0.1130	0.0735 }-------	S. SPLAY (S. VEIN) WALLROCKS
A81	0.89	0.0600	0.0534 }	AVG GRADE 0.73 G/T AU
TOTALS		0.1730	0.1269	

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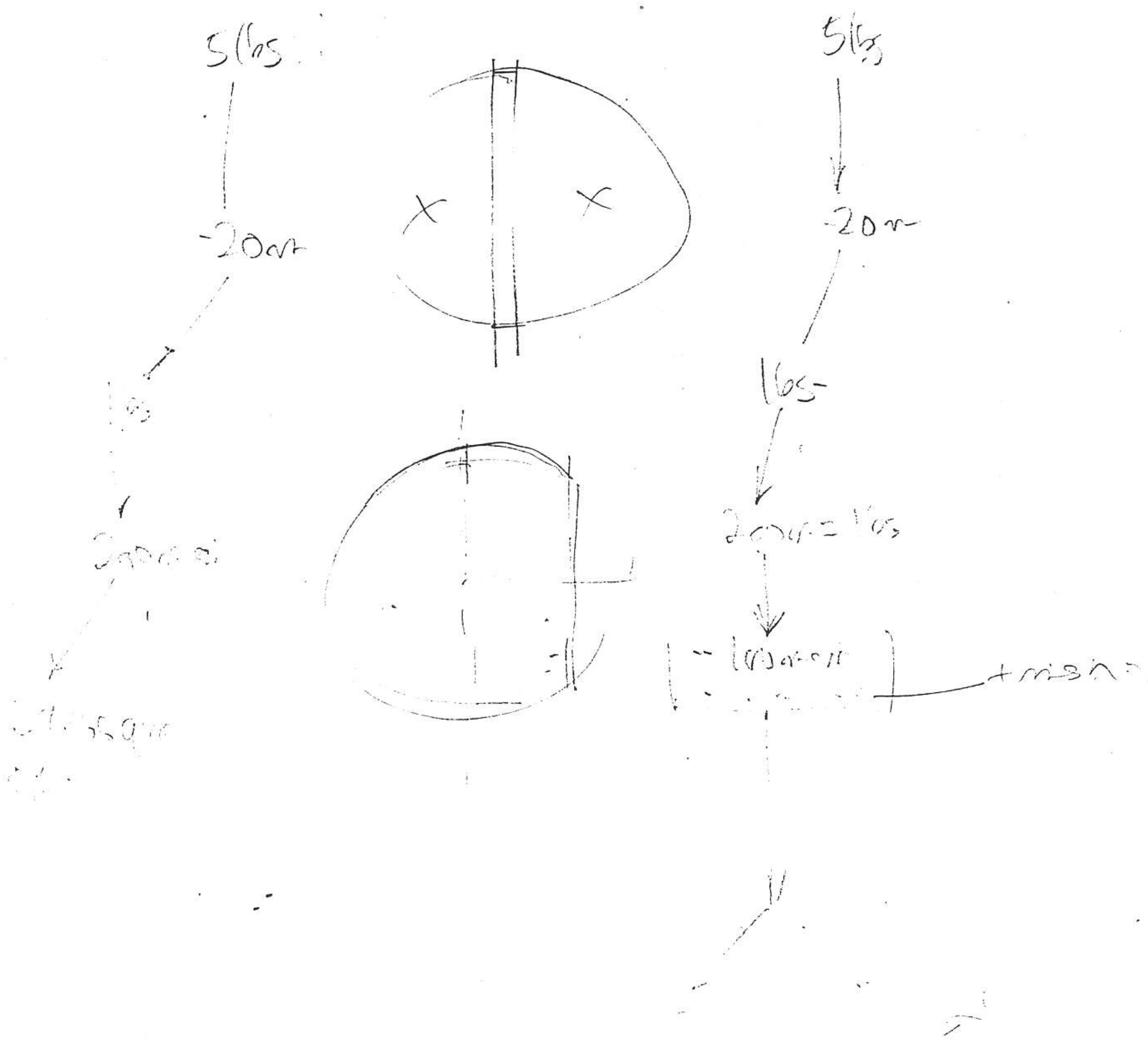
33.38
divide all by 4
grade 0.27
oz T[illegible]

"A" TRENCH COMPOSITE GRADES--SUMMARY

DESCRIPTION	AU G/T	(m) LENGTH	(m) AVG WIDTH
NORTH VEIN	67.29	11.0	0.02
N.VEIN + WALLROCKS	9.18	11.0	0.16
S.VEIN	18.11	9.0	0.04
S. VEIN + WALLROCKS	4.71	9.0	0.20
S. VEIN + N. SPLAY	16.69	12.0	0.04
S. VEIN + N. SPLAY + WALLROCKS	4.10	12.0	0.20
S. VEIN + S. SPLAY	16.70	12.0	0.04
S. VEIN + S. SPLAY + WALLROCKS	4.34	12.0	0.17

****



"36" TRENCH -- WEIGHTED ASSAY/COMPOSITE GRADE TABLE

SMPL #	AU G/T	AREA(M²)	WTD. AU	LOCATION
B1	0.12	0.0424	0.0051 }	
B4	0.12	0.0500	0.0060 }	
B7	0.55	0.0850	0.0468 }	
B10	0.03	0.0700	0.0021 }	
B13	0.04	0.0611	0.0024 }	
B16	0.11	0.0350	0.0039 }	
B19	0.05	0.0300	0.0015 }	WEST "36" VEIN
B22	0.07	0.0500	0.0035 }	AVG GRADE 0.16
B25	0.16	0.0550	0.0088 }	
B28	0.35	0.0625	0.0219 }	
B31	0.18	0.0500	0.0090 }	
B34	0.11	0.0450	0.0050 }	
B37	0.16	0.0450	0.0072 }	
B40	0.06	0.0450	0.0027 }	
B43	0.04	0.0550	0.0022 }	
TOTALS		0.7810	0.1280	
B46	19.60	0.0425	0.8330 }	
B49	0.41	0.1460	0.0599 }	
B52	0.40	0.0449	0.0180 }	
B55	0.04	0.0500	0.0020 }	CENTRE "36" VEIN
B58	3.79	0.0400	0.1516 }	AVG GRADE 5.30
B61	16.79	0.0550	0.9235 }	
B64	5.63	0.0600	0.3378 }	
TOTALS		0.4384	2.3257	
B67	0.11	0.0500	0.0055 }	
B70	0.04	0.0500	0.0020 }	
B73	0.20	0.0600	0.0120 }	
B76	0.34	0.0650	0.0221 }	
B79	0.04	0.0600	0.0024 }	
B82	0.06	0.0520	0.0031 }	
B85	0.04	0.0767	0.0031 }	EAST "36" VEIN
B88	0.14	0.0959	0.0134 }	AVG GRADE 0.30
B91	0.13	0.0738	0.0096 }	
B94	0.08	0.0789	0.0063 }	
B97	0.04	0.0636	0.0025 }	
B100	1.02	0.0700	0.0714 }	
B103	0.80	0.1776	0.1421 }	
TOTALS		0.9735	0.2955	
B2	0.88	0.0473	0.0416 }	
B3	0.06	0.0530	0.0032 }	
B5	0.10	0.0550	0.0055 }	

B6	0.25	0.0600	0.0150	}
B8	0.04	0.0500	0.0020	}
B9	0.11	0.0500	0.0055	}
B11	0.04	0.0450	0.0018	}
B12	0.08	0.0400	0.0032	}
B14	0.06	0.0500	0.0030	}
B15	0.36	0.0550	0.0198	}
B17	0.08	0.0450	0.0036	}
B18	0.07	0.0550	0.0039	}
B20	0.04	0.0450	0.0018	}
B21	0.05	0.0450	0.0023	}
B23	0.08	0.0500	0.0040	}------- WEST "36" VEIN WALLROCKS
B24	0.05	0.0450	0.0023	} AVG GRADE 0.33
B26	0.09	0.0550	0.0050	}
B27	0.07	0.0400	0.0028	}
B29	0.25	0.0500	0.0125	}
B30	0.08	0.0400	0.0032	}
B32	0.07	0.0450	0.0032	}
B33	0.15	0.0450	0.0068	}
B35	0.10	0.0550	0.0055	}
B36	6.18	0.0500	0.3090	}
B38	0.09	0.0600	0.0054	}
B39	0.07	0.0450	0.0032	}
B41	0.08	0.0600	0.0048	}
B42	0.04	0.0500	0.0020	}
B44	0.06	0.0550	0.0033	}
B45	0.23	0.0500	0.0115	}
TOTALS		1.4903	0.4963	

B47	1.47	0.0528	0.0776	}
B48	4.16	0.0432	0.1797	}
B50	4.61	0.0583	0.2688	}
B51		0.0497	0.0000	}
B53	0.07	0.0400	0.0028	}
B54	0.09	0.0450	0.0041	}
B56	0.18	0.0450	0.0081	}------- CENTER "36" VEIN WALLROCKS
B57	0.05	0.0650	0.0033	} AVG GRADE 1.04
B59	0.54	0.0450	0.0243	}
B60	0.08	0.0450	0.0036	}
B62	0.10	0.0450	0.0045	}
B63	0.27	0.0400	0.0108	}
B65	2.28	0.0450	0.1026	}
B66	0.25	0.0550	0.0138	}
TOTALS		0.6740	0.7038	

B68	0.20	0.0450	0.0090	}
B69	0.07	0.0500	0.0035	}
B71	0.18	0.0300	0.0054	}
B72	2.28	0.0500	0.1140	}
B74	0.04	0.0400	0.0016	}
B75	0.13	0.0550	0.0072	}

B77	0.06	0.0350	0.0021 }	
B78	0.04	0.0450	0.0018 }	
B80	0.17	0.0300	0.0051 }	
B81	0.12	0.0500	0.0060 }	
B83	0.03	0.0350	0.0011 }	
B84	0.07	0.0550	0.0039 }	
B86	0.74	0.0400	0.0296 }-------	EAST "36" VEIN WALLROCKS
B87	0.08	0.0500	0.0040 }	AVG GRADE 0.22
B89	0.06	0.0371	0.0022 }	
B90	0.15	0.0636	0.0095 }	
B92	0.05	0.0350	0.0018 }	
B93	0.12	0.0550	0.0066 }	
B95	0.06	0.0408	0.0024 }	
B96	0.15	0.0510	0.0077 }	
B98	0.04	0.0477	0.0019 }	
B99	0.05	0.0371	0.0019 }	
B101	0.06	0.0400	0.0024 }	
B102	0.04	0.0500	0.0020 }	
B104	0.34	0.0370	0.0126 }	
B105	0.10	0.0444	0.0044 }	
TOTALS		1.1037	0.2405	

****

"36" TRENCH COMPOSITE GRADES--SUMMARY

DESCRIPTION	AU G/T	(m) LENGTH	(m) AVG WIDTH
W. PART '36' VEIN	0.16	15.0	0.05
MIDDLE '36' VEIN	5.30	7.0	0.06
E. PART '36' VEIN	0.30	12.7	0.08
OVERALL '36' VEIN	1.25	34.7	0.06
W. PART '36' VEIN + WALLRX	0.27	15.0	0.15
MIDDLE '36' VEIN + WALLRX	2.72	7.0	0.16
E. PART '36' VEIN + WALLRX	0.26	12.7	0.17
OVERALL '36' VEIN + WALLRX	0.77	34.7	0.16

****

B77	0.06	0.0350	0.0021	)
B78	0.04	0.0450	0.0018	)
B80	0.17	0.0300	0.0051	)
B81	0.12	0.0500	0.0060	)
B83	0.03	0.0350	0.0011	)
B84	0.07	0.0550	0.0039	)
B86	0.74	0.0400	0.0296	)------- EAST "36" VEIN WALLROCKS
B87	0.08	0.0500	0.0040	) AVG GRADE 0.22
B89	0.06	0.0371	0.0022	)
B90	0.15	0.0636	0.0095	)
B92	0.05	0.0350	0.0018	)
B93	0.12	0.0550	0.0066	)
B95	0.06	0.0408	0.0024	)
B96	0.15	0.0510	0.0077	)
B98	0.04	0.0477	0.0019	)
B99	0.05	0.0371	0.0019	)
B101	0.06	0.0400	0.0024	)
B102	0.04	0.0500	0.0020	)
B104	0.34	0.0370	0.0126	)
B105	0.10	0.0444	0.0044	)
TOTALS		1.1037	0.2405	

****

"36" TRENCH COMPOSITE GRADES--SUMMARY

DESCRIPTION	AU G/T	(m) LENGTH	(m) AVG WIDTH
W. PART '36' VEIN	0.16	15.0	0.05
MIDDLE '36' VEIN	5.30	7.0	0.06
E. PART '36' VEIN	0.30	12.7	0.08
OVERALL '36' VEIN	1.25	34.7	0.06
W. PART '36' VEIN + WALLRX	0.27	15.0	0.15
MIDDLE '36' VEIN + WALLRX	2.72	7.0	0.16
E. PART '36' VEIN + WALLRX	0.26	12.7	0.17
OVERALL '36' VEIN + WALLRX	0.77	34.7	0.16

****

SMPL #	AU G/T	AREA (M)	WTD AU	
A31	0.49	0.0206	0.0101)	
A27	5.56	0.0200	0.1112)	
A26	202.45	0.0168	3.4012)	
A24	0.51	0.0159	0.0081)	
A23	1.68	0.0212	0.0356)	
A22	0.73	0.0204	0.0149)-------	NORTH VEIN
A21	629.96	0.0150	9.4494)	AVG GRADE 67.29 G/T AU
A17	1.58	0.0158	0.0249)	
A10	6.33	0.0200	0.1266)	
A5	32.98	0.0200	0.6596)	
A2	14.37	0.0255	0.3664)	
TOTALS		0.2112	14.2080	

A35	0.09	0.1200	0.0108)	
A38	0.41	0.1050	0.0431)	
A45	9.01	0.1020	0.9190)	
A50	0.15	0.1040	0.0156)	
A57	0.06	0.0840	0.0050)	
A60	0.54	0.0700	0.0378)	
A59	0.13	0.0650	0.0085)	
A61	0.21	0.0680	0.0143)	
A66	0.07	0.0520	0.0036)-------	NORTH VEIN WALLROCKS
A70	0.08	0.0816	0.0065)	AVG GRADE 1.19 G/T AU
A91	0.21	0.0500	0.0105)	
A93	0.13	0.1300	0.0169)	
A86	0.12	0.0600	0.0072)	
A88	0.12	0.1200	0.0144)	
A79	0.27	0.0700	0.0189)	
A83	0.14	0.1000	0.0140)	
A74	1.89	0.0800	0.1512)	
A75	7.11	0.0750	0.5333)	
TOTALS		1.5366	1.8306	

A32	74.88	0.0850	6.3648)	
A30	2.13	0.0600	0.1278)	
A29	0.88	0.0500	0.0440)	
A28	1.67	0.0550	0.0919)	
A25	2.76	0.0400	0.1104)-------	SOUTH VEIN
A20	3.83	0.0309	0.1183)	AVG GRADE 18.11 G/T AU
A19	0.15	0.0224	0.0034)	
A18	7.52	0.0150	0.1128)	
A16	0.24	0.0250	0.0060)	
A15	15.46	0.0150	0.2319)	
TOTALS		0.3983	7.2113	

A14	3.59	0.0080	0.0287)	
A11	6.70	0.0124	0.0831)-------	N. SPLAY (SOUTH VEIN)
A6	8.38	0.0300	0.2514)	AVG GRADE 10.12 G/T AU
A1	14.24	0.0357	0.5084)	
TOTALS		0.0861	0.8716	

```
A12     1.29   0.0070   0.0090 }------- S. SPLAY (SOUTH VEIN)
A9      1.77   0.0102   0.0181 }        AVG GRADE    2.66 G/T AU
A4      4.56   0.0156   0.0711 }

TOTALS         0.0398   0.1058
----------------------------------


A33     6.58   0.1200   0.7896 }
A34     0.68   0.0800   0.0544 }
A39     0.22   0.0600   0.0132 }
A40            0.1000   0.0000 }
A43     0.08   0.0800   0.0064 }
A44     0.14   0.0600   0.0084 }
A48     0.10   0.0900   0.0090 }
A49     0.37   0.0600   0.0222 }------- SOUTH VEIN WALLROCKS
A53     2.47   0.0700   0.1729 }        AVG GRADE    0.99 G/T AU
A54     0.27   0.0650   0.0176 }
A62     0.55   0.0360   0.0198 }
A63     0.95   0.0850   0.0808 }
A64     0.09   0.1000   0.0090 }
A65     0.22   0.1000   0.0220 }
A67     0.23   0.0650   0.0150 }
A90     0.90   0.1700   0.1530 }
A94     0.19   0:0900   0.0171 }

TOTALS         1.4310   1.4103
----------------------------------

A85     0.49   0.1300   0.0637 }
A80     0.48   0.1000   0.0480 }------- N. SPLAY (S. VEIN) WALLROCK
A72     1.71   0.1030   0.1761 }        AVG GRADE    0.75 G/T AU
A76     0.50   0.1590   0.0795 }

TOTALS         0.4920   0.3673
----------------------------------

A89     0.65   0.1130   0.0735 }------- S. SPLAY (S. VEIN) WALLROCK
A81     0.89   0.0600   0.0534 }        AVG GRADE    0.73 G/T AU

TOTALS         0.1730   0.1269
----------------------------------
*********************************************************************
COMPOSITE GRADES--SUMMARY                      (m)      (m)
DESCRIPTION                        AU G/T   LENGTH  AVG WIDTH

NORTH VEIN                          67.29     11.0      0.02
N.VEIN + WALLROCKS                   9.18     11.0      0.16

S.VEIN                              18.11      9.0      0.04
S. VEIN + WALLROCKS                  4.71      9.0      0.20

S. VEIN + N. SPLAY                  16.69     12.0      0.04
S. VEIN + N. SPLAY + WALLROCKS       4.10     12.0      0.20

S. VEIN + S. SPLAY                  16.70     12.0      0.04
S. VEIN + S. SPLAY + WALLROCKS       4.34     12.0      0.17

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[illegible] TRENCH MIX 5

{?}~{DOWN
/XGG1~

A31	0.49	0.0206	0.0101
A27	5.56	0.0200	0.1112
A26	202.45	0.0168	3.4012
A24	0.51	0.0159	0.0081
A23	1.68	0.0212	0.0356
A22	0.73	0.0204	0.0149
A21	629.96	0.0150	9.4494
A17	1.58	0.0158	0.0249
A10	6.33	0.0200	0.1266
A5	32.98	0.0200	0.6596
A2	14.37	0.0255	0.3664
TOTALS		0.2112	14.2080
AVG GRADE	67.29		

A35	0.09	0.1200	0.0108
A38	0.41	0.1050	0.0431
A45	9.01	0.1020	0.9190
A50	0.15	0.1040	0.0156
A57	0.06	0.0840	0.0050
A60	0.54	0.0700	0.0378
A59	0.13	0.0650	0.0085
A61	0.21	0.0680	0.0143
A66	0.07	0.0520	0.0036
A70	0.08	0.0816	0.0065
A91	0.21	0.0500	0.0105
A93	0.13	0.1300	0.0169
A86	0.12	0.0600	0.0072
A88	0.12	0.1200	0.0144
A79	0.27	0.0700	0.0189
A83	0.14	0.1000	0.0140
A74	1.89	0.0800	0.1512
A75	7.11	0.0750	0.5333
TOTALS		1.5366	1.8306
AVG GRADE	1.19		

A32	74.88	0.0850	6.3648
A30	2.13	0.0600	0.1278
A29	0.88	0.0500	0.0440
A28	1.67	0.0550	0.0919
A25	2.76	0.0400	0.1104
A20	3.83	0.0309	0.1183
A19	0.15	0.0224	0.0034
A18	7.52	0.0150	0.1128
A16	0.24	0.0250	0.0060
A15	15.46	0.0150	0.2319
TOTALS		0.3983	7.2113
AVG GRADE	18.11		

[illegible]	[illegible]	[illegible]	[illegible]

[illegible]	[illegible]	[illegible]	[illegible]
A1	14.24	0.0357	0.5084
TOTALS		0.0861	0.8716
AVG GRADE	10.12		

A13	1.09	0.0070	0.0076
A12	1.29	0.0070	0.0090
A9	1.77	0.0102	0.0181
A4	4.56	0.0156	0.0711
TOTALS		0.0398	0.1058
AVG GRADE	2.66		

A33	6.58	0.1200	0.7896
A34	0.68	0.0800	0.0544
A39	0.22	0.0600	0.0132
A40		0.1000	0.0000
A43	0.08	0.0800	0.0064
A44	0.14	0.0600	0.0084
A48	0.10	0.0900	0.0090
A49	0.37	0.0600	0.0222
A53	2.47	0.0700	0.1729
A54	0.27	0.0650	0.0176
A62	0.55	0.0360	0.0198
A63	0.95	0.0850	0.0808
A64	0.09	0.1000	0.0090
A65	0.22	0.1000	0.0220
A67	0.23	0.0650	0.0150
A90	0.90	0.1700	0.1530
A94	0.19	0.0900	0.0171
TOTALS		1.4310	1.4103
AVG GRADE	0.99		

A85	0.49	0.1300	0.0637
A80	0.48	0.1000	0.0480
A72	1.71	0.1030	0.1761
A76	0.50	0.1590	0.0795
TOTALS		0.4920	0.3673
AVG GRADE	0.75		

A89	0.65	0.1130	0.0735
A81	0.89	0.0600	0.0534
TOTALS		0.1730	0.1269
AVG GRADE	0.73		

AVERAGE COMPOSITE GRADES	AU G/T	LENGTH	AVG WIDTH
S. VEIN + N. SPLAY	16.69	12.0	0.04
S. VEIN + S. SPLAY	16.70	12.0	0.04
S. VEIN + WALLROCKS	4.71	9.0	0.20
N. SPLAY + WALLROCKS	2.14	3.5	0.17
S. SPLAY + WALLROCKS	1.09	3.0	0.07
S. VEIN + N. SPLAY + WALLROCKS	4.10	12.0	0.20
S. VEIN + S. SPLAY + WALLROCKS	4.34	12.0	0.17
N.VEIN + WALLROCKS	9.18	11.0	0.16

SMPL #	AU G/T	AREA(M)	WTD. AU	
B1	0.12	0.0424	0.0051 }	
B4	0.12	0.0500	0.0060 }	
B7	0.55	0.0850	0.0468 }	
B10	0.03	0.0700	0.0021 }	
B13	0.04	0.0611	0.0024 }	
B16	0.11	0.0350	0.0039 }	
B19	0.05	0.0300	0.0015 }-------	WEST "36" VEIN
B22	0.07	0.0500	0.0035 }	AVG GRADE 0.16
B25	0.16	0.0550	0.0088 }	
B28	0.35	0.0625	0.0219 }	
B31	0.18	0.0500	0.0090 }	
B34	0.11	0.0450	0.0049 }	
B37	0.16	0.0450	0.0072 }	
B40	0.06	0.0450	0.0027 }	
B43	0.04	0.0550	0.0022 }	
TOTALS		0.7810	0.1280	

B46	19.60	0.0425	0.8330 }	
B49	0.41	0.1460	0.0599 }	
B52	0.40	0.0449	0.0180 }	
B55	0.04	0.0500	0.0020 }-------	CENTRE "36" VEIN
B58	3.79	0.0400	0.1516 }	AVG GRADE 5.30
B61	16.79	0.0550	0.9235 }	
B64	5.63	0.0600	0.3378 }	
TOTALS		0.4384	2.3257	

B67	0.11	0.0500	0.0055 }	
B70	0.04	0.0500	0.0020 }	
B73	0.20	0.0600	0.0120 }	
B76	0.34	0.0650	0.0221 }	
B79	0.04	0.0600	0.0024 }	
B82	0.06	0.0520	0.0031 }	
B85	0.04	0.0767	0.0031 }-------	EAST "36" VEIN
B88	0.14	0.0959	0.0134 }	AVG GRADE 0.30
B91	0.13	0.0738	0.0096 }	
B94	0.08	0.0789	0.0063 }	
B97	0.04	0.0636	0.0025 }	
B100	1.02	0.0700	0.0714 }	
B103	0.80	0.1776	0.1421 }	
TOTALS		0.9735	0.2955	

B2	0.88	0.0473	0.0416 }
B3	0.06	0.0530	0.0032 }
B5	0.10	0.0550	0.0055 }
B6	0.25	0.0600	0.0150 }
B8	0.04	0.0500	0.0020 }
B9	0.11	0.0500	0.0055 }
B11	0.04	0.0450	0.0018 }
[illegible]	[illegible]	[illegible]	[illegible]

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B17       0.08   0.0450   0.0036 }
B18       0.07   0.0550   0.0039 }
B20       0.04   0.0450   0.0018 }
B21       0.05   0.0450   0.0023 }
B23       0.08   0.0500   0.0040 }------- WEST "36" VEIN WAL
B24       0.05   0.0450   0.0023 }        AVG GRADE    0.33
B26       0.09   0.0550   0.0049 }
B27       0.07   0.0400   0.0028 }
B29       0.25   0.0500   0.0125 }
B30       0.08   0.0400   0.0032 }
B32       0.07   0.0450   0.0032 }
B33       0.15   0.0450   0.0068 }
B35       0.10   0.0550   0.0055 }
B36       6.18   0.0500   0.3090 }
B38       0.09   0.0600   0.0054 }
B39       0.07   0.0450   0.0032 }
B41       0.08   0.0600   0.0048 }
B42       0.04   0.0500   0.0020 }
B44       0.06   0.0550   0.0033 }
B45       0.23   0.0500   0.0115 }

TOTALS           1.4903   0.4963 .
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B47       1.47   0.0528   0.0776 }
B48       4.16   0.0432   0.1797 }
B50       4.61   0.0583   0.2688 }
B51              0.0497   0.0000 }
B53       0.07   0.0400   0.0028 }
B54       0.09   0.0450   0.0041 }
B56       0.18   0.0450   0.0081 }------- CENTER "36" VEIN W
B57       0.05   0.0650   0.0033 }        AVG GRADE    1.04
B59       0.54   0.0450   0.0243 }
B60       0.08   0.0450   0.0036 }
B62       0.10   0.0450   0.0045 }
B63       0.27   0.0400   0.0108 }
B65       2.28   0.0450   0.1026 }
B66       0.25   0.0550   0.0138 }

TOTALS           0.6740   0.7038
--------------------------------


B68       0.20   0.0450   0.0090 }
B69       0.07   0.0500   0.0035 }
B71       0.18   0.0300   0.0054 }
B72       2.28   0.0500   0.1140 }
B74       0.04   0.0400   0.0016 }
B75       0.13   0.0550   0.0072 }
B77       0.06   0.0350   0.0021 }
B78       0.04   0.0450   0.0018 }
B80       0.17   0.0300   0.0051 }
B81       0.12   0.0500   0.0060 }
B83       0.03   0.0350   0.0011 }
B84       0.07   0.0550   0.0039 }
B86       0.74   0.0400   0.0296 }------- EAST "36" VEIN WAL
B87       0.08   0.0500   0.0040 }        AVG GRADE    0.22
B89       0.06   0.0371   0.0022 }
B90       0.15   0.0636   0.0095 }
B92       0.05   0.0350   0.0018 }
B93       0.12   0.0550   0.0066 }
B95       0.06   0.0408   0.0024 }
B96       0.15   0.0510   0.0076 }
B98       0.04   0.0477   0.0019 }
[illegible]
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B104	0.34	0.0370	0.0126)
B105	0.10	0.0444	0.0044)

TOTALS	1.1037	0.2405

****

COMPOSITE GRADES--SUMMARY

DESCRIPTION	AU G/T	(m) LENGTH	(m) WIDTH
W. PART '36' VEIN	0.16	15.0	0.05
MIDDLE '36' VEIN	5.30	7.0	0.06
E. PART '36' VEIN	0.30	12.7	0.08
OVERALL '36' VEIN	1.25	34.7	0.06
W. PART '36' VEIN + WALLRX	0.27	15.0	0.15
MIDDLE '36' VEIN + WALLRX	2.72	7.0	0.16
E. PART '36' VEIN + WALLRX	0.26	12.7	0.17
OVERALL '36' VEIN + WALLRX	0.77	34.7	0.16

****

APPENDIX V

Valentine Discovery Zone Drilling - Core Logs and Assays

VALENTINE GOLD CORP
SUMMARY LOG

LOGGED BY Dvane R Lucas

HOLE NO. 87-1

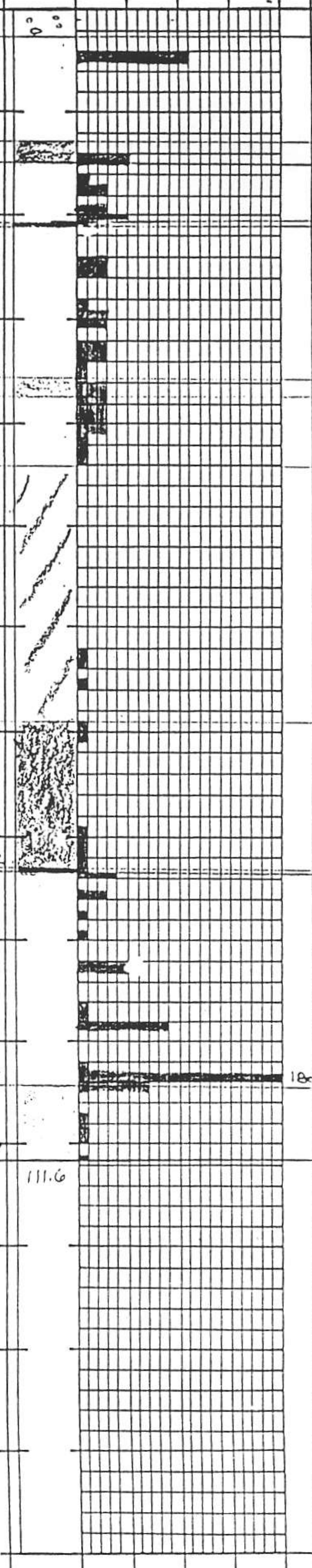
% OX	% CaCO	% SUL	Sample No	DEPTH	GRAPHIC	Au in ppb (0 – 50 – 100)	DESCRIPTION
				0 – 1.7			Overburden
			14201				Meta sandstone
				14.6			Biotite schist
				42.0			Meta sandstone
				50m			
				62.1			← Fault
				62.3			Metasandstone
				76.3			Biotite schist/ metasandstone
				93.1			← Quart vein
				93.4			Biotite schist/ metasandstone
			[illegible]	100m / 100.3			
				150m			

PAGE 1 OF 1
DATE:

LITHOLOGIC LOG

LOGGED BY: DL

(%) OX	(%) CAR	(%) SUL	(%) CLY	(%) SFD	(%) SVN	Sample No	Depth	Graphic	Au in ppb (0 – 50 – 100)	Unit	Description HQ
							0 – 2.9				Overburden
						14106	2.9 – 12.9				Meta-Sandstone
							12.9 – 14.6				Bio Schist
							14.6 – 20.8				Meta-Sandstone
							20.8 – 21.1				
							21.1 – 35.8				Meta Sandstone
							35.8 – 37.2				Biotite Schist
							37.2 – 44.1				Meta Sandstone
							44.1 – 69.6 (50m)				Meta sd/Schist
							69.6 – 83.2				Schist
							83.2				Fault
							83.2 – 104.5 (100m)				Metasandstone
						14216	104.5 – 111.6				Amphibolite
							150m				

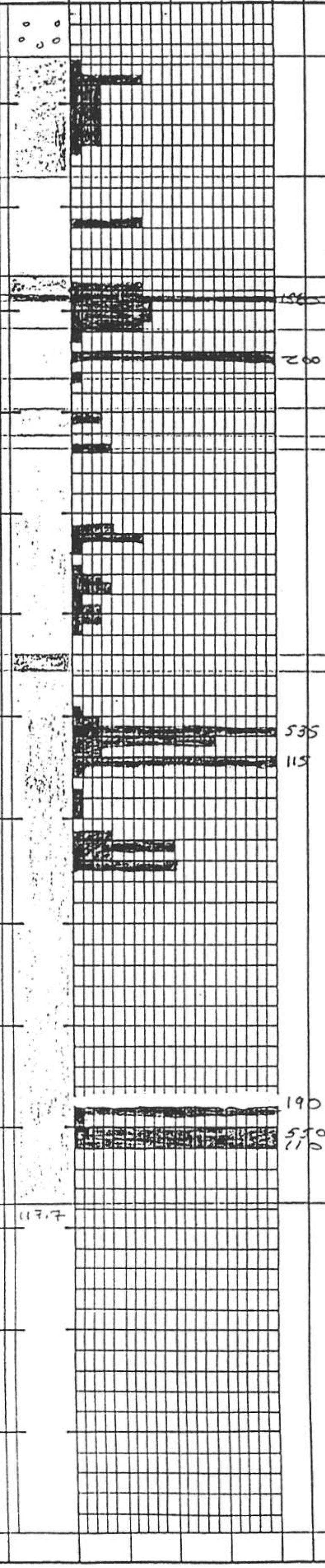


VALENTINE GOLD CORP.
LITHOLOGIC LOG

PAGE 1 OF 1
DATE:
HOLE NO.:
LOGGED BY: DL

Description: HQ

(%) OX	(%) CAR	(%) SUL	(%) CLY	(%) SFD	(%) SVN	Sample No	Depth	Unit	Description
							0 – 5.5		Overburden
						3521	5.5 – 17.1		Biotite Schist
							17.1 – 26.8		Meta-Sandstone
							26.8 – 28.5		Bio - Schist
							28.5 – 29.1		
							29.1 – 31.8		Meta - Sandstone
							31.8 – 36.7		Amphibolite
							36.7 – 39.8		Meta-Sandstone
							39.8 – 42.1		Amphibolite
							42.1 – 43.8		Meta Sandstone
							43.8 –		Amphibolite
									Cataclastic
							– 117.7		Amphibolite

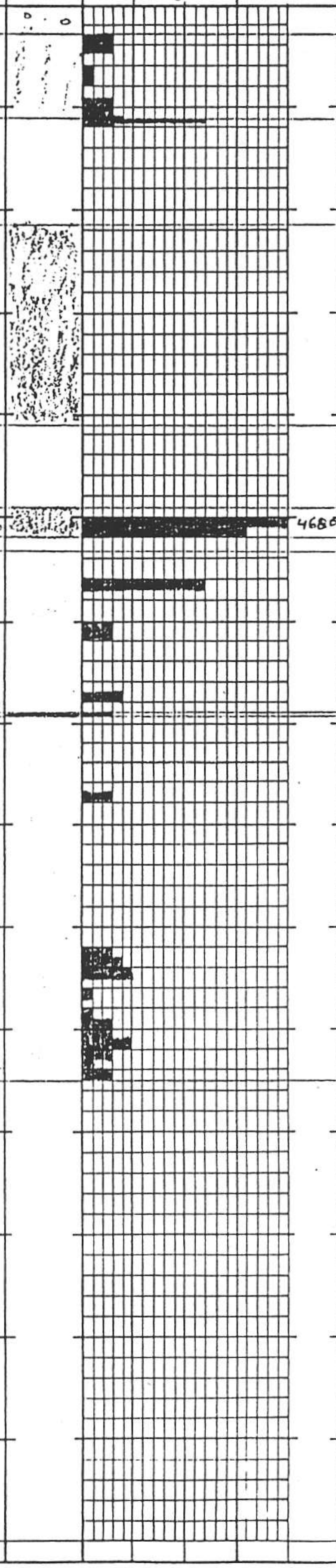


◆ VALENTINE GOLD CORP
SUMMARY LOG

LOGGED BY DRL

HOLE NO. 87-4

% OX	% CaCO	% SUL		DEPTH	GRAPHIC	Au in ppb (0, 50, 100)	DESCRIPTION
				0 – 3.1			Overburden
				3.1 – 10.7			Biotite schist / metasandstone
				10.7			Fault
				10.7 – 21.6			Metasandstone
				21.6 – 41.1			Biotite Schist
				41.1 – 49.1			Metasandstone
				49.1 – 52.0 (50m)		4680	Biotite schist
				52.0 – 53.6			Metasandstone
				53.6 – 69.0			Amphibolite
				69.0 – 69.3			Quartz vein
				69.3 – 105.5 (100 m)			Amphibolite
				150m			

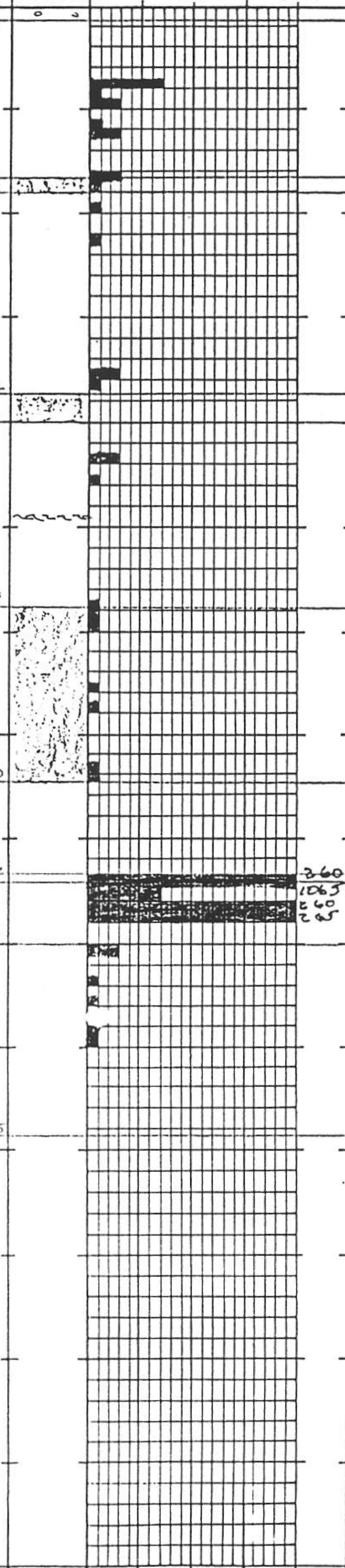


LOGGED BY DRL

VALENTINE GOLD CORP
SUMMARY LOG

HOLE NO. 87-5

% OX	% CaCO	% SUL		DEPTH	GRAPHIC	Au in ppb (0 – 50 – 100)	DESCRIPTION
				0 – 1.5			Overburden
				1.5 – 16.6			Metasandstone
				16.6 – 18.0			Biotite schist
				18.0 – 37.2			Metasandstone
				37.2 – 40.0			Biotite schist
				40.0 – 57.9			Metasandstone
				50m			
				57.9 – 75.0			Biotite schist
				75.0 – 83.6			Metasandstone
				83.6 – 84.1			Fault
				84.1 – 90.0			Metasandstone
				90.0 – 108.5			Amphibolite
				100 m			
				108.5			
				150m			

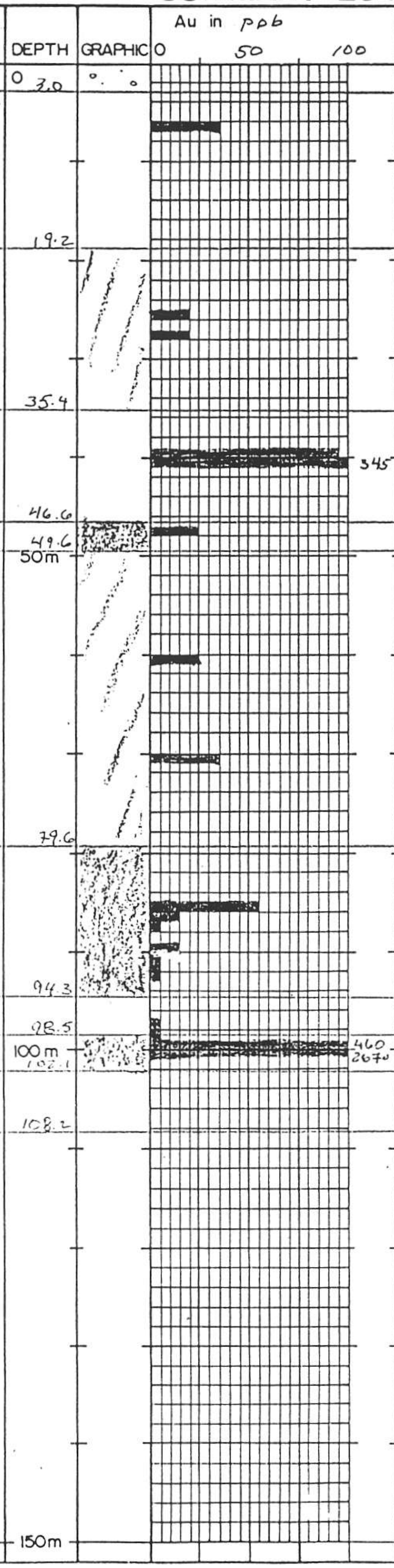


LOGGED BY P. Mazacek

VALENTINE GOLD CORP
SUMMARY LOG

HOLE NO. 87-6

% OX	% CaCO	% SUL	[illegible]	DEPTH	GRAPHIC	Au in ppb (0 – 50 – 100)	DESCRIPTION
				0 – 3.0			Overburden
				3.0 – 19.2			Metasandstone
				19.2 – 35.4			Biotite schist/ metasandstone
				35.4 – 46.6		345	Metasandstone/
				46.6 – 49.6			Biotite Schist
				49.6 – 79.6			Biotite schist /Metasandstone
				79.6 – 94.3			Biotite schist
				94.3 – 98.5			Metasandstone
				98.5 – 102.1		460, 2670	Biotite schist
				102.1 – 108.2			Metasandstone



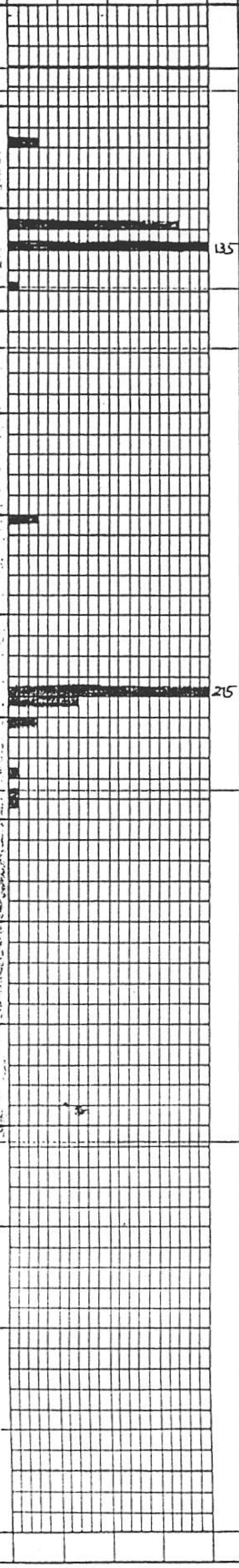
PAGE 1 OF 1
DATE: ______

VALENTINE GOLD CORP.

LITHOLOGIC LOG

HOLE NO. 07-1
LOGGED BY: DL

(%) OX	(%) CAR	(%) SUL	(%) CLY	(%) SFD	(%) SVN	Sample No	Depth	Graphic	Au in ppb (0 – 50 – 100)	Unit	Description HQ
							0 – 6.1	o o o o			Overburden
						85632	8.5				Metasandst
							27.7		135		Amphibolite
							33.5				Meta sandstone
							50m / 77.2		215		Amphibolite
						[illegible]	100m	116			Biotite Gneiss
							150m				

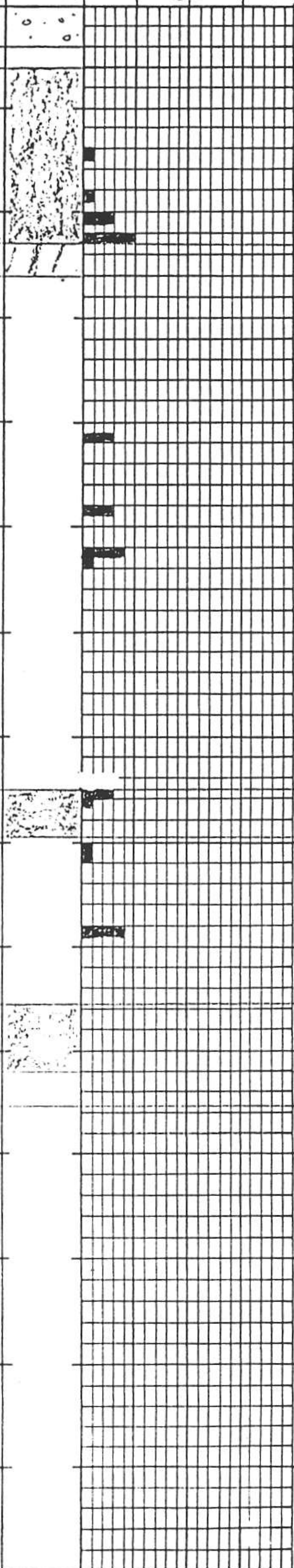


◆ VALENTINE GOLD CORP
SUMMARY LOG

LOGGED BY P. M[illegible]

HOLE NO. 87-8

% OX	% CaCO	% SUL	No.	DEPTH	GRAPHIC	Au in ppb (0 – 50 – 100)	DESCRIPTION
				0 – 4.0			Overburden
			85737	6.0			Metasandstone
				23.2			Biotite Schist
				26.0			Biotite schist / Meta Sd
				50m			Metasandstone
				75.4			
				79.3			Biotite schist
				95.6			Metasandstone
				100 m			Biotite schist
				102.[illegible]			
				105.5			Metasandstone
				150m			



PAGE 1 OF 1
DATE: 28 June 1987

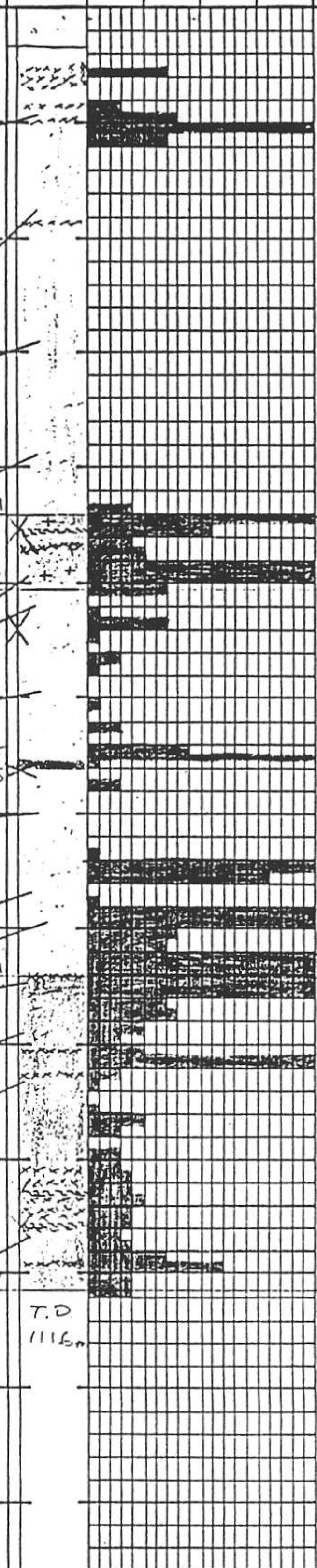
VALENTINE GOLD CORP.
LITHOLOGIC LOG

HOLE NO. [illegible]
LOGGED BY: [illegible]

Au In (ppb) 0 — 50 — 100

Description HQ core

(%) OX	(%) CAR	(%) SUL	(%) CLY	(%) SFD	(%) SVN	No	Depth	Unit	Description
1%	3-5	tr-1	0-tr	—	tr-1	85897	0		AMPHIBOLITE
	tr	tr	1-3	—	—	—	44.1	520	QUARTZ DIORITE DIKE
	3-5	tr-1	—	—	1%		50m	175, 380	AMPHIBOLITE
							65.5	560	QUARTZ VEIN
							66.0	105, 935, 165, 1665, 465, 505	AMPHIBOLITE
							84.1	135	BIOTITE SCHIST
						85948	100m, 111.6		



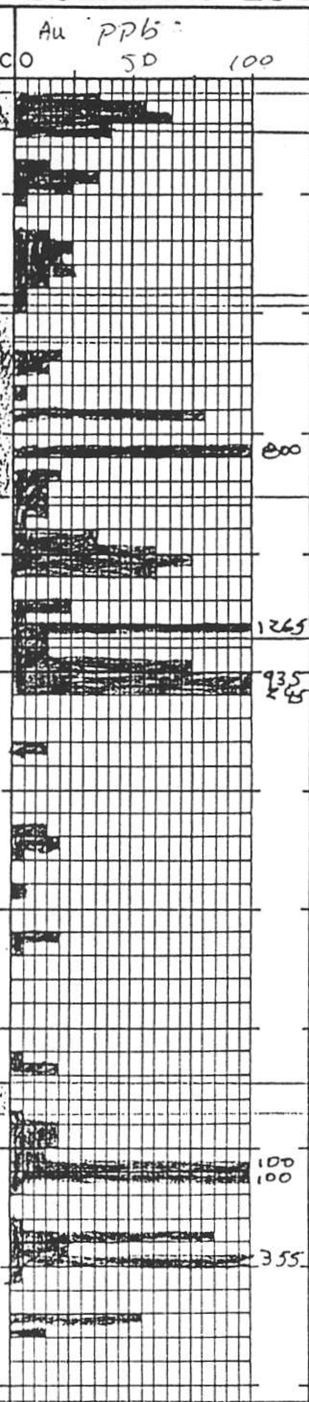
150m

VALENTINE GOLD CORP
SUMMARY LOG

LOGGED BY PM

HOLE NO. 87-10

% OX	% CaCO	% SUL	DEPTH	GRAPHIC	Au ppb	DESCRIPTION
			0 – 1.5			Overburden
			4.6			Biotite schist
			18.6			Metasandstone
			19.4			Biotite schist
			23.6			Quartz vein
			35.4			Biotite schist
			47.6			Metasandstone
			50m			
			84.5			Amphibolite
			87.2			Quartz diorite dike
			100 m			
			111.6			Amphibolite
			150m			



◆ VALENTINE GOLD CORP
SUMMARY LOG

LOGGED BY DRL

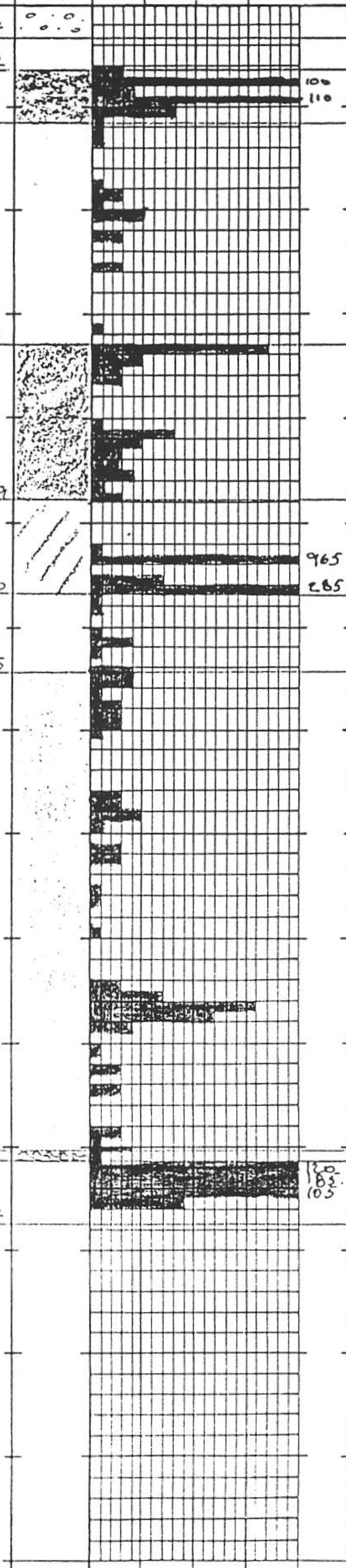
HOLE NO. 87-11

% OX	% CaCO	% SUL	Sample No	DEPTH	GRAPHIC	Au in ppb (0 – 50 – 100)	DESCRIPTION
				0 2.7			Overburden
			[illegible]061	33.0			Metasandstone
				37.0			Biotite schist
				50m 58.0		205 105 145 10[illegible] 10,000 365	Metasandstone / Biotite Schist
				75.0			Metasandstone
				85.5		180 45	Biotite Schist
				90.0			Metasandst / Biotite Sch
				97.8		3300	Metasandstone
				100 m 103.5		320	Amphibolite
			[illegible]	150m			

VALENTINE GOLD CORP
SUMMARY LOG

LOGGED BY DRL HOLE NO. 87-12

% OX	% CaCO	% SUL	Sample No	DEPTH	GRAPHIC	Au in ppb (0 – 50 – 100)	DESCRIPTION
				0 – 3.7			Overburden
			86165	6.2			Metasandstone
				11.9		100, 110	Biotite Schist
				33.0			Metasandstone
				47.9			Biotite Schist
				50m – 57.0		965, 285	Metasandstone/Biotite Schist
				64.5			Metasandstone
				100 m			Amphibolite
							Fault zone
			V	117.7		130, 85, 105	Amphibolite
				150m			



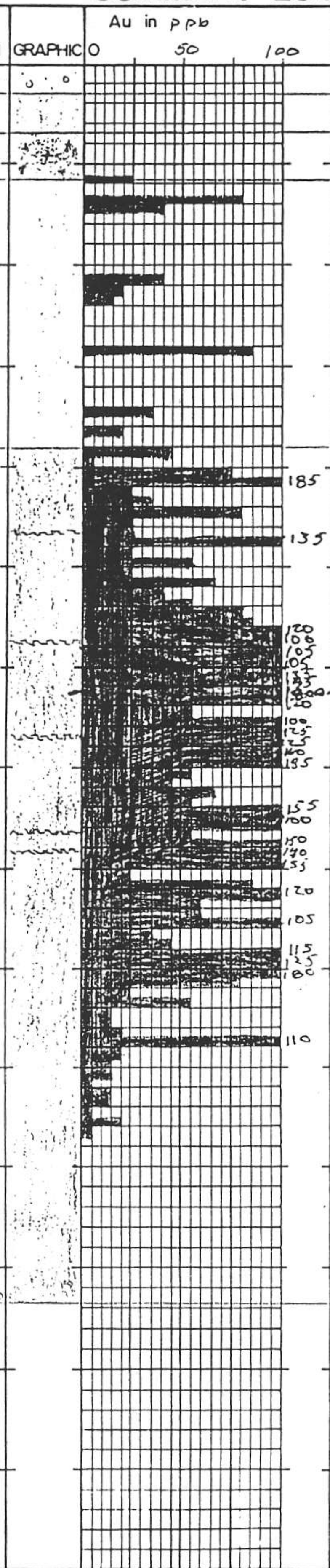
VALENTINE GOLD CORP
SUMMARY LOG

LOGGED BY DRL

HOLE NO. 87-13

% OX	% CaCO	% SUL	Sample No.	DEPTH	DESCRIPTION
				0 – 3.0	Overburden
			86281	3.0 – 6.9	Amphibolite
				6.9 – 11.7	Quartz diorite dike
				11.7 – 38.0	Amphibolite
				38.0 – 123.8	Biotite Gneiss
			S0402	123.8	

Depth scale: 0, 50m, 100m, 150m



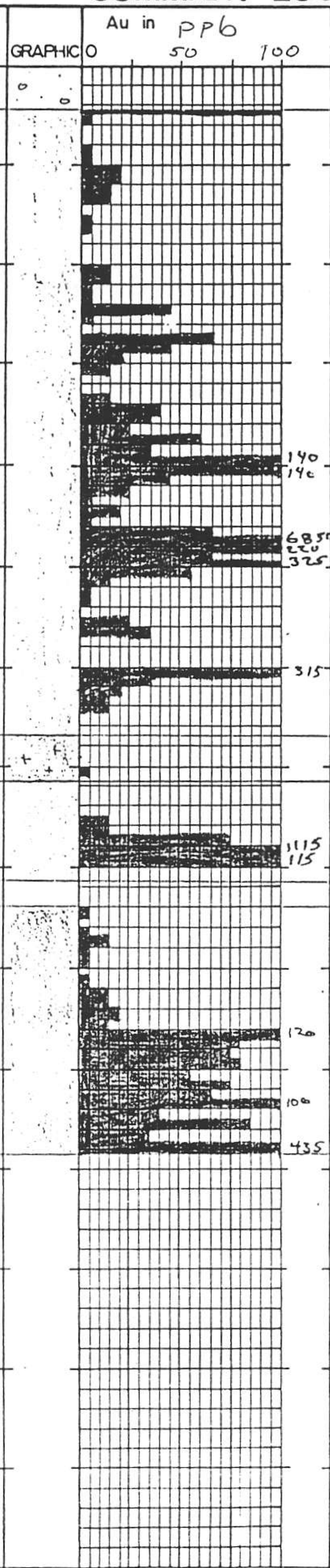
LOGGED BY DRL

VALENTINE GOLD CORP
SUMMARY LOG

HOLE NO. 87-14

% OX	% CaCO	% SUL		DEPTH	GRAPHIC	Au in ppb (0 – 50 – 100)	DESCRIPTION
				0 – 4.6			Overburden
				4.6 – 69.2			Amphibolite
				69.2 – 70.9			Quartz diorite dike
				70.9 – 81.7			Amphibolite
				81.7 – 84.0			Metasandstone - Bio Gneiss
				84.0 – 108.5			Biotite gneiss

Depth scale: 0, 50m, 100m, 150m



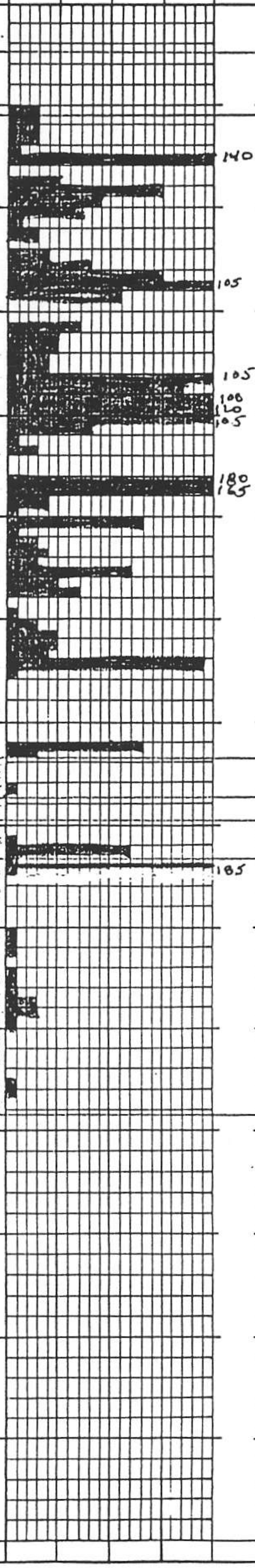
LOGGED BY DRL

VALENTINE GOLD CORP
SUMMARY LOG

HOLE NO. 87-15

% OX	% CaCO	% SUL	No	DEPTH	GRAPHIC	Au in ppb (0 – 50 – 100)	DESCRIPTION
/				0 – 4.9			Overburden
			8353C	10.9			Metasandstone
				73.9			Amphibolite
				77.4			Quartz diorite dike
				79.5			Amphibolite
				83.8			Quartz diorite dike
				108.5			Biotite gneiss
			5600				

Depth scale: 0, 50m, 100 m, 150m



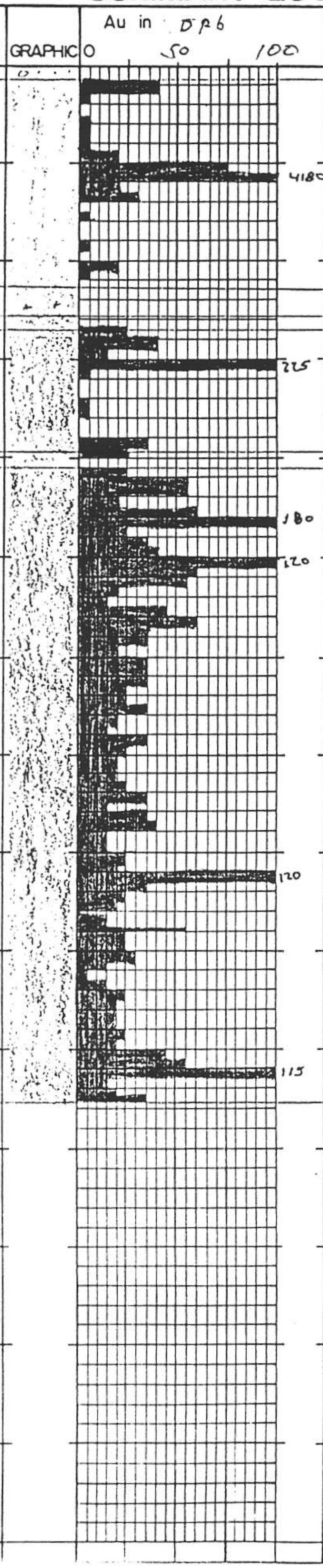
VALENTINE GOLD CORP
SUMMARY LOG

LOGGED BY DRL

HOLE NO. 87-16

% OX	% CaCO	% SUL		DEPTH	DESCRIPTION
			86615	0 – 6.5	Overburden
				6.5 – 22.8	Amphibolite
				22.8 – 25.9	Quartz diorite dike
				25.9 – 27.2	Amphibolite
				27.2 – 39.6	Biotite gneiss
				39.6 – 41.0	Amphibolite
				41.0 – 105.5	Biotite gneiss

Depth scale: 0, 50m, 100 m, 150m

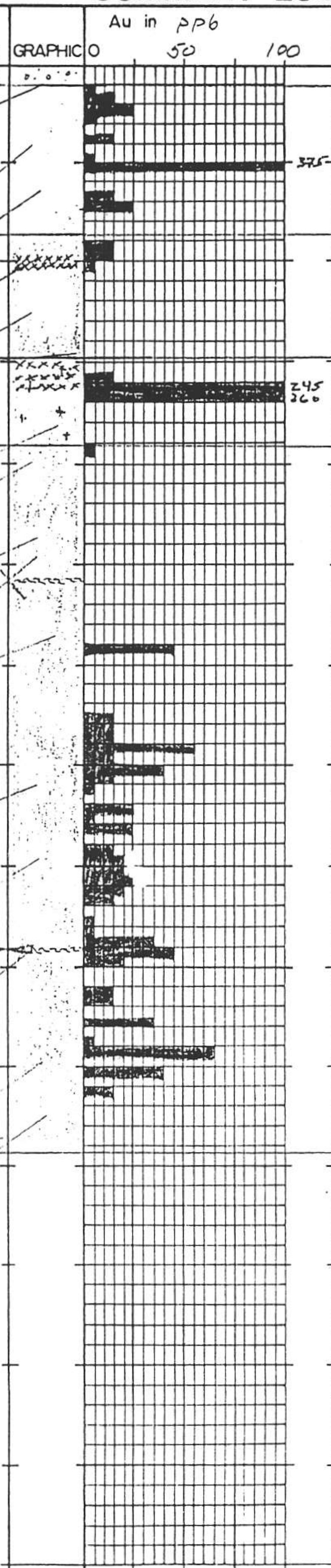


VALENTINE GOLD CORP
SUMMARY LOG

LOGGED BY FWL

HOLE NO. 87-17

% OX	% CaCO	% SUL	no	DEPTH	DESCRIPTION
				0 2.0	Overburden
			6721	17.4	Amphibolite
				29.6	Biotite gneiss
				38.1	Quartz diorite dike
				50m	Biotite gneiss
				100 m	
				105.5	
				150m	

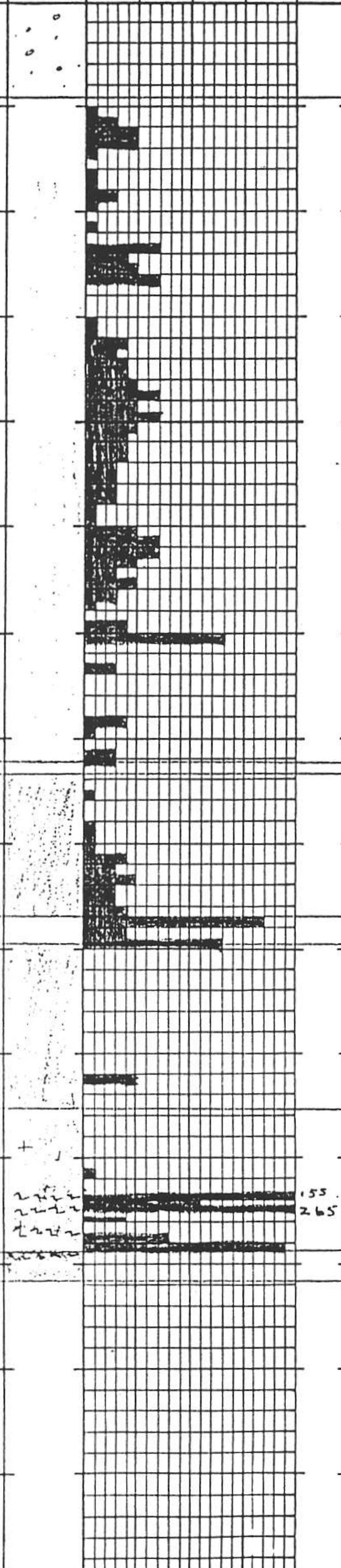


LOGGED BY EWL/DRL

VALENTINE GOLD CORP
SUMMARY LOG

HOLE NO. 87-18

% OX	% CaCO	% SUL		DEPTH	GRAPHIC	Au in ppb (0 – 50 – 100)	DESCRIPTION
				0			Overburden
							Amphibolite
				50m			
				72.1			
				73.8			Metasandstone
							Biotite Gneiss
				87.0			
				89.5			Metasandstone (?)
							Biotite Gneiss
				100 m			
				105.5			
						155, 265	Quartz diorite dike
				118.8			
				121.9			Biotite Gneiss
				150m			

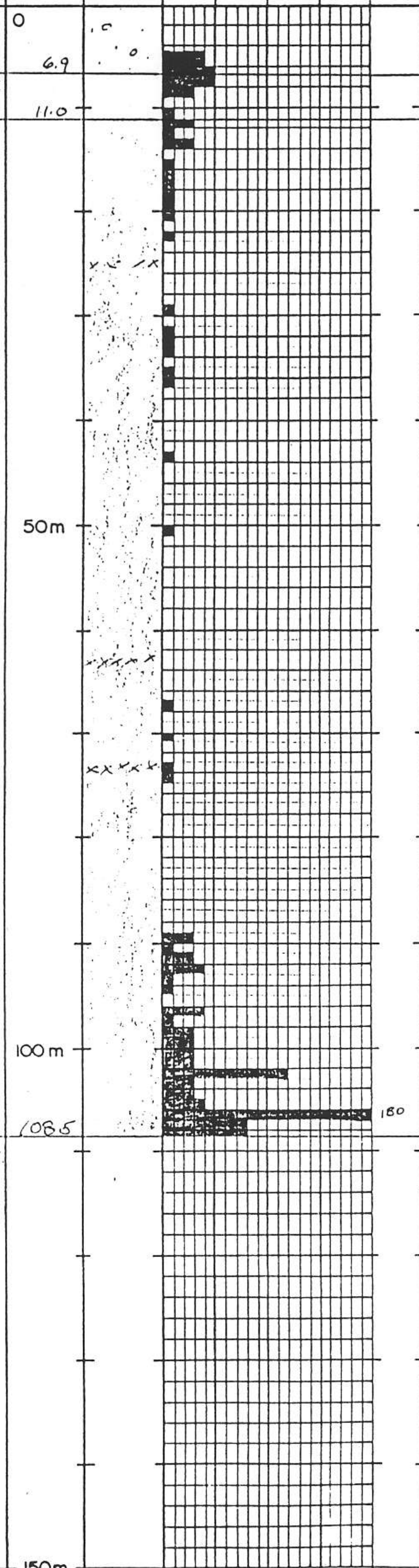


LOGGED BY DRL

VALENTINE GOLD CORP
SUMMARY LOG

HOLE NO. 87-19

% OX	% CaCO	% SUL		DEPTH	GRAPHIC	Au in ppb (0 – 50 – 100)	DESCRIPTION
				0 – 6.9			Overburden
				6.9 – 11.0			Metasandstone / Bio Gneiss
				11.0 – 108.5			Biotite Gneiss



◆ VALENTINE GOLD CORP
SUMMARY LOG

LOGGED BY DRL

HOLE NO. 87-20

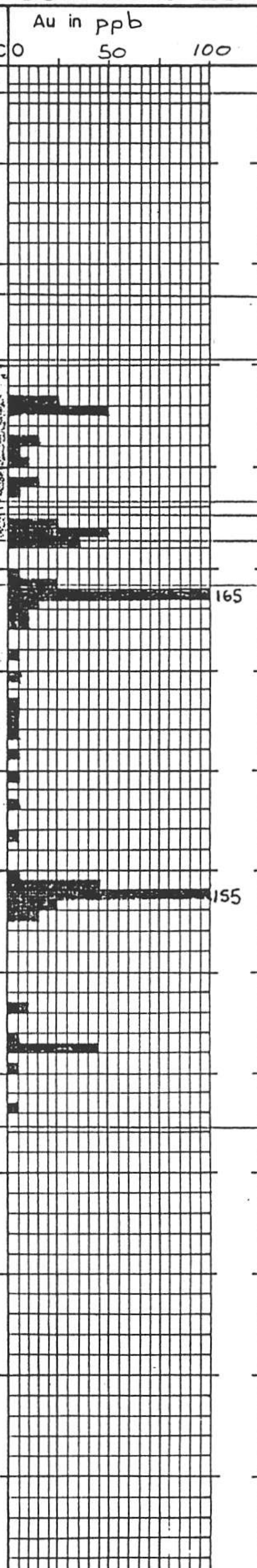
% OX	% CaCO	% SUL		DEPTH	GRAPHIC	Au in ppb (0 – 50 – 100)	DESCRIPTION
				0 – 5.1			Overburden
				9.5			Amphibolite
				14.0			Metasandstone
				50m, 100 m, 110.9			Biotite gneiss .
				150m			

LOGGED BY 87-21

VALENTINE GOLD CORP
SUMMARY LOG

HOLE NO. 87-21

% OX	% CaCO	% SUL	Sample No	DEPTH	GRAPHIC	Au in ppb 0 50 100	DESCRIPTION
				0 2.9			Overburden
			[illegible]-155	23.0			Metasandstone
				29.7			Metasandstone/biotite schist
				43.5			Biotite schist
				44.8			Fault zone
				47.5			Biotite schist
				50m			Metasandstone
				51.9		165	Amphibolite
						155	
				100 m			
				105.5			
			[illegible]-257				
				150m			



VALENTINE GOLD CORP
SUMMARY LOG

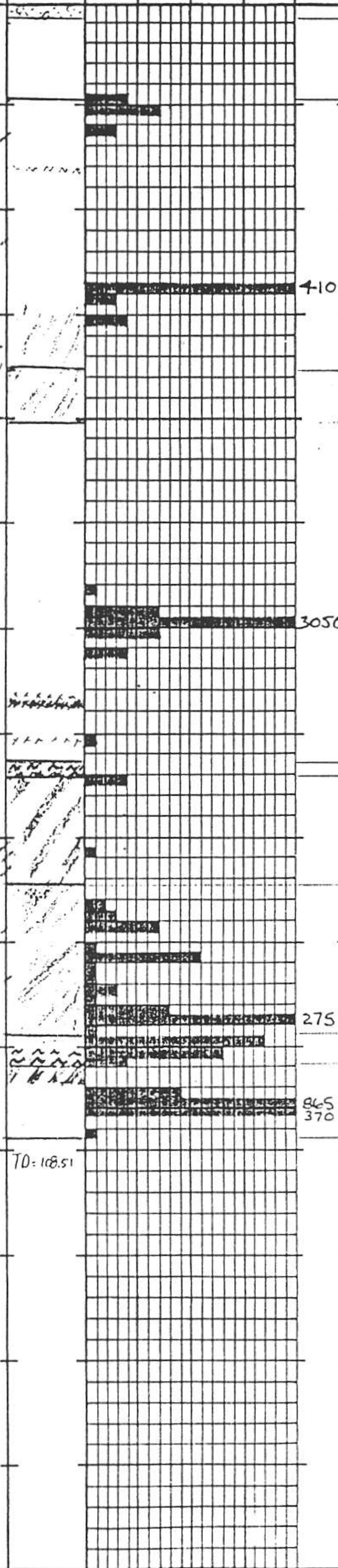
LOGGED BY: DRL

HOLE NO. 87-22

% OX	% CaCO	% SUL	Sample No.	DEPTH	DESCRIPTION
			87258	0 – 1.83	Overburden
5-10	<1	1		1.83 – 9.33	Metasandstone
2	1	1		9.33 – 35.41	Metasandstone
0	1	1-2		35.41 – 40.31	Metasandstone / Biotite Schist
	1	1-2		40.31 – 72.73	Metasandstone
2	2			72.73 – 74.37	Biotite Schist
	1	1-2		74.37 – 84.25	Metasandstone (Biotite Schist)
	1	2-3		84.25 – 98.78	Biotite Andalusite Schist
2	2-3			98.78 – 101.80	Fault & Fracture Zone
	1	1	87365	101.80 – 108.51	Metasandstone

TD: 108.51

Depth scale: 0 – 50 m – 100 m – 150 m



APPENDIX VI

BACON,
DONALDSON
& ASSOCIATES LTD.

2036 COLUMBIA STREET
VANCOUVER, B.C., CANADA V5Y 3E1
TELEPHONE (604) 879-8461
TELEX 04-53437

METALLURGICAL TESTING OF VALENTINE GOLD ORE

Prepared for:

VALENTINE GOLD CORP.
Suite 2000, Park Place
666 Burrard Street
Vancouver, B.C.
V6C 2X8

File Number: 7031
June 19, 1987

Jasman Yee, B.Sc.Chem

1.0 INTRODUCTION

On April 7, 1987, we were approached by Mr. Ursel Doran of Valentine Gold Corp. to carry out metallurgical testwork on three samples. The samples were received in three 45 gallon barrels. One barrel was labelled A, and the other two barrels FL1. For ease of identifying the two FL1 barrels, all future references to FL1 with the white band are referred to as FL2. In addition to the above mentioned samples a hand sample was delivered personally by Ursel Doran for visual inspection and initial testing.

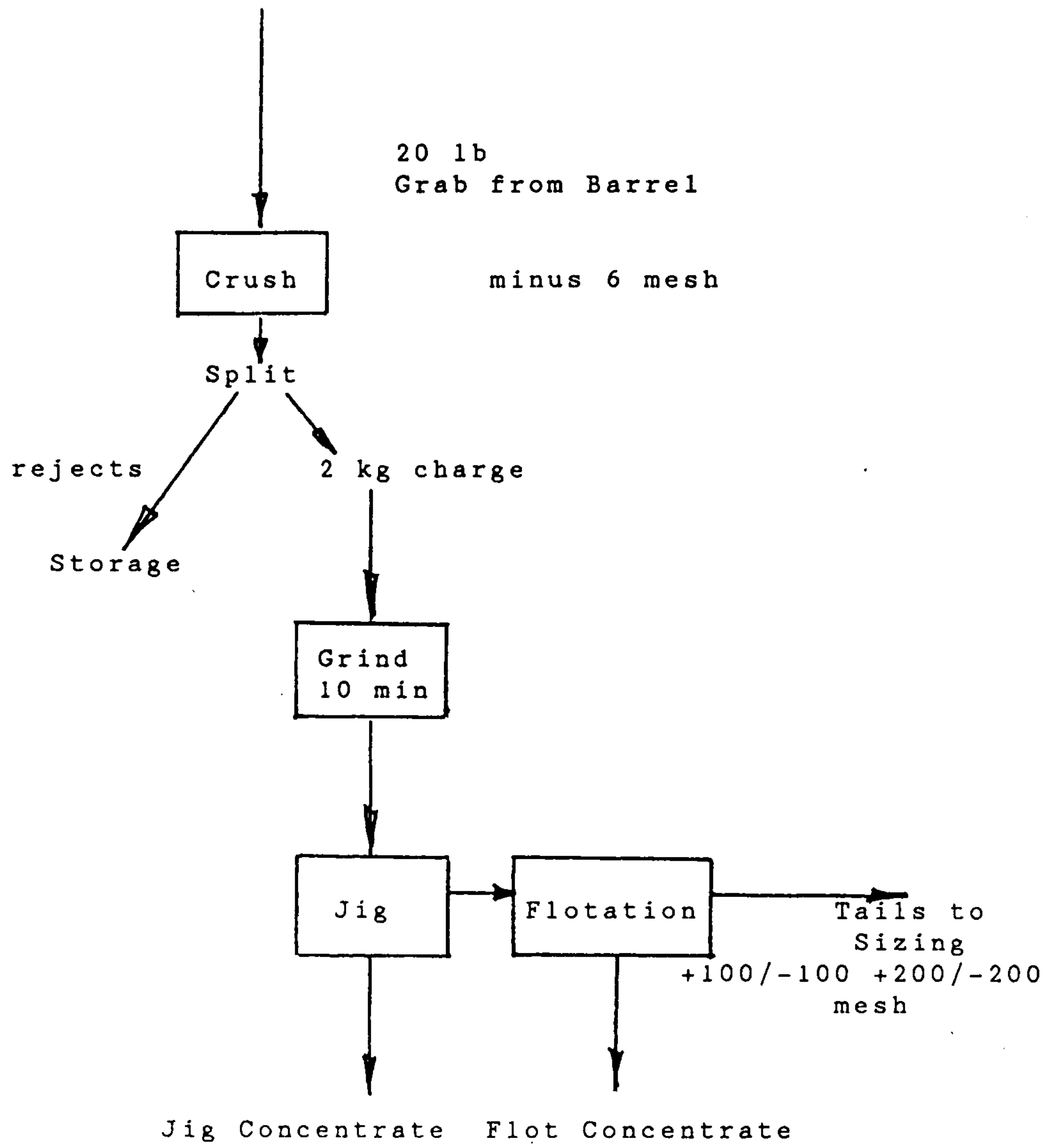
Barrel A was made up of quartz rock with very little fines. The other two barrels contained fractured and highly altered material. Barrel FL1 and FL2 appeared visually to be similar.

Two testing programs were developed. The first program (Program A) involved the use of grab samples from each individual barrel and testing them separately using the conventional crushing, grinding, jigging and flotation processes to recover the gold. The hand sample was tested likewise.

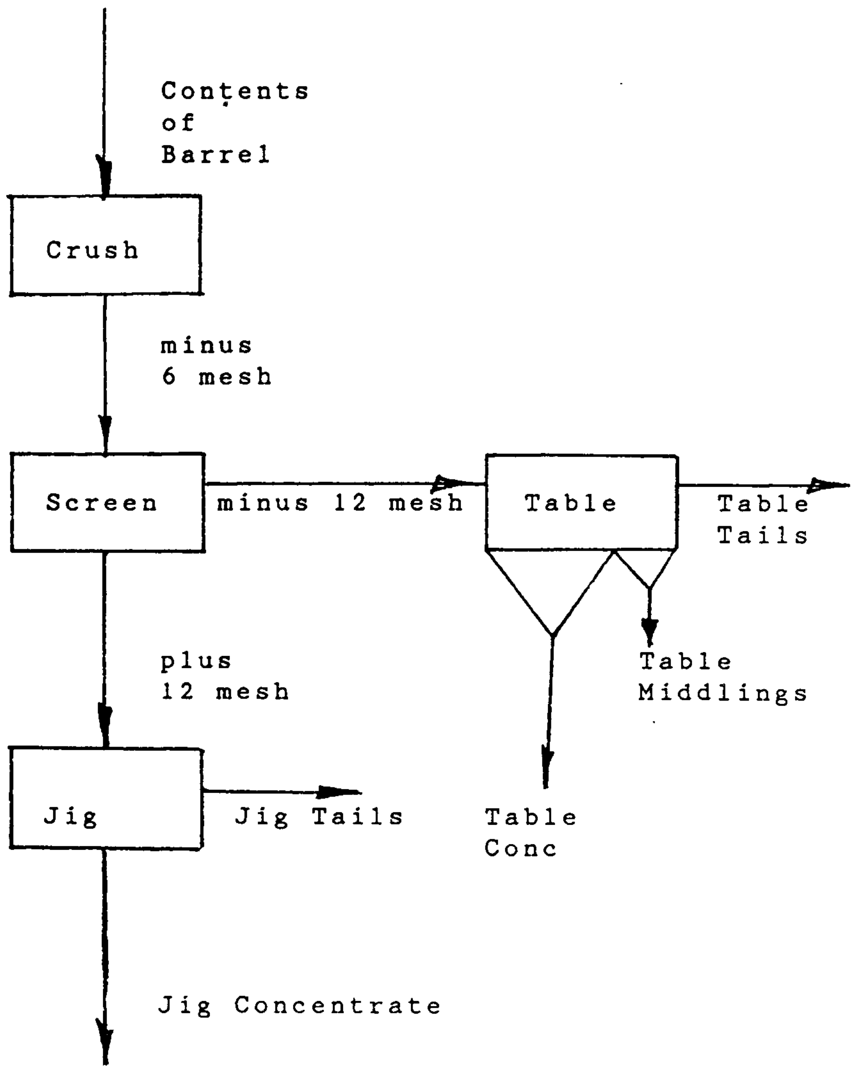
The second program (Program B) involved bulk testing the entire contents of the barrels in order to determine the grade of each barrel. The flowsheet selected for B differed from A in that grinding and flotation were omitted and in their places screening and tabling were included.

2.0 PROCEDURE FOR THE TEST AS PER FLOWSHEETS

2.1 FLOWSHEET FOR PROGRAM A



2.2 FLOWSHEET FOR PROGRAM B



3.0 RESULTS

3.1 PROGRAM A

The results obtained from Program A are summarized in the Table below.

Test No.	Sample	Work Index	Jig Rec. % Total	Flot Rec. % Total	Total Recovery	Calc Grade oz/ton Au
F1	Hand	16.21	93.89	5.73	99.62	8.402
F2	Barrel A	12.70	79.94	18.68	98.62	2.534
F3	Barrel FL1	8.11	83.32	14.20	97.52	0.216
F4	Barrel FL2	8.11	20.75	48.41	69.16	0.014

Parting of gold from the silver was not done for Tests F1 and F2, hence the calculated grades for these tests are approximately 20% high due to no correctio for the silver content.

Size analysis on the flotation tailings indicated that the altered ore Barrel FL1 & Barrel FL2 had most of the gold losses reporting to the -200 mesh fraction. The hard rock (Barrel A) had the bulk of the gold losses in the +200 fraction of flotation tailings.

3.2 PROGRAM B

For Program B the entire contents of each barrel was crushed to minus 6 mesh, and followed by screening to 12 mesh. The plus 12 mesh material was jigged and the minus 12 mesh product tabled.

Total Wts?!

Results from this test procedure are tabulated below.

Barrel #	Jig Rec. % of overall	Table Rec. % of overall	Total Recovery	Calc Grade oz/ton	
A	58.25	16.43	74.67	0.391	— 372 lbs
FL1	23.67	20.05	43.72	0.382	— 365 lbs.
FL2	17.65	27.04	44.69	0.144	— 403 lbs.

The results indicated that at minus 6 mesh, 20 to 40% of the gold is still not liberated. A grinding stage is therefore essential in improving the overall gold recovery.

It is clear from the above assays the FL1 and FL2 are significantly different samples, contrary to initial appearances.

There is a big difference in the calculated grades of ore between Program A and Program B. The grades and the differences are presented below.

Barrel #	Program A Calc grade in oz/ton	Program B Calc grade in oz/ton	Difference
A	2.534	0.391	2.143
FL1	0.216	0.382	<0.166>
FL2	0.014	0.144	<0.130>

365 × .382 = 139.43
403 × .144 = 58.03
197.46
768 lbs @ .257

4.0 ADDITIONAL WORK AND RESULTS

At the request of Mr. R. Akright, a 32 element analysis on the flotation concentrate produced from bench scale test # F2 was carried out by Chemex. The results of the analysis are appended.

In addition to the above analysis, 2 polished thin sections on the F2 flotation concentrate were done by Vancouver Petrographics Ltd. The thin sections were examined by Bacon Donaldson's personnel. Free gold and minor quantities of magnetite were observed.

5.0 SUMMARY

The results from Program A are based on grab samples from each barrel and therefore are subject to significant sample errors. It is recommended that the calculated grades obtained in Program A not be used to estimate the grade of the barrels.

The results from Program B are considered accurate representation of the metallurgical grades for each barrel. The highest grade obtained was from Barrel A at 0.391 oz/ton.

TESTWORK PROCEDURE

Test No. 7031-F1 Date: April 13, 1987

Preliminary Test Sample

STAGE	TIME (min)	ADDITIONS lb/ton	ADDITIONS REAGENT
GRIND AT 65% SOLIDS	10		
JIG			Conc to assay Tails to flotation
CONDITION	1	0.06 0.10	R208 R350
ROUGHER FLOT	5	0.10	DF250
CONDITION	1	0.10	R350
SCAVENGER FLOT	5		pH of pulp 6.8

Combine Rougher and Scavenger Concentrates for assaying and

Size assay flotation tailings +100 mesh/-100 +200/-200 mesh

TESTWORK PROCEDURE

Test No. 7031-F2 Date: April 13, 1987

Grab from Barrel A

STAGE	TIME (min)	ADDITIONS	
		lb/ton	REAGENT
GRIND AT 65% SOLIDS	10		
JIG			Conc to assay Tails to flotation
CONDITION	1	0.06 0.10	R208 R350
ROUGHER FLOT	5	0.05	DF250
CONDITION	1	0.10	R350
SCAVENGER FLOT	5	0.002	DF250 pH of pulp 7.4

Combine Rougher and Scavenger Concentrates for assaying and

Size assay flotation tailings +100 mesh/-100 +200/-200 mesh

TESTWORK PROCEDURE

Test No. 7031-F3 Date: April 14, 1987

Grab from Barrel FL1

STAGE	TIME (min)	ADDITIONS lb/ton	REAGENT
GRIND AT 65% SOLIDS	10		
JIG			Conc to assay Tails to flotation
CONDITION	1	0.06 0.10	R208 R350
ROUGHER FLOT	5	0.05	DF250
CONDITION	1	0.10	R350
SCAVENGER FLOT	5	0.002	DF250

Combine Rougher and Scavenger Concentrates for assaying and

Size assay flotation tailings +100 mesh/-100 +200/-200 mesh

TESTWORK PROCEDURE

Test No. 7031-F4 Date: April 154, 1987

Grab from Barrel FL2

STAGE	TIME (min)	ADDITIONS	
		lb/ton	REAGENT
GRIND AT 65% SOLIDS	10		
JIG			Conc to assay Tails to flotation
CONDITION	1	0.06 0.10	R208 R350
ROUGHER FLOT	5	0.05	DF250
CONDITION	1	0.10	R350
SCAVENGER FLOT	5	0.002	DF250

Combine Rougher and Scavenger Concentrates for assaying and

Size assay flotation tailings +100 mesh/-100 +200/-200 mesh

METALLURGICAL BALANCE
Test Number: F1

Preliminary Test Sample

Products			Assays			Units			% Dist.		
	Wt	Wt%	P.M.			P.M.			P.M.		
Jig Conc	5.48	0.28	2817.063			788.778			93.89		
Flot Conc	149.70	7.53	6.395			48.154			5.73		
Tails	1831.80	92.19	0.035			3.227			0.38		
Cal. Head	1986.98	100.00	8.402			840.159			100.00		

METALLURGICAL BALANCE
Test Number: F2

Grab from Barrel A

Products			Assays			Units			% Dist.		
	Wt	Wt%	P.M.			P.M.			P.M.		
Jig Conc	5.93	0.30	675.274			202.582			79.94		
Flot Conc	56.90	2.88	16.441			47.350			18.68		
Tails	1915.13	96.82	0.036			3.486			1.38		
Cal. Head	1978.13	100.00	2.534			253.418			100.00		

Size Analysis on Test F1
Flotation Tailings

Products			Assays			Units			% Dist.		
	Wt	Wt%	Au	Ag		Au	Ag		Au	Ag	
+100 mesh	67.14	33.94	0.040	0.009		1.358	0.305		47.25	46.94	
-100 +200	51.56	26.06	0.029	0.004		0.756	0.104		26.30	16.01	
-200 mesh	79.14	40.00	0.019	0.006		0.760	0.240		26.45	36.95	
Cal. feed	197.84	100.00	0.029	0.006		2.873	0.650		100.00	100.00	

Size Analysis on Test F2
Flotation Tailings

Products			Assays			Units			% Dist.		
	Wt	Wt%	Au	Ag		Au	Ag		Au	Ag	
+100 mesh	33.57	16.88	0.029	0.006		0.490	0.101		18.36	16.88	
-100 +200	61.41	30.89	0.035	0.006		1.081	0.185		40.52	30.88	
-200 mesh	103.85	53.23	0.021	0.006		1.097	0.313		41.12	52.23	
Cal. feed	198.83	100.00	0.027	0.006		2.668	0.600		100.00	100.00	

Size Analysis on Test F3
Flotation Tailings

Products			Assays (oz/ton)			Units			% Dist.		
	Wt	Wt%	Au	Ag		Au	Ag		Au	Ag	
+100	1.26	0.64	0.024	0.009		0.015	0.006		1.65	1.19	
-100 +200	31.46	16.07	0.026	0.009		0.418	0.145		44.79	29.91	
-200	163.03	83.29	0.006	0.004		0.500	0.333		53.56	68.90	
Calc heads	195.75	100.00	0.009	0.005		0.933	0.484		100.00	100.00	

Size Analysis on Test F4
Flotation Tailings

Products			Assays (oz/ton)			Units			% Dist.		
	Wt	Wt%	Au	Ag		Au	Ag		Au	Ag	
+100	2.02	0.92	0.001	0.010		0.001	0.009		0.14	0.72	
-100 +200	41.46	18.92	0.005	0.012		0.095	0.227		14.41	17.76	
-200	175.66	80.16	0.007	0.013		0.561	1.042		85.45	81.52	
Calc heads	219.14	100.00	0.007	0.013		0.657	1.278		100.00	100.00	

WORK INDEX

$$W = 10\ wi \left(\frac{1}{\sqrt{P}} - \frac{1}{\sqrt{F}} \right)$$

where W = power consumption in kwh/short ton

Wi = work index of ore

P = size in microns which 80% of product will pass

F = size in microns which 80% of feed will pass

$$W = \frac{1}{4} \times \frac{10}{60} \times \frac{hr}{1} \times \frac{1}{2.0} \times 1000 \times \frac{0.9}{S.T.}$$

= 18.96 hphr/S.T.

= 25.40 kwhr/S.T.

At 30% useful work

Grinding Power = 7.62 kwh/S.T.

For Test F1

$$W = 10\ wi \left(\frac{1}{\sqrt{P}} - \frac{1}{\sqrt{F}} \right)$$

$$7.62 = 10\ wi \left(\frac{1}{\sqrt{210}} - \frac{1}{\sqrt{2000}} \right)$$

7.62 = 10 wi (0.047)

wi = 7.62/0.47

= 16.21

For Test F2

$$7.62 = 10\ wi \left(\frac{1}{\sqrt{150}} - \frac{1}{\sqrt{2000}} \right)$$

= 10 wi (0.082 - 0.22)

wi = 12.7

For Test F3

$$7.62 = 10\ wi \left(\frac{1}{\sqrt{74}} - \frac{1}{\sqrt{2000}} \right)$$

$$= 10\ wi\ (0.116 - 0.022)$$

$$= 10\ wi\ (0.094)$$

$$wi = \frac{7.62}{10(0.094)}$$

$$= 8.11$$

For Test F4

same as F3

METALLURGICAL BALANCE
Grab from Barrel FL1
Test Number F3

Products			Assays (oz/ton)			Units			% Dist.		
	Wt	Wt%	Au	Ag		Au	Ag		Au	Ag	
Jig conc	3.24	0.16	112.595	9.677		18.015	1.548		83.32	35.17	
Flot conc	203.40	10.34	0.297	0.198		3.071	2.047		14.20	46.51	
Tails	1761.10	89.50	0.006	0.009		0.537	0.806		2.48	18.32	
Calc heads	1967.74	100.00	0.216	0.044		21.623	4.401		100.00	100.00	

METALLURGICAL BALANCE
Grab from Barrel FL2
Test Number F4

Products			Assays (oz/ton)			Units			% Dist.		
	Wt	Wt%	Au	Ag		Au	Ag		Au	Ag	
Jig conc	2.79	0.14	2.143	0.240		0.300	0.034		20.75	4.15	
Flot conc	206.20	10.60	0.066	0.048		0.700	0.509		48.41	62.80	
Tails	1735.60	89.26	0.005	0.003		0.446	0.265		30.84	33.05	
Calc heads	1944.59	100.00	0.014	0.008		1.446	0.810		100.00	100.00	

TEST NUMBER: 7031-A JIGGING +12 MESH AND TABLING -12 MESH

PRODUCT	WEIGHT GMS	WEIGHT %	ASSAYS Au oz/ton	ASSAYS Ag oz/ton	UNITS Au	UNITS Ag	% DIST Au	% DIST Ag
JIG CONC	1.5	.00	25608	3558.3	22.748	3.161	58.24	57.57
JIG TAIL	93818.0	55.56	0.107	0.017	5.945	0.945	15.22	17.20
+12 MESH	93819.5	55.56	0.516	0.074	28.693	4.105	73.47	74.77
TABLE CONC	1131.0	0.67	9.579	0.945	6.416	0.633	16.43	11.53
TABLE MIDS	1961.0	1.16	1.104	0.170	1.282	0.197	3.28	3.60
TABLE TAILS	62500.0	37.01	0.072	0.015	2.665	0.555	6.82	10.11
-12 MESH	65592.0	38.84	0.267	0.036	10.363	1.386	26.53	25.23
SLIMES	9445.0	5.59	0.000	0.000				
CALC HEAD	168856.5	100.0	0.391	0.055	39.056	5.491	100.00	100.00

372 lbs.

TEST NUMBER: 7031-FL1 JIGGING +12 MESH AND TABLING -12 MESH

PRODUCT	WEIGHT GMS	WEIGHT %	ASSAYS Au oz/ton	ASSAYS Ag oz/ton	UNITS Au	UNITS Ag	% DIST Au	% DIST Ag
JIG CONC	0.6	.00	25561	3604.9	9.033	1.274	23.67	22.54
JIG TAIL	83636.0	50.45	0.289	0.043	14.579	2.169	38.20	38.39
+12 MESH	83636.6	50.45	0.468	0.068	23.613	3.443	61.87	60.93
TABLE CONC	1339.0	0.81	9.476	1.365	7.653	1.102	20.05	19.51
TABLE MIDS	4359.0	2.63	0.553	0.078	1.454	0.205	3.81	3.63
TABLE TAILS	74636.0	45.02	0.121	0.020	5.447	0.900	14.27	15.93
-12 MESH	80334.0	48.46	0.300	0.046	14.555	2.208	38.13	39.07
SLIMES	1818.0	1.10	0.000	0.000	0.000	0.000	0.00	0.00
CALC HEAD	165788.6	100.0	0.382	0.057	38.187	5.651	100.00	100.00

365 lbs

TEST NUMBER: 7031-FL2 JIGGING +12 MESH AND TABLING -12 MESH

PRODUCT	WEIGHT GMS	WEIGHT %	ASSAYS Au oz/ton	ASSAYS Ag oz/ton	UNITS Au	UNITS Ag	% DIST Au	% DIST Ag
IG CONC	0.2	.00	25633	3531.9	2.540	0.350	17.65	15.06
IG TAIL	81455.0	44.46	0.109	0.017	4.847	0.756	33.67	32.53
12 MESH	81455.2	44.46	0.166	0.025	7.386	1.106	51.32	47.59
ABLE CONC	5143.0	2.81	1.386	0.191	3.891	0.536	27.04	23.08
ABLE MIDS	6597.0	3.60	0.117	0.023	0.421	0.083	2.93	3.56
ABLE TAILS	68545.0	37.42	0.072	0.016	2.694	0.599	18.72	25.77
12 MESH	80285.0	43.82	0.160	0.028	7.006	1.218	48.68	52.41
LIMES	21455.0	11.71	0.000	0.000	0.000	0.000	0.00	0.00
ALC HEAD	183195.2	100.0	0.144	0.023	14.392	2.324	100.00	100.00

403.88 lbs

Chemex Labs Ltd.
Analytical Chemists * Geochemists * Registered Assayers
212 BROOKSBANK AVE., NORTH VANCOUVER, BRITISH COLUMBIA, CANADA V7J-2C1
PHONE (604) 984-0221

CERTIFICATE OF ANALYSIS A8714754

To : BACON, DONALDSON & ASSOCIATES LTD.,
2036 COLUMBIA STREET
VANCOUVER, B.C.
V5Y 3E1

Project :
Comments:

Page No. : 1-A
Tot. Pages: 1
Date : 21-MAY-87
Invoice # : I-8714754
P.O. # : 52845

SAMPLE DESCRIPTION	PREP CODE		Al %	Ag ppm	As ppm	Ba ppm	Be ppm	Bi ppm	Ca %	Cd ppm	Co ppm	Cr ppm	Cu ppm	Fe %	Ga ppm	Hg ppm	K %	La ppm	Mg %	Mn ppm	Mo ppm
7031-F2 CONC	214	238	1.56	32.6	3180	380	< 0.5	< 2	0.25	< 0.5	26	53	159	3.55	< 10	< 1	0.69	< 10	0.63	413	3

CERTIFICATION : [signature]

Chemex Labs Ltd.
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Comments:

Page No. : 1-B
Tot. Pages: 1
Date : 21-MAY-87
Invoice # : I-8714754
P.O. # : 52845

SAMPLE DESCRIPTION	PREP CODE		Na %	Ni ppm	P ppm	Pb ppm	Sb ppm	Se ppm	Sr ppm	Ti %	Tl ppm	U ppm	V ppm	W ppm	Zn ppm						
7031-F2 CONC	214	238	0.04	64	730	798	20	< 10	20	0.12	< 10	< 10	47	< 5	306						

CERTIFICATION :

APPENDIX VII

BACON,
DONALDSON
& ASSOCIATES LTD.

2036 COLUMBIA STREET
VANCOUVER, B.C., CANADA V5Y 3E1
TELEPHONE (604) 879-8461
TELEX 04-53437

METALLURGICAL BULK SAMPLING PILOT PLANT PROGRAMME FOR VALENTINE MOUNTAIN PROPERTY

Prepared for:

VALENTINE GOLD CORP.
Suite 2000, Park Place
666 Burrard Street
Vancouver, B.C.
V6C 2X8

Attention: Michael J. Hopley

File Number: 7065
March 14, 1988

Kenneth B. DeGraaf, M.A.Sc., P.Eng.

1.0 INTRODUCTION

As part of an overall exploration program, Valentine Gold Corp. carried out a programme of bulk sampling at its Valentine Mountain property near Sooke, B.C. Due to the apparent "nugget" effect it was necessary to treat much larger samples than would be available from the planned drill program. Under Bacon Donaldson & Associates supervision, the bulk trench samples were processed on-site at the Valentine Mountain 20 ton/day gravity/flotation pilot plant.

The bulk sampling programme extended over a period from November 30, 1987 through to February 9, 1988. During this period three (3) bulk trench samples were processed through the pilot plant facility. The following report is a final account of the head grades calculated for each of the bulk trench samples handle.

In addition, a brief report is provided on the final mill status at the completion of this bulk sampling program.

2.0 SUMMARY

The following table summarizes the calculated head grade, the % gold recovery and the total sample weight for each of the three bulk samples.

Sample	Calculated Head Grade Au (oz/ton)	% Gold Recovery	Sample Weight (tons)
D-14	0.015	63.0	247.1
Vein 36 East	0.106	96.5	184.0
Vein 36 West	0.027	91.9	221.8

The 20 ton/d bulk sampling pilot plant remains intact, but has been temporarily decommissioned to reduce degradation of plant equipment. To recommission the pilot plant it is estimated that approximately 20 mandays will be required to reconnect pumps, motor, etc.

3.0 HEAD GRADE CALCULATIONS

Due to the apparent nature of the deposit at Valentine Mountain (i.e. the "nugget" effect) it was necessary to consider processing large bulk samples in order to achieve a representative measure of the deposits head grade. Due to the coarseness of gold particles it was not acceptable to simply crush the material and split-out smaller sample cuts for assay.

In order to calculate the head grade for each sample it was necessary to process the entire sample through a gravity/flotation mill. The head grade was then calculated from the weights and assays of the mill products which included tailings, table concentrate, flotation concentrate and at the completion of each test run the gold contained in the ball mill/sump clean-out. At the completion of each run the entire mill circuit was cleaned before the next bulk sample was started.

The calculated head grade for each bulk sample was previously summarized in Section 2.0. The detailed account of tonnage and assays are appended to this report. Appendix I contains the data for D-14 which reports a calculated head grade of 0.015 oz/ton Au. To emphasize the necessity of the bulk sampling procedure selected, it should be noted that a head grade based on the weighted average assay of the D-14 ball mill belt cuts only reported a value of 0.007 oz/ton gold - less than half the value of the calculated head.

The detailed accounts of tonnage and assays for the Vein 36 East and West samples are reported respectively in Appendix II and III.

4.0 MILL STATUS REPORT

The bulk sampling pilot plant was left essentially intact at the completion of the third bulk sample, but has been temporarily decommissioned until further bulk sampling is required. At the completion of operations the mill was deemed to be in good operating condition and should only require 15-20 mandays to recommission the facility. This is required to reconnect plumbing and electrical equipment which was removed from the mill and has been temporarily stored off-site in nearby Sooke.

Should it appear likely that operations will extend beyond a 2-3 month period, when the plant is again started, there will probably be major maintenance required on the crushing and grinding units. Just prior to closure of the plant it was necessary to make repairs to the jaw crusher's main shaft and bearings. The shaft was damaged by events documented elsewhere; the result is that it may be necessary to remove the shaft and have it machined to remove scour marks on the wear surface, as well as requiring the fabrication of new babbitt bearings to match. If the jaw crusher is monitored carefully it should operate well for 2 to 3 months without this major maintenance.

Likewise, the roll crusher will require monitoring. Hard-surfacing of the rolls will be required on a weekly basis but again if extended operation is anticipated it may be necessary to find a replacement set of rolls.

As documented elsewhere, the ball mill bull gear should be watched carefully for unacceptable wear. A replacement bull gear may be required for extended operation. In addition, the ball mill drive should be checked regularly for movement. The drive has not moved since modifications to the ball mill base were made, however, this should be watched.

Prior to start up an inventory of parts and equipment should be compiled. Critical spare parts that are missing should be ordered.

Before the mill is powered up the electricals should be inspected by an electrical engineer and up-to-date electrical drawings completed. There have been a number of modifications to the motor control circuits and additional electrical equipment installed since the last set of electrical drawings were done.

APPENDIX VIII

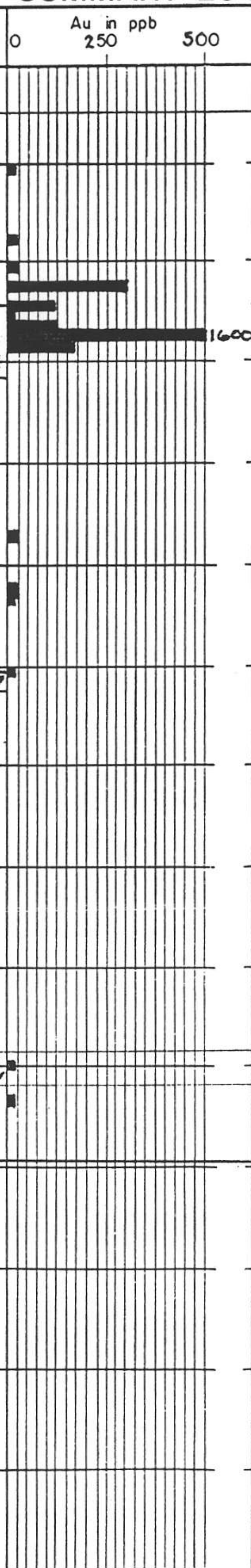
Valentine Zone C Drilling - Core Logs and Assays

LOGGED BY D. Lucas

VALENTINE GOLD CORP.
SUMMARY LOG

HOLE NO. 87-23

% OX	% CaCO	% SUL	Sample No.	DEPTH (m.)	LITHO	Au in ppb (0 – 250 – 500)	DESCRIPTION
							OVERBURDEN
	2	2% py	57851				Metasandstone
	1	1% As py					
	1	1% Aspy					
				24.7			
	1	1%py 1% Aspy				1600	Metasandstone / Bi, schist; large Aspy at 25.0 m.
				32.2			
		1%py					
				50m			large Aspy at 53.0 m.
	1	2%py		60.3			
				62.8			Meta SS / Bi schist
	1	1%py					
	1						
		1%py 1% Aspy		100m.			Bi, schist / Metasandst.
	1	1%py	57956	108.54			Metasandstone

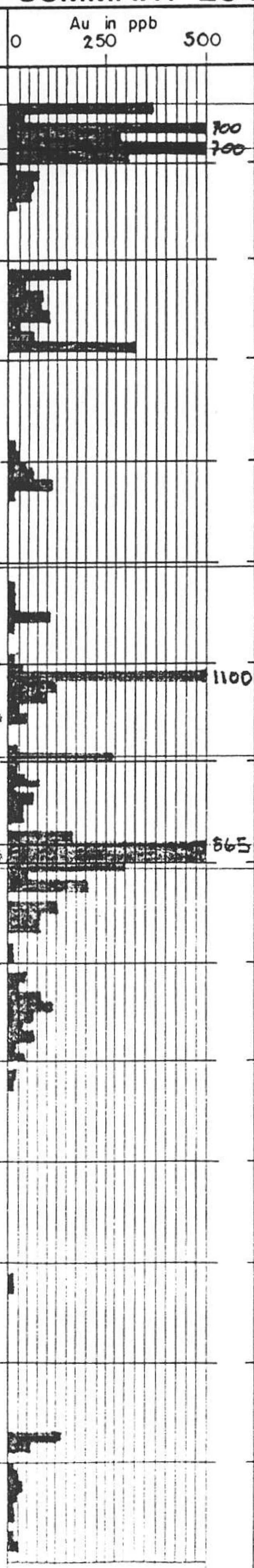


LOGGED BY D. Lucas

VALENTINE GOLD CORP.
SUMMARY LOG

HOLE NO. 87-24

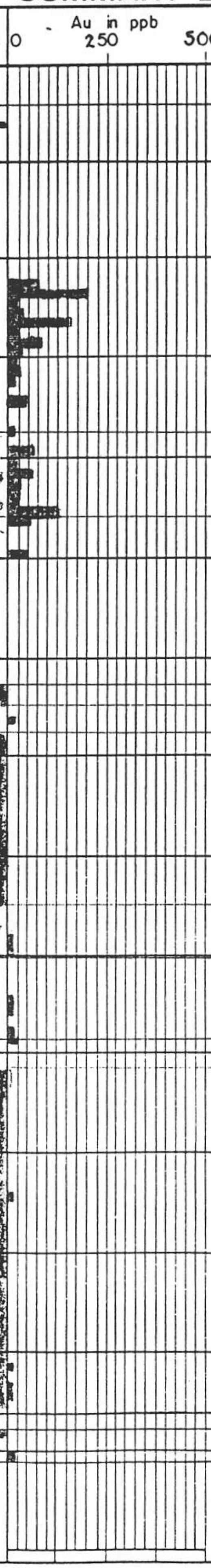
% OX	% CaCO	% SUL	Sample No.	DEPTH (m.)	LITHO	DESCRIPTION
				3.94		OVERBURDEN
	1	1% Py / 1% APy	87 957	9.0	////	MTSS / Bi-schist
	1	1% py				Meta SS
				50 m.		
	1	1% Py / 1% Aspy		69.4	////	Bi-schist / Meta SS Aspy 55-56 m.
		Tr-1% Aspy		77.5		Meta SS
	1	1% Aspy		81.1	////	Meta SS / Bi schist
	1	1% Aspy		100 m.		Meta SS
		EOH		154.2		



VALENTINE GOLD CORP.
SUMMARY LOG

LOGGED BY D. Lucas HOLE NO. 88-1

% OX	% CaCO	% SUL	Sample No.	DEPTH (m.)	LITHO	DESCRIPTION
				3.53		OVERBURDEN
1		2% py Aspy; 1-2% Py, Aspy; 1-2% Aspy	88 108	38.1	Qtz.v.	Metass Qtz veining at 23m. 5% Aspy at 24.80m.
		1-3% Aspy		46.6		Bi-schist / MTSS
				50 m.; 62.3		MTSS
		1% pyrh.				Bi-schist
				68.3		MTSS
				85.2		Bi-schist
	1			90.0		Metass / Bi-schist
				98.0		Bi-shist / Metass
				100 m		Metass
	1			136.4		Bi, garnet schist
				138.7		Meta-ss
				141.7		Amphibolite
			88 247			



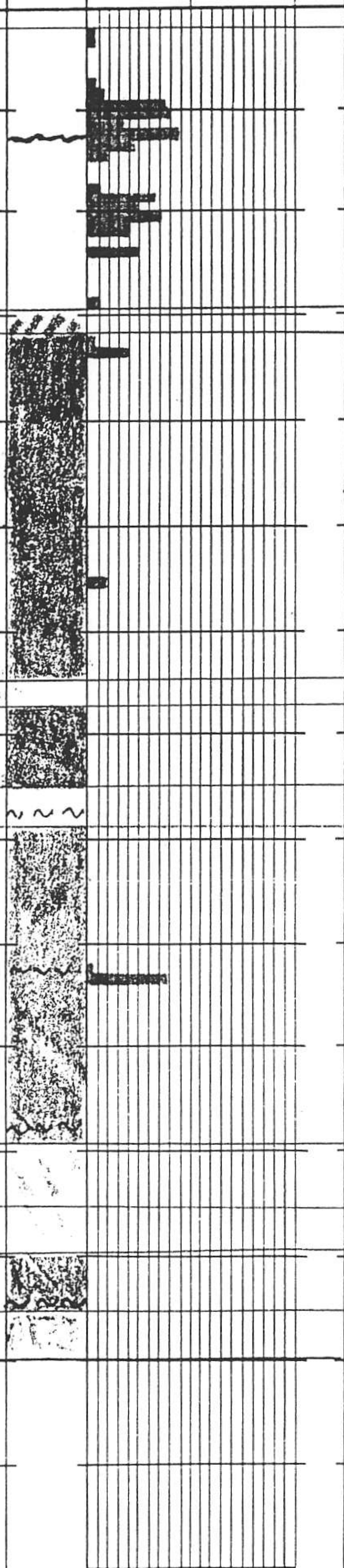
LOGGED BY D. Lucas

VALENTINE GOLD CORP.
SUMMARY LOG

HOLE NO. 88-2

% OX	% CaCO	% SUL	Sample No.	DEPTH (m.)	DESCRIPTION
			88248	2.1	OVERBURDEN
5	1	1-3% Aspy 1-2% Aspy		29.38	Meta SS Large aspy at 11.85-12.05 12.0 - 12.6 - Qtz.v.
	1			32.8	Bi - schist / Meta SS
	1	1-4% Py		50m 64.0	gar, Bi schist
				67.4	Meta SS
				76.3	Bi schist
				79.3	Meta SS fault at 78.6m.
	2	1-2% Py		100 m. 109.3	Bi - schist 92.24 - 92.65 fault gauge 108.2 - fault breccia
	4	1-2% Py		115.6	Amphibolite
	2	1		119	Amph / Metass
	2	1		126.1	Bi-schist (amphibolitized)
	4	1% Py	88375	129.6	fault gauge 124.1 and 125.1 Amphibolite

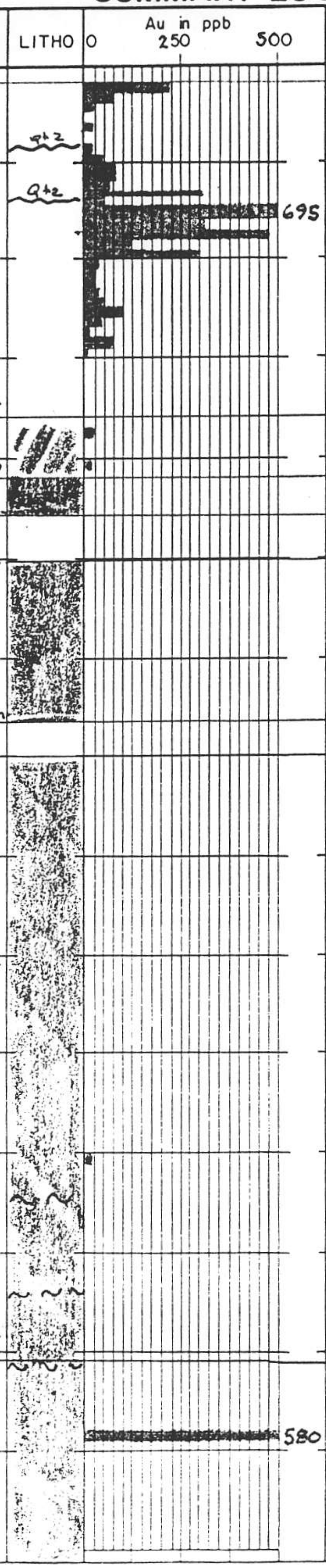
LITHO / Au in ppb (0 – 250 – 500)



LOGGED BY D. Lucas

VALENTINE GOLD CORP.
SUMMARY LOG

HOLE NO. 88-3



% OX	% CaCO	% SUL	Sample No.	DEPTH (m.)	DESCRIPTION
			88376	2 m.	OVERBURDEN
10	1	1% py 1-4% Aspy			Metass 9.23 - 9.83 qtz.v + 3% Aspy 12-13 m - large As py 13 - 14m - 4% Aspy 25.4m - large Aspy
	2	1% py		35.8 42.0	Metass / bi schist
	1				Bi - schist
				50m.	Metass
	1	1% py pyrh		68m	Bi schist
					Metass
		1% py		100m	Bi, gar. schist 115m fault 116.7 fault breccia 124.4 fault breccia 131.3 fault breccia
	1	1% Py			Bi, garnet schist EOH 154.23 m.

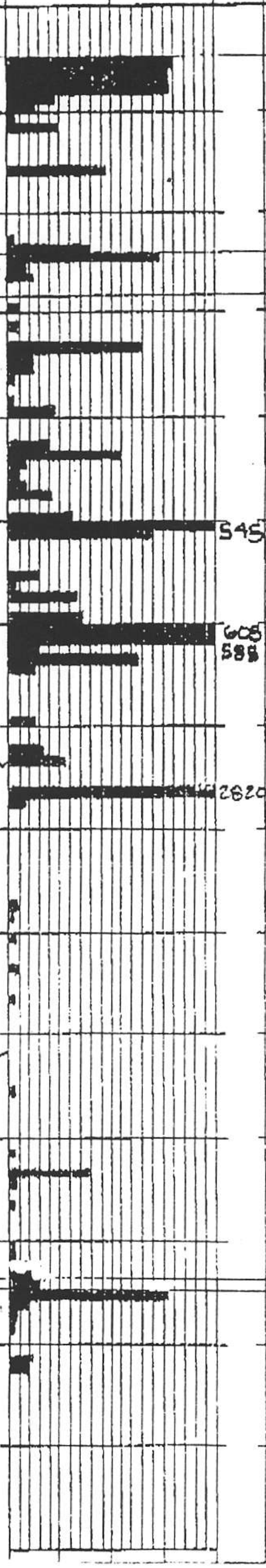
88527

LOGGED BY D. Lucas

VALENTINE GOLD CORP.
SUMMARY LOG

HOLE NO. 88-4

% OX	% CaCO	% SUL	Sample No.	DEPTH (m.)	LITHO	Au in ppb 0 250 500	DESCRIPTION
			83528	5.0			OVERBURDEN
7		Tr. py					Meta SS
1		Tr. Aspy Py		24.0			
		1%		27.6	////		Bi-schist / MT SS - Aspy 24-26 m.
	10	Aspy					
		2% Aspy					Meta SS
				50 m			
		Tr-0.3% Aspy			~ ~		fault gauge 73-73.4m
				100 m	~ ~		fault at 101.4 m.
				123.4 / 123.2			Siliceous sill
							Meta SS

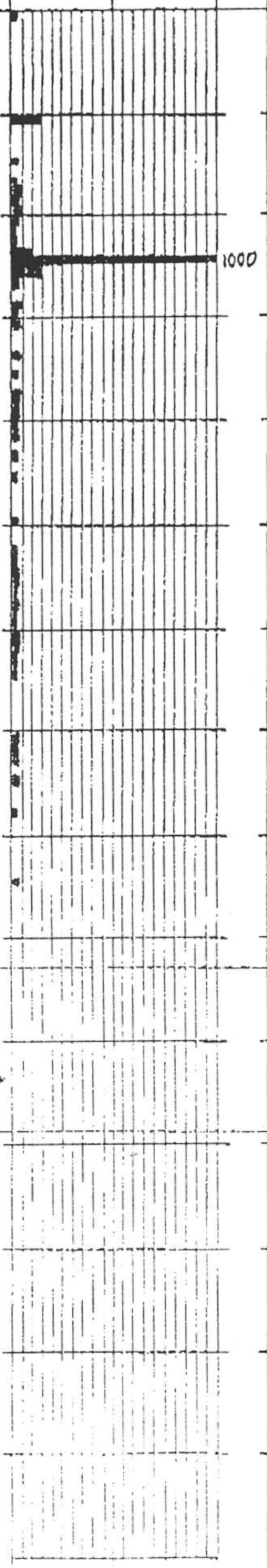


LOGGED BY D. Lucas

VALENTINE GOLD CORP.
SUMMARY LOG

HOLE NO. 88-4

% OX	% CaCO	% SUL	Sample No.	DEPTH (m.)	LITHO	Au in ppb 0 250 500	DESCRIPTION
1				160			
		Trace Aspy Py				1000	174.3-175 m. - 1% Aspy along Qtz veinlets 177.4 - 177.6 Aspy 184.5 - gauge
				200			
				242.6			
				250m			Metass / Bi-schist
			B8779	259 - EOH			

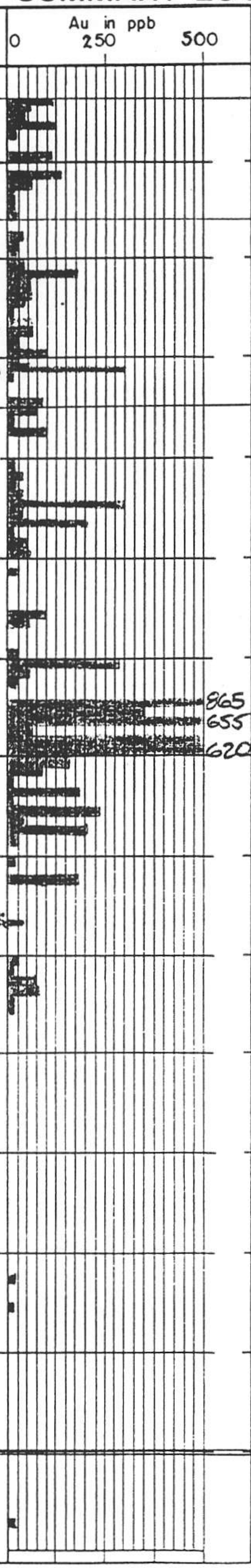


LOGGED BY J. Lucas

VALENTINE GOLD CORP.
SUMMARY LOG

HOLE NO. 88-5

% OX	% CaCO	% SUL	Sample No.	DEPTH (m.)	LITHO	Au in ppb (0 – 250 – 500)	DESCRIPTION
			88780	3.6			OVERBURDEN
0.5		½% Aspy		17.9			Metass shears + qtz veins + Aspy 2% - 16.3 - 17.0
	2	Tr-2% Aspy		34.8			Metass /Bi-schist intense shearing 30 - 32 m. Aspy at 34 m.
		1-2% Aspy					Metass Aspy at: 36, 37, 40-45 m., 1-2%
				50			
		Aspy 1%					Aspy 56-57 m.
	1-4	3% py 1% Aspy				865 655 620	61-69 - fracturing
	2						Aspy at 73 m - 1% qtz veining
		3% Py					86.7-86.95 - gouge, breccia
				100			
		0.5% Py					
				140			
		Py		EOH 157.3			↖ siliceous sill Metass



LOGGED BY D. Lucas

VALENTINE GOLD CORP.
SUMMARY LOG

HOLE NO. 88-06

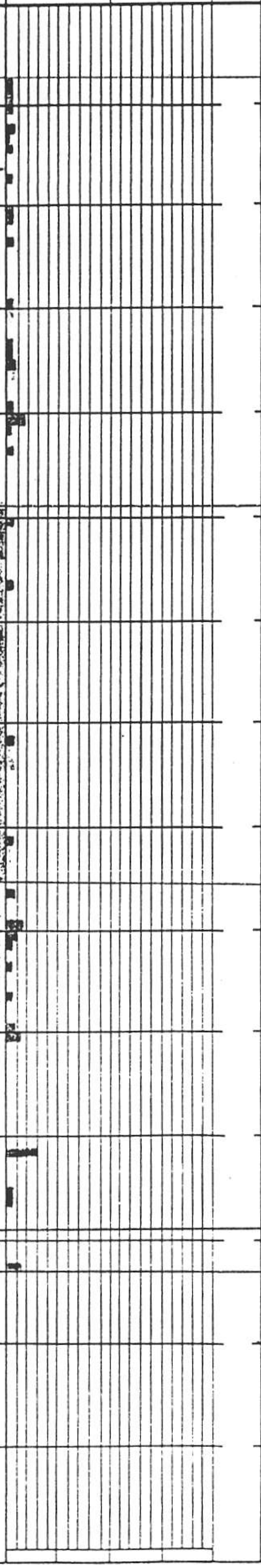
% OX	% CaCO	% SUL	Sample No.	DEPTH (m)	LITHO	Au in ppb (0 – 250 – 500)	DESCRIPTION
			88939	9.1			OVERBURDEN
10				16.4			Meta SS
	2	0.5% pyrh.					Bi, gneiss
	1	1% pyrh.		44			32-35.6 – shearing
	1	1% py		50 52			Amphibolite?
	1	1% py pyrh.					Bi, andalusite gneiss
							83.8-84.9 – shear. + gauge
		1% pyrh. py cpy	89026	98.2 100			95-95.4 – shear + gauge

LOGGED BY D. Lucas

VALENTINE GOLD CORP.
SUMMARY LOG

HOLE NO. 88-7

% OX	% CaCO	% SUL	Sample No.	DEPTH (m.)	LITHO	Au in ppb 0 250 500	DESCRIPTION
			89027	7.6			OVERBURDEN
	1 2	1% py 0.5% py Tr. cpy			~~~ ~~~ ~~~		Meta SS fault gouges + shears at 14.2, 14.8, 16.6 - 17.5, 18-18.3 qtz veins : 26.7 - 26.8 26.9 40.2 - 40.4 m.
	2 1	1% py Tr-0.5% py pyrh		50 85			Bi - schist intense fract: 59.7 - 62.0 64.0 - 65.6 fault gauge
	4	Tr-0.5% py pyrh		100 119			Amphibolite
				122.5	////		Bi - schist / meta SS
			89142				

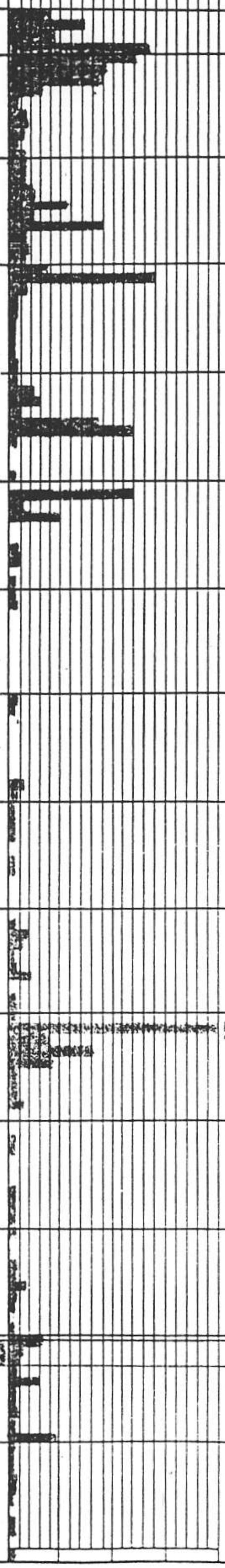


VALENTINE GOLD CORP.
SUMMARY LOG

LOGGED BY D. Lucas

HOLE NO. 88-8

% OX	% CaCO	% SUL	Sample No.	DEPTH (m.)	LITHO	Au in ppb (0 – 250 – 500)	DESCRIPTION
			89143				OVERBURDEN
Tr.	1	Tr-0.5% Py, Pyrh. Aspy					Meta SS
							Aspy, Pyrh: 10.0-10.4 -0.5%; 11.8 -0.2%; 12.4 - 0.4%
							veining with Aspy 20.7-25.3
							fract: 32-33; 36-37; 44-45
	1	Tr-0.5% Py Aspy		50			0.5% Aspy 51.5-51.9
	1	Aspy .5-1%		100		545	100-103 fracturing, py
							Qtz veining + Aspy 103.1; 104.7; 105.7; 108.6
	1			130.1			
	Tr.	Tr.		132.9			Bi - Schist
	2	Tr.					Meta SS
				EOH 150.9			



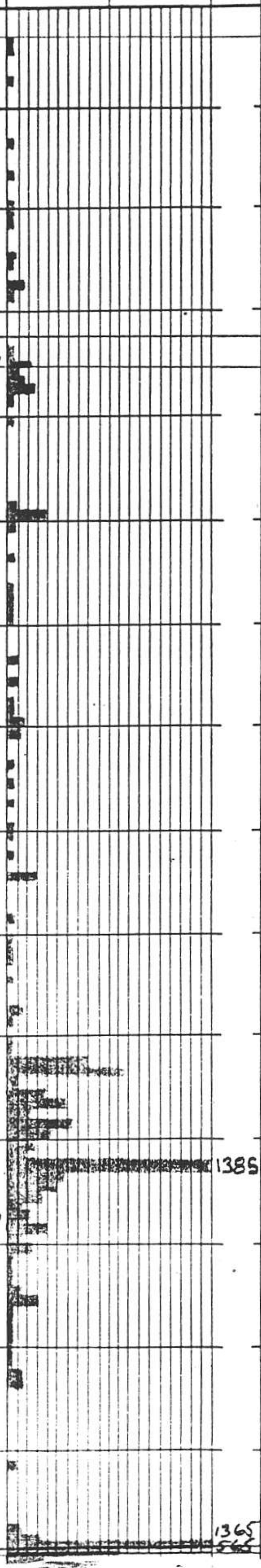
89288

VALENTINE GOLD CORP.
SUMMARY LOG

LOGGED BY D: Lucas

HOLE NO. 88-9

% OX	% CaCO	% SUL	Sample No.	DEPTH (m.)	LITHO	Au in ppb (0 – 250 – 500)	DESCRIPTION
			89289	2			OVERBURDEN
1-2	Tr.	Tr. py		32	~~~		Meta SS 29.1 - brecciation
	1	0.5-2% Aspy		35.2			Bi-schist / MTSS
	3	Tr.		50			Meta SS fracturing at: 39.2, 45.7, 50.0, 55.0, 58-59.5
	1	Tr-1% py					Aspy at 64m. py, pyrh at 67.8
				100			Aspy at 103.8
					NNN	1385	fault gauge, 26cm. Aspy 119.5-120.0 m.
	3	.5% py					1-3% Aspy, 148.6-149.2, 149.8-150.5
		1-3% Aspy		148.6		1365 565	Bi-schist/MTSS
			89443	154			MTSS

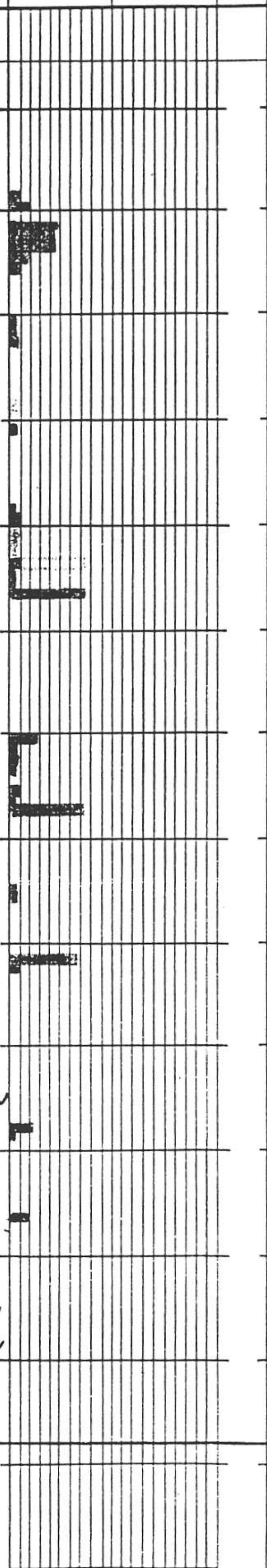


LOGGED BY D. Lucas

VALENTINE GOLD CORP.
SUMMARY LOG

HOLE NO. 88-10

% OX	% CaCO	% SUL	Sample No.	DEPTH (m.)	LITHO	Au in ppb (0 – 250 – 500)	DESCRIPTION
			89444	4.6			OVERBURDEN
1							Meta SS
							shearing at 8.0, 9.3, 11.8 m.
		Tr. py					23-24m : 1.5% Aspy,
							40.8-41.3 - Qtz flood
							42.8-43 —"—
	2	Tr-0.5% py, pyrh		50			
							54m and 56m - Qtz flood 5% py + pyrh.
	1	Tr-1% pyrh					62.5m - 1% Aspy
							76.8 - py, pyrh
	1						
				100			
		Tr			~~~~		105.3-106.4 fault gauge
		py			~~~~		125-125.8 fault
		py			~~~~		128-128.5 fault
							131.6 - Qtz flood
			89574	138			



LOGGED BY P. MAZACEK

VALENTINE GOLD CORP.
SUMMARY LOG

HOLE NO. 88-11

% OX	% CaCO	% SUL	Sample No.	DEPTH (m.)	LITHO	Au in ppb (0 – 250 – 500)	DESCRIPTION
			89575	3.6			OVERBURDEN
	1	1% py		9.7			Metasandstone
	1	2% py		34.8			Bi-schist
	1	1% py		41.8			Meta SS
	1	2% py		47.4			Metass / bi-schist
	1	1% py		50 73			Metass
		3% py		74.7			Siliceous dyke
	1	2% py		79.25			MTSS /
	1	1% py		83			MetaSS / Gar, bi schist
	1	2% py		90			Gar, bi-schist
	1	2% py		93.3			MetaSS / Gar-bi-schist
				95			Gar, bi-schist ↑ Metass
	1	1% py		100 103			Interbedded Metass and Garnet, bi-schist
	1	1% py		142.2			Garnet, Bi-schist
	1	2(6) py		150			Interbedded MTSS + gar. bi-schist

LOGGED BY P. Mazacek

VALENTINE GOLD CORP.
SUMMARY LOG

HOLE NO. 88-11

% OX	% CaCO	% SUL	Sample No.	DEPTH (m.)	LITHO	Au in ppb 0 250 500	DESCRIPTION
	1	1% PY		160 170			158.2–158.6 - fault gauge Interbedded MetaSS + bi.garnet schist
	1	1% PY		183.3			greenish silicified Metasandstone (Amphibolitized?)
	1	2% PY		200 221.3			185–187 - fault gauge garnet, graph, bi schist (Amphibolitized?)
	2	1% PY		227.4			Amphibolite
			89785	250			

VALENTINE GOLD CORP.
SUMMARY LOG

LOGGED BY P. Mazzuk

HOLE NO. 88-12

% OX	% CaCO	% SUL	Sample No.	DEPTH (m.)	LITHO	Au in ppb (0 – 250 – 500)	DESCRIPTION
			89807	18.3			overburden
	2	1% py		50			Amphibolite
							79.-80 m. fault gauge
				100		7340 1235 5140	
				130.45			
			89917				

LOGGED BY P. Mazacek

VALENTINE GOLD CORP.
SUMMARY LOG

HOLE NO. 88-13

% OX	% CaCO	% SUL	Sample No.	DEPTH (m.)	LITHO	Au in ppb (0 – 250 – 500)	DESCRIPTION
			89918	15.2			OVERBURDEN
	2	Tr. py		36.3			Amphibolite
				38.2			Bi. gar. schist
	2	Tr. py		44.8			Amphibolite
	1	Tr. py		50 54.7			garnet, bi - schist greenish, Amphibolitized
	2	10% py	90020	100 117.4			fault 54.7-55.5 65.7-65.8 - fault, 30% py 67.4 - 10% py 72 - 78, 5-10% py Bi, garnet schist weakly Amphibolitized fault 99-100.3 fault 111.0-111.3, 10% py

APPENDIX IX

Report #1021

DIGHEM^{III} SURVEY
FOR
VALENTINE GOLD CORPORATION

SOOKE AREA, B.C.

NTS 92 B/5, 12
92C/9

Paul A. Smith
Geophysicist

DIGHEM SURVEYS & PROCESSING INC.
MISSISSAUGA, ONTARIO
February 12, 1988

AR-PAS-243

SUMMARY

A total of 402 km (250 miles) of survey was flown with the DIGHEM^{IV} system under the terms of an agreement dated December 8, 1987, over a single survey block in the Sooke area of B.C., for Valentine Gold Corporation.

The survey outlined several bedrock conductors and numerous anomalies of possible bedrock origin, some of which show direct or flanking correlation with moderate to weak magnetic anomalies. Most of the conductors detected by the survey are broad and poorly defined, but probably warrant further investigation using appropriate surface exploration techniques. Areas of interest may be assigned priorities for follow-up work on the basis of supporting geological and/or geochemical information. A comparison of the various geophysical parameters should be extremely valuable in mapping the geological units and structural breaks within the survey area.

The survey area exhibits potential as a host for weakly conductive zones of disseminated mineralization. Most of the inferred bedrock conductors are considered to be of moderate priority as exploration targets.

CONTENTS

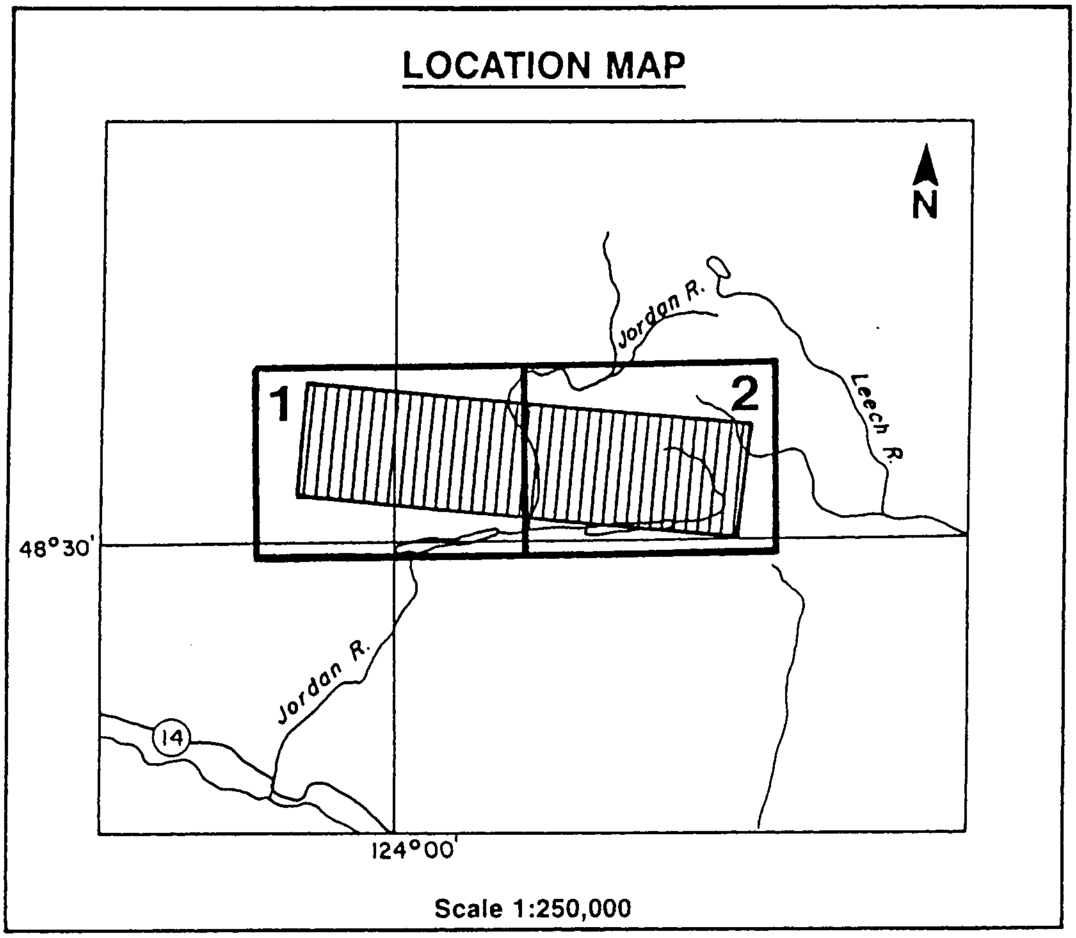


FIGURE 1

THE SURVEY AREA

INTRODUCTION

A DIGHEM^{IV} electromagnetic/resistivity/magnetic/VLF survey totalling approximately 402 line-km was flown with a 200 m line-spacing in the Sooke area of B.C. The survey covered a single survey block with 75 traverse lines flown in a north/south (06°/186°) direction. Nine cross lines were flown over the central portion of the survey block, in an area known as the "C" zone. These lines were flown in an azimuthal direction of 102°/282°. The survey block is located on NTS map sheets 92 B/5, 12 and 92C/9. (See location map - Figure 1).

A Bell 204B turbine helicopter (Registration CF-AHY) was provided by Vancouver Island Helicopters Limited. The helicopter flew at an average airspeed of 110 km/h with an EM bird height of approximately 30 m. Ancillary equipment consisted of a Picodas Cesium magnetometer with its bird at an average height of 45 m, a Sperry radio altimeter, a Panasonic video camera, an RMS GR33 digital graphics recorder, a Scintrex CDI6 digital data acquisition system, and a Digidata 1640 9-track, 800 bpi magnetic tape recorder. The analog equipment recorded four channels of EM data at approximately 900 Hz, two channels of EM data at approximately 7200 Hz, two channels at 56,000 Hz, two channels of magnetics (coarse and fine count), and a channel of radio altitude. The digital equipment recorded the EM data with a sensitivity of 0.20 ppm at 900 Hz, 0.40 ppm at 7200 Hz, and 1 ppm at 56,000 Hz, and the magnetic field to 0.1 nT.

A Herz Industries Totem-2A VLF-EM receiver was also used to record the total field and quadrature components of the secondary VLF signals from Seattle, Washington, (NLK-24.8 kHz) and Annapolis, Maryland (NSS-21.4 kHz). The filtered VLF results from the station at Seattle are included as part of this report under the terms of the survey agreement.

Appendix A provides details on the data channels, their respective sensitivities, and the navigation/flight path recovery procedure. Noise levels of less than 2 ppm are generally maintained for wind speeds up to 35 km/h. Higher winds may cause the system to be grounded because excessive bird swinging produces difficulties in flying the helicopter. The swinging results from the 5 m^2 of area which is presented by the bird to broadside gusts.

In areas where EM responses are evident primarily on the quadrature components, zones of poor conductivity are indicated. Where these responses are coincident with strong magnetic anomalies, it is possible that the inphase component amplitudes have been suppressed by the effects of magnetite. Most of these poorly-conductive magnetic features give rise to resistivity anomalies which are only slightly below background. If it is expected that poorly-conductive economic mineralization may be associated with magnetite-rich units, most of these weakly anomalous features will be of interest. In areas where magnetite causes the inphase components to become negative, the apparent conductance and depth of EM anomalies may be unreliable.

Anomalies which occur near the ends of the survey lines, (i.e., outside the survey area), should be viewed with caution. Some of the weaker anomalies could be due to aerodynamic noise, i.e., bird bending, which is created by abnormal stresses to which the bird is subjected during the climb and turn of the aircraft between lines. Such aerodynamic noise is usually manifested by an anomaly on the coaxial inphase channel only, although severe stresses can affect the coplanar inphase channels as well.

SECTION I: SURVEY RESULTS

General Discussion

The survey results are presented on two contiguous map sheets at a scale of 1:10,000. Table I-1 summarizes the EM responses in the survey area, with respect to conductance grade and interpretation.

Anomalous electromagnetic responses were picked and analysed by computer to provide preliminary electromagnetic anomaly maps. The resulting maps are used in conjunction with the computer processed digital data profiles during the interpretation stage, to produce the final EM anomaly maps.

The anomalies shown on the electromagnetic anomaly maps are based on a near-vertical, half plane model. This model best reflects "discrete" bedrock conductors. Wide bedrock conductors or flat-lying conductive units, whether from surficial or bedrock sources, may give rise to very broad anomalous responses on the EM profiles. These may not appear on the electromagnetic anomaly map if they have a regional character rather than a locally anomalous character. These broad conductors, which more closely approximate a half space model, will be maximum coupled to

TABLE I-1

EM ANOMALY STATISTICS OF THE SOOKE AREA

CONDUCTOR GRADE	CONDUCTANCE RANGE SEIMENS (MHOS)	NUMBER OF RESPONSES
6	> 100	0
5	50 - 100	0
4	20 - 50	0
3	10 - 20	1
2	5 - 10	1
1	< 5	144
X	INDETERMINATE	186
TOTAL		332

CONDUCTOR MODEL	MOST LIKELY SOURCE	NUMBER OF RESPONSES
D	DISCRETE BEDROCK CONDUCTOR	21
B	DISCRETE BEDROCK CONDUCTOR	108
S	CONDUCTIVE COVER	114
H	ROCK UNIT OR THICK COVER	88
E	EDGE OF WIDE CONDUCTOR	1
TOTAL		332

(SEE EM MAP LEGEND FOR EXPLANATIONS)

the horizontal (coplanar) coil-pair and should be more evident on the resistivity parameter. Resistivity maps, therefore, may be more valuable than the electromagnetic anomaly maps, in areas where broad or flat-lying conductors are considered to be of importance. Contoured resistivity maps, based on the 7200 Hz coplanar data, are included with this report.

Excellent resolution and discrimination of conductors was made possible by using a relatively fast sampling rate of 0.1 sec and by employing a common frequency (900 Hz) on two orthogonal coil-pairs (coaxial and coplanar). The resulting "difference channel" parameters often permit differentiation of bedrock and surficial conductors, even though they may exhibit similar conductance values.

As previously mentioned in the introduction to this report, the effects of magnetite can reduce the positive amplitude of the inphase responses and can yield negative inphase responses in poorly conductive areas. It should be reiterated that the effects of magnetite can yield higher (overstated) apparent resistivities, lower (understated) EM conductance values, and erroneously shallow depth estimates. Furthermore, the apparent dips of conductors may also be incorrect if they are flanking, or contained within, magnetite-rich units.

There may be occasions where the low frequency (900 Hz) inphase coplanar response is negative while the high frequency (7200 Hz) inphase coplanar response is positive. Although the effects of magnetite are frequency independent, and should therefore yield equal negative excursions for both frequencies, the higher frequency will yield a more positive response over zones of conductivity.

Magnetics

A Geometrics 826 proton precession magnetometer was operated at the survey base to record diurnal variations of the earth's magnetic field. The clock of the base station was synchronized with that of the airborne system to permit subsequent removal of diurnal drift.

The corrected data were interpolated onto a regular grid at a 2.5 mm interval using a cubic spline technique. The resulting grid provided the basis for presenting the magnetic contours.

Although there was no correction applied to the magnetic data for local variations in the IGRF field across the survey grid, the background levels have been related to the mean IGRF value for the survey area.

The total field magnetic data have been presented as contours on the photomosaic base maps using a contour interval of 10 nT where gradients permit. The maps show the magnetic properties of the rock units underlying the survey area.

The total field information can also be subjected to a computer processing algorithm to produce enhanced magnetic maps. This procedure enhances near-surface magnetic units and suppresses regional gradients. It not only provides better definition and resolution of magnetic units, but also develops weak magnetic features which may not be clearly evident on the total field maps. Maps of the first or second vertical magnetic derivative can also be prepared from existing survey data, if requested.

There is weak evidence on the magnetic maps which suggests the area has undergone some deformation and/or alteration. These structural complexities are evident on the contour maps as variations in magnetic intensity, irregular patterns, and as offsets or changes in strike direction. A major unit of relatively low magnetic intensity strikes east/west along the southern property boundary. This is flanked on the south by a strong magnetic high, between lines 10461 and 10750.

If a specific magnetic intensity can be assigned to the rock type which is believed to host the target mineralization, it may be possible to select areas of higher priority on the basis of the total field magnetic maps. This is based on the assumption that the magnetite content of the host rocks will give rise to a limited range of contour values which will permit differentiation of various lithological units.

Magnetic relief is about 1100 nT, varying from a low of 55,170 nT to a high of more than 56,250 nT, near the south end of line 10750. Background values are about 55,720 nT over most of the survey grid.

In addition to the major magnetic high which dominates the southwestern corner, south of the Bear Creek reservoir, there are several other clearly defined magnetic units within the survey area. These are located near fiducial 2319 on line 10280, fiducial 597 on line 10491, fiducial 1495 on 10461, fiducial 1777 on line 10491, fiducial 1990 on line 10510 and anomaly 10590B. Of these, only the last anomaly appears to be associated with bedrock conductivity.

There are also several magnetic lows on the property which may be of interest. These lows may represent non-magnetic rock units or zones of alteration.

Strikes on the western half of the property appear to be east/west. On the eastern sheet, however, a strike direction of WNW/ESE is also evident. These two strike directions, inferred from the magnetic data, appear to converge towards the east.

The magnetic results, in conjunction with the other geophysical parameters, should provide valuable information which can be used to effectively map the geology and structure in the survey area.

Resistivity

Resistivity maps, which display the conductive properties of the survey area, were produced from the 7200 Hz coplanar data. Most of the survey block yields resistivities of more than 1,000 ohm-m, suggesting that the surficial cover and underlying rocks are quite resistive. There are some areas, however, where well-defined zones of low resistivity are evident. Some of these may be due to bedrock conductors.

VLF

The VLF maps show the contoured results of the filtered total field parameter from the transmitter at Seattle, Washington. Seattle was used as the primary signal source although the results from Annapolis also yield well-defined VLF trends. Several lines of data were missing from the Annapolis data set, due to interruptions in signal transmission.

The VLF method is quite sensitive to the angle of coupling between the conductor and the propogated EM field. Consequently, conductors which strike towards the VLF station will usually yield a stronger response than conductors which are nearly orthogonal to it. The general strike in the survey area, inferred from the magnetic data, appears to be approximately east/west. This strike provides moderately good coupling with VLF signals from Seattle and Annapolis.

In general, the VLF trends over most of the survey area are quite strong and well-defined, and do not appear to be adversely affected by topography or overburden. Most VLF trends, however, do not show a strong correlation with bedrock conductors or magnetic units. This suggests that the magnetic units are generally non-conductive. Some VLF anomalies appear to transect the local geologic strike at a shallow angle, suggesting that they are possibly due to shears or faults. VLF trends which appear to be truncated or offset may also be intersected by faults or shears.

The VLF parameter does not normally provide the same degree of resolution available from the EM data. Closely-spaced conductors, conductors of short strike length or conductors which are poorly coupled to the VLF field, may escape detection with this method. Erratic signals from the VLF transmitters can also give rise to strong, isolated anomalies which should be viewed with caution. Regardless of these limitations, however, the VLF results have provided valuable additional structural information, particularly within the more resistive portions of the survey area. The VLF method could possibly be used as a follow-up tool to locate most of the bedrock conductors in the survey area. Because of the relatively high frequency, the VLF data may even prove to be more effective than the EM results over most of the grid. The filtered total field VLF contour maps are presented on the photomosaic base with a contour interval of one percent.

Electromagnetics

The EM anomalies resulting from this survey appear to fall within one of two general categories. The first type genrally comprises weak or broad responses which exhibit the characteristics of a half space and do not yield well-defined inflections on the difference channels. Anomalies in this category are usually given an "S" or "H" interpretive symbol. The lack of a difference channel response usually implies a poorly conductive broad source such as overburden.

The second class of anomalies, of which there are very few, consists of moderately narrow responses on the coaxial channel. The anomalies which fall into this category are attributed to concentrations of conductive sulphides or graphite and have been given a "B" or "D" interpretive symbol.

The effects of poorly conductive overburden are evident over portions of the survey area. Although the difference channels (DIFI and DIFQ) are extremely valuable in detecting bedrock conductors which are partially masked by conductive overburden, sharp undulations in the bedrock/overburden interface can yield anomalies in the difference channels which may be interpreted as possible bedrock conductors. Such anomalies usually fall into the "S?" or "B?" classification but may also be given an "E" interpretive symbol, denoting a resistivity contrast at the edge of a conductive unit.

Conductors in the Survey Area

Due to the type of mineralization being sought, and the relatively low amplitude EM responses which have been observed over known minerlization on the ground, an attempt has been made to pick even the most subtle responses detected by the survey.

In many cases, the interpretation was based primarily on the 7200 Hz coplanar quadrature response, which should give the strongest response over very weak conductors.

Other anomalies were picked on broad, weak responses, which would normally be attributed to weakly conductive overburden. As stated previously in this report, broad or flat-lying zones may not yield "discrete" EM anomalies, but will be evident on the resistivity parameter. The reported absence of conductive overburden in the survey area tends to enhance the significance of the low resistivity zones.

The general lack of clearly-defined EM conductors in an area which reportedly contains long, linear graphite-bearing zones is somewhat difficult to understand. One possible explanation is that the graphite is relatively non-conductive in this area. Normally one would expect a very strong response at the 900 Hz freqency. The conductivity can be confirmed by doing a quick ground survey over a known graphitic zone.

A second possibility is that the graphitic zones are flat-lying, thereby being maximum coupled to the coplanar coil-pair, rather than the coaxial. Such features would be seen on the resistivity parameter but might not give rise to discrete EM anomalies.

A third possibility is that the conductive zones are contained within deep valleys and were therefore not detected because of the increase in the sensor to source distance.

The following paragraphs provide a very brief description of some of the more interesting geophysical responses detected by the survey.

Even weak conductors may be of economic significance in this survey area. A proper assessment and evaluation of these anomalies, therefore, should be carried out by one or more qualified professionals who have access to, and can provide a meaningful compilation of, all available geophysical, geological and geochemical data.

The electromagnetic anomaly maps show the anomaly locations with the interpreted conductor type, dip, conductance and depth being indicated by symbols. Direct magnetic correlation is also shown if it exists. The strike direction and length of the conductors are indicated when anomalies can be correlated from line to line. When studying the map sheets, consult the anomaly listings appended to this report.

As economic mineralization within the area may be associated with weakly disseminated sulphides, it is difficult to assess the relative merits of EM anomalies on the basis of conductance. It is recommended that an attempt be made to compile a suite of geophysical "signatures" over areas of interest. Anomaly characteristics are clearly defined on the computer generated data profiles which are supplied as one of the survey products.

Sheet 1

Only ten anomalies have been attributed to probable bedrock conductors in the western half of the survey block. The remaining anomalies are either weak, or poorly defined, and generally yield signatures typical of broad or flat-lying zones of poor conductivity.

Approximately half of the bedrock conductors are associated with two zones of low resistivity which commonly yield values of less than 500 ohm-m. These have been shown on the EM map as zones A and B.

Zone A

Two probable bedrock conductors are associated with a well-defined resistivity low in the northwestern corner of sheet 1. This is outlined as zone A. Most of the anomalous responses are quite broad. Anomalies 10030A and 10030xC, however, reflect moderately thin sources, which may dip to the north.

Neither of these conductors is magnetic, although 10020xC-10030xC is located on the north side of a very weak magnetic trend. This magnetic trend is also paralleled by a weak VLF anomaly which strikes WSW from the centre of zone A. It is interesting to note that the second conductor, 10030A-10040A, appears to strike ESE along the central axis of zone A.

Conductor 10150A

This isolated, grade 1 anomaly is non-magnetic, but is coincident with a moderately strong VLF anomaly. The VLF response strikes in a south-southwesterly direction, swinging to the east near zone B, and then to the north.

The VLF trend suggests that anomaly 10150A may be a continuation of one of the conductors in zone B.

Zone B

An elongate, east/west trending resistivity low occurs in the north-central portion of sheet 1. Although there is no direct VLF correlation, VLF anomalies are evident on the western, northern and southeastern flanks of the conductive zone.

There is a weak magnetic anomaly associated with 10220E, which tends to enhance its significance. Most anomalies are quite weak. Anomalies 10200A, 10210A and 10210B are quite well-defined, suggesting a narrow conductive source within the bedrock.

Strikes are uncertain, so it is recommended that additional work be done to determine the true strike and extent of conductors associated with zone B.

Conductor 10361A-10371A

Anomalies 10361A and 10371A reflect a thin bedrock conductor which appears to strike NW/SE, dipping to the northeast. These responses are evident primarily on the quadrature component, indicating a narrow zone of weak conductivity. This conductor is proximal and parallel to a NW/SE trending segment of the Jordan River, and may therefore be related to structure.

The rock unit hosting this conductor does not show an appreciable change from the magnetic background. A weak VLF trend, which does not appear to be related to topography, is associated with this conductor.

Strikes in this area appear to deviate from the normal east/west trend, and may therefore represent local structural deformation.

Approximately 3.8 km to the south, on line 10361, the effects of magnetite are clearly evident on the inphase profiles. Note the negative inflections associated with the strong magnetic peak at fiducial 458. This plug-like magnetic unit is non-conductive.

Conductor 10401xA

Anomaly 10401xA is a weak but interesting response in the southeastern corner of sheet 1. This anomaly reflects a narrow bedrock conductor of limited strike length. The strike extent may be much greater than indicated on the EM map. This statement is based on the coincident VLF anomaly which extends ENE from line 10361 through conductor 10361xA, continuing to the east on sheet 2.

The conductor is non-magnetic, being situated in a trough between two magnetic units, 150m and 300m to the south and north, respectively.

Conductor 10421A

Anomaly 10421A reflects a probable bedrock conductor, the strike direction and strike length of which is uncertain. This conductor appears to be related to a strike change evident on the VLF map, in close proximity to the Jordan River. The conductor may extend in a southeasterly direction to 10431xA, following the VLF axis. The resistivity patterns indicate a possible north/south strike while magnetic patterns are ambiguous. There is a magnetic low, however, which generally coincides with the river, suggesting a probable structural break.

The significance of conductor 10421A is significantly enhanced by its apparent proximity to a mineralized unit known as the "C" zone. It is obvious that any anomalies in this area should be subjected to further investigation.

Sheet 2

With the exception of anomaly 10421A, which occurs at the junction of sheets 1 and 2, most of the bedrock conductors on sheet 2 are located in the northeastern quadrant. Zone G, in the southeast corner, is one exception.

Correlation of EM trends from line to line is quite difficult, with many anomalies suggesting NE/SW striking directions. This trend direction does not correlate with the convergent W/E and WNW/ESE trends inferred from the magnetic VLF and resistivity data. This apparent lack of correlation suggests that some of the EM anomalies may be related to cross-cutting faults, or that they represent isolated responses of very limited strike length.

Conductors 10590B, 10600B, 10610xB

Anomaly 10590B is an extremely weak response and may be due to aerodynamic noise. However, it is coincident with a well-defined WNW/ESE striking magnetic anomaly, which suggests a possible bedrock source. This anomaly is located about 300m south of a similarly trending VLF anomaly. The VLF anomaly also coincides with a major resistivity gradient which extends from the northend of line 10461 to the eastern end of line 20020. The 1000 ohm-m contour on the resistivity map suggests a possible contact in this area, with the more conductive unit to the northeast and the more resistive unit to the southwest.

Anomaly 10600B is a definite bedrock conductor which may be related to anomaly 10610xB on the adjacent line. Anomaly 10600B correlates with an isolated, moderately strong magnetic peak. It is also flanked on the south by a major east/west trending VLF response.

Zone D

Zone D consists of a resistivity low which hosts three or more possible bedrock conductors. All anomalies in this zone appear to be contained within a non-magnetic rock unit, except for 10630B which yields a weak magnetic correlation of 7nT. A discontinuous VLF anomaly trends WNW/ESE along the southern boundary of zone D. Anomaly 10640A is one of the better defined responses in this zone.

Zone E

Zone E is a narrow zone of low resistivity which exhibits a marked change in strike in the vicinity of line 10650. The eastern portion strikes east-southeast, parallel to the major resistivity gradient described previusly. The western portion seems to strike NE/SW, and may be related to a fault or contact.

There are at least three anomalies within this zone which suggest narrow bedrock conductors. These are 10630C, 10670F and 10710D. Dips appear to be to the north. A moderately strong VLF anomaly extends from 10630xD to 10730B, coincident with the eastern portion of zone E.

South of this zone there is an isolated anomaly, 10680D, which is of interest. This anomaly appears to be due to a narrow, north-dipping, magnetic bedrock conductor, near the southern contact of a moderately conductive unit.

Anomaly 10720C also reflects a narrow isolated conductor which sould be investigated. There is no magnetic or VLF correlation with this conductor although it is on strike with a VLF trend to the west.

Zone F

Zone F consists of a broad conductive unit located in the extreme northeastern corner of the survey grid. This conductive unit, which appears to be open to the north and east, contains several moderately strong bedrock conductors. Strikes are uncertain due to the incomplete survey coverage. These conductors may actually be located beyond the proposed survey area.

It is strongly recommended that additional work be carried out in this area in order to determine the causative source of the conductors in zone F.

Resistivities are less than 100 ohm-m on lines 10720 to 10760. This area is relatively non-magnetic, but there is a moderately strong VLF anomaly which extends from 10720F to fiducial 180 on line 10760.

Zone G

Zone G is located in the southeastern corner of the survey grid. It also yields a well-defined resistivity low with values of less than 100 ohm-m. This zone is situated on the southern side of the valley which hosts the Bear Creek Reservoir, about 1.5 km to the west.

The conductors are located on the northern flank of a pronounced magnetic low which strikes east/west across the southern sheet boundary. There is also a weak VLF anomaly which extends in an easterly direction from 10700A through 10750A.

This zone, which is open to the east, is considered to be one of the more attractive targets on this sheet. Its proximity to the strong magnetic gradient suggests the conductors may be relatd to a major fault, alteration zone or contact.

Although most of the remaining responses on sheet 2 are relatively weak and poorly-defined, some are considered important enough to warrant further investigation. Particular attention should be given to those anomalies which appear to be associated with VLF or magnetic anomalies. These would include anomalies 10500xD, 10530B-10540xA, 10540A, 10630xA-10640xA and 10700B, to name only a few.

Any anomalies which appear to be associated with structural breaks inferred from the magnetic or VLF data, are considered to be of potential interest. Several trend discontinuities and offsets in magnetic/VLF anomalies suggest the presence of at least three faults or folds. It is likely that structural deformation may have influenced mineral deposition in the survey area.

It is reported that the survey area contains at least one known zone of disseminated mineralization. As the geophysical signatures of such zones may be extremely weak or poorly-defined, it is recommended that some of the more subtle targets be subjected to fairly detailed investigation using appropriate ground equipment and survey techniques. Most of the stronger conductors, however, can probably be drilled after confirming their exact location on the ground. After initial investigations have been carried out, it may be necessary to re-evaluate the remaining anomalies based on information acquired from the follow-up program.

It is also recommended that additional processing of existing geophysical data be considered, in order to extract the maximum amount of information from the survey results. Colour maps and enhanced shadow maps often provide valuable information on structure and lithology, which may not be clearly evident on the contour maps. A map of the first vertical magnetic derivative or a similarly "enhanced" magnetic map may provide more meaningful results from the magnetic data. Consideration should also be given to processing the 56,000 Hz EM data in order to provide a second resistivity map.

A P P E N D I X   E

EM ANOMALY LIST

ANOMALY/ FID/INTERP	COAXIAL 900 HZ REAL PPM	QUAD PPM	COPLANAR 900 HZ REAL PPM	QUAD PPM	COPLANAR 7200 HZ REAL PPM	QUAD PPM	VERTICAL DIKE COND MHOS	DEPTH* M	HORIZONTAL SHEET COND MHOS	DEPTH M	CONDUCTIVE EARTH RESIS OHM-M	DEPTH M
LINE 10010	(FLIGHT		2)									
A 233 H	0	1	0	1	16	19	1	0	1	41	355	14
LINE 10030	(FLIGHT		2)									
A 434 B	0	6	0	15	41	51	1	6	1	43	703	0
LINE 10040	(FLIGHT		3)									
A 264 B?	3	8	2	7	19	20	2	0	1	56	370	0
B 266 H	1	2	3	8	7	2	2	0	1	74	189	24
LINE 10050	(FLIGHT		3)									
A 285 H	1	5	2	6	6	8	1	0	1	53	367	1
B 283 H	1	6	1	7	1	40	1	0	1	60	622	0
LINE 10060	(FLIGHT		3)									
A 358 S?	0	1	1	1	9	21	1	0	1	0	775	0
B 410 H	1	2	1	2	10	15	1	0	1	48	522	16
LINE 10110	(FLIGHT		3)									
A 735 H	1	1	2	2	9	5	1	0	1	54	654	18
LINE 10120	(FLIGHT		3)									
A 878 H	0	0	0	1	8	26	1	0	1	34	1154	0
B 892 S	2	2	0	1	7	11	1	0	1	12	1051	0
LINE 10130	(FLIGHT		3)									
A 909 S?	0	1	2	1	12	15	1	0	1	0	458	0
LINE 10140	(FLIGHT		3)									
A 982 H	1	1	1	1	21	38	1	0	1	21	205	0
LINE 10150	(FLIGHT		3)									
A 1175 B	1	10	2	8	24	66	1	6	1	65	530	10
LINE 10180	(FLIGHT		3)									
A 1429 S?	2	2	2	2	10	14	1	0	1	12	771	0
B 1412 B?	3	4	3	4	3	4	1	0	1	71	193	43
C 1411 B?	2	4	3	3	11	4	1	0	1	73	211	45
D 1391 S?	1	2	1	1	5	17	1	0	1	32	1658	0
LINE 10190	(FLIGHT		3)									
A 1486 H	4	0	2	2	11	13	1	0	1	50	443	20

* ESTIMATED DEPTH MAY BE UNRELIABLE BECAUSE THE STRONGER PART OF THE CONDUCTOR MAY BE DEEPER OR TO ONE SIDE OF THE FLIGHT LINE, OR BECAUSE OF A SHALLOW DIP OR OVERBURDEN EFFECTS.

ANOMALY/ FID/INTERP	COAXIAL 900 HZ REAL PPM	COAXIAL 900 HZ QUAD PPM	COPLANAR 900 HZ REAL PPM	COPLANAR 900 HZ QUAD PPM	COPLANAR 7200 HZ REAL PPM	COPLANAR 7200 HZ QUAD PPM	VERTICAL DIKE COND MHOS	VERTICAL DIKE DEPTH* M	HORIZONTAL SHEET COND MHOS	HORIZONTAL SHEET DEPTH M	CONDUCTIVE EARTH RESIS OHM-M	CONDUCTIVE EARTH DEPTH M
LINE 10190	(FLIGHT		3)									
B 1501 B?	1	0	1	1	5	14	1	0	1	46	1469	8
C 1528 H	1	1	0	1	7	12	1	0	1	38	1001	0
D 1534 H	1	1	1	1	8	13	1	0	1	55	861	18
E 1539 H	1	1	1	2	11	13	1	0	1	35	464	1
F 1542 B?	3	4	1	2	14	13	1	0	1	46	402	15
LINE 10200	(FLIGHT		3)									
A 1599 D	3	9	3	13	47	45	2	0	1	53	210	9
LINE 10210	(FLIGHT		3)									
A 1727 B	2	11	2	12	47	53	1	0	1	34	531	0
B 1729 D	3	10	2	1	28	18	2	5	1	56	810	0
C 1729 H	3	10	2	6	28	18	2	0	1	45	617	0
D 1734 S?	1	4	1	4	23	48	1	0	1	21	200	0
LINE 10220	(FLIGHT		3)									
A 1794 H	0	0	0	2	8	19	1	0	1	39	1106	4
B 1786 H	0	0	0	1	9	18	1	0	1	62	832	27
C 1774 H	1	1	0	1	13	14	1	0	1	66	453	34
D 1765 H	0	1	1	2	8	5	1	0	1	53	911	16
E 1758 B?	1	6	1	5	9	26	1	0	1	91	601	12
F 1756 B?	1	6	2	7	6	37	1	2	1	88	280	34
G 1750 B?	1	2	1	1	16	23	1	0	1	27	389	0
LINE 10230	(FLIGHT		3)									
A 1851 H	1	1	1	1	7	6	1	0	1	41	937	7
B 1857 S?	1	2	0	1	7	21	1	0	1	18	1431	0
C 1876 S?	1	0	0	1	16	18	1	0	1	22	502	0
D 1888 S?	1	1	0	0	16	16	1	0	1	14	500	0
E 1890 H	1	1	0	1	14	14	1	0	1	30	444	0
LINE 10240	(FLIGHT		3)									
A 1952 H	2	1	0	2	22	28	1	0	1	38	293	12
B 1937 S?	0	1	1	1	14	11	1	0	1	24	594	0
C 1930 H	0	0	1	1	19	19	1	0	1	42	324	14
LINE 10250	(FLIGHT		3)									
A 2001 S?	0	1	2	1	8	27	1	0	1	27	1143	0
B 2008 S?	0	1	2	1	14	17	1	0	1	52	569	21
C 2059 B?	0	0	0	0	9	15	1	0	1	52	653	15
D 2064 H	0	1	0	1	12	4	1	0	1	76	118	50

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ANOMALY/ FID/INTERP	COAXIAL 900 HZ REAL PPM	COAXIAL 900 HZ QUAD PPM	COPLANAR 900 HZ REAL PPM	COPLANAR 900 HZ QUAD PPM	COPLANAR 7200 HZ REAL PPM	COPLANAR 7200 HZ QUAD PPM	VERTICAL DIKE COND MHOS	VERTICAL DIKE DEPTH* M	HORIZONTAL SHEET COND MHOS	HORIZONTAL SHEET DEPTH M	CONDUCTIVE EARTH RESIS OHM-M	CONDUCTIVE EARTH DEPTH M
LINE 10260	(FLIGHT	3)										
A 2094 B?	0	3	0	2	6	19	1	0	1	116	1005	0
LINE 10270	(FLIGHT	3)										
A 2240 H	0	2	1	2	8	11	1	0	1	184	1035	0
LINE 10310	(FLIGHT	3)										
A 2588 H	0	0	0	1	9	15	1	0	1	63	816	27
B 2593 H	0	1	0	0	8	15	1	0	1	21	978	0
LINE 10361	(FLIGHT	4)										
A 521 D	2	10	0	5	14	33	1	0	1	86	949	0
LINE 10371	(FLIGHT	4)										
A 543 D	1	10	1	6	13	58	1	0	1	82	492	14
LINE 10401	(FLIGHT	4)										
A 864 H	1	4	1	3	12	14	1	0	1	34	577	1
LINE 10421	(FLIGHT	4)										
A 1083 B	0	13	0	6	25	48	1	7	1	102	949	10
B 1084 B?	0	13	0	6	25	48	1	3	1	71	831	0
LINE 10491	(FLIGHT	4)										
A 1731 H	1	4	2	4	13	28	1	0	1	31	634	2
LINE 10510	(FLIGHT	4)										
A 1992 H	0	3	0	3	12	18	1	0	1	28	623	0
LINE 10520	(FLIGHT	4)										
A 2022 S	0	2	1	2	13	13	1	0	1	28	417	0
B 2084 S	1	3	0	3	11	46	1	0	1	13	871	0
LINE 10530	(FLIGHT	4)										
A 2170 S	1	3	0	4	17	25	1	0	1	32	315	4
B 2163 B?	2	4	2	3	5	13	1	0	1	45	325	16
LINE 10540	(FLIGHT	4)										
A 2251 B?	1	4	0	3	12	30	1	0	1	43	762	11
B 2261 B?	1	5	1	5	12	35	1	0	1	16	712	0
LINE 10550	(FLIGHT	4)										
A 2342 H	1	4	0	2	14	22	1	0	1	45	383	14

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1021-A VANCOUVER ISLAND

ANOMALY/ FID/INTERP	COAXIAL 900 HZ REAL PPM	QUAD PPM	COPLANAR 900 HZ REAL PPM	QUAD PPM	COPLANAR 7200 HZ REAL PPM	QUAD PPM	VERTICAL DIKE COND MHOS	DEPTH* M	HORIZONTAL SHEET COND MHOS	DEPTH M	CONDUCTIVE EARTH RESIS OHM-M	DEPTH M
LINE 10560	(FLIGHT		4)									
A 2370 S	0	1	2	1	6	12	1	0	1	30	1217	0
B 2378 H	1	2	1	4	12	16	1	0	1	34	380	3
LINE 10570	(FLIGHT		4)									
A 2510 H	1	3	0	3	11	15	1	0	1	21	560	0
B 2468 H	1	2	0	3	3	19	1	0	1	26	532	0
LINE 10580	(FLIGHT		4)									
A 2591 B?	1	4	0	4	14	18	1	0	1	37	524	5
LINE 10590	(FLIGHT		4)									
A 2659 S?	0	3	0	2	9	14	1	0	1	38	280	9
B 2625 B	3	1163	2	1164	2	4	1	0	1	168	287	77
LINE 10600	(FLIGHT		4)									
A 2729 H	0	3	0	6	27	35	2	0	1	94	1035	0
B 2754 B	2	3	6	3	14	33	1	0	1	44	369	16
C 2775 B?	2	12	2	13	39	102	1	0	1	39	325	0
LINE 10610	(FLIGHT		4)									
A 2851 H	2	2	2	2	11	11	1	0	1	26	284	0
B 2846 S?	2	0	3	2	18	17	1	0	1	0	203	0
C 2815 B?	1	14	0	13	24	99	1	0	1	54	765	0
D 2809 B?	0	5	1	5	13	47	1	11	1	79	529	16
LINE 10620	(FLIGHT		4)									
A 2883 H	3	3	3	5	14	20	1	0	1	48	315	19
B 2926 B?	0	11	0	12	37	103	1	0	1	58	811	0
C 2930 B	0	12	1	11	30	84	1	8	1	71	811	4
D 2939 H	2	6	1	4	15	22	1	0	1	57	224	30
E 2941 H	2	6	1	5	22	22	1	0	1	87	111	64
LINE 10630	(FLIGHT		4)									
A 3039 H	1	2	1	2	15	13	1	0	1	35	261	7
B 3004 B?	0	11	1	9	30	81	1	0	1	69	828	0
C 2990 D	2	9	1	7	26	39	1	0	1	72	497	9
LINE 10640	(FLIGHT		4)									
A 3106 D	2	15	1	14	50	73	1	0	1	46	713	0
B 3112 B?	1	4	0	4	15	27	1	0	1	39	562	11
LINE 10650	(FLIGHT		3)									
A 2786 S?	0	2	1	4	12	11	1	0	1	15	382	0

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	COAXIAL 900 HZ		COPLANAR 900 HZ		COPLANAR 7200 HZ		VERTICAL DIKE		HORIZONTAL SHEET		CONDUCTIVE EARTH	
ANOMALY/ FID/INTERP	REAL PPM	QUAD PPM	REAL PPM	QUAD PPM	REAL PPM	QUAD PPM	COND MHOS	DEPTH* M	COND MHOS	DEPTH M	RESIS OHM-M	DEPTH M
LINE 10650	(FLIGHT	3)										
B 2836 B?	0	5	0	5	20	40	1	0	1	67	917	0
C 2838 B?	0	4	0	6	28	33	1	0	1	51	834	0
D 2854 S	0	3	1	3	21	16	1	0	1	19	236	0
LINE 10660	(FLIGHT	3)										
A 2938 H	1	2	2	4	17	10	1	0	1	25	363	0
B 2914 B?	0	8	0	6	13	77	1	0	1	75	867	0
C 2905 H	0	11	1	14	14	7	1	3	1	40	615	0
LINE 10670	(FLIGHT	3)										
A 2974 H	0	1	2	1	4	20	1	0	1	27	2076	0
B 2985 B?	1	3	2	5	17	15	2	0	1	64	402	0
C 2998 H	0	0	1	1	9	13	1	0	1	27	893	0
D 3020 B?	0	6	2	7	8	31	1	0	1	39	581	0
E 3024 H	0	6	1	6	10	63	1	0	1	41	638	0
F 3041 D	1	10	1	6	22	40	1	0	1	66	471	7
G 3042 B?	1	10	0	6	5	40	1	0	1	50	555	0
LINE 10680	(FLIGHT	3)										
A 3117 S?	2	5	2	5	21	9	1	0	1	8	300	0
B 3091 B?	0	4	1	6	17	5	1	0	1	79	719	0
C 3076 D	0	12	0	11	27	91	1	1	1	69	828	0
D 3073 S?	1	10	2	6	25	91	1	0	1	43	508	0
E 3066 B?	6	23	3	9	39	41	2	0	1	48	246	5
F 3064 B	6	24	5	23	40	66	2	0	1	31	247	0
LINE 10690	(FLIGHT	3)										
A 3158 S	2	2	2	4	10	8	1	0	1	19	337	0
B 3212 B?	2	6	0	6	17	14	1	5	1	83	903	0
C 3213 B?	1	6	0	6	26	41	1	12	1	66	799	1
LINE 10700	(FLIGHT	3)										
A 3290 B?	1	7	6	14	48	30	2	0	1	43	134	3
B 3252 H	0	2	0	4	15	20	1	0	1	30	660	1
C 3245 B?	0	11	0	9	25	22	1	0	1	49	741	0
D 3237 H	3	10	2	8	27	32	2	0	1	59	212	12
E 3237 B?	3	10	3	12	40	15	2	0	1	61	204	14
LINE 10710	(FLIGHT	4)										
A 3298 D	5	22	10	38	144	67	2	0	1	37	141	3
B 3296 B?	5	26	10	38	144	67	2	0	1	36	137	3

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	COAXIAL 900 HZ		COPLANAR 900 HZ		COPLANAR 7200 HZ		VERTICAL DIKE		HORIZONTAL SHEET		CONDUCTIVE EARTH	
ANOMALY/ FID/INTERP	REAL PPM	QUAD PPM	REAL PPM	QUAD PPM	REAL PPM	QUAD PPM	COND MHOS	DEPTH* M	COND MHOS	DEPTH M	RESIS OHM-M	DEPTH M
LINE 10710	(FLIGHT		4)									
C 3258 B?	0	5	1	3	14	17	1	0	1	37	420	8
D 3254 D	0	9	2	10	43	59	1	0	1	68	501	8
LINE 10720	(FLIGHT		4)									
A 3327 B?	3	9	6	10	45	25	3	0	1	54	113	13
B 3364 B?	0	12	0	15	19	167	1	13	1	47	691	2
C 3366 D	0	13	1	12	19	85	1	7	1	52	735	0
D 3380 B?	1	5	0	5	20	42	1	8	1	65	795	0
E 3384 S?	3	9	2	6	28	37	2	0	1	41	395	0
F 3387 D	5	16	6	12	67	182	3	4	1	49	178	11
G 3389 D	9	37	4	29	108	182	2	0	1	28	175	0
H 3390 D	9	37	6	31	120	182	2	0	1	28	168	0
LINE 10730	(FLIGHT		4)									
A 3460 B?	3	10	4	12	33	40	2	0	1	51	199	7
B 3419 B?	2	4	1	5	8	46	2	25	1	65	806	0
C 3408 D	9	28	4	20	84	98	3	0	1	47	155	11
LINE 10750	(FLIGHT		5)									
A 111 B?	4	9	6	16	64	55	3	0	1	60	232	11
B 131 B?	0	8	0	5	15	53	1	4	1	95	932	6
C 141 H	0	4	0	6	11	46	1	2	1	83	886	2
D 154 B?	5	12	6	12	54	46	3	0	1	64	294	14
E 157 B?	7	8	7	22	22	20	4	12	1	55	107	20
LINE 10760	(FLIGHT		5)									
A 213 B?	0	7	0	6	19	62	1	0	1	77	908	0
B 197 B?	0	5	1	4	12	51	1	0	1	23	677	0
C 190 B	5	14	4	11	48	54	3	0	1	53	284	6
D 188 B	8	8	6	3	14	32	9	21	1	49	134	11
E 186 D	6	20	6	16	68	77	3	0	1	45	149	8
F 185 B?	4	16	3	16	68	56	2	0	1	54	140	17
G 181 D	9	26	7	27	110	115	3	0	1	45	141	10
H 178 D	15	6	11	25	76	24	12	24	1	64	70	32

* ESTIMATED DEPTH MAY BE UNRELIABLE BECAUSE THE STRONGER PART OF THE CONDUCTOR MAY BE DEEPER OR TO ONE SIDE OF THE FLIGHT LINE, OR BECAUSE OF A SHALLOW DIP OR OVERBURDEN EFFECTS.

APPENDIX X

GEOLOGICAL REPORT

VALENTINE GOLD PROPERTY,

VALENTINE MOUNTAIN, B.C.

for

Michael Hopley

by

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and

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January 20, 1988

GEOLOGICAL REPORT
VALENTINE GOLD PROPERTY,
VALENTINE MOUNTAIN, B.C.,

1. Introduction

This preliminary report is the result of a visit to the office at Sooke, B.C. and the property on Valentine Mountain on January 19, 1988. A recent petrographic report by John Payne (VP 7075) was reviewed, drill core was examined, and a field examination was made in the snow in the Discovery trench area (Vein 36) and in the C-zone along the road below the "Barber pole". The geology and exploration models were discussed with the geological personnel of Valentine Gold Ltd. Samples were taken for further petrographic examination. Because of the preliminary nature of the study, conclusions are to be judged accordingly.

2. Rock Types

The host rocks are a series of meta-sedimentary rocks of the Leech River Schist Belt. They are dominated in the mine area by a series of meta-sandstones (greywackes) with lesser interlayered meta-siltstones and meta-mudstones. The latter commonly are dark grey in color, moderately fissile, and contain moderately abundant carbonaceous opaque (probably in part graphite). Less abundant rock types are a garnet-bearing schist and a mafic volcanic rock, the latter altered to chlorite-carbonate-epidote-actinolite. The metamorphic rocks are cut by a few felsic (?) sills, and to the northwest of the property by a Jurassic-Cretaceous granodiorite/quartz-diorite pluton.

3. Deformation

Regionally, the rocks have been deformed intensely by a series of southeast trending regional folds with steeply dipping axial planes and moderately east-southeast plunging fold axes, along which is developed a prominent axial lineation.

The Discovery zone area is along the axis of a major antiform. Well developed mesoscopic folds of the order of a few mm to several cm were seen in outcrop and in drill core from the showing area. Axial lineations are strongly developed in outcrop. In the Falconbridge cut, strongly folded, finely banded argillitic schist is crosscut at a high angle by quartz veins up to 10 cm across. These veins are folded moderately to tightly about axes which may be coaxial to those which had already deformed the schist host-rock. This suggests that two pulses of deformation occurred in the same stress field, and were separated by a tensional event during which quartz veins were introduced.

On surface, rocks in the C-zone are much less deformed than those in the Discovery zone, and comprise more meta-greywacke and less interbedded argillite. The axial lineation is not prominent in the meta-greywacke of the C-zone, in part because of its more competent nature and in part because the C-zone may not be in the nose of a major fold (where lineations tend to be more prominently developed than along the limbs). Discrete zones of shearing in argillaceous rocks commonly host small quartz veins. Previous work suggests that the C-zone area is on the south limb of the same fold which closes southeast of the Discovery Zone.

In drill core, tight parasitic folds are very abundant. They commonly are distended and smeared out along their limbs, being locally obliterated in part. Quartz veins show similar styles of deformation to those of the enclosing rocks, indicating that they also were intensely deformed. Knots of felsic rock (mainly in garnet-bearing schists) and of quartz indicated fold noses from which the limbs have been completely separated. Some less-deformed quartz veins may represent later veins than those which are strongly contorted.

In the Discovery Pit, late cross fractures cut the rocks perpendicular to foliation. These contain limonite and probably represent tensional zones into which iron was mobilized during weathering. They may be related genetically to the regional folding event.

4. Gold and Sulfide Mineralization

1) Discovery Pit

The 36 Vein was covered with snow and ice in the bottom of the pit. Nearby are other quartz veins which show moderate to strong deformation features. Bordering the 36 Vein are zones of strong shearing within the argilliceous host rocks containing small quartz veins and limonitic staining. The 36 Vein may crosscut the trend of the regional foliation at a small angle.

From the previous petrographic report (VP 7075), the main vein contains quartz which was deformed and partly recrystallized to much finer grained aggregates, with inclusions(?) of quartz with abundant, extremely fine grained pyrite and/or pyrrhotite along grain borders. Native gold occurs in later, discontinuous veinlets and replacement patches, whose emplacement was moderately controlled by grain boundaries of deformed quartz. Locally, native gold (and pyrrhotite) occurs in tiny inclusions in coarse patches of arsenopyrite.

2) C-zone

In drill core, mineralized zones in the C-zone contain deformed quartz veinlets and disseminated porphyroblasts and aggregates of arsenopyrite. The latter are concentrated in certain sedimentary intervals, mainly in the finer grained argillites and in siltstone and greywacke near the argillite. Locally, arsenopyrite forms knots and patches up to a few cm across along borders of deformed quartz veins. Some arsenopyrite patches appear to be strung out parallel to foliation, and to have pressure shadow overgrowths of quartz, carbonate and chlorite along their borders. One main zone of shearing and quartz veining up to 20 cm in width was seen in the road cut in a band of argillite and siltstone within a broad zone of meta-greywacke.

5. Models

The most probable model (Model A) for gold-arsenic mineralization is as follows:

1) the metallic minerals were formed as part of the original sedimentary rocks, possibly somewhat concentrated in the finer grained sediments, or were introduced in a pre-metamorphic hydrothermal event of unknown origin.

2) During metamorphism, gold (and arsenopyrite) were moderately concentrated, possibly into zones of shearing in noses of major folds, and in part into quartz veins (also in these zones of shearing) formed during early stages of deformation. The distribution of these zones would retain some correlation with the original distribution of the metals.

3) At a later stage, further quartz veins were formed, and gold migrated into some of these, possibly near the end of the deformational event.

An alternate model (Model B) would relate some of the mineralization, especially that in the C-zone to a later hydrothermal event which was superimposed on the metamorphic event. Although most evidence suggests that the mineralization was metamorphosed, the presence of minor tourmaline and K-feldspar envelopes on a few quartz veins (VP 6886) suggests some hydrothermal contribution to the system.

6. Recommendations

1) Relationships between gold, arsenopyrite, quartz veins, deformation, and primary rock type, and metamorphic grade should be mapped, and any significant correlations noted. At this stage, it is important to develop continuity of structural zones (i.e., shear zones and late quartz veins), in which gold appears to be concentrated.

2) The present drilling program should continue to test zones of coincident geochemical and geophysical anomalies along the major structural trends and zones of known mineralization. Data from this drilling program should be assessed thoroughly and correlated with detailed surface geological mapping and petrographic analysis, before further drilling is done.

3) Petrographic studies should examine the following:

a) comparison of gold-bearing and barren quartz veins with respect to style of deformation, composition, distribution of sulfides and alteration halos. The purpose of this is to determine if distinctive types and/or ages of veins can be recognized on the basis of any features other than actual gold abundance.

b) comparison of C-zone and Discovery Zone to determine if the zones have undergone different intensities and types of hydrothermal alteration and/or mineralization.

c) Specifically, Does gold in the C-zone occur as inclusions in arsenopyrite aggregates? Are arsenopyrite clusters deformed?

d) Are gold and arsenopyrite concentrated in argillite-rich intervals in the deformed sedimentary sequence? (Moderate correlation in drill core of higher-grade gold values with K suggests either
1) association with K-rich argillite (relative to meta-greywacke)
2) K-alteration associated with quartz veins (VP 6886).

4) Further drilling should test the best model(s) developed from the first stages of this exploration program.

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Invoice 72Ø4
March 1988

Samples: DDH-88-3 138.7 m
-4 76.5-76.7 m, 77.8-78.Ø m
-5 67.1 m, 69.2-69.4 m
-12 94.Ø m, 96.6 m (1), 96.6 m (2), 98.Ø m

Summary:

The samples are mainly of a deformed, meta-volcanic sequence of dacite and andesite/basalt. Dacite flows(?) are dominated by plagioclase with lesser quartz and minor to moderately abundant K-feldspar, actinolite, and biotite/chlorite. Dacite crystal tuffs contain abundant crystals of quartz and lesser ones of plagioclase in a plagioclase-rich groundmass with lesser quartz, biotite, and muscovite. Mafic rocks are dominated by plagioclase-actinolite-(biotite) or actinolite-plagioclase.

Argillite is dominated by plagioclase with lesser quartz and biotite and moderately abundant carbonaceous opaque. In one sample it also contains minor garnet.

Sulfides are dominated by disseminated lenses and patches of pyrrhotite and lesser chalcopyrite, with widespread porphyroblasts of arsenopyrite, and locally abundant galena.

Native gold occurs in arsenopyrite in a vein in sample 88-5 69.2-69.4 m, and with galena in a the breccia matrix of sample 88-3 138.7 m.

88-3 138.7 m meta-dacite, replaced and cut by veins of quartz-(chlorite) and minor plagioclase-(chlorite); brecciated with a matrix of calcite with lesser quartz, minor pyrite , chlorite, and chalcopyrite, and a few patches of galena-sphalerite. Native gold occurs in a patch of galena.

88-4 76.5-76.7 m meta-dacite crystal tuff; arsenopyrite and muscovite porphyroblasts

88-4 77.8-78.Ø m meta-dacite crystal tuff, arsenopyrite and muscovite porphyroblasts; quartz-calcite vein

(continued)

88-5 67.1 m layered meta-dacite crystal tuff, argillaceous tuff; early quartz vein.

88-5 69.2-69.4 m argillite cut by early quartz-(biotite-calcite-sulfide) veins with minor native gold in arsenopyrite; late veins of chlorite-pyrite

88-12 94.0 m biotite amphibolite (meta-andesite flow?) with segregations of plagioclase-(actinolite); vein of calcite

88-12 96.6 m (1) meta-dacite, somewhat banded with variation between plagioclase- and quartz-rich layers, and between actinolite and biotite/chlorite; early vein of quartz-calcite-chlorite-(pyrrhotite-chalcopyrite)

88-12 96.6 m (2) meta-dacite [(similar top 88-12 96.6 m (1)]; early quartz-calcite vein

86-12 98.0 m banded amphibolite, rich in actinolite, with plagioclase-(calcite) rich lenses, moderately abundant sphene and ilmenite; discontinuous plagioclase-(actinolite vein)

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DDH 88-3 138.7 m Meta-Dacite(?) Replaced and Cut by Quartz-rich Veins; Brecciated and Cemented by Calcite-Quartz-Pyrite-Chalcopyrite-Chlorite-(Galena-Sphalerite-Native Gold) Vein

The rock contains angular fragments of very fine grained meta-dacite, which was partly replaced and cut by quartz-rich vein material, then brecciated and cemented by a fine to medium grained vein dominated by calcite and quartz, with local concentrations of pyrite, chalcopyrite, and minor galena and sphalerite. A second section contains a trace of native gold associated with galena.

meta-dacite	
plagioclase	20-25%
quartz	4- 5
muscovite-(biotite)	2- 3
chlorite	1
Ti-oxide	0.3
pyrite/marcasite	1
early vein and replacement	
1) plagioclase-(chlorite)	0.5
2) quartz	35-40
chlorite	1- 2
apatite	minor
breccia matrix	
calcite	12-15
quartz	4- 5
pyrite	1- 2
chlorite	1- 2
chalcopyrite	1
galena	0.2
sphalerite	trace
native gold	trace (in second section)

The meta-dacite is dominated by equant, anhedral plagioclase grains averaging 0.04 mm in size, intergrown with much less quartz grains of similar size. Plagioclase is altered slightly to moderately to extremely fine grained sericite.

Muscovite forms a few concentrations of flakes averaging 0.05 mm in length in parallel orientation defining a weak to moderate foliation. It also forms a few ragged clusters up to 0.3 mm long of very fine grained flakes. Biotite forms a very few slender, ragged flakes up to 0.4 mm in length; pleochroism is form nearly colorless to light brown.

Chlorite and lesser sericite form a rectangular patch 0.6 mm in length of extremely fine to very fine grains; this may be a replacement of a hornblende phenocryst or porphyroblast. Chlorite also forms scattered patches of slightly radiating to unoriented flakes up to 0.15 mm across. Ti-oxide forms patches averaging 0.1-0.3 mm in size, with a few slender elongate patches up to 0.6 mm long.up to 0.2 mm in size.

Pyrite/marcasite forms a few porphyroblasts up to 2 mm in size. One contains a ragged inclusion 0.15 mm across of pyrrhotite. Other patches of pyrite/marcasite up to 0.5 mm in size consist of extremely fine grained, granular aggregates.

An early vein up to 0.3 mm wide consists of plagioclase grains averaging 0.1-0.2 mm in size.

(continued)

The rock is replaced by or cut by veins dominated by fine to medium grained quartz. Intensity of replacement is variable, ranging from slight to complete. Zones of slight replacement contain scattered patches of quartz surrounded by plagioclase. More intense replacement produced a texture of 60-80% very fine grained quartz with interstitial patches of very fine grained dacite. Complete alteration produced a fine to medium grained rock dominated by fine to medium grained quartz, with scattered patches of very fine grained chlorite and minor disseminated acicular apatite grains up to 0.2 mm long.

The rock is broken into angular fragments averaging 1-5 mm in size. These are largely cemented by a sparse to locally moderately abundant matrix of fine grained calcite, with local concentrations of fine to medium grained, subhedral quartz, and patches of pyrite and of chalcopyrite-galena-(sphalerite) associated with interstitial patches of extremely fine grained, yellow-green chlorite. Pyrite forms grains up to 2 mm across containing minor irregular inclusions up to 0.12 mm in size of galena. One patch up to 0.8 mm across is dominated by chalcopyrite with much less galena and a patch 0.2 mm across of orange-brown sphalerite. Chalcopyrite forms an elongate patch 1.2 mm long between two coarse subhedral quartz grains. On the edge of the sample, a veinlike zone contains abundant chalcopyrite and much less galena intergrown intimately with chlorite and calcite. Elsewhere, calcite contains concentrations of disseminated pyrite grains averaging 0.03-0.05 mm in size.

A second polished section of the sample contains a few patches of galena up to 0.5 mm in size in the late breccia-filling material. One of these contains an equant grain 0.02 mm across of native gold. Within 0.1 mm of this grain are two other grains averaging 0.002 mm in size in a fracture in strained, coarse grained quartz.

DDH 88-4 76.5-76.7 m **Meta-Dacite Crystal Tuff with Arsenopyrite Porphyroblasts**

The rock is a metamorphosed dacite crystal tuff containing abundant megacrysts of quartz and minor ones of plagioclase in a slightly foliated groundmass dominated by plagioclase with less biotite and muscovite and minor chlorite. The megacrysts are interpreted as original crystals in a crystal tuff. Arsenopyrite and muscovite each form minor disseminated porphyroblasts.

megacrysts			
quartz	12-15%		
plagioclase	1- 2		
arsenopyrite	1- 2		
muscovite	1		
groundmass			
plagioclase	50-55		
quartz	7- 8	Ti-oxide-(ilmenite-sphene)	0.3
biotite	5- 7		
muscovite	5- 7	pyrrhotite	0.1
chlorite	1- 2	chalcopyrite	trace
arsenopyrite	1- 2	tourmaline	trace
calcite	0.3	zircon	trace

Quartz forms equant to elongate megacrysts averaging 0.2-0.5 mm in size, with a few large ones from 0.7-1.2 mm long. Grains generally show wavy extinction.

Plagioclase forms ragged megacrysts averaging 0.2-0.3 mm in size; these may be phenocrysts or porphyroblasts. They are recrystallized slightly, and some are altered to muscovite porphyroblasts.

The groundmass is dominated by anhedral plagioclase averaging 0.03-0.05 mm in size. Biotite and muscovite form ragged flakes averaging 0.03-0.15 mm long. Biotite is pleochroic from pale straw to medium orange-brown. Muscovite also forms scattered, ragged porphyroblasts up to 0.2 mm in size; some of these replace plagioclase megacrysts and others are not associated with plagioclase megacrysts. Calcite forms disseminated, anhedral, in part skeletal grains averaging 0.05-0.1 mm in size, in part replacing plagioclase.

Chlorite is concentrated at one end of the section in textures similar to those of biotite in the rest of the section. It commonly contains patches of Ti-oxide, and probably is a replacement of biotite It also forms a few patches in pressure shadows of pyrite porphyroblasts.

Arsenopyrite forms subhedral to locally euhedral porphyroblasts up to 1 mm in size. One is a penetrating growth twin. Many contain moderately abundant lensy to blebby inclusions of pyrrhotite averaging 0.02-0.05 mm in size.

Ti-oxide forms dusty to extremely fine grained patches and seams up to 0.3 mm across. It commonly is associated with muscovite porphyroblasts or biotite.

Ilmenite forms a few patches up to 0.15 mm in size. Some are rimmed by grains of sphene and/or Ti-oxide up to 0.15 mm across.

Pyrrhotite forms anhedral disseminated grains and clusters of a few grains averaging 0.03-0.1 mm in size. A few equant grains of pyrrhotite from 0.07-0.1 mm across occurs on the borders of arsenopyrite porphyroblasts. Chalcopyrite occurs with pyrrhotite or alone as anhedral grains averaging 0.02-0.03 mm in size.

Zircon forms a very few subhedral stubby prismatic to anhedral grains averaging 0.05-0.08 mm in size.

Tourmaline forms a very few subhedral grains up to 0.12 mm across. Pleochroism is from light to medium olive green.

DDH 88-4 77.8-78.0 m **Meta-Dacite Crystal Tuff with Arsenopyrite Porphyroblasts; Quartz-Calcite Vein**

The sample is very similar to DDH 88-4 76.5-76.7 m, and has a slightly stronger foliation. It contains megacrysts of quartz and minor plagioclase, somewhat elongated parallel to foliation. A vein 0.3 mm wide and perpendicular to foliation is dominated by quartz and calcite. Arsenopyrite forms a few porphyroblasts, in whose pressure shadows are patches of fine grained calcite-pyrrhotite-quartz-plagioclase-muscovite-(chlorite). An early vein is dominated by quartz with lesser calcite and muscovite.

megacrysts		vein	
quartz	12-15%	quartz	1.5-2%
plagioclase	1- 2	calcite	0.3
arsenopyrite	2- 3	muscovite	0.1
muscovite	1- 2	sphene	trace
groundmass			
plagioclase	50-55	pyrrhotite	0.2%
quartz	12-15	arsenopyrite	minor
biotite	4- 5	sphene	minor
muscovite	4- 5	apatite	trace
calcite	0.2	zircon	trace
Ti-oxide-(ilmenite)	0.2		

Quartz forms megacrysts averaging 0.3-0.7 mm in size; many are elongated parallel to or at a low angle to foliation. Most are strained moderately, and some are slightly recrystallized to irregular subgrain aggregates.

Plagioclase forms ragged porphyroblasts or original, recrystallized phenocrysts averaging 0.2-0.4 mm in size. Muscovite forms ragged porphyroblasts up to 0.4 mm in size, in part as a replacement of plagioclase.

Arsenopyrite forms porphyroblasts up to 1.8 mm in size. They contain abundant inclusions of pyrrhotite averaging 0.03-0.05 mm in size. Many of the inclusions are elongate lenses in parallel orientation. In pressure shadows of arsenopyrite porphyroblasts are fine grained aggregates containing a few of muscovite, quartz, calcite, pyrrhotite, plagioclase, and minor chlorite. Pyrrhotite occurs in a fine grained patch 0.6 mm long.

The groundmass is dominated by an aggregate of equant, anhedral plagioclase and lesser quartz grains averaging 0.02-0.07 mm in size, with ragged flakes and clusters of flakes of biotite and muscovite of similar size (locally up to 0.2 mm long) outlining a moderate foliation. Biotite is pleochroic from light straw to medium orange-brown. Anhedral calcite grains average 0.05-0.1 mm across.

Ilmenite, in part surrounded by and altered to Ti-oxide, forms patches averaging 0.05-0.08 mm across. Ti-oxide also is moderately concentrated in extremely fine grained to dusty lenses associated with muscovite and elongate parallel to foliation. Sphene forms a few irregular grains averaging 0.05-0.1 mm in size and one coarser grain 0.25 mm long. Apatite and zircon form anhedral grains averaging 0.05-0.08 mm in size.

Pyrrhotite forms anhedral patches up to 0.15 mm in size. Arsenopyrite forms a few disseminated euhedral to subhedral grains from 0.02-0.15 mm in size.

The vein averages 0.3 mm in width and is dominated by quartz with lesser calcite and scattered flakes of muscovite and a patch of sphene. Its diffuse borders and preferred orientation of mineral grains parallel to foliation indicate that it was recrystallized with the rock.

DDH 88-5 67.1 m **Layered Dacite Crystal Tuff, Argillaceous Tuff cut by Early Quartz Vein**

The rock contains layers of dacite crystal tuff as in DDH-4 77.8-78.0 m, interlayered with finer grained argillaceous tuff with more abundant dusty opaque. The latter is cut and replaced by an early, deformed vein dominated by quartz, and containing lenses of altered rock rich in biotite and calcite with lesser apatite and pyrrhotite.

dacite crystal tuff (45-50% of section)

megacrysts	
quartz	10-12%
plagioclase	3- 4
groundmass	
plagioclase	50-55
quartz	10-12
biotite	10-12
muscovite	4- 5
calcite	1- 2
pyrrhotite	1- 2
Ti-oxide/ilmenite	0.5
arsenopyrite	trace

Quartz megacrysts are from 0.3-0.8 mm in size and have wavy extinction. Some are oriented parallel to foliation. Plagioclase forms equant phenocrysts up to 0.5 mm in size. They are recrystallized moderately.

The groundmass is dominated by plagioclase and lesser quartz grains averaging 0.015-0.04 mm in size, with moderately abundant very fine grained biotite and lesser muscovite oriented mainly parallel to foliation. Calcite forms anhedral grains from 0.03-0.1 mm in size. Ti-oxide forms dusty seams and lenses parallel to foliation. Ilmenite rimmed by Ti-oxide forms scattered patches up to 0.1 mm in size. Pyrrhotite is concentrated in irregular lenses up to 1.5 mm long (averaging 0.1-0.3 mm) subparallel to foliation. Arsenopyrite forms scattered grains up to 0.05 mm in size associated with pyrrhotite.

argillaceous tuff (15-17% of section)

At one end (away from the quartz vein) this consists of extremely fine grained plagioclase (0.01-0.02 mm) with much less biotite and muscovite flakes oriented parallel to foliation, and with abundant dusty opaque (carbonaceous?). It contains lenses up to 0.6 mm long of very fine grained aggregates of biotite and muscovite. Pyrrhotite forms scattered patches up to 0.1 mm across and one lens 0.6 mm long. Zircon forms one elongate grain 0.08 mm long.

At the other end, the rock is replaced and cut by a quartz vein. Here, the rock is dominated by two phases. One is similar to the argillaceous tuff at the other end, and contains moderately abundant K-feldspar. The other is finer grained and contains very abundant dusty opaque. Locally, tight folds are present in relic patches of this unit in the quartz vein.

quartz vein (30-35 % of section)

The vein is dominated by medium to coarse grained quartz, which during deformation was strained and moderately recrystallized to irregular very fine to fine grained aggregates. It contains very fine grained lenses and seams (3% of rock) dominated by biotite and calcite with lesser rounded grains of apatite and lenses of pyrrhotite; this unit has gradational contacts with the quartz vein, and in part grades into the argillitic tuff. Calcite commonly contains moderately abundant dusty inclusions of carbonaceous(?) opaque.

DDH 88-5 69.2-69.4 m Argillite cut by early Quartz-Calcite-Sulfide-(Native Gold) veins and Late Vein of Chlorite-Pyrite

The rock is a well foliated, extremely fine grained argillite with contorted layers dominated by quartz-biotite and early veins of quartz-calcite-sulfides, with a trace of native gold in arsenopyrite. It is cut at a high angle to foliation by slightly contorted veins dominated by chlorite and pyrite.

plagioclase	60-65%	**early veins**	
quartz	15-17	quartz	3- 4%
biotite	8-10	biotite	0.3
carbonaceous opaque	1	calcite	0.2
garnet	0.4	chlorite	minor
ilmenite	0.1		
pyrrhotite	0.1	arsenopyrite	0.1
arsenopyrite	0.1	chalcopyrite	minor
chalcopyrite	minor	pyrrhotite	minor
tourmaline	trace	pyrite	trace
late veins		native gold	trace
chlorite	3- 4		
pyrite	1- 2		
calcite	0.3		
quartz	0.1		

Plagioclase forms aggregates of equant grains averaging 0.01-0.02 mm in size intergrown with much less quartz of similar size and abundant dusty carbonaceous opaque.

Biotite forms flakes up to 0.1 mm in size, commonly oriented parallel to foliation, and commonly concentrated in lenses alone or with very fine grained quartz.

Garnet forms subhedral porphyroblasts averaging 0.2-0.5 mm in size. Most contain minor inclusions of quartz and commonly have minor concentrations of quartz along some of their borders.

Ilmenite forms patches up to 0.2 mm in size of very fine grains and aggregates , in part containing abundant quartz inclusions, and commonly elongate parallel to foliation.

Pyrrhotite and much less chalcopyrite form irregular patches and lenses up to 0.1 mm in size.

Arsenopyrite forms minor disseminated grains averaging 0.05-0.08 mm in size and scattered porphyroblasts up to 0.4 mm in size; the latter contain minor inclusions of pyrrhotite.

Tourmaline forms subhedral to euhedral, elongate prismatic grains up to 0.15 mm long. Pleochroism is from colorless to light green.

Quartz and lesser biotite are concentrated in irregular lenses and layers up to 2.5 mm thick parallel to foliation. These are slightly to moderately warped. Grain size averages 0.05-0.08 mm.

Very fine to fine grained crosscutting veins up to 1 mm wide are dominated by quartz with lesser calcite and patches of sulfides, including arsenopyrite with lesser pyrrhotite and chalcopyrite, and minor pyrite. One patch 0.9 mm across of arsenopyrite contains an inclusion of native gold 0.02 x 0.01 mm in size. The veins are tightly warped.

Late veins up to 1.5 mm wide are dominated by fine grained chlorite with patches of pyrite, lesser calcite, and minor ilmenite, quartz and muscovite. Pyrite commonly is intimately intergrown as interstitial selvages between clusters of chlorite grains. It also forms dense patches of extremely fine to very fine grain size. Textures in some of the extremely fine grained pyrite suggest that it was formed by replacement of pyrrhotite. Ilmenite forms platy grains and clusters up to 0.3 mm in length, mainly intergrown with pyrite.

DDH 88-12 94.0 m **Biotite Amphibolite (Meta-andesite flow?) with segregation of Plagioclase-(Actinolite), vein of Calcite**

The rock is a well foliated, slightly banded meta-andesite dominated by actinolite and plagioclase with lesser biotite concentrated in certain layers. Warping of grains and a few tight folds in a coarser grained plagioclase-(actinolite) seam suggest that the rock was moderately deformed. Late veinlets and patches are of calcite.

actinolite	40-45%		
plagioclase	40-45		
biotite	7- 8		
sphene	1		
ilmenite	0.7	chalcopyrite	minor
quartz	0.2	pyrrhotite	trace
chlorite	0.1	arsenopyrite	trace
calcite	0.1		
veins			
1) plagioclase-(actinolite)	2- 3%		
2) calcite	1- 2 (more in core sample)		

Actinolite forms anhedral to subhedral equant to prismatic grains averaging 0.2-0.5 mm in size, with scattered porphyroblasts from 0.7-1.2 mm long. Elongate grains commonly are oriented parallel to foliation, but in biotite-rich layers they commonly are at a moderate angle to foliation. Pleochroism is form nearly colorless to light green.

Plagioclase forms anhedral, equant grains averaging 0.02-0.1 mm in size. It is concentrated moderately in plagioclase-rich seams averaging 0.3-0.5 mm wide. Within a given seam, grain size is relatively uniform. Plagioclase is fresh.

Biotite is concentrated in lenses parallel to foliation and up to 2 mm wide. Mainly equant grains average 0.2-0.6 mm in size, with a few up to 1 mm across. Pleochroism is from pale brown to medium red-brown or orange-brown. Several larger grains are warped slightly to moderately, and a few of these are broken as well.

Irregular patches and lenses (commonly parallel to foliation) up to 0.2 mm long consist of extremely fine to very fine grained sphene, with or without cores of ilmenite. Ilmenite also forms elongate lenses up to 0.15 mm in length away from sphene. Moderately abundant wispy seams parallel to foliation consist of granular sphene and/or Ti-oxide grains averaging less than 0.005 mm in size.

Chalcopyrite and lesser pyrrhotite form a few patches and lenses up to 0.5 mm long of anhedral grains averaging 0.03-0.1 mm in size intergrown with actinolite. Arsenopyrite forms one euhedral, equant grain 0.02 mm across surrounded by actinolite.

Quartz forms scattered grains averaging 0.03-0.05 mm in size intergrown with plagioclase.

Two interstitial patches up to 0.5 mm across consist of aggregates of very fine grained chlorite and a few grains of calcite. Elsewhere, calcite forms scattered interstitial grains up to 0.4 mm in size, and chlorite forms a few flakes parallel to foliation up to 0.12 mm long. Pleochroism of chlorite is from nearly colorless to pale green.

The rock contains an irregular, contorted veinlike zone up to 1 mm wide dominated by fine to medium grained plagioclase with moderately abundant acicular to elongate prismatic grains of actinolite.

At one end is a vein up to 1 mm wide of very fine to medium grained calcite.

DDH 88-12 96.6 m (1) **Meta-dacite: Plagioclase-Quartz-Biotite/Chlorite-Actinolite-K-feldspar; early vein of Quartz-Calcite-Chlorite-(Pyrrhotite-Chalcopyrite)**

The rock is well foliated and slightly banded schist/gneiss dominated by plagioclase, with quartz moderately concentrated in quartz-rich seams. Mafic minerals are moderately segregated, with chlorite (after biotite) dominant at one end and actinolite and lesser biotite dominant at the other end of the section. Sulfides include a few porphyroblasts of arsenopyrite and disseminated lenses and patches of pyrrhotite and chalcopyrite. An early, recrystallized vein is dominated by quartz with lesser calcite and chlorite, and minor pyrrhotite and chalcopyrite.

plagioclase	55-60%		
quartz	17-20		
chlorite-(biotite)	7- 8		
K-feldspar	2- 3	ilmenite	0.5%
actinolite	3- 4	sphene	0.1
pyrrhotite	1	apatite	trace
arsenopyrite	minor	calcite	trace
chalcopyrite	minor	zircon	trace
vein			
quartz-calcite-chlorite-(pyrrhotite-chalcopyrite)			1- 2%

Plagioclase forms anhedral, equant grains averaging 0.03-0.07 mm in size, with a few up to 0.15 mm across. In a few chlorite-rich layers, plagioclase contains abundant dusty semiopaque inclusions, and may be altered to K-feldspar. K-feldspar was not identified in thin section; its distribution is seen in the stained offcut block. It is concentrated moderately in the actinolite-bearing layers.

Quartz is concentrated moderately to strongly in quartz-rich seams parallel to foliation. Grain size ranges from 0.02-0.5 mm. Coarser grains have been strongly sheared, strained, and recrystallized to the finer grained aggregates.

Biotite forms clusters of ragged flakes averaging 0.05-0.5 mm in size, with a few up to 0.8 mm long. Pleochroism is from pale to medium orange-brown. It is relatively fresh in some layers, particularly in the center of the section, and is altered strongly to completely to pseudomorphic chlorite elsewhere, especially at the end away from amphibole. Chlorite is pale green in color

Actinolite forms ragged to subhedral prismatic grains and clusters of grains averaging 0.3-0.7 mm in size with a few up to 1.2 mm long. Pleochroism is from light yellow green to light green. Some clusters are slightly radiating.

Ilmenite forms anhedral patches and lenses up to 0.2 mm in length, mainly parallel to foliation. Sphene forms a few lenses up to 1 mm long of very fine grained aggregates, and extremely fine grained aggregates associated with some ilmenite grains and patches.

Pyrrhotite forms anhedral patches averaging 0.1-0.25 mm in size, with a few lenses up to 0.8 mm long. Associated with pyrrhotite are minor chalcopyrite grains averaging 0.03-0.05 mm across.

Apatite forms anhedral, equant grains averaging 0.05-0.08 mm in size, commonly concentrated in quartz-rich layers. Zircon forms a very few anhedral, elongate grains up to 0.07 mm long.

Calcite forms a few anhedral grains up to 0.1 mm in size.

An early vein up to 0.4 mm wide is dominated by quartz with moderately abundant calcite and chlorite, and lesser pyrrhotite-(chalcopyrite) concentrated in irregular, very fine to fine grained patches. The vein is recrystallized to the same texture as the host rock.

DDH 88-12 96.6 m (2) **Meta-dacite cut by Early Quartz-Calcite Vein**

The sample is a well foliated meta-dacite similar to that in Sample 88-12 96.6 m (1). It is cut by an early vein of quartz-calcite which shows deformation textures indicating that it was sheared and recrystallized.

meta-dacite (25-30% of section; 75-80% of rock)

plagioclase	55-60%		
quartz	8-10		
K-feldspar	8-10	sphene	0.7
calcite	5- 7	ilmenite	minor
biotite/chlorite	5- 7	chalcopyrite	minor
actinolite	5- 7	apatite	minor
pyrrhotite	1	arsenopyrite	trace

Plagioclase forms equant, anhedral grains averaging 0.03-0.15 mm in size. K-feldspar forms similar grains; it was not distinguished form plagioclase in thin section, and its distribution was determined from the stained offcut block. Quartz forms equant grains averaging 0.03-0.1 mm in size intergrown with feldspars.

Calcite is concentrated in certain layers, commonly with actinolite as grains averaging 0.05-0.2 mm in size. Many of the coarser grains are irregular to skeletal in outline.

Actinolite forms slender subhedral to euhedral, prismatic grains and anhedral, poikilitic, prismatic grains averaging 0.3-0.8 mm in length. Some prismatic grains form slightly radiating aggregates. Pleochroism is from pale to light green.

Biotite forms ragged, irregular flakes averaging 0.05-0.5 mm in size. A few are fresh, with pleochroism from pale to medium orange-brown. Many are altered strongly to completely to pseudomorphic chlorite with lenses of Ti-oxide along cleavage.

Sphene forms anhedral, equant grains averaging 0.05-0.08 mm in size, with a few grains and clusters up to 0.2 mm across. Many patches have tiny (0.01-0.02 mm) cores of ilmenite.

Apatite is concentrated in a few clusters of equant, anhedral grains from 0.05-0.15 mm in size; these are somewhat intergrown with calcite and actinolite.

Pyrrhotite forms disseminated, irregular patches averaging 0.05-0.15 mm in size, with a few up to 0.3 mm across. Chalcopyrite occurs with pyrrhotite as scattered grains form 0.03-0.07 mm in size.

Arsenopyrite forms two subhedral grains 0.1 and 0.18 mm across.

vein (70-75% of thin section; 20-25% of rock)

quartz	50-55%	ilmenite/sphene	0.2%
calcite	45-50	pyrrhotite-(chalcopyrite)	minor

Calcite forms aggregates of anhedral grains averaging 0.3-1.2 mm in size. Many are warped and strained and show deformation twins.

Quartz forms patches of grains averaging 0.5-1.2 mm across. These are strained and moderately recrystallized along grain borders to extremely fine to very fine grained subgrain aggregates. Grain borders commonly are strongly sutured. Interstitial to quartz are scattered irregular, very fine grains of calcite. A few late veinlets of calcite cut quartz; these probably were remobilized during deformation. Chlorite forms scattered patches of very fine to fine grains up to 0.7 mm in size.

One patch 0.8 mm long consists of fine grained ilmenite surrounded by a thin overgrowth of sphene and minor pyrrhotite.

Pyrrhotite and minor chalcopyrite from a very few patches form 0.02-0.1 mm in size.

DDH 88-12 98.0 m **Banded Amphibolite; Early Vein of Plagioclase-Actinolite**

The rock is a well foliated amphibolite dominated by actinolite, with plagioclase concentrated in lenses parallel to foliation. It locally shows open kink folds. Sphene and ilmenite are moderately abundant in patches and seams parallel to foliation. Calcite, pyrrhotite, and epidote are minor phases, along with lesser chalcopyrite. A discontinuous, recrystallized vein is of plagioclase-(actinolite).

actinolite	65-70%
plagioclase	20-25
sphene	3- 4
calcite	1.5- 2
ilmenite	1- 1.5
pyrrhotite	0.7
epidote	0.2
chalcopyrite	minor
vein	
plagioclase-(actinolite)	1- 2

Actinolite forms anhedral to subhedral prismatic grains averaging 0.1-0.3 mm in length, and lesser aggregates of equant, interstitial grains. Actinolite grains are oriented subparallel to foliation, with the degree of orientation much greater in some layers than in others. Locally actinolite clusters are warped into open kink folds of the order of 0.7-1 mm in size.

Plagioclase is moderately concentrated in lenses averaging 0.3-0.5 mm wide. It forms anhedral, equant grains averaging 0.03-0.12 mm in size, with broader lenses commonly being coarser grained than narrower lenses.

Sphene forms clusters up to 0.3 mm in size of irregular aggregates of very fine grains, commonly with abundant inclusions of ilmenite (0.01-0.05 mm) in their cores. Sphene (and/or Ti-oxide) also is concentrated in wispy lenses and layers parallel to foliation as very abundant grains averaging 0.005 mm in size. One of these zones is up to 1.2 mm wide.

Ilmenite is concentrated moderately in a few layers up to 1 mm wide as equant to tabular grains up to 0.15 mm long. A few ilmenite grains up to 0.15 mm in size have thin, irregular rims of extremely fine grained sphene/Ti-oxide. It also occurs within sphene aggregates as described above.

Epidote occurs in equant to slightly lensy patches of grains averaging 0.05-0.1 mm in size. Commonly it is associated with coarser grained plagioclase, and in places it forms irregular rims around pyrrhotite grains and aggregates.

Calcite is concentrated in two plagioclase-rich layers, one up to 1.7 mm wide, as lenses of grains averaging 0.05-0.2 mm in size. Locally it forms grains up to 0.05 mm in size with epidote.

Pyrrhotite forms lenses averaging 0.2-0.5 mm long parallel to foliation and clusters of equant grains averaging 0.03-0.1 mm in size.

Chalcopyrite forms grains averaging 0.02-0.05 mm in size associated with pyrrhotite and epidote.

An early(?), possibly folded vein up to 0.5 mm wide of plagioclase and much less actinolite crosses foliation at a high angle. It is discontinuous and does not cross the broad plagioclase-calcite-rich layer. The vein was recrystallized, but shows no foliation. Plagioclase forms equant grains averaging 0.03-0.1 mm in size. Actinolite grains are slightly coarser.

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Invoice 7075
January 1988

Samples: 36 VEIN 1, 36 VEIN 2, 36 VEIN 3, DDH 88-01 5.2 m

Summary:

The gold bearing veins are of two main types. Samples 36 VEIN 1 and 36 VEIN 2 contain an early, deformed quartz vein with minor muscovite and feldspar, with late veinlets and replacement patches of native gold and minor pyrite/hematite/limonite. Sample 36 VEIN 3 contains a similar early quartz vein with a patch of sulfide dominated by arsenopyrite with much less pyrrhotite (altered to hematite). Native gold forms clusters of inclusions in arsenopyrite and a few grains along grain borders and fractures in arsenopyrite. Pyrrhotite forms minor inclusions in arsenopyrite.

DDH 88-01 5.2 m is a feldspar-quartz-(muscovite) schist with lenses of altered pyrrhotite.

Samples 36 VEIN 1 and DDH 88-01 5.2 m contain ellipsoidal patches of quartz-(feldspar) with abundant dusty pyrite/pyrrhotite along grain borders. These patches represent early formed zones of introduction of quartz and Fe-sulfides. In 36 VEIN 1, this patch is surrounded by later quartz vein material. In DDH 88-01 5.2 m these patches replace the schist.

Microphotographs were taken to illustrate textures. These are listed on the following page, with photo numbers referring to the number on the back of the photograph and to the number on the negative film.

386 2928

John G. Payne
John G. Payne

LIST OF PHOTOMICROGRAPHS

S, 1	36 VEIN 1	Native gold in quartz, reflected light. Length of photo: 3.Ø mm
2	36 VEIN 1	Native gold in quartz, reflected light. Length of photo : 1.62 mm
3	36 VEIN 1	Border of quartz-pyrite/pyrrhotite inclusion in quartz vein (note zone of limonite stain bordering inclusions); transmitted light. Length 3.Ø mm
4	36 VEIN 1	Quartz-pyrite/pyrrhotite inclusion; transmitted light. Length of photo 1.62 mm
5	36 VEIN 2	Native gold patch and veinlets along fractures in feldspar(?) crystal, surrounded by quartz; reflected light. Length of photo 3.Ø mm
6	36 VEIN 3	Native gold inclusions in arsenopyrite; reflected light. Length of photo 3.Ø mm
7	36 VEIN 3	Close-up of native gold inclusions in arsenopyrite (as in photo 6); reflected light. Length 1.2 mm
8	36 VEIN 3	Native gold and pyrrhotite inclusions in arsenopyrite; reflected light. Length Ø.3Ø mm
9	88-Ø1 5.2 m	Altered pyrrhotite lens with minor chalcopyrite in feldspar-quartz-muscovite schist; reflected and transmitted light, crossed nicols for transmitted light. Length of photo 2.Ø mm
1Ø	88-Ø1 5.2 m	Altered pyrrhotite; reflected light. Length Ø.3Ø mm
11	36 VEIN 1	Native gold veinlets and patches in quartz; reflected light. Length of photo 1.62 mm
12	36 VEIN 2	Native gold lenses along main "vein" zone, in quartz; reflected light. Length of photo 1.62 m

36 VEIN 1 **Quartz Vein with Inclusion of Quartz-(Pyrite) and Late Vein of Native Gold-(Pyrite/Hematite)**

The vein consists of very fine to fine grained quartz. It contains an ellipsoidal inclusion up to 1.5 cm across in which abundant dusty pyrite occurs along quartz grain borders. Irregular late replacement and fracture-filling veins consist of native gold, with patches up to 1.5 mm in size.

inclusion	
quartz	30-35%
pyrite	0.3
main vein	
quartz	60-65%
limonite	0.1
muscovite	trace
late veinlets, replacement	
native gold	2
pyrite/hematite	0.2

Quartz forms anhedral grains ranging widely in grain size, with a few over 1 mm in size and most averaging 0.1-0.3 mm in size. Grain borders are irregular and slightly interlocking. Many grains, especially coarser ones are moderately to strongly strained, and some are recrystallized to subgrain aggregates with slightly rotated extinction positions. These textures indicate that the vein probably was originally medium to coarse grained, and that it was deformed and mainly recrystallized to the finer grained aggregate.

The vein contains an ellipsoidal patch up to 1.5 cm across in which quartz has a texture similar to that of the main vein, but grains coarser than 0.5 mm across are rare. Interstitial to and intergrown intimately with quartz are clusters of extremely fine grained pyrite. The pyrite is so fine grained (0.003-0.01 mm) that only locally does it occur on the surface of the section; however, the fact that it is a sulfide is indicated by reflections off crystal surfaces below the quartz grains on the polished surface of the section. In a diffuse zone extending outwards for about 1.5 mm from the dark patch,limonite forms a faint to moderately prominent stain along quartz grain borders. The ellipsoidal patch probably represents a relic of silicified host rock, whose original texture and composition was completely destroyed. Pyrite would have formed with quartz during this early silicification. Limonite represents a weak weathering of pyrite and migration of Fe outwards along grain borders and fractures.

Muscovite/sericite forms one aggregate 0.08 mm across of a few anhedral flakes; it is surrounded by quartz.

Native gold occurs in an irregular veinlike zone cutting across the quartz vein and the silicified inclusion. In this zone (which is up to 1.5 mm wide), gold forms patches up to 1.5 mm in size grading down to veinlets as narrow as 0.01 mm across. Some of the veinlets extend outwards into the quartz vein at high angles to the overall trend of the gold "vein". Gold appears to be of replacement origin, and is concentrated in interstitial patches between quartz grains. Associated with native gold is much less pyrite/hematite in patches and veinlets less than 0.2 mm in size. Pyrite is mainly altered to hematite and locally to patches and smears of limonite.

36 VEIN 2 **Quartz Vein cut by Native Gold Vein**

The main quartz vein is very fine to fine grained, with a moderately foliated texture produced by recrystallization during metamorphism.

main vein		
quartz	98%	
feldspar(?)	Ø.4	(one large crystal)
muscovite	Ø.5	
late veinlets, replacements		
native gold	1	(in polished sections, trace in T.S.)
limonite	Ø.1	

Quartz forms anhedral, slightly to moderately interlocking grains averaging Ø.Ø5-Ø.3 mm in size with a few up to 1.5 mm across. Grains are slightly to moderately strained and are moderately oriented parallel to a metamorphic foliation. Textures suggest that they were formed by recrystallization of coarser grains into subgrain aggregates.

Muscovite is concentrated in a wispy veinlike zone, containing flakes up to Ø.4 mm in size. Associated with this zone is minor limonite. Scattered through quartz aggregates are a few anhedral to subhedral flakes averaging Ø.Ø2-Ø.Ø4 mm long.

Pyrite (in thin section) forms equant patches from Ø.Ø2-Ø.Ø7 mm in size scattered through the main vein.

Native gold forms a discontinuous veinlike zone containing elongate replacement patches up to Ø.5 mm in size and stringers averaging Ø.Ø2-Ø.Ø5 mm in width. One crystal or inclusion 2 mm across, possibly of feldspar (seen in polished block only) is strongly fractured, in part along a prismatic cleavage. Gold and much lesser limonite/hematite is concentrated in fractures in this patch.

Limonite forms a few discontinuous veinlets up to Ø.15 mm in width. They are partly associated with moderately sheared, extremely fine to very fine grained patches of quartz.

36 VEIN 3 Quartz Vein with Patch of Arsenopyrite-(Native Gold-Pyrrhotite)

The main vein consists of quartz with a few patches of plagioclase and one large patch of sulfides dominated by arsenopyrite (with minor inclusions of native gold and of pyrrhotite) and much less pyrrhotite (altered to hematite). Quartz textures suggest that the vein was deformed and recrystallized.

quartz	97%
plagioclase	0.3
muscovite	minor
arsenopyrite	2
native gold	minor
pyrrhotite	0.2
limonite	minor

The original vein probably contained medium to coarse grained quartz. During metamorphism, these were strained and moderately to strongly recrystallized to subgrain aggregates averaging 0.05-0.3 mm in grain size. Some of these have optical orientations close to those of the original grain (whose outlines can still be recognized), and others have been completely recrystallized into new, random orientations. A few relic grains are from 1-2 mm in size. The vein now has a weak to locally moderate foliation caused by preferred orientation of some quartz grains.

Plagioclase forms a patch near one side of the section of several anhedral grains averaging 0.1-0.3 mm in size. Associated with plagioclase are a few flakes of muscovite up to 0.1 mm long and minor dusty limonite.

Muscovite forms a few anhedral to subhedral flakes up to 0.15 mm long, in part associated with plagioclase and in part disseminated widely in quartz.

Arsenopyrite forms a cluster up to 3 mm across of a few subhedral grains from 0.3-2 mm in size. The largest grain contains two smaller, equant grains of arsenopyrite 0.1 mm in size.

A few patches in and on the borders of arsenopyrite grains contain irregular grains of native gold averaging 0.01-0.03 mm in size. Near the border of one arsenopyrite grain, native gold occurs in a few wispy veinlets up to 0.005 mm in width.

Adjacent to the largest grain of native gold is a grain of an unknown mineral 0.03 mm long with the following reflective properties: light brownish-grey color, low to moderately reflectivity, isotropic. It is too small to test for hardness; it could be identified by S.E.M. analysis.

Pyrrhotite forms clusters of irregular inclusions averaging 0.02-0.05 mm in size; pyrrhotite is altered moderately to strongly to secondary Fe-sulfides and hematite. Bordering the arsenopyrite patch are a few grains up to 0.3 mm in size of hematite (after pyrrhotite) and a few irregular patches of limonite up to 0.2 mm across.

Chalcopyrite forms a very few grains up to 0.013 mm across as inclusions in arsenopyrite, associated with hematite and pyrrhotite.

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RECEIVED JUL 27 1987

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DDH-3

Samples:

3 rock samples, numbered 1, 2 and 3, for preparation as polished thin sections and petrographic description.

Summary: — 85306 / 555 ppb

Samples 1 and 3 are epidote-hornblende-plagioclase-quartz assemblages, probably derived by metamorphic recrystallization of mafic igneous or pyroclastic rocks. Sample 3 shows a fairly regular laminated structure, but Sample 1 is more heterogenous.

Sample 2 appears to be a sericitized feldspathic rock (possibly some form of andesite), brecciated, veined and replaced by quartz, calcite and chlorite.

Individual petrographic descriptions are attached. Also enclosed are photomicrographs illustrating typical fields of the two rock types. Subject matter of these is as follows:

Neg. 93-23A Sample # 1 Scale 1 cm = 0.17mm. 85224 — 1580 ppb

Sheaf-like amphibole (left) projecting into area of granular quartz (greys, bottom centre). At right, epidote (orange, violet) in matrix of plagioclase (cloudy greys), partially included within the granular quartz. Fine-grained, felted patches (pastel colours) at top left are strongly sericitized plagioclase.

Neg. 93-24A Sample #2 Scale 1 cm = 0.17mm. 85267 — 535 ppb

Vein like mass of coarse-grained calcite (diagonal band of brownish greys, upper part of photo) with emulsion-textured chlorite (very dark blue-black) cutting sericitized plagioclase aggregate (bottom centre to bottom left). Areas of granular quartz (mosaic-textured greys, top and bottom right) contain included remnants of altered plagioclase. Blue and green sheafs (upper right centre) are well-crystallized sericite developed on carbonate contact.

J.F. Harris

J.F. Harris Ph.D.

DDH 88-01 5.2 m **Feldspar-Quartz-Muscovite Schist with Patches of Altered Pyrrhotite/**

The rock is a very fine grained schist dominated by plagioclase with lesser quartz and K-feldspar, and much less muscovite and biotite. A few replacement(?) patches of plagioclase-quartz-(pyrite/pyrrhotite) are up to 3.5 mm in size. Pyrrhotite is concentrated in lenses parallel to foliation.

plagioclase	55-60%
quartz	17-20
K-feldspar	8-10
muscovite	5- 7
biotite	1- 2
apatite	trace
pyrrhotite	1- 2
chalcopyrite	trace
limonite	1
replacement(?) patches	
plagioclase-quartz-(pyrite/pyrrhotite)	2- 3

Plagioclase, quartz, and K-feldspar form equant, anhedral grains averaging 0.03-0.07 mm in size, with a few plagioclase grains from 0.1-0.2 mm across. A few coarser grained patches up to 1.5 mm across of quartz and lesser muscovite may represent metamorphic segregations.

Muscovite forms disseminated flakes averaging 0.05-0.1 mm in length; these are oriented parallel to foliation. Muscovite and lesser biotite are concentrated in a few seams up to 0.3 mm wide, in part associated with lenses up to 0.5 mm wide of quartz grains averaging 0.1-0.15 mm in grain size.

Biotite(?) forms scattered ragged to subhedral porphyroblasts from 0.1-0.3 mm in length. Pleochroism is from neutral to light greenish brown.

The rock contains a few ellipsoidal lenses up to 3.5 mm long which in hand sample have a dark grey color. These contain moderately abundant, extremely fine grained patches of pyrite or pyrrhotite and only rare muscovite. (These are similar in texture to the quartz-pyrite patch in Sample 36 VEIN 1.)

Pyrrhotite is strongly concentrated in a few lenses up to 2 mm in length. In these it forms very fine grained aggregates, which are altered strongly to completely to secondary Fe-sulfides and hematite. On the border of one are a few grains of chalcopyrite averaging 0.02-0.03 mm across.

Apatite forms a few subrounded grains up to 0.07 mm across.

The rock is cut by a few veinlets up to 0.1 mm in width dominated by limonite, with a patch of altered pyrrhotite at one side of the section. Limonite forms dusty pervasive alteration in broad patches in the rock.

Sample #1 GREENSTONE

Estimated mode

Epidote	30
Amphibole	32
Quartz	20
Plagioclase	10
K-feldspar	1
Carbonate	6
Sphene) Rutile)	1
Pyrite	trace

This sample shows a crudely-banded structure with some discordant, vein-like features.

It is of heterogenous aspect in thin section with complex intergrowths of the various components in different proportions.

The principal constituents are amphibole and epidote. The amphibole is rather pale green and moderately pleochroic. It is probably an actinolitic hornblende. It occurs mainly as randomly oriented, often sheaf-like aggregates of grain size 0.2 - 1.0mm.

Epidote generally forms clusters and coalescent aggregates of subhedral-euhedral grains, 0.02 - 0.2mm (occasionally to 0.5mm) in size. It occurs in diverse associations, including intergrowths in hornblende and dense disseminations in quartz. It is most commonly developed within patches and streaks of granular, somewhat sericitized plagioclase which occur as inclusions or irregular intercalations intergrown with the crudely-banded segregations of quartz and hornblende.

The quartz forms irregular zones of strained anhedral mosaic of grain size 0.1 - 1.0mm. This often contains inclusions of epidotized plagioclase, scattered disseminated grains of amphibole or epidote, and coarse, well-segregated intergrowths of dolomitic carbonate.

Some of the quartz segregations appear veinlike in form but contacts are typically gradational, and show features (like sheafs of hornblende projecting into quartz) suggestive of concomittent development or extensive assimilation and interchange of material followed by recrystallization under metamorphic conditions.

A notable accessory is a striking golden brown mineral thought to be a form of rutile, and occurring within amphibole and epidote as irregular/elongate clumps rimmed by sphene.

Sulfides are present only in faint traces, in the form of random clusters of tiny anhedral grains of pyrite, mainly associated with epidote.

The slide contains one small patch of coarse K-feldspar with poikilitic inclusions of epidote, amphibole and carbonate.

This is a rock of greenstone type which lacks textural evidence of origin. It appears extensively recrystallized, and is most likely of meta-igneous derivation.

Sample #2 ALTERED ANDESITE BRECCIA(?)

Estimated mode

Plagioclase	39
K-feldspar	1
Quartz	12
Sericite	22
Chlorite	13
Calcite	12
Biotite	1
Tourmaline	trace
Rutile	trace
Magnetite	trace
Pyrrhotite	trace
Pyrite	trace
Chalcopyrite	trace

This is a texturally heterogenous rock. Low power examination of the stained cut-off chip suggests that it may be coarsely brecciated and exhibits extensive veining and replacement.

The principal component is an even-grained, anhedral, probably recrystallized mosaic of plagioclase, of grain size 0.03 - 0.1mm. This is more or less strongly pervaded by randomly oriented flecks of sericite, with extensive patches showing almost complete replacement.

Randomly oriented flakes and semi-coalescent networks of biotite, now mainly altered to chlorite and acicular rutile, are locally common within the plagioclase aggregate. Disseminated, fine-grained carbonate, quartz and traces of tourmaline are also seen.

Patchy variations in grain size, content of biotite, and degree of sericitization possibly reflect a fragmental structure.

Coarse segregations of quartz, carbonate and chlorite appear to be introduced, replacing phases.

The quartz occurs as diffuse-margined, irregular masses, and small pockets of strained, anhedral mosaic, frequently incorporating remnants of sericitized plagioclase.

The carbonate (calcite) forms coarse, sparry segregations, sometimes with intergrown quartz, and commonly with prominent pockets and areas of emulsion-type intergrowth of a felted/spherulitic chlorite (quite distinct from the chloritized biotite flakes in the plagioclase).

The carbonate-chlorite association, in part, clearly occupies a fracture zone in the centre of the slide. Quartz pockets, marginal to this zone, and apparently cut by it, show the development of coarse, water-clear plagioclase (albite?) at their contact with the sericitized plagioclase host rock, indicating that extensive assimilation and interchange of material has taken place in this highly altered rock.

Sulfides in this rock consist of traces of pyrrhotite, with rare pyrite and chalcopyrite. They occur as sparsely disseminated, irregular grains, generally within the sericitized plagioclase and/or chloritized biotite.

The nature of this sample is obscure. It is tentatively interpreted as a brecciated, sericitized andesite, veined and replaced by quartz, carbonate and chlorite.

Sample #3 BANDED EPIDOTE AMPHIBOLITE

Estimated mode

Plagioclase	32
Epidote	25
Hornblende	18
Biotite	6
Quartz	14
Carbonate	1
Chlorite	1
Sphene	2
Rutile	1
Pyrite	trace
Chalcopyrite	trace

This rock has a streaky banded texture on the scale of 1 - 4mm.

The individual bands and lenses tend to show gradational composition and a high degree of physical intergrowth.

Typical assemblages are finely granular, anhedral mosaics of plagioclase, of grain size 0.02 - 0.1mm; disseminations, grading to compact aggregates, of subhedral epidote in a similar size range, often intergrown with plagioclase; pockets and lenses of anhedral quartz, 0.05 - 0.5mm, sometimes with intergrown coarse plagioclase; fine-grained, foliated intergrowths of well-oriented biotite and interstitial epidote; aggregates of coarse, well-formed biotite, of grain size 0.1 - 0.5mm; and sheaflike aggregates of prismatic hornblende of similar size, often with intergrown epidote.

The biotite, and to a lesser degree the hornblende, typically contains clusters and linear trains of fine-grained, disseminated sphene, and rutile rimmed by sphene.

Carbonate and chlorite are minor, scattered accessories.

The paucity of carbonate and presence of biotite distinguish this rock from Sample 1, which is of related type.

The only sulfides are rare, tiny, randomly disseminated specks of pyrite.

The rock shows a distinct foliation, defined by the lensy, banded, compositional segregations. The fine-grained biotitic bands show a high degree of grain orientation, as does some of the prismatic hornblende, but most components show random orientation of the constituent grains.

This rock has the mineralogy of a greenstone, and is probably the product of amphibolite-grade metamorphism of mafic igneous material - possibly a tuff.

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RE: EXAMINATION OF 4 POLISHED THIN SECTIONS

SAMPLE 1: QUARTZ-BIOTITE-MUSCOVITE SCHIST

Laminated black (biotitic) and white (quartz-rich) schist with clots and veins of cross-cutting quartz (probably meteamorphic "sweats" for the most part). Coarse crystals of euhedral arsenopyrite in some of the quartz veins (which therefore may be hydrothermal). At first glance, this appears to be a normal metamorphic rock. However, the presence of envelopes of K-feldspar (revealed by staining) to the quartz veins, and euhedral tourmaline crystals, plus the arsenopyrite, indicate hydrothermal alteration and mineralization. The minerals present are:

Quartz		40%
K-feldspar		10%
Biotite		20%
Muscovite		20%
Tourmaline		3%
Chlorite		2%
Carbonate		1%
Apatite		1%
Zircon		tr
Sulfides:		2%
Arsenopyrite	2%	
Pyrrhotite	tr	
Chalcopyrite	tr	
Sphalerite	tr	
Sphene, ± rutile		<1%

GRID - #5   0.53 oz/to

Quartz occurs in two distinct modes: coarse (0.5 to 1 mm) highly fractured, sutured ragged anhedral interlocking grains in the veins, and fine (0.03 mm) grains forming the mass of the rock with biotite and muscovite (both as flakes averaging about 0.05 to 0.1 mm long). K-feldspar is restricted to the margins of the quartz veins, in grains similar in size to the fine quartz. It is likely that the muscovite is, like the K-feldspar, the product of hydrothermal alteration: the biotite appears to be replaced by the muscovite.

Tourmaline, which shows zoning from central slate-blue cores to olive rims, is probably normal schorlite (Fe-rich). It occurs as euhedral 0.1 mm diameter by 0.2 mm long crystals scattered through parts of the matrix, and implies boron-rich alteration. Rare euhedral grains of apatite and lesser zircon are also scattered through the matrix.

Scattered large arsenopyrite masses are up to 5 mm across, composed of euhedral rhomb-shaped grains 0.5 to 1.5 mm in size. They contain small (less than 0.1 mm) rounded blebs of pyrrhotite as inclusions. Within the pyrrhotite are inclusions of grey sphalerite (10 to 20 microns, red internal reflections) and chalcopyrite of similar size. The large masses of arsenopyrite are coated or rimmed by a pale green chlorite±sericite mix. Traces of limonite from weathering of the sulfides are present along the foliation of the rock.

SAMPLE 2: QUARTZ-BIOTITE SCHIST WITH QUARTZ VEIN

Similar biotite schist to that in sample 1, but with major quartz vein (over 2 cm thick) occupying half the slide. The vein contains the same alteration minerals seen in sample 1: namely, K-feldspar, muscovite, and arsenopyrite. Minor carbonate is also present, but tourmaline is absent. Approximate mineral abundances are:

ROCK	
Quartz	50%
Biotite	25%
Plagioclase (albite?)	10%
K-feldspar	10%
Carbonate (dolomite?)	2%
Chlorite	1%
Sericite	<1%
Fe-Ti oxides (hematite, rutile)	1%
Sphene	1%
VEIN	
Quartz	80%
Muscovite	10%
K-feldspar	5%
Arsenopyrite	4%
Pyrrhotite	tr
Chalcopyrite	tr
Sphalerite	tr
Limonite (after sulfides)	1%

The host rock is a quartz-K/feldspar-biotite schist, with layers of slightly coarser material (up to 0.5 mm) that contain plagioclase as ragged metamorphic grains interlocked with the quartz, and fine K-feldspar grains of 0.03 mm diameter. Quartz forms fine grains averaging about 0.02 mm with biotite flakes averaging about 0.1 mm long in the biotite-rich layers. A very high-relief carbonate, which does not react to cold dilute HCl, and is therefore probably dolomite, also occurs in these layers as small (0.1 to 0.3 mm diameter) anhedral grains, mixed with the biotite. Extremely fine dust-like opaques (hematite?) are also localized in these layers.

The vein looks like an aplite (fine-grained felsic igneous rock) in hand specimen but in thin section it is composed almost entirely of extremely fractured, sutured, undulose extinguishing pressure quartz. It shows some elongation parallel to the walls of the vein. There is no biotite in the vein; only muscovite and K-feldspar are present in addition to the quartz.

Sulfides are not restricted to the vein, and are similar in nature in both vein and wall-rock. They are composed of coarse euhedral rhomb-shaped crystals and aggregates up to 4 mm across, with minor inclusions of rounded blebby pyrrhotite containing traces of chalcopyrite and sphalerite. The assemblage is identical to that of sample 1, even to the chlorite/sericite rims to the sufide grains. Minor limonite staining spreads out from the sulfide grains.

5 same location as #1

SAMPLE 3: QUARTZ-OLIGOCLASE-MUSCOVITE SCHIST

The mineralogical composition of this specimen is almost the same as that of samples 1 and 2, but the sulfides are quite different, being dominated by pyrrhotite rather than by arsenopyrite. It may be farther removed from mineralization. The minerals present are:

Plagioclase (oligoclase, An25)		60%
Quartz		15%
Muscovite		10%
Biotite		5%
K-feldspar		5%
Sulfides:		4%
Pyrrhotite	2%	
Pyrite	2%	
Chalcopyrite	tr	
(all replaced in places by goethite)		
Carbonate		1%
Sphene		tr

The bulk of the rock is made up of alternately coarse and fine layers of ragged, anhedral, interlocking grains of plagioclase averaging about 0.1 mm in diameter. It has a refractive index almost identical to that of quartz, and is almost as clear as the quartz, making it very difficult to distinguish the two. A centered figure perpendicular to Z gives an extinction angle of about 5 degrees (X^001) so the composition is probably oligoclase, about An20 or so. This would imply upper greenschist metamorphism. The rest of the rock is composed of quartz, biotite (now largely altered to muscovite), minor K-feldspar, sulfides, and some sphene rimmed by carbonate. Some layers are enriched in phyllosilicates, and others (less common) are enriched in K-feldspar.

Muscovitized biotite forms flakes about 0.1 to 0.2 mm long with very pale brown colour; in other portions of the slide the biotite has been totally converted to muscovite. Muscovite, carbonate, and sphene are closely intergrown with the sulfides.

The sulfides are mainly pyrrhotite, as anhedral aggregates up to 0.2 mm distributed along the foliation. These are oxidizing to the characteristic "bird's-eye" and/or lamellar pyrite/marcasite. Elsewhere, euhedral pyrite grains that are probably primary are present in place of the pyrrhotite. In some portions of the slide, weathering has gone even further, converting all sulfides to goethite psuedomorphs and limonite stains. Traces of chalcopyrite are included in the pyrrhotite.

As in sample 1, alteration and mineralization in this sample appears to be more of a background nature compared to sample 2 with the major quartz vein. The absence of arsenopyrite in this sample also supports this.

SAMPLE 4:

Pale green, possibly volcanic rock that has been strongly quartz veined and silicified. It is well-stained by malachite and limonite. In thin section, minerals identified are:

Quartz	30%
Plagioclase	20%
Chlorite	20%
Sericite	10%
Malachite	10%
Limonite	5%
Jarosite (?)	4%
Carbonate (dolomite?)	1%

The rock is made up of an interlocking mosaic of quartz and lesser plagioclase grains, averaging 0.1 to 0.3 mm in size. Patches of chlorite and sericite may be after original mafic minerals. No sulfides remain, but copper minerals must have been present to account for the abundant malachite.

Plagioclase rarely shows twinning and has a refractive index similar to that of quartz, so the two are distinguished only with difficulty. The feldspar is quite dusty and altered by many fine flecks of chlorite and sericite, and does not stain for K-feldspar; otherwise it would be difficult to identify. Chlorite is bright green and pleochroic, with anomalous birefringence; it may replace former mafic sites.

A yellow mineral of high relief and high birefringence may be jarosite in this weathering environment. It has the typical basal cleavage and radial aggregate habit characteristic of the sulfates jarosite and alunite, but the identification must be regarded as tentative without confirmation by X-ray diffraction.

Malachite is deep green, with carbonate-like high relief and birefringence, and forms patches, stains, and veins in the rock. It is closely associated with limonite, implying that the precursor copper mineral may have also borne iron. Alternatively, there may have been pyrite with the copper minerals.

Voids in the rock may be merely due to weathering and/or plucking during section preparation, or they might be primary vesicles from a volcanic rock.

C. F. B. Leitch

Metrosim s.l.c.