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# GEOLOGY, LITHOGEOCHEMISTRY AND GEOCHRONOLOGY STUDY

# OF THE

# GRANDUC PROPERTY

**SKEENA MINING DIVISION**

**104B/1E, 1W, 8W**

**Latitude: 56°14'**

**Longitude: 130°20'**

SUB-RECORDER
RECEIVED
NOV 1 6 1994
M.R. # .......... $ ..........
VANCOUVER, B.C.

**Owner:**
**Granduc Mining Corporation**
**2000-95 Wellington St. West**
**Toronto, Ontario**
**M5J 2N7**

**By:**

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GEOLOGICAL BRANCH
ASSESSMENT REPORT

23,610

PART 1 OF 2

**September 22, 1994**

**Volume 1**

*Cambria Geological Ltd.*
*Consulting Geologists*

## SUMMARY

The Granduc deposit, located 40 km northwest of Stewart in northwestern British Columbia, is a copper-rich syngenetic volcanogenic massive sulphide deposit hosted in strongly deformed bimodal volcanic, chemical, and clastic sedimentary rocks. Unpublished production figures from the 1968 to 1984 were 15.42 million tonnes grading 1.83% copper. Total mineral inventory including production from 1968 to 1984 is 29.03 million tonnes grading 1.83% copper. It may be similar to the Kuroko deposits in the Green Tuff district of Japan where syngenetic massive sulphide deposits are associated with back-arc rifting and felsic volcanism.

Rocks mapped on Granduc Mountain and to the north are separated into two easily recognizable units termed the western and eastern series that are separated by the north-northwest striking South Unuk shear zone (Lewis, 1994). Western series rocks are Late Triassic or older in age, and are tentatively correlated with the Late Triassic Stuhini Group. They consist of moderately to highly foliated schists, phyllites, marbles and gneisses. North of Granduc Mountain, western series rocks are subdivided into six lithological rock types (units 9-14); similar rock types on Granduc Mountain (units 1-8) have been described by Klepacki and Read (1981) and include the Granduc Mine series (McGuigan and Marr, 1979). U-Pb analysis of zircons collected from the Footwall series mafic volcanic rocks (North zone) are 230.5 ± 14 Ma (Childe, 1994). An intermediate sill that intrudes the mafic volcanics has a identical age within error of 232 ± 3 Ma.

Eastern series rocks are Middle Jurassic in age and tentatively correlated with the Lower to Middle Jurassic Hazelton Group. They consist of relatively undeformed, mainly volcanic rocks that are subdivided into three conformable stratigraphic units (units 15-17). U-Pb analysis of zircon from dacitic tuffs (unit 16) north of the North Leduc Glacier returned a date of 186.8 ± 9 Ma. An identical age within error of 185.4 ± 9 Ma was obtained from a felsic lapilli tuff approximately 7 km to the south (Childe, 1994). This unit is similar in age to felsic units in the footwall of the precious metal rich Eskay Creek massive sulphide deposit (Bartsch, 1993).

The South Unuk shear zone is an north-northwest striking subvertical fault that has dominantly a sinistral sense of displacement; it is mapped from the Iskut River area south to Granduc Mountain, a distance of 60 km. On Granduc Mountain, and to the north (Divelbliss, Duke and North Leduc areas), western series rocks record strongly heterogeneous deformation with a large component of simple shear in a ductile to semi-brittle environment; these features indicate western series rocks should be included as part of the shear zone. Limited mapping during the 1993 study did not permit the South Unuk shear zone to be delineated on Granduc Mountain. However, the linear associated with the South Unuk shear zone north of the North Leduc Glacier is on trend with the HKF fault mapped by McGuigan and Marr (1979). The HKF fault is a north-northwest striking steeply dipping fault; locally, a ultramafic horizon of dunite, talc-chlorite schist and chlorite-serpentine schist occurs along the fault.

Four phases of folding were documented by Klepacki and Read (1981) on Granduc Mountain. The first two phases are the most intense and affected the distribution of orebodies underground in the Granduc Mine. Lewis (1994) mapped similar style folds north of the North Leduc Glacier and attributes $F_1$ and $F_2$ folds on Granduc Mountain to progressive deformation associated with the South Unuk shear zone. This new interpretation is significant because, previously, the consistent northerly striking and steeply west dipping $S_1$ foliation measured by Klepacki and Read (1981) was interpreted to represent a single limb of a major $F_1$ fold. According to Lewis (1994) a major $F_1$ fold is unlikely, and its postulated occurrence should not be used to guide exploration.

A limited lithogeochemistry study of mainly Footwall rocks (Western series) from the North zone (Granduc Mountain) indicates the volcanic rocks are mainly mafic with an tholeiitic magma affinity (Barrett, 1994). REE and trace element tectonic discrimination diagrams indicate these rocks are most like midocean ridge or marginal basin basalts (Wilson, 1989), however the slightly enriched LILE and gentle

negative REE pattern suggests some crustal contamination from a subduction zone. Rocks logged as 'cherty tuff' or 'dacitic tuff' have REE patterns similar to that of the mafic volcanic rocks indicating they are not dacitic in composition as logged in the field. A mafic sill (field term) within the Footwall series rocks is chemically intermediate in composition and has a similar, but higher REE pattern to the mafic volcanics. The similar REE element chemistry and the identical U-Pb (zircon) dates from these units suggest they are genetically related. The intermediate sill is similar in composition and age to the Bucke Glacier stock and is tentatively correlated with this suite of intrusions.

Lead (galena and microcline) isotope analysis of two samples from the B orebody indicate the lead is relatively non-radiogenic, and compared to mineralization of known age within Stikinia, indicates a pre-Jurassic age (Childe, 1994). Two samples from veins cutting the Footwall mafic volcanics (North zone) plot within the Stewart Mining Camp Tertiary cluster as defined by Alldrick *et al.* (1993); deposits of this age in the Stewart area include the Porter-Idaho/Prosperity and Indian.

Preliminary conclusions from the 1993 study on the Granduc property indicate a number of different styles, ages and stratigraphic settings of mineralization are present, or can be expected to be found on the Granduc property. They include (i) Copper rich volcanogenic massive sulphide mineralization hosted within the Late Triassic Western series rocks (Stuhini Group), (ii) precious metal rich volcanogenic massive sulphide mineralization hosted within the Middle Jurassic Eastern series rocks (Hazelton Group) similar to the Eskay Creek deposit in the Iskut camp, (iii) Jurassic precious metal rich veins hosted in Lower to Middle Jurassic Eastern series rocks (Hazelton Group) similar to the Big Missouri and Premier Mines in the Stewart camp, and (iv) Tertiary silver rich veins hosted in both Western and Eastern series rocks similar to the Porter-Idaho/Prosperity and Indian Mines in the Stewart camp.

An exploration program consisting of detailed structural and stratigraphic mapping, lithogeochemistry, and geochronology is recommended to locate favorable stratigraphy, identify drill targets and develop a predictive ore deposit model for the deposit. In addition to the above work, ground geophysical surveys consisting of magnetic, VLF and Pulse EM to cover favorable stratigraphy in the North zone and the down plunge extension of the A, $B_1$ and $B_2$ horizons under the South Leduc Glacier.

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# A. INTRODUCTION

## A.1 Program Objectives

The Granduc copper rich volcanogenic massive sulphide deposit was the focus of a stratigraphic, structural, lithogeochemical and geochronological study in August, 1993 by the Mineral Deposits Research Unit (MDRU) at The University of British Columbia and Cambria Geological Ltd. The objectives of this joint study were: (i) determine if correlations by a number of recent workers (Anderson and Thorkelson, 1990; M^c^Guigan *et al.*, 1992) that suggest the Granduc deposit is hosted by the Lower Middle Jurassic Salmon River formation similar to the precious metal rich Eskay Creek deposit, or is hosted by the Late Triassic Stuhini Group as previously thought, (ii) determine the structural history of the Granduc deposit, (iii) determine if the South Unuk River shear zone, mapped to the north, can be extended south on to the Granduc property, (iv) determine the magma series, chemical composition, compare their composition with those of known tectonic setting, and 'finger print' similar lithological units to aid in structural interpretations using lithogeochemistry, (v) determine the age of the volcanic stratigraphy hosting Granduc mineralization using U-Pb (zircon) isotopes, and (vi) determine the age and sources of metals in the deposit using lead (galena and microcline) isotopes.

A detailed description of stratigraphy, structure and mineralization at the Granduc Mine is not addressed in this study, however the reader is referred to earlier studies by Norman *et al.* (1959), M^c^Guigan and Marr (1979), M^c^Guigan and Tucker (1981), Klepacki and Read (1981), M^c^Donald (1981), Freckelton *et al.* (1982), Anderson (1991), Melnyk (1991) and M^c^Guigan *et al.* (1992).

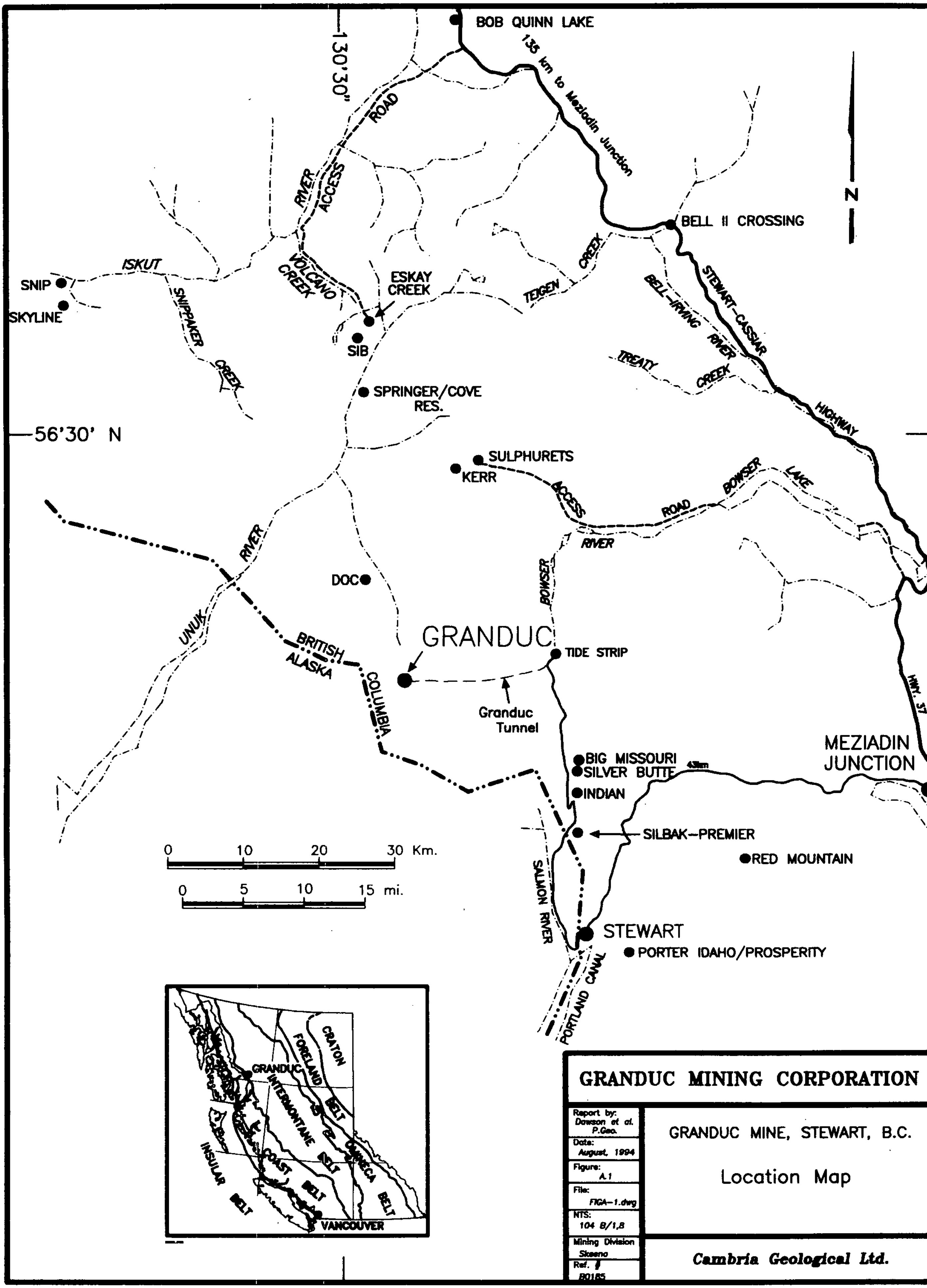
**A.2 Location and Access**

The Granduc property in northwestern British Columbia is 900 km northwest of Vancouver and 40 km northwest of Stewart (Fig. A.1, NTS Maps 104B/1E, 1W, 8W; centered near longitude: 130°20' and latitude: 56°14'). It is situated within the Skeena Mining Division.

Access is by helicopter from Stewart, B.C. or via the Tide tunnel (19.5 km) which connects underground workings at Granduc Mountain with the former mill site near Summit Lake. Summit Lake is accessed by an 35 km all weather road from Stewart-Hyder. Stewart has port facilities for ocean going ships, and a paved airstrip capable of handling medium sized aircraft.

**A.3 Land Status**

The Granduc property consists of 64 Crown Granted mineral claims, 149 two-post mineral claims and 2 four post (21 units) mineral claims (Fig. A.2). Appendix A lists the Claims and Crown Grants with their respective record numbers, group name, tenure number and expiry dates (Note: claim title and expire date are based on present company records and were not verified with records at the British Columbia Ministry of Energy, Mines and Petroleum Resources - Mining Recorders Office). All claims constituting the Granduc property are owned by Granduc Mining Corporation, 2000-95 Wellington St. West, Toronto, Ontario. Assessment work on mineral claims comprising the Granduc property expire throughout 1995.



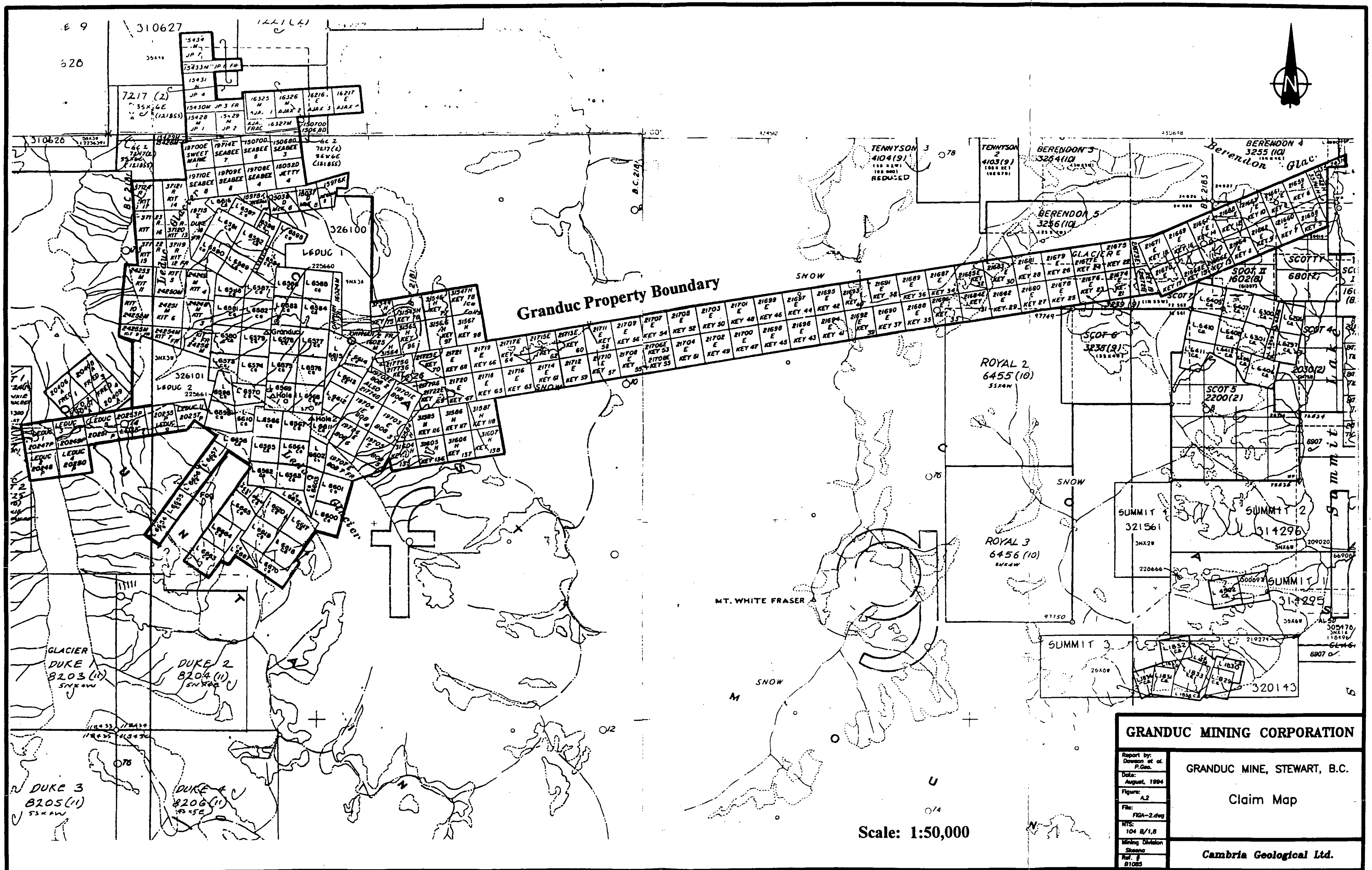

**GRANDUC MINING CORPORATION**

Report by: Dawson et al. P.Geo.
Date: August, 1994
Figure: A.1
File: FIGA-1.dwg
NTS: 104 B/1,8
Mining Division Skeena
Ref. # B0185

GRANDUC MINE, STEWART, B.C.

Location Map

*Cambria Geological Ltd.*


Granduc Property Boundary
SNOW
MT. WHITE FRASER
LEDUC 1
LEDUC 2
326100
326101
TENNYSON 3
BERENDON 4
BERENDON 5
ROYAL 2
6455 (10)
ROYAL 3
6456 (10)
SUMMIT 1
321561
SUMMIT 2
314296
SUMMIT 3
320143
DUKE 1
8203 (11)
DUKE 2
8204 (11)
DUKE 3
8205 (11)
GLACIER
Scale: 1:50,000
GRANDUC MINING CORPORATION
Report by: Dowson et al. P.Geo.
Date: August, 1994
Figure: A2
File: FIGA-2.dwg
NTS: 104 B/1,8
Mining Division Skeena
GRANDUC MINE, STEWART, B.C.
Claim Map
Cambria Geological Ltd.

**A.4 History**

Mineralization was first discovered on Granduc mountain by Wendell, Dawson and W. Fromholz in 1931. E. Kvale and T.J. McQuillan staked the copper showings in 1951 for Helicopter Exploration Company Ltd. Granby Mining Company acquired the property in 1952 and completed surface and underground exploration work under their newly formed company--Granduc Mines Ltd. Newmont Mining Corporation Ltd. entered into an agreement with Granby in 1953 whereby Newmont would finance mine development.

Approximately 14.15 million tonnes grading 1.22% copper were mined between 1971 and 1982 by Granduc Mines Ltd. and by Esso Resources Canada (Canada Wide Mines) Ltd. (BCEMPR MINFILE 104B-21). Unpublished production figures from 1968 to 1984 were 15.42 million tonnes grading 1.83% copper (Melnyk, 1991). Low copper prices forced the closure of the mine and demolition of the mill facilities in 1985. Total mineral inventory including production from 1968 to 1984 is 29.03 million tonnes grading 1.83% copper (Anderson, 1991).

Exploration on the Granduc property during the period 1974 to 1984 focused primarily on extending copper mineralization along strike north and south of the mine. In the final two years of operation, Esso Minerals Canada Ltd. evaluated the property for gold. Gold bearing quartz-carbonate veins were discovered in the Tide Tunnel and gold bearing pyrrhotite veins were located adjacent to the millsite.

In 1991, a small surface exploration program funded by Granduc Mines Ltd, (N.P.L.) focussed on several mineralized zones on the Granduc property. The program consisted of surface sampling and mapping (Melnyk, 1991).

In 1992, Cambria Geological Ltd. compiled and reviewed the regional and property geology with the aim to identify a number of new exploration targets (M$^c$Guigan *et al.*, 1992). A number of targets were identified and a recommended work program was outlined.

### A.5 Work Accomplished in the 1993 Program

The 1993 joint study by MDRU and Cambria Geological Ltd. accomplished the following work:

* Relevant reports and maps from the Hecla Mines Ltd. office in Coure d' Alene, Idaho were copied or obtained.

* A geologist and helper organized and catalogued (Appendix B) fifty-four pellets of drill core (27 500 m) at the shared Granduc - Newhawk warehouse in Stewart, British Columbia.

* Ten drill holes (4 500 m) were relogged and sampled (Appendix C) from the North zone (146-3, 147-1b, 153-1, 158-1, 158-2a), F zone (119-58, 119-64, 119-66,) and $B_1/B_2$ zone (102-77, 102-79) during a 20 day period in August, 1993. A total of 133 samples were collected for lithogeochemistry, age dating and thin sections.

* Thirty four samples (Appendix D) were analyzed by x-ray fluorescence (XRF) for major and minor elements at M$^c$Gill University Geochemistry Laboratory, Ottawa, Ontario. Rare earth elements were analyzed by neutron activation at Activation Laboratories, Ancaster, Ontario.

* Six samples (Appendix E) were collected from outcrop and drill core for U-Pb (zircon) isotope analysis at the Geochronometry Laboratory, University of British Columbia.

* Three samples (Appendix E) were collected from outcrop and drill core for lead (galena, microcline) isotopes.

* Ten days were spent mapping (Appendix F) north of Granduc Mountain in an attempt to extend known stratigraphic and structural elements identified in the MDRU Iskut River study (Lewis, 1993; Lewis *et al.*, 1993) southward into the Granduc Mine area.

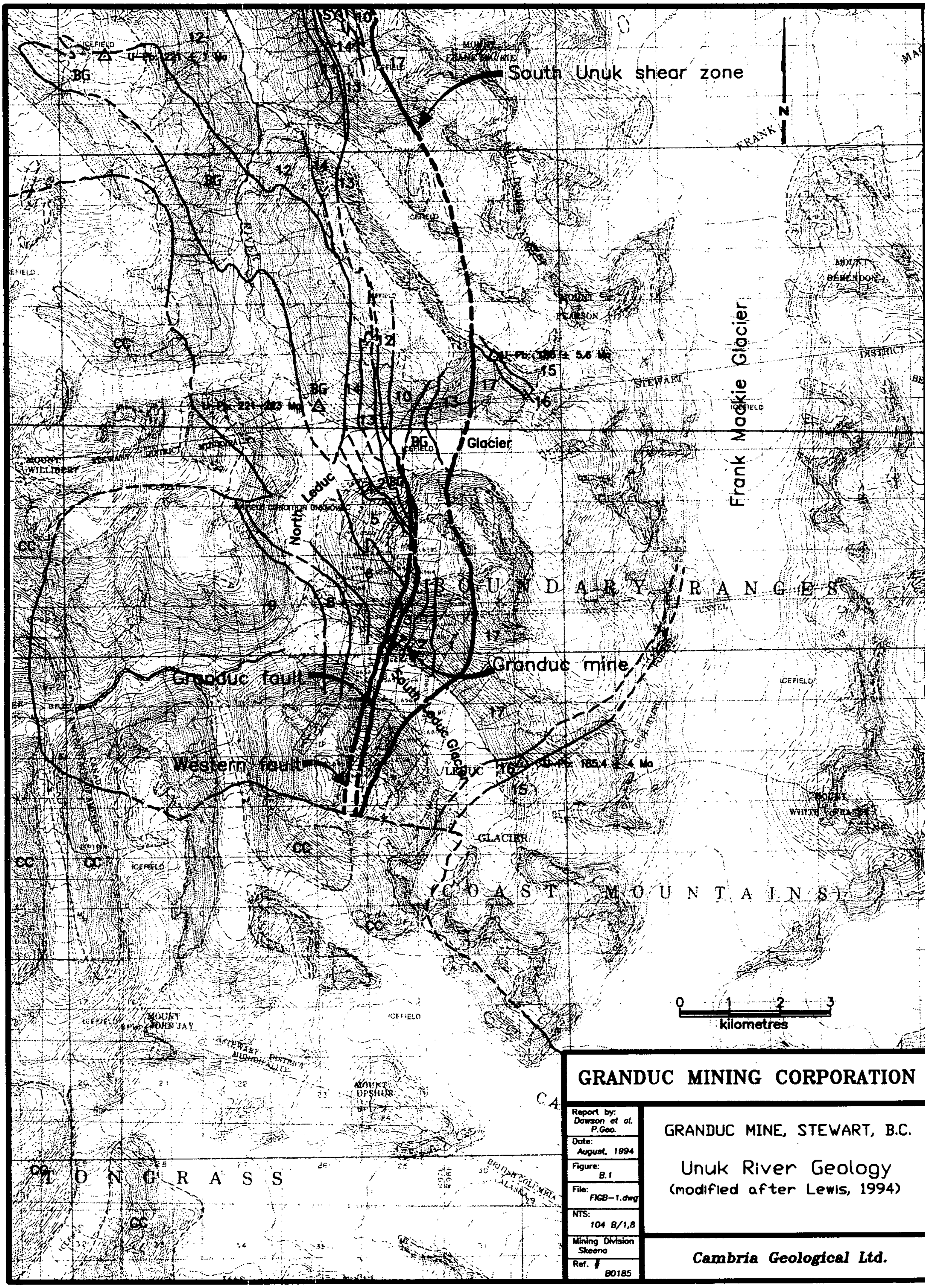
# B. GEOLOGY OF THE UNUK RIVER AREA

## B.1 Introduction

The area north of Granduc Mountain along the eastern flank of the South Unuk River was mapped by Lewis (1994) in order to extend stratigraphic and structural features documented in the MDRU Iskut River study (Lewis, 1993; Lewis *et al.*, 1993) southward into the Granduc Mountain mine area (Appendix F). Mapping was completed in three areas north of Granduc Mountain and are referred to as the (from north to south): (i) Divelbliss, (ii) Duke, and North Leduc areas (Figs. B.1 and C.1). Previous mapping in the area is by Alldrick *et al.* (1989) and references therein.

Rocks exposed on Granduc Mountain and to the north are subdivided into two easily recognizable units termed the western and eastern series, and are separated by the north-northwest striking South Unuk shear zone (Lewis, 1994). Western series rocks consist of foliated, greenschist facies metavolcanic and metasedimentary rocks and include the Granduc Mine series (M$^{c}$Guigan and Marr, 1979) and hanging wall units on Granduc Mountain. Eastern series rocks are much less deformed and are mainly volcanic. The boundary between western and eastern series rocks is easily identifiable north of Granduc Mountain, however on Granduc Mountain itself, the boundary is uncertain.

Intrusive suites consist of the pre-tectonic Late Triassic Bucke Glacier stock and syenite sills or dykes that intrude western series rocks and the post-tectonic Eocene Lee Brant pluton that intrude eastern series rocks.




**GRANDUC MINING CORPORATION**

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|---|---|
| Report by: Dawson et al. P.Geo. | GRANDUC MINE, STEWART, B.C. |
| Date: August, 1994 | Unuk River Geology (modified after Lewis, 1994) |
| Figure: B.1 | |
| File: FIGB-1.dwg | |
| NTS: 104 B/1,8 | |
| Mining Division Skeena | Cambria Geological Ltd. |
| Ref. # 80185 | |

## B.2 Stratigraphy

### B.2.a Western series

Western series rocks crop out east of the South Unuk River where they form a north-northwest striking and steeply dipping unit (Figs. B.1 and C.1). They consist of moderately to highly foliated schist, phyllite, marble and gneiss. The stratigraphic thickness of the western series is uncertain because facing indicators have been destroyed by metamorphism and deformation. Repetition of similar lithologic units suggests structural duplication. North of Granduc Mountain, western series (units 9 to 14) are subdivided into six lithological (no stratigraphic order) rock types consisting of: (i) strongly foliated , medium grained biotite schist (unit 9), (ii) pale green argillite and cherty argillite (unit 10), (iii) marble (unit 11), (iv) mafic hornblende schist and gneiss (unit 12), (v) intermediate schist and gneiss (unit 13), and (vi) layered to laminated phyllitic mudstone to siltstone (unit 14). Similar rock types defined by Klepacki and Read (1981) on Granduc Mountain (units 1 to 8) were retained by Lewis (1994); correlation of individual units across the North Leduc Glacier has not been attempted.

A minimum age of 220 Ma for the western series is obtained by U-Pb (zircon) dates from the Bucke Glacier stock north of the North Leduc Glacier and related bodies on Granduc Mountain that intrude western series rocks. The Bucke Glacier stock ranges from 220 to 223 Ma (J. Mortensen, personal communication to P.D. Lewis, 1994); similar composition sills on Granduc Mountain were 232 $\pm$ 3 Ma (Childe, 1994). In addition, a U-Pb (zircon) analysis from the footwall andesite on Granduc Mountain (North zone) returned an identical date within error of 230.5 $\pm$ 14 Ma (see Section C.6.a).

### B.2.b Eastern series

Eastern series rocks form a northwest trending package of rocks that are separated from western series rocks by the South Unuk shear zone on the west, and are bounded by the Frank Mackie Glacier on the east (Figs. B.1 and C.1). They are subdivided into three lithologically distinct conformable volcanic units (from oldest to youngest) consisting of: (i) heterolithic intermediate volcanic breccia to conglomerate (unit 15), (ii) bedded dacitic (?) tuffs, tuffaceous conglomerate and homolithic breccia (unit 16), and (iii) andesitic pillowed flow and pillow breccia (unit 17). In the North Leduc Glacier area, sedimentary grading and pillow shapes indicate these units face southwest; in other areas, facing directions are uncertain.

The age of the eastern series is partly constrained by U-Pb analyses of zircons separated from a dacite megaclast (unit 15) collected north of Granduc Mountain. An interpreted age for this unit, based on four zircon fractions, is 186.8 $\pm$ 5.6 Ma (J. Mortensen, personal communication to P. Lewis, 1994). An identical age within error of 185.4 $\pm$ 9 Ma was obtained from a felsic lapilli tuff approximately 7 km to the south on the Homestake property (Childe, 1994). These rocks are similar in age to felsic rocks (Hazelton Group) in the footwall of the precious metal rich Eskay Creek massive sulphide deposit (Bartsch, 1993).

## B.3 Intrusions

### B.3.a Bucke Glacier stock

Bucke Glacier stock forms a northwesterly elongate body (approximately 10 km long by 2 km wide) in western series rocks north of Granduc Mountain (Figs. B.1 and C.1). It consists of fine to coarse grained hornblende-biotite diorite to monzodiorite. The contacts of the stock are parallel to subparallel to regional foliation, and the stock is foliated itself, however to a lesser degree than the enclosing western series rocks. Intermediate intrusive rocks exposed on the north side of Granduc Mountain (Klepacki and Read, 1981) and intersected in North zone drilling (Freckelton *et al.*, 1982) are correlated with the Bucke Glacier suite based on similar lithologies and preliminary U-Pb (zircon) dates (Childe, 1994).

The age of the Bucke Glacier stock is constrained by two widely separated U-Pb (zircon) dates. To the north, near the northern most exposure of the stock, a foliated diorite phase of the stock returned a date of 221 ± 1 Ma (M.L. Bevier, personal communication to P. Lewis, 1994). To the south, near the southern most exposure of the stock, a hornblende quartz monzodiorite phase returned a date of 220 - 223 Ma (J. Mortensen, personal communication to P. Lewis, 1994).

**B.3.b Syenite sills (and dykes)**

Syenite sills (and minor dykes) form north-northwesterly trending elongate bodies (<1.5 km long and 10's of metres thick) in western series rocks north of Granduc Mountain (Figs. B.1 and C.1). Sill contacts are parallel to subparallel to regional foliation and compositional layering measured in the enclosing western series rocks. The sills contain crowded megacrystic (<5 cm) potassium feldspar and are weakly foliated.

**B.3.c Lee Brant stock**

Lee Brant stock forms a large stock in eastern series rocks north of Divelbless Creek (Appendix F). The stock consists of undeformed hornblende - biotite quartz monzonite. A U-Pb (zircon) date of 55.6 ± 2 Ma was obtained from a sample collected along the eastern margin of the body north of Divelbliss Creek (J. Mortensen, personal communication to P. Lewis, 1994).

**B.4 Structure**

The major structure identified in the Unuk River area is the South Unuk shear zone (Figs. B.1 and C.1). It is a north-northwest striking, subvertical fault that is mapped from the Iskut River area south to Granduc Mountain, a distance of 60 km. The fault varies along strike (north to south) from a brittle fault (10-20 m thick) with uncertain sense and direction near Mount Shirley that widens to a ductile deformed zone greater than 1 km wide south of Sulphurets creek where sinistral offset is indicated. Further south, in the Divelbliss, Duke and North Leduc areas, western series rocks record strongly heterogeneous deformation with a large component of simple shear in a ductile to semi-brittle environment; these features indicate western series rocks should be included as part of the shear zone. The eastern boundary of the shear zone is marked by a fault that separates the more deformed Late Triassic (or older) western series rocks from relatively undeformed Lower to Middle Jurassic eastern series rocks.

# C. GRANDUC PROPERTY GEOLOGY

## C.1 Introduction

Work on the Granduc property during the 1993 study focused on re-logging and sampling selected drill holes (Appendix C) for lithogeochemistry (Appendix D) and geochronology (Appendix E). Surface mapping on Granduc Mountain was limited to a few traverses to examine: (i) previous stratigraphic subdivisions (McGuigan and Marr, 1979; Klepacki and Read, 1981), (ii) previous structural analysis (Klepacki and Read, 1981), and (iii) to help with correlation of units logged in drill core and mapped north of the North Leduc Glacier during the 1993 study (Lewis, 1994).

The following brief description of stratigraphy, structure and mineralization is based mainly on mapping by McGuigan and Marr (1979) and Klepacki and Read (1981), and re-logging selected drill holes.

## C.2 Stratigraphy:

Previous surface mapping on the Granduc property by McGuigan and Marr (1979) outlined three major rocks assemblages: (i) Hanging Wall series, (ii) Mine series, and (iii) the Footwall series--which comprise the Granduc series (Figs. C.1 and C.2; Maps 1 and 2). These assemblages were further subdivided by Klepacki and Read (1981) into 47 map lithologic units. Rapid facies changes, faulting and folding makes correlation of individual units difficult. Schematic litho-stratigraphic sections from the South zone and preceding north past the North zone depict changes in the Granduc series across the property (Figs. C.1 and C.3).

The Granduc series is an assemblage of volcanic and sedimentary rocks approximately 1 500 m thick; the exact thickness is difficult to determine because of likely stratigraphic repetition. Footwall series rocks

# LEGEND

**Eocene**

CC COAST COMPLEX: medium to coarse grained biotite granite, granodiorite and minor quartz diorite

——— Intrusive contact ———

**Lower to Middle Jurassic**

**EASTERN SERIES (Hazelton Group ?)**

17 Andesite to basalt mafic flows, pillowed flows and flow breccia
16 Dacite breccia, bedded tuff and epiclastic conglomerate
15 Andesite tuff, volcanic conglomerate

——— South Unuk shear zone ———

**Uncertain age**

SY Kfeldspar megacrystic syenite

**Late Triassic**

BG BUCKE GLACIER STOCK: light grey gneissic to foliated, medium grained hornblende–biotite quartz diorite

——— Intrusive contact ———

**Late Triassic or older**

**WESTERN SERIES (Stuhini Group ?)**

South Unuk units:
14 Phyllitic mudstone, siltstone; locally tuffaceous
13 Intermediate hornblende schist and gneiss
12 Mafic hornblende schist and gneiss
11 Marble
10 Bedded green cherty tuffaceous argillite
9 Biotite schist

Granduc units:
8 Upper volcanic sequence: andesite metavolcanic rocks and interbedded chert
7 Siliceous wacke sequence: siliceous wacke
6 Mafic wacke sequence: mafic wacke, chert and argillite
5 Varied sequence: argillite, limestone and chlorite schist
4 Gash Banded tuff sequence: phyllitic wacke and tuffaceous sandstone
3 Granduc Mine Series: dacite tuff, chert, conglomerate, limestone and phyllite
2 Upper Footwall sequence: argillite, phyllite, tuffaceous argillite
1 Lower Footwall sequence: andesite flows, tuff and breccia

## SYMBOLS

Geological contact:
- defined
- approximate

Fault:
- defined
- approximate

Axial surface trace:
- anticline
- syncline

Bedding:
- inclined
- vertical

Modified from Lewis (1994) and McGuigan et al. (1992)

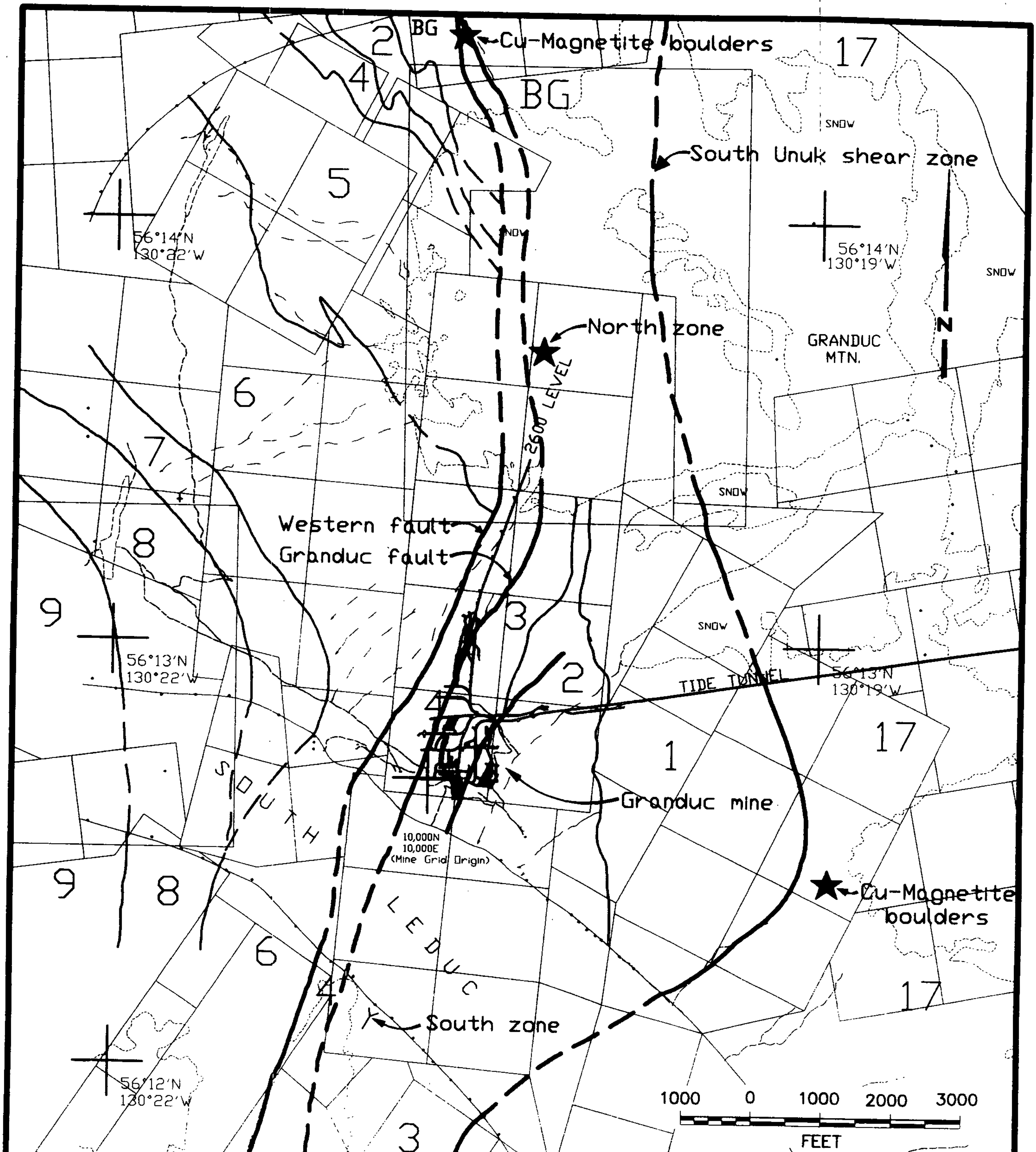
**GRANDUC MINING CORPORATION**

Report by: Dawson et al. P.Geo.
Date: August, 1994
Figure: C.1
File: FIGC-1.dwg
NTS: 104 B/1,8
Mining Division Skeena
Ref. # B0185

GRANDUC MINE, STEWART, B.C.

Granduc Legend

**Cambria Geological Ltd.**




**GRANDUC MINING CORPORATION**

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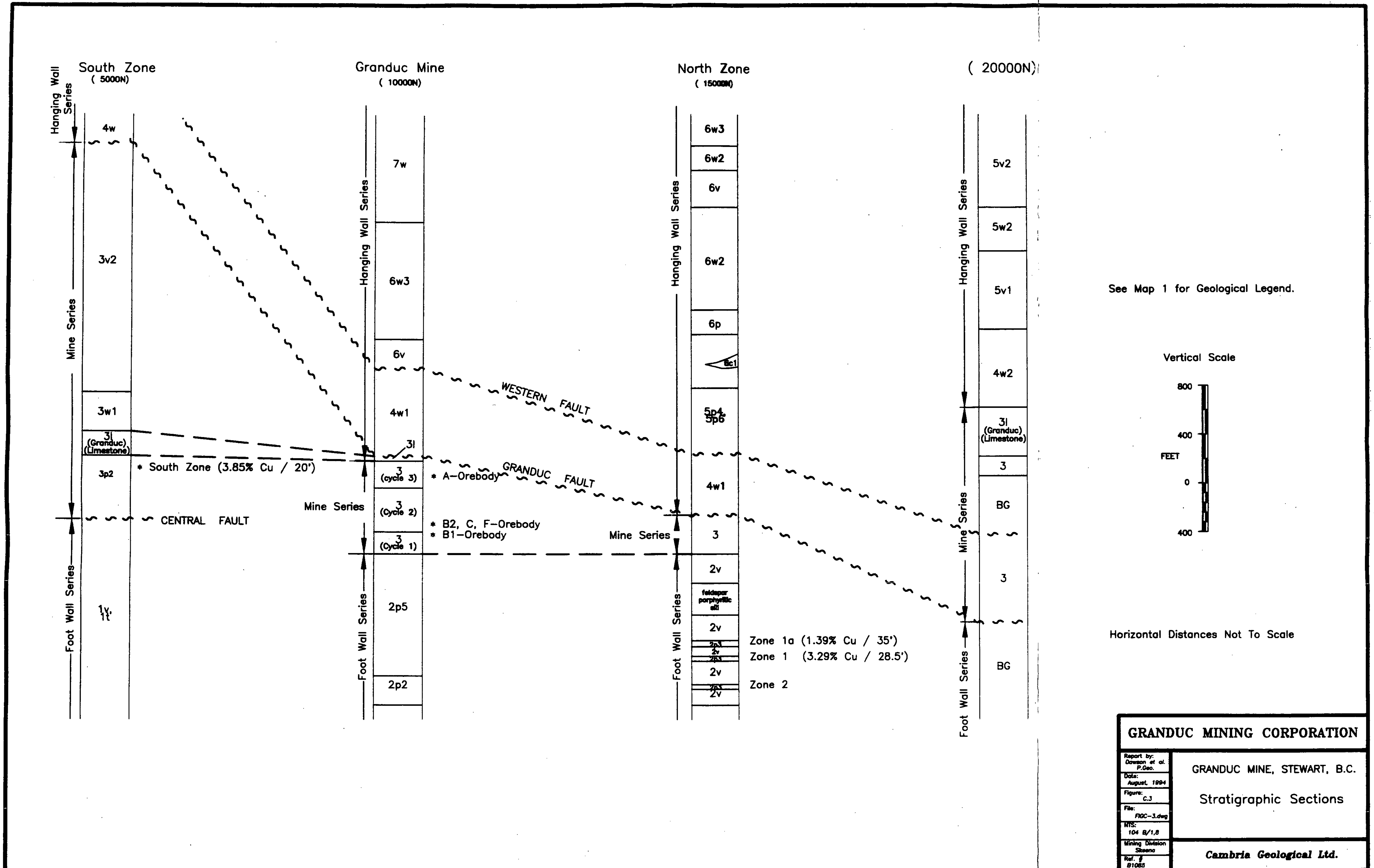
|---|---|
| Report by: Dawson et al. P.Geo. | GRANDUC MINE, STEWART, B.C. |
| Date: August, 1994 | |
| Figure: C.2 | Property Geology |
| File: FIGC-2.dwg | |
| NTS: 104 B/1,8 | |
| Mining Division Skeena | |
| Ref. # 80185 | ***Cambria Geological Ltd.*** |


South Zone
( 5000N)
Granduc Mine
( 10000N)
North Zone
( 15000N)
( 20000N)
Hanging Wall Series
Mine Series
Foot Wall Series
4w
3v2
3w1
3l (Granduc) (Limestone)
3p2
1v
* South Zone (3.85% Cu / 20')
CENTRAL FAULT
7w
6w3
6v
4w1
3l
3 (cycle 3)
3 (Cycle 2)
3 (Cycle 1)
2p5
2p2
* A–Orebody
* B2, C, F–Orebody
* B1–Orebody
WESTERN FAULT
GRANDUC FAULT
6w3
6w2
6v
6w2
6p
6c1
5p4
5p6
4w1
3
2v
feldspar porphyritic silt
2v
2v
2v
Zone 1a (1.39% Cu / 35')
Zone 1 (3.29% Cu / 28.5')
Zone 2
5v2
5w2
5v1
4w2
3l (Granduc) (Limestone)
3
BG
3
BG
See Map 1 for Geological Legend.
Vertical Scale
800
400
FEET
0
400
Horizontal Distances Not To Scale
GRANDUC MINING CORPORATION
Report by: Dawson et al. P.Geo.
Date: August, 1994
Figure: C.3
File: FIGC-3.dwg
NTS: 104 B/1,8
Mining Division Skeena
GRANDUC MINE, STEWART, B.C.
Stratigraphic Sections
Cambria Geological Ltd.

consist of pillowed and massive andesite to basalt flows which are overlain by flow breccias, crystal and lithic andesite tuff. Mine series rocks are cyclic dacitic tuffs and chemical sediments that include chert, magnetite iron formation and sulphides. Hanging Wall series rocks consist of siliceous and mafic wacke followed by andesite tuff, argillite, siltstone and limestone.

### C.2.a Footwall series

Footwall series rocks have been divided into a *Lower Footwall* and a *Upper Footwall sequence.* The *Lower Footwall sequence* consists mainly of augite phyric andesite flows (1v), siliceous wacke (1w), and augite phyric andesite tuff (1t). These units are locally calcareous and contains rare disseminated magnetite, pyrrhotite and chalcopyrite. A thin ultramafic horizon consists of dunite, talc-chlorite schist and chlorite-serpentine schist; locally it marks the top of the Lower Footwall sequence.

The *Upper Footwall sequence* is distinctly more sedimentary and thinner bedded than the Lower Footwall sequence. It consists of argillite (2p2-5), phyllite (2p1), tuffaceous sandstone (2ss), and tuffaceous argillite and minor augite phyric andesite flows (2v). Locally, units are calcareous and contain disseminated magnetite, pyrrhotite and chalcopyrite.

### C.2.b Mine series

Mines series consist primarily of interbedded dacite tuff (3v1-2), chert (3c), and minor chloritic$\pm$calcareous wacke (3w1), argillite (3p1-2) and the Granduc limestone (3l). Mine series rocks were subdivided by M$^{c}$Guigan and Marr (1979) into the: (i) *Lower Mine unit*, (ii) *Middle Mine unit,* and (iii) the *Upper Mine unit*. They are separated by faults of small displacement.

The *Lower Mine unit* is at the same stratigraphic level as the $B_1$ orebody. The unit has a limited strike extent and does not extend north of 12 000 N on surface. It consists of laminated brown chert at its base, succeeded by interbedded amphibolitic tuff, chert, and biotitic feldspar phyric dacite tuff. The dacite tuffs contain disseminated magnetite, pyrrhotite and chalcopyrite. The top of the unit consists of laminated brown chert.

The *Middle Mine unit* corresponds to the same stratigraphic level as the C, $B_2$ and F orebodies. Surface exposures are limited due to overburden and surface cave from underground mining. The unit consists of a lower dacite tuff, a middle coarse chert marker, and an upper thinly laminated chert and tuff unit. Minor disseminated magnetite, pyrrhotite and chalcopyrite occur throughout the unit. It is separated from the Lower Mine unit by a minor fault (0.3 m gouge).

The *Upper Mine unit* corresponds to the same stratigraphic level as the A orebodies underground. The unit consists of equal amounts of interbedded dacite tuff and laminated brown chert. Dacite tuff decreases northward where chert and fine grained siliciclastics predominate. Tuffaceous sulphide bearing magnetite iron formation (1.5 - 3.0 m thick) occurs near the top of the formation.

Granduc limestone overlies the Upper Mine unit. It consists of grey to black tuffaceous limestone and calcareous-chloritic dacite tuff. The unit grades upward into thick bedded feldspar phyric dacite ash and lapilli tuff that is locally calcareous. The top of the unit is cut by the Granduc fault.

**C.2.c Hangingwall series**

Hanging Wall series rocks are separated from the underlying Mine series by the Granduc fault. The unit has been subdivided into the: (i) *Gash Banded Tuff sequence*, (ii) *Varied sequence*, (iii) *Siliceous Wacke sequence*, and (iv) *Upper Volcanic sequence.*

*Gash Banded Tuff sequence* crops out mainly between the Granduc and Western faults. It consists of tuffaceous sandstone (4t), wacke (4w1-2), and massive limestone (4l).

*Varied sequence* is separated from the underlying Gash Banded Tuff sequence by the Western fault. The sequence consists of a heterogeneous package of thinly bedded sediments and volcanic rocks. In decreasing order of abundance, they include argillite (5p1-6), siliceous wacke (5w1-2), foliated andesite volcanics (5v1-2), tuffaceous sandstone (5ss) and limestone (5l1-3). Facing indicators throughout this unit are right-way up.

*Mafic Wacke sequence* conformably overlies the Varied sequence. It consists of dark green wacke (6w1-3), argillite (6p), foliated amphibole phyric tuff (6v), calcareous tuff and limestone (6t), chert (6c1-2) and feldspathic arenite (6s).

*Siliceous Wacke sequence* is separated from the underlying Mafic Wacke by a thin basal limestone. The rest of the unit is a relatively homogeneous fine to medium grained siliceous wacke (7w) that contains rare pyrite clots.

*Upper Volcanic sequence* conformably overlies the Siliceous Wacke sequence. It consists of foliated feldspar and augite phyric andesite flows and tuffs (8v), and white to black chert (8c).

### C.3 Structure

#### C.3.a Folding

Surface mapping on Granduc Mountain by Klepacki and Read (1981) identified four phases of folding. The earliest deformation is characterized by minor isoclinal folds ($F_1$) that plunge shallow to the southeast in the northern part of the map, and to the southwest in the southern part of the map. The axial plane of these folds are parallel to layering. The intersection of axial planar cleavage ($S_1$), defined by the alignment of biotite and muscovite, with bedding ($S_0$) results in lineations ($L_1$) that plunge similar to the ($F_1$) minor folds. Second phase deformation is characterized by tight to open, minor to major folds ($F_2$) that verge to the east. Axial planes of $F_2$ folds strike north-northeasterly and dip steeply east or west. $F_2$ fold axes plunge steeply north in the northern part of the map, and steeply south in the southern part of the map. Locally, $F_2$ minor folds have axial surfaces which diverge and form box-shaped folds. Third phase deformation produced small open folds. $F_3$ axial planes strike east to northeasterly and dip shallow to moderately south. They are best developed in the Varied Sequence (Unit 4) and appear to be spatially related to the Granduc and Western faults. Fourth phase deformation is defined by gentle warps that cause the gradual change in orientation of older features across the map sheet.

Lewis (1994) attributes $S_1$ foliation, $F_1$ and $F_2$ folds on Granduc Mountain to progressive deformation associated with the South Unuk shear zone. The South Unuk shear zone is several km wide and has dominantly a sinistral sense of displacement. This new interpretation is significant because, previously, the consistent northerly striking and steeply west dipping $S_1$ foliation measured by Klepacki and Read (1981) was interpreted to represent the single limb of a major $F_1$ fold. According to Lewis (1994), a major $F_1$ fold is unlikely, and its postulated occurrence should not be used to guide exploration. For a more in-depth discussion of the South Unuk shear zone and associated structural elements the reader is referred to Appendix F (Lewis, 1994).

### C.3.b Faulting

Faults identified by Klepacki and Read (1981) on the Granduc property include the Granduc and Western faults. These faults strike northerly and dip moderately to steeply west. The HFK fault mapped by M^c^Guigan and Marr (1979) may represent the southern continuation of the South Unuk shear zone mapped north of Granduc Mountain by Lewis (1994). The South Unuk shear zone separates deformed Late Triassic Western series (Stuhini Group ?) rocks in the west, that host the Granduc deposit, from less deformed Early to Middle Jurassic Eastern series (Hazelton Group ?) rocks in the east.

### C.4 Mineralization

Exploration and mining on Granduc Mountain has focused on volcanogenic massive sulphide (Cu) deposits hosted within the Late Triassic Western series (Stuhini Group). This syngenetic mineralization consists of sulphides--pyrrhotite, chalcopyrite, pyrite, rare sphalerite and galena--and magnetite iron formation hosted within chert and dacitic pyroclastic rocks of the Granduc Mine series. Subsequent deformation has remobilized and recrystallized the sulphides as disseminations, layers that parallel foliation, and crosscutting breccia zones along transpositional slips. Three major mineralized zones have been identified--*North zone, Granduc deposit and South zone.*

*North zone* is between 14 600N and 15 800N approximately one mile north of the Granduc Mine. Mineralization was first intersected in surface drill hole 153-1 by Newmont Ltd. in 1977 (Map 1). Assays from this hole were 1.39% Cu over 10.7 m and 3.29% Cu over 8.7 m. These intersections led to a surface diamond drilling program (approximately 7 620 m in nine drill holes) by Esso Minerals Canada Ltd. in

1980 and 1982. Two separate mineralized zones were identified in the Upper Footwall series (Unit 2). Potential mineable reserves are 2.05 million tonnes averaging 1.84% Cu and 1.48 million tonnes averaging 1.51% Cu (Freckelton *et al.*, 1982).

*Granduc deposit* consists of a number of individual orebodies--A, $B_1$, $B_2$, C and F--that are structurally controlled by south plunging $F_2$ folds (Map 1). The A, $B_1$ and F orebodies average 1.9% Cu, while the $B_2$ and C orebodies average 1.3% and 1.7% Cu, respectively. The deposit is separated into a northern and southern block that is separated by a weakly mineralized to barren zone. The F orebody lies in the northern block (north of 11 300 N) while all others lie in the southern block. Mineralization is essentially stratabound, however deformation has caused sulphide remobilization resulting locally in cross-cutting relationships. It consists of varying proportions of chalcopyrite, pyrrhotite, magnetite, minor pyrite, and rare sphalerite and galena.

*South zone* is between 6 000 and 5 000N, approximately one mile south of the Granduc Mine (Map 2). Granduc Mines Ltd. explored this area in 1961 and completed a 152 m adit and a number of surface and underground drill holes. Drill hole 250 intersected two zones assaying 3.84% Cu over 14.3 m and 3.27% Cu over 13.72 m; true thickness are substantially less than the drill indicated metreages. Mineralization is hosted in volcanic conglomerate thought to be the facies equivalents of the Granduc Mine series.

**C.5 Lithogeochemistry**

Thirty four samples were collected by Barrett (1994) from long drill holes mainly in the North zone (Maps 1, 3, 4 and 7) at Granduc Mountain for a lithogeochemistry study (Appendix D). The objectives of the study are: (i) to 'fingerprint' similar lithological units to aid in structural interpretations, (ii) determine the magma series, (iii) chemically classify the rocks, and (iv) compare their compositions with those of known tectonic setting.

Methods developed by Maclean (1988) and Barrett *et al.* (1992) were used to evaluate the effects of primary igneous fractionation and the extent of alteration in volcanic rocks from Granduc Mountain. Initial interpretations by Barrett (1994) indicate most samples are mafic volcanics or an intermediate sill which have a Zr/Y ratios equal to 3 - 4; this is consistent with an overall tholeiitic magmatic affinity. On a number of binary plots (Appendix D), the mafic volcanics show the following trends: (i) increasing $Al_2O3$ and Zr is interpreted to represent a mafic fractionation trend; two mafic samples and two cherty iron formation samples appear to be derived from a different magma source that has higher Zr and $TiO_2$ content, (ii) decreasing MgO and $Cr_2O_3$ likely reflects the removal of olivine (Mg) and spinel (Cr) by fractionation, (iii) increasing $Al_2O_3$ with decreasing $Cr_2O_3$ likely reflects increasing plagioclase content as olivine (Cr) and spinel (Cr) are removed by fractionation, and (iv) increasing $Na_2O$ with decreasing $SiO_2$ likely reflects fractionation with the mafic volcanic sequence involving increasingly more sodic plagioclase.

Rare earth element (REE) plots by Barrett (1994) show that the mafic volcanic rocks have a uniform REE composition with La/Yb (chondrite normalized) ratio of 3.5 to 5.0 suggesting a transitional chemical affinity between mid ocean ridge basalts (flat to slight light REE depleted pattern) and an island arc setting (enriched in large ion lithophile elements [LILE] and a gentle negative REE pattern). The slightly more differentiated intermediate sill has a similar, but higher REE pattern than the mafic volcanics that suggests they may be genetically related. Banded tuffaceous or volcaniclastic rocks logged as 'cherty tuff' or 'dacitic tuff' have REE patterns almost identical to that of the mafic volcanic rocks indicating they are not dacitic in composition as logged in the field.

In addition to plots by Barrett (1994), a number of major and trace element plots were completed utilizing a computer program called NEWPET (Clarke, 1991). The program was designed to plot commonly used chemical classification and discrimination diagrams, as well as user defined plots. On a total alkali *vs.* silica plot (TAS: Irvine and Barager, 1971) in Figure C.4, the mafic volcanic rocks and intermediate sill plot mainly in the alkaline field, however some samples plot in the subalkalic field. The apparent alkaline composition is likely a result of increased alkalis (mainly Na from spilitization) associated with seawater alteration and not the actual magma composition; the samples plot in the tholeiitic field on diagrams using relatively immobile trace elements. On a similar TAS diagram, mafic volcanic rocks plot mainly in the basalt field (TAS: compositional fields defined by Cox *et al.*, 1979) in Figure C.5, and the intermediate sills plot in the syenite field or to the left of the syenite and monzonite field (TAS: compositional fields defined by Middlemost, 1985) in Figure C.6. Using trace elements, the mafic volcanic rocks plot mainly in the andesitic basalt and basalt fields on a $Zr/TiO_2$ *vs.* Nb/Y diagram (Winchester and Floyd, 1977) in Figure C.7.

Tectonic discrimination diagrams constructed from mafic volcanic rocks in modern day tectonic settings indicate that mafic volcanic samples from Granduc Mountain (North zone) plot mainly in the low potassium tholeiite field on a Ti *vs.* Zr plot (Pearce and Cann, 1973) in Figure C.8. On a Nb/2 - Zr/4 - Y plot (Meschede, 1986) in Figure C.9, samples plot in the plume-mid ocean ridge basalt (P-MORB) and normal-mid ocean ridge basalt (N-MORB) fields, however some samples plot along the line discriminating MORB from volcanic arc basalt (VAB) field. Samples plot in a straight line within the ocean floor basalt field (OFB) and along the discrimination line separating the calcalkaline basalt (CAB) and island arc basalt (IAB) field on a Ti/100 - Zr - Sr/2 plot (Pearce and Cann, 1973) in Figure C.10. This may indicate some Sr exchange with seawater during calcareous alteration of the basalt, since the Sr cation can exchange for the Ca cation in calcite. Samples plot mainly in the ocean floor basalt field (OFB), however some samples plot in the low potassium tholeiite field (LKT) on a Ti/100 - Zr - Y/3 plot (Pearce and Cann, 1973) in Figure C.11.

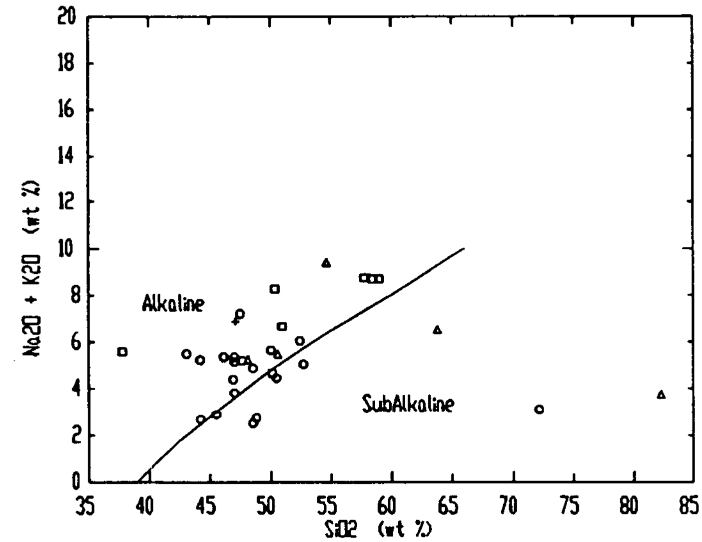



Figure C.4: Total alkali *vs.* silica plot (TAS: Irvine and Barager, 1971) of rocks from the North Zone, Granduc Mountain. Circles = andesitic rocks (field name); triangles = cherty tuff (field name); squares = mafic sill (field name). The andesitic rocks and mafic sill plot mainly in the alkaline field; cherty tuff rocks plot across both the alkaline and subalkaline field as a result of the varying amounts of silica in the samples.

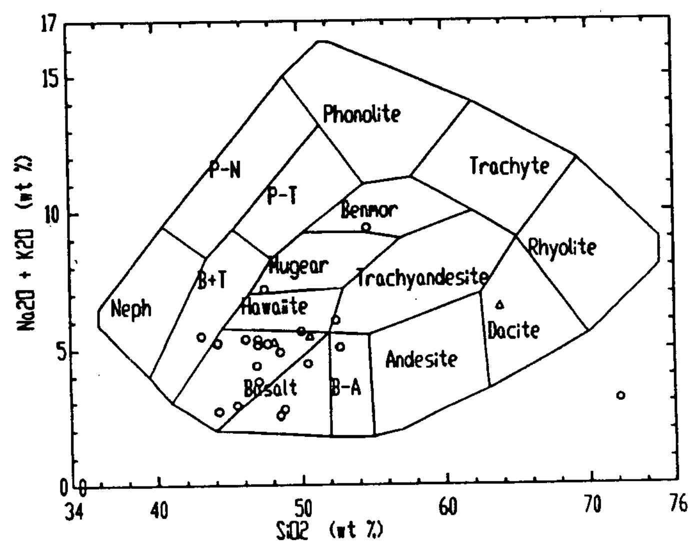



Figure C.5: Total alkali *vs.* silica plot (TAS: compositional fields defined by Cox *et al.*, 1979) of volcanic rocks from the North Zone, Granduc Mountain. Circles = andesitic rocks (field name); triangles = cherty tuff (field name). The andesitic rocks plot mainly in the basalt field and the cherty tuff rocks plot across numerous fields as a result of varying amounts of silica in the samples.

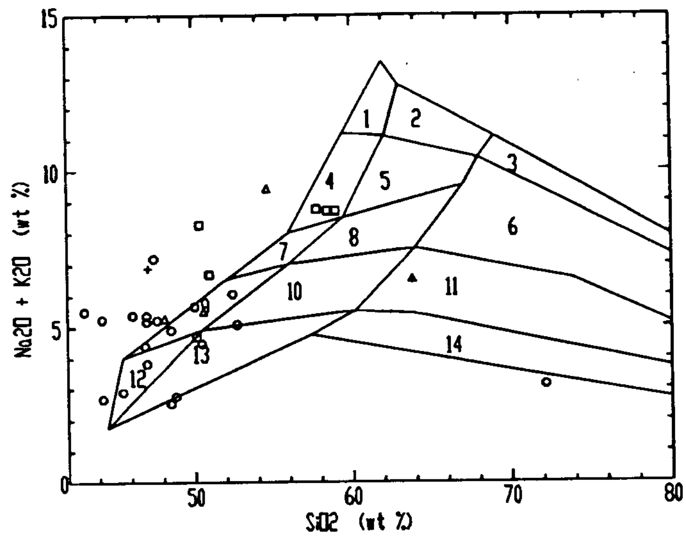



Figure C.6: Total alkali vs. silica plot (TAS: compositional fields defined by Middlemost, 1985) of intrusive rocks from the North Zone, Granduc Mountain. Squares = mafic sills (field name). The mafic sills plot in the syenite field or to the left of the syenite and monzonite field. This composition is likely caused by sodium alteration (spilitization) and is not the actual composition of the intrusion.

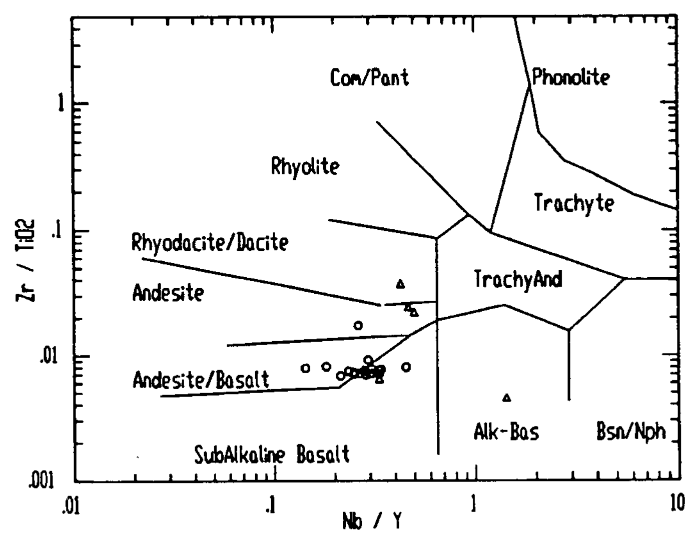



Figure C.7: $Zr/TiO_2$ *vs.* Nb/Y plot (Winchester and Floyd, 1977) of volcanic rocks from the North Zone, Granduc Mountain. Circles = andesitic rocks (field name); triangles = cherty tuff (field name). The andesitic rocks plot mainly in the andesitic basalt and basalt fields; cherty tuff rocks plot across numerous fields as a result of varying amounts of silica in the samples.

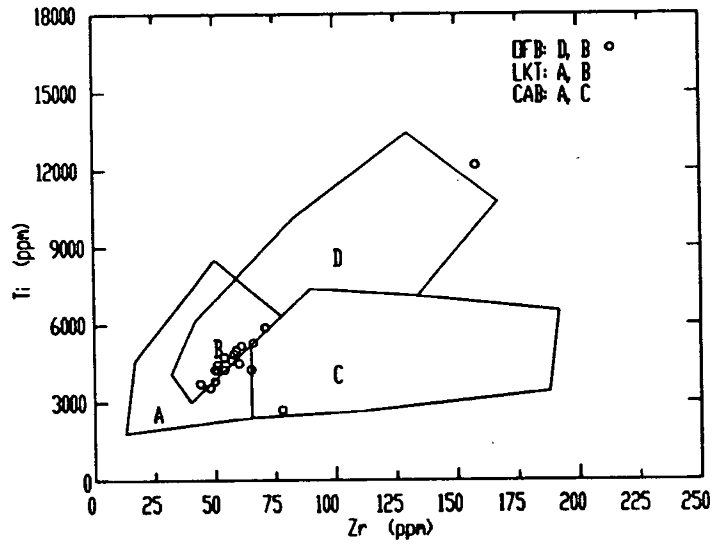



Figure C.8: Ti *vs.* Zr plot (Pearce and Cann, 1973) of mafic volcanic rocks from the North Zone, Granduc Mountain. Circles = andesitic rocks (field term). Samples plot in a straight line mainly in the low potassium tholeiite field which is common to MORB's and marginal basin environments (Wilson, 1989).

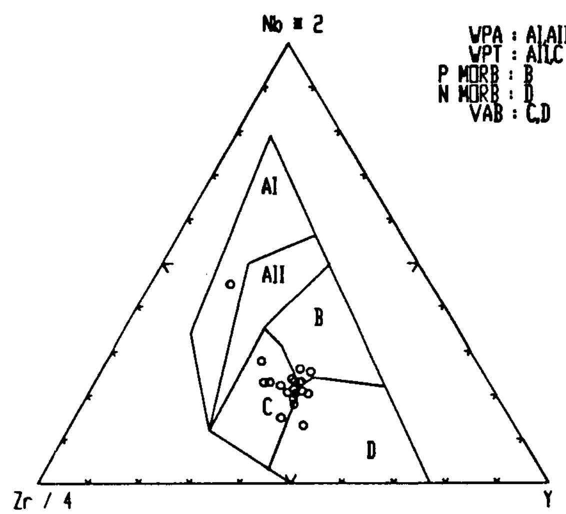



Figure C.9: Nb/2 - Zr/4 - Y plot (Meschede, 1986) of mafic volcanic rocks from the North Zone, Granduc Mountain. Circles = andesitic rocks (field term). Samples plot mainly in the plume-mid ocean ridge basalt (P-MORB) and normal-mid ocean ridge basalt (N-MORB) fields, however some samples plot in and along the line discriminating MORB from volcanic arc basalt (VAB) field.

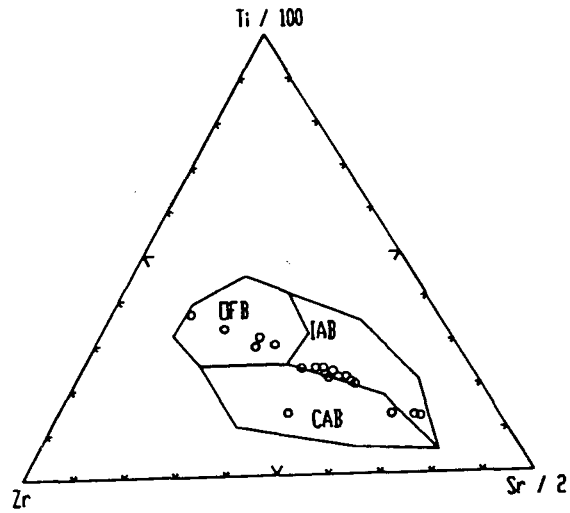



Figure C.10: Ti/100 - Zr - Sr/2 plot (Pearce and Cann, 1973) of mafic volcanic rocks from the North Zone, Granduc Mountain. Circles = andesitic rocks (field term). Samples plot in a straight line within the ocean floor basalt field (OFB) and along the discrimination line separating th9e calcalkaline basalt (CAB) and island arc basalt (IAB) field. This may indicate some Sr exchange with seawater during calcareous alteration of the basalt, since Sr cation can exchange for the Ca cation in calcite.

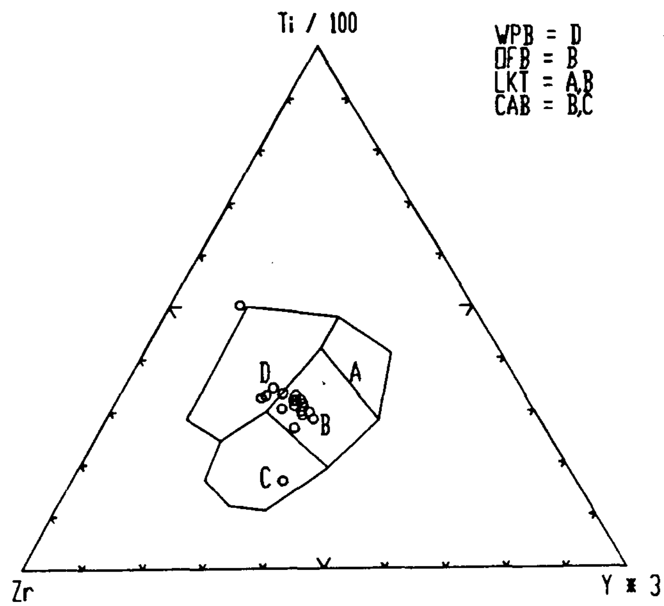



Figure C.11: Ti/100 - Zr - Y/3 plot (Pearce and Cann, 1973) of mafic volcanic rocks from the North Zone, Granduc Mountain. Circles = andesitic rocks (field term). Samples plot in a straight line mainly in the ocean floor basalt field (OFB), however some samples plot in the low potassium tholeiite field (LKT).

### C.6 Geochronology

A number of samples were collected from outcrop and drill core by Childe (1994) for U-Pb (zircon) and lead (galena, kfeldspar and other sulphides) isotope analysis (Appendix E). The objectives of the study are: (i) to determine the age of the volcanic sequence hosting the Granduc deposit, and (ii) characterize the source of metals in the deposit.

#### C.6.a U-Pb isotopes

Three samples were collected from volcanic units (Footwall series mafic volcanics: North zone, felsic tuff: Homestake property south of Granduc deposit, and felsic tuff: South zone) and one sample was collected from a subvolcanic sill (North zone: intermediate sill) in an attempt to recover zircon for U-Pb analysis (Appendix E). Preliminary interpretations (Childe, 1994) of these analyses are:

1. The footwall mafic volcanics (North zone) is 230.5 ± 14 Ma. This age is given by passing an isochron (least squares regression) through zero and two fractions; two or more additional fractions are required to further constrain this age.
2. The intermediate sill (North zone) is 232 ± 3 Ma. This age is given by passing an isochron (least squares regression) through zero and four fractions; zircons have suffered some lead loss and at least one more well abraded fraction is required to further constrain this age.
3. The felsic lapilli tuff (Homestake property south of the Granduc deposit) is 185.4 ± 9 Ma. This age is based on one concordant point (two fractions suffered some lead loss); one more concordant point would allow a much tighter constraint on the error of this analysis.
4. The felsic tuff (South zone) has not been analyzed to date (June, 1994).

**C.6.b Galena lead isotopes**

Two samples from the B orebody (G1: ddh 102-77, 34 m and G2: ddh 102-77, 108 m) and two samples from microcline-calcite-sphalerite-galena veins cutting the North zone Footwall series mafic volcanics (G3: ddh 158-1, 956 m and G4: ddh 158-2A, 765 m) were collected for lead isotope analysis (Appendix E). Preliminary interpretation (Childe, 1994) of these analyses are:

1. Samples G1 and G2 are relatively non-radiogenic, and compared to mineralization of known age within Stikinia, indicates a pre-Jurassic age.

2. Samples G3 and G4 plot within the Stewart Mining Camp Tertiary cluster as defined by Alldrick *et al.* (1993). Deposits of this age in the Stewart area include the Porter-Idaho/Prosperity and Indian.

## D. CONCLUSIONS

Rocks mapped on Granduc Mountain and to the north are separated into two easily recognizable units termed the western and eastern series that are separated by the north-northwest striking South Unuk shear zone. Western series rocks are Late Triassic or older in age, and are tentatively correlated with the Late Triassic Stuhini Group. They consist of moderately to highly foliated schists, phyllites, marbles and gneisses. North of Granduc Mountain, western series rocks are subdivided into six lithological rock types (units 9-14); similar rock types on Granduc Mountain (units 1-8) have been described by Klepacki and Read (1981) and include the Granduc Mine series (McGuigan and Marr, 1979). Eastern series rocks are Middle Jurassic in age and tentatively correlated with the Lower to Middle Jurassic Hazelton Group. They consist of relatively undeformed, mainly volcanic rocks that are subdivided into three conformable stratigraphic units (units 15-17). U-Pb (zircon) dates from the dacitic tuffs (unit 16) north of the North Leduc Glacier and south of the Granduc deposit are similar in age to felsic units in the footwall of the precious metal rich Eskay Creek massive sulphide deposit (Bartsch, 1993).

The South Unuk shear zone is an north-northwest striking subvertical fault that has dominantly a sinistral sense of displacement; it is mapped from the Iskut River area south to Granduc Mountain, a distance of 60 km. On Granduc Mountain, and to the north (Divelbliss, Duke and North Leduc areas), western series rocks record strongly heterogeneous deformation with a large component of simple shear in a ductile to semi-brittle environment; these features indicate western series rocks should be included as part of the shear zone. Limited mapping during the 1993 study did not permit the South Unuk shear zone to be delineated on Granduc Mountain. However, the linear associated with the South Unuk shear zone north of the North Leduc Glacier is on trend with the HKF fault mapped by McGuigan and Marr (1979). The HKF fault is a north-northwest striking steeply dipping fault; locally, a ultramafic horizon of dunite, talc-chlorite schist and chlorite-serpentine schist occurs along the fault.

Four phases of folding were documented by Klepacki and Read (1981) on Granduc Mountain. The first two phases are the most intense and affected the distribution of orebodies underground in the Granduc Mine. Lewis (1994) mapped similar style folds north of the North Leduc Glacier and attributes $F_1$ and $F_2$ folds on Granduc Mountain to progressive deformation associated with the South Unuk shear zone. This new interpretation is significant because, previously, the consistent northerly striking and steeply west dipping $S_1$ foliation measured by Klepacki and Read (1981) was interpreted to represent a single limb of a major $F_1$ fold. According to Lewis (1994) a major $F_1$ fold is unlikely, and its postulated occurrence should not be used to guide exploration.

A limited lithogeochemistry study of mainly Footwall series rocks from the North zone (Granduc Mountain) indicates: (i) intermediate volcanic rocks (field term) are chemically tholeiitic mafic volcanics and are most like midocean ridge or marginal basin basalts (Wilson, 1989) when plotted on REE plots and trace element tectonic discrimination diagrams; however the slightly enriched LILE and gentle negative REE pattern suggests some crustal contamination from a subduction zone, (ii) samples from a mafic sill (field term) are chemically intermediate in composition and have a similar, but higher REE pattern to the mafic volcanics; similar REE element chemistry and the identical U-Pb (zircon) dates from these units suggest they are genetically related, and (iii) rocks logged as 'cherty tuff' or 'dacitic tuff' have REE patterns similar to that of the mafic volcanic rocks indicating they are not dacitic in composition as logged in the field.

U-Pb (zircon) analysis of three samples from the Granduc Mountain area returned the following dates: (i) the Footwall series mafic volcanic rocks (North zone) are 230.5 $\pm$ 14 Ma, (ii) an intermediate sill that intrudes the mafic volcanics has a identical age within error of 232 $\pm$ 3 Ma, and (iii) the felsic volcanic rocks south of the Granduc deposit on the Homestake property are 185.4 $\pm$ 9 Ma.

Lead (galena and microcline) isotope analysis of four samples from Granduc Mountain indicates: (i) Two samples from the B orebody are relatively non-radiogenic, and compared to mineralization of known age within Stikinia, indicates a pre-Jurassic age, and (ii) two samples from veins cutting the Footwall mafic volcanics (North zone) plot within the Stewart Mining Camp Tertiary cluster as defined by Alldrick *et al.* (1993); deposits of this age in the Stewart area include the Porter-Idaho/Prosperity and Indian.

The preliminary conclusions, outlined above from the combined stratigraphic, structural, lithogeochemistry and geochronological study on the Granduc property, indicate a number of different styles, ages and stratigraphic settings of mineralization are present, or can be expected to be found on the Granduc property. They include:

1. Copper rich volcanogenic massive sulphide mineralization hosted within the Late Triassic Western series rocks (Stuhini Group ?).
2. Precious metal rich volcanogenic massive sulphide mineralization hosted within the Middle Jurassic Eastern series rocks (Hazelton Group ?) similar to the Eskay Creek deposit in the Iskut camp.
3. Jurassic precious metal rich veins hosted in Lower to Middle Jurassic Eastern series rocks (Hazelton Group ?) similar to the Big Missouri and Premier Mines in the Stewart camp.
4. Tertiary silver rich veins hosted in both the Western and Eastern series rocks similar to the Porter-Idaho/Prosperity and Indian Mines in the Stewart camp.

**E. RECOMMENDATIONS**

New stratigraphic and structural interpretations constrained by recently acquired U-Pb (zircon) dates, lead (galena and microcline) isotopes and lithogeochemistry indicates a number of previously unrecognized styles and ages of mineralization are present on the Granduc property. Recommendations based on conclusions documented in this study are:

1. Complete stratigraphic and structural mapping on Granduc Mountain to: (i) correlate units mapped to the north, (ii) delineate the boundary between the Late Triassic Western series (Stuhini Group ?) and the Middle Jurassic Eastern series (Hazelton Group ?), and (iii) to test structural models presented in this study (Lewis, 1994).

2. Expand the lithogeochemistry study to include the Hangingwall, Mine and Footwall series in the Granduc deposit and the South zone. This would require opening the underground workings for sampling.

3. Expand the lithogeochemistry study to include the Eastern series rocks located east of the South Unuk shear zone and south of the Granduc deposit. This work would help to: (i) correlate stratigraphic units in areas of poor exposure or glacier cover, (ii) determine alteration vectors to focus exploration, (iii) determine the geological setting, and (iv) identify similarities of volcanic units to those at the well studied Eskay Creek precious metal rich massive sulphide deposit (Roth, 1993; Bartsch, 1993).

4. Sample the Mine series dacite units at number of stratigraphic intervals for U-Pb (zircon) dating underground at the Granduc deposit. This would help constrain the age of the various sulphide

horizons and would determine if the Granduc deposit is Late Triassic in age, similar to Footwall series rocks.

5. Expand the lead (galena, kfeldspar and other sulphide phases) isotope study to: (i) various sulphide horizons underground in the Granduc deposit, (ii) South zone mineralization, (iii) North zone mineralization, (iv) other documented sulphide occurrences on the Granduc property, and (iv) the intermediate sill in the Western series (North zone). The spatial relationship between the Late Triassic intermediate sill (part of the Bucke Glacier suite) and copper mineralization in the North zone suggests this body may be a source of metals and may have important exploration implications.

Relevant recommendations previously documented by McGuigan *et al.* (1992) are:

1. Map the hanging wall of the Granduc fault on the north side of Granduc Mountain to identify northern extensions of the Mine series stratigraphy.

2. Prospect the area where massive sulphide boulders were discovered on the north side of Granduc Mountain (Melnyk, 1991).

3. Map the western portion of the Tide tunnel to: (i) delineate the contact between the Late Triassic Western series (Stuhini Group ?) and Lower to Middle Jurassic Eastern series (Hazelton Group ?) rocks, (ii) identify possible targets similar to North zone mineralization in the Upper Footwall sequence, and (iii) identify possible Eskay Creek type targets in Middle Jurassic Eastern series stratigraphy.

4. Complete ground magnetic, VLF and Pulse EM surveys to trace North zone mineralization northward under the ice field and to survey the area of sulphide boulders in the hangingwall of the Granduc fault documented by Melnyk (1994).

5. Complete ground magnetic, VLF and Pulse EM surveys over the South Leduc Glacier southwest of the Granduc deposit to identify possible extensions of the A, $B_1$ and $B_2$ horizons below the glacier.

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**APPENDIX A:** List of Claims.

## GRANDUC CLAIMS AND CROWN GRANTS

| CLAIM NAME | GROUP NAME | RECORD | TENURE NUMBER | UNITS | ANNIVERSARY DATE | EXPIRY DATE |
|---|---|---|---|---|---|---|
| Ajax 001 | Duke | 16325 | 254651 | 1 | Sept 06/55 | 1995/09/06 |
| Ajax 002 | Duke | 16326 | 254652 | 1 | Sept 06/55 | 1995/09/06 |
| Ajax 003 | Duke | 16216 | 254649 | 1 | May 21/55 | 1995/05/21 |
| Ajax 004 | Duke | 16217 | 254650 | 1 | May 21/55 | 1995/05/21 |
| Ajax Fr. | Duke | 16327 | 254653 | 1 | Sept 06/55 | 1995/09/06 |
| Audro 001 | | L6597 | | 1 | Mar. 10/53 | |
| Audro 002 | | L6596 | | 1 | Mar. 10/53 | |
| Audro 003 | | L6593 | | 1 | Mar. 10/53 | |
| Audro 004 | | L6595 | | 1 | Mar. 10/53 | |
| Audro 005 | | L6594 | | 1 | Mar. 10/53 | |
| Belle 003 | Duke | L6621 | | 1 | July 21/53 | |
| Bent Fr. | Portal | L6615 | | 1 | Aug. 22/54 | |
| Blend 001 | Portal | L6614 | | 1 | Sept 30/52 | |
| Blend 002 | Portal | L6613 | | 1 | Sept 30/52 | |
| Blend 003 | | L6612 | | 1 | Sept 30/52 | |
| Blend 004 | | L6611 | | 1 | Sept 30/52 | |
| Blue 004 | Duke | L6599 | | 1 | Apr. 17/53 | |
| Bob 001 | Portal | 19701 | 254784 | 1 | May 11/61 | 1995/05/11 |
| Bob 002 | Portal | 19702 | 254785 | 1 | May 11/61 | 1995/05/11 |
| Bob 003 | Portal | 19703 | 254786 | 1 | May 11/61 | 1995/05/11 |
| Bob 004 | Portal | 19704 | 254787 | 1 | May 11/61 | 1995/05/11 |
| Bob 005 | Portal | 19705 | 254788 | 1 | May 11/61 | 1995/05/11 |
| Bob 006 | Portal | 19706 | 254789 | 1 | May 11/61 | 1995/05/11 |
| Bob 007 Fr. | Portal | 19707 | 254790 | 1 | May 11/61 | 1995/95/11 |
| Bryce Fr. | | L6603 | | 1 | Aug. 20/53 | |
| Dal Fr. | | L6602 | | 1 | Aug. 20/53 | |
| Duke 018 Fr. | Duke | 19715 | 254795 | 1 | May 23/61 | 1995/05/23 |
| Fanny 001 | Portal | L6600 | | 1 | Aug. 20/53 | |
| Fanny 002 | Portal | L6601 | | 1 | Aug. 20/53 | |
| Granduc 001 | Duke | L6573 | | 1 | July 31/54 | |
| Granduc 002 | | L6574 | | 1 | July 31/54 | |
| Granduc 003 | Duke | L6580 | | 1 | July 31/54 | |
| Granduc 004 | | L6579 | | 1 | July 31/54 | |
| Granduc 005 | Duke | L6581 | | 1 | July 31/54 | |
| Granduc 006 | Duke | L6582 | | 1 | July 31/54 | |
| Granduc 007 | | L6588 | | 1 | Aug. 02/54 | |
| Granduc 008 | | L6587 | | 1 | Aug. 02/54 | |
| Granduc Fr. | | L6570 | | 1 | Aug. 13/54 | |
| Iola 001 | | L6578 | | 1 | Aug. 04/54 | |
| Iola 002 | Portal | L6577 | | 1 | Aug. 04/54 | |
| Iola 003 | Portal | L6583 | | 1 | Aug. 04/54 | |
| Iola 004 | Portal | L6584 | | 1 | Aug. 04/54 | |
| Iola 005 | Portal | L6586 | | 1 | Aug. 04/54. | |
| Iola 006 | Portal | L6585 | | 1 | Aug. 04/54 | |
| J.P. 001 | Duke | 15428 | 254618 | 1 | Sept 21/53 | 1995/09/21 |
| J.P. 002 | Duke | 15429 | 254619 | 1 | Sept 21/53 | 1995/09/21 |
| J.P. 003 Fr. | Duke | 15430 | 254620 | 1 | Sept 21/53 | 1995/09/21 |
| J.P. 004 | Duke | 15431 | 254621 | 1 | Sept 21/53 | 1995/09/21 |
| J.P. 006 Fr. | Duke | 15433 | 254622 | 1 | Sept 21/53 | 1995/09/21 |
| J.P. 007 | Duke | 15434 | 254623 | 1 | Sept 21/53 | 1995/09/21 |
| Jetty 004 | Duke | 15052 | 254613 | 1 | Apr. 17/53 | 1995/04/17 |
| Key 005 | Portal | 21658 | 254874 | 1 | May 27/63 | 1995/05/27 |
| Key 006 | Portal | 21659 | 254875 | 1 | May 27/63 | 1995/05/27 |
| Key 007 | Portal | 21660 | 254876 | 1 | May 27/63 | 1995/05/27 |
| Key 008 | Portal | 21661 | 254877 | 1 | May 27/63 | 1995/05/27 |
| Key 009 | Portal | 21662 | 254878 | 1 | May 27/63 | 1995/05/27 |
| Key 010 | Portal | 21663 | 254879 | 1 | May 27/63 | 1995/05/27 |
| Key 011 | Portal | 21664 | 254880 | 1 | May 27/63 | 1995/05/27 |
| Key 012 | Portal | 21665 | 254881 | 1 | May 27/63 | 1995/05/27 |
| Key 013 | Portal | 21666 | 254882 | 1 | May 27/63 | 1995/05/27 |
| Key 014 | Portal | 21667 | 254883 | 1 | May 27/63 | 1995/05/27 |
| Key 015 | Portal | 21668 | 254884 | 1 | May 27/63 | 1995/05/27 |
| Key 016 | Portal | 21669 | 254885 | 1 | May 27/63 | 1995/05/27 |
| Key 017 | Portal | 21670 | 254886 | 1 | May 27/63 | 1995/05/27 |
| Key 018 | Portal | 21671 | 254887 | 1 | May 27/63 | 1995/05/27 |
| Key 019 | Portal | 21672 | 254888 | 1 | May 27/63 | 1995/05/27 |
| Key 020 | Portal | 21673 | 254889 | 1 | May 27/63 | 1995/05/27 |
| Key 021 | Portal | 21674 | 254890 | 1 | May 27/63 | 1995/05/27 |
| Key 022 | Portal | 21675 | 254891 | 1 | May 27/63 | 1995/05/27 |
| Key 023 | Portal | 21676 | 254892 | 1 | May 27/63 | 1995/05/27 |

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|---|---|---|---|---|---|---|
| Key 024 | Portal | 21677 | 254893 | 1 | May 27/63 | 1995/05/27 |
| Key 025 | Portal | 21678 | 254894 | 1 | May 27/63 | 1995/05/27 |
| Key 026 | Portal | 21679 | 254895 | 1 | May 27/63 | 1995/05/27 |
| Key 027 | Portal | 21680 | 254896 | 1 | May 27/63 | 1995/05/27 |
| Key 028 | Portal | 21681 | 254897 | 1 | May 27/63 | 1995/05/27 |
| Key 029 | Portal | 21682 | 254898 | 1 | May 27/63 | 1995/05/27 |
| Key 030 | Portal | 21683 | 254899 | 1 | May 27/63 | 1995/05/27 |
| Key 031 | Portal | 21684 | 254900 | 1 | May 27/63 | 1995/05/27 |
| Key 032 | Portal | 21685 | 254901 | 1 | May 27/63 | 1995/05/27 |
| Key 033 | Portal | 21686 | 254902 | 1 | May 27/63 | 1995/05/27 |
| Key 034 | Portal | 21687 | 254903 | 1 | May 27/63 | 1995/05/27 |
| Key 035 | Portal | 21688 | 254904 | 1 | May 27/63 | 1995/05/27 |
| Key 036 | Portal | 21689 | 254905 | 1 | May 27/63 | 1995/05/27 |
| Key 037 | Portal | 21690 | 254906 | 1 | May 27/63 | 1995/05/27 |
| Key 038 | Portal | 21691 | 254907 | 1 | May 27/63 | 1995/05/27 |
| Key 039 | Portal | 21692 | 254908 | 1 | May 27/63 | 1995/05/27 |
| Key 040 | Portal | 21693 | 254909 | 1 | May 27/63 | 1995/05/27 |
| Key 041 | Portal | 21694 | 254910 | 1 | May 27/63 | 1995/05/27 |
| Key 042 | Portal | 21695 | 254911 | 1 | May 27/63 | 1995/05/27 |
| Key 043 | Portal | 21696 | 254912 | 1 | May 27/63 | 1995/05/27 |
| Key 044 | Portal | 21697 | 254913 | 1 | May 27/63 | 1995/05/27 |
| Key 045 | Portal | 21698 | 254914 | 1 | May 27/63 | 1995/05/27 |
| Key 046 | Portal | 21699 | 254915 | 1 | May 27/63 | 1995/05/27 |
| Key 047 | Portal | 21700 | 254916 | 1 | May 27/63 | 1995/05/27 |
| Key 048 | Portal | 21701 | 254917 | 1 | May 27/63 | 1995/05/27 |
| Key 049 | Portal | 21702 | 254918 | 1 | May 27/63 | 1995/05/27 |
| Key 050 | Portal | 21703 | 254919 | 1 | May 27/63 | 1995/05/27 |
| Key 051 | Portal | 21704 | 254920 | 1 | May 27/63 | 1995/05/27 |
| Key 052 | Portal | 21705 | 254921 | 1 | May 27/63 | 1995/05/27 |
| Key 053 | Portal | 21706 | 254922 | 1 | May 27/63 | 1995/05/27 |
| Key 054 | Portal | 21707 | 254923 | 1 | May 27/63 | 1995/05/27 |
| Key 055 | Portal | 21708 | 254924 | 1 | May 27/63 | 1995/05/27 |
| Key 056 | Portal | 21709 | 254925 | 1 | May 27/63 | 1995/05/27 |
| Key 057 | Portal | 21710 | 254926 | 1 | May 27/63 | 1995/05/27 |
| Key 058 | Portal | 21711 | 254927 | 1 | May 27/63 | 1995/05/27 |
| Key 059 | Portal | 21712 | 254928 | 1 | May 27/63 | 1995/05/27 |
| Key 060 | Portal | 21713 | 254929 | 1 | May 27/63 | 1995/05/27 |
| Key 061 | Portal | 21714 | 254930 | 1 | May 27/63 | 1995/05/27 |
| Key 062 | Portal | 21715 | 254931 | 1 | May 27/63 | 1995/05/27 |
| Key 063 | Portal | 21716 | 254932 | 1 | May 27/63 | 1995/05/27 |
| Key 064 | Portal | 21717 | 254933 | 1 | May 27/63 | 1995/05/27 |
| Key 065 | Portal | 21718 | 254934 | 1 | May 27/63 | 1995/05/27 |
| Key 066 | Portal | 21719 | 254935 | 1 | May 27/63 | 1995/05/27 |
| Key 067 | Portal | 21720 | 254936 | 1 | May 27/63 | 1995/05/27 |
| Key 068 | Portal | 21721 | 254937 | 1 | May 27/63 | 1995/05/27 |
| Key 069 | Portal | 21722 | 254938 | 1 | May 27/63 | 1995/05/27 |
| Key 070 | Portal | 21723 | 254939 | 1 | May 27/63 | 1995/05/27 |
| Key 071 | Portal | 21772 | 254941 | 1 | June 26/63 | 1995/06/26 |
| Key 072 | Duke | 21773 | 254942 | 1 | June 26/63 | 1995/06/26 |
| Key 073 | Portal | 21774 | 254943 | 1 | June 26/63 | 1995/06/26 |
| Key 074 | Portal | 21775 | 254944 | 1 | June 26/63 | 1995/06/26 |
| Key 075 | Duke | 31544 | 255142 | 1 | July 14/67 | 1995/07/14 |
| Key 076 | Duke | 31545 | 255143 | 1 | July 14/67 | 1995/07/14 |
| Key 077 | Duke | 31546 | 255144 | 1 | July 14/67 | 1995/07/14 |
| Key 078 | Duke | 31547 | 255145 | 1 | July 14/67 | 1995/07/14 |
| Key 095 | Duke | 31564 | 255146 | 1 | July 14/67 | 1995/07/14 |
| Key 096 | Duke | 31565 | 255147 | 1 | July 14/67 | 1995/07/14 |
| Key 097 | Duke | 31566 | 255148 | 1 | July 14/67 | 1995/07/14 |
| Key 098 | Duke | 31567 | 255149 | 1 | July 14/67 | 1995/07/14 |
| Key 115 | Portal | 31584 | 255150 | 1 | July 14/67 | 1995/07/14 |
| Key 116 | Portal | 31585 | 255151 | 1 | July 14/67 | 1995/07/14 |
| Key 117 | Portal | 31586 | 255152 | 1 | July 14/67 | 1995/07/14 |
| Key 118 | Portal | 31587 | 255153 | 1 | July 14/67 | 1995/07/14 |
| Key 135 | Portal | 31604 | 255154 | 1 | July 14/67 | 1995/07/14 |
| Key 136 | Portal | 31605 | 255155 | 1 | July 14/67 | 1995/07/14 |
| Key 137 | Portal | 31606 | 255156 | 1 | July 14/67 | 1995/07/14 |
| Key 138 | Portal | 31607 | 255157 | 1 | July 14/67 | 1995/07/14 |
| Kit 002 Fr. | Duke | 24256 | 255014 | 1 | Sept 04/64 | 1995/09/04 |
| Kit 003 | Duke | 24248 | 255006 | 1 | Sept 04/64 | 1995/09/04 |
| Kit 004 | Duke | 24249 | 255007 | 1 | Sept 04/64 | 1995/09/04 |
| Kit 005 | Duke | 24250 | 255008 | 1 | Sept 04/64 | 1995/09/04 |
| Kit 006 | Duke | 24251 | 255009 | 1 | Sept 04/64 | 1995/09/04 |
| Kit 007 Fr. | Duke | 24254 | 255012 | 1 | Sept 04/64 | 1995/09/04 |
| Kit 009 Fr. | Duke | 24255 | 255013 | 1 | Sept 04/64 | 1995/09/04 |
| Kit 010 | Duke | 24252 | 255010 | 1 | Sept 04/64 | 1995/09/04 |

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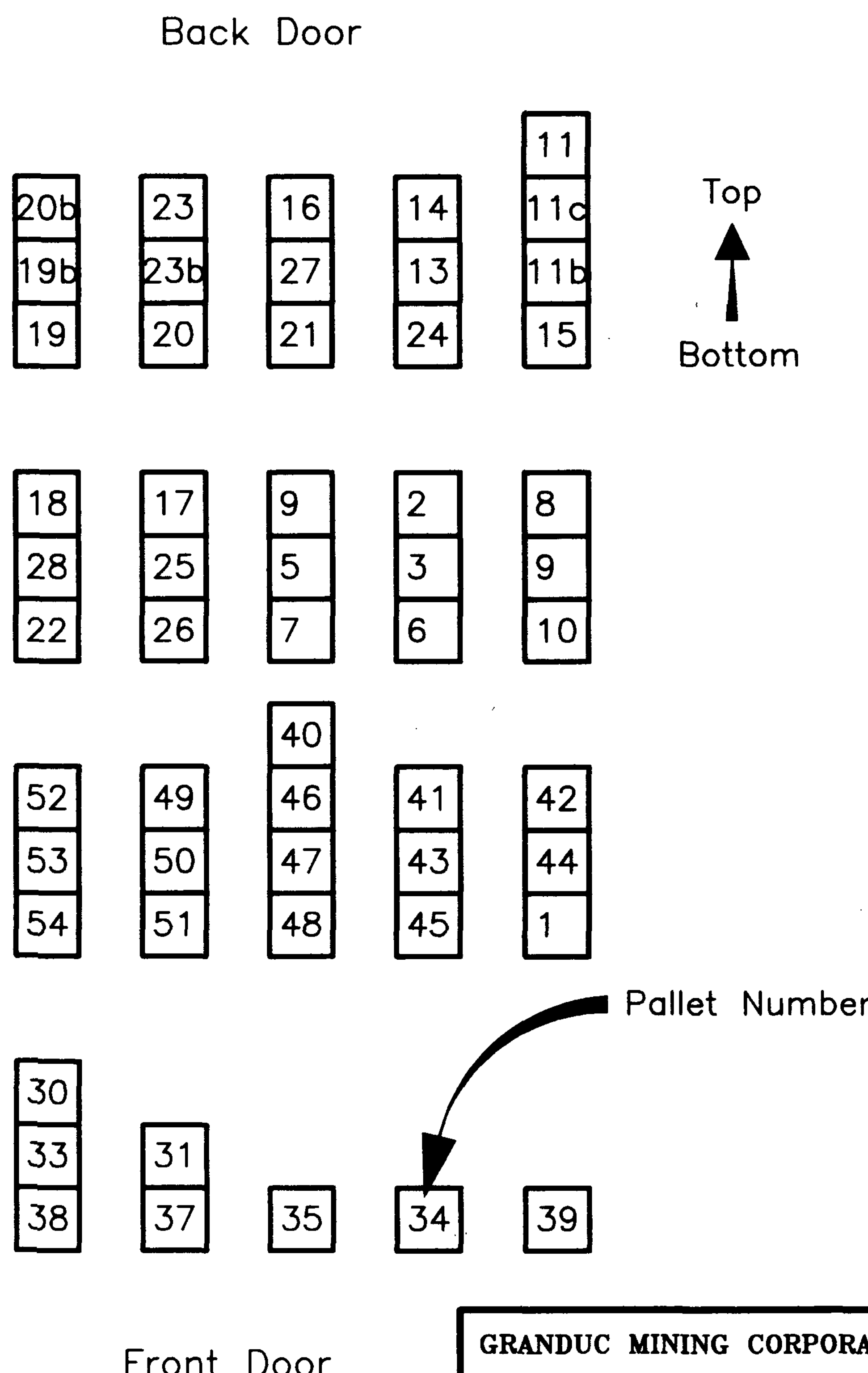
|---|---|---|---|---|---|---|
| Kit 011 | Duke | 24253 | 255011 | 1 | Sept 04/64 | 1995/09/04 |
| Kit 012 Fr. | Duke | 37119 | 255248 | 1 | Dec. 07/71 | 1995/12/07 |
| Kit 013 | Duke | 37120 | 255249 | 1 | Dec. 07/71 | 1995/12/07 |
| Kit 014 | Duke | 37121 | 255250 | 1 | Dec. 07/71 | 1995/12/07 |
| Kit 015 | Duke | 37122 | 255251 | 1 | Dec. 07/71 | 1995/12/07 |
| Kit 016 | Duke | 37123 | 255252 | 1 | Dec. 07/71 | 1995/12/07 |
| Kit 017 | Duke | 37124 | 255253 | 1 | Dec. 07/71 | 1995/12/07 |
| Leduc 1 | | 326100 | 326100 | 12 | June 04/94 | 1995/06/04 |
| Leduc 2 | | 326101 | 326101 | 9 | June 04/94 | 1995/06/04 |
| Leduc 001 | Duke | 20247 | 254809 | 1 | Nov. 16/61 | 1995/11/16 |
| Leduc 002 | Duke | 20248 | 254810 | 1 | Nov. 16/61 | 1995/11/16 |
| Leduc 003 | Duke | 20249 | 254811 | 1 | Nov. 16/61 | 1995/11/16 |
| Leduc 004 | Duke | 20250 | 254812 | 1 | Nov. 16/61 | 1995/11/16 |
| Leduc 005 | Duke | 20251 | 254813 | 1 | Nov. 16/61 | 1995/11/16 |
| Leduc 007 | Duke | 20253 | 254814 | 1 | Nov. 16/61 | 1995/11/16 |
| Leduc 009 | Duke | 20255 | 254815 | 1 | Nov. 16/61 | 1995/11/16 |
| Leduc 011 | Duke | 20257 | 254816 | 1 | Nov. 16/61 | 1995/11/16 |
| Marg 002 | | L6610 | | 1 | Mar. 10/53 | |
| McK No. 005 | Duke | 15037 | 254611 | 1 | Apr. 15/61 | 1995/04/15 |
| McK No. 006 | Duke | 15038 | 254612 | 1 | Apr. 15/61 | 1995/04/15 |
| McQ | | L6591 | | 1 | Aug. 15/51 | |
| McQ 001 | | L6592 | | 1 | Aug. 15/51 | |
| McQ 002 | | L6589 | | 1 | Aug. 15/51 | |
| McQ 003 | | L6590 | | 1 | Aug. 15/51 | |
| McQ 004 | | L6616 | | 1 | Aug. 24/53 | |
| Orphan 001 Fr. | Duke | 16024 | 254647 | 1 | Sept 17/54 | 1995/09/17 |
| Orphan 002 Fr. | Duke | 16025 | 254648 | 1 | Sept 17/54 | 1995/09/17 |
| Portal 001 | Portal | 35741 | 255211 | 1 | July 13/70 | 1995/07/13 |
| Portal 002 | Portal | 35742 | 255212 | 1 | July 13/70 | 1995/07/13 |
| Portal 003 | Portal | 35743 | 255213 | 1 | July 13/70 | 1995/07/13 |
| Regina 001 Fr. | Duke | 15975 | 254645 | 1 | Aug. 27,/54 | 1995/08/27 |
| Regina 002 | Duke | 15976 | 254646 | 1 | Aug. 27/54 | 1995/08/27 |
| Rex 001 | | L6663 | | 1 | Aug. 24/54 | |
| Rex 002 | | L6664 | | 1 | Aug. 24/54 | |
| Rex 006 Fr. | Duke | L6658 | | 1 | Aug. 25/54 | |
| Rex 007 Fr. | | L6657 | | 1 | Aug. 25/54 | |
| Rex 008 Fr. | | L6656 | | 1 | Aug. 25/54 | |
| Rex 009 Fr. | | L6655 | | 1 | Aug. 25/54 | |
| Rex 010 Fr. | | L6654 | | 1 | Aug. 25/54 | |
| Rex 011 Fr. | | L6670 | | 1 | Sept 13/54 | |
| Rex 012 Fr. | | L6667 | | 1 | Sept 13/54 | |
| Rex 013 Fr. | | L6665 | | 1 | Sept 13/54 | |
| Rex 014 Fr. | | L6672 | | 1 | Sept 13/54 | |
| Rex 015 Fr. | Duke | L6666 | | 1 | June 19/54 | |
| Seabee 003 | Duke | 15068 | 254614 | 1 | Apr. 17/53 | 1995/04/17 |
| Seabee 004 | Duke | 19708 | 254791 | 1 | May 11/61 | 1995/05/11 |
| Seabee 005 | Duke | 15070 | 254615 | 1 | Apr. 17/53 | 1995/04/17 |
| Seabee 006 | Duke | 19709 | 254792 | 1 | May 11/61 | 1995/05/11 |
| Seabee 007 | Duke | 19714 | 254794 | 1 | May 23/61 | 1995/05/23 |
| Seabee 008 | Duke | 19710 | 254793 | 1 | May 11/61 | 1995/05/11 |
| Solar 008 | Duke | L6598 | | 1 | June 08/53 | |
| Sweet Marie 1 | Duke | 19700 | 254783 | 1 | May 11/61 | 1995/05/11 |
| VK 009 | | L6566 | | 1 | Aug. 28/52 | |
| VK 010 | | L6567 | | 1 | Aug. 28/52 | |
| VK 011 | Duke | L6565 | | 1 | Aug. 28/52 | |
| VK 012 | | L6564 | | 1 | Aug. 28/52 | |
| VK 013 | Duke | L6562 | | 1 | Aug. 28/52 | |
| VK 014 | | L6563 | | 1 | Aug. 28/52 | |
| Vaughn K 1 | Portal | L6619 | | 1 | Aug. 14/51 | |
| Vaughn K 2 | Duke | L6618 | | 1 | Aug. 14/51 | |
| Vaughn K 3 | Portal | L6620 | | 1 | Aug. 14/51 | |
| Vaughn K 4 | Portal | L6617 | | 1 | Aug. 14/51 | |
| Vaughn K 5 | | L6568 | | 1 | Aug. 14/51 | |
| Vaughn K 6 | | L6569 | | 1 | Aug. 14/51 | |
| Vaughn K 7 | | L6576 | | 1 | Aug. 14/51 | |
| Vaughn K 8 | | L6575 | | 1 | Aug. 14/51 | |

**APPENDIX B:** List of drill holes and location of core storage at the Stewart warehouse, British Columbia.

Appendix B contains a plan map showing the location of pallets containing Granduc drill core at the shared Newhawk/Granduc warehouse in Stewart, British Columbia and a list of diamond drill holes with their respective pallet number. The plan map shows the location of the 55 pallets stacked 3-4 high (numbered from bottom to top). All pallets are in good condition, except for pallets numbered 34, 35 and 41. The list of diamond drill holes contains the number of boxes per hole, pallet number the drill core is located on, and core size other than AQ is noted (*i.e.* BQ, NQ, HQ, *etc.*).




(See List for pallet number and respective drill hole number)

| | |
|---|---|
| **GRANDUC MINING CORPORATION** | |
| Report by: *Dawson et al. P.Geo.* | GRANDUC MINE, STEWART, B.C. |
| Date: *August, 1994* | Stewart Warehouse Core Storage |
| Figure: *Append–B.1* | |
| File: *APPEND_B.dwg* | |
| NTS: *104 B/1,8* | |
| Mining Division *Skeena* | ***Cambria Geological Ltd.*** |
| Ref. # *80185* | |

| Palette | Hole # | # of Boxes |
|---|---|---|
| 1 | 153-2A | 115 NQ BQ |
| 2 | 102-66 | 13 AQ |
| 2 | 118-54 | 7 |
| 2 | 120-48 | 5 |
| 2 | 119-58 | 5 |
| 2 | 119-56 | 4 |
| 2 | 120-75 | 9 |
| 2 | 118-55 | 8 |
| 2 | 103-53 | 13 |
| 2 | 121-42 | 14 |
| 2 | 121-41 | 1 |
| 2 | 120-76 | 12 |
| 2 | 119-57 | 7 |
| 2 | 121-40 | 7 |
| 2 | 102-65 | 8 |
| 2 | 120-74 | 7 |
| 2 | 120-48 | 5 |
| 2 | 120-47 | 5 |
| 2 | 121-33 | 8 |
| 3 | 147-1C | 14 BQ |
| 3 | 153-1 | 50 NQ + HQ |
| 4 | 116-48 | 12 AQ |
| 4 | 116-84 | 3 |
| 4 | 120-73 | 15 |
| 4 | 116-83 | 12 |
| 4 | 102-61 | 14 |
| 4 | 104-35 | 17 |
| 4 | 106-69 | 14 |
| 4 | 102-62 | 14 |
| 4 | 114-76 | 12 |
| 4 | 113-67 | 3 |
| 4 | 99-69 | 3 |
| 4 | 113-66 | 5 |
| 4 | 100-26 | 8 |
| 4 | 114-75 | 6 |
| 4 | 116-73 | 1 |
| 4 | 120-65 | 1 |
| 4 | 120-64 | 2 |
| 4 | 9-911 | 1 |
| 4 | 116-6 | 1 |
| 4 | 110-52 | 2 |
| 4 | 117-69 | 1 |
| 5 | 153-2A | 75 HQ |
| 6 | 107-86 | 6 AQ |
| 6 | 114-101 | 31 |
| 6 | 102-79 | 27 |
| 6 | 116-101A | 15 |
| 6 | 106-71 | 10 |

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|---|---|---|
| 6 | 102-79 | 6 |
| 6 | 105-61 | 12 |
| 6 | 115-98 | 10 |
| 6 | 108-77 | 5 |
| 7 | 103-54 | 4 |
| 7 | 103-56 | 2 |
| 7 | 105-43 | 1 |
| 7 | 104-41 | 5 |
| 7 | 105-42 | 5 |
| 7 | 111-55 | 5 |
| 7 | 101-68 | 11 |
| 7 | 99-40 | 12 |
| 7 | 99-45 | 8 |
| 7 | 97-26 | 5 |
| 7 | 108-81 | 3 |
| 7 | 102-74 | 7 |
| 7 | 113-70 | 1 |
| 7 | 110-56 | 12 |
| 7 | 107-95 | 8 |
| 7 | 99-35 | 5 |
| 7 | 112-55 | 11 |
| 7 | 111-51 | 8 |
| 8 | 96-14 | 6 |
| 8 | 112-62 | 6 |
| 8 | 112-61 | 6 |
| 8 | 103-73 | 12 |
| 8 | 100-57 | 11 |
| 8 | 122-47 | 11 |
| 8 | 121-49 | 12 |
| 8 | 103-68 | 15 |
| 8 | 103-63 | 15 |
| 8 | 108-80 | 10 |
| 8 | 109-61 | 13 |
| 8 | 107-105 | 4 |
| 8 | 103-74 | 10 |
| 8 | 101-77 | 8 |
| 8 | 140-2 | 5 |
| 8 | 118-65 | 4 |
| 8 | 107-105 | 3 |
| 8 | 118-58 | 7 |
| 8 | 97-25 | 6 |
| 8 | 99-41 | 7 |
| 8 | 106-75 | 3 |
| 8 | 102-75 | 7 |
| 8 | 118-64 | 12 |
| 8 | 111-53 | 12 |
| 8 | 99-36 | 5 |
| 8 | 118-65 | 4 |
| 8 | 99-36 | 6 |

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|---|---|---|
| 8 | 121-47 | 6 |
| 8 | 115-95 | 8 |
| **10** | 111-56 | 3 |
| 10 | 107-96 | 5 |
| 10 | 110-54 | 2 |
| 10 | 98-24 | 5 |
| 10 | 106-72 | 7 |
| 10 | 99-37 | 4 |
| 10 | 99-17 | 5 |
| 10 | 114-88 | 1 |
| 10 | 108-69 | 2 |
| 10 | 97-19 | 3 |
| 10 | 106-74 | 7 |
| 10 | 109-57 | 8 |
| 10 | 98-26 | 3 |
| 10 | 102-72 | 4 |
| 10 | 105-55 | 5 |
| 10 | 98-32 | 3 |
| 10 | 97-19 | 3 |
| 10 | 105-55 | 5 |
| 10 | 105-53 | 10 |
| 10 | 100-53 | 6 |
| 10 | 99-46 | 12 |
| 10 | 99-44 | 10 |
| 10 | 106-72 | 6 |
| 10 | 100-47 | 10 |
| 10 | 111-56 | 5 |
| 10 | 105-81 | 1 |
| 10 | 108-81 | 1 |
| **11c** | 102-77 | 15 |
| 11c | 147-1B | 1 |
| 11c | 101-65 | 14 |
| 11c | 119-64 | 1 |
| 11c | 119-66 | 25 |
| 11c | 102-67 | 15 |
| **11** | 121-34 | 10 |
| 11 | 121-33 | 2 |
| 11 | 122-27 | 12 |
| 11 | 101-66 | 10 |
| 11 | 100-42 | 7 |
| 11 | 121-35 | 11 |
| 11 | 116-90 | 8 |
| 11 | 100-41 | 5 |
| 11 | 100-44 | 9 |
| 11 | 102-68 | 12 |
| 11 | 101-66 | 5 |
| 11 | 121-39 | 3 |
| **11B** | 117-63 | 2 |
| 11B | 118-48 | 1 |

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|---|---|---|
| 11B | 115-84 | 1 |
| 11B | 114-75 | 2 |
| 11B | 100-26 | 1 |
| 11B | 100-27 | 1 |
| 11B | 114-72 | 5 |
| 11B | 99-18 | 2 |
| 11B | 114-76 | 3 |
| 11B | 116-80 | 1 |
| 11B | 112-52 | 1 |
| 11B | 120-66 | 1 |
| 11B | 115-77 | 3 |
| 11B | 99-18 | 1 |
| 11B | 115-80 | 1 |
| 11B | 99-19 | 2 |
| 11B | 99-20 | 3 |
| 11B | 113-65 | 1 |
| 11B | 113-67 | 2 |
| 11B | 100-27 | 4 |
| 11B | 113-64 | 1 |
| 11B | 113-63 | 3 |
| 11B | 115-84 | 3 |
| 11B | 114-63 | 4 |
| 11B | 99-20 | 3 |
| 11B | 118-78 | 2 |
| 11B | 124-22 | 5 |
| 11B | 118-47 | 4 |
| 11B | 115-80 | 3 |
| 11B | 106-65 | 3 |
| 11B | 99-24 | 7 |
| 11B | 119-66 | 16 |
| 11B | 116-79 | 7 |
| 11B | 116-78 | 14 |
| 11B | 112-52 | 2 |
| 11B | 113-65 | 3 |
| 11B | 99-20 | 4 |
| 11B | 116-80 | 5 |
| 11B | 118-50 | 6 |
| 13 | 116-82 | |
| 13 | 98-17 | |
| 13 | 121-38 | |
| 13 | 226-1 | |
| 13 | 114-79 | |
| 13 | 119-64 | |
| 13 | 118-49 | |
| 13 | 121-37 | |
| 13 | 118-52 | |
| 13 | 120-72 | |
| 14 | 110-60 | 27 |
| 14 | 108-81 | 11 |

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|---|---|---|
| 14 | 97-31 | 1 |
| 14 | 99-36 | 3 |
| 14 | 117-82 | 8 |
| 14 | 108-82 | 2 |
| 14 | 108-87 | 10 |
| 14 | 102-78 | 14 |
| 14 | 114-92 | 12 |
| 14 | 114-97 | 11 |
| 14 | 109-64 | 12 |
| **15** | 105-59 | 17 |
| 15 | 104-55 | 7 |
| 15 | 105-57 | 5 |
| 15 | 104-53 | 9 |
| 15 | 106-82 | 3 |
| 15 | 103-61 | 14 |
| 15 | 103-65 | 7 |
| 15 | 106-84 | 8 |
| 15 | 105-50 | 9 |
| 15 | 103-67 | 7 |
| 15 | 102-76 | 8 |
| 15 | 115-97 | 15 |
| **16** | 98-36 | 5 |
| 16 | 107-99 | 11 |
| 16 | 119-78 | 13 |
| 16 | 115-94 | 8 |
| 16 | 108-79 | 8 |
| 16 | 108-82 | 2 |
| 16 | 113-86 | 3 |
| 16 | 99-49 | 10 |
| 16 | 97-28 | 13 |
| 16 | 97-30 | 4 |
| 16 | 119-79 | 5 |
| 16 | 104-52 | 5 |
| 16 | 117-80 | 3 |
| 16 | 103-102 | 8 |
| 16 | 103-101 | 10 |
| 16 | 109-65 | 7 |
| 16 | 103-100 | 5 |
| **17** | 97-8 | 3 |
| 17 | 109-46 | 4 |
| 17 | 119-67 | 3 |
| 17 | 120-68 | 4 |
| 17 | 99-22 | 1 |
| 17 | 99-26 | 1 |
| 17 | 100-23 | 2 |
| 17 | 100-29 | 9 |
| 17 | 99-28 | 1 |
| 17 | 109-47 | 1 |
| 17 | 119-71 | 7 |

| | | |
|---|---|---|
| 17 | 99-26 | 5 |
| 17 | 119-72 | 9 |
| 17 | 99-21 | 5 |
| 17 | 99-23 | 4 |
| 17 | 100-25 | 11 |
| 17 | 102-64 | 8 |
| 17 | 95-1 | 5 |
| 17 | 101-64 | 8 |
| 17 | 101-63 | 4 |
| 17 | 101-62 | 8 |
| 17 | 96-7 | 1 |
| 17 | 96-4 | 1 |
| 17 | 96-5 | 1 |
| 17 | 109-47 | 6 |
| 17 | 96-8 | 4 |
| 17 | 96-7 | 7 |
| 17 | 96-6 | 5 |
| 17 | 96-5 | 5 |
| 17 | 102-52 | 7 |
| **18** | 96-13 | 8 |
| 18 | 106-75 | 3 |
| 18 | 113-82 | 5 |
| 18 | 96-13 | 2 |
| 18 | 96-15 | 19 |
| 18 | 97-33 | 15 |
| 18 | 100-61 | 15 |
| 18 | 103-71 | 14 |
| 18 | 104-58 | 22 |
| 18 | 121-47 | 5 |
| 18 | 116-106 | 18 |
| **19** | 153-3 | 44 HQ |
| 19 | 147-1B | 25 HQ |
| **19B** | 147-1B | 30HQ,4QNQ,5BQ |
| **20** | 158-2A | 65 NQ |
| **20B** | 52)158-2A | NQ |
| **21** | 147-2 | 20 HQ |
| 21 | 158-3 | 44 HQ |
| **22** | 153-4 | 108 NQ+BQ |
| **23** | 147-1B | 19 BQ |
| 23 | 153-3 | 73 NQ+BQ |
| **23B** | 153-1 | 73NQ |
| **24** | 158-2A | 40NQ |
| 24 | 147-2 | 35HQ |
| **25** | 153-3 | 21NQ+BQ |
| 25 | 147-2 | 35HQ |
| **26** | 158-1 | 75HQ |
| **27** | 158-1 | 70NQ,40BQ |
| **28** | 158-3 | 97NQ+BQ |
| **30** | 100-45 | 13 |

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|---|---|---|
| 30 | 113-69 | 15 |
| 30 | 117-65 | 6 |
| 30 | 122-38 | 14 |
| 30 | 115-88 | 6 |
| 30 | 114-80 | 1 |
| 30 | 116-88 | 5 |
| 30 | 114-81 | 4 |
| 30 | 116-89 | 6 |
| 30 | 114-82 | 6 |
| 30 | 114-83 | |
| 30 | 115-87 | 4 |
| 30 | 115-85 | 5 |
| 30 | 118-57 | 4 |
| 30 | 117-64 | 3 |
| 30 | 118-53 | 5 |
| 30 | 114-83 | 1 |
| 30 | 115-86 | 5 |
| 30 | 118-53 | 1 |
| 30 | 118-56 | 3 |
| 30 | 116-86 | 2 |
| 30 | 116-67 | 2 |
| 30 | 116-68 | 7 |
| 30 | 122-26 | 11 |
| **31** | 100-59 | |
| 31 | 140-26 | |
| 31 | 107-105 | |
| 31 | 118-65 | |
| 31 | 101-72 | |
| 31 | 106-88 | |
| 31 | 107-85 | |
| 31 | TH-2 | |
| **33 messy** | 123-40 | 1 |
| 33 messy | 118-45 | 5 |
| 33 messy | 120-62 | 4 |
| 33 messy | 100-20 | 2 |
| 33 messy | 116-68 | 5 |
| 33 messy | 115-74 | 1 |
| 33 messy | 110-51 | 3 |
| 33 messy | 98-16 | 2 |
| 33 messy | 97-3 | 1 |
| 33 messy | 109-46 | 2 |
| 33 messy | 100-30 | 4 |
| 33 messy | 100-22 | |
| 33 messy | 100-17 | |
| 33 messy | 99-17 | |
| 33 messy | 118-45 | 3 |
| 33 messy | 115-74 | 2 |
| 33 messy | 115-68 | |
| 33 messy | 120-63 | |

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| 33 messy | 120-62 | |
| 33 messy | 113-67 | |
| 33 messy | 116-77 | |
| 33 messy | 110-50 | |
| 33 messy | 99-19 | 4 |
| 33 messy | 95-2 | 3 |
| 33 messy | 116-81 | 1 |
| 33 messy | 117-63 | 4 |
| 33 messy | 114-75 | 1 |
| 33 messy | 100-28 | 5 |
| 33 messy | 99-27 | 1 |
| 33 messy | 101-25 | 1 |
| 33 messy | 105-41 | 2 |
| 33 messy | 115-81 | 2 |
| 33 messy | 116-76 | 1 |
| 33 messy | 113-67 | 5 |
| 33 messy | 99-18 | 1 |
| 33 messy | 100-26 | 1 |
| 33 messy | 120-65 | 3 |
| 33 messy | 124-23 | 1 |
| 33 messy | 115-77 | 1 |
| 33 messy | 99-18 | 3 |
| 33 messy | 112-51 | |
| 33 messy | 97-8 | |
| 33 messy | 99-19 | 5 |
| 33 messy | 109-46 | |
| 33 messy | 100-90 | 3 |
| 33 messy | 95-2 | 4 |
| 33 messy | 99-19 | 5 |
| 33 messy | 99-20 | 1 |
| 33 messy | 116-81 | 4 |
| 33 messy | 100-28 | 1 |
| 33 messy | 110-52 | 4 |
| 33 messy | 120-66 | |
| 33 messy | 115-10 | |
| 33 messy | 105-4 | |
| 33 messy | 114-76 | 2 |
| 33 messy | 116-76 | |
| 33 messy | 124-23 | 3 |
| 33 messy | 118-43 | |
| 33 messy | 121-51 | 2 |
| 33 messy | 116-73 | |
| 33 messy | 100-27 | |
| 34 | 103-51 | |
| 34 | 101-61 | |
| 34 | 107-94 | |
| 34 | 106-70 | |
| 34 | 103-52 | |
| 34 | 101-61 | |

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|---|---|---|
| 34 | 100-36 | |
| 34 | 104-36 | |
| 34 | 100-37 | |
| 34 | 100-32 | |
| 34 | 114-77 | |
| 34 | 118-32 | |
| **35** | 118-67 | 4 |
| 35 | 119-75 | 1 |
| 35 | 112-57 | 2 |
| 35 | 99-43 | 3 |
| 35 | 108-68 | 1 |
| 35 | 103-55 | 2 |
| 35 | 112-57 | 2 |
| 35 | 105-46 | 4 |
| 35 | 111-56 | |
| 35 | 108-74 | 2 |
| 35 | 104-40 | 2 |
| 35 | 108-70 | 4 |
| 35 | 100-54 | 3 |
| 35 | 108-83 | 1 |
| 35 | 99-43 | 5 |
| 35 | 112-57 | 5 |
| 35 | 103-55 | 2 |
| 35 | 105-46 | |
| 35 | 103-68 | 2 |
| 35 | 140-40 | 2 |
| 35 | 111-54 | 3 |
| 35 | 111-56 | |
| 35 | 109-52 | 1 |
| 35 | 110-55 | 10 |
| 35 | 108-74 | 3 |
| 35 | 108-7 | 2 |
| 35 | 93-39 | 3 |
| 35 | 100-55 | 7 |
| 35 | 105-43 | 3 |
| 35 | 109-52 | 1 |
| 35 | 110-55 | 5 |
| 35 | 98-39 | 4 |
| 35 | 106-72 | |
| 35 | 100-55 | 8 |
| 35 | 105-45 | 2 |
| 35 | 108-74 | 2 |
| 35 | 108-69 | 4 |
| 35 | 98-27 | 4 |
| **37** | 114-77 | |
| 37 | 118-51 | |
| 37 | 119-65 | |
| 37 | 115-82 | |
| 37 | 115-84 | |

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|---|---|---|
| 37 | 114-78 | |
| 37 | 294-1 | |
| 37 | 122-45 | |
| 37 | 122-46 | |
| 37 | 106-127 | |
| 37 | 118-50 | |
| 37 | 114-78 | |
| 37 | 115-84 | |
| 37 | 114-78 | |
| 37 | 115-84 | |
| 37 | 122-46 | |
| **38** | 146-5 | |
| 38 | 146-2 | |
| 38 | 146-4 | |
| 38 | 146-3 | |
| **39** | 107-114 | 5 |
| 39 | 18-46 | 8 |
| 39 | 106-66 | 2 |
| 39 | 98-44 | 5 |
| 39 | 97-27 | 5 |
| 39 | 120-86 | 4 |
| 39 | 120-89 | 1 |
| 39 | 117-83 | 4 |
| 39 | 116-109 | 6 |
| 39 | 112-60 | 5 |
| 39 | 97-31 | 6 |
| 39 | 99-36 | 1 |
| 39 | 103-74 | 3 |
| 39 | 99-16 | 8 |
| 39 | 107-114 | 3 |
| 39 | 106-86 | 2 |
| 39 | 98-46 | 5 |
| 39 | 97-27 | 5 |
| 39 | 98-44 | 3 |
| 39 | 120-89 | 4 |
| 39 | 120-86 | 2 |
| 39 | 98-46 | 1 |
| 39 | 116-109 | 1 |
| 39 | 112-60 | 1 |
| 39 | 97-61 | 1 |
| 39 | 103-74 | 1 |
| 39 | 96-16 | 1 |
| 39 | 117-83 | 1 |
| **40** | 80 boxes | 65-75 holes |
| **41** | 114-85 | 9 |
| 41 | 116-92 | 11 |
| 41 | 116-91 | 8 |
| 41 | 119-84 | 4 |
| 41 | 118-66 | 12 |

| | | |
|---|---|---|
| 41 | 118-68 | 4 |
| 41 | 107-98 | 11 |
| 41 | 107-97 | 8 |
| 41 | 108-71 | 7 |
| 41 | 110-54 | 5 |
| 41 | 98-41 | 6 |
| 41 | 98-43 | 1 |
| 41 | 99-39 | 9 |
| 41 | 98-35 | 6 |
| 41 | 115-92 | 11 |
| 41 | 114-84 | 11 |
| 41 | 116-96 | 11 |
| 41 | 96-91 | 1 |
| 42 | 210-99 | 5 |
| 42 | 102-75 | 3 |
| 42 | 102-73 | 2 |
| 42 | 110-60 | 5 |
| 42 | 112-61 | 1 |
| 42 | 105-62A | 4 |
| 42 | 96-14 | 5 |
| 42 | 116-104 | 5 |
| 42 | 103-70 | |
| 42 | 103-69 | 3 |
| 42 | 108-88 | 2 |
| 42 | 120-85 | 2 |
| 42 | 105-53 | 1 |
| 42 | 120-82 | 1 |
| 42 | 103-68 | 5 |
| 42 | 101-77 | 5 |
| 42 | 117-84 | 10 |
| 42 | 100-57 | 2 |
| 42 | 210-99 | 3 |
| 42 | 107-71 | 5 |
| 42 | 116-60 | 2 |
| 42 | 112-61 | 3 |
| 42 | 112-62 | 5 |
| 42 | 105-62A | 5 |
| 42 | 96-14 | 5 |
| 42 | 103-70 | 3 |
| 42 | 116-104 | 2 |
| 42 | 108-88 | 2 |
| 42 | 103-69 | 1 |
| 42 | 108-88 | 1 |
| 42 | 105-53 | 2 |
| 42 | 120-85 | 3 |
| 42 | 101-77 | 2 |
| 42 | 103-68 | 3 |
| 42 | 117-84 | 1 |
| 42 | 101-77 | 2 |

| | | |
|---|---|---|
| 42 | 115-96 | 4 |
| 43 | 119-77 | 3 |
| 43 | 120-86 | 2 |
| 43 | 116-08 | 3 |
| 43 | 119-27 | 1 |
| 43 | 119-77 | 111 |
| 43 | 120-87 | 5 |
| 43 | 120-79 | 5 |
| 43 | 121-48 | 5 |
| 43 | 98-46 | 5 |
| 43 | 106-80 | 5 |
| 43 | 105-62A | 7 |
| 43 | 103-70 | 3 |
| 43 | 118-63 | 5 |
| 43 | 103-69 | 11 |
| 43 | 117-84 | 4 |
| 43 | 120-86 | 2 |
| 43 | 119-77 | 3 |
| 43 | 116-108 | 5 |
| 43 | 121-45 | 4 |
| 43 | 120-67 | 1 |
| 43 | 121-48 | 5 |
| 43 | 120-79 | 1 |
| 43 | 98-46 | 3 |
| 43 | 106-36 | 5 |
| 43 | 105-62A | 8 |
| 43 | 106-86 | 2 |
| 43 | 118-63 | 3 |
| 43 | 103-70 | 2 |
| 43 | 117-84 | 5 |
| 43 | 103-69 | 10 |
| 44 | 114-02 | 15 |
| 44 | 116-08 | 10 |
| 44 | 132-20 | 10 |
| 44 | 135-2 | 4 |
| 44 | 120-82 | 6 |
| 44 | 141-1 | 10 |
| 44 | 146-7 | 10 |
| 44 | 114-102 | 15 |
| 44 | 116-108 | 6 |
| 44 | 135-2 | 4 |
| 44 | 132-20 | 10 |
| 44 | 120-82 | 6 |
| 44 | 142-1 | 13 |
| 44 | 146-7 | 10 |
| 45 | 96-4 | 5 |
| 45 | 101-52 | 5 |
| 45 | 97-15 | 2 |
| 45 | 96-9 | 1 |

| | | |
|---|---|---|
| 45 | 102-57 | 2 |
| 45 | 103-49 | 2 |
| 45 | 96-1 | 1 |
| 45 | 103-50 | 5 |
| 45 | 100-40 | 3 |
| 45 | 99-31 | 4 |
| 45 | 102-58 | 3 |
| 45 | 100-31 | 1 |
| 45 | 102-60 | 8 |
| 45 | 101-33 | 4 |
| 45 | 97-14 | 5 |
| 45 | 98-33 | 1 |
| 45 | 98-20 | 1 |
| 45 | 98-23 | 3 |
| 45 | 101-60 | 2 |
| 45 | 99-34 | 4 |
| 45 | 100-33 | 7 |
| 45 | 101-59 | 7 |
| 45 | 116-85 | 5 |
| 45 | 101-52 | 1 |
| 45 | 102-59 | 1 |
| 45 | 96-10 | 1 |
| 45 | 103-30 | 1 |
| 45 | 101-58 | 1 |
| 45 | 102-52 | 1 |
| 45 | 96-104 | 1 |
| 45 | 101-50 | 3 |
| 45 | 101-51 | 3 |
| 45 | 100-40 | 1 |
| 45 | 100-31 | 5 |
| 45 | 102-58 | 1 |
| 45 | 102-57 | 1 |
| 45 | 101-53 | 3 |
| 45 | 99-32 | 2 |
| 45 | 101-53 | 2 |
| 45 | 101-58 | 2 |
| 45 | 102-58 | 3 |
| 45 | 98-33 | 2 |
| 45 | 96-11 | 2 |
| 45 | 102-57 | 3 |
| 45 | 98-23 | 2 |
| 45 | 98-22 | 2 |
| 45 | 101-60 | 2 |
| 45 | 98-21 | 3 |
| 45 | 99-33 | 3 |
| 45 | 101-59 | 4 |
| 45 | 100-33 | 2 |
| 46 | 120-84 | 2 |
| 46 | 113-91 | 3 |

| | | |
|---|---|---|
| 46 | 120-87 | 4 |
| 46 | 120-88 | 1 |
| 46 | 121-53 | 4 |
| 46 | 116-103 | |
| 46 | 121-52 | 3 |
| 46 | 97-29 | 1 |
| 46 | 105-63 | 2 |
| 46 | 97-29 | 12 |
| 46 | 105-01 | 3 |
| 46 | 115-98 | 2 |
| 46 | 116-85 | 3 |
| 46 | 101-59 | 9 |
| 47 | 113-63 | 6 |
| 47 | 117-59 | 6 |
| 47 | 121-36 | 12 |
| 47 | 120-72 | 6 |
| 47 | 99-13 | 3 |
| 47 | 114-68 | 3 |
| 47 | 114-70 | |
| 47 | 116-69 | 5 |
| 47 | 123-37 | 6 |
| 47 | 99-17 | 1 |
| 47 | 110-50 | 5 |
| 47 | 99-15 | 3 |
| 47 | 99-16 | 3 |
| 47 | 118-37 | 4 |
| 47 | 99-14 | 2 |
| 47 | 118-41 | 4 |
| 47 | 114-69 | 2 |
| 47 | 121-27 | 5 |
| 47 | 117-36 | 1 |
| 47 | 113-62 | 2 |
| 47 | 117-59 | 4 |
| 47 | 116-70 | 2 |
| 47 | 120-59 | 1 |
| 47 | 121-36 | 13 |
| 47 | 120-58 | 4 |
| 47 | 117-53 | 2 |
| 47 | 99-12 | 3 |
| 47 | 116-69 | 3 |
| 47 | 114-70 | 6 |
| 47 | 123-37 | 2 |
| 47 | 113-62 | 1 |
| 47 | 110-50 | 3 |
| 47 | 123-35 | 1 |
| 47 | 116-75 | 3 |
| 47 | 99-16 | 2 |
| 47 | 99-15 | 1 |
| 47 | 99-13 | 2 |

| | | |
|---|---|---|
| 47 | 99-14 | 1 |
| 47 | 118-37 | 1 |
| 47 | 121-29 | 3 |
| 47 | 114-69 | 2 |
| 47 | 118-41 | 2 |
| 47 | 117-56 | 4 |
| 47 | 121-27 | 1 |
| 47 | 121-26 | 5 |
| **48** | 132-20 | 1 |
| 48 | 124-24 | 2 |
| 48 | 132-21 | 16 |
| 48 | 132-20 | 4 |
| 48 | 135-1 | 13 |
| 48 | 147-1B | 2 |
| 48 | 135-2 | 9 |
| 48 | 124-24 | 14 |
| 48 | 13-20 | 3 |
| 48 | 124-24 | 20 |
| 48 | 132-20 | 3 |
| 48 | 132-21 | 15 |
| 48 | 135-1 | 12 |
| 48 | 135-2 | 11 |
| **49** | 111-60 | 5 |
| 49 | 110-53 | 10 |
| 49 | 105-53 | 8 |
| 49 | 108-78 | 11 |
| 49 | 103-72 | 19 |
| 49 | 108-77 | 9 |
| 49 | 99-48 | 25 |
| 49 | 105-54 | 7 |
| 49 | 100-58 | 26 |
| **50** | 146-8 | 29BQ |
| 50 | 146-7 | 18BQ |
| 50 | 140-1 | 36BQ |
| 50 | 142-2 | 15BQ |
| 50 | 135-2 | 5 |
| **51** | 146-6 | 27BQ |
| 51 | 360-47 | 27AQ |
| 51 | 360-41 | 8 |
| 51 | 360-42 | 14 |
| 51 | 360-40 | 4 |
| 51 | 360-43 | 10 |
| 51 | 360-45 | 5 |
| 51 | 360-44 | 7 |
| 51 | 360-46 | 1 |
| **52** | 109-64 | 1 |
| 52 | 101-76 | 2 |
| 52 | 98-45 | 10 |
| 52 | 97-30 | 18 |

| | | |
|---|---|---|
| 52 | 98-42 | 3 |
| 52 | 100-48 | 1 |
| 52 | 102-69 | 1 |
| 52 | 98-51 | 8 |
| 52 | 104-50 | 11 |
| 52 | 109-51 | 2 |
| 52 | 98-40 | 4 |
| 52 | 98-43 | 1 |
| 52 | 113-81 | 3 |
| 52 | 97-21 | 1 |
| 52 | 103-75 | 16 |
| 52 | 100-51 | 2 |
| 52 | 102-74 | 2 |
| 52 | 98-31 | 1 |
| 52 | 109-56 | 9 |
| 52 | 111-57 | 1 |
| 52 | 106-90 | 3 |
| **53** | 101-73 | 8 |
| 53 | 96-12 | 14 |
| 53 | 101-74 | 12 |
| 53 | 100-60 | 14 |
| 53 | 97-32 | 11 |
| 53 | 97-34 | 16 |
| 53 | 101-75 | 15 |
| 53 | 113-87 | 8 |
| 53 | 98-50 | 12 |
| 53 | 96-17 | 14 |
| **54** | 107-118 | 16 |
| 54 | 108-78 | 4 |
| 54 | 98-46 | 7 |
| 54 | 97-29 | 10 |
| 54 | 98-44 | 6 |
| 54 | 116-103 | 14 |
| 54 | 120-88 | 13 |
| 54 | 119-81 | 5 |
| 54 | 120-77 | 11 |
| 54 | 121-53 | 8 |
| 54 | 98-37 | 5 |
| 54 | 113-88 | 3 |
| 54 | 117-71 | 7 |
| 54 | 121-52 | 1 |
| 54 | 120-84 | 4 |
| 54 | 120-78 | 4 |
| 54 | 121-52 | 2 |

**APPENDIX C:** Re-logs of drill holes:

GD102-77
GD102-79
GD119-58
GD119-64
GD119-66
GD146-3
GD147-1B
GD153-1
GD158-1
GD158-2A

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Hole No: | GD102_77 | Azimuth: | 268.6 | Core Size: | 0-560 AQ | Date Logged: | |
| | | | | Drill Name: | | Logged By: | |
| Project: | Granduc | Dip: | -5.0 | Contractor: | | | |
| | | | | | | Date Re-logged: | August 11, 1993 |
| Property: | | Length(ft): | 560.00 | Started: | June 10, 1982 | Re-logged By: | G. Price |
| | | | | Completed: | | | |
| Claim: | | Elevation: (ft) | 2435.90 | Recovery: | | Report Printed: | 14 Apr, 1994 10:45pm |
| Co-ords: (ft) | N: 10189.39<br>E: 10356.35 | Purpose: | | | | | |

DOWN HOLE SURVEY TESTS:

| Depth (ft) | Azimuth | Dip | Depth (ft) | Azimuth | Dip | Depth (ft) | Azimuth | Dip | Depth (ft) | Azimuth | Dip | Depth (ft) | Azimuth | Dip | Depth (ft) | Azimuth | Dip |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0.0 | 268.6 | -5.0 | | | | | | | | | | | | | | | |

| INTERVAL (ft) From: | To: | DESCRIPTION | Sample No. | From (ft) | To (ft) | Inter-val(ft) | Au Oz/T | Ag Oz/T | Cu % | Pb % | Zn % | Field No. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| .00 | 5.00 | ANDESITE TUFF,<br>Felsic ft: Medium brown, very fine grained, moderate-strong at 60 to 70 degrees to Ca, strong chl. Alteration, strong biotite alteration, trace disseminated pyrite, <2% cal-qtz. Veins. | | | | | | | | | | |
| 5.00 | 118.00 | CHERT, ANDESITE TUFF, ARGILLITE,<br>Chert-felsic ft-arg. (60% chert, 25% felsic fT, 15% arg), grey black-brown-tan, thin band at 65-75 degrees to Ca, moderate broken core, local isoclinal folds, patchy strong biotite alteration, trace pyrite, chalcopyrite dissemination, <3% quartz veins, loc. Graphite on shears.<br>5.70 5.90 Trace fine grained acicular sulphosalt in stockwork veins over 5 cm in flesh pink (Ksp?) altered fracture breccia.<br>92.00 118.00 2-4% chalcopyrite stringers, <3% po, <1% pyrite, trace magnetite-hematite, trace galena associated with quartz veins. | 1059<br>1060 | 111.50<br>112.00 | 112.00<br>113.00 | .50<br>1.00 | | | | | | |
| 118.00 | 190.00 | ANDESITE TUFF,<br>Andesite T with <10% chert + felsic T: dark green, fg-mg (dacitic where mg with >30% <0.3 mm feldspar crystals) chert banded Ft in 2-20 cm beds, strong chlorite alteration where chert is biotitic, <0.5% chalcopyrite, <1% po, <1% pyrite as stringers and lams, trace very fine grained magnetite in 0.5-1.0 cm wisps/clots. | 1061 | 140.00 | 141.00 | 1.00 | | | | | | |
| 190.00 | 203.00 | DACITE, | | | | | | | | | | |

| INTERVAL (ft) From: | To: | DESCRIPTION | Sample No. | From (ft) | To (ft) | Inter-val(ft) | Au Oz/T | Ag Oz/T | Cu % | Pb % | Zn % | Field No. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Dacite-lithic Crystal T-LT: mud green brown, strong perr. Biotite alteration with moderate-strong chlorite alteration, well so, grades from feldspar dominant (30% 1-4 mm euh. Plag.) to lithic dominant downhole (round-subrounded finely fp porphytitic clasts to 1 cm), cross-cut by <2% cal. Clots. | 1062 | 191.00 | 192.00 | 1.00 | | | | | | |
| 203.00 | 240.00 | DACITE,<br>Dacite fT-mT: dark green, strong chlorite alternation, grainy, vaguely thin banded at 50-60 degrees to CA, >20% feldspars<0.5 mm, well sorted, trace cg disseminated pyrite and chalcopyrite, trace chert. | | | | | | | | | | |
| 240.00 | 303.50 | DACITE, CHERT,<br>Dacite T - Chert: dark-pale green, f-cg, local feldspar up to 3mm, <10% chert thin banded at 80-90 degrees to CA, strong chlorite alteration patchy epidote alteration, trace 1% disseminated pyrite + po (+chalcopyrite).<br>263.50 267.00 Was entered on Log as 363.5-367, changed to 263.5-267 (M. Pond). 3% chalcopyrite, 3% pyrite, <1% po as matrix to chlorite wispy clastic, andesite as lams, as matrix to cal. Fragments.<br>283.00 289.00 5% chalcopyrite, 4% pyrite, very fine grained mag? as matrix and wispy lams.<br>290.50 293.00 60% quartz. Cal. Vein.<br>293.00 296.50 <8% very coarse grained Ksp (plag.) up to 8 mm, euhedral. | 1063<br>1064 | 264.00<br>275.00 | 265.00<br>276.00 | 1.00<br>1.00 | | | | | | |
| 303.50 | 339.00 | CHERT, ARGILLITE,<br>Chert-argillite(Dacite T): pale grey-black with flesh brown lams/beds, thin-medium banded at 65-75 degrees to Ca, stratabound breccia 'beds' 2-10 cm thick, amg. Argillite fragments healed with quartz, strongly folded in local 'beds', moderate-strong patchy chlorite (+-) biotite alteration, trace chalcopyrite clots. _. | 1065 | 309.00 | 310.00 | 1.00 | | | | | | |
| 339.00 | 364.00 | DACITE, CHERT,<br>Dacite T with <10% chert: fine-grained-coarse grained, thick-thin banded at 70-80 degrees to CA, grainy, med. Dark brown-brown green, strong chlorite + biotite alteration, grades from fine grained to fp phyric downhole.<br>355.20 364.00 2% chalcopyrite, 2% pyrite, <1% po, trace specular hematite, <1% very fine grained magnetite. | 1066 | 356.00 | 357.00 | 1.00 | | | | | | |
| 364.00 | 382.00 | ANDESITE TUFF,<br>Andesite T(?) with <5% chert: Dark green brown, strongly foliated, streaky broken cherty beds, knots 1-2mm of epidote with pressure shadow growth of quartz, vaguely-fp phyric (??), strong biotite-chlorite alteration, 0.5% chalcopyrite, 0.3% po, 0.3% py, trace mag. | | | | | | | | | | |
| 382.00 | 406.00 | MASSIVE SULPHIDE | | | | | | | | | | |

| INTERVAL (ft) From: | To: | DESCRIPTION | Sample No. | From (ft) | To (ft) | Inter-val(ft) | Au Oz/T | Ag Oz/T | Cu % | Pb % | Zn % | Field No. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Massive sulphide with chert + Andesite T (?): 6% chalcopyrite, 6% magnetite, 3% po, <1% py, 30% thin banded chert; sulphides as stringers + lenses.<br>382.00 391.00 35% sulphide.<br>391.00 406.00 5% sulphide. | | | | | | | | | | |
| 406.00 | 429.00 | ANDESITE TUFF,<br>Andesite T(?) dark brown green, strongly foliated at 70-80 degrees to CA, <20% wispy to euh. 'sausseritized' plag. (wispy crystals maybe epidote-quartz altered chert bed fragments), rock has porphyritic appearance, strong chlorite-biotite alteration, trace chalcopyrite-mag. | 1067 | 419.00 | 420.00 | 1.00 | | | | | | |
| 429.00 | 449.00 | CHERT, ANDESITE TUFF,<br>Chert-fels. T: Medium dark grey-green, thin banded at 70 degrees to CA, very fine grained, patchy moderate-strong chlorite-epidote alteration, disced. Core, local dismembered beds into streaky wisps of epidote-quartz. | 1068 | 435.00 | 436.00 | 1.00 | | | | | | |
| 449.00 | 456.00 | ANDESITE TUFF,<br>Andesite T(?): Dark green, fine grained, streaky with <10% chert + fels. T, strong chlorite alteration, local episote alteration, <3% sulphides (po >chalcopyrite>mag>py). | | | | | | | | | | |
| 456.00 | 469.50 | ANDESITE TUFF,<br>Andesite T(?) with 20% stringer sulphide: dark green, chlorite altered, chalcopyrite-po-pyrite, 80% in stringers cross-cutting schistosity, 20% parallel to schistosity. | | | | | | | | | | |
| 469.50 | 535.00 | ANDESITE TUFF, CHERT,<br>Felsic T - Chert - (Andesite T?): medium pale brown-green, thin banded at 75-80 degrees to CA, (beds 2mm), strongly foliated/folded (isolcinal), mod. Biotite-epidote-chlorite alteration, <1% sulphides with patchy distribution over 2-15 cm associated with strongly chlorite altered, disced. Core.<br>522.50 529.50 Pale grey, chert.<br>529.50 530.00 Graphitic argillite.<br>530.00 534.50 Grainy, fels. T. | 1069 | 532.00 | 533.00 | 1.00 | | | | | | |
| 535.00 | 539.00 | FAULT<br>60% Core recovery, graphitic gouge. | | | | | | | | | | |
| 539.00 | 551.00 | CHERT,<br>Chert: milky grey, very thin banded (<2 mm) at 70-80 degrees to CA local brown biotitic sections, trace disseminated pyrite parallel to lams. | | | | | | | | | | |
| 551.00 | 560.00 | A<br>Andesite fels fT: dark green <10% cherts/fels T beds (,2 mm). Thin banded at fo at 80-80 degrees, moderate-strong chlorite-epidote alteration, | 1070<br>1071 | 554.00<br>555.00 | 555.00<br>556.00 | 1.00<br>1.00 | | | | | | |

| INTERVAL (ft) From: | To: | DESCRIPTION | Sample No. | From (ft) | To (ft) | Inter-val(ft) | Au Oz/T | Ag Oz/T | Cu % | Pb % | Zn % | Field No. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | local bio. Alteration, trace disseminated chalcopyrite, po, py. | | | | | | | | | | |
| 560.00 | | END OF HOLE | | | | | | | | | | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Hole No: | GD102_79 | Azimuth: | 268.6 | Core Size: | 0-640 AQ | Date Logged: | |
| | | | | Drill Name: | | Logged By: | |
| Project: | Granduc | Dip: | -27.6 | Contractor: | | | |
| | | | | | | Date Re-logged: | August 13, 1993 |
| Property: | | Length(ft): | 640.00 | Started: | June 17, 1982 | Re-logged By: | Garcia/G.Price |
| | | | | Completed: | | | |
| Claim: | | Elevation: (ft) | 2432.72 | Recovery: | | Report Printed: | 14 Apr, 1994 10:45pm |
| Co-ords: N: | 10189.47 | | | | | | |
| (ft) E: | 10357.11 | Purpose: | | | | | |

DOWN HOLE SURVEY TESTS:

| Depth (ft) | Azimuth | Dip | Depth (ft) | Azimuth | Dip | Depth (ft) | Azimuth | Dip | Depth (ft) | Azimuth | Dip | Depth (ft) | Azimuth | Dip | Depth (ft) | Azimuth | Dip |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0.0 | 268.6 | -27.6 | | | | | | | | | | | | | | | |
| 640.0 | 268.0 | -30.0 | | | | | | | | | | | | | | | |

| INTERVAL (ft) From: | To: | DESCRIPTION | Sample No. | From (ft) | To (ft) | Inter-val(ft) | Au Oz/T | Ag Oz/T | Cu % | Pb % | Zn % | Field No. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| .00 | 5.00 | No core. | | | | | | | | | | |
| 5.00 | 10.00 | MAFIC TUFF<br>Mafic T (?): dark brown green fine grained grainy, strongly foliated at 20-30 degrees to CA, strong biotite-chlorite alteration, 3% fine grained disseminated pyrite streaks/wisps parallel to fo, <2% cal/quartz veins <0.5 mm streaked parallel to fo. | 63521 | 8.00 | 9.00 | 1.00 | | | | | | |
| 10.00 | 31.00 | CHERT,<br>Chert (fels fT) pale brown + pale grey, very thin banded at 30-40 degrees, strongly folded, 75% chert, <5% argillite, trace disseminated pyrite. | | | | | | | | | | |
| 31.00 | 60.50 | ARGILLITE, CHERT,<br>Argillite-chert (70% argillite); black carbonaceous, pale grey-white chert, thin banded at 30-40 degrees to CA, 1% disseminated pyrite, trace chalcopyrite + po.<br>37.00 41.50 80% Chert-chert breccia. | 63522 | 40.00 | 41.00 | 1.00 | | | | | | |
| 60.50 | 86.00 | CHERT, ANDESITE TUFF,<br>Chert-fels fT; pale grey green, very thin banded at 40-50 degrees to CA, 25% breccia healed with quartz, moderate-strong sericite-epidote alteration, 5% 0.2-0.5 mm white euh-subh. Feldspar crystals trace po, | | | | | | | | | | |

| INTERVAL (ft) From: | To: | DESCRIPTION | Sample No. | From (ft) | To (ft) | Inter-val(ft) | Au Oz/T | Ag Oz/T | Cu % | Pb % | Zn % | Field No. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | pyrite, chalcopyrite. | | | | | | | | | | |
| 86.00 | 122.00 | CHERT, ARGILLITE,<br>Chert-Argillite: pale grey, pale red brown, black, thin banded at 40-50 degrees CA, 35% argillite, strongly folded. Loc. Highly siliceous beds/boudinaged foliated veins of recrystallized quartz, trace disseminated po, chalcopyrite, pyrite.<br>106.00 108.00 Strongly siliceous, cg. | 63523 | 107.00 | 108.00 | 1.00 | | | | | | |
| 122.00 | 143.40 | ARGILLITE,<br>Argillite (with <15% chert) black with <15% streaks of grey chert (quartz veins remobilized into foliation?), thin banded at 35-45 degrees to CA, carbonaceous, strongly folded, <2% fine grained pyrite as lams and dissemination. Trace very fine grained magnetite wisps. | | | | | | | | | | |
| 143.40 | 175.00 | CHERT,<br>Chert-stringer sulphide breccia: pale grey, 15% sulphide (chalcopyrite-po-pyrite) 2% magnetite as veins and matrix to breccia. | | | | | | | | | | |
| 175.00 | 251.00 | MAFIC TUFF CHERT,<br>Mafic T(?)-Chert-stringer sulphide breccia: dark green, strong chloritic alteration, 20% chert, 15% sulphide (po-chalcopyrite-pyrite), <1% very fine grained magnetite; sulphide/oxide as breccia matrix and veins, <5% quartz veins.<br>186.00 191.00 <5% sulphide/oxide.<br>195.00 210.00 90% Chert.<br>213.00 235.00 10% sulphide/oxide as lams.<br>235.00 251.00 90% chert, 8% sulphide/oxide. | 63524 | 187.00 | 188.00 | 1.00 | | | | | | |
| 251.00 | 282.00 | CHERT,<br>Chert: dark grey, very thin banded at 50 degrees to CA, folded, loc. Chlorite +-biotite alteration, trace mg disseminated pyrite, trace chalcopyrite, trace sericite (sheared leucoxene?). | | | | | | | | | | |
| 282.00 | 323.00 | MAFIC TUFF<br>Mafic fT (?) dark green, very strongly folded, foliated at 35-45 degrees to CA, strong chlorite alteration, folded 1 mm epidote-quartz veins, trace disseminated pyrite.<br>299.00 307.00 Trace chalcopyrite, 1% pyrite.<br>307.00 323.00 2.5% chalcopyrite, 1% pyrite, <0.5% po, trace magnetite as lams parallel to foliation. | 63525 | 288.00 | 289.00 | 1.00 | | | | | | |
| 323.00 | 341.00 | ANDESITE TUFF,<br>Andesite cT(?) dark green, strong chlorite alteration, strongly foliated, patchy sulphide+oxide mineralization, appears feldspar phyric in places but may be severly dismembered and brecciated epidote-quartz veins/beds - streaky and folded locally. | 63526 | 337.00 | 338.00 | 1.00 | | | | | | |

| INTERVAL (ft) From: | To: | DESCRIPTION | Sample No. | From (ft) | To (ft) | Inter-val(ft) | Au Oz/T | Ag Oz/T | Cu % | Pb % | Zn % | Field No. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 334.00 336.00 20% very fine grained magnetite, 5% chalcopyrite + po. | | | | | | | | | | |
| 341.00 | 376.50 | CHERT,<br>Chert: dark green, siliceous massive, brecciated and strongly foliated at 40-50 degrees to CA, massive section has vague hint of plag. Crystals, trace chalcopyrite. | 63527 | 367.00 | 368.00 | 1.00 | | | | | | |
| 376.50 | 389.00 | ARGILLITE, CHERT,<br>Argillite-chert breccia: dark grey, ang. Argillite fragments (<1 cm) healed with quartz+sericite, moderate to 50-60 degrees to CA. | | | | | | | | | | |
| 389.00 | 397.00 | MAFIC TUFF<br>Mafic (T)? dark green, strong chlorite alteration, fine grained, strong fo at 70-80 degrees to CA. | | | | | | | | | | |
| 397.00 | 414.00 | CHERT, MAFIC TUFF<br>Magnetite-chalcopyrite (po)-chert/Maf T: 70% very fine grained magnetite, 6% chalcopyrite, 2% po, 10-15% chert/Maf T with strong chlorite alteration, banded at 65-75 degrees to CA. | | | | | | | | | | |
| 414.00 | 434.50 | CHERT, MAFIC TUFF<br>Chert-maf T(?)-int T(?) with <15% very fine grained magnetite, <2% chalcopyrit +po, dark green, strong chlorite alteration, loc vague fp phyric (<0.2 mm) lams/beds, fo/banded at 50 degrees to CA. | | | | | | | | | | |
| 434.50 | 456.00 | ANDESITE TUFF,<br>Andesite T(?) dark green, strong chlorite alteration, strongly fo at 65-75 degrees to CA 'fp phyric', 1-3 mm broken sulphide-amg epidote-quartz vein fragments/bed fragments/feldspar fragments??. | | | | | | | | | | |
| 456.00 | 458.50 | MASSIVE SULPHIDE<br>Magnetite (60%)-chalcopyrite (5%) po? with chert and quartz veins. | | | | | | | | | | |
| 458.50 | 532.00 | MAFIC TUFF<br>Maf T(?) with <15% chert, dark green thin-moderate band, strongly fo at 50-70 degrees CA, strong chlorite (+-biotite) alteration, patchy quartz-epidote alteration, trace chalcopyrite veins, trace po, pyrite magnetite.<br>479.00 491.00 85% resembles cg fp T - 1-3 mm amg quartz-epidote plag. Crystals/vein fragments/bed fragments.<br>505.00 506.00 Bleached, brecciated, healed with quartz vein.<br>509.50 511.00 Bleached, brecciated, healed with quartz veins. | | | | | | | | | | |
| 532.00 | 545.00 | MAFIC TUFF<br>Sulphide-maf T: dark green, strong chlorite alteration, strong fo at 60-70 degrees to CA, 8% chalcopyrite, 6% po as beds parallel to fo and matrix to breccia. | | | | | | | | | | |

| INTERVAL (ft) From: | To: | DESCRIPTION | Sample No. | From (ft) | To (ft) | Inter-val(ft) | Au Oz/T | Ag Oz/T | Cu % | Pb % | Zn % | Field No. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 545.00 | 567.00 | CHERT,<br>Chert-int(?): medium grey green, very thin band at 70-80 degrees to CA, moderate chlorite-sericite alteration, loc. Biotite alteration, <1% chalcopyrite, <1% po in 1-5 mm 'lenses'. | | | | | | | | | | |
| 567.00 | 611.00 | CHERT, MAFIC TUFF<br>Chert-maf T(?)-sulphide: 60% chert, 30% maf T(?), 10% chalcopyrite+po as matrix to breccia and in 'lenses', trace cg disseminated pyrite. | | | | | | | | | | |
| 611.00 | 624.00 | CHERT, MAFIC TUFF<br>Chert-maf T(?): 80% chert, 18% maf T(?), <2% disseminated chalcopyrite-po-pyrite, medium grey+brown, thin band at 55-65 degrees to CA. | | | | | | | | | | |
| 624.00 | 640.00 | LOST CORE<br>End of core. | | | | | | | | | | |
| 640.00 | | END OF HOLE<br>Core missing. | | | | | | | | | | |

Hole No: GD119_58
Project: Granduc
Property:
Claim:
Co-ords: N: 11900.00
(ft) E: 10540.00

Azimuth: 270.0
Dip: 40.0
Length(ft): 153.00
Elevation: (ft) 2940.00
Purpose:

Core Size: 0-153 AQ
Drill Name:
Contractor:
Started:
Completed:
Recovery:

Date Logged:
Logged By:
Date Re-logged: August 16, 1993
Re-logged By: G. Price
Report Printed: 14 Apr, 1994 10:45pm

DOWN HOLE SURVEY TESTS:

| Depth (ft) | Azimuth | Dip | Depth (ft) | Azimuth | Dip | Depth (ft) | Azimuth | Dip | Depth (ft) | Azimuth | Dip | Depth (ft) | Azimuth | Dip | Depth (ft) | Azimuth | Dip |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0.0 | 270.0 | 40.0 | | | | | | | | | | | | | | | |

| INTERVAL (ft) From: | To: | DESCRIPTION | Sample No. | From (ft) | To (ft) | Inter-val(ft) | Au Oz/T | Ag Oz/T | Cu % | Pb % | Zn % | Field No. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| .00 | 30.00 | ANDESITE TUFF, DACITE, Andesite-Dacite fT with <5% chert: dark green grey, thin band at 70-80 degrees to CA, grainy-very fine grained, strong chlorite alteration, trace disseminated pyrite. | | | | | | | | | | |
| 30.00 | 54.00 | CHERT, Chert-mafT: grey brown, thin band, <5% sulphides (po-chalcopyrite-pyrite) trace magnetite, strong chlorite alteration at maf T. | 1053 | 48.00 | 49.00 | 1.00 | | | | | | |
| 54.00 | 136.00 | FELSIC SCHIST, FELSIC BRECCIA, Magnetite (40%) fine grained-coarse grained; chlorite schist (30%); pyrrhotite (15%) as breccia matrix with chalcopyrite (10%) and pyrite (15%). | 1054 | 62.00 | 63.00 | 1.00 | | | | | | |
| | | | 1055 | 65.00 | 66.00 | 1.00 | | | | | | |
| | | | 1056 | 86.00 | 87.00 | 1.00 | | | | | | |
| | | | 1057 | 90.00 | 91.00 | 1.00 | | | | | | |
| | | | 1058 | 93.00 | 94.00 | 1.00 | | | | | | |
| 136.00 | 153.00 | CHERT, MafT-Chert, T. | | | | | | | | | | |
| 153.00 | | END OF HOLE | | | | | | | | | | |

| | | | | | |
|---|---|---|---|---|---|
| Hole No: | GD119_64 | Azimuth: 267.5 | Core Size: 0-359 AQ | Date Logged: | |
| | | | Drill Name: | Logged By: | |
| Project: | Granduc | Dip: 35.0 | Contractor: | | |
| | | | | Date Re-logged: | August 16, 1993 |
| Property: | | Length(ft): 359.00 | Started: | Re-logged By: | G. Price |
| | | | Completed: | | |
| Claim: | | Elevation: (ft) 2258.48 | Recovery: | Report Printed: | 14 Apr, 1994 10:45pm |
| Co-ords: N: | 11897.34 | | | | |
| (ft) E: | 10540.76 | Purpose: | | | |

DOWN HOLE SURVEY TESTS:

| Depth (ft) | Azimuth | Dip | Depth (ft) | Azimuth | Dip |
|---|---|---|---|---|---|
| 0.0 | 267.5 | 35.0 | | | |
| 190.0 | | 32.0 | 350.0 | | 28.5 |

| INTERVAL (ft) From: | To: | DESCRIPTION | Sample No. | From (ft) | To (ft) | Inter-val(ft) | Au Oz/T | Ag Oz/T | Cu % | Pb % | Zn % | Field No. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| .00 | 87.00 | ANDESITE TUFF,<br>Andesite T(LT?): dark green thin bedded/strongly foliated at 75-90 degrees to CA, grainy feldspathic (rare subh. Elongate stretched white crystals), strong chlorite alteration, cross-cut by <8% quartz-cal veins, trace py as lams +disseminations.<br>.00 7.50 Silicified coarse grained (diorite??), 3% disseminated pyrite.<br>13.50 20.00 Weak, patchy silicification, breccia.<br>22.00 44.00 LOST CORE Missing core.<br>67.00 69.00 0.5% cal. Quartz veins. | 63535 | 67.00 | 68.00 | 1.00 | | | | | | |
| 87.00 | 122.00 | CHERT,<br>Chert (mafT) <10% maf T: medium grey, thin bedded at 75-85 degrees to CA, strongly folded, thinly interfoliated chert + maf T (ie no clean chert sections), 5-10% disseminated sulphides (chalcopyrite, po, pyrite), throughout, crosscut by <10% quartz veins (up to 15 cm thick). | 63536 | 121.00 | 122.00 | 1.00 | | | | | | |
| 122.00 | 137.00 | CHERT, ARGILLITE,<br>Chert-argillite (mafT?): dark grey, 25% chlorite schist (=maf t), thin bedded at 70-80 degrees to CA, 4% chalcopyrite, 3% po, 1% pyrite >2% magnetite as stringers and lams. | | | | | | | | | | |
| 137.00 | 160.00 | LOST CORE<br>Missing core. | | | | | | | | | | |

| INTERVAL (ft) From: | To: | DESCRIPTION | Sample No. | From (ft) | To (ft) | Inter-val(ft) | Au Oz/T | Ag Oz/T | Cu % | Pb % | Zn % | Field No. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 160.00 | 162.50 | CHERT, ARGILLITE,<br>Chert-argillite (maf T?) dark grey, 15% argillite, thin bedded at 80-90 degrees to CA, 3% very fine grained disseminated pyrite. | | | | | | | | | | |
| 162.50 | 253.00 | Mineralized mafT(?): dark green, strong chlorite alteration, banded at 70-80 degrees to CA, 6% chalcopyrite, 8% po, 8% pyrite, 5% very fine grained magnetite - as breccia matrix. Lams and dissemination, cross-cut by <3% quartz veins subparallel-parallel to fo. | | | | | | | | | | |
| 253.00 | 258.00 | CHERT,<br>Chert- int T(?) : dark grey, thin bedded at 80-90 degrees to CA, strongly folded, <2% po + pyrite as veins. | | | | | | | | | | |
| 258.00 | 329.00 | LOST CORE<br>Missing? (block at 258 says EOH, but core exists from 329-359??). | | | | | | | | | | |
| 329.00 | 359.00 | ANDESITE TUFF, CHERT,<br>Felsic T-chert-maf T?: medium grey green brown, thin bedded, strongly contorted folds, 60% grey grainy 'fels T' intimately interbedded with chert and chloritic 'maf T, 3 cm msv. Magnetite + chalcopyrite at 345', trace fine grained po + pyrite as lams. | 63537 | 340.50 | 341.50 | 1.00 | | | | | | |
| 359.00 | | END OF HOLE | | | | | | | | | | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Hole No: | GD119_66 | Azimuth: | 270.0 | Core Size: | 0-501 AQ | Date Logged: | |
| | | | | Drill Name: | | Logged By: | |
| Project: | Granduc | Dip: | -40.0 | Contractor: | | | |
| | | | | | | Date Re-logged: | August 16, 1993 |
| Property: | | Length(ft): | 501.00 | Started: | | Re-logged By: | G. Price |
| | | | | Completed: | | | |
| Claim: | | Elevation: (ft) | 2255.00 | Recovery: | | Report Printed: | 14 Apr, 1994 10:46pm |
| Co-ords: N: | 11900.00 | | | | | | |
| (ft) E: | 10560.00 | Purpose: | | | | | |

DOWN HOLE SURVEY TESTS:

| Depth (ft) | Azimuth | Dip | Depth (ft) | Azimuth | Dip | Depth (ft) | Azimuth | Dip | Depth (ft) | Azimuth | Dip | Depth (ft) | Azimuth | Dip | Depth (ft) | Azimuth | Dip |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0.0 | 270.0 | -40.0 | | | | | | | | | | | | | | | |

| INTERVAL (ft) From: | To: | DESCRIPTION | Sample No. | From (ft) | To (ft) | Inter-val(ft) | Au Oz/T | Ag Oz/T | Cu % | Pb % | Zn % | Field No. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| .00 | 77.50 | ANDESITE TUFF,<br>Andesite T(?) dark green, strongly foliated at 30-40 degrees to CA, 40% grey 1-3 mm elongated sheared feldspar crystals(?) strong chlorite alteration, trace disseminated pyrite, cross-cut by <3%.2-10 cm quartz-cal veins (with local bleached envelopes), weak epidote alteration.<br>50.00 60.50 QUARTZ VEIN, 35% bleached, 10% quartz vein. | 63528 | 13.00 | 14.00 | 1.00 | | | | | | |
| 77.50 | 92.00 | DIORITE,<br>'Diorite' (dyke?) medium dark green grey, very coarse grained with feldspars up to 0.5 cm, grainy, brecciated, mod. Irregular foliation at 50-60 degres to CA, strong chlorite alteration, trace disseminated pyrite cross-cut by <5% quartz cal. Veins. | 63529 | 77.50 | 78.50 | 1.00 | | | | | | |
| 92.00 | 175.50 | ANDESITE TUFF,<br>Andesite (Ba)T: dark green <15% elongate sheared stretched 'pyroxene;, strongly fo at 25-30 degrees to CA, grainy fp phyric, strong chlorite (ep) alteration, cross-cut by <3% quartz-cal veins, trace disseminated pyrite.<br>92.00 140.00 ANDESITE FLOW, Flow.<br>140.00 162.00 Tuff, thin bedded, 2-3% coarse grained disseminated pyrite.<br>162.00 175.50 CHERT, 5-10% chert. | 63530<br>63531 | 114.00<br>162.00 | 115.00<br>163.00 | 1.00<br>1.00 | | | | | | |
| 175.50 | 258.00 | CHERT,<br>Chert (maf T- argillite): <15% maf T (strong chlorite alteration), <1% | 63532 | 180.00 | 181.00 | 1.00 | | | | | | |

| INTERVAL (ft) From: | To: | DESCRIPTION | Sample No. | From (ft) | To (ft) | Inter-val(ft) | Au Oz/T | Ag Oz/T | Cu % | Pb % | Zn % | Field No. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | graphitic argillite; thin bedded, strongly folded, foliated, boudinaged and brecciated, variable chlorite-biotite alteration, trace-0.5% chalcopyrite as 1-2 cm massive 'lenses' and disseminated/veins, <1% pyrrhotite as veins, trace pyrite.<br>175.50 195.00 95% Chert.<br>195.00 207.00 80% maf T.<br>207.00 247.50 85% Chert.<br>247.50 253.00 90% brown biotitic chert with 5% sulphide.<br>253.00 258.00 60% brown biotitic chert with 4% sulphide. | | | | | | | | | | |
| 258.00 | 435.50 | ANDESITE TUFF,<br>Andesite T(?): dark green strongly foliated at 30-40 degrees to CA, grainy feldspars <0.3 mm, strong chlorite-biotite alteration, trace-1% sulphide (po-chalcopyrite-pyrite) in.1-2 cm stringers, cross-cut by <2% cal. Quartz veins, <1% very fine grained magnetite.<br>281.00 288.00 60% brown biotitic chert.<br>304.00 314.00 6% po+chalcopyrite+pyrite, 10% very fine grained magnetite.<br>314.00 340.00 Broken and ground core.<br>351.00 372.00 8% pyrite, 2% po, 1% chalclpyrite as stringers.<br>386.00 391.00 1% chalcopyrite, 1% po, 1% pyrite.<br>399.00 399.50 10% po, 2% chalcopyrite.<br>426.00 435.50 <0.1% sulphides. | 63533 | 428.00 | 429.00 | 1.00 | | | | | | |
| 435.50 | 501.00 | CHERT,<br>Chert-(maf T): <10% maf T, chlorite altered; medium dark grey brown, biotite altered, thin bedded at 50-60 degrees to CA, strongly folded, trace chalcopyrite, pyrite as dissem. + veins, cross-cut by <3% quartz-cal veins. | 63534 | 482.00 | 483.00 | 1.00 | | | | | | |
| 501.00 | | END OF HOLE | | | | | | | | | | |

Hole No: GD146_3
Project: Granduc
Property:
Claim:
Co-ords: N: 14600.00
(ft) E: 11475.00

Azimuth: 325.0
Dip: 7.0
Length(ft): 1019.00
Elevation: 2625.00
(ft)
Purpose:
Poor preservation of footage blocks, practically illegible.

Core Size:
Drill Name:
Contractor:
Started: November , 1982
Completed:
Recovery: Poor preservation of footage blocks, practically illegible.ort Printed: 14 Apr, 1994 10:46pm

Date Logged:
Logged By: Fraser
Date Re-logged: August 12, 1993
Re-logged By: G. Price

DOWN HOLE SURVEY TESTS:

| Depth (ft) | Azimuth | Dip |
|---|---|---|
| 0.0 | 325.0 | 7.0 |
| 500.0 | | 10.0 |
| 1019.0 | | 18.0 |

| INTERVAL (ft) From: | To: | DESCRIPTION | Sample No. | From (ft) | To (ft) | Inter-val(ft) | Au Oz/T | Ag Oz/T | Cu % | Pb % | Zn % | Field No. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| .00 | 187.00 | ANDESITE FLOW,<br>Andesite flow: dark green, massive, fp+py phyric (randomly oriented crystals), <10% 0.2-1.0 mm euh. Plag. Laths, <1% 2 mm stubby pyroxene crystals, moderate-strong pervasive chlorite alteration, patchy epidote alteration, <10% quartz-epidote (cal.) veins, <15% 2-20 cm thick and m-f T sections (mod. Fo at 35-55 degrees to CA).<br>84.00 163.50 Andesite T-(L)T: strongly foliated at 40-50 degrees to CA, wispy clasts <2 cm. | 63501<br>1073<br>1074 | 17.00<br>18.00<br>186.00 | 18.00<br>19.00<br>187.00 | 1.00<br>1.00<br>1.00 | | | | | | |
| 187.00 | 289.00 | ANDESITE TUFF,<br>Andesite T (flow?) dark green-green-brown, moderately foliated to massive, local feldspar phyric sections (<20 cm, <15% 0.5-1.0 euh fp laths/blocky crystals), strong chlorite +- biotite alteration, <8% cal. Quartz veins, 0.5-1.0% mg disseminate pyrite, trace chalcopyrite+po stringers.<br>266.00 289.00 QUARTZ VEIN, 10-15% quartz cal. Veins. | 1075 | 270.00 | 271.00 | 1.00 | | | | | | |
| 289.00 | 313.00 | ANDESITE FLOW,<br>Andesite-int flow (cT?) medium green, fp phyric, >20% 0.5-2.0 mm euh-subrounded fp crystals, grainy massive, strong chlorite alteration, local strong foliation, locally bleached + brecciated cross-cut by 10-15% quartz cal. Veins, trace coarse grained dissem. Pyrite.<br>303.00 308.00 Bleached, ak-cal. Altered brecciaed healed with coarse grain dissem. Py. | | | | | | | | | | |

| INTERVAL (ft) From: | To: | DESCRIPTION | Sample No. | From (ft) | To (ft) | Inter-val(ft) | Au Oz/T | Ag Oz/T | Cu % | Pb % | Zn % | Field No. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 308.00 313.00 FAULT Fault? rubble core with slickensides. | | | | | | | | | | |
| 313.00 | 409.50 | ANDESITE TUFF,<br>Andesite T (?) dark green, medium grained, strong fo at 70-80 degrees to CA grainy feldspathic appearance, <2% fine grained epidote-quartz lans parallel to fo, strong pervasive chlorite alteration, patchy strong biotite alteration, cross-cut by <5% quartz cal-epidote veins, trace dissem. Pyrite, trace po, locally bleached with epidote quartz vein+envelopes.<br>385.00 409.50 Brecciated, healed with chlorite + quartz cal. Veins and minor epidote veins. | 1076<br>63502 | 336.00<br>350.00 | 337.00<br>351.00 | 1.00<br>1.00 | | | | | | |
| 409.50 | 480.00 | FELSIC BRECCIA,<br>Bleached? pale grey, white, strong quartz-sericite alteration, quartz sericite healed breccia with vague subround clasts, knots at epidote (<3%, <2 cm), trace dissem. Pyrite, local leucoxene dust, trace dissem. Pyrite.<br>433.00 434.50 QUARTZ VEIN, Quartz vein-subparallel to CA (5-15 degrees).<br>450.50 453.00 QUARTZ VEIN, Quartz vein parallel - 15 degrees to CA. | 63503<br>63504<br>1077 | 430.00<br>435.00<br>476.00 | 431.00<br>436.00<br>477.00 | 1.00<br>1.00<br>1.00 | | | | | | |
| 480.00 | 556.00 | ANDESITE TUFF,<br>Andesite T(?)-LT: dark green, mod. Fo increasing with depth, grainy <10% epidote quartz wisps, loc <2 cm thick fo bound quartz-epidote breccia, loc. Ep knots to 10 cm, strong perv. Chlorite alteration, trace -2% coarse grained dissem. Pyrite, trace po, trace chalcopyrite splashes, <5% cal.quartz veins parallel to fo, locally ptygmatic and cross-cutting.<br>542.00 544.00,3% stubby 0.5-2.0 mm euh. Pyroxene crystals.<br>549.00 556.00 Strongly fo at 55-65 degrees to CA, strong epidote alteration, increasing mottled feldspathic appearance, 1-8 cm intervals with vague interlocking plag. Laths (up to 3 mm). | 63505 | 550.00 | 551.00 | 1.00 | | | | | | |
| 556.00 | 894.00 | DIORITE,<br>Diorite: feldspar-quartz-kspar, very coarse grained crystals up to 2 cm, massive to strongly foliated, broken crystals, crystals cross-cut by chlorite veinlets, very hard, trace dissem. Pyrite, strong 'quartz-chlorite' alteration, trace dissem. Pyrite, <10% streaky 2-10 cm chlorite 'bands'.<br>588.00 636.00 ANDESITE TUFF, Andesite T(??): dark green, strongly fo, grainy, strong chlorite +/- biotite alteration, laminated at 60-70 degrees to CA, 1% coarse grained dissem. Pyrite.<br>645.30 653.50 QUARTZ VEIN, 70% quartz vein.<br>664.00 700.00 Moderate-strong foliation, decreasing in grain size down-hole.<br>700.00 756.00 Patchy bleaching quartz-epidote alteration associated with quartz veins. | 1078<br>1079<br>1080<br>1081<br>63506 | 575.00<br>644.00<br>667.00<br>765.00<br>872.00 | 576.00<br>645.00<br>668.00<br>766.00<br>873.00 | 1.00<br>1.00<br>1.00<br>1.00<br>1.00 | | | | | | |

| INTERVAL (ft) From: | To: | DESCRIPTION | Sample No. | From (ft) | To (ft) | Inter-val(ft) | Au Oz/T | Ag Oz/T | Cu % | Pb % | Zn % | Field No. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 894.00 | 1019.00 | MAFIC INTRUSIVE,<br>Maf-(int.)T: dark green, very strong foliated, at 20-60 degrees to CA, thin bed parallel to fo (=compositional layering, strong perv. Chlorite alteration, <15% cal.-quartz veins parallel to foliation, local breccia + folding. | 1082 | 903.00 | 904.00 | 1.00 | | | | | | |
| | | | 1083 | 995.00 | 996.00 | 1.00 | | | | | | |
| 1019.00 | | END OF HOLE | | | | | | | | | | |