

ARIS SUMMARY SHEET

District Geologist, Smithers

Off Confidential: 89.08.18

ASSESSMENT REPORT 18054

MINING DIVISION: Liard

PROPERTY: Grace  
LOCATION: LAT 57 11 00 LONG 131 27 00  
UTM 09 6340243 351913  
NTS 104G03W

CLAIM(S): Grace 1-2  
OPERATOR(S): Pioneer Metals  
AUTHOR(S): Blusson, S.L.  
REPORT YEAR: 1988, 11 Pages

COMMODITIES

SEARCHED FOR: Copper,Gold

GEOLOGICAL

SUMMARY: Interbedded basic volcanics including andesite tuffs, breccia, with augite basalt flows and clastic sediments of Triassic age cut by minor syenite intrusives - including possible hydrothermal breccias and fine-grained feldspar porphyry dykes.

KEYWORDS: Triassic,Andesite,Tuff,Breccia,Basalt,Clastic,Dykes  
Feldspar porphyry

WORK

DONE: Geological,Geochemical  
GEOL 400.0 ha  
Map(s) - 1; Scale(s) - 1:10 000  
HMIN 4 sample(s) ;AU,CU  
ROCK 8 sample(s) ;AU,CU

|   |       |
|---|-------|
| LOG NO: 5417                                      | RD. 2 |
| ACTION: Date received report back from amendments |       |
| FILE NO:  |       |

1130

Record Numbers 4162, 4163

ASSESSMENT REPORT  
 GRACE 1 AND 2 CLAIMS  
 LIARD MINING DIVISION  
 NTS 104G/3W

REGIONAL BRANCH  
 ASSESSMENT REPORT

10-054

LAT. 57 11'N  
 LONG. 131 27'W

OWNER/OPERATOR: PIONEER METALS CORPORATION

FILED

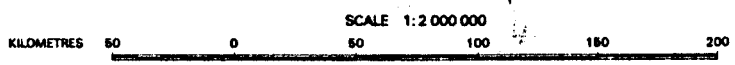
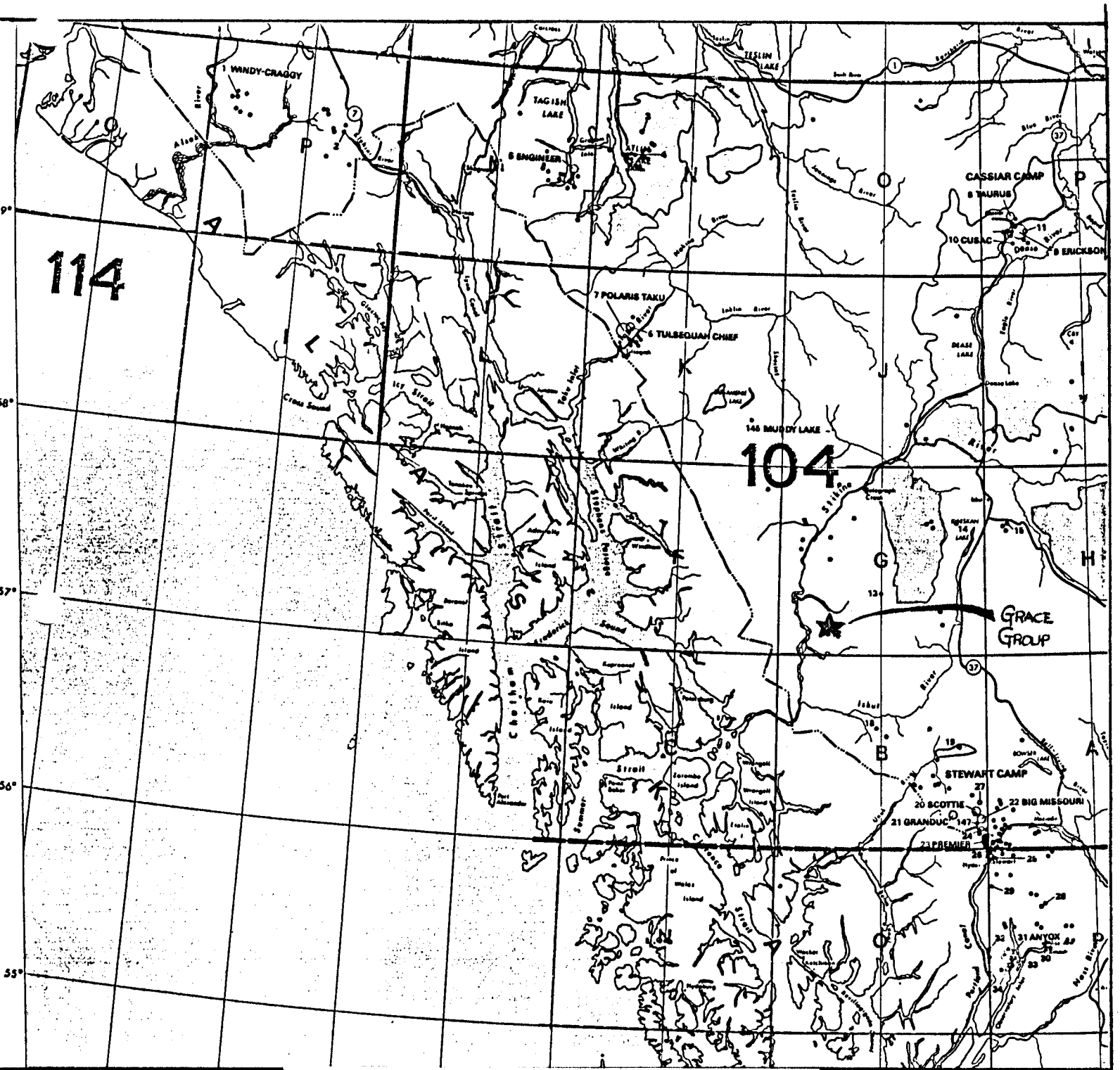
SEARCHED  
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 M.R. # \_\_\_\_\_ \$ \_\_\_\_\_  
 VANCOUVER, B.C.

VANCOUVER, B.C.  
 NOVEMBER 18, 1988

AUTHOR: Stewart L. Blusson, PhD.

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GRACE CLAIMS, B.C.  
 Index Map.

MIO4G/3W

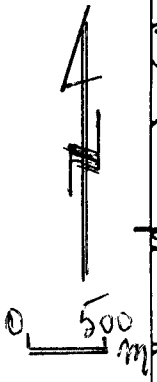
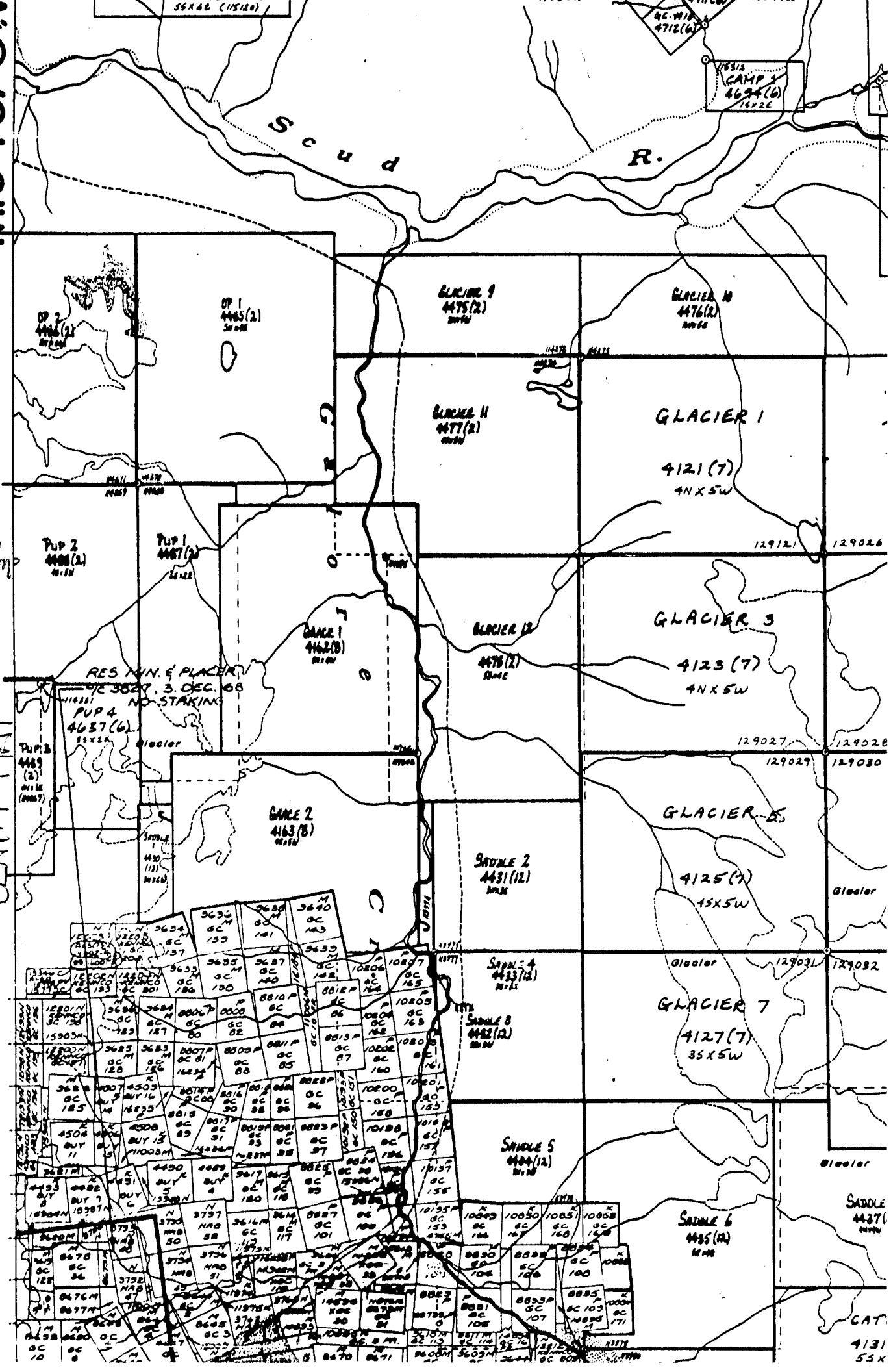
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5

4

CLAIM MAP

N AP 104G/4E



55866 (15128) 1

4C-1116 4712(6)

18512 CAMP 2 4694(6) 16222

Scud R.

GLACIER 1 4475(2) MIN

GLACIER 10 4476(2) MIN

GLACIER 11 4477(2) MIN

GLACIER 1

4121(7) 4N X 5W

OP 2 4486(2) MIN

OP 1 4485(2) MIN

PUP 2 4488(2) MIN

PUP 1 4487(2) MIN

GLACIER 12 4462(8) MIN

GLACIER 12 4478(2) MIN

GLACIER 3

4123(7) 4N X 5W

RES. MIN. & PLACER NO STAKING

PUP 4 4637(6) MIN

PUP 3 4489(2) MIN

GLACIER 2 4463(8) MIN

SADDLE 2 4431(12) MIN

GLACIER 5

4125(7) 4S X 5W

SADDLE 4 4433(12) MIN

GLACIER 7

4127(7) 3S X 5W

SADDLE 5 4404(12) MIN

SADDLE 6 4495(12) MIN

SADDLE 4437(12) MIN

CAT 4131 55X

GRACE CLAIMS  
BRITISH COLUMBIA

INTRODUCTION

A. Location and Access

The Grace mineral claims are located within the Coast Range about midway between the Stewart and Muddy Lake mining camps in Northwestern British Columbia (See index map).

Access for heavy equipment is provided by the navigable Stikine River situated about 12 km to the east and its tributary the Scud River 5 km to the north.

The Cassiar-Hazelton Highway (37) reaches its closest point near the Bob Quinn maintenance camp 78 km to the east.

B. Property

The common legal corner post for Grace 1 (5N x 4W) and Grace 2 (5W x 4S) is located 5 km due south of Scud River on the west bank of Galore Creek, and 7 km NNE of the Stikine Copper airstrip. The Grace 2 claim group borders the northern boundary of a large block of claims held by Kennco & HBMS, centred on their impressive copper porphyry gold deposit known as Galore Creek; for which published reserves are 113 million tonnes of 1.06% copper and over .4 gms gold.

C. Topography and Climate

The topography and climate of the region can be described simply by two words, "difficult" and "harsh". Given such physical conditions, development is constrained and exploration tends to go in spurts with long periods of little or no activity, as witnessed at Galore Creek since the late sixties.

On the Grace Claims, elevations range from 1,500 feet in the valley of Galore Creek to peaks over 6,500 feet on the west boundary. Shear cliffs tens of meters high are common on the west, while the lower areas on the east are covered with debris laden snow slides well into the summer or by near impregnable underbrush composed of slide alder, devils club and stinging nettle.

GRACE CLAIMS  
BRITISH COLUMBIA

GENERAL GEOLOGY

The present field investigation consisted of several traverses over most of the property combined with selected helicopter spot checks of the property boundary and hard to get geologic features.

At the outset it became clear that most of the property was overburden covered, especially the part on structural projection with the large porphyry copper deposit to the south. Rocks exposed are principally basic volcanics, including andesitic tuffs, breccias, and augite porphyry basalt flows and dykes. Fine-grained feldspar porphyry dykes that are locally intensely silicified, cut the older volcanic rocks.

High in the ridge to the west and extending beyond the property boundary is a generally west dipping sedimentary sequence of argillite to conglomerate with some calcareous members. Tuff clasts and beds within the sediments resemble the volcanic suite, suggesting a common age. Feldspar porphyry dykes likewise cut the sediments.

STRUCTURE AND ALTERATION

To guide prospecting, emphasis was placed on outlining zones of shearing, fracturing, brecciation and alteration. Alteration was noted in two principal settings: near the base of the well exposed cliffs at about centre of the claim group adjacent to feldspar porphyry dyke contacts, and in complexly fractured andesitic rock where exposed in a few stream cuts on the lower slopes. The well exposed sediments and volcanics on the upper reaches on the west side of the property are essentially unfractured and fresh, even where cut by porphyry and basaltic dykes.

The complexly fractured and altered zone could be much more extensive than the few outcrops suggest, possibly occupying the entire lower slope west of Galore Creek. The general trend appears NNE on strike with a major break in the Galore Creek porphyry. However, Galore Creek occupies a u-shaped valley with a deep bottom fill of glacial deposits, and slide debris covers the slopes above, even filling in most stream courses.

**GALORE CLAIMS  
BRITISH COLUMBIA**

**SAMPLING**

Meaningful stream sediment samples could only be taken upstream from the slide deposit and as such only test the well exposed upper reaches of unaltered rock. All the rock chip and heavy mineral sediment samples taken essentially test this area. The lack of anomalous results in both copper and gold, merely confirms the direct geologic observation of limited mineral potential on the upper slopes and underscores the need for an exploration technique to "see" below the cover on the lower slopes; either basal overburden sampling or geophysical methods.

Stream sediment samples were screened to 10, 50 and 100 mesh, the coarsest fractions being concentrated by panning, heavy liquid, and magnetic separation and the minus 100 mesh fraction by heavy liquid and magnetic separation only. After examination by binocular microscope to identify and count sulfide particles, the concentrates were digested in aqua regia and MIBK extracts were analyzed for gold with a zeeman modulated scintrex AAZ-2 atomic absorption spectrophotometer. Similarly analyzed rock samples were first slabbed by diamond saw and examined under binocular microscope to check for any sulfide and silicate alteration.

As a further check on geochemistry results, composite splits of the rock chip samples and minus 50 mesh fractions of stream sediment samples were sent to Bondar-Clegg for analysis. Results are shown on the traverse map and tabulated in Appendix C.



GALORE CLAIMS  
BRITISH COLUMBIA

APPENDIX A

STATEMENT OF EXPENDITURES

|   |         |
|---|---------|
| Geologist (3 days @ \$500/day)                  | \$1,500 |
| Assistant (3 days @ \$250/day)                  | 750     |
| Car Rental (Terrace to Bob Quinn)               | 330     |
| Helicopter Charter (Bob Quin - Galore Creek)    | 1,646   |
| Air Fare (Vancouver - Terrace (2))              | 835     |
| Meals & Accommodation (6 man days @ \$50)       | 300     |
| Field Equipment                                 | 205     |
| Head Office Expenditure                         | 250     |
| Rock cutting & Petrologic Interpretation        | 350     |
| Heavy mineral concentration of sediment samples | 225     |
| Binocular microscope and geochemical analysis   | 225     |
| Report Preparation                              | 250     |
|   | <hr/>   |
| TOTAL EXPENDITURES                              | \$5,641 |

GALORE CLAIMS  
BRITISH COLUMBIA

APPENDIX B

STATEMENT OF QUALIFICATIONS - STEWART L. BLUSSON

Dr. Stewart L. Blusson is a graduate of the University of British Columbia (B. Sc. Geology) and of the University of California Berkely (Ph.D. Geology and Geochemistry). Between 1965 and 1981 Dr. Blusson worked as a research geologist for the Geological Survey of Canada and is presently Vice President of Explorations for Pioneer Metals Corporation.

  
\_\_\_\_\_  
STEWART L. BLUSSON, B. Sc., Ph.D.

GALORE CLAIMS  
BRITISH COLUMBIA

APPENDIX C

SAMPLE ANALYSIS

| <u>Sample Number</u> | <u>Au PPB</u> | <u>Cu PPM</u> |
|----------------------|---------------|---------------|
| T1 GC 1              | 586           | 169           |
| T1 GC 2              | 775           | 191           |
| T1 GC 4-80           | 45            | 36            |
| T2 GC 3              | 27            | 41            |
| R2 R1                | <5            | 161           |
| R2 R2                | <5            | 135           |
| R2 R3                | <5            | 134           |
| R2 R4                | 33            | 119           |
| R2 R5                | <5            | 75            |
| R2 R6                | 61            | 117           |
| R2 R7                | 60            | 205           |

Bondar-Clegg & Company Ltd.  
 130 Pemberton Ave.  
 North Vancouver, B.C.  
 V7P 2R5  
 (604) 985-0681 Telex 04-352667



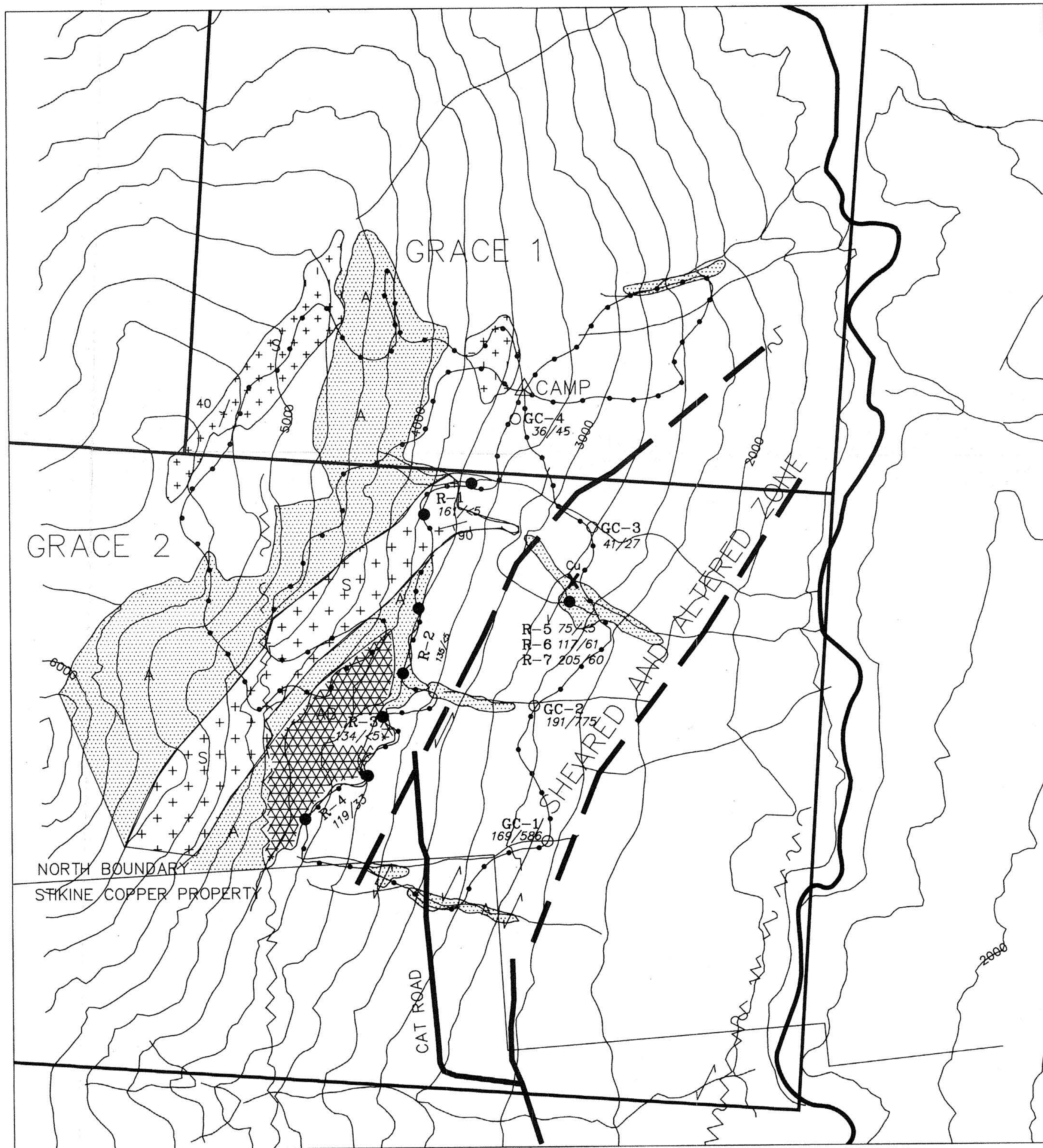
**Geochemical  
 Lab Report**

REPORT: V89-01514.D

PROJECT: NONF GIVEN

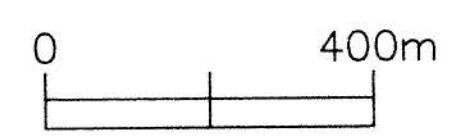
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| SAMPLE NUMBER | ELEMENT UNITS | Au PPM | Cu PPM |
|---------------|---------------|--------|--------|
| T1 GC 1       |               | 586    | 169    |
| T1 GC 2       |               | 775    | 191    |
| T1 GC 4 80    |               | 45     | 36     |
| T2 GC 3       |               | 27     | 41     |
| R2 R1         |               | <5     | 161    |
| R2 R2         |               | <5     | 175    |
| R2 R3         |               | <5     | 134    |
| R2 R4         |               | 33     | 119    |
| R2 R5         |               | <5     | 75     |
| R2 R6         |               | 61     | 117    |
| R2 R7         |               | 60     | 205    |



- AUGITE BALSALT
- ANDESITIC ROCKS—mainly tuffs
- SEDIMENTARY ROCKS
- TRAVERSE ROUTES
- AREA OF OUTCROP
- SHEARING
- BEDDING
- FAULT (defined, projected)
- HEAVY MINERAL STREAM SAMPLE (Assay Cu ppm/AuPPb)
- ROCK CHIP SAMPLE (Assay Cu ppm/AuPPb)

● R-4 ●  
 REPRESENTS A SERIES OF CHIPS TAKEN BETWEEN THESE POINTS



Pioneer Metals Corporation  
 GRACE GROUP  
 TRAVERSE & OUTCROP MAP  
 GEOLOGICAL BRANCH  
 ASSESSMENT REPORT

M1877  
**18,054**