

GEOLOGICAL AND GEOCHEMICAL REPORT

ON THE

CHUCHI PROPERTY
(KLAN 1 TO 9. NORN CLAIMS)

N.T.S. $93 \mathrm{~N} / 1 \mathrm{E}=$

OMINECA MINING DIVISION

SITUATED AT OQMOFDINATES: $\begin{array}{r}55^{\circ} 15 \prime N \\ 124^{\circ} 30 . \%\end{array}$

NORANDA EXPLORATION COMPANY. LIMITED (NO PERSONAL LIABILITY)

## GEOLOGICALBRANCH <br> ASSESSMENT REPORT


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## SUMMARY:

The Klaw claims were acquired in the fall of 1987 to cover several reconnaissance strean geochemicai anomalies and a roadside geochemical anomaly detected earlier in the year. The Klaw 8 and 9 claims were staked in the summer of 1988 to expand the area of the property. Preliminary geologic mapping and reconnaissance soil sampling were conducted by Noranda personnel during the 1988 field season. A iarge recon soil grid was hip-chained and compassed and several small mini grids were added to define the size of anomalies.

Soil geochemistry outlined a very harge copper anomaiy with values up to 2200 ppm copper and other numerous isolated gold and copper anomalies.

Proposed work for the properiy in 1989 consists of mapping the entire grid. filling in between the recon soil iines over the iarge copper anomaiies, conduct a magnetometer survey over the entire grid and conduciing an iP survey over the main copper anomaiy.

## INTRODUCTION:

The property was staked in the fail of 1987 to cover the drainage areas of several streams with numerous gold and copper anomalies. Pan concentrate anomalies for goid are up to 37,000 ppb. Copper silt anomalies range up to 1400 ppm, and a roadside soil anomaly on the Germansen-Indata forest road. *** Freliminary geologic mapping and soil sampiing were conducted in the 1988 field season. A large recon soil grid was established to investigate a porphyry copper and goid system and a structuraliy hosted gold deposit. Two smaller grids were established: the Tyrone grid to test a roadside geochemical anomaly and the Norn grid to test a pan concentrate and silt anomaly.

## LOCATION \& ACCESS:

The claims are located along the north shore of Chuchi iake. approximately 180 kilometers northwest of Prince Georce. see Figure 1)

Access to the proper $\quad$ is via the Indata-Germansen forest service road. off of the all-weather Germansen road from fort St. James. The indata-Germansen road is presencly only accessiale during the summer. There has been recent ioquing on most of the property. Roads and clear cuts provide ehceilent access to ait of the property.

CLAIM STATISTICS:




TOPOGRAPHY \& VEGETATION:
The area is characterized by iow rolling glacial topography, including pine flats. outcrop ridges and knobs and low swampy valleys. Elevations range from 868 meters on Chuchi Lake to 1200 meters.

Vegetation consists of mature standis of spruce, pine and balsar, which has been logged off in many areas on the property. Undergrowth is mainly small cedar, alder and devil's club.

## GRIDS:

During the 1988 fieid season, a iarge reconnaissance soil grid, consisting of innes spaced 500 meters apart and sampling every 50 meters. was hip-chained anc compassed. The grid was established to cover a iarge area and pinpoint sources of the anomalous copper and gold stream geochemistry samples. The recon grid consists of 27.0 km of fiagged grid lines controlled by 4 km of cut baseiine at an azimutn of 090 degrees. Jhree lines 100 meiers apart were adied around 1 ine 7000 and three lines 200 meters apari were estainished to the east of line 11000 .

Two smailer grids. the Tyrone and Norn, were estainisied to cover a roadside soil anomaiy and a copper-goid stream sediment sample, The Tyrone grid consists of 2.575 km oz fiagged aric lines, controlied by 400 meters of cut base line at an azimuth of 090 degrees. The Tyrone grid is situated on the Klaw 6 ciaim. (see Figure 3) The Norn gric consists of 2.325 km of flagged grid. line controiled by 400 meters of cut base line at an azimutin of 090 degrees. The Norn gxid is located on the Norn claim (see Figure 3).

## REGIONAL GEOLOGY:

The most recent published information on regional geoiogy is by Paterson. I.A.. 1974 G.S.C. Paper 74-1. part B.

The Chuchi ciaim group lies in a broad northwest trending package of rocks known as the Quesnel trough. These include Upper Triassic to Lower Jurassic volcanics and sediments. which have been intruded by the Hogem Batholith and numerous other felsic to mafic stocks, ranging in age from Triassic to Cretaceous.

The volcanic rocks include massive to porpnyritic andesite and basaitic flows. The sedimentary package includes argiliites, greywackes and conglomerates.

The property is located in close proximity to the Hogem Batholith and this has probably caused major deformation in the area.

The Quesnel Trough is bounded to the west by the Pinchi Fault. The fault forms a contact between the Hogem Batholith and the volcanic and sedimentary package of rocke.

LOCAL GEOLOGY:-
The outcrop on the property is sparse and isolated with large areas covered by overburden. The area appears to be underlain by andesites and siltstones which have been intruded by several gabbro and diorite dykes.

The andesites are typically paie green, massive to weakiy porphyritic, moderately silicified and have minor epidote alteration.

The siltstones are medium to dark grey, usually hornteised, mottled and highly fractured and contain up ro $j-2 \%$ pyrite.

The diorite and gaboro occur as smail dykes cutting the sediments and volcanics. possibly causing hornfelsing anci alteration. The diorite is weakly porphyritic: weakly sausauritized? with a trace amounc of disseminated pyrite and chalcopyrite. There have values of up to $6 \%$ copper reported for this unit, in localized shear zones.

## PREVIOUS WORK:

There has been extensive work performed in this area during the mid $1960^{\prime} s$ to early $1970^{\prime} s$. In the late $1960^{\prime} s$, Noranda estabiished several soil lines in the area of the present property. The results revealed high soil values for copper and molybdenum.

In the late $1960^{\prime} s, N o r a n d a$ drilled and identified a deposit of 20.000 tons of $7.5 \%$ combined lead and zinc on the WIT claim situated to the east of the Chuchi property. In 1984 and 1985 . RP Selco performed work on the Phil claims that are located north of the Chuchi property. Soil and rock samples were found to have anomalous copper values.

## GEOCHEMISTRY:

## METHOD -

A total of 789 soil samples were collected from the Chuchi property during the 1988 field season. The samples were taken using a soil auger. The samples were collected from the "B" horizon, $15-35 \mathrm{~cm}$ below the surface. The gamples were placed in kraft paper bags, dried and sent to the Noranda Lai for analysis at 1050 Davie St., Vancouver, B. C. The original recon soil samples were anaiyzed for copper, zinc, lead. silver, arsenic and gold. Each sample, from the Norn and Tyrone grids were analyzed for copper, zinc, lead, silver, arsenic and gold. The samples from the 100 meter spaced lines on the recon were analyzed for copper and gold only. The results are plotted on Figures 6 co i7. located in the pocket file.

OBSERVATIONS -

NORN GRID -

Goid - Gold values on the Norn gric zange between io and 40 ppb. Values greater than 10 ppb are considered to be weakiy anomalous. Five single station anomailes have been outiined:

- 20 ppb L3900N/4150E
- 40 ppb L4000N/4225E
- 20 ppb L4000N/4300E
- 20 pob L4100N/4200E
- 40 ppb L4200N/3900E

Copper - Values range from 8 ppm to 230 ppm. The average 15 around 20-25 ppm and values greater than 100 ppm are consideredi anomalous. Four single station anomalies have been ouvlined:

- 150 ppm L3800N/3975E
- $230 \mathrm{ppm} \mathrm{L} 3800 \mathrm{~N} / 4100 \mathrm{E}$
- 220 ppm L4000N/3800E
- 110 ppr L4000N/4350E

Lead - Values range from 1 ppm to 94 ppm. Most values are in the $1-2$ ppm range and values greater than 25 ppm are considered anomalous. Only one anomalous sample (S4 ppm) is indicated by the survey and occurs at [4000N/3900E.

Zinc - Values range from 28 ppm to 330 ppm, with the average around 40 to 50 ppm. Vaiues greater than 200 ppm are considered anomalous. One one anomalous sample was indicated:

- 330 ppm L4000N/4125E

Silyer - Values range from 0.2 to 1.6 ppm, with the average around 0.4 ppm. Only one sample was greater than 1.0 ppm:

- 1.6 ppr L4000N/3900E

Arsenic - Values range from 1 to 580 pom. Most values are around 2 to 2 ppm and values greater than 50 ppm are considered anomalous. Two anomalous samples have been outiined on the grid:

- 100 ppr L4000N/3900E
- 580 ppr L4000N/3800E

TYRONE GRID -

Goid - Vaiues range from 5 to 150 poo. Oniy two samples are greater than 10 ppi:

- 20 рро L6900E/5875N
- $150 \mathrm{ppO} \quad \mathrm{p} 7000 \mathrm{E} / 5850 \mathrm{~N}$

Copper - Vaiues range from 8 ppm to 360 ppm and the average is around 25 to 30 ppr. Values greater than 100 ppm are considered anomalous.

- 360 ppr LS900E/6150N

Lead - Values range from 2 to 24 ppm. Most values fall between 2 and 4 ppm and values greater than 25 ppm are considered anomalous. None are found on the grid.

Zinc - Values range from 48 to 620 ppm. The average is around 70 to 80 ppm and values greater than 200 ppm are considered anomalous. Two single station anomalies have been outlined:

- 620 ppm L6900E/5150N
- 240 ppr L7000E/6100N

Silver - Values range from 0.2 to 0.8 ppm. Most values are around 0.2 pom and values greater than 1.0 ppm are considered anomaious:
$-1.4 \mathrm{ppm} \quad \mathrm{L} 6800 \mathrm{E} / 6250 \mathrm{~N}$

Argenic - Values range from $1-20$ ppm. No values are considered anomaious.

RECON SOIL GRID -
Gold - Gold values on the recon grid range from 10 to 1000 pob. Values greater tan 10 ppb are considered co pe anomaious. One triple station, one couble siation and 22 singie station anomalies have been outlined:

|  | 80 | pop | L7000E/ 8050N |
| :---: | :---: | :---: | :---: |
|  | 1000 | ppo | L7000E/10350N |
|  | 50 | ppb | L7000E/11800N |
|  | 30 | poo | L7000E/12000N |
|  | 30 | فpp | L7000E/12050N |
|  | 30 | ppb | L7000E/12150N |
|  | 80 | ppb | L7000E/12950N |
|  | 30 | ppb | L7500E/ 7900N |
|  | 20 | ppo | L7500E/ 8700N |
| - | 30 | ppo | L7500E/10850N |
|  | 20 | ppb | L7500E/124 |
| - | 30 | ppo | L7500E/133 |
| - | 110 | bpb | L8000E/10500N |
| - | 100 | ppb | L8000E/10600N |
| - | 30 | ppb | L8000E/10900N |
|  | 30 | Opo | L8000E/10950N |
|  | 20 | ppb | L8000E/11000N |
|  | 20 | ppo | L8000E/12600N |
|  | 240 | ppo | L8500E/10950N |
|  | 270 | ppb | L9000E/10400N |
|  | 340 | ppo | L.9000E/11000N |
| - | 80 | ppb | L9000E/11100N |
| - | 30 | ppo | L10000E/ 9800N |
| - | 40 | ppb | L10500E/11750N |
|  | 40 | ppo | L11000E/ 9800N |
|  | 20 | ppb | L11000E/10050N |
|  | 30 | ppb | L11000E/11650 |

Copper - Copper values on the recon grid range from 4 ppr to 2200 ppm. The average is around 50 to 70 ppm, and vaiues areater than 100 ppm are considered anomalous.

A large, loosely defined anomaly and 2 double station and 13 single station anomajies are defined. open to the southeast.

A large copper anomaly with values up to 2200 ppm, extends from Line $9500 E$ to Line $11200 E$. The outer boundaries of the anomaly are outlined by:

L $9500 \mathrm{E} \quad 10550 \mathrm{~N}$ to 11550 N
LiOOOOE 10250 N to 11650 N
LiO500E 10400 N to 11500 N
L11000E 10400 N to 11200 N
L11200E 11000 N to 11050 N

The 13 single and 2 double station anomalies are:

- 100 pom L7000E/ 7750N
- 110 ppm L7000E/ 7850N
- 100 ppm L7000E/ 7900N
- 130 ppm L7000E/ S800N
- 380 ppm L7000E/10000N
- 140 ррm L7000E/12950N
- 110 ppm L7000E/13050N
- 130 ppr L7500E/ 7600N
- 120 por L7500E/ 7900N
- 450 ppm L75005/10900N
- 140 ppm L7500E/10250N
- 130 ppm L7500E/10300N
- 170 ppm L8500E/10150N
- 170 ppr L8500e/11300N
- 100 ppr L9000E/ 9800n
- 130 ppm L9000E/10050N
- 130 ppm LSOOOE/11500N

Lead - Lead values on the recon soil grid range from 1 ppm to 28 ppm. The average is between 4 and 8 ppm. Values greater than 25 ppm are considered to be anomalous. One value is found to be anomalous:
-28 ppm L10500E/11200N

Zinc - Zinc values on the recon soil grid range trom 18 ppm to 290 ppin. with the average around $60-70$ ppm. Vaiues greater than 200 ppm are considered to be anomalous. Four single station anomalies are defined:

- 240 ppr $\quad$ LOOOE/10750N
- 290 ppr $\mathrm{L} 7000 \mathrm{e} / 11000 \mathrm{~N}$
- 290 ppm L7000E/11700N
- 280 ppr L10000E/11800N

Silver - Silver values on this grid range from 0.2 to 1.2 ppm, with the average around 0.4 ppm. Two values are considered anomalous:
$\begin{array}{ll}-1.0 \text { ppm } & \mathrm{L} 9500 \mathrm{E} / 11650 \mathrm{~N} \\ -1.2 \text { ppr } & \mathrm{L} 30000 \mathrm{E} / 10850 \mathrm{~N}\end{array}$

Arsenic - Arsenic values on the recon grid range from 1 ppm to 92 ppm. with an average around 5 ppm to 8 ppm. Values above 50 ppm are considered to be anomalous. Four single station anomalies are outlined:

- 92 ppm L $7000 \mathrm{E} / 11000 \mathrm{~N}$
- $84 \mathrm{ppm} \quad \mathrm{L} 7000 \mathrm{E} / 13700 \mathrm{~N}$
- 72 ppm $~ \mathrm{p}$ 7500E/ 7600N
- 64 por Lil000E/10900N

100 METER SPACED LINES -
The 100 meter spaced lines were established around high anomaiies defined by the recon sampiing. The iines are spaced aoo meters apart and samples are taken at 25 meter intervals. The grid lines are flagged and were established with a hip chain and compass.

L6900E, L7100E, L7200E -
Gold - Goid values on these detailed lines range from 10 to 20 ppb. The average is 10 ppb. Three single station anomailes of 20 ppb are defined:

- 20 ppb L6300E/11000N
- 20 ppb L7100E/10975N
- 20 ppb L7200E/10550N

Copper - Copper values on these 100 meter spaced lines range from 12 ppm to 1400 ppm . The average vaiue $i s$ around 110 ppm to 120 ppm . The average is distorted by some very high anomalous values. There is a 7 station, a 2 station and 2 single station anomalies defined:

| - 140 ppm | $\mathrm{L} G 900 \mathrm{E} / 10675 \mathrm{~N}$ |
| :--- | :--- |
| - 180 ppm | $\mathrm{L} 6900 \mathrm{E} / 10800 \mathrm{~N}$ |
| - 160 ppm | $\mathrm{L} G 900 \mathrm{E} / 10825 \mathrm{~N}$ |
| - 120 ppm | $\mathrm{L} 7100 \mathrm{E} / 10700 \mathrm{~N}$ |
| - 160 ppm | $\mathrm{L} 7100 \mathrm{E} / 10850 \mathrm{~N}$ |
| - 470 ppm | $\mathrm{L} 7200 \mathrm{E} / 10850 \mathrm{~N}$ |
| - 180 ppm | $\mathrm{L} 7200 \mathrm{E} / 10875 \mathrm{~N}$ |
| -1300 ppm | $\mathrm{L} 7200 \mathrm{E} / 10900 \mathrm{~N}$ |
| -1400 ppm | $\mathrm{L} 7200 \mathrm{E} / 10925 \mathrm{~N}$ |
| - 270 ppm | $\mathrm{L} 7200 \mathrm{E} / 10950 \mathrm{~N}$ |
| - 280 ppm | $\mathrm{L} 7200 \mathrm{E} / 11000 \mathrm{~N}$ |

Li1,200E. L11,400E and Li1, 600E -

Gold - The gold values on these 200 meter spaced lines range from 10 ppo to 520 ppb. The average is around 20 ppb. There are 5 singie scation anomailes outiined:

| $-\quad 40 \mathrm{ppo}$ | $\mathrm{L} 11200 \mathrm{E} / 11225 \mathrm{~N}$ |
| ---: | ---: | ---: |
| $-\quad 20 \mathrm{ppD}$ | $\mathrm{L} 11200 \mathrm{E} / 11575 \mathrm{~N}$ |
| -520 ppb | $\mathrm{L} 11400 \mathrm{E} / 11225 \mathrm{~N}$ |
| $-\quad 30 \mathrm{ppo}$ | $\mathrm{L} 11600 \mathrm{E} / 11325 \mathrm{~N}$ |
| -70 ppb | $\mathrm{L} 11600 \mathrm{E} / 11375 \mathrm{~N}$ |

Copper - The copper values on the 200 meter spaced lines range from 16 ppm to 580 ppm . The average is around 80 ppm . Values above 100 ppm are considered to be anomaious. There are 3 double station and 6 single station anomalies outiined:

| pp | L11200E/11000N |
| :---: | :---: |
| 100 ppm | L11200E/11025N |
| 100 ppm | L11400E/11450N |
| 10 ppm | L11400E/11 |
| 110 ppm | L11400E/1 |
| 580 ppm | L1160 |
| 200 ppm | L11600 |
| 380 ppm | L11600E/111 |
| 100 ppm | L11600E/11150N |
| 330 ppm | L13600E/11225N |
| 120 pmm | L11600E/1 |
| 220 ppd | LI1600E/11375N |
| 260 ppm | L11600E/1 |
| 100 ppm | L11600E/116 |
|  |  |

## CONCLUSIONS:

The property is underiain by porphyritic diorite that appears to be weakly altered, massive to porphyritic andesite with a trace amount of pyrite and disseminated chalcopyrite and siltstones that are hornfelsed and contain up to $1-2 \%$ pyrite.

A structural break trending 070 degrees occurs on the property. This is indicated by strean courses and topography changes seen on air photos and topographic maps. Reconnaissance gold anomalies weakly refiect this break.

A large copper geochemical anomaly $2 k m$ long and 1.5 km wide that is open to the southeast has been outlined. The copper values in this anomaly range up to 2200 ppm. Scattered gold anomalies with values up to 1000 ppo are found throughout the grid.

The Tyrone grid has scattered gold values up to 150 opo, scattered copper values up to 360 ppm and a large zinc vaiue of 620 ppm .

The Norn grid has scattered weak copper and goid values and an anomalous arsenic area iocated on the southern edge of the grid. The arsenic values range up to 580 ppm.

## RECOMMENDATIONS:

Further soil sampling and geophysics work should be performed on the property.

## Geochemistry -

These soil iines should be added to the grid with samples

L 9100E
L 9200E
L 9300E
L 9400 E
L 9600 E
L 9700E
L 9800E
L 9900E
L10100E
LiO200E
L10300E
L10400E
L. 10500 E

L10700E
L10800E
L10900E
L11100E
L11200E
Li 1300 E
L11400E
L12500E
LI?600E
L. 6800 E

L $6900 E$
L 7100 E
L $7200 E$
L. 7300 E

L 7400E
L 7500E
L $7900 E$
L 8100E
L 8900E
L 9100E
L $6900 E$
L 7100 E
L 7400 E
L 7600 E
$10000 \mathrm{~N}-12000 \mathrm{~N}$ 10000N-12000N $10000 \mathrm{~N}-12000 \mathrm{~N}$ $10000 \mathrm{~N}-12000 \mathrm{~N}$ 10000N-12000N $10000 \mathrm{~N}-12000 \mathrm{~N}$ $10000 \mathrm{~N}-12000 \mathrm{~N}$ $10000 \mathrm{~N}-12000 \mathrm{~N}$ $10000 \mathrm{~N}-12000 \mathrm{~N}$ $10000 \mathrm{~N}-12000 \mathrm{~N}$ $10000 \mathrm{~N}-12000 \mathrm{~N}$ $10000 \mathrm{~N}-12000 \mathrm{~N}$ $10000 \mathrm{~N}-12000 \mathrm{~N}$ $10000 \mathrm{~N}-12000 \mathrm{~N}$ $10000 \mathrm{~N}-12000 \mathrm{~N}$ $10000 \mathrm{~N}-12000 \mathrm{~N}$ 10000N-12000N $10000 \mathrm{~N}-11000 \mathrm{~N}$ $10000 \mathrm{~N}-12000 \mathrm{~N}$ $10000 \mathrm{~N}-11000 \mathrm{~N}$ $10000 \mathrm{~N}-12000 \mathrm{~N}$ $10000 \mathrm{~N}-11000 \mathrm{~N}$ $10200 \mathrm{~N}-11100 \mathrm{~N}$ $9700 \mathrm{~N}-10500 \mathrm{~N}, 11850 \mathrm{~N}-12250 \mathrm{~N}$ $9700 \mathrm{~N}-10500 \mathrm{~N}, 11850 \mathrm{~N}-12250 \mathrm{~N}, 11000 \mathrm{~N}-13000 \mathrm{~N}$ $9700 \mathrm{~N}-10500 \mathrm{~N}, 11000 \mathrm{~N}-13000 \mathrm{~N}$
$10300 \mathrm{~N}-11200 \mathrm{~N}$. 10100N-11200N $10100 \mathrm{~N}-11200 \mathrm{~N}$ $10400 \mathrm{~N}-11200 \mathrm{~N}$ $10400 \mathrm{~N}-11200 \mathrm{~N}$ 9650N-10150N 9650N-10150N $7650 \mathrm{~N}-8100 \mathrm{~N}, 12700 \mathrm{~N}-13100 \mathrm{~N}$ $7650 \mathrm{~N}-8100 \mathrm{~N}, 12700 \mathrm{~N}-13100 \mathrm{~N}$ $7800 \mathrm{~N}-8000 \mathrm{~N}$ $7800 \mathrm{~N}-8000 \mathrm{~N}$

Geophysics -

Complete a magnetometer survey over the entire property. L9000E to L11500E; 10000 N to 12000 N , spacing lines 100 meters apart. A total of 52 km of magnetometer survey.

Complete an $I p$ survey over the same grid as the magnetometer survey with 200 meter spacing between the iines. A total of 26 km os Ip survey.

The proposed geophysics phase involves a magnetometer survey and an IP survey. The magnetometer survey will cover the entixe grid. The IP survey will cover the area of the iarge copper anomaly.

Geoiogy -
Map the property at a scaie of 1:5,000.

## APPENDIX I <br> STATEMENT OF WORK

a) WAGES:

Geology - 5 mandays $5150 /$ day $\$ 750.00$
Linecutting - 5 mandays 0 s $100 / \mathrm{day}$
$\$ 500.00$
Soil Sampling - 7 mandays $9100 / \mathrm{day}$
$=700.00$
b) FOOD. ACCOMMODATIONS \& TRANSPORTATION:

17 days @ $550 /$ day
$\$ 850.00$
c) COST OF ANALYSIS:

151 sampies $0 \$ 8.75$ ea
51. 321.25

638 sampies @ $\$ 15.00$
$\$ 9,570.00$
d) COST OF REPORT PREPARATION:

Author 5200.00
Drafting $\quad \$ 200.00$
Typing $\quad \$ 50.00$ 550.00

TOTAL COST
$\$ 14.141 .25$

## APPENDIX I

## COST BREAKDOWN

a) GEOLOGY:
Wages $\quad$ Accommodations \& Transportation ..... $\$ 750.00$
Food, Accommodations \& Trangportation 250.00 Report Preparation ..... 200.00
$\$ 1,200.00$
b) SOIL GEOCHEMISTRY:
wages ..... $\$ 500.00$
Food, Accommodations \& Transportation ..... 250.00
Cost of Analysis ..... $\$ 10.891 .25$
Report Preparation ..... 250.00
$\$ 11.891 .25$
c) LINE EUTTING:
Wages$=700.00$
Food, Accommodations \& Transportation$=350.00$
$\$ 1.050 .00$

## STATEMENT OF QUALIFICATIONS

I, Terrence Campbell, of Frince George, Frovince af Eritisin Columbia, do hereby certify that:

1. I am a geologist residing at 7740 Gladstone Drives, Prirce George, British Columbia. .
2. I am a 1385 graduate of the University af British Coluntia, E.Sc. (Geology).
3. I am a member ir goad staridirg of the Eritish Columian Yukon Chamber of Mires.
4. I presently hold the position of Field Gealagist with Nomanda Explometion Compary, Limited iro persorimal liability) and have beer in their emplay sirnee 1986.


Terrerice Campoe 11

The methods listed are presertly applied to analyse geological materials by the Noranda Geochenical Laboratory at Vancouver. (March, 1984)

## Preparation of Samples

Sediments and soils are dried at approximately $80^{\circ} \mathrm{C}$ and sieved with a 80 mesh nyion screen. The -80 mesh ( 0.18 mm ) fraction is used for analysis.

Rock specimens are pulverized to -120 mesh ( 0.13 mm ) . Heavy mineral fractions (parned samples) are analysed im its entirety, when it is to be determined for gold without further sample preparation. See addendum.

Amalysis of Samples.

Decomposition of a $0 . \mathcal{E O O} \mathrm{g}$ sample is done with conceritrated perchloric and nitric acid (3:1), digested for 5 hours at reflux temperature. pulps of rock or core are weighed out at 0.2 g or less depending an the matrix of the rock, and twice as much acid is used for decomposition than that is used for silt or soil.

The coricentrations of Ag, Cd, Co, Cu, Fe, Mn, Mo, Ni, Pb, $V$ and Zr (all the group $A$ elemerts of the fee schedule) can be determined directly from the digest (dissalution) with an atomic absomption spectrometer (AA). A Variar-Techtror Model AA-S or Model AA-475 is used to measure elemental concentratiors.

## Elements Reguirirg Specific Decompositian Method

Antimony - St: O.E 9 sample is attacked with 3.3 mL of $6 x$ tartaric acid, 1.5 m coric. hydrochloric acid ard $O .5 \mathrm{ml}$ of conc. nitric acid, then heated irt a water bath for 3 hours at $75 \mathcal{C}$. $S b$ is detemined directly from the acid solution with an AA-475 equipped with electrodeless discharge lamp (EDL).

Arsenic - As: $0 . \varepsilon-0.4 \mathrm{~g}$ sample is digested with 1.5 mL of $70 \%$ perchloric acid and 0.5 mL of coric. ritric acid. A Varian AA-475 equipped with ari As-EDL measures the arseric corceritration of the digest.

Barium - Bat 0.1 g sample is decompesed with corc. perchioric, nitric and hydrofluoric acid. Atomic absorption using a nitrous oxide-acetylene flame determiries Ba from the aquequs solution.

Bismuth - Bi: O. 2 - 0.3 g is digested with 2. 0 ml of perchloric $70 x$ and I. O ml of conc. nitric acid. Bismuth is detemmined directly from the digest into the flame of the $A A$ iristrument $c / w E D L$.

Gold - Au: 10.0 g sample (Pan-comcentrates see below) is digested with aqua regia ( 1 part nitric and 3 parts hydrochloric acid). Gold is extracted with Methyl iso-Butyl ketone (MIBK) from the aqueous solution. Gold is determined from the MIBK solution with flame AA.

Magnesium - Mg: $0.05-0.10$ g sample is digested with 4 ml perchloric/nitric acid (3:1). An aliquot is taker to reduce the concentration to within the range of atomic absorption. The $A A-475$ with a nitrous oxide flame determines Mg from the aqueous solution.

Tungsten - W: 1.0 g sample sintered with a carbonate flux and thereafter leached with water. The leachate is treated with potassium thiocyanate. The yellow tungsten thiocyanate is extracted into tri-n-butyl phosphate. This permits colourimetric comparison with standards to measure tungsten concentration.

Uranium - U: An aliquot, taken from a perchloric-nitric (3:1) decomposition, usually from the multi-element digestion, is diluted with water and a phosphate buffer. This solution is exposed to laser light, and the luminescence of the uranyl ion is quantitatively measured on the UR-3 (Scintrex).

LOWEST VALUES REPORTED IN PPM



U"iues in P户M, exceft where noted.


| $\begin{aligned} & \text { T.i. } \\ & \text { NO. } \end{aligned}$ | SAMPLE NC． | Cu | Zri | Pto | $\mathrm{Fig}^{3}$ | As | PPs Au | $\begin{aligned} & 88: 1-005 \\ & \text { Pg. }_{5} 2073 \end{aligned}$ |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 50 | 7000E－E100N | ECl | \＃40 | 12 | 0.5 | 5 | $\pm$ |  |
| 51 | 5125 | ここ | 75 | 4 | 0.8 | E | 5 |  |
| 5 | 6150 | $3 B$ | 75 | 8 | $0 . E$ | $E$ | 동 |  |
| 53 | 6175 | 35 | ES | 5 | 0.5 | E | 5 |  |
| 54 | ロご00 | 16 | E4 | $z$ | $0 . E$ | 4 | 5 |  |
| 55 | ㅌ．ets | E6 | 56 | $\Xi$ | 6． 3 | E | 5 |  |
| 5 E | Eご心 | 14 | 50 | 1 | O．E | 1 | 5 | － |
| 57 | E®75 | 10 | 44 | 1 | \％． | 4 | 5 |  |
| 59 | 7000E－5EOON | 15 | $4 E$ | $E$ | 0.8 | \％ | 5 |  |
| 5 | $7100 \mathrm{E}-5 \mathrm{GON}$ | 69 | 100 | こ | 0.5 | 8 | 5 |  |
| 60 | 55E5 | 40 | E6 | $E$ | 2． | $E$ | 5 |  |
| 61 | 5¢56 | 76 | Es | 4 | 0.4 | 14 | 5 |  |
| Eミ | 5575 | 3 | 75 | 4 | $0 . E$ | E | 5 |  |
| 53 | $590 \%$ | 1 こ | 150 | 4 | 0.5 | $\Sigma$ | 5 |  |
| 64 | $5 \%$ 5\％ | 78 | $1 き 0$ | $E$ | O．E | 4 | 든 |  |
| 55 | 5950 | 45 | 100 | 4 | 0.3 | 6 | 든 |  |
| 65 | 5000 | 56 | 96 | $E$ | O．E | E | E |  |
| 67 | E0ES | 18 | $1 \approx 0$ | 4 | 0.3 | 1 | 5 |  |
| EG | E0EO | E8 | 78 | 4 | $0 . E$ | 4 | E |  |
| 65 | E075 | 13 | 140 | 4 | O．こ | 10 | 동 |  |
| 70 | $E 100$ | 13 | 170 | 4 | 0.5 | 1 | 5 |  |
| 71 | E1E | 54 | 50 | 16 | C． 4 | $\because$ | 5 |  |
| 7 － | E150 | 15 | 60 | $E$ | O．E | E | 5 |  |
| 75 | E．175 | ㅌ6 | Eb | 4 | 0.4 | 1 | E |  |
| 74 | E玉O以 | 15 | 70 | E | O．E | 4 | 5 |  |
| 75 | EEES | $E$ | 6.4 | 4 | 0.4 | 4 | 5 |  |
| 7 F | E心EO | E® | 45 | 4 | 0.4 | 1 | 5 |  |
| 77 | Eミ7E | 15 | EO | 4 | O． | 4 | 5 |  |
| 78 | 7100E－ESOON | O | Et | 4 | 0.4 | 1 | E |  |
| 79 | 7EOE－5EGON | 7 O | Ee | 4 | $0 . も$ | 18 | 5 |  |
| 80 | 55 | 4.4 | 74 | 4 | 6．E | E | 5 |  |
| 51 | 5856 | 50 | 78 | 4 | O．${ }^{2}$ | 6 | $\pm$ |  |
| $g \Xi$ | 5575 | E8 | 85 | 4 | 0.3 | 1 | E |  |
| 53 | 5900 | 34 | 110 | 4 | 0.4 | 4 | 5 |  |
| 94 | 틀 | E0 | 160 | E | O．E＇ | 4 | 5 |  |
| ES | 5550 | 30 | 176 | 4 | G． | ® | 듣 |  |
| 56 | Einoo | 18 | 54 | 4 | 6． | 1 | E |  |
| ET | E．cre | 14 | $E \pm$ | 4 | O． 5 | 4 | 5 |  |
| 89 | 8050 | 8 | 54 | 4 | $0 . E$ | 5 | 5 |  |
| 89 | 6075 | 10 | 58 | 4 | O．E | 4 | 5 |  |
| 50 | 5100 | 30 | 46 | $E$ | 0.5 | $E$ | 5 |  |
| 31 | E1ES | 16 | 90 | 8 | 0.8 | E | 5 |  |
| Э゙ | E175 | ®s | ブ | $E$ | 0.3 | 4 | 5 |  |
| 35 | E®E5 | こ8 | 64 | 6 |  | E | 5 |  |
| 54 | EE50 | EG | あ玉 | 4 | 0.5 | 5 | 5 |  |
| 95 | E． 075 | E4 | 匕こ | E | 6. | 1 | 5 |  |
| 96 | 7ニOOE－E5OCN | 12 | 50 | き | $0 . E$ | 3 | 5 |  |
| 97 | ごЭ0以サー 3760 C | $1 こ$ | 4シ | こ | 0.0 | 1 | 10 |  |
| 98 | 375 | $E S$ | 58 | $E$ | 0． | 1 | 단 |  |
| 99 | 3750 | 38 | 110 | $E 6$ | 0.4 | 190 | $\Xi$ |  |
| 100 | CHECK NL－E | 50 | 140 | 66 | 1.0 | Э0 | － |  |
| 101 | $3 \Im 00 N-3775 \mathrm{E}$ | 16 | E50 | 14 | 0.3 | \＃00 | E |  |
| $10 \pm$ | 4000157005 | 1 ご | 48 | E | 0.3 | 1 | 5 |  |
| 103 | 37 | 24 | 44 | $E$ | 0.0 | 1 | 단 |  |
| 104 | 3750 | 50 | 58 | 4 | 0. | 1 | 5 |  |
| 105 | $4000 N-3775 E$ | 44 | 68 | 4 | 0.2 | 1 | 5 |  |
| 106 | $41003 \mathrm{O}-3510 \mathrm{E}$ | ES | 98 | 4 | 0.4 | EEO | 5 |  |


| F. | SAMPLE NC. | Eu | $2 r$ | Ob | Fig | As | FFE Fu | $\begin{aligned} & \text { ES11-60g } \\ & \text { Pg. } 3 \text { of } \end{aligned}$ |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 07 | 41005 －3775N | 34 | 94 | 4 | 0.3 | 1 | 5 |  |
| 05 | $4010 \mathrm{~N}-3500 \mathrm{E}$ | 50 | 86 | 4 | O．${ }^{\text {e }}$ | 24 | 5 |  |
| 09 | ごGON－38パを | 10 | 62 | 4 | 0.4 | E | 5 |  |


COEE ：8S10～05
JROPERTY；LロCATICN：DHUCHI
Date rec＇a：OCT ぎ

Shモet： 1 cf $\Xi$
EECTM ：EM．M．
Date campi：NGV． 17
Vaiues in FFM，except vinere roter．



| ic. | SAMFLE No． | Cu | $\begin{aligned} & \text { FPE } \\ & F: H \end{aligned}$ | $\begin{aligned} & \text { B810-0등 } \\ & \text { Fg. } 3 \text { af } 3 \end{aligned}$ |
| :---: | :---: | :---: | :---: | :---: |
| 44 | $11500 \mathrm{E}-11150 \mathrm{~N}$ | 100 | 10 |  |
| 45 | 11 E00 | 54 | 10 |  |
| 45 | 11ごら | 130 | 10 |  |
| 47 | 11300 | $1 E 0$ | 10 |  |
| 48 | 1135 | 50 | JC |  |
| 49 | 11250 | 50 | 10 |  |
| 50 | CHECK NL－6 | 50 |  |  |
| E． 1 | 11575 | シご | 70 |  |
| 5 | 11400 | E®0 | 10 |  |
| 53 | 114ES | 40 | 10 |  |
| 54 | 11450） | 50 | 10 |  |
| 55 | 11475 | 90 | 10 |  |
| $5 E$ | 1150 | 7 E | 10 |  |
| ． 57 | 115 | 5 | 10 |  |
| 58 | 11 Eご | 50 | 10 |  |
| 53 | 11850 | 109 | 10 |  |
| ．EO | 11675 | 110 | 10 |  |
| E1 | 11700 | 88 | 10 |  |
| $6 \%$ | $117 E$ | 단） | 10 |  |
| 63 | 11600E－11775N | Э | 10 |  |
| E． 4 | 10406E－11400N | 130 | 10 |  |
| 55 | 114 cos | 55 | 10 |  |
| E6 | 11475 | 35 | 10 |  |
| 67 | 11500 | Eお耍 | 80 |  |
| ．Es | 1150 | 7 － | 10 |  |
| ． 63 | 11550 | 60 | 10 |  |
| 70 | 11575 | 55 | 10 |  |
| ． 71 | 11600 | 45 | 10 |  |
| ．7E | 11 E®゙ち | 54 | 10 |  |
| $\bigcirc 73$ | 11650 | 50 | 10 |  |
| ． 74 | 11700 | 110 | 10 |  |
| ：75 | 11785 | 10 | 10 |  |
| $: 75$ | 11750 | 110 | 10 |  |
| ： 77 | 10400E－11775N | 140 | 10 |  |

## NORANDA UANCOUVER LAEDRATORY

| PROPERTY／LD | ：STU | RT CLA |  | CODE | ＝8807－003 |
| :---: | :---: | :---: | :---: | :---: | :---: |
| Prajecti Na． | ： | 283 | Sheet： 1 cif 3 | Date | rec＇d：IUNE7 |
| Material | ： 45 | SOILS | Geal．：G．M． | Date | Compl＝Jul |
| Remarks | ： |  |  |  |  |
|  |  |  | Values in Pm， | xcep | where rscoted． |


| r. T. <br> Na． | SAMPLENG． | Eu | 2 rr | Pb | Ag | As | $\begin{aligned} & \text { PPE } \\ & A_{4} \end{aligned}$ |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  |  |  |  |  |  |  |
| $\because$ | 700以E－75\％ON | 38 | 130 | 4 | 0.2 | 1 | 10 |  |
| 3 | 7500 | 34 | 4 B | ® | 0.8 | 5 | 10 |  |
| 4 | 7700 | 4こ | 54 | E | $0 . \Xi$ | 16 | 10 |  |
| 5 | 7750 | 100 | 130 | 1 | 0.6 | 6 | 10 | －1．n－m－ |
| 5 | 7800 | 38 | 58 | こ | $00^{2}$ | 14 | 10 | 0 ¢ 0 ，： |
| 7 | 7850 | 110 | 120 | 6 | O． 5 | 30 | 10 | $\mathrm{g}_{1}+\cdots-\cdots-\cdots-\cdots$ |
| B | 7900 | 100 | 46 | $こ$ | O．E | 15 | 10 | ก JH $\%$ ．－－\％ |
| 5 | 7950 | 48 | 54 | 2 | 0.2 | 14 | 10 | ！J－－． 5000 |
| 10 | 8000 | 48 | 58 | $\Xi$ | 0.2 | こ | 10 |  |
| 11 | 8050 | 68 | 140 | 16 | 0.5 | 30 | － 80 |  |
| 1 13 | B：00 | 68 | 76 | 4 | 0.8 | 18 | 10 |  |
| 13 | 8150 | 18 | E® | $=$ | 0.2 | 10 | 10 |  |
| 14 | 8 ㄴ00 | ここ | 50 | E | 0.3 | 14 | 10 |  |
| 15 | $8=50$ | E4 | $5:$ | $\Xi$ | 0.2 | 18 | 10 |  |
| 15 | 8300 | 16 | 48 | 4 | 0.2 | 8 | 10 | $9$ |
| 17 | 8350 | 16 | 50 | $\Xi$ | 0.2 | 6 | 10 | $\cdots$ corser |
| 18 | 8400 | 30 | 56 | 4 | 0.5 | 6 | 10 |  |
| 13 | 8450 | こ® | 58 | 6 | 0.5 | 14 | 10 |  |
| $E$ | 8500 | 54 | 70 | ᄅ | 0.3 | 10 | 10 |  |
| こ1 | 8550 | 14 | 56 | 4 | 0.3 | 18 | 10 |  |
| ここ | 8600 | 18 | 80 | シ | 0.3 | 1： | 10 |  |
| 23 | 8550 | E0 | 60 | 1 | 0.4 | 6 | 10 |  |
| 24 | 8700 | 56 | 70 | こ | 0.5 | 12 | 10 |  |
| 25 | 8750 | 56 | 36 | \％ | $0 . E$ | 8 | 10 |  |
| EG | 8800 | 16 | 34 | 1 | 0.3 | 2 | 10 |  |
| E7 | 8850 | 14 | 34 | 1 | $0 . E$ | $\Xi$ | 10 |  |
| こ8 | 9150 | 36 | 54 | 1 | C． | 8 | 10 |  |
| ت9 | Fこ00 | 15 | 5こ | $E$ |  | 5 | 10 |  |
| 30 | 9700 | $\Sigma 4$ | 74 | $\Xi$ | 0.3 | 6 | 10 |  |
| 31 | 9750 | 14 | 96 | E | 0.2 | 4 | 10 |  |
| 35 | 3800 | 130． | 94 | 8 | 0.2 | 18 | 10 |  |
| 33 | 3850 | 42 | 90 | 4 | $0 . \pm$ | 2 | 10 |  |
| 34 | 9700 | 15 | 55 | こ | 0.3 | 1 | 10 | $\sqrt{n} \cdot t$ |
| 35 | 3950 | こ6 | 50 | 1 | 0.2 | 1 | 10 | 1 |
| 36 | 10000 | 380 | 88 | 1 | 0.4 | 5 | 10 | $10$ |
| 37 | 10050 | ここ | 78 | 1 | 0.2 | E | 10 | $V$ |
| 38 | 10100 | $6 \pm$ | 94 | 1 | 0.3 | 6 | 10 |  |
| 33 | 10150 | 36 | 54 | 1 | O．E | 14 | 10 |  |
| 40 | 10000 | 26 | 40 | 1 | 0.2 | 4 | 10 |  |
| 41 | 10 ¢50 | 14 | 44 | 1 | 0.2 | $\Xi$ | 10 |  |
| 4 E | 20300 | ここ | 64 | $\Xi$ | 0.2 | 10 | 10 |  |
| 43 | 10350 | 36 | 55 | 4 | 0.2 | $\Sigma$ | $\cdots 000^{\circ}$ |  |
| 44 | 10400 | 16 | 56 | $E$ | $0 . \pm$ | 10 | 10 |  |
| 45 | 10450 | 58 | 78 | 10 | 0.2 | 6 | 10 |  |
| 46 | 10500 | 18 | 50 | 8 | 0.3 | 1 | 10 |  |
| 47 | 10550 | $1 \Xi$ | 48 | $\approx$ | 0.2 | 1 | 10 |  |
| 48 | 10600 | 12 | 38 | 4 | 0.2 | 4 | 10 |  |
| 43 | 7000E－10650N | ご | 70 | 4 | 0.3 | 4 | 10 |  |


| T．T． vo． | SAMPLE NC． | Cu | Zrs | Pb | Ag | fs | $\begin{aligned} & \text { PPE } \\ & \text { Pu } \end{aligned}$ | $\begin{aligned} & 8807-00 \\ & \text { pg. } E \text { e. } \end{aligned}$ | Э |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 50 | 7000E－10700N | $\Xi 2$ | 66 | 4 | 0.2 | 4 | 10 |  |  |
| 51 | 10750 | 4こ | \％40 | 18 | 0.3 | E0 | 10 |  |  |
| 5 | 1085 | 13 | 40 | 4 | O．${ }^{2}$ | $\Xi$ | 10 |  |  |
| 53 | 10350 | 38 | 140 | 6 | O． $0^{2}$ | 8 | 10 |  |  |
| 54 | 11000 | 32 | ： 59 | 14 | 0.7 | 9ะ | 10 |  |  |
| 55 | 11050 | 24 | 5 | 4 | 0.5 | 1 | 10 |  |  |
| 56 | 11100 | 20 | 40 | 4 | 0.5 | 1 | 10 |  |  |
| 57 | 11150 | 14 | 48 | 6 | $0 . \Xi$ | 1 | 10 |  |  |
| 58 | 11 E00 | 10 | Eこ | 6 | 0.8 | 1 | 10 |  |  |
| 59 | 11250 | 4 | 40 | 1 | C． | 1 | 10 |  |  |
| 60 | 11300 | 18 | 5 | 8 | 0.5 | 1 | 10 |  |  |
| 61 | 1：350 | 10 | 50 | $\Xi$ | O． | 8 | 10 |  |  |
| 65 | 11400 | 14 | 38 | 4 | O． $0^{1}$ | 10 | 10 |  |  |
| 63 | 11550 | 10 | 40 | 6 | O． | 8 | 10 |  |  |
| 64 | 11500 | 12 | 4こ | 8 | 0.2 | 10 | 10 |  |  |
| 55 | 11700 | 66 | $\therefore 290$ | 20 | $0 . E$ | 84 | 10 |  |  |
| 66 | 11800 | 5 | 170 | 5 | 0.2 | 14 | －60． |  |  |
| 67 | 11850 | ®0 | 48 | 6 | O． $0^{2}$ | 10 | 10 |  |  |
| 68 | 11900 | 16 | 60 | 12 | 0.3 | 12 | 10 |  |  |
| 69 | 11950 | 5 | 85 | 8 | 0.2 | 14 | 10 |  |  |
| 70 | 1：0000 | B | 65 | 10 | 0.3 | こ | $-30$ |  |  |
| 71 | 1 EOSO | 8 | 40 | $\Xi$ | 0.3 | 1 | ． 30 |  |  |
| 75 | $1 こ 100$ | 35 | 54 | 6 | $0 . E$ | 8 | 10 |  |  |
| 73 | 15150 | ニะ | 78 | 4 | 0.2 | 10 | ． 30. |  |  |
| 74 | 1 ここらら0 | 30 | 74 | 6 | 0.3 | 1 | 10 |  |  |
| 7 5 | 1 こכ00 | 16 | 7こ | 4 | 0.3 | 1 | 16 |  |  |
| 75 | 1 ここら0 | こ® | 75 | 5 | 0.3 | 8 | 10 |  |  |
| 77 | $1 \Xi 450$ | E6 | 58 | 4 | 0.2 | 10 | 10 |  |  |
| 78 | $1:=500$ | 5 5 | 100 | 4 | 0.3 | 1 こ | 10 |  |  |
| 79 | 1：5ㄴㅇㅇ | 16 | 50 | 4 | 0． 2 | 14 | 10 |  |  |
| 80 | $1=500$ | こ0 | 58 | 6 | （．）$\underbrace{\circ}$ | 13 | 10 |  |  |
| 81 | $1: 550$ | こ4 | 50 | 6 | 0.8 | 4 | 10 |  |  |
| BE | $1 \approx 700$ | 56 | 64 | 5 | 6． 5 | 4 | 10 |  |  |
| 83 | 12750 | 18 | 5 | 8 | 0.3 | こ | 10 |  |  |
| 84 | 1E800 | 14 | 45 | 4 | 0.8 | 1 | 10 |  |  |
| 85 | 1 5850 | 츤 | 54 | 4 | $0 . \Xi$ | 4 | 30 |  |  |
| 85 | 12700 | 40 | 58 | 4 | 0.5 | 4 | 10 |  |  |
| 87 | $1: 950$ | 140 | 120 | 12 | 0.8 | ミะ | ． 800 |  |  |
| 88 | 13000 | ぶ | $8 ะ$ | $\Xi$ | O． | 4 | 10 |  |  |
| 83 | 13050 | 0110 | 68 | $\Xi$ | O． $0^{\text {O }}$ | 6 | 10 |  |  |
| 90 | 13100 | 46 | 7こ | $\Sigma$ | 0.5 | 6 | 10 |  |  |
| 91 | 13 こ00 | 40 | 48 | 2 | 0.0 | 1 | 10 |  |  |
| $9 ๕$ | 13550 | 40 | 64 | $\Xi$ | 0.8 | 4 | 10 |  |  |
| 93 | 13300 | 18 | 5 | 4 | 0.5 | 5 | 10 |  |  |
| 94 | 13450 | 38 | 7シ | E | 0． | 6 | 10 |  |  |
| 95 | 7000E－13500N | 46 | 48 | $\Xi$ | $0 . \Xi$ | 1 | 10 |  |  |
| 96 | $7500 E-7500 N$ | 44 | 5 | 1 | 0.3 | 4 | 10 |  |  |
| 97 | 7550 | 5 | 80 | $\Xi$ | 0.6 | 16 | 10 |  |  |
| 98 | 7500 | 180 | 69 | 1 | 0.6 | 75 | 10 |  |  |
| 99 | 7500E－7650N | 58 | 94 | 1 | 0.5 | 8 | 10 |  |  |
| 100 | EHESH－NE． | － | 144 | $E$ | － | － | $\sim$ |  |  |
| 101 | 7500E－7700N | 42 | 55 | 1 | 0.3 | 34 | 10 |  |  |
| 100 | 7800 | 34 | 1こ0 | E | 0.2 | 玉 | 10 |  |  |
| 103 | 7900 | 120 | 74 | 2 | 0.8 | 30 | $-30$ |  |  |
| 104 | 8050 | 46 | 50 | 1 | 0.3 | 4 | 10 |  |  |
| 105 | 8150 | 40 | 44 | 1 | $0 . E$ | 1 | 10 |  |  |
| 105 | 7SOUE－GESON | こ0 | 50 | 1 | 0.3 | $E$ | 10 |  |  |



| $\begin{aligned} & \because \mathrm{T} \\ & \mathrm{de} . \end{aligned}$ | SAMPLE No． | Cu | $2 n$ | Fb | $\mathrm{Al}_{3}$ | As | PPE Au | $\begin{array}{r} 8807-00 \\ \mathrm{Pg} .4 \mathrm{Cf} \end{array}$ | $\xi$ |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 16 | 7500E－1ごこON | 16 | 4こ | 4 | 0.3 | 8 | 10 |  |  |
| 17 | 12950 | こロ | 68 | 6 | 0.8 | 8 | 10 |  |  |
| 18 | 13050 | 38 | 62 | $B$ | 0.8 | 10 | 10 |  |  |
| 13 | 13100 | 34 | 48 | 6 | 0.3 | 4 | 10 |  |  |
| EO | 13150 | 34 | 46 | E | O．E | $\Xi$ | 10 |  |  |
| き1 | $13 こ 50$ | 38 | 66 | 4 | O． 3 | $\pm$ | 10 |  |  |
| ミニ | 13300 | 6 | 24 | E | 0.3 | ； | 30. |  |  |
| こ3 | 13550 | 4 | 20 | 4 | $0 . \mathrm{E}$ | 1 | 10 |  |  |
| 24 | 13400 | 6 | 34 | 6 | ©． $0^{2}$ | 5 | 10 |  |  |
| 토 | $7500 E-13450 N$ | 46 | 64 | 6 | 0.4 | 8 | 10 |  |  |
| E6 | E0OOE－10000N | 10 | 48 | 4 | 0.2 | 8 | 10 |  |  |
| E7 | 10050 | 7こ | 60 | 6 | O．E | 14 | 10 |  |  |
| Es | 10100 | 44 | 万ご | 4 | O．E | 35 | 10 |  |  |
| E9 | 10150 | ご | 34 | 4 | $0 . \square$ | 6 | 10 |  |  |
| 30 | 10500 | 15 | 5 E | 4 | 0.2 | 8 | 10 |  |  |
| 51 | 10050 | 38 | 50 | 4 | O．シ | 10 | 10 |  |  |
| 35 | 10300 | ご | 46 | 4 | 0． 2 | 10 | 10 |  |  |
| 33 | 10450 | 32 | 40 | $\because$ | 0.2 | 4 | 10 |  |  |
| 34 | 10500 | 14 | 38 | 1 | 0．E | 1 | 110 |  |  |
| 35 | 10550 | 8 | 40 | E | 0.8 | 1 | 10 |  |  |
| 36 | 10600 | 16 | 4E | 4 | 0.2 | 1 | 100. |  |  |
| 37 | 10650 | だー | 50 | 4 | 0.2 | 1 | 10 |  |  |
| 38 | 10750 | 14 | 34 | E | 0.3 | 3 | 10 |  |  |
| 33 | 10800 | 10 | 55 | $\Xi$ | 0.5 | 1 | 10 |  |  |
| 40 | 10850 | 16 | $5 E$ | 4 | C． 2 | 1 | 10 |  |  |
| 41 | 10300 | 14 | 5 5 | 6 | C． 2 | 1 | 30 |  |  |
| 4 2 | 10550 | 18 | 46 | 6 | 0． 3 | 1 | 30 |  |  |
| 43 | 11000 | ご | 46 | 6 | 0.2 | 1 | E0 |  |  |
| 44 | 11200 | 10 | $2 \square$ | 4 | O．$\#$ | 1 | 10 |  |  |
| 45 | 11400 | 30 | 48 | 5 | 0.4 | 1 | 10 |  |  |
| 46 | 11500 | 10 | Эこ | 8 | 0． 5 | 1 | 10 |  |  |
| 47 | 1：550 | 8 | 28 | 4 | 0.5 | 1 | 10 |  |  |
| 48 | 11600 | 16 | 46 | 10 | 0.3 | 1 | 10 |  |  |
| 43 | 11550 | 46 | 46 | 5 | C． 4 | 1 | 10 |  |  |
| 50 | 11700 | 90 | 44 | 플 | 0． 3 | ⓪ | 10 |  |  |
| 51 | 11750 | 80 | 68 | 4 | 0.4 | 14 | 10 |  |  |
| 딘 | 11800 | 42 | 58 | 4 | 0.4 | E | 10 |  |  |
| 53 | 11850 | 44 | 48 | 6 | 0.3 | 8 | 10 |  |  |
| 54 | 11900 | 34 | 45 | 4 | O． | 16 | 10 |  |  |
| 5 | 11350 | 3 J | 68 | 10 | 0.6 | 14 | 10 |  |  |
| 55 | 12000 | 10 | उ | 4 | 0.2 | 6 | 10 |  |  |
| 57 | 12050 | $4 \Xi$ | 68 | 8 | 0.4 | 14 | 10 |  |  |
| 58 | $1 E 100$ | 44 | E8 | 10 | 0.4 | 20 | 10 |  |  |
| 53 | 1こ：50 | ぢき | 72 | 15 | 0.8 | EO | 30 |  |  |
| 50 | 1ご00 | 38 | 50 | 8 | 6． 3 | 30 | 10 |  |  |
| 61 | 1 Eこ50 | 14 | 60 | 4 | $0 . \Xi$ | こ | 10 |  |  |
| 58 | ミころ00 | コこ | 86 | 10 | 0.4 | $\Sigma 0$ | 10 |  |  |
| 63 | 12350 | ミ2 | 50 | E | 0.3 | 14 | 10 |  |  |
| 64 | 12400 | ご | 45 | 10 | O．$こ$ | 5 | 10 |  |  |
| 55 | 15450 | 10 | 3\％ | 6 | ¢．シ | 4 | 10 |  |  |
| 66 | 1：こ500 | 40 | EE | 6 | 6.3 | ミ | 10 |  |  |
| 67 | 12500 | E | 18 | 4 | $0 . \geq$ | 1 | 20 |  |  |
| 68 | 1E650 | 6 | 36 | 6 | 0.2 | 1こ | 10 |  |  |
| 67 | 1E700 | 15 | 46 | 6 | C． 3 | 12 | 10 |  |  |
| 70 | $1 \approx 750$ | 8 | 30 | 4 | 0.2 | 16 | 10 |  |  |
| 71 | ： 5900 | こ4 | 46 | 6 | 0.8 | 4 | 30 |  |  |
| 75 | 80OOE－15850N | 38 | 52 | 8 | 0.2 | 16 | 10 |  |  |





| $\underset{C-}{+}$ | SAMPLE Na． | Cu | Zn | Pb | Ag | As | $\begin{array}{r} P \rho G \\ A u \end{array}$ | $\begin{aligned} & 8 B 07-00 \\ & \text { Pge } 8 \text { of } \end{aligned}$ | 3 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 96 | $10500 E-10150 N$ | 100 | 50 | 2 | C． 2 | 6 | 10 |  |  |
| 37 | 10200 | 64 | 50 | こ | 0.2 | ๕ | 10 |  |  |
| 98 | 10350 | 70 | 180 | 16 | 0.4 | 1 | 10 |  |  |
| 93 | $10500 E-10300 N$ | E0 | 60 | 4 | 0.2 | 1 | 10 |  |  |
| 00 | CHECK NE－S | 5 | 146 | 68 |  | －58 | － |  |  |
| 01 | $10500 \mathrm{E}-10350 \mathrm{~N}$ | 48 | 75 | 8 | 0.4 | 4 | 10 |  |  |
| ロこ | 10400 | Эコ | 5こ | 4 | 0.3 | 4 | 10 |  |  |
| 03 | 10450 | 110 | 58 | 4 | 0． 4 | 6 | 10 |  |  |
| 04 | 10500 | 34 | 4ミ | こ | 0.2 | 2 | 10 |  |  |
| 05 | 10550 | 60 | 160 | 6 | 0.4 | 1 | 10 |  |  |
| 06 | 10700 | 1 こ0 | らご | 16 | c． 4 | 36 | 10 |  |  |
| 07 | 10750 | 38 | 45 | 4 | $0 . \Xi$ | 4 | 10 |  |  |
| 08 | 10900 | 38 | 48 | 6 | O． $0^{\text {O }}$ | 1 | 10 |  |  |
| 03 | 10950 | 160 | 54 | 5 | 0.3 | 4 | 10 |  |  |
| 10 | 11000 | 42 | 94 | 4 | 0.2 | 1 | 10 |  |  |
| 12 | 11050 | З3 | 36 | 6 | 0.5 | 4 | 10 |  |  |
| $1 \Xi$ | 11500 | 46 | 86 | 28 | 0.4 | E4 | 10 |  |  |
| 13 | 1：250 | 68 | 110 | 8 | 0.4 | 8 | 10 |  |  |
| 14 | 11300 | 180 | 100 | 15 | 0.6 | 10 | 10 |  |  |
| 15 | 11350 | 1 100 | 34 | 4 | 0.4 | E | 10 |  |  |
| 15 | 11450 | 350 | 55 | 10 | 0.8 | 14 | 10 |  |  |
| 17 | 11500 | 170 | 48 | 5 | 0.4 | 4 | 10 |  |  |
| 18 | 11600 | 32 | 88 | 4 | 0． 4 | 4 | 10 |  |  |
| 13 | 11650 | 35 | 44 | 4 | 0．E | 1 | 10 |  |  |
| EO | 11700 | 74 | 5 | 6 | 0.4 | 6 | 10 |  |  |
| E1 | 10500E－11750N | 170 | 8 8 | 8 | 0.4 | B | 40 |  |  |
| ここ | $11000 E-F 500 N$ | 170 | 120 | 4 | 0.4 | $\Xi$ | 10 |  |  |
| こう | 9550 | Е6 | 150 | 4 | 0.8 | 1 | 10 |  |  |
| ご | 9600 | 16 | Fs | 4 | 0.2 | 1 | 10 |  |  |
| ． 5 | 3650 | 46 | 68 | 6 | 0.5 | 1 | 10 |  |  |
| こ6 | 3700 | 18 | 58 | 4 | 0.3 | 4 | 30 |  |  |
| ．ミ7 | 9800 | 42 | 76 | 4 | －．ミ | 6 | 40. |  |  |
| 28 | 9850 | 24 | 38 | 4 | $0 . \geq$ | 6 | 10 |  |  |
| E3 | 9550 | Е8 | 75 | 4 | 0.5 | き | 10 |  |  |
| 30 | 10050 | 50 | 180 | $\stackrel{\rightharpoonup}{2}$ | 0.2 | $E$ | ， 20 |  |  |
| 31 | 10100 | 36 | 150 | 1 | 0. － | 6 | 10 |  |  |
| 52 | 10150 | \＃8 | 64 | 4 | 0． 2 | 4 | 10 |  |  |
| ． 33 | 10こ00 | 6こ | 56 | 6 | 0.3 | 4 | 10 |  |  |
| ． 34 | 10550 | 18 | 42 | 6 | O． 3 | 1 | 10 |  |  |
| 35 | 10300 | 30 | 45 | こ | 0.2 | 1 | 10 |  |  |
| 35 | 10350 | 30 | 5¢ | 4 | O．E | 1 | 10 |  |  |
| 37 | 10400 | 38 | 190 | 6 | 6．E | 1 | 10 |  |  |
| 35 | 10450 | 38 | 46 | $E$ | 0.2 | 1 | 10 |  |  |
| －39 | 10550 | ［170． | 56 | 6 | 0.3 | 1 | 10 |  |  |
| 40 | 10500 | 1150． | 58 | G | 0． $0^{2}$ | 1 | 10 |  |  |
| 44 | 10700 | ciia | 48 | 4 | O． 2 | 1 | 10 |  |  |
| 42 | 10750 | 80 | 56 | 10 | 6．E | 1 | 10 |  |  |
| 43 | 10800 | C110． | E6 | 6 | 0.3 | 1 | 10 |  |  |
| 44 | 10850 | －190 | 78 | 4 | 0.4 | E | 10 |  |  |
| 45 | 10900 | 88 | 180 | 10 | 0.2 | 64 | 10 |  |  |
| 46 | 11000 | 120 | 58 | 10 | $0 . E$ | 8 | 10 |  |  |
| 47 | 11050 | 58 | 70 | 6 | 0.2 | 8 | 10 |  |  |
| 148 | 11100 | T140． | 84 | 9 | 0.4 | 1 | 10 |  |  |
| 143 | 11000E－11200N | 35 | 38 | 4 | 0.4 | 8 | 10 |  |  |
| 150 | CHECK NL－6 | － | $\pm$ | GG | － | ¢f | － |  |  |
| 151 | $11000 \mathrm{E}-11$ ESON | 5.4 | 140 | 4 | 0.4 | 6 | 10 |  |  |
| 15. | 11000E－1：300N | 54 | 56 | 4 | O．${ }^{2}$ | 4 | 10 |  |  |





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