GEOLOGIAL, GEOCHEMICAL AND GEOPHYSICAL REPORT on the

WHITE CLAIM GROUP

Omineca Mining Division, B.C. 93F/11E, 6E

LOCATION: 90 km southeast of Vanderhoof, B.C.Latitude $53^{\circ} 30^{\prime}$, Longitude $125^{\circ} 05^{\prime}$
OWNER OF RECORD: Newmont Exploration of Canada Limited
WORK DONE BY: Newmont Exploration of Canada Limited
WORK DONE BETWEEN: September 29, 1987 - September 29, 1988
DATE SUBMITTED: December E2O IGGICALBRANCHASSESSMENTREPORT
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This report describes the results of the geological mapping, soil sampling, silt sampling, rock chip sampling, VLF resistivity and magnetic surveys carried out on the WHITE claim group between September 29, 1987 to September 29, 1988. The target concept is exploration for an epithermal-style volcanic hosted, bulk tonnage precious metal deposit. The property is wholly owned by Newmont and is located 90 km southwest of Vanderhoof, B.C.

Initially, a landsat-lineament study of several target areas underlain by Tertiary felsic volcanics of the Ootsa Lake Group was undertaken. The property was staked after boulders of a stibnitebearing altered sandstone were traced up-ice 7 km to their source and several intersecting faults were recognized nearby.

At the Arrow Lake Showing, highly anomalous $\mathrm{Sb}, \mathrm{Hg}$ and minor As are distributed along a series of intersecting subvertical faults that have been locally silicified. Veining in the fractured arkosic sandstone and rhyolite host carry significant amounts of stibnite, pyrite, marcasite and cinnabar. Gold values ranged between 2 - 86 ppb .

Gold mineralization at the Gus Showing is proximally related to an east trending fault lineament and associated dilatant faults and fractures. Several poorly exposed fault zones, up to 1.0 m wide, are interpreted as conduits which fed hydrothermal solutions to the structurally prepared rhyolite and lithic tuff hosts. Chalcedonic rhyolite breccia zones typically carry between 43 $795 \mathrm{ppb} \mathrm{Au}, 0.3$ - 1.5 ppm Ag, 144 - 8452 ppm As, 141 - 26626 ppm Sb , and 1500 - 22000 ppb Hg . The structural setting, intense brecciation, chalcedonic quartz flooding, anomalous trace elements, fine-grained sulfides and erratic gold occurrences represent evidence of a high-level epithermal system.

Extensive backhoe trenching is warranted on both showing areas. A 2500 ft $N Q$ diamond drill program is contingent on encouraging results of the preceding work.

## INTRODUCTION

This report describes the results of the geological mapping, soil sampling, stream sediment sampling, rock chip sampling, VLF resistivity and magnetic surveys conducted on the WHITE claim group between September 29, 1987 - October 13, 1987 and May 13, 1988 September 29, 1988. The program was designed to systematically explore the claims for a bulk tonnage, volcanic-hosted precious metal deposit. Newmont's name for this work is the OOTSA - WHITE Project.

## Location, Access and Topography

The WHITE claim group is located in the Nechako Plateau of the central interior, approximately 90 km southwest of Vanderhoof, B.C. The claims are situated on the north shore of Natalkuz Lake of the Ootsa Lake - Nechako Reservoir near Emmett Lake (see Figure 1).

The nearest access via logging road is from either Vanderhoof or Fort Fraser to Kenny Dam, a distance of 100 and 70 kilometres, respectively. Access to the claim group is gained by driving 9 km west of Kenny Dam along the Ootsa Lake logging road, and then branching off onto a narrow, winding 4 wheel drive access road for a distance of 4.6 km to Arrow Lake. This road cuts through the WHITE 1 and 4 claims.

Relief throughout the region varies between quite flat to moderately steep. Flat to gently undulating topography with numerous small lakes and open grassy swamps cover much of the claim area. Elevations range from 2950 ft near Arrow Lake to over 3600 ft at the summit of a small knoll to the southwest.


NEWMONT EXPLORATION OF CANADA LTD. LOCATION MAP

| scale I: 250000 | LDCATION $93 F^{\text {DATE }}$ NOV. 1,1988 |  |
| :---: | :---: | :---: |
| SUAVEY Br | D.B. | A.C. |

Open stands of jackpine, spruce, and aspen cover the area and underbrush is locally thick near marshy areas. Creeks are shallow and slow flowing.

Variable thicknesses of coarsely to poorly stratified till covers almost the entire claim area. The till physiographically forms drumlin and ridge - like features. The glacial direction is from the southwest to the north-northeast. Outcrop exposure is very poor, comprising less than $1 \%$ of the claim area. Local patches of outcroppings and residual rock occur along the lakeshore of Arrow Lake and in areas of elevated relief.

## Claim Inventory

The WHITE property consists of 4 contiguous mineral claims recorded in the Omineca Mining Division (see Figure 2). For assessment purposes, the mineral titles were grouped as the WHITE Group. Details are as follows:

## WHITE GROUP

| Claim | No. of Units |  | Record Date |  |
| :--- | :--- | :--- | :--- | :--- |
| White 1 | 20 |  | Record Number |  |
| White 2 | 20 |  | Sept. 29, 1987 | 8988 |
| White 3 | 20 |  | Sept. 29, 1987 | 8989 |
| White 4 | 20 |  | Sept. 29, 1987 | 8990 |
|  |  |  | Sept. 29, 1987 | 8991 |

The property consists of 80 claim units totalling about 2000 hectares (4942 acres) and is wholly owned by Newmont Exploration of Canada Limited.


## Property History

The first major geologic survey conducted in the region was by H. W. Tipper of the G.S.C. between 1949 and 1953. Results of the Nechako River map-area survey are published in G.S.C. Memoir 324, dated 1963.

Reconnaissance field work was initially carried out by Newmont in the Nechako Range between July and August, 1986, after researching the available geological, geochemical, and geophysical data. Thematic mapping - landsat data, utilized for a faultlineament interpretation study, was ordered for several map sheets for use on Newmont's image processing system. The integrated study cited favorable target areas for volcanic-hosted epithermal precious metal deposits near intersecting Late Cretaceous and Tertiary related structures. The Nechako River map sheet (93F) displayed the greatest concentration of lineaments and potential targets within the felsic volcanic flows of the Ootsa Lake Group.

Regional exploration in the Lucas Lake area conducted in 1986 was followed-up in 1987 by a 4-man field crew led by J. Nebocat. Newmont personnel discovered several float boulders of a stibnitebearing quartz feldspar wacke/tuff in a logged clearing about 4 km NE of the WHITE 4 claim. After three days of prospecting, the source of the stibnite-bearing sandstone float was found along the lakeshore of Arrow Lake, some 7 km up-ice from a logged clearing. The WHITE claims were subsequently staked based on the widespread exposure of the altered stibnite zone and several intersecting structures recognized nearby. There is no published record or evidence on the ground of previous exploration work on the area now covered by the WHITE claim group.

## Summary of Work

Field work on the WHITE claim group was carried out during two periods. Between September 29 to October 13, 1987, the following work was done: prospecting, rock sampling, stream sediment sampling, and geological mapping. About 16 man-days were utilized in field work. A total of 23 rock samples and 5 silt samples were collected by J. Nebocat, H. Klatt and K. Atkins.

Between May 13 to September 29, 1988, the following field work was carried out by a 2 to 6 man crew led by $D$. Bohme: rock chip sampling, soil sampling, prospecting, geological mapping, hand trenching, a magnetic survey and a VLF resistivity survey. Field personnel included A. Campbell, K. Read, N. Singh, D. Anderson, C. Anderson, and J. Miller. A total of 165 man-days were spent on the property; a further 36 in office compilation and report preparation.

One-hundred and five rock samples and 317 soil samples were collected in 1988. A grand total of 128 rock samples, 317 soil samples and 5 stream sediment samples were taken on the WHITE claim group during the 1987-1988 field programs. All samples were analyzed for gold and 30 trace elements. No backhoe trenching work was undertaken on the property.

Grid lines were flagged and picketed over the entire grid for the geologic mapping, geophysical, and geochemical surveys (see Figure 3). Linecutting was required only in a few localities. A total of 27.9 km of grid line oriented at $140^{\circ}$ AZ were laid out. Lines were spaced 100 metres apart and stations were marked at 25 m intervals with 1 m high orange spray-painted, lath pickets. Around the Gus Showing area, lines were spaced 50 m apart and stations every 12.5 m . All lines were compassed surveyed and slope corrected using a clinometer and chain.


The magnetic and VLF resistivity surveys were carried out by N. Singh and K. Read. A geophysical report prepared by H. Limion, Chief Geophysicist for Newmont Exploration of Canada Limited, is included in Appendix III. All data were plotted and contoured at 1:5,000 scale.

Geological mapping and geochemical values were plotted at 1:5,000 scale. Trench sites and showing areas were mapped at 1:500 scale. Some mapping was done by examining residual rock fragments in dug-out soil sample sites. A petrographic report of one mineralized specimen by C. H. B. Leitch of U.B.C., is included in Appendix I.

## REGIONAL GEOLOGY

The regional geology underlying the Nechako Plateau can be separated into three major divisions: the Middle Jurassic Hazelton Group; the Upper Cretaceous to Eocene Ootsa Lake Group; and the Miocene and later Endako Group (Tipper, 1963). The WHITE claim group is underlain predominantly by felsic volcanics and minor sedimentary rocks belonging to the Upper Cretaceous to Mid-Tertiary Ootsa Lake Group. Cretaceous or Tertiary granitic plutons commonly intrude the Hazelton Group volcanic flows.

The Ootsa Lake Group overlies the intermediate volcanics comprising the Hazelton Group with angular unconformity. No Hazelton rocks were mapped on the property but large outcroppings of andesite porphyry were mapped as Hazelton just to the west-south west of the property. A quartz-monzonite intrusive plug occurs 2.5 km to the west of the WHITE 2 claim.

The Ootsa Lake Group is unconformably overlain by thick piles of Oligocene - Miocene Endako Group basalt to andesite flows. These lavas are flat-lying and are exposed throughout the region along major valleys and in areas of high relief.

## PROPERTY GEOLOGY

## Lithologies

Five lithological units were classified on the property (see Map 1). Three of these units are exposed on the grid and were mapped in more detail.

The Endako Group basalt and andesite (Unit 1) formed as massive to vesicular outcroppings usually at higher elevations. The flows are dark green to black in colour and may be fine-grained to coarsely porphyritic in texture. Only a few sub-angular boulders of basalt were found on the grid. Fine magnetite is disseminated throughout these rocks.

An epiclastic, arkose sandstone (Unit 2) was mapped along the shore of Arrow Lake. Typically in hand specimen the rock exhibits a light grey to black coloured aphanitic matrix and contains up to $60 \%$ white, clay altered feldspars, $10-20 \%$ grey quartz phenocrysts and 10-20\% angular, cherty quartz or felsic volcanic fragments. Possible jarosite was observed in thin section. Thin bands of shale or dark siltstone are interbedded within the sandstone and occasionally contain small wood fossils.

Fracturing, brecciation and shearing were very common within this flat-lying sediment. The unit is locally well silicified. Intensely fractured zones carry fine to coarsely radiating masses of stibnite and fine pyrite within a dark grey chalcedonic quartz matrix.

To the southwest, a faulted contact suggests that the rhyolite overlies the broken-up sediment.

A light grey to buff-beige coloured, weakly flow banded rhyolite (Unit 3) outcrops in several areas on the grid. Less siliceous tuffs and flows are likely more dacitic in composition. clear quartz eyes were occasionally noted along with fine hornblende and biotite. Rusty limonite, hematite and argillic alteration is locally widespread over several tens of metres. Fine pyrite, arsenopyrite and marcasite are associated with narrow chalcedonic quartz veinlets and occasionally within the bleached, siliceous matrix of the rhyolite. More resistant rhyolite exposures form local heights of elevated topography.

At the Gus Showing area, a weathered lithic tuff (Unit 4) lies in fault contact with the more resistant rhyolite exposures to the northeast. Angular lithic fragments include argillically altered felsic volcanics, white quartz and black chalcedonic quartz phenos and greenish andesite pieces cemented in a grey to rusty brown ash matrix. Individual clasts range in size from 1 to 8 millimetres. Outcroppings show a crumbly, rounded surface and a mottled grey to black weathering. The lithic tuff is moderately silicified near fault zones and breaks off in sub-conchoidal pieces.

Several large exposures of coarsely porphyritic latite flows and tuffs (Unit 5) occur on the southern and eastern margins of the claims. The latite is commonly fleshy pink to light grey in colour and contains rare quartz phenocrysts. Trachytic textures were sometimes noted.

## structure

The property area has been extensively dissected by block and transcurrent fault linears mainly evident on aerial or landsat photographs. steeply dipping, northeast trending fault lineaments are interpreted to be truncating less pronounced east-west and northwest oriented faults. The intersections of these major faults has structurally prepared the ground for localized, high level, epithermal-style occurrences of hydrothermal alteration, veining and mineralization.

The local structural environment is dominated by two prominent landsat lineaments; one $050^{\circ} \mathrm{AZ}$ trending fault along Arrow Lake and another $095^{\circ}$ fault truncating, the rhyolite/dacite volcanics to the north. The rhyolite/sandstone outcroppings hosting the Arrow Lake Showing are intensely sheared and fractured with a pseudo banding or foliation oriented subparallel to the regional linear trend and dipping steeply to the northwest. Bedding planes in the sandstone and shale strike about $100^{\circ}$ and dip gently between $5-20^{\circ}$ to the north. Restricted zones of intense fracturing within the sediment are pervasively silicified, brecciated, and mineralized.

In fault contact with, to the southwest, and overlying the arkosic sandstone, is a flat-lying, broken-up rhyolite. Tensional fault structures and fractures radiate outward generally perpendicular to the major $N E$ trending lineament. Fracturing, shearing, and veining are near vertical and strike $165^{\circ}$ to $15^{\circ} \mathrm{AZ}$. A narrow zone of gossanous rhyolite tuff appears to have been downdropped by a series of block faults. Related alteration within the structurally-prepared ground extends along the strike for at least 600 metres before being masked by overburden cover.

The Gus Showing area displays several well silicified, brecciated, dilatant fault zone systems in close proximity to a major 085 - $095^{\circ} \mathrm{AZ}$ trending fault lineament.


#### Abstract

Fracturing, faulting and related veining generally show orientations between $30-45^{\circ} \mathrm{AZ}$ and dip between $65^{\circ}$ to $85^{\circ}$ to the southeast. Quartz veinlet density averages 1 per 10 - 20 centimetres. The fault contact between the fine-grained rhyolite and lithic tuff can be traced for 250 m . Restricted zones of friable rock, gouge, and silicified breccia occur within both the lithic tuff and rhyolite units. Additional trenching is required to further evaluate the structural setting and related mineralization and alteration.


Flow banding or laminated textures in other rhyolite, dacite, or latite porphyry exposures are rare. Other recognizable fault lineaments were plotted and prospected but excessive drift cover masks the geologic evidence in most cases.

## Mineralization and Alteration

Erratic gold mineralization, along with variable amounts of pyrite, arsenopyrite, stibnite, cinnabar and marcasite, occurs in silicified breccia structures associated with major, transcurrent fault lineaments. Structurally-controlled, veined or silicaflooded replacement zones commonly carry anomalous $\mathrm{As}, \mathrm{Sb}$, and Hg pathfinder elements. Coinciding VLF resistivity highs are noted for both the Arrow Lake and Gus Showing areas.

At the Arrow Lake Showing, 5 hand trenches were excavated in siliceous rhyolite and 3 trenches were dug within silica-enriched zones of the arkosic sandstone (see Figures 4, 4a, 4b). Fine to coarsely bladed masses of stibnite occur in grey chalcedonic veinlets and siliceous breccia zones within the fractured sediment. Both the rhyolitic fragments in the breccia and the secondary chalcedonic quartz matrix are mineralized with stibnite. Sericite and jarosite alteration were observed in thin section. Very fine streaks of reddish-brown cinnabar were identified in hand specimens.




The bleached, pyritiferous, locally intensely silicified rhyolite outcrops to the southwest of the sediment and carries elevated values in $\mathrm{Hg}, \mathrm{Sb}, \mathrm{As}$, and Ba and minor gold. White vuggy quartz infillings, irregular chalcedonic quartz veinlets and narrow breccia zones generally trend NE, subparallel to the major fault lineament along Arrow Lake. Patchy, fine to medium-grained sulfides include arsenopyrite, pyrite, marcasite, stibnite and cinnabar.

Vein mineralization around the Arrow Lake Showing area is restricted to a 600 m long by 10 to 150 m wide zone of structurally prepared felsic volcanic/sedimentary host rocks. The character of the veining and mineralization, accompanied with enhanced amounts of $\mathrm{Hg}, \mathrm{As}, \mathrm{Sb}$, and Ba, are signs of an epithermal environment.

Gold mineralization at the Gus Showing is proximally related to a major east-west fault lineament and associated dilatant faults and fractures (see Map 4). Persistant prospecting over a 300 m by 200 m local height of land with small outcroppings and thin, but extensive overburden, eventually turned-up this new discovery. About 10 hand trenches were excavated in the area up to 0.6 metres deep.

The competent, fine-grained, rhyolite host has been locally shattered and brecciated by faulting and re-cemented by dark grey/black chalcedonic quartz. The transcurrent fault lineament defines the rhyolite-lithic tuff contact. The poorly exposed fault contact shows adjacent brecciation and chalcedonic silicification in trenches exposing both rock types. Breccia fragments are typically $1-3 \mathrm{~cm}$ long and quite bleached.

Well-developed tensional fracturing is exposed in several hand-trenches excavated peripheral to the fault lineament. Milky white to transluscent to vitreous black chalcedonic quartz veinlets, up to 2 cm wide, occasionally form weak stockworks. Contact margins of the veinlets are very sharp. Discontinuous bands of grey to white quartz were noted in a few hand specimens.

Drusy, vuggy, colloform, and sugary textured quartz veinlets were observed in a network of up to $2-3$ veinlets per 0.1 metre. At least 2 stages of veining are evident. Individual veinlets may carry significant amounts of sulfides, mainly arsenopyrite and pyrite. Crosscutting limonite and hematite fracture coatings were often noted. Carbonate alteration is weak to moderate.

At the Gus Showing, the best mineralized extensional fault structure pinches and swells between 0.6 and 1.0 m wide and typically displays friable gouge, crackle breccia, argillic alteration, adjacent bleaching, fine sulfide disseminations and fracture coatings and irregular, wedge-like chalcedonic quartz veining and open space replacement. Sulfides, mainly arsenopyrite and stibnite, occur as fine disseminations within the darker silica matrix, as sporadic clusters in a shattered matrix or as fine hairline fracture coatings. Recognition of fine granular masses of acicular (needle-like) arsenopyrite requires careful examination. Radiating aggregates of blue-grey stibnite crystals, up to $2-3 \mathrm{~cm}$ long, extend along the margins of the fault zone into the bleached wallrock. Between 1 - $3 \%$ sulfides are noted in selected hand specimens laced with arsenopyrite and lesser amounts of pyrite and marcasite.

Hand trenching peripheral and along strike of the fault towards the baseline varified erratic occurrences of fault breccia, bleaching, quartz flooding and fine sulfides. A significant occurrence of patchy, bladed stibnite was uncovered in the hand trench at line $2050 S+10 W$. Other sulfide-bearing, chalcedonic quartz, fault-related mineralized zones likely exist in the Gus Showing area. Mechanized trenching would be necessary to permit adequate geologic evaluation of the structures at surface.

## GEOCHEMISTRY

All soil, stream sediment, and rock chip samples were prepared and analyzed by Acme Analytical Laboratories Ltd., in Vancouver, B.C. All of the soils were analyzed for gold and 30 element inductively coupled argon plasma (ICP) analysis. The majority of rock samples were sent for $\mathrm{Au}, \mathrm{Hg}$ and 30 element ICP analysis. A grand total of 128 rock samples, 5 silt samples, and 317 soil samples were collected during the 1987 and 1988 exploration programs.

Sample locations were plotted for the entire data set. All the significant $A u, A g, A s$ and Sb geochemical results for the rock and soil samples were plotted. Results for the silt samples were very low and therefore not plotted. No samples were fire assayed for gold or silver.

## Field Procedure

Selected areas were soil sampled based on the occurrence of residual rock, float or outcrop noted nearby. Soil samples were collected every 25 metres except within marshy or clay-rich depressions. Samples were taken at 12.5 metre intervals over the Gus Showing area.

Soils in the region are poorly developed podzols. In many areas the whitish, leached $A_{2}$ horizon and the reddish brown, enriched B horizon is absent to very poorly developed. Based on 4 pits dug on the grid, the glacial till varies between poorly sorted porous gravels to thick, stratified clay and gravel layers.

Standard soil sampling techniques were used on the geochemical survey. At each sample point a hole was dug with a mattock or shovel to a depth of at least 15 centimetres. With the aid of a trowel, a soil sample was then taken from the bottom of the hole and placed in a numbered $9 \times 15 \mathrm{~cm}$ Kraft paper envelope. Organic material in the samples were usually less than $10 \%$. The stream sediment samples were also taken with the use of a trowel.

The majority of the rock samples were taken with either a moil or a chisel and a 2 lb hammer. Sampled widths were marked by two lines spray painted perpendicular to the sample line. The perimeter of panel samples were also marked with spray paint. Rock sample weights were about 1 to 2.5 kilograms.

## Laboratory Procedure

Silt and soil samples were dried in their envelopes and sieved to obtain a -80 mesh fraction. Then 0.5 gram sample is digested in 3 ml of $3: 1: 2 \mathrm{HCl}-\mathrm{HNO}_{3}-\mathrm{H}_{2} \mathrm{O}$ solvent at 95 C for one hour and is then diluted to 10 ml with water. The digested sample is analyzed for 30 elements by inductively coupled argon plasma method. This leach is partial for $\mathrm{Mn}, \mathrm{Fe}, \mathrm{Ca}, \mathrm{P}, \mathrm{La}, \mathrm{Cr}, \mathrm{Mg}, \mathrm{Ba}, \mathrm{Ti}, \mathrm{B}, \mathrm{W}$ and limited for $\mathrm{Na}, \mathrm{K}$, and Al.

For Hg , a 0.5 G sample is digested with aqua regia and diluted with $20 \% \mathrm{HCl}$. Hg in the solution is determined by cold vapour AA using a $\mathrm{F} \& \mathrm{~J}$ scientific Hg assembly. An aliquot of the extract is added to a stannous chloride/hydrochloric acid solution. The reduced Hg is swept out of the solution and passed into the Hg cell where it is measured by atomic absorption spectrophometer.

A 0.25 g sample is used for F determination. The sample is fused with sodium hydroxide and leached with 10 ml water. The solution is neutralized, buffered, adjusted to pH 7.8 and diluted to 100 ml . Fluorine is determined by Specific Ion Electrode using an Orion Model 404 meter.

For $\mathrm{Au}, \mathrm{a} \log$ sample is ignited at $600^{\circ} \mathrm{C}$ and digested with 30 mls hot dilute aqua regia. Then 75 mls of clear solution is extracted with 5 mls Methyl Isobutyl Ketone. Gold is determined in the acid leach MIBK extract by graphite furnace Atomic Absorption analysis to a 1 ppb detection limit.

Rock samples were pulverized to -100 mesh, and analyzed using the same procedures outlined above. For Au, however, the 10 gram sample is preconcentrated using fire assay techniques and finished by Atomic Absorption analysis.

Rock and Soil Geochemistry - Results and Interpretation

With the aid of Newmont's IBM computer Autocad program system and Calcomp 965 plotter, three maps were produced of the Arrow Lake Showing at 1:500 scale. Sample locations and results for the Gus Showing were drafted at 1:500 scale (see Maps 5, 6, 7). Property maps showing rock, soil and silt sample locations were drafted at 1:5000 scale (see Maps 2, 3).

Soil geochemical data for 6 elements were statistically analyzed using Newmont's statistics computer program. No statistics were compiled for the rock or stream sediment results. A summary of the soil results are shown in the following table:

WHITE Grid - population 317

|  | Low | $\underline{\text { High }}$ | Mean | Threshold Value <br> (95th Percentile) |
| :--- | :---: | :---: | :---: | :---: |
| Au (ppb) | 1 | 75 | 2.3 | 4 |
| Ag (ppm) | 0.1 | 0.6 | 0.13 | 0.4 |
| As (ppm) | 2 | 451 | 15 | 96 |
| Sb (ppm) | 2 | 581 | 8 | 78 |
| Ba (ppm) | 39 | 228 | 72 | 146 |
| Zn (ppm) | 18 | 432 | 58 | 166 |

Of all the elements analyzed, arsenic and antimony show the most positive correlation. Both elements exhibit strong anomalies over structure - related mineralization on the Gus and Arrow Lake Showing areas. Barium and zinc also display a positive association. Local highs of barium are likely associated with carbonate altered felsic volcanics.

Gold anomalies are extremely spotty and are quite weak over the showing areas. Most of the spot anomalies investigated turnedout to be clayey tills with no residual rock present. Two anomalies of 21 and 27 ppb Au occur over the Arrow Lake Showing. Soil sampling at 12.5 m intervals over the Gus Showing verified the very poor dispersion of gold in the glacial derived soils. A high of 7 ppb Au was obtained over the best mineralized structure on the Gus Showing. Silver values on the grid as whole, are extremely low.

At the Arrow lake Showing, rock sampling from the stibnite bearing altered sandstone returned negligible gold - silver results. Highly anomalous $\mathrm{Hg}, \mathrm{Sb}$, and As ranged between 6200-28000 ppb, 660-21821 ppm, and $21-598 \mathrm{ppm}$, respectively. The pyritiferous, fractured rhyolite to the southwest also exhibits elevated $\mathrm{Hg}, \mathrm{Sb}$, and As. Out of 25 rock samples collected from the area two separate samples ran 51 and 86 ppb Au. Indicator elements show up to $8500 \mathrm{ppb} \mathrm{Hg}, 604 \mathrm{ppm} \mathrm{Sb}, 341 \mathrm{ppm} \mathrm{As}$, and 239 ppm Ba . Trace element geochemical anomalies are associated with structures cutting through both the arkosic sandstone and rhyolite.

At the Gus Showing, a total of 74 rock and 65 soil samples were collected from a $250 \times 250 \mathrm{~m}$ area, mostly from narrow trenches. Results are generally encouraging. Of the 30 panel chip samples averaging 0.5 by 0.5 metres in area, twelve assayed between 43-795 ppb Au, 0.3-1.5 ppm Ag, 144-8452 ppm As, 141-26626 ppm Sb and 150022000 ppb Hg . A separate trench across the fault zone averaged 450 $\mathrm{ppb} A u, 1.0 \mathrm{ppm} A g, 5562 \mathrm{ppm} \mathrm{As}$, and 9169 ppm Sb and 14167 ppb Hg over 1.2 metres. Other elements such as Mo, Zn , and Ba show discrete, but positive correlations. Several other surface grab samples near the fault - lineament area ranged between 32-285 ppb $\mathrm{Au}, 697-4307 \mathrm{ppm} \mathrm{As}, 37-189 \mathrm{ppm} \mathrm{Sb}$ and up to 8200 ppb Hg .

Elevated values in $A u$ also occur along the east-west strike of the fault - lineament, particularly near line $2050 \mathrm{~S}+10$ west. A shallow hand trench turned up 76 ppb Au over 3.2 metres. Trace elements ranged between $610-11400 \mathrm{ppb} \mathrm{Hg}, 29-16896 \mathrm{ppm} \mathrm{Sb}, 261-1828$ ppm As and $3-26 \mathrm{ppm}$ Mo. Overburden appears to be quite thick peripheral to the Gus Showing area, therefore, additional soil sampling and manual trenching was not considered.

Sampling elsewhere off the grid did not turn-up any significant results. A float sample on the WHITE 1 claim of an aphanitic, bleached rhyolite ran 655 ppm Ba , the highest barium value obtained on the property. A quartz-pyrite veined altered rhyolite observed in float along the road on the WHITE 4 claim did not yield any significant gold. Drift cover throughout the claim area is extensive and only a few random areas could be explored by manual trenching, prospecting and sampling of residual rock.

## CONCLUSION

The WHITE claims are predominantly underlain by a suite of gently dipping, subaerial felsic volcanic tuffs, flows, pyroclastics and sediments of the Ootsa Lake Group that have been locally intensely fractured by major $N E$ and $E$ trending faultlineaments and intersecting $N$, $N W$ and $N E$ trending dilatant fault structures. Mineralization shows a strong spatial relationship to fracturing and brecciation. Hydrothermal alteration is pronounced in structurally-controlled zones.

At the Arrow Lake Showing, highly anomalous $\mathrm{Hg}, \mathrm{Sb}$ and minor As are distributed along a series of subvertical faults that have been locally silicified. Scattered zones of drusy, vuggy quartz veinlets and open-space chalcedonic quartz flooding carry significant amounts of stibnite, pyrite, marcasite and cinnabar. The structurally-controlled zones of hydrothermal alteration and the corresponding geochemical indications are characterized as leakage in a high level epithermal environment.

At the Gus Showing, several poorly exposed fault zones are interpreted as conduits which fed hydrothermal solutions to the structurally prepared rhyolite and lithic tuff hosts. Gold mineralization, up to 795 ppb, occurs in narrow breccia stockworks and vein fracture fillings. Veins and silicified zones are predominantly composed of dark grey chalcedonic to translucent quartz with very fine arsenopyrite and pyrite disseminated sporadically throughout. Coarse aggregates of stibnite occur both within the rhyolite and lithic tuff breccia and the adjacent bleached, kaolinized wallrock. In general, the structural setting, locally intense brecciation, quartz and chalcedonic quartz openspace filling, fine-grained sulfide mineralogy, anomalous geochemical indicators and the erratic gold mineralization represent evidence of a high-level epithermal system. Addition work may define a more extensive, hydrothermally altered, target area.

Soil geochemistry displayed anomalous $\mathrm{As}, \mathrm{Sb}$ and spotty gold over the showing areas. With the exception of As, detailed soil sampling over the Gus Showing verified that very erratic and narrow dispersion widths for Au and other trace elements is typical for this environment. Several spot gold anomalies in glacial till covered areas remain unexplained.

Outcrop exposures show VLF resistivity highs. Areas of thick overburden covering much of the property appear to have severely limited the effectiveness of the VLF resistivity and magnetic surveys.

## RECOMMENDATIONS

Based on the results of the 1987-1988 exploration program, the following exploration work is recommended for the WHITE claim group:

1. A petrographic - mineralogic study is recommended on selected hydrothermally altered samples. Detailed x-ray diffraction, $x$-ray fluorescence, and SEM analyses may be necessary to help determine the alteration assemblage and level in the Cordilleran-type epithermal model.
2. A minimum of 50 overburden plugger drill holes in order to sample residual soil peripheral to bedrock in deep overburden covered areas. Sampling targets should include areas along strike of known structures and discrete soil or angular float anomalies.
3. Extensive backhoe trenching is warranted on the rhyolite exposures along Arrow Lake and the 250 by 250 m area known as the Gus Showing. Careful assessment of the mineralization, hydrothermal alteration and structural controls may establish drill targets. Spot soil geochemistry and VLF resistivity anomalies may warrant some trenching.
4. Dependent upon encouraging results of the preceding work, a $2500 \mathrm{ft} N Q$ core diamond drill program is recommended on the best target area. Mineralization and hydrothermal alteration at the Gus Showing currently displays the most favourable test area for drilling.

VANCOUVER, B.C.
December 19, 1988


Dennis M. Bohme, P. Eng.

## REFERENCES

Nebocat, J. (1987): Progress report on the Ootsa Survey - 1987, Newmont Exploration of Canada Limited, Company Report.

Tipper, H. W. (1963): Nechako River Map Area, B.C. Geological Survey of Canada, Memoir 324.

1. PERSONNEL

1987
J. Nebocat

Project Geologist
K. Atkins Geologist
H. Klatt

Geologist

## 1988

D. Bohme Project Geologist
A. Campbell Geologist
N. Singh Geophyscist
H. Limion Chief Geophysicist
J. Miller

Geologist
K. Read

Helper
B. Howard Cook
D. Anderson

Helper
C. Anderson

Helper

COST STATEMENT

| Sept. 29, 1987 - Feb. 26, 1988 9 days @ \$153.67/day | \$ 1, 383,03 |
| :---: | :---: |
| Sept. 29, 1987-Oct. 13, 1987 |  |
| 4 days @ \$124.61/day | 498.44 |
| Sept. 29, 1987 - Oct. 13, 1987 4 days @ \$112.14/day | 448.56 |
| Feb. 24, 1988-Sept. 29, 1988 26 days @ \$145.83/day | 3,791.58 |
| Apr. 25, 1988 - Sept. 29, 1988 28 days @ \$117.50/day | 3,290.00 |
| May 10, 1988 - July 20, 1988 15 days @ \$117.50/day | 1,762.50 |
| Sept. 1, 1988 - Sept. 3, 1988 |  |
| 2 days @ \$234.40/day | 468.80 |
| May 29, 1988-Aug. 25, 1988 13 days @ \$115.00/day | 1,495.00 |
| May 11, 1988 - July 16, 1988 |  |
| 14 days @ \$87.49/day | 1,224.86 |
| May 11, 1988- Sept. 29, 1988 |  |
| 34 days @ \$115.00/day | 3,910.00 |
| May 13, 1988-sept. 29, 1988 |  |
| 27 days @ \$75.00/day | $2,025.00$ |
| May 13, 1988-sept. 29, 1988 |  |
| 30 days @ \$77.50/day | $2,325.00$ |

3,791.58
$3,290.00$
$1,762.50$ 468.80
$1,495.00$
$1,224.86$
$3,910.00$
$2,325.00$
2. TRANSPORTATION

| Van Rental | 5 vehicle days @ $\$ 43.00 /$ day | 215.00 |
| :--- | ---: | ---: |
| Toyota $4 \times 4$ pick-up truck | 5 vehicle days @ $\$ 65.00 /$ day | $\$ 25.00$ |
| $3 / 4$ ton Pick-up rental $4 \times 4$ | 25 vehicle days @ $\$ 51.00 /$ day | $1,275.00$ |
| $4 \times 4$ Bronco rental | 30 vehicle days @ $\$ 46.00 /$ day | $1,380.00$ |
| $4 \times 4$ suburban | 7 vehicle days @ $\$ 85.00 /$ day | 595.00 |
| Air Fare to - from Vancouver/Prince George | 200.00 |  |

3. MEALS AND GROCERIES

Meals
Groceries

| 608.10 |
| :--- | ---: |
|  |
| 4.710 .51 |$\quad 5,318.61$

4. ACCOMMODATION

Hotels
520.27
5. CAMP COSTS

Communications
Lumber, hardware, equipment
Fuel for stoves, heater, etc.
\$ $\quad 223.00$
1,177.30
169.20
$1,569.50$
6. FUEL

Gasoline for vehicles
7. GEOCHEMICAL CHARGES

```
        1987
19 rock samples for Au, Hg + 30 element ICP
        @ $17.00/sample
4 rock samples for Au, Hg, F + 30 element ICP
    @ $21.25/sample
5 \text { silt samples for Au, Hg, F + 30 element ICP}
    @ $17.50/sample
    1988
101 rock samples for Au + 30 element ICP
    @ $15.25/sample
4 rock samples for Au, Hg + 30 element ICP
    @ $17.75/sample
317 soil samples for Au, Hg + 30 element ICP
    @ $11.60/sample
8. INSTRUMENT COSTS
\begin{tabular}{ll} 
Magnetometer & 4 days @ \(\$ 30.00 /\) day \\
VLF-Resistivity Instrument & 7 days @ \(\$ 25.00 /\) day \\
Toshiba field computer & 5 days @ \(\$ 21.00 /\) day
\end{tabular}
9. CONTRACT WORK
Petrographic Report
\(\$ \quad 120.00\)
175.00
105.00
400.00
10. FIELD SUPPLIES
Flagging, bags, tools, misc. equipment, etc. Freight + shipping
\(1,540.25\)
71.00
\(3,677.20\)
5,783.95

\section*{11. REPORT PREPARATION}

Reproductions, maps
Typing, copying, drafting
Computer plotting
\begin{tabular}{r}
\(\$ 200.00\) \\
\(1,200.00\) \\
200.00 \\
\hline
\end{tabular}


\section*{STATEMENT OF QUALIFICATIONS}

I, Dennis Martin Bohme, of the City of Vancouver, in the Province of British Columbia, do hereby certify that:
1. I am a graduate of the British Columbia Institute of Technology with a Diploma in Mining Technology, 1980.
2. I am a graduate of the Montana College of Mineral Science and Technology, in Butte, Montana, with the degree of Bachelor of Science in Geological Engineering, 1985.
3. I have been employed in mining exploration as a technician and a geological engineer with Newmont Exploration of Canada Limited from May 1980 to present, except for 18 months when \(I\) was attending university.
4. I personally carried out and supervised much of the work described in this report.


\section*{APPENDIX I}

\section*{SAMFLE 14535: HIGHLY MINEFALIZED EEEGTIA}

Dark grey ta blact silicig breccia with abundant bladed stibnite, which explains the Sb geachemistry (1. Э\%). Na Gbvious reason is apparent for the anomalous Hg, although it would not be unexperted in surh an epithermal environment. Fragments in the breccia consist mostly of tan felsia voleanics, also mineralized with small grains of stibnite. In polished thin seitian, the mineralogy observed is:

Guartz (phencucrysts) 10\%
(graundmass, largely secondary) \(50 \%\)
Sericite \(15 \%\)
Feldspar (altali) \(5 \%\)
Stibnite \(15 \%\)
Jarosite(亏) 5\%
Zircon tr

The lithis fragments af the trecia are mainly felsia volaanics, with fine (up to mal 1 mear quartz eyes and shards plus serigitized remnants af feldspars, set in an almost glassy tan groundmass that may be eomposed af quartz and alkali feldspar in the sub- 5 micron size range, impossibie tu identify micrascopically. Fatahes af stibrite are generally surraunded by chalaedanic, radiating aggregates of secandary quartz (white in hand specimen) as graine up to 0.1 mm long.

Quartz Erystals in this ract have the same Eurving limunite lined fractures seen in other volanics from the peralkaline veleanies Gf the Ilgaghuz Fange. Feldspars were probably alkali, as iri 1425 , but have been altered beyond recognition in this sample. A few patahes are altered ta a bright yellow mineral with the high relief characteristis gf jarasite. Jarasite would be experted in this environment, and indicative of epithermal mineralization, but this can anly be considered to be a tentative identifigation without x-ray data.

Stibnite forms bladed to massive irreqular masses up ta a Eentimeter across, showing distinet anisotropism from tan to greyobue. The deformation twinning se aharacteristig af stibnite is absent, however. It also owsurs as minute needles as small as a few mierons in the groundmass, and as small irregular grains in veins.

This is a strongly mineralized rowt torth the primary volsanis textures and the charagter of the mineralization indirate a high level in an epithermal system.

Craig H. B. Leitch, P. Eng.
May \(10,1988\).

ACME ANALYTICAL LAEORATORIES
852 E．HASTINGS ST．VANCOUVER E．C．VGA IFG
DATA LINE 251－1011
GEDCHEMICAL ICP ANALYSIS


－SARPLE TYPEI PI－ROCX P2－SILI



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\hline R－14536 & 1 & 2 & 8 & 35 & ． 1 & 3 & 1 & 11 & ． 41 & 18 & 5 & ND & 2 & \(\theta\) & 1 & 1425 & 2 & 2 & ． 02 & ． 004 & 1 & 3 & ． 01 & 13 & ． 01 & 2 & ． 28 & ． 01 & ． 01 & 1 & & 10000 & \\
\hline R－14537 & 1 & 3 & 13 & 14 & ． 3 & 2 & 1 & 22 & ． 75 & 598 & 5 & ND & 4 & 14 & 1 & 4444 & 2 & 2 & ． 02 & ． 004 & 7 & 2 & ． 01 & 36 & ． 01 & 3 & ． 29 & ． 01 & ． 05 & 1 & 11 & 1200 & \\
\hline \(R-14538\) & 1 & 2 & 2 & 9 & ． 6 & 4 & 1 & 48 & ． 75 & 2 & 5 & ND & 1 & 12 & & 21821 & 2 & 1 & ． 03 & ． 002 & 2 & 2 & ． 01 & 16 & ． 01 & 2 & ． 02 & ． 01 & ． 02 & 1 & & 29000 & \\
\hline \(8-14546\) & 1 & 2 & 10 & 14 & ． 1 & 1 & 1 & 26 & ． 36 & 35 & 5 & no & 2 & 22 & 1 & 209 & 1 & 3 & ． 01 & ． 005 & 10 & 2 & ． 01 & 39 & ． 01 & 8 & ． 36 & ． 01 & ． 04 & 1 & 1 & 9200 & \(D\) \\
\hline R－14547 & 1 & 2 & 5 & 12 & .1 & 2 & 1 & 21 & ． 42 & 34 & 5 & no & 3 & 8 & 1 & 1133 & 2 & 2 & ． 01 & ． 004 & 9 & 4 & ． 01 & 28 & ． 01 & 7 & ． 31 & ． 01 & ． 04 & 1 & 1 & 8100 & 0 \\
\hline R－14548 & 1 & 2 & 10 & 25 & ． 2 & 3 & 1 & 39 & ． 44 & 49 & 5 & NO & 3 & 6 & 1 & 3364 & 2 & 2 & ． 01 & ． 004 & 7 & 3 & ． 01 & 22 & ． 01 & 2 & ． 28 & ． 01 & ． 03 & 1 & 1 & 5600 & T \\
\hline R－14549 & 1 & 2 & 0 & 40 & .1 & 2 & 1 & 24 & ． 27 & 13 & 5 & no & 1 & 14 & 1 & 5712 & 2 & 3 & ． 03 & ． 003 & 8 & 2 & ． 01 & 40 & ． 01 & 2 & ． 39 & ． 01 & ． 05 & 1 & 2 & 3800 & \({ }_{3}^{2}\) \\
\hline R－14550 & 2 & 2 & 10 & 23 & ． 2 & 2 & 1 & 24 & ． 37 & 19 & 5 & no & 3 & 13 & 1 & 1 529 & 2 & 3 & ． 02 & ． 005 & 9 & 3 & ． 01 & 38 & ． 01 & 2 & ． 34 & ． 01 & ． 04 & 1 & 1 & 9500 & H \\
\hline R－17790 & 2 & 2 & 12 & 33 & ． 1 & J & 1 & 42 & ． 46 & 26 & 5 & No & 2 & 11 & 1 & 14551 & 2 & 3 & ． 02 & ． 005 & 7 & 4 & ． 01 & 58 & ． 01 & 15 & ． 29 & ． 01 & ． 03 & 1 & 1 & 9800 & \(x\) \\
\hline \(k-17191\) & 1 & 2 & 6 & 22 & ． 1 & 3 & 1 & 30 & ． 39 & 13 & 5 & No & 1 & 8 & 1 & 18765 & 2 & 1 & ． 02 & ． 003 & 6 & 3 & ． 01 & 29 & ． 01 & 8 & ． 26 & ． 01 & ． 03 & 1 & 1 & 6200 & H \\
\hline R－11792 & 1 & 1 & 6 & 32 & ． 4 & 3 & 1 & 41 & ． 33 & 29 & 5 & ND & 3 & 7 & 1 & 1 2156 & 2 & 1 & ． 01 & ． 003 & 1 & 2 & ． 01 & 32 & ． 01 & 10 & ． 27 & ． 01 & ． 02 & \(!\) & & 10400 & H \\
\hline R－11193 & 1 & 2 & 3 & 24 & ． 1 & 3 & 1 & 41 & ． 41 & 18 & 5 & no & 2 & 7 & 1 & 12592 & 2 & 1 & ． 01 & ． 002 & 7 & 3 & ． 01 & 86 & ． 01 & 2 & ． 29 & ． 01 & ． 02 & 1 & 2 & 7600 & \\
\hline R－17744 & 1 & 1 & 13 & 29 & ． 1 & 2 & 1 & 27 & ． 26 & 21 & 5 & ND & 1 & 8 & 1 & 1569 & 2 & 1 & ． 01 & ． 003 & 10 & 1 & ． 01 & 35 & ． 01 & 2 & ． 29 & ． 01 & ． 02 & 1 & 2 & 11000 & \\
\hline R－17823 & 11 & 4 & 11 & 82 & ． 1 & 5 & 3 & 149 & 2.99 & 7 & 5 & NO & 2 & 19 & 1 & 122 & 2 & 3 & ． 93 & ． 037 & 3 & 3 & ． 36 & 41 & ． 01 & 13 & ． 28 & ． 03 & ． 12 & 1 & 1 & 340 & \\
\hline R－17824 & 2 & 1 & 5 & 24 & ． 3 & 3 & 1 & b & 1.08 & 3 & 5 & ND & 2 & 4 & 1 & 121 & 2 & 1 & ． 02 & ．003 & 10 & 1 & ． 01 & 24 & ． 01 & 12 & ． 37 & ． 01 & ． 11 & 1 & 34 & 930 & \\
\hline R－17825 & 2 & 1 & 2 & 18 & ． 2 & 2 & 1 & 51 & ． 59 & 53 & 5 & no & & 12 & 1 & 119 & 2 & 1 & ． 04 & ． 003 & 21 & 2 & ． 01 & 129 & ． 01 & 4 & ． 27 & ． 01 & ． 13 & 1 & 25 & 1200 & \\
\hline R－17827 & 2 & 2 & 1 & 29 & ． 2 & 2 & 1. & 83 & ． 13 & 2 & 5 & ND & 4 & 3 & 1 & 15 & 2 & 1 & ． 01 & ． 007 & 16 & 1 & ． 01 & 21 & ． 01 & 5 & ． 25 & ． 01 & ． 16 & 1 & 51 & 140 & \\
\hline R－17828 & 2 & 1 & 8 & 40 & ． 1 & 2 & 1 & 96 & 1.11 & 18 & 5 & ND & 4 & 5 & 1 & 117 & 2 & 1 & ． 01 & ． 004 & 23 & 1 & ． 01 & 40 & ． 01 & 4 & ． 31 & ． 01 & .13 & 1 & 86 & 2800 & \\
\hline R 17829 & 1 & 5 & 1 & 32 & ． 1 & 1 & 1 & 135 & 1.93 & 10 & 9 & KD & 1 & 26 & 1 & 19 & 2 & 2 & ． 01 & ． 008 & 2 & 1 & ． 01 & 28 & ． 01 & 6 & ． 40 & ． 01 & ． 09 & 1 & 1 & 1300 & 150 \\
\hline 817817 & 1 & 41 & 16 & 157 & .2 & 63 & 21 & 2183 & 9.91 & 2 & 5 & \(N 0\) & 6 & 131 & \(!\) & 2 & 2 & 113 & 1.11 & ． 187 & 32 & 84 & ． 21 & 124 & ． 05 & 5 & ． 92 & ． 17 & ． 10 & 1 & 2 & 10 & 560 \\
\hline R 17795 & 5 & 7 & 12 & 34 & ． 1 & 1 & 1 & 99 & ． 67 & 25 & 5 & ND & 1 & 8 & 1 & 22 & 2 & 1 & ． 01 & ． 003 & 14 & 1 & ． 01 & 50 & ． 01 & 8 & ． 21 & ． 01 & ． 11 & 2 & 2 & \(3300^{\circ}\) & 170 \\
\hline R 17796 & 2 & 7 & 2 & 84 & ． 1 & 1 & 12 & 658 & 5.22 & 1 & 5 & NO & ， & 10 & 1 & 2 & 3 & 32 & ． 14 & ． 096 & 19 & 2 & ． 05 & 36 & ． 01 & 15 & ． 49 & ． 04 & ． 16 & 1 & 1 & 2300 & 320 \\
\hline 2981 & 2 & 12 & 9 & 63 & ． 1 & 14 & 8 & 672 & 2.55 & 5 & 5 & no & 4 & 46 & 1 & 12 & 1 & 38 & ． 52 & ． 086 & 22 & 17 & ． 58 & 74 & ． 08 & 3 & 1.02 & ． 05 & ． 08 & 1 & 1 & 70 & 440 \\
\hline 2982 & 2 & 17 & & 37 & ． 1 & 9 & 1 & 322 & 1.59 & 2 & 5 & ND & 3 & 56 & 1 & 12 & 2 & 32 & ． 59 & ． 063 & 17 & 14 & ． 41 & 96 & ． 04 & 3 & 1.15 & ． 03 & ． 05 & 1 & 1 & 30 & 310 \\
\hline 3405 & 2 & 20 & ， & 115 & ． 2 & 21 & 18 & 2033 & 5.48 & 7 & 5 & ND & 5 & 68 & 1 & 12 & 2 & 64 & ． 65 & ． 105 & 19 & 20 & ． 34 & 181 & ． 04 & 2 & 1.96 & ． 05 & ． 11 & 1 & 1 & 40 & 590 \\
\hline 3406 & 1 & 17 & 2 & 65 & ． 1 & 14 & 8 & 953 & 3.20 & 5 & 5 & ND & 3 & 71 & 1 & 12 & 2 & 34 & ． 87 & ． 129 & 23 & 24 & ． 24 & 93 & ． 03 & 2 & ． 93 & ． 04 & ． 07 & 1 & 1 & 90 & 600 \\
\hline 3407 & 2 & 12 & 12 & 50 & ． 1 & 5 & 6 & 3072 & 2.64 & 10 & 5 & ND & 5 & 60 & 1 & 2 & 2 & 23 & ． 17 & ． 064 & 30 & 13 & ． 25 & 166 & ． 02 & 5 & ． 75 & ． 04 & ． 09 & 1 & 1 & 220 & 510 \\
\hline
\end{tabular}




NEWMONT EXPLORATION LTD. PROJECT 334 File \# 88-4939 Page 1


ACME ANALYTICAL LABORATORIES LTD. 852 E. HASTINGS ST. VANCOUVER B.C. V6A 1R6 PHONE(604)253-3158 EAX(604)253-1716
GEOCHEMICAI, ANAIYSIS CERTIEICATE



\begin{tabular}{|c|c|c|c|c|c|c|c|c|c|c|c|c|c|c|c|c|c|c|c|c|c|c|c|c|c|c|c|c|c|c|c|c|c|}
\hline 3¢, 3 ?: & Y & \(\therefore\) & : & : & i; & y: & C: & Ka & : & 1s & \% & \(\lambda 6\) & : & :t & :1 & 3) & \(3!\) & \(i\) & :1 & \(?\) & !! & \(6:\) & Mi & is & 11 & 1 & \(\lambda\) & Y & 1 & i & A:', & 8 & \\
\hline s... & : & : X & : \(: \times\) & \%: & ? P\% & ? 3 & P! & P:X & 1 & Pi: & ¢? \({ }^{\text {¢ }}\) & PFY & :? & ?? & P? \({ }^{\text {N }}\) & : \(: \times\) & 3 PN & 8: & 1 & \(\}\) & : : \(^{\text {n }}\) & i? \({ }^{\text {a }}\) & 1 & iPM & 1 & i:M & : & ; & 1 & : \(:\) & :? & : \(:\) & \\
\hline \% 39971 & 5 & ¢ & 11 & 11 & . 2 & 1 & 1 & \(5!1\) & 1.19 & \(2: 8\) & \(!\) & ND & 1 & 25 & 1 & 20 & 1 & g & . 19 & . \(23{ }^{\circ}\) & 3 & 5 & .02 & 15 & . 01 & \(!\) & . \(3!\) & . 11 & .11 & \(!\) & 11 & 110 & \\
\hline 13:871 & 1 & 1 & , & (1) & . 1 & 1 & 1 & 197 & 1.22 & 31 & 5 & No & 3 & 5 & 1 & 1 & 2 & 1 & . 6 & . \(\cos\) & 32 & 8 & . 81 & 31 & . 61 & 1 & . 81 & . 11 & . 16 & 1 & 1 & 360 & \\
\hline P. \(1: 397\) & j & 1 & 1 & 3 & . 1 & 1 & \(i\) & 191 & 1.51 & \% & 5 & ND & 3 & 1 & : & 1 & ? & 1 & . 01 & . 005 & 31 & 1 & . 11 & 15 & . 21 & , & . 28 & . 01 & . 16 & 1 & 1 & 1200 & \\
\hline 1:351: & j & 3 & 1 & 17 & . 1 & 1 & 1 & 311 & 1.50 & :1 & 1 & is & 1 & 11 & 1 & : & 2 & 1 & . 68 & . 006 & 30 & 1 & . 01 & 11 & . 61 & j & . 21 & .1! & . 15 & 1 & 12 & 110 & \\
\hline 1. 51591 & 1 & 1 & \(1:\) & i] & . 1 & 2 & 1 & 111 & 2.1: & :2 & \(!\) & Nit & 2 & 10 & 1 & \$ & 2 & 1 & . \(i 6\) & . 085 & 11 & \(j\) & . 31 & 31 & . 11 & 1 & . 25 & . \(0:\) & . 15 & 1 & ? & 200 & \\
\hline 1: \(: 90\) & : & 3 & \% & is & . 1 & 3 & 1 & 511 & . 59 & ; & ; & N0 & 2 & ; & : & 1 & 9 & 1 & . 68 & .064 & 36 & : & . 22 & 11 & . 01 & 9 & . \(\therefore 1\) & . \(1:\) & . 11 & : & 1 & 310 & \\
\hline \(131: 13\) & 1 & 1 & ) & 31 & . 1 & 1 & d & 195 & . 39 & 2 & 3 & 10 & , & 11 & 1 & , & : & 3 & . 12 & . 001 & 12 & 1 & . 03 & 13 & . 01 & ? & . 35 & . 01 & . 16 & 1 & 1 & 10 & \\
\hline 131031 & 2 & 1 & 1 & 19 & . 1 & 1 & 1 & 599 & 3.18 & 1 & , & 10 & 1 & 11 & 1 & , & j & 1 & . 11 & . 011 & 11 & 1 & . 03 & 13 & . 01 & 11 & . 15 & . 02 & . 11 & 1 & 1 & 120 & 1 \\
\hline 13186 & 1 & 3 & 10 & 11 & . 1 & 1 & 1 & 11 & 2.59 & 111 & ) & N0 & 1 & 10 & 1 & 1 & ! & 1 & . 03 & . 011 & 6 & 1 & . 01 & 12 & . 01 & 1 & . 16 & . 01 & . 15 & 1 & \(!\) & 110 &  \\
\hline 1 11151 & 1 & 1 & 10 & 12 & . 1 & 1 & 1 & 11 & 1.15 & 131 & 9 & 10 & 1 & 1 & , & , & 2 & 1 & . 03 & . 005 & 11 & 1 & . 01 & 31 & . 01 & 1 & . 31 & . 01 & . 15 & 1 & 1 & 880 &  \\
\hline 131192 & ) & ? & 1 & 15 & . 3 & 1 & 1 & 15 & 1.05 & 85 & 5 & 10 & 2 & 5 & 1 & 1 & \% & 1 & . 02 & . 001 & 11 & 1 & . 01 & 11 & . 01 & 1 & . 31 & . 01 & . 10 & 1 & 11 & 390 & \\
\hline 131169 & 3 & 2 & 9 & 6 & . 3 & 1 & 1 & 91 & . 11 & 19 & S & vo & 2 & 3 & 1 & 1 & 2 & 1 & . 02 & . 005 & 11 & \(j\) & . 01 & 36 & . 01 & 9 & . 11 & . 01 & . 11 & 1 & 10 & 330 & \\
\hline 111151 & \(s\) & ¢ & 11 & 6 & . 1 & \(s\) & 1 & 569 & 2.58 & 13 & 5 & \(N 0\) & 1 & 11 & 1 & 2 & 1 & 1 & . 13 & . 031 & 1 & 1 & . 05 & 11 & . 01 & 1 & . 11 & . 01 & . 11 & 1 & 11 & 250 & \\
\hline 131165 & \% & , & 9 & 38 & . 2 & \(?\) & , & 839 & 2.51 & 21 & 3 & no & , & 16 & , & f & 2 & 1 & . 13 & . 036 & 1 & 3 & . 03 & 11 & . 01 & 1 & . 10 & . 01 & . 01 & \(!\) & 12 & 310 & \\
\hline 111156 & 1 & \% & 11 & 81 & . 1 & 1 & 5 & 191 & 2.51 & 12 & ) & no & 1 & 11 & 1 & 2 & 2 & 1 & . 11 & . 018 & 1 & 1 & . 03 & 80 & . 01 & 2 & . 60 & . 01 & . 10 & 1 & 1 & 130 & \\
\hline 131169 & \(!\) & 1 & 13 & 65 & . 1 & \(\delta\) & 1 & 863 & 2.19 & 19 & \(s\) & no & 1 & 11 & 1 & 2 & 2 & 1 & . 11 & . 012 & 1 & 2 & . 01 & 16 & . 01 & 1 & . 31 & . 01 & . 13 & 1 & 1 & 210 & \\
\hline 131153 & 1 & \(f\) & 11 & 12 & . 1 & 1 & 1 & 380 & 3.28 & 20 & 5 & no & 1 & 16 & 1 & 2 & 1 & 5 & . 13 & . 061 & 1 & 2 & . 05 & 15 & . 01 & 1 & . 58 & . 01 & . 11 & 1 & 2 & 200 & \\
\hline 111169 & 1 & 1 & 5 & 81 & . 1 & 1 & 1 & 158 & 1.15 & 21 & S & VO & 1 & 1 & 1 & 2 & 2 & 1 & . 05 & . 009 & 10 & 1 & . 01 & 10 & . 01 & 5 & .10 & . 01 & . 15 & 2 & 1 & 900 & \\
\hline \(1311 i s\) & g & 2 & 1 & 16 & . 2 & 1 & , & 59 & . 51 & 161 & 5 & No & 1 & 25 & , & 19 & ? & 1 & . 05 & . 011 & 2 & , & . 02 & 98 & . 01 & 8 & . 21 & . 01 & . 15 & 1 & 11 & 1700 & \\
\hline 131171 & 5 & 1 & 12 & 11 & . 2 & \(?\) & 1 & 185 & . 11 & 691 & 1 & 10 & 1 & 28 & , & 131 & 2 & 1 & . 01 & . 009 & 2 & 1 & . 01 & 268 & . 01 & 1 & .28 & . 01 & . 13 & \(j\) & 10 & 1800 & \\
\hline 111192 & 10 & ; & 9 & 1 & .3 & 1 & 1 & 11 & . 91 & 2197 & 1 & N0 & 1 & 11 & 1 & 111 & 2 & 1 & . 02 & . 005 & 1 & 2 & . 01 & 151 & . 01 & 1 & . 11 & . 01 & . 11 & 1 & 210 & 8200 & \\
\hline 131173 & 1 & j & 9 & 1 & . 2 & 1 & , & 16 & 1.11 & 301 & 8 & no & 2 & 20 & 1 & 19 & 2 & 1 & . 05 & . 011 & 1 & 5 & . 01 & 65 & . 01 & , & . 31 & .01 & . 11 & 2 & 32 & 3590 & \\
\hline 131191 & 1 & 1 & 9 & 11 & . 1 & ? & , & 367 & 2.02 & 59 & 1 & 10 & 3 & 1 & , & 26 & 2 & 1 & . 01 & . 011 & 19 & l & . 01 & 11 & . 01 & 5 & . 11 & . 01 & . 11 & 1 & 1 & 180 & \\
\hline 131198 & 1 & ? & 1 & 35 & . 1 & 1 & 1 & 311 & 1.19 & 41 & 1 & 18 & j & 1 & 1 & 1 & 2 & 1 & . 05 & . 010 & 11 & \(j\) & . 02 & 31 & . 01 & 9 & . 31 & . 01 & . 15 & 2 & 1 & 1300 & \\
\hline 111176 & 1 & 1 & 12 & 25 & .2 & 1 & \(!\) & 12 & 1.31 & 11 & 5 & 10 & j & 11 & 1 & 16 & 2 & 1 & . 01 & . 001 & 11 & ? & . 01 & 60 & . 01 & 1 & . 21 & . 01 & . 11 & 1 & 1 & 2100 & \\
\hline 131119 & 11 & 3 & 11 & 18 & .2 & 1 & 1 & 118 & . 31 & 11 & 5 & yo & 3 & 13 & 1 & 26 & 2 & 1 & . 03 & . 005 & 16 & 3 & . 01 & 111 & . 01 & 3 & . 21 & . 01 & . 11 & 2 & ; & 1100 & \\
\hline 131193 & 1 & \% & 13 & 26 & .1 & 1 & 1 & 161 & 1.01 & 117 & 5 & \(n\) & 1 & 10 & 1 & 11 & 2 & 1 & . 02 & . 006 & 21 & 2 & . 01 & 129 & . 01 & 1 & . 21 & . 01 & . 11 & 1 & 1 & 2300 & \\
\hline 131199 & 1 & 1 & 3 & 10 & . 1 & 1 & 1 & 234 & 1.39 & 159 & 3 & 10 & 3 & 10 & 1 & 13 & 2 & 1 & . 01 & . 001 & 10 & 1 & . 01 & 31 & . 01 & 3 & . 25 & . 01 & . 11 & 3 & 1 & 1200 & \\
\hline 131130 & \(!\) & ? & 1 & 20 & . 1 & ? & 1 & 121 & . 32 & 131 & 9 & 10 & 1 & 6 & 1 & 16 & 2 & 1 & . 01 & . 005 & 2 & 1 & . 01 & 62 & . 01 & 1 & . 21 & . 01 & . 10 & 1 & ; & 1800 & \\
\hline 131181 & ? & j & 1 & 15 & . 3 & ? & 1 & 103 & . 62 & 131 & g & yo & 2 & 12 & 1 & 111 & 2 & 2 & . 03 & . 007 & 9 & j & . 02 & 109 & . 01 & 3 & . 13 & . 01 & . 12 & 1 & 21 & 6000 & \\
\hline 131182 & 2 & ! & 9 & 16 & . 2 & 1 & 1 & 11 & .19 & 159 & ; & 10 & 1 & , & 1 & 296 & 2 & 1 & . 03 & . 001 & 29 & 1 & . 01 & 111 & . 01 & 1 & . 90 & . 01 & . 11 & 1 & 1 & 3800 & \\
\hline 131103 & 3 & 3 & 1 & 21 & . 3 & 1 & 1 & 111 & . 11 & 198 & 1 & 10 & 2 & 10 & 1 & 181 & \(j\) & 1 & . 03 & . 001 & 1 & 1 & . 01 & 115 & . 01 & \(j\) & .21 & . 01 & . 11 & 1 & 1 & 1380 & \\
\hline ¢9 \%/At-1 & 19 & \(j 6\) & 11 & 122 & 3.1 & 68 & 30 & 1017 & 1.11 & 11 & 21 & 8 & 19 & \(1 i\) & 20 & 11 & 19 & 59 & . 13 & . 097 & 11 & 35 & . 82 & 116 & . 01 & 33 & 1.91 & . 06 & . 16 & 12 & 505 & 1100 & \\
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NEWMONT EXPLORATION LTD. PROJECT 339 F11E 88-3212
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\hline R 34134 & 1 & 3 & 11 & 11 & . 1 & 1 & 1 & 119 & . 90 & 169 & j & no & 2 & 11 & 1 & 263 & 2 & 1 & . 03 & . 003 & 1 & 2 & . 01 & 255 & . 01 & 1 & . 21 & . 01 & . 10 & 1 & 18 & 5600 \\
\hline 131185 & 1 & 2 & 9 & 15 & . 2 & 1 & 1 & 255 & . 19 & 103 & 5 & 10 & 2 & 9 & 1 & 19 & 2 & 1 & . 01 & . 005 & 13 & 3 & . 01 & 17 & . 01 & 5 & . 25 & . 01 & . 15 & & 1 & 3300 \\
\hline 131186 & 1 & 2 & 9 & 16 & .1 & 1 & 1 & 32 & . 69 & 363 & 5 & N0 & 1 & 11 & 1 & 61 & 2 & 1 & . 03 & . 005 & 1 & 2 & . 01 & 11 & . 01 & 1 & . 19 & . 01 & . 12 & 1 & 11 & 2100 \\
\hline 131189 & 2 & 2 & 11 & 12 & . 1 & 1 & 1 & 21 & . 66 & 96 & 5 & 1 D & 2 & 1 & 1 & 19 & 2 & 1 & . 01 & . 005 & 6 & 2 & . 01 & 69 & . 01 & 1 & . 26 & . 01 & . 16 & , & 1 & 2300 \\
\hline 231213 & 5 & 5 & 11 & 16 & . 1 & 1 & 1 & 21 & . 97 & 1309 & 5 & ND & 1 & 10 & 1 & 189 & 2 & 1 & . 01 & . 002 & 2 & 1 & . 01 & 121 & . 01 & 1 & . 21 & . 01 & . 3 & 1 & 285 & 2000 \\
\hline 131211 & 2 & 3 & 15 & 19 & . 1 & 2 & 1 & 68 & . 57 & 5 & 5 & ND & 10 & 1 & 1 & 2 & 2 & 1 & . 03 & . 005 & 38 & 5 & . 01 & 11 & . 01 & 2 & . 28 & . 01 & . 18 & 3 & 1 & 150 \\
\hline P 31251 & 5 & 1 & 6 & 26 & . 3 & 3 & 2 & 18 & 1.16 & 16 & g & HD & 2 & 19 & 2 & 13 & , & , & . 09 & . 019 & 1 & , & . 02 & 39 & . 01 & 10 & . 39 & . 01 & . 19 & 1 & 1 & 380 \\
\hline 134238 & 1 & ? & 13 & 8 & . 1 & 2 & 1 & 11 & . 85 & 106 & \} & No & 1 & 35 & 1 & 12 & i & 3 & . 06 & . 023 & 3 & 3 & . 02 & 61 & . 01 & ? & . 39 & . 01 & .19 & ? & 9 & 1300 \\
\hline 831253 & 6 & 1 & 8 & 5 & . 1 & 1 & 1 & 19 & . 54 & 207 & 1 & ND & 2 & 18 & ? & 11 & 2 & 2 & . 01 & . 005 & 2 & 2 & . 01 & 66 & . 01 & 10 & . 33 & . 01 & . 18 & 1 & 19 & 9600 \\
\hline Q 31251 & 5 & 1 & 7 & 5 & . 1 & 2 & i & 30 & . 18 & 88 & ; & ND & 3 & 15 & 3 & 110 & 2 & 3 & . 85 & . 004 & 3 & 3 & . 02 & 11 & . 01 & 11 & . 39 & . 01 & . 18 & 2 & 30 & 12100 \\
\hline R 31255 & 1 & 1 & 6 & 3 & . 1 & 5 & 1 & 22 & . 59 & 111 & 5 & ND & 1 & 20 & 1 & 163 & 2 & - & . 06 & . 009 & ? & 2 & . 01 & so & . 01 & ? & . 35 & . 01 & . 19 & 1 & 13 & 9600 \\
\hline 2. 34256 & 8 & 1 & g & 5 & . 2 & 2 & 1 & 21 & . 65 & 135 & 5 & ND & 1 & ii & 1 & 89 & 3 & 2 & . 05 & . 008 & 3 & 1 & . 02 & 5 & . 01 & 13 & . 25 & . 01 & . 20 & ? & 10 & 8600 \\
\hline ? \(3: 259\) & 10 & 1 & 13 & 8 & 1.0 & 3 & 1 & 19 & . 11 & 184 & , & ND & 1 & 16 & 1 & 189 & 3 & 3 & . 05 & . 607 & \(\vdots\) & ? & . 02 & 60 & . 01 & 19 & . 29 & . 01 & . 19 & & 151 & 13090 \\
\hline \& 31858 & 9 & \(i\) & if & 5 & . 1 & 2 & 1 & 26 & . 61 & 111 & & VD & 1 & 15 & 1 & 159 & 2 & 2 & . 04 & . 005 & 2 & 1 & . 01 & 18 & . 01 & 2 & . 36 & . 01 & . 18 & 1 & 35 & 13600 \\
\hline 8 31255 & 5 & 2 & \(!\) & 1 & . 3 & 2 & 1 & 13 & . 16 & 97 & 5 & ij & 2 & 13 & \(!\) & 69 & 1 & 1 & . 04 & . 005 & ? & 2 & . 01 & 63 & . 01 & :1 & . 34 & . 01 & . 18 & : & 11 & \(8: 00\) \\
\hline P. 21360 & 8 & 3 & 11 & 10 & . 6 & j & i & 30 & . 96 & 3061 & 5 & ND & 1 & 29 & 1 & 210 & ? & , & .0? & . 015 & 3 & , & . 01 & 152 & . 01 & \(i\) & . 29 & .il & . 16 & ; & & 16000 \\
\hline R 3426! & 1 & 2 & 11 & 8 & . 9 & ? & 1 & 25 & . 91 & 1404 & 5 & ND & 2 & 11 & 2 & 132 & : & : & . 03 & . 003 & 3 & 2 & . 01 & 107 & . 01 & 10 & . 31 & . 01 & . 16 & 1 & 115 & 11000 \\
\hline i 3:262 & 3 & , & 9 & 11 & . 9 & 3 & 1 & 32 & . 59 & 1722 & ; & Nit & , & 13 & 2 & 81 & 2 & 1 & . 04 & . 003 & 2 & 6 & . 02 & 10 & . 01 & 11 & . 25 & . 01 & . 16 & , & 123 & 3500 \\
\hline R 31263 & 5 & i & 8 & 10 & . 1 & 3 & 1 & 20 & . 59 & 681 & g & ND & 1 & 19 & 1 & 29 & ? & 1 & . 04 & . 005 & 1 & 1 & . 01 & 89 & . 01 & 5 & . 39 & . 01 & . 18 & 1 & if & :300 \\
\hline 131261 & 8 & 1 & 16 & 35 & . 1 & 1 & 1 & 11 & 1.02 & 2316 & 1 & Ni & , & 13 & 2 & 11 & 2 & 1 & . 03 & . 003 & 3 & 2 & . 01 & 91 & . 01 & 11 & . 31 & . 01 & . 20 & 3 & 5 & 3400 \\
\hline \(R 31265\) & 9 & \(!\) & 16 & 16 & . 5 & 2 & ! & 23 & . 61 & 1366 & 5 & ND & 1 & 15 & 2 & 1755 & \(?\) & 1 & . 05 & . 004 & 3 & 1 & . 01 & 91 & . 01 & 9 & . \(3 i\) & . 01 & . 19 & 1 & 33 & 2600 \\
\hline 1 31266 & 23 & ? & 13 & 11 & . 2 & 2 & 1 & 28 & . 91 & 171 & 3 & vo & , & 21 & 3 & 71 & 2 & 2 & . 05 & . 009 & 1 & 5 & . 02 & 120 & .01 & 11 & . 35 & . 01 & . 25 & 1 & 36 & 3300 \\
\hline 831269 & 11 & ? & 11 & 1 & . 6 & 3 & 1 & 21 & 1.23 & i 191 & , & N & 2 & 39 & 2 & 205 & ? & ? & . 03 & . 011 & 3 & 1 & . 01 & 186 & . 01 & 8 & . 35 & . 01 & . 28 & ! & 28 & 9200 \\
\hline P. 31268 & 5 & 3 & 10 & 11 & . 1 & 2 & 1 & 18 & . 62 & 113 & 5 & KD & 1 & 26 & 1 & 31 & ? & 6 & . 03 & . 010 & 1 & 5 & . 01 & 148 & . 01 & 13 & . 36 & . 01 & . 21 & 1 & 1 & 2800 \\
\hline P. 21269 & 6 & \% & 13 & 11 & . 1 & 2 & 1 & 21 & . 16 & 90. & 5 & No & 1 & 33 & 1 & 10 & 2 & 2 & . 05 & . 011 & 2 & 2 & . 01 & 111 & . 01 & 2 & . 35 & . 01 & . 18 & ! & 1 & 1300 \\
\hline  & :1 & j8 & 41 & \(1: 2\) & : .1 & 68 & 30 & 1017 & 4.11 & 14 & 26 & 8 & 39 & \(1 i\) & 20 & 16 & 19 & 59 & . 15 & . 097 & 11 & 5 & . 82 & 176 & . 07 & 35 & \(\therefore 17\) & . 06 & . 16 & i & 505 & 1400 \\
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\begin{tabular}{|c|c|c|c|c|c|c|c|c|c|c|c|c|c|c|c|c|c|c|c|c|c|c|c|c|c|c|c|c|c|c|c|}
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y & C: & : 5 & in & 19 & Rid & \({ }^{6}\) & x \({ }^{\text {a }}\) & 'e & ds & \(\square\) & \(\lambda\) & Th & 55 & 01 & 5) & 81 & \(v\) & Ca & \% & d & : & Y & \(B 1\) & 91 & 8 & \(\lambda:\) & Y8 & 5 & i & \\
\hline & R SM & PPK & R?Y & Pfy & SPM & PPM & ? \(3 \times\) & ¢Ex & 3 & 2?M & ? 3 & P?Y & : 3 M & ! & 2? & PiM & g? & fin & ; & \(\}\) & PPY & P? & \(\}\) & PeM & i & P! & 1 & + & 1 & 8:\% & : \(: 3\) \\
\hline : \(\because:\) & . & : & \(:\) & is & . 1 & 13 & ! & 1i4: & 3.:i & \(1:\) & ! & \(8:\) & , & 33 & ! & ? & i & 15 & . 31 & . 18 & 15 & 20 & . 31 & 19! & . 04 & ? & 2.01 & . 01 & . Cb & \(!\) & 3 \\
\hline \(30: 3\) & 1 & ; & 3 & 39 & . 1 & \% & 1 & [3] & 1.:5 & 1 & 5 & 10 & 1 & : & , & , & 3 & 21 & . 11 & . 128 & :0 & is & . 21 & 5 & . 25 & , & 1.:3 & . 8 & . 28 & . & \\
\hline 3i:4 & : & ; & : & 12 & \(\therefore\) & \% & 1 & :19 & \(\therefore . .1\) & , & : & vi & , & 16 & 1 & : & i & 35 & . 9 & . \(:\) : & : 0 & 15 & . 20 & 16 & . 07 & , & 1.85 & . \(:\) & . 24 & , & \\
\hline 3: 5 & 1 & ; & 1 & 19 & .i & 1 & 1 & \(2: 4\) & 2.:6 & , & ! & 40 & , & it & 1 & ! & , & 31 & . 19 & . 036 & il & 18 & . 23 & 11 & . 28 & 1 & 1.15 & . \(\because\) & . 0 ? & : & \\
\hline 8256 & 1 & ; & \(i\) & 18 & \(\therefore\) & ; & 1 & 331 & \(\therefore\) : & ; & ! & Vi & 1 & 2: & 1 & \(i\) & 3 & \(3 i\) & . 2 ? & . 253 & io & 18 & . 22 & \(i 1\) & . 6 & 6 & 1.:1 & \(\because\) & .if & 1 & \\
\hline 3250 & 1 & 5 & 1 & 7 & . 1 & \(1:\) & : & \(2: 1\) & 2.92 & :1 & ; & Si & : & i & 1 & 5 & : & is & . 15 & . \(31:\) & 15 & 13 & . 2 & \% & . \(8 i\) & ! & 1.8! & \(\therefore 1\) & . 09 & : & \\
\hline : \(:\) ! & : & 3 & 3 & 12 & . 1 & 13 & 5 & 215 & :. 19 & 19 & ; & Y & : & 31 & 1 & 9 & 3 & 3 & . 2 & . 235 & \(1!\) & 15 & . 2 & 89 & . 4 & 1 & :.ad & . \(i\) & . 31 & & \\
\hline \(8: 5\) & 1 & 5 & 9 & 69 & . & 8 & 1 & 569 & 1.32 & 1 & \% & Y\% & , & 15 & 1 & 5 & , & :3 & . \(: 1\) & . 155 & 11 & : 5 & . 11 & 11 & . 26 & : & : 1.04 & . & . \(: 1\) & & \\
\hline \(325 ;\) & 1 & : & ; & : & .i & 11 & 5 & :19 & 2. \(2:\) & . & f & 3 & : & 17 & : & \% & ; & 40 & . \(\because\) & .03i & \% & 31 & . \(\therefore\) & 71 & .is & : & 1.is & . \(2:\) & . 04 & ! & \\
\hline 8:5: & 1 & 5 & ! & \(\because\) & .i & 5 & 3 & 23. & i.it & 6 & ; & ij & : & \(2!\) & : & 3 & \(?\) & : & .is & . \(01:\) & :i & : & . \(:\) & 53 & \(\therefore 3\) & \(\vdots\) & . 61 & . 31 & .is & : & ! \\
\hline 9296 & 1 & ; & 1 & 31 & \(\therefore\) & 6 & 3 & : 19 & 1.95 & ? & 5 & 90 & 1 & 32 & 1 & , & , & 31 & . 15 & . 220 & :3 & 14 & . 18 & 8 & . 68 & 2 & . 58 & . 4 : & . \(i\) & : & 2 \\
\hline 8:69 & 1 & 1 & 11 & 12 & . 3 & 1 & , & 13 & 1.05 & 8 & : & V10 & & 12 & 1 & , & ? & 16 & . 23 & . 025 & is & !? & .i & 35 & . \(0:\) & \(!\) & . 11 & . \(\because\) : & . 0 & i & 1 \\
\hline 8259 & \(!\) & 1 & 11 & 21 & .? & 5 & 3 & 141 & 1.5: & 3 & 5 & Si & & \(6 i\) & 1 & \(?\) & 2 & is & . 38 & . \(0: 1\) & 21 & 13 & . 2 & 81 & . 04 & 3 & . 34 & . 6 & . iE & : & 1 \\
\hline 8659 & 1 & \(\delta\) & 12 & 13 & . & 5 & 1 & 111 & 1.is & 1 & 5 & 98 & 1 & S & \(!\) & 2 & ? & 21 & . 15 & .021 & 25 & \(1:\) & . 20 & 58 & \(\therefore\) Af & i & 1.04 & . 0 S & . 36 & 1 & 1 \\
\hline 8356 & 1 & 3 & 8 & 30 & \(\therefore\) & ; & , & 139 & \(1.6 \%\) & ? & ; & Y 8 & ? & 17 & 1 & i & , & \(2:\) & . 11 & . 015 & 13 & 1: & .1: & 60 & . 3 & 3 & 1.1: & . 01 & . 9 & 1 & ; \\
\hline 3:9\% & 1 & ; & 8 & 23 & . 1 & 1 & , & 204 & : in & , & & 10 & , & 26 & \(!\) & , & & 29 & . 15 & .i31 & 11 & \(1 i\) & . 1 & 5 & . 36 & : & . 81 & . 01 & . 9 & 1 & 1 \\
\hline 525: & : & : & ; & :1 & . \(i\) & 1 & 2 & 119 & 1.59 & 5 & 5 & St & 3 & \$i & : & 2 & 2 & 26 & . 15 & .11: & 11 & 16 & . 11 & 16 & . 05 & : & . 50 & . \(i\) ? & . & , & \\
\hline 9259 & 1 & , & 8 & 15 & . \(i\) & , & , & \(9 \%\) & . \({ }^{\text {P }}\) & ? & 5 & S0 & 1 & \$1 & 1 & 2 & 2 & 13 & . 3 & . 115 & :9 & is & . 1 & 13 & . iS & : & .is & . \(\because\) & . 11 & 1 & \\
\hline 3619 & 1 & \(i\) & if & 21 & . 1 & 5 & \(i\) & \(15:\) & 1.: & \(i\) & 5 & 10 & : & 15 & \(!\) & ? & 2 & \(: 0\) & . 30 & . i : & 15 & : & .ii & \(5:\) & . 3 & \(\vdots\) & .is & C: & .11 & i & , \\
\hline 3i7: & 1 & 4 & 1 & \(1:\) & . 2 & 1 & 1 & 208 & \(2 .: 2\) & 8 & 5 & 15 & 2 & 6 & , & . & 2 & 31 & . 31 & .14: & i3 & is & . 13 & 8 & . 26 & 2 & 1.0: & . 01 & . 0 & 1 & \\
\hline E2\% & 1 & ; & 12 & 33 & . 1 & 6 & , & 225 & 1.61 & , & , & 时 & , & 16 & , & , & , & 23 & . 36 & . 220 & 21 & 12 & . 20 & 52 & . 05 & , & 1.2i & 0.0 & . 13 & 1 & \\
\hline \(32: 3\) & 1 & 2 & 9 & 31 & . 2 & ; & 1 & \(1: 1\) & :.80 & 3 & 5 & YD & , & :8 & 1 & , & : & 25 & . 15 & . 024 & 12 & 12 & . 13 & 55 & . 09 & : & . 36 & . \(\because 1\) & . 03 & 1 & \\
\hline B: \(: 19\) & 1 & 3 & 1 & 21 & . 1 & 5 & 3 & 167 & 1.78 & 1 & 5 & N0 & 2 & 24 & 1 & , & 2 & 31 & . 11 & .0:1 & 13 & 15 & . 15 & 53 & . 07 & 2 & . 16 & . 0 & . 09 & 1 & \\
\hline 9215 & 1 & 3 & \(i\) & 19 & . 2 & 5 & ; & 171 & 1.84 & \} & 5 & is) & ! & 22 & 1 & 2 & ? & 27 & .15 & . 224 & 13 & 12 & . 13 & 59 & . 06 & : & . 11 & . 01 & . 01 & \(!\) & \\
\hline 6 210 & 1 & 3 & \(i\) & 30 & .i & 4 & : & 134 & 1.is & , & 5 & H0 & 3 & 28 & 1 & 2 & , & 31 & . 19 & . \(8: 5\) & 13 & 11 & . 13 & 61 & . 35 & 2 & . 61 & . \(C\) : & . 3 & 1 & 1 \\
\hline 819 & 1 & 1 & 8 & 13 & . 1 & 9 & 1 & 239 & 1.51 & : & j & NJ & 1 & 10 & 1 & 2 & 2 & 21 & . 31 & .033 & 15 & 12 & . 23 & 81 & . 03 & : & 1.01 & . \(0:\) & . 09 & 1 & \\
\hline 8278 & 1 & \% & \(?\) & 83 & . 2 & 8 & 1 & 217 & 2.1i & 21 & 5 & io & 2 & 35 & 1 & 3 & 2 & 33 & . 21 & . 035 & 13 & 16 & . 21 & 93 & . 92 & 2 & 1.08 & . 11 & . 10 & 1 & \\
\hline 821; & 2 & 2 & 1 & 53 & . 1 & 1 & l & 559 & 1.98 & f & f & ND & 1 & 11 & 1 & 3 & 2 & 19 & . 15 & . 122 & 1 & 6 & . 10 & 66 & . 01 & 2 & . 61 & . 31 & . 11 & 1 & \\
\hline 8280 & 1 & 1 & 1 & 25 & . 1 & 6 & ? & 153 & 1.85 & 6 & 5 & 80 & 2 & 29 & 1 & 2 & 2 & 30 & . 11 & . \(0: 2\) & 11 & 14 & . 16 & 53 & . 05 & 2 & . 59 & . 02 & . 01 & 1 & \\
\hline 8281 & 1 & 5 & 1 & 56 & . 1 & \(s\) & ! & 165 & 1.5 & 2 & 5 & Ki & 1 & 23 & , & 2 & 2 & :5 & . 19 & . 061 & 11 & 12 & . 15 & 59 & . 05 & 1 & . 81 & . 01 & . 01 & 1 & 2 \\
\hline \(8: 62\) & 1 & 5 & 7 & 81 & . 1 & 8 & 2 & 296 & 1.5? & \(?\) & \% & HD & 1 & 2: & 1 & 6 & 2 & 21 & . 20 & . 025 & 13 & 12 & . 20 & 69 & . 01 & 2 & . 87 & . 11 & . 09 & 1 & \\
\hline 363? & 1 & 6 & 8 & 33 & . 1 & 3 & 3 & 191 & 2.03 & 6 & 5 & N & 2 & 11 & 1 & 2 & \(?\) & 33 & . 15 & . 033 & 9 & 11 & . 19 & 66 & . 06 & 2 & . 15 & . 01 & . 05 & 1 & 2 \\
\hline \(82 E 4\) & 1 & - & 7 & 31 & . 1 & 9 & , & 190 & 2.65 & 1 & 5 & No & i & 20 & 1 & 2 & 2 & 31 & . 19 & . 030 & 11 & 16 & . 20 & \(6:\) & . 85 & 3 & . 84 & . \(0:\) & . 05 & 1 & \\
\hline 8355 & 1 & \(i\) & 7 & i & . 1 & 6 & 3 & 156 & 1.91 & 6 & 5 & NO & 2 & is & 1 & 2 & ? & 19 & . 19 & . 323 & 10 & 12 & . 11 & 59 & . 21 & 2 & . 63 & . S 1 & . 65 & 1 & \\
\hline 8295 & 1 & i & 1 & 31 & . 1 & 5 & 3 & 166 & 1.95 & ; & ; & yt & : & 19 & 1 & 2 & 2 & 32 & . 13 & . \(23:\) & io & 11 & . 16 & 58 & . 05 & : & . 64 & . 0 ! & . 05 & 1 & \\
\hline 8239 & : & 3 & i & : & . 1 & 4 & - & \(1: 5\) & 1.6: & 1 & ; & 80 & 1 & is & 1 & 2 & \(i\) & 25 & . 15 & . 010 & 3 & 10 & . 15 & \(1:\) & . 05 & 1 & . 51 & . 01 & . 05 & 1 & 1 \\
\hline Sis E/au-s & i & 57 & 33 & i3: & 6.9 & 6 & \(\because\) & 1159 & 1.08 & 33 & 17 & 8 & 31 & 19 & 19 & 18 & 19 & 96 & . 19 & . ABE & 39 & \$ & . 98 & 112 & . 06 & 32 & 1.83 & . 0 & . 11 & 11 & 18 \\
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\begin{tabular}{|c|c|c|c|c|c|c|c|c|c|c|c|c|c|c|c|c|c|c|c|c|c|c|c|c|c|c|c|c|c|c|c|}
\hline SAMS: \(: 1\) & no & A & it & : & ig & Y: & co & yc & ie & is & J & \(\lambda\) & : 1 & 5: & 24 & 5i & 5 & \(V\) & Ca & ? & ! 3 & C: & G & 11 & 9 & ; & Ri & 31 & t & ; & \\
\hline & Pay & B:Y & ? B & pry & \%:Y & P? K & 8: & 3FY & 1 & 2: X & P: & P?Y & ? P\% & P! & PPY & ? & ? 3.1 & PiY & \(i\) & 3 & ? \(3:\) & ? 3 & \} & PiY & \} & ?:! & ! & 1 & 1 & : & : \\
\hline : \(: 14\) & - & \(\vdots\) & : & \(\because\) & .i & 9 & \(?\) & i:6 & i.is & : & ! & Tiv & : & \(\because\) & 1 & ? & : & :3 & . \({ }^{\prime}\) & .i: 3 & 12 & 13 & . 2 & : & .6: & : & . 9 & .il & . 9 & : & 1 \\
\hline 3ii: & ; & 1 & ; & 3 & .i & : & ? & 11: & : \(: 3\) & : & ; & 30 & : & \(\because\) & : & , & : & i & \(\therefore\) & .i4is & 16 & 12 & . & 11 & . A & : & . 19 & . \(3:\) & . 15 & ; & . \\
\hline S14 & 1 & : & 4 & \(\because\) & . 1 & \(\varepsilon\) & \(\pm\) & ! \({ }^{\text {i }}\) & i. \({ }^{\text {a }}\) & : & ; & Sis & : & 2 & : & : & . & i? & \(\therefore\) : & . 2 St & : \({ }^{\text {a }}\) & ! & . 3 ? & 4 & . 0 & - & . 7 ¢ & .11 & .is & - & ; \\
\hline Sili & : & i & 6 & 2: & \(\therefore\) & 6 & : & 12 & 1.15 & 3 & 5 & 3: & 1 & 20 & : & : & & \(\because\) & . 1 & . 3.4 & \(\because\) & !! & . & 11 & . 29 & : & . 5 & . 6 & .is & : & , \\
\hline \(3 \mathrm{i} \%\) & i & 2 & : & \(\because\) & .i & 1 & \(\vdots\) & \(1: 3\) & 1.25 & : & 5 & 98 & ! & : 6 & : & : & : & : & .25 & . \(0: 5\) & !: & :! & . \(2:\) & 14 & . \(2:\) & : & . 69 & . 21 & . 8 & i & 1 \\
\hline \(3 i t ;\) & 1 & 4 & : & 11 & \(\therefore\) & 5 & 3 & 1 j & : 2. & : & ! & :10 & 1 & : \({ }^{\text {a }}\) & : & ! & 2 & 13 & . 3 & . 36 & 11 & 11 & . \(: 1\) & \(1:\) & . \(\because\) & : & . 5 & .i! & . 81 & : & : \\
\hline 31: & : & 1 & ; & \(\because\) & . 1 & ¢ & ; & \(13:\) & 1.: & : & ; & If & : & 15 & : & . & : & 19 & . \(\because\) & . \(0:\) ? & :i & :2 & . 2 & 15 & . & ; & . \(: 3\) & .i: & . \(\because\) & : & \\
\hline ¢ B \% & . & ! & , & : & . & : & 3 & 189 & !.?: & d & 5 & Si & : & \(\because\) & : & ? & : & 11 & . 3 & . \(11:\) & i! & 11 & . 1 & \(1:\) & . \(1:\) & : & , it & . O & \(\therefore\) & & ! \\
\hline \(3: 1:\) & , & ; & ; & O & . 1 & E & 3 & : \({ }_{\text {\% }}\) & 1.5! & \% & ! & \% & : & \(\because\) & 1 & \(\vdots\) & : & ii & . 29 & . \(9: 5\) & \(: 1\) & 19 & . \(:\) & jis & . 45 & i & \(\because\) & . 21 & A; & & + \\
\hline : \(3:\) & i & 4 & - & \(\because\) & \(\therefore\) & \(i\) & 5 & 19. & :.14 & \(\because\) & ¢ & 8 & : & 29 & , & :1: & : & : 5 & . 9 & . \(\because:\) & : 2 & :1 & . 11 & 81 & \(\therefore\) A & : & i.i? & . \(\because\) : & . \(\therefore\) & & ? \\
\hline 3i:1 & : & 1 & 1 & 9 & .i & 9 & \(s\) & \(10 i\) & 8.8: & i & ! & Vi & 1 & 2? & 1 & , & , & 37 & . 23 & .04! & 10 & :i & . 20 & 16 & . \(0:\) & ? & 1.6 & .l! & . \(!\) & ! & : \\
\hline 915 & 1 & 5 & ; & ii & . 1 & :1 & 1 & : 35 & :. 36 & I! & \(!\) & N & : & 21 & ; & , & 2 & \(1:\) & . \({ }^{\text {j }}\) & . \(1: 5\) & :1 & :9 & . 25 & 59 & . 2 & : & 1.18 & . il & . i & ; & ! \\
\hline \(8: 50\) & 1 & \(i\) & ; & iis & . 1 & \(!\) & 6 & \(5: 1\) & : 16 & \% & ! & 15 & : & \(3:\) & ! & ? & 1 & 39 & . 21 & . \(1: 1\) & 13 & :9 & . 85 & if & . D & ? & 1.:? & . 01 & . \(i\) & & i \\
\hline 81: & 1 & ; & \(\vdots\) & \(1:\) & . 1 & \(g\) & ; & : \(: 1\) & 2.3: & f & : & N & 1 & 3 & \(!\) & 1 & \(?\) & 11 & . 25 & . 311 & 1: & ! & .if & 66 & . 09 & 2 & : 03 & . 21 & . & . & i \\
\hline 2is: & 2 & \% & 15 & 15: & . & 11 & ; & \(4: 5\) & 3.28 & 59 & 5 & Vi & , & is & 1 & 531 & 2 & 14 & .!1 & . 86 & \(1:\) & :f & . 2 ? &  & . 08 & . & : 1.31 & . 61 & . 35 & \(!\) & 1 \\
\hline gis; & : & ! & : & 69 & . 1 & 3 & , & its & 2. 21 & ; & \(\oint\) & No & 1 & 21 & : & 15 & 4 & 11 & .2: & . 211 & 12 & ! & . 29 & \$6 & .is & 2 & 1.3? & .f! & . A : & ! & 1 \\
\hline 8isi & : & ! & \% & 9 & . 1 & 11 & 5 & 23 ? & 2.30 & 9 & ! & ni & : & 26 & ; & 15 & , & 39 & . 29 & . 055 & 10 & :1 & . 31 & 19 & . 08 & 1 & 1.20 & . 0 & .is & . & ? \\
\hline :19: & i & 1 & \(1 i\) & is & .2 & 13 & ! & \(32:\) & 2.15 & 21 & \% & Yi & & 35 & : & 10 & ? & 19 & .19 & . 145 & : & : 5 & \(\therefore 1\) & 36 & . 26 & ? & 1.6: & . 01 & . \(\therefore 5\) & : & 1 \\
\hline 8:6: & : & 4 & ; & 35 & . 2 & 5 & \(?\) & \(1: 0\) & :.12 & 4 & 5 & yiv & ? & 15 & 1 & , & 2 & 25 & . 2 & . 039 & 13 & 11 & . 33 & 11 & . 05 & , & . 14 & . V & . 04 & 1 & 1 \\
\hline 8:6? & 1 & \(!\) & 9 & 35 & .6 & 5 & 2 & \(2: 1\) & 1.50 & 3 & ; & 13 & : & \(1 ;\) & i & \% & & 6 & . \(i 1\) & . 12 ? & :2 & : & . 23 & 11 & . 21 & 2 & . 81 & . i : & \(\therefore\) : & , & , \\
\hline 8164 & ; & 5 & , & 31 & . 1 & 11 & 1 & 219 & 2.08 & 3 & 5 & St & , & 22 & : & : & , & 38 & . 21 & . 010 & i2 & \(2 ?\) & . 25 & 53 & . 05 & 2 & . 3 & . 11 & . 25 & \(!\) & 1 \\
\hline 8165 & \(!\) & 1 & 3 & ! & . 1 & ; & 3 & 167 & 1.19 & 1 & ; & 170 & 1 & 19 & 1 & & , & 26 & . 19 & . 119 & :1 & 14 & . 22 & 13 & . 06 & ? & . 11 & . 61 & . 21 & 1 & 1 \\
\hline 8165 & ! & 5 & 5 & 40 & . 1 & 9 & 3 & 172 & 1.7 & 3 & 5 & HL & , & 18 & , & ; & 2 & 30 & . 19 & .02? & 11 & 16 & . 21 & 16 & . 08 & ? & .8j & . 11 & . 81 & & 1 \\
\hline \(8: 57\) & : & 1 & 5 & 32 & . 1 & 9 & 1 & 193 & : 1.5 & ; & 5 & No & 1 & 19 & 1 & 3 & \(?\) & 33 & . 20 & . 029 & 11 & 16 & . 22 & 19 & . \(0 i\) & : & . 32 & . 21 & . 26 & 1 & 2 \\
\hline 2168 & 1 & 1 & 1 & 31 & . 3 & 5 & 3 & \(15 i\) & 1.55 & 3 & \(s\) & ni & , & 19 & 1 & 2 & 2 & i9 & . 21 & . 025 & 11 & 13 & . 21 & 11 & . 09 & , & .is & . 01 & . 81 & 1 & 1 \\
\hline 8159 & 1 & ! & , & 32 & . 1 & 8 & , & 17. & 1.92 & 1 & ; & 110 & 2 & 19 & 1 & 2 & 2 & 31 & . 19 & . 232 & 11 & 11 & . 21 & 59 & . 01 & 2 & . 91 & . 01 & . 04 & 1 & 1 \\
\hline 317 & 1 & 5 & 5 & 29 & . 1 & 3 & ? & 182 & 1.50 & 1 & 5 & 13 & , & 19 & 1 & 2 & 2 & 29 & . 19 & . 020 & 10 & 14 & . 21 & 54 & . 06 & 2 & . 83 & . 01 & . 01 & i & 1 \\
\hline 3:11 & 1 & ! & 2 & 39 & . 1 & 1 & 1 & 118 & 1.69 & 2 & 5 & No & : & 11 & 1 & 2 & 2 & 30 & . 13 & . 015 & 10 & 11 & . 20 & 52 & . 06 & 5 & . 91 & . 01 & . 24 & 1 & ! \\
\hline 8172 & 1 & \(i\) & 5 & 31 & . 1 & 8 & 1 & 153 & 1.55 & 2 & f & No & 1 & 20 & 1 & * & , & 29 & . 2 ? & . 029 & 10 & 15 & . 22 & 59 & . 03 & 2 & . 99 & . 01 & . 04 & i & 1 \\
\hline \(81: 9\) & 1 & 3 & 1 & 33 & . 1 & 1 & ; & 13 j & 1.11 & 2 & 5 & 10 & 1 & 20 & 1 & 2 & 2 & 25 & . 21 & . 014 & 10 & 1 ? & . 21 & 19 & . 01 & 2 & . 85 & . 01 & . \(2:\) & 1 & 1 \\
\hline 8174 & 1 & 1 & 5 & 32 & . 3 & 9 & 3 & 178 & 1.28 & 2 & 5 & NE & J & \(2:\) & 1 & 2 & 2 & 24 & . 23 & . 014 & 12 & 13 & . 21 & 52 & . 08 & 2 & . 88 & . 01 & . 04 & 1 & 2 \\
\hline 9175 & 1 & 1 & 1 & 25 & . 3 & 8 & 3 & 119 & 1.52 & 2 & \% & 90 & 2 & 19 & 1 & 2 & 2 & 11 & . 23 & . 024 & 11 & 11 & . 23 & 19 & . 09 & 1 & .83 & . 01 & . 05 & 1 & 1 \\
\hline 8176 & 1 & , & 9 & 35 & . 2 & 7 & 3 & \(1: 2\) & 1.65 & 1 & ; & 40 & 3 & 20 & 1 & ? & 2 & 36 & . 23 & . \(0: 6\) & 11 & 11 & . 28 & 49 & . 09 & 1 & . 81 & . 01 & . 19 & 1 & 1 \\
\hline 8171 & 1 & 1 & 1 & \(3 i\) & . 1 & 6 & 3 & 158 & 1.52 & 1 & 5 & NL & 2 & 19 & 1 & 2 & ? & 21 & .23 & . 039 & 11 & 15 & . 21 & 11 & . 09 & 1 & .84 & . 01 & . 85 & 1 & 1 \\
\hline 8179 & 1 & 6 & 6 & \(3 ;\) & . & 6 & 2 & 113 & :. 28 & 1 & 5 & N & 2 & 20 & 1 & ; & , & 11 & . 22 & . 12 : & 11 & 11 & . 19 & 11 & . 05 & : & . 4 & . 01 & . 65 & 1 & , \\
\hline 3179 & 1 & j & 1 & 3: & . 1 & 5 & 1 & 169 & 1.12 & ; & s & ND & \(?\) & 20 & i & ¢ & 2 & 25 & . 20 & . 018 & 11 & 12 & . 11 & 39 & . 08 & 2 & .65 & . 11 & . 0 : & 1 & 1 \\
\hline \(5: 0: 14 \cdot 0\) & 11 & 59 & 35 & :3: & 1.2 & 61 & 21 & 1015 & 1.10 & 39 & 13 & 8 & 37 & 19 & \(1 i\) & 17 & 20 & : & . 47 & . 085 & 39 & 55 & . 92 & 175 & . 06 & 33 & 1.30 & . 08 & .13 & ii & 51 \\
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\section*{NEWMONT EXPLORATION LTD. PROJECT 334 FILE \(=88-3535\)}

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 - SAXPLE IIPL: PI-Pg SOIL PIO ROCK AU: ANALISIS BY ACID LIACH/M IRON 10 gK SAKgLS.
\begin{tabular}{|c|c|c|c|c|c|c|c|c|c|c|c|c|c|c|c|c|c|c|c|c|c|c|c|c|c|c|c|c|c|c|c|}
\hline SAMPSEI & no & Cu & 7b & 20 & 19 & Vi & Co & nn & Pe & As & - & A! & Th & \(5!\) & cd & sb & 81 & \(V\) & Cl & \(\stackrel{ }{8}\) & La & C: & Mg & 83 & Ti & 3 & 11 & Na & 1 & V & \({ }^{10} 0^{\prime}\) \\
\hline & PPM & PPM & P?M & P9M & PPM & PPK & PPY & PPM & 1 & PFK & PPK & PPM & PPY & P7\% & PPM & PPM & PPY & PPK & 1 & 1 & PPM & PPK & 1 & PPY & 1 & PPM & 1 & \(\}\) & 1 & P? & PPB \\
\hline 8000 & ! & 1 & 1 & 11 & . 1 & 7 & ? & 235 & 2.04 & 6 & 5 & ND & 3 & 35 & 1 & 2 & 2 & 33 & . 22 & . 266 & 15 & 11 & . 19 & 65 & . 09 & 2 & 1.22 & . 01 & . 11 & 2 & 1 \\
\hline 8001 & 1 & 3 & 1 & 39 & . 1 & f & 2 & 136 & 1.12 & 2 & 5 & 110 & ? & 35 & 1 & 2 & 2 & 23 & . 21 & . 026 & 11 & 11 & . 13 & 68 & . 07 & 2 & . 63 & . 02 & . 19 & 2 & 1 \\
\hline 8002 & 1 & 2 & 5 & 20 & . 1 & , & 1 & 12 ? & 1.11 & 3 & 5 & ND & - & 11 & 1 & 2 & 2 & 20 & . 21 & . \(0: 3\) & 18 & 9 & . 15 & 55 & . 06 & 1 & . 61 & . 03 & . 20 & 1 & 2 \\
\hline 8903 & 1 & 5 & 8 & 11 & . 2 & & 2 & 222 & 1.61 & 1 & 5 & No & 1 & 16 & 1 & 2 & 2 & 21 & . 35 & . 014 & 29 & 12 & . 19 & 59 & . 06 & 2 & . 83 & . 02 & . 19 & 2 & 1 \\
\hline 8004 & 1 & \(\xi\) & 6 & 28 & . & 5 & 3 & 183 & 1.71 & 1 & 5 & ND & 2 & 35 & 1 & 2 & 2 & 3 31 & . 27 & . 012 & 18 & 15 & . 19 & 59 & . 08 & 2 & . 13 & . 02 & . 08 & 1 & 1 \\
\hline 3005 & 1 & 1 & \(1!\) & 69 & . 1 & 10 & 5 & 155 & 2.55 & 8 & 5 & ND & ? & 61 & 1 & 2 & 2 & 38 & . 31 & . 098 & 19 & 18 & . 28 & 121 & . 05 & l & 1.68 & . 01 & . 13 & 1 & 1 \\
\hline 8906 & 1 & 1 & 1 & 61 & . 1 & 9 & 2 & 103 & 1.63 & 3 & 5 & YD & 2 & 31 & 1 & ? & 2 & 21 & . 23 & . 010 & 12 & 11 & . 21 & 11 & . 05 & 2 & 1.12 & . 01 & . 08 & 1 & 53 \\
\hline 8007 & 1 & \(s\) & 6 & 39 & . 1 & 1 & 1 & 178 & 1.91 & 5 & 5 & ND & 2 & 21 & 1 & ! & , & 31 & . 19 & . 037 & 12 & 15 & . 20 & 11 & . 08 & 6 & 1.11 & . 01 & . 01 & 2 & 1 \\
\hline 8008 & 1 & 1 & , & 10 & . 1 & \(g\) & 1 & 235 & 2.18 & ) & 5 & No & 2 & 19 & 1 & 2 & 3 & 10 & . 18 & . 050 & 12 & 19 & . 23 & 60 & . 07 & 2 & 1.09 & . 01 & . 06 & 2 & 1 \\
\hline 1009 & 1 & 5 & 1 & 12 & . 1 & ; & 1 & 103 & 1.81 & 1 & 5 & NO & \(!\) & 31 & 1 & , & , & 32 & . 28 & . 014 & 11 & 11 & . 3 & 10 & . 06 & 2 & . 99 & . 01 & . 09 & ? & 1 \\
\hline 1010 & 1 & 6 & 9 & 38 & . 1 & 10 & 1 & 235 & 2.2? & 3 & 5 & ND & 2 & 26 & 1 & 2 & 1 & 12 & . 25 & . 033 & 13 & 21 & . 30 & 11 & . 10 & 2 & 1.08 & . 01 & . 05 & 2 & 1 \\
\hline 801: & 1 & 1 & 1 & 31 & . 1 & 8 & 3 & 184 & 1.39 & 1 & 5 & ND & 1 & 30 & 1 & 1 & 2 & 38 & . 21 & .03! & 11 & 18 & . 25 & 13 & . 09 & 3 & . 85 & . 02 & . 05 & 1 & 2 \\
\hline 8012 & 1 & \(g\) & 5 & 29 & . 2 & 1 & 3 & 208 & 1.91 & 5 & 5 & ND & , & 30 & 1 & 2 & 2 & 37 & . 26 & . 034 & 11 & 17 & . 23 & 76 & . 09 & 1 & . \(8:\) & . 02 & . 05 & 2 & 1 \\
\hline 8013 & 1 & 5 & 3 & 39 & . 1 & , & 1 & 210 & 2.32 & 5 & 5 & RD & 2 & 21 & 1 & 2 & , & 15 & . 26 & . 034 & 12 & 21 & . 28 & 69 & . 10 & 2 & . 93 & .01 & . 05 & 2 & 1 \\
\hline 8014 & 1 & 5 & 6 & 32 & . 1 & 8 & 1 & 210 & 1.98 & 1 & \(j\) & ND & 1 & 28 & 1 & 2 & 2 & 37 & . 23 & . 028 & 12 & 17 & . 31 & 61 & . 09 & 3 & 1.00 & . 01 & . 05 & 1 & 1 \\
\hline 8015 & 2 & 1 & 11 & 19 & . 1 & ) & 3 & 290 & 2.52 & 20 & 5 & ND & 1 & 11 & 1 & 2 & f & 30 & . 20 & . 071 & 10 & 11 & . 11 & 91 & . 01 & 3 & . 16 & . 01 & . 11 & 1 & 1 \\
\hline 8016 & 2 & 1 & 17 & 134 & . 2 & & 1 & 3315 & 2.19 & 30 & 5 & no & , & 63 & 1 & , & , & 15 & . 17 & . 100 & 9 & 9 & . 10 & 228 & . 01 & 3 & . 81 & . 01 & . 13 & 1 & 1 \\
\hline 8019 & 2 & 5 & 10 & 112 & . 1 & 6 & 3 & 919 & 2.11 & 29 & 5 & ND & 1 & 29 & 1 & 2 & , & 19 & . 21 & . 051 & 1 & 10 & . 12 & 132 & . 01 & 2 & . 86 & . 01 & . 09 & 1 & 1 \\
\hline 8018 & \(?\) & 6 & 11 & 191 & . 6 & 8 & 3 & 328 & 2.13 & 68 & 5 & ND & 2 & 31 & 1 & J & 2 & 28 & . 18 & . 114 & 11 & 13 & . 19 & 180 & . 01 & 1 & 2.04 & . 01 & . 10 & 1 & 2 \\
\hline 8019 & : & 1 & 13 & 168 & . 2 & 1 & 3 & 330 & 2.31 & 80 & 5 & ND & 1 & 25 & 1 & 8 & , & 30 & . 18 & . 052 & 11 & 12 & . 12 & 91 & . 03 & 2 & . 98 & . 01 & . 09 & 1 & 1 \\
\hline 8520 & 3 & 5 & 12 & 115 & . 1 & 1 & 3 & 165 & 2.07 & 98 & 5 & No & 1 & 33 & 1 & 9 & 1 & 26 & . 23 & . 011 & 11 & 13 & . 22 & 120 & . 03 & 2 & . 99 & . 01 & . 10 & 1 & 1 \\
\hline \(802!\) & 3 & 6 & 9 & 135 & . 2 & 8 & 1 & 328 & 2.11 & 28 & 5 & \(n 0\) & 1 & 21 & 1 & 2 & , & 26 & . 18 & . 016 & 9 & 12 & . 18 & 81 & . 01 & 2 & 1.03 & . 01 & . 07 & 1 & 1 \\
\hline 8022 & 3 & 6 & 10 & 178 & . 2 & 11 & 1 & 119 & 2.36 & 29 & 5 & ND & 2 & 21 & 1 & 1 & 3 & 29 & . 16 & . 080 & 13 & 15 & . 25 & 131 & . 02 & 2 & 1.66 & . 01 & . 07 & 1 & 1 \\
\hline 8023 & 3 & 6 & 13 & 161 & . 1 & 1 & 3 & 159 & 2.12 & 31 & S & ND & 1 & 29 & 1 & 2 & 2 & 23 & . 25 & . 061 & 11 & 11 & . 16 & 111 & . 01 & 2 & 1.32 & . 01 & . 08 & 1 & 1 \\
\hline 8021 & 1 & 6 & 11 & 269 & . 1 & 8 & 1 & 1093 & 2.39 & 9 & 5 & NO & 1 & 28 & 1 & 2 & , & 29 & . 33 & . 089 & 12 & 15 & . 15 & 175 & . 01 & 2 & 1.71 & . 01 & . 09 & 1 & 2 \\
\hline 8025 & 1 & 6 & 8 & 165 & . 1 & 10 & 3 & 695 & 2.18 & 10 & 5 & No & 1 & 21 & 1 & 2 & f & 30 & . 22 & . 076 & 12 & 15 & . 20 & 110 & . 03 & 2 & 1.34 & . 01 & . 08 & 1 & 1 \\
\hline \(80: 5\) & 2 & 6 & 11 & 391 & . 1 & & 1 & 1302 & 2.71 & 22 & 5 & N0 & , & 12 & 1 & 5 & 2 & 26 & . 33 & . 149 & 12 & 12 & . 18 & 113 & . 01 & & 1.60 & . 01 & . 11 & 1 & 1 \\
\hline 1027 & 6 & 5 & 13 & 150 & . 1 & 1 & 1 & 319 & 2.11 & 11 & 5 & No & 1 & 36 & 1 & , & 2 & 32 & . 25 & . 062 & 13 & 16 & . 21 & 122 & . 01 & 2 & 1.19 & . 01 & . 13 & 1 & 1 \\
\hline 8028 & 3 & 3 & 10 & 102 & . 1 & 5 & 3 & 551 & 1.76 & 23 & 5 & no & 1 & 31 & 1 & 1 & 2 & 21 & . 29 & .054 & 12 & 12 & . 16 & 109 & . 02 & 2 & 1.03 & . 01 & . 11 & 1 & 2 \\
\hline 8029 & 2 & 6 & 1 & 56 & .l & 9 & g & 174 & 2.55 & 51 & 5 & No & 1 & 15 & 1 & 3 & 1 & 39 & . 21 & . 050 & 11 & 11 & . 22 & 81 & . 04 & 2 & 1.33 & . 01 & . 11 & 1 & 1 \\
\hline 8030 & 1 & 6 & 1 & 98 & . 1 & 9 & 1 & 333 & 2.11 & 21 & 5 & yo & 1 & 33 & 1 & 2 & 2 & 35 & . 28 & . 096 & 13 & 11 & . 21 & 81 & . 01 & , & 1.51 & . 01 & . 10 & 1 & 1 \\
\hline 8031 & 2 & 1 & 1 & 108 & . 1 & 6 & 1 & 1059 & 1.51 & 23 & 5 & ND & 1 & 22 & 1 & 2 & , & 20 & . 11 & . 035 & 16 & 11 & . 16 & 100 & . 03 & 2 & 1.18 & . 01 & . 11 & 1 & 1 \\
\hline 8032 & 1 & 1 & 1 & 1? & . 2 & 6 & 3 & 212 & 1.55 & 1 & 5 & vo & 2 & 23 & 1 & 2 & 2 & 21 & . 17 & . 030 & 13 & 13 & . 19 & 32 & . 06 & 2 & . 81 & . 01 & . 11 & 2 & 1 \\
\hline 8033 & 1 & 3 & 6 & 28 & . 1 & 5 & 3 & 169 & 1.69 & 10 & 5 & No & 2 & 12 & 1 & 2 & 1 & 29 & . 19 & . 031 & 11 & 13 & . 16 & 69 & . 07 & 2 & . 81 & . 02 & . 17 & 1 & 1 \\
\hline 8034 & 1 & 5 & 9 & 89 & . 1 & 1 & 5 & 188 & 2.00 & 20 & 5 & YD & 1 & 3 & 1 & 2 & , & 30 & . 30 & . 081 & 13 & 15 & . 18 & 113 & . 02 & 2 & 1.32 & . 01 & . 11 & 1 & 1 \\
\hline 8035 & 1 & 3 & 10 & 11 & . 1 & 5 & 3 & 195 & 1.62 & 11 & 5 & ND & 1 & 20 & 1 & 2 & 2 & 28 & . 16 & . 025 & 12 & 13 & . 18 & 52 & . 06 & 3 & . 86 & . 01 & . 07 & 2 & 1 \\
\hline ST0 C/At-s & 18 & 37 & 36 & 132 & 9.2 & 67 & 28 & 1032 & 1.05 & 38 & 19 & 1 & 31 & 17 & 17 & 16 & 19 & 58 & . 16 & . 083 & 39 & 56 & . 91 & 111 & . 06 & 33 & 1.86 & . 06 & . 13 & 12 & 52 \\
\hline
\end{tabular}

\section*{APPENDIX III}

\title{
REPORT ON THE GEOPHYSICAL GROUND SURVEYS ON THE WHITE CLAIMS
}

By

\section*{H. Limion, Chief Geophyscist}

November 1, 1988

Location: British Columbia NTS: \(93 \mathrm{~F} / 11 \mathrm{E}, 6 \mathrm{~W}\)
Latitude \(53^{\circ} 30^{\prime} \mathrm{N}\) Longitude \(125^{\circ} 05^{\prime} \mathrm{W}\)

Work done by: Newmont Exploration of Canada Limited Work done between: July 10 - July 20, 1988
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Summary
Introduction
Location, Access, Topography
Geology and Previous Work
Geophysical Survey and Coverage
(i) Magnetic
(ii) VLFR
Results and Interpretation
(i) White grid
Conclusions and Recommendations
Statement of Qualification

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\section*{Maps at 1:5000 Scale}

1 map - VLF Resistivity Contours - White Grid in pocket

1 map - Magnetic Survey Contours - White Grid in pocket
1 map - VLF Resistivity Values - White Grid in pocket

1 map - Magnetic Survey Values - White Grid
in pocket

\section*{SUMMARY}

Magnetic surveys map geology by mapping the distribution of magnetite. VLFR surveys map geology and alteration by mapping bulk resistivities which are affected by characteristic rock porosities and permeability, and by the presence of conductive or resistive cover. These surveys were carried out on the White grid.

The White grid survey demonstrated relatively low magnetic signatures. A few magnetic highs correspond to some basalt float boulders found nearby. A narrow, elongate magnetic unit is suggested in one area. The resistivity survey indicated three definite fault-related contact zones near the Arrow Lake and Gus Showing areas. It should be noted that the overburden noise level is approximately 30 - 100 ohm metres and thus indicates a significant thickness of overburden throughout much of the property.

\section*{OOTSA PROJECT}

\section*{Location Map}
B.C. NTS:93 FII

figure \(/\)

\section*{INTRODUCTION}

A Landsat lineament study by J. Nebocat in the spring of 1986 indicated a concentration of lineaments on the Nechako River map sheet (93F). These are in an area underlain by early to mid Tertiary felsic volcanics and pyroclastics known as the Ootsa Lake Group.

Field reconnaissance in 1986 showed target areas. In 1987, several showings were staked by Newmont. In 1988, work continued in the area and on the claims. Geophysical work on the gridded portions of the claims included magnetic and VLF resistivity surveys. The magnetic surveys will generally map magnetite distribution and help in delineating rock-type, structures, and breaks. The VLF resistivity survey maps the apparent resistivity of the ground. The resistivity is related to porosity and permeability which, in turn, are affected by overburden cover, rock type, and alteration.

\section*{Location, Access, Topography}

The claims are in the gently rolling areas of pine and fir west of Prince George. Elevations on the claim group from 2900' to \(3500^{\prime}\) ASL, with the steepest slopes being \(15-20 \%\) over \(1 / 2 \mathrm{~km}\). Underbrush is quite sparse.

Access is approximately 120 km by logging road, either from Vanderhoof or Burns Lake. The northwest corner of the grid is accessible by road.

\section*{Geology and Previous Work}

The general bedrock is the late Cretaceous-Eocene Ootsa Lake Group volcanics, which unconformably overlie the Middle Jurassic Hazelton group volcanics and sediments. Both are overlain by predominantly basaltic lavas of the Oligocene-Miocene Endako Group.

Mingold staked several showings in the area in 1986. In September 1987, Newmont staked 80 claim units comprising the white claims. These were prospected, and several showings have been found. At the Arrow Lake Showing, high values on antimony and mercury are encouraging as pathfinders for gold mineralization. At the Gus Showing, a silicified fault zone in rhyolite yield Au and As values up to 795 ppb and 8452 ppm , respectively.


\section*{Geophysical Survey and Coverage}
1) Magnetic

The magnetic survey was designed to read all the lines, which are 100 m apart, at \(121 / 2 \mathrm{~m}\) spacing. An EDA OMNI IV proton precession magnetometer was read in the field, with readings corrected to a base station which was monitoring the diurnal every 30 sec .

The readings and coverage for each grid were:
\begin{tabular}{lcc} 
Grid & No. of Readings & Coverage \\
White & 2150 & 28 km
\end{tabular}
2) VLFR

A Geonics EM16R read the apparent resistivity. Readings for this survey were made on the grid lines at 25 m spacings. The VLF transmitter at Annapolis, Maryland was chosen for the white grid survey.

Coverage was:
Grid
No. of Readings
Coverage
White
1094
27 km

\section*{Results and Interpretation}

With the VLFR survey, we expect to see higher resistivities in areas of silicification, where alteration has decreased the porosity of the rock. In places where clay overburden is thicker, we expect a decrease in apparent resistivity. Specific rock types may be mappable by their resistivities.

The magnetic survey should define some rock types by their magnetite content. The overlying Tertiary plateau basalts are magnetically active, for example. Offsets in magnetic features, or a flat magnetic field may be significant.

\section*{(i) White grid}

The thickness of the overburden (till) on the white property effectively masks the resistivity trends over much of the grid. However, there appear to be mappable trends on the order of 150250 ohm-metre contrast. Much of the change in the resistivity will be caused by a change in overburden depth.

There are three definite contact zones indicated by the resistivity survey. The first is a contact along lines 7-14S at 500W (just along the Arrow Lake), which corresponds to the outcrop of the original discovery showing. The second is a resistive structure covering lines 14-17S from 25-250E. The third is a definite fault scarp along lines \(20,21 S\) at 325 W , where some siliceous fault breccia was found in subcrop. The 300 m by 200 m area known as the Gus Showing displays a strong resistivity high. The E-W fault lineament trend noted on the airphotos is also defined by the contours.

The magnetic field strength shows a trend slightly east of grid north. A unit is mappable from 1800S/175W to 200S/200E A parallel magnetic unit is seen from \(1100 \mathrm{~S} / 200 \mathrm{~W}\) to \(200 \mathrm{~S} / 100 \mathrm{~W}\). A magnetically flat area occupies the eastern part of the map, and it may correspond to a discrete geologic unit. Basalt float boulders were noted nearby.

\section*{Conclusions and Recommendations}

The magnetic and VLFR surveys both proved of value on this project in defining contacts, faults and the extent of the units. There is a definite advantage in continuing the VLFR survey over selected zones after the 25 m field survey has been completed. The detailed VLFR has the potential for defining trench targets, and initial drill targets over areas of moderate overburden thickness. As well, there is potential for some IP test lines to further detail drill targets along these same zones, where in some cases, there occur 5-10\% sulphides. Extensive IP coverage is not encouraged, as in general, overburden is extensive and sulphide rich rocks are erratically distributed in fault structures. It is possible that a VLF EM survey will give extra detail over areas of high overburden, since other companies in the area have had success in defining contacts.
H. LIMION

STATEMENT OF QUALIFICATIONS
I, Heikki Limion, received my B.A.Sc degree in Engineering Science (Geophysics Option) from the University of Toronto in 1965.

I spent two summers in geophysical field work; one with Hudson's Bay Oil and Gas, and one with INCO Exploration.

In 1965-66 I worked for one year with Hudson's Bay Oil \& Gas as a Junior Geophysicist in seismic field work.

From 1967-1976 I worked with INCO Exploration, on ground and airborne geophysical surveys. I was in charge of airborne geophysical operations for four years, and worked on research and development of airborne geophysical systems. I conducted ground geophysical surveys in Canada, U.S.A., and Brazil.

In 1977 and 1978 I was the head of the geophysics sections in the Kenya Department of Mines and Geology. During this time, I was under contract to CIDA (the Canadian International Development Agency) .

Since the beginning of 1979, I have held the position of Chief Geophysicist of Newmont Exploration of Canada Limited.

I am a member of the Society of Exploration Geophysicists, the Association of Professional Engineers of Ontario, and the Prospectors and Developers Association.












\subsection*{18.191}

\section*{NEWMONT EXPLORATION CANADA LTD}

MAGNETIC SURVEY VALUES
OOTSA PROJECT WHITE GRID NTS \(93 F 11\) eda onni iv mag corrected to base station values in gammas
FIELD SURVEY BY KEN READ - JUNE 14-19.1988

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