82-448-10485

DU PONT OF CANADA EXPLORATION LIMITED

GEOLOGICAL AND GEOCHEMICAL REPORT

ON THE PARK 1-5 CLAIMS

LIARD MINING DIVISION

LAT. 57°46'N, LONG. 127°45'W

NTS: 94-E-13 E&W

OWNER OF CLAIMS: Du Pont of Canada Exploration Limited OPERATOR: Du Pont of Canada Exploration Limited

Author J. Drown Date Submitted:

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MINERAL RESOURCES BRANCH ASSESSMENT REPORT



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## I. INTRODUCTION

## a. Location

The PARK 1-5 claims are located in northcentral British Columbia within the Liard Mining Division, NTS 94-E-13. The property is located 10 kilometres northwest of Mt. Albert Dease. The claims cover both the north and south walls, and the valley of an unnamed creek that flows southeast to Park Creek. Elevations on the property range from 1220 metres above sea level where the creek crosses the eastern boundary to 1985 metres in the northeast and southeast corners of the claim group. The valley floor is covered with low shrubs and grasses, and at elevations in excess of 1525 metres, talus slopes and alpine flora prevail.

### b. Access

At present, access to the property is via helicopter from the Sturdee Valley airstrip which is located 72 kilometres to the southeast of the claims.

Smithers, which represents the major supply centre in the region, is situated 260 kilometres south of the Sturdee Valley airstrip.

## c. <u>Claim Status</u>

The PARK 1-5 claims represent 63 contiguous units, as listed below:

Claim	(Units)	Record No.	Tag No.	Date Recorded
PARK 1	(15)	1492	45869	1980 July 25
PARK 2	· /	1491	45870	1980 July 25
PARK 3	• •	1493	45871	1980 July 25
PARK 4		2218	76121	1981 Oct. 13
PARK 5	(8)	2219	76120	1981 Oct. 13

Adjoining to the south and west are the BILL 1 and 3 claims (Record #1199 and 1201).

The PARK claims are presently owned and operated by Du Pont of Canada Exploration Limited. The property was staked as a result of the discovery of an auriferous heavy mineral concentrate anomaly within the creek which crosses the eastern boundary.

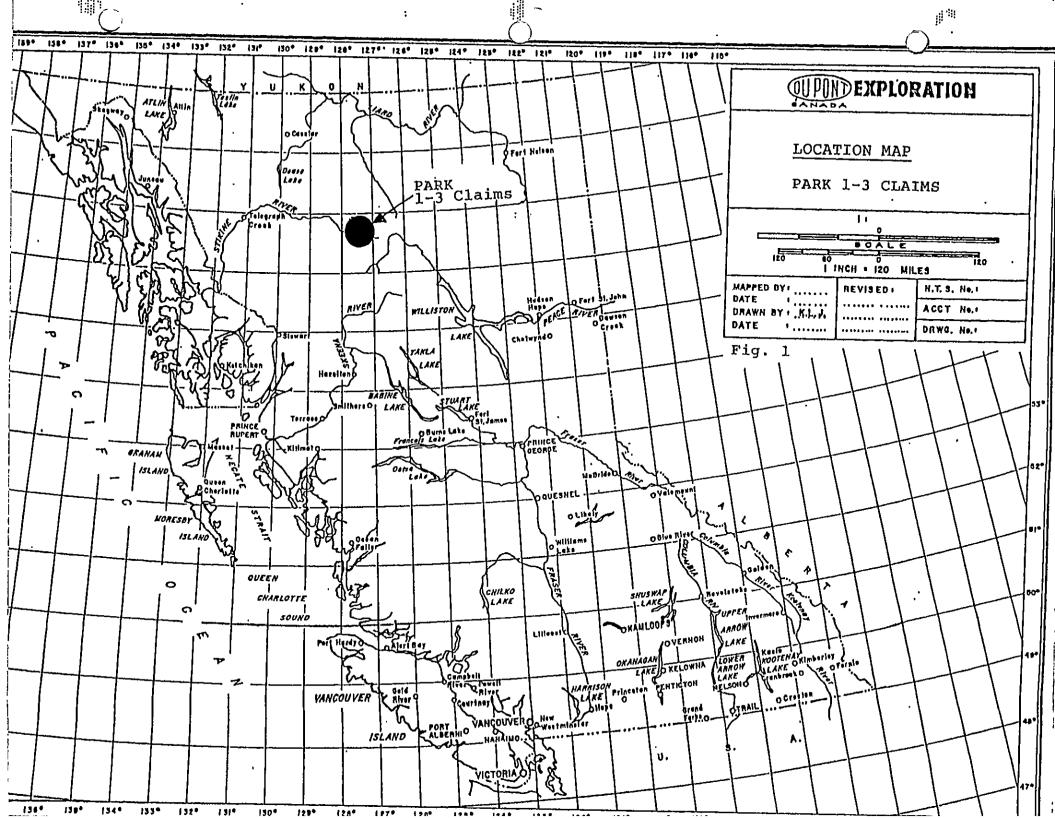
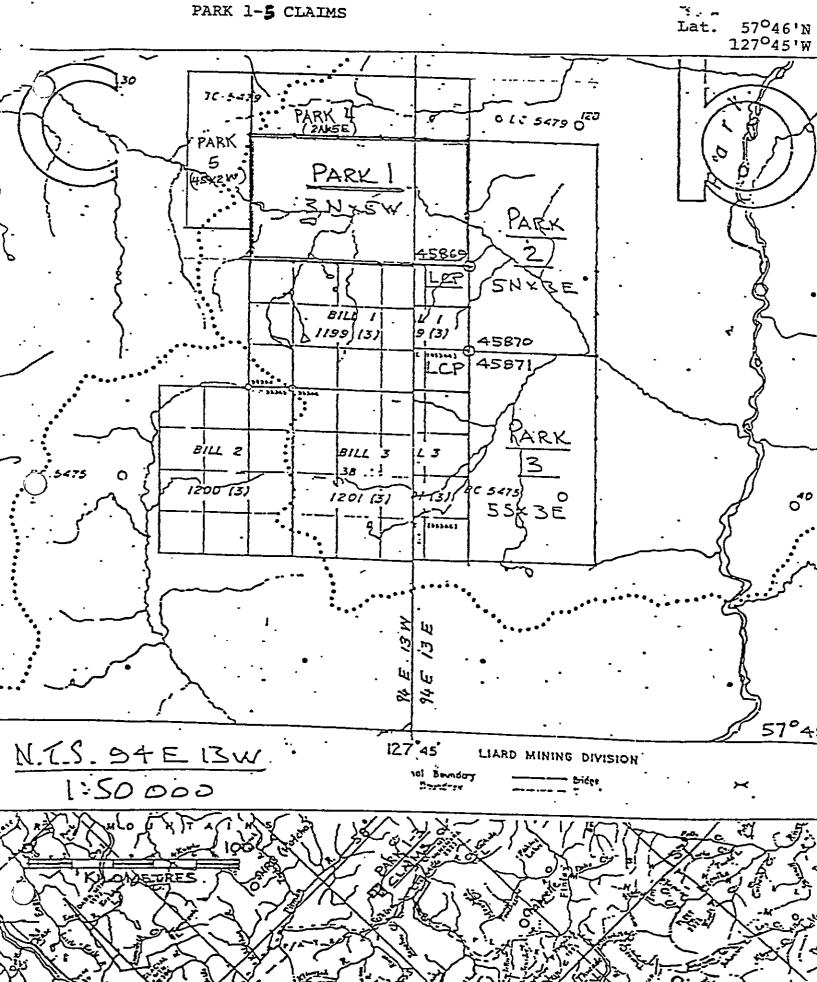


Fig. 2 INDEX MAP

PARK 1-5 CLAIMS



## d. <u>History and Economic Assessment of the Property</u>

PARK 1, 2 and 3 claims were staked in 1980 in response to several auriferous heavy mineral concentrates in the creeks draining the PARK area. No evidence exists for previous mineral exploration in the claim area although the BILL claims lie immediately south of the PARK claims. Follow-up soil, silt and rock geochemistry in conjunction with geological mapping and prospecting in 1980 and 1981 led to the location of gold-bearing rock and soil on PARK 1 in a gossanous andesitic feldspar porphyry. Continued detailed sampling of this area prompted the staking of PARK 4 and 5 claims in 1981 September.

Presently the extent and gold content of the volcanic rocks below this zone is not yet known. Detailed rock sampling and trenching of the zone are planned for 1982.

#### e. Summary of Work Performed

Between 1981 June 11 and 1981 September 16, 14 person days were spent on the claims collecting 47 rock, 8 bulk sediment, 16 silt and 188 soil samples. Sampling was done along creeks at random intervals along lines parallelling creeks and along grid lines at regular intervals of 20 to 100 metres. Following the location of an auriferous zone on PARK 1, a rock-soil grid was established over the zone. Detailed prospecting and geological mapping at a scale of 1:10 000 was completed using air photographs for control.

#### GEOLOGY

II.

#### a. Introduction

The PARK claims are underlain by Permian phyllite, chert and tuffaceous sediments and Triassic fine grained andesitic to dacitic volcanic rocks which have been intruded along the northeastern boundary by a quartz monzonite-diorite batholith. Associated with the emplacement of the intrusion is the development of impressive gossans near the contact. Chert, containing abundant (10-15%) disseminated pyrite appears to be chiefly responsible for the gossans.

Gossans on PARK 1 appear to be the result of disseminated pyrite in a silicified dacite to andesite

2.

feldspar porphyry. Here the volcanic rocks are cut by occasional 0.2 to 0.5 m quartz veins.

Gossans on PARK 3 are the result of weak carbonate and pyrite alteration within phyllites probably caused by the intrusion of diorite dykes in the immediate area. The distribution of rock types is shown on Dwg. No. AR.81-51.

- b. Lithology
  - i) Phyllite (Unit 1A)

Occurring within PARK 1 and 3, this unit is grey-green in colour, is locally weakly chloritized and exhibits a well developed schistosity. Within the schistose layers occur frequent quartz lenses and sweats up to 10 cm wide. These quartz bodies often contain chalcocite, galena, and pyrite in massive blobs. Significant Ag values (321 ppm) are reported from these sulphide blobs.

Minor carbonate alteration occurs in PARK 3 associated with disseminated pyrite and quartz sweats along foliation in the phyllite.

The attitude of the phyllites is northwesterly with shallow northeasterly dips creating several dip-slope type hills and hogsback ridges.

ii) Chert (Unit 1)

This unit occurs extensively within PARK 2 and in the northeastern area of PARK 1. It consists of chert with lesser tuffaceous sediments and minor andesitic volcanic rocks. The chert is typically black to grey in colour and massive, although tuffaceous locally. Occasional quartzcalcite stringers cut the chert at numerous attitudes. The general trend of this unit appears to be northwesterly with shallow dips to the northeast. The emplacement of intrusives to the north has led to the development of intense pyrite alteration and bleaching of the chert creating spectacular gossans.

iii) Andesite-Dacite (Unit 2)

This unit consists of fine to medium grained, green to beige volcanics, possibly of the Takla

Group. These rocks are in part porphyritic with anhedral plagioclases up to 1 cm long. The groundmass is mostly green except where alteration has changed it to a rusty beige colour. Frequent quartz stringers and veins cut the volcanics at unknown attitudes. Up to 10% disseminated pyrite has led to a significant gossan which is traceable for 500-700 m in an east- northeast direction in PARK 1. At least two northwesterly trending faults offset the gossanous zone. The attitude of the volcanics appears from the style of hogsback ridge in PARK 1 to be east-northeast, dipping to the southeast at approximately 30°. Volcanic rocks of this unit do not appear elsewhere on the PARK claims.

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#### Diorite (Unit 3)

This unit occurs within the northeast and northcentral sectors of PARK 1 and is in contact with units 1 and 2. It is medium grained, pink and green and weathers to a pink/buff colour. Several fine to medium grained dykes, dark grey in colour, containing epidote intrude the chert (unit 1). It is unknown whether the dykes are offshoots of the main diorite body or separate entities.

v) Quartz Monzonite-Granodiorite (Unit 4)

This unit appears to exhibit several phases varying from rhyolite to granodiorite. It is fine to medium grained with chloritized mafics, minor pyrite and is strongly clay-quartz-pyrite altered along contacts with country rocks exhibiting several spectacular gossans. Alteration appears to be completely due to the contact with country rocks showing no veining or sulphide mineralization other than disseminated pyrite.

#### c. Mineralization

No significant economic mineralization has been observed on the PARK claims to date. Minor amounts of chalcocite-galena were noted in quartz-carbonate lenses within the phyllite in PARK 1, however no size potential exists for such mineralization. In PARK 1 the volcanic rocks of Unit 2 contain interesting values in Au, Ag and Cu, geochemically speaking. Here the rocks are variably silicified and narrow quartz veins cut the volcanics. Quartz float in the same area suggest more intense quartz alteration as yet not observed in outcrop. This area appears the most interesting on the property and is the area where further work is planned in 1982.

## d. Conclusions

PARK 3 is underlain by Permian, Asitka Group, phyllites. No significant economic mineralization or alteration was noted.

PARK 2 is underlain by Asitka Group cherts and intrusive rocks of diorite to quartz monzonite composition. Significant gossans along the intrusive-chert contact are well developed with no significant economic mineralization noted.

PARK 1 is underlain by Takla(?) volcanic rocks and diorite. The volcanic rocks are altered by quartz, pyrite and clay. The pyrite content of the volcanics is responsible for a significant gossan on PARK 1. Gold and silver occur within the volcanics in trace amounts up to 1.6 g/t Au in rock. The area of interest for future exploration is in the gossanous volcanic rocks within PARK 1. A significant amount of lithogeochemistry was conducted on gossanous areas of PARK 1.

# III. GEOCHEMICAL SURVEY

#### a. Introduction

A total of 8 bulk sediment, 16 silt, 47 rock and 188 soil samples were collected along streams, parallelling streams, along contour traverses and along grid lines established with topo-fil and compass. The distribution and results of geochemical samples are shown on Dwg. No. AR.80-52.

#### b. <u>Sample Collection</u>

i. Silts

For silt samples, at each sample site about 500 g of sand-silt sized material was collected from the stream bed and placed in a wet

strength, kraft paper, envelope. The sample was numbered and specific information regarding the sample and site was recorded on prepared data sheets. A plastic ribbon bearing the sample number was placed at the sample site.

ii. Soils

For soil samples, at each sample site approximately 500 g of soil was collected from the A, B or C horizons. Samples were taken at depths ranging from 10 to 30 cm using a 5 x 20 cm steel mattock. Soil was placed in wet strength kraft paper envelopes. Appropriate sample and site information was recorded on prepared data sheets. A plastic ribbon bearing the sample number was placed at the sample site.

## iii. Bulk Sediments

For bulk sediment samples, an aluminum scoop was used to collect about 10 kg of active sandgravel sized material from the stream bed. The sample was placed in a numbered 30 cm  $\times$  50 cm plastic sample bag. Considerable care was taken in selecting sample sites most suitable for the deposition of Au particles. Like silt samples, specific information regarding the sample and site was recorded on prepared data sheets. A plastic ribbon bearing the sample number was placed at the sample site.

## iv. <u>Rocks</u>

Rock samples were collected mostly as chip samples over intervals of 1 to 10 m and occasionally as grab samples of selected mineralized material. The sample was placed in a numbered 15 cm x 30 cm plastic sample bag. Appropriate sample information was recorded on prepared data sheets and a plastic ribbon bearing the sample number was placed at the sample site.

#### c. Sample Preparation

#### i. Silt and Soil

Silt and soil samples were sent to Min-En Laboratories in North Vancouver where they were oven dried and sieved to -80, -40 or -20 mesh depending on the physical nature of the sample. The sieved fraction was then used for analyses.

ii. Bulk Sediment

Bulk sediment samples were wet sieved in the field to -10 mesh. This fraction was sent to Min-En Laboratories in North Vancouver where samples were further sieved producing a -20+100 mesh fraction. The -20+100 mesh fraction underwent a heavy mineral separation using tetrabromethane (S.G. 2.85 g/cc) and centrifuging. The "sink" and middlings were recovered and sent for analyses. The fine fraction (-100 mesh) was pulverized and rolled with a portion sent for geochemical analyses.

iii. Rocks

Rock samples were sent to Min-En Laboratories in North Vancouver, where they were crushed, pulverized and sieved to -80 mesh. A portion of the sieved fraction was sent for analyses.

# d. <u>Analytical Geochemical Procedure</u>

The geochemical analytical method used for all samples is outlined in Appendix A, located at the back of the report.

#### e. Results and Interpretation

Soil sampling on the PARK consisted of several contour soil lines, wide spaced grids and several lines parallelling creeks. Areas of interest lie in gossanous zones where contour soil line sampling discovered significant Au-Ag-Cu in soil.

Copper values in soil range from 4 ppm to 740 ppm with values greater than 100 ppm considered anomalous. Thirty samples are anomalous with six samples greater than 300 ppm Cu.

Lead values report mostly background values, <60 ppm. Values greater than 70 ppm are considered anomalous. Four samples are anomalous with a maximum of 560 ppm Pb. (This sample also contained the maximum Cu value.) Zinc values range from 19 ppm to 4500 ppm with values greater than 100 ppm considered anomalous. Eleven samples are anomalous with 10 falling between 100 ppm and 215 ppm. (The sample with 4500 ppm Zn was the sample with maximum Cu and Pb.)

Silver values range from 0.2 to 2.6 ppm with values greater than 1.5 ppm considered anomalous. Five samples are considered anomalous. For the most part Ag values are lower than regional background values of 0.9 to 1.5 ppm.

Mercury values range from 5 ppb to 160 ppb, with values greater than 80 ppb considered anomalous. Twenty samples report anomalous values with seven samples greater than 100 ppb.

Arsenic values range from <1 to 1120 ppm with values greater than 60 ppm considered anomalous. Thirty-one samples are anomalous with 15 samples exceeding 200 ppm and 2 exceeding 500 ppm As.

Gold values range from 5 to 1670 ppb with values greater than 65 ppb considered anomalous. Ten samples report anomalous Sb values, with most anomalous in Au and Cu as well.

Silt samples report background values for Pb, Zn, Ag, Hg and Au.

Copper values range from 44 to 158 ppm Cu with one sample greater than 120 ppm considered anomalous.

Arsenic values range from <1 ppm to 1060 ppm with values greater than 70 ppm considered anomalous. Nine samples are anomalous with five exceeding 400 ppm As.

Antimony values range from 12 to 110 ppm with four samples considered elevated, but not anomalous, having values from 85 to 110 ppm. These elevated Sb values correlate to anomalous As values greater than 400 ppm. Overall, for silts, there is good correlation among Cu, Zn, As and Sb.

Bulk stream sediment samples report background values for Pb, Zn, Hg, As and Sb.

Copper values range from 34 to 2930 ppm with two samples exceeding 150 ppm considered anomalous reporting values of 1150 and 2930 ppm. Silver values are within background limits for the -100 mesh fraction. The -20+100 mesh fraction reports values from 1.0 ppm to 2.8 ppm. Three samples are considered anomalous with 2.8, 2.6 and 2.4 ppm Ag.

Gold in the -20+100 mesh fraction is within background limits with <40 ppb. The -100 mesh fraction is mostly within background except one sample containing 230 ppb, a somewhat elevated but not highly anomalous value.

Rock samples were collected from random locations and over a grid in two small gossanous zones on PARK 1.

Copper values range from 2 to 14300 ppm with values greater than 140 ppm considered anomalous. Eleven samples are anomalous with two exceeding 500 ppm, one being 14300 ppm. (This extreme value is from a selected grab sample.)

Lead values report mostly background values of 10 to 30 ppm. Four samples exceeding 60 ppm Pb are considered anomalous. Of these, only one exceeds 200 ppm with 150 ppm Pb.

Zinc values report background values of <60 ppm except one sample with 970 ppm Zn.

Silver values range from 0.2 ppm to 320 ppm with values greater than 2.0 ppm considered anomalous. Three samples are anomalous with values of 2.2, 2.9 and 320.0 ppm Ag.

Mercury values range from 5 ppb to 1020 ppb with values exceeding 60 ppb considered anomalous.

Three samples are anomalous with values of 105, 170 and 1020 ppb.

Arsenic values range from <1 to 980 ppm with values exceeding 30 ppm considered anomalous. Six samples are anomalous with one sample reporting 980 ppm and the others less than 120 ppm As.

Gold values range from 5 to 335 ppb with values exceeding 90 ppb considered anomalous. Eight samples are anomalous with six exceeding 200 ppb Au.

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Antimony values range from 2 to 6800 ppm with values greater than 60 ppm considered anomalous. Thirteen samples are anomalous with 12 samples less than 350 ppm.

Overall, there is good correlation among Cu, As, Au and Sb in rock samples. One exceptionally high grade sample skews the results. This was a grab sample of a 10 cm wide carbonate-sulphide zone within a quartz sweat in phyllites.

#### IV. COST STATEMENT

a. Labour

1981 July 11, 12, 13 and 1981 Sept. 16

3 junior field assistants, 9 man days	\$	476.46
l senior field assistant, 3 man days	•	219.18
2 geologists, 2 man days		287.96

Total Labour: \$ 983.60

b. Room and Board

Per diem rate of \$30 applies to 14 person days for 1981 June 11,12,13 and 1981 September 16 \$420.00

# c. Transportation

i. To field area:

Total cost of transporting crew and equipment to and from the Sturdee Valley airstrip is \$1740 and is prorated over 19 claims worked on. The charge to this claim is \$91.57. \$ 91.57

ii. In direct support of field work:

Viking helicopter subcontracted from S.E.R.E.M. Ltd.

8.9 hours @ \$350/hr, 1981 July 11-13 and 1981 Sept. 16 \$ 3,115.00

1011 litres fuel @ \$0.92/litre \$ 940.23

Total Transportation: \$ 4,146.80

d. Analytical Services

Min-En Laboratories:

47 Rock-prep. @ \$2.25 ea. \$ 105.75 47 Rock-geochem Cu, Pb, Zn, Au, Ag, As, Hg, Sb @ \$20.95 ea. 984.65 204 Soil and/or Silt-prep. @ \$0.85 ea. 173.40 204 Soil and/or Silt geochem. Cu, Pb, Zn, Au,Ag,As,Hg,Sb @ \$20.95 ea. 4,273.80 8 Heavy mineral flotation prep @ \$20 ea. 160.00 -100 mesh geochem. Cu, Pb, Zn, Au, Ag, As, Hg, Sb @ \$20.95 ea. 167.60 -20+100 mesh geochem. Cu, Pb, Zn, .Au, Ag, As, Hg,Sb @ \$20.95 ea. 167.60 Total Analytical Services: \$ 6,032.80 e. Freight Samples, misc. equipment and supplies: 250.00 \$ f. Report Preparation Drafting, typing and compilation 300.00 Ş GRAND TOTAL: \$12,133.30

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### 7. QUALIFICATIONS

- I, Thomas J. Drown, do hereby certify that:
- I am a geologist residing at 407 Cardiff Way, Port Moody, British Columbia and employed by Du Pont of Canada Exploration Limited.
- 2. I am a graduate of the University of British Columbia with a B.Sc. degree in honours geology.
- 3. I have practised my profession in geology for approximately five years in various jurisdictions in Canada.
- 4. On 1981 July 11, 12 13 and 1981 September 16, I supervised/directed a field programme on the PARK claims on behalf of Du Pont of Canada Exploration Limited.

Thomas J. Drown Geologist

v.

TJD/krl

# APPENDIX A

MIN-EN Laboratories Ltd.

Specialists in Mineral Environments Corner 15th Street and Bewicke 705 WEST 15th STREET NORTH VANCOUVER, B.C. CANADA

# ANALYTICAL PROCEDURE REPORTS FOR ASSESSMENT WORK

. PROCEDURES FOR Mo, Cu, Cd, Pb, Mn. Ni, Ag, Zn, As, F

Samples are processed by Min-En Laboratories Ltd., at 705 W. 15th St., North Vancouver Laboratory employing the following procedures.

After drying the samples at 95°C soil and stream sediment samples are screened by 80 mesh sieve to obtain the minus 80 mesh fraction for analysis. The rock samples are crushed by a jaw crusher and pulverized by ceramic plated pulverizer.

1.0 gram of the samples are digested for 6 hours with  $HNO_3$  and  $HClO_4$  mixture.

After cooling samples are diluted to standard volume. The solutions are analyzed by Atomic Absorption Spectrophotometers.

Copper, Lead, Zinc, Silver, Cadmium, Cobalt, Nickel and Manganese are analysed using the  $CH_2H_2$ -Air flame combination but the Molybdenum determination is carried out by  $C_2H_2$ -N<sub>2</sub>O gas mixture directly or indirectly (depending on the sensitivity and detection limit required) on these sample solutions.

For Arsenic analysis a suitable aliquote is taken from the above 1 gram sample solution and the test is carried out by Gutzit method using Ag  $CS_2N$  ( $C_2H_5$ )<sup>2</sup> as a reagent. The detection limit obtained is 1. ppm.

<u>Fluorine analysis</u> is carried out on a 200 milligram sample. After fusion and suitable dilutions the fluoride ion concentration in rocks or soil samples are measured quantitatively by using fluorine specific ion electrode. Detection limit of this test is 10 ppm F.

# APPENDIX A

# MERCURY ANALYTICAL PROCEDURE FOR ASSESSMENT FILING

1.000 gram sample digested with Nitric and Sulphuric Acid. Than further oxidized with 30% H<sub>2</sub>0 while heating and repeating the oxidizing steps.

After cooling and diluting to suitable volume the solution to refine the oxidation procedure 5% KMNO, is added in the titrating manner until pink color is obtained.

Mercury is realized by reducing solution into the Flameless Atomic Absorption Chamber and measured in comparing samples with known standards.

#### APPENDIX B

# COST BREAKDOWN PER CLAIM GROUP

Group No. 1

A total of 135 or 52% out of 259 samples collected from PARK #2 and PARK #3 claims.

Portion attributed to Group No. 1 is 52% of \$12 133.30 = \$6 309.32

Group No. 2

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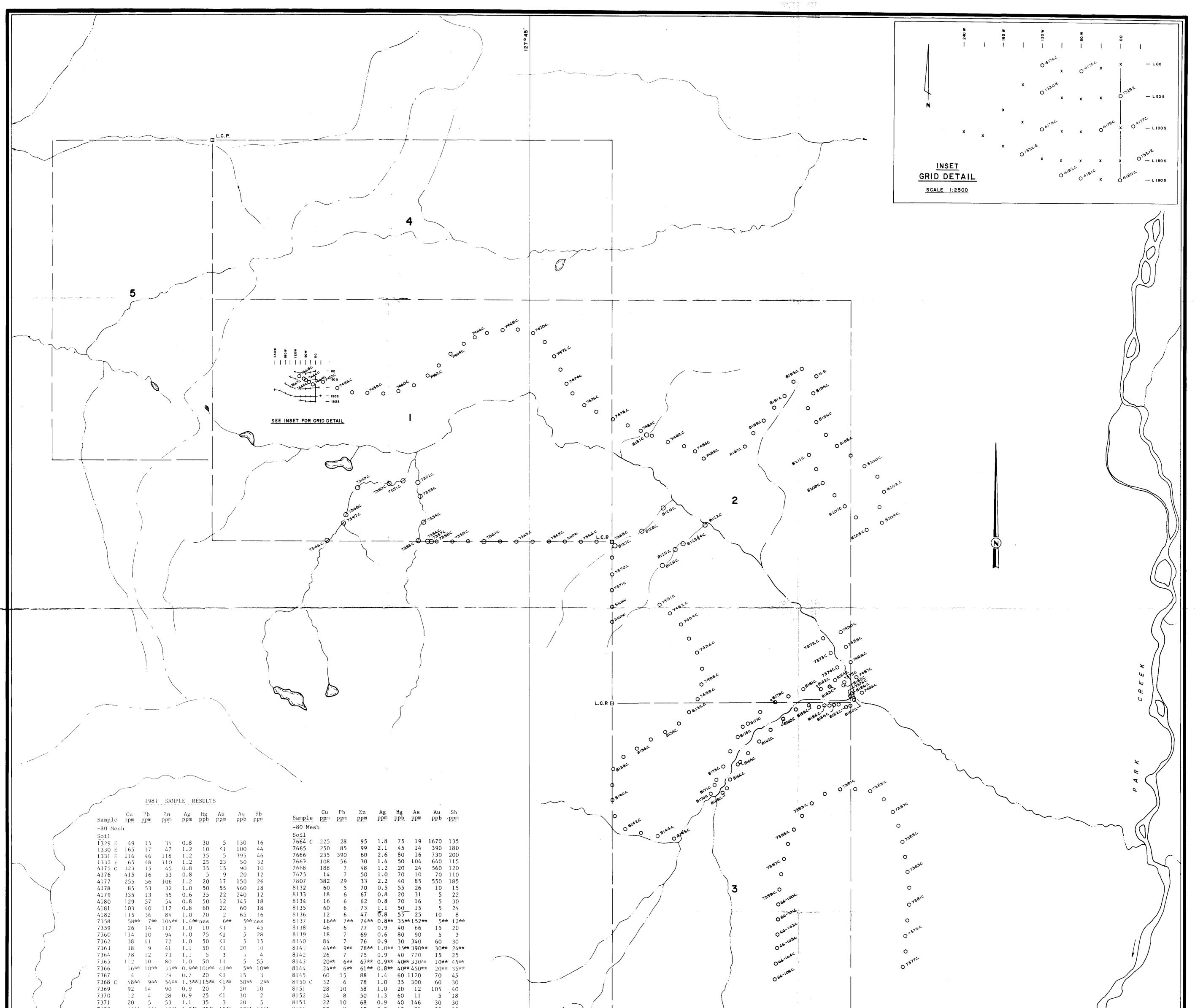
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A total of 124 or 48% out of 259 samples collected from PARK #1 claim.

Portion attributed to Group No. 2 is 48% of \$12 133.30 = <u>\$ 5 823.98</u>

TOTAL: \$12 133.30

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7371 20 5 33 1.1 35 33 20 5 8153 22 10 68 0.9 40 146 30 30   7372 44% 6% 63% 1.0 20 75 8153 30 8 65 0.9 40 14 30 3 20 5 8153 30 8 65 0.9 40 14 70 24   7374 104 14 96 1.1 10 72 15 12 8156 62 5 80 0.8 25 218 5	57° 46'
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$\begin{array}{cccccccccccccccccccccccccccccccccccc$	O 7335C STREAM SEDIMENT SAMPLE LOCATION & NUMBER   x ROCK SAMPLE LOCATION (ON GRID)   ARGONAUT PROJECT PARK CLAIMS GEOCHEMISTRY   PARK CLAIMS GEOCHEMISTRY NOTE   NOTE : FOR PREVIOUS GEOCHEM. DATA SEE DRWG AR.80-247 Note : 8105 17

